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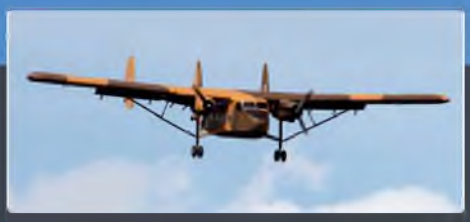

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Contents

JANUARY 2017 • ISSUE #396

FRONT COVER

Originally featured in the Feb/Mar 2016 issues of RC Model World, Phil Cooke and Matt Jones designed this 36" span two-channel jet style glider especially for the A-4 Skyhawk Mass Build event, which was held on 11th September at The Great Orme in Llandudno. Turn to page 64 for a full event report

REGULARS

REVIEWS

FEATURES

Pre-flight

Kevin Crozier
Editor | Radio Control Model World
Contact me either by post:
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Traplet Publications Ltd
Willow End Park, Blackmore Park Rd,
Malvern WR13 6NN. UK
or email: rcmw@traplet.com

Welcome to the January issue of RC Model World. A few weeks ago I received an email from an aeromodelling friend with whom I had lost contact. It was great to renew our acquaintance but he worried me a bit by saying he had been thinking of cancelling his subscription to RC Model World due to our increasing levels of electric coverage. However, he was pleased to see a greater variety of IC engine related content in recent issues and so had written to tell me that he would renew his subscription.

As regular readers will know I consider myself to be an all-round model flyer and, as I've said many times before, if it has got wings or rotor blades then I'll happily fly it – glow, petrol, jet, electric powered or glider! So I've no particular axe to grind.

RC Model World is an all-rounder too and our remit over nearly 400 issues has always been to represent all aspects of our wonderful hobby. The trouble is that model flying now covers such a vast array of specialised subjects that it's impossible to cover them all on a regular basis, and there's also no doubt that more and more R/C models will be powered by electric motors as time goes by. Our content at any one time merely reflects the interests of our contributors who have taken the time to write something for the magazine and it is probably no surprise that more and more of them are discovering the cleanliness and ease of electric power.

However, as I say, anything goes as far as our content is concerned, so I extended an invitation to my long lost friend to make sure that IC enthusiasts were kept well represented in the magazine by contributing a few articles of his own. I also related the problems that I had been having in getting anyone to take on the mantle of writing about petrol engines on a regular basis and this really touched a nerve with my mate, Ivan, who set about writing his first article in what we hope will be the first in a new series all about petrol power.

All we need now are some willing souls to pen some informative articles about glow engines, both two-strokes and four-strokes, and hopefully the balance of articles will be just about right to reflect the varied types of models that are being flown by club modellers up and down the land.

Ivan has called his new series 'High Tension' and he has used his first article to introduce himself and how he came to be passionate about IC engines, not just model types but agricultural and motorbike engines too.

Peter Maw is a regular contributor who has already taken the opportunity to write about one of the main aspects of the hobby that interests him – building scale models from plans. In this issue we welcome him back for another of his popular building series, this time centred around Traplet's plan and wood pack for the Dalotel DM-165.

Our plan features this month start with the first in a two part article from Chris Golds, who offers his large Scottish Aviation Twin Pioneer as our main feature plan. Graham Dorschell has developed a quick and easy way of making robust sport models using a special folded foam wing technique that requires little in the way of tools other than a sharp Stanley knife, a hot glue gun and some strong tape! This time Graham shows how to fabricate his E-Vulcan delta from this month's free pull-out plan.

Talking about balance of articles, I always strive not to over do things with respect to event reports but these have been piling up a bit lately so I hope you'll forgive me for running a few in this issue. The variety of disciplines covered should, however, keep things interesting. Phil Cooke kicks things off with a report from the Great Orme, where the PSSA hosted their Mass Build Fly-In for gliders built from the recent RCMW plan for the A-4 Skyhawk power scale soarer. Next up, Terry Westrop updates us on retro models currently being flown at Classic Aerobatic meetings, while Frank Skilbeck returns to the slope, this time at the Long Mynd to cover one of Wolves MAC's scale gliding events. We also have coverage from the Sumners Pond model show, held to support the Kent, Surrey & Sussex Air Ambulance, and we finish things off with a report on the scale seaplanes and floatplanes that were flown at the International Idromeeting on the shores of Lake Varese, Italy last August.

So quite a varied mix, once again, I hope you will agree. And if you don't, well you know what to do – boot up your computer and get typing!

Until next time...

Happy flying!

Kevin

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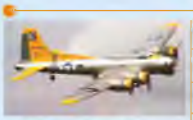

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Take Off R/C News and Views

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

Spitfire 80th Anniversary

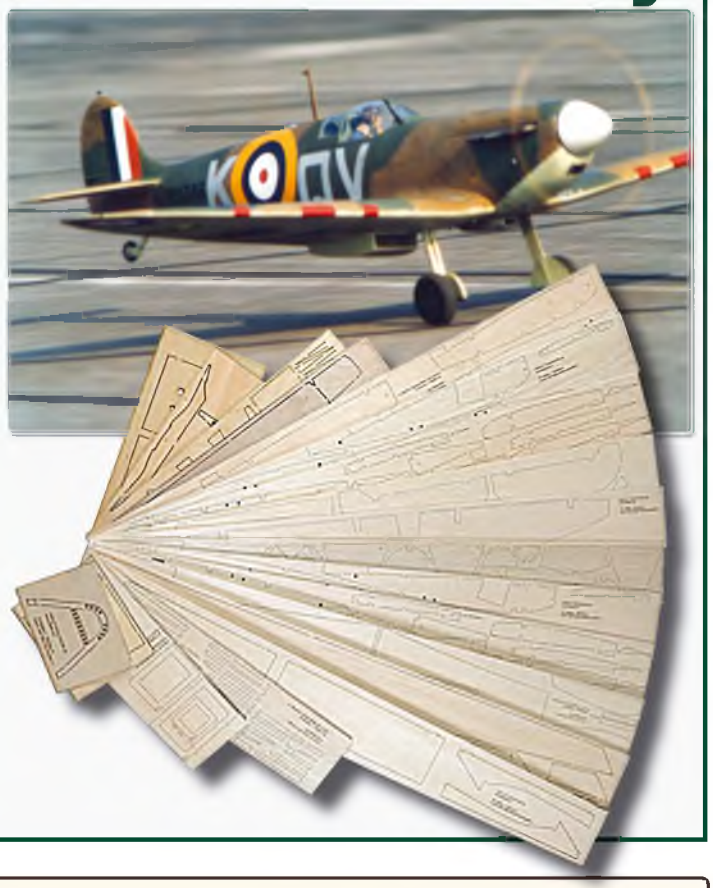
Whilst compiling Take Off for this issue (in mid-November, 2016) it has suddenly dawned on us that we have not had any articles or reports this year from R/C modellers wanting to celebrate the 80th anniversary of the first flight of the prototype Supermarine Spitfire. So, just in the nick of time, we thought we should do something to redress the situation, if only to encourage a few more readers to start building their own R/C Spitfires over the coming winter months.

Designed by RJ Mitchell, the prototype Spitfire, K5054, was the culmination of a series of cleaned up monoplane designs from the drawing boards of Mitchell and his design team, using experience gained from building the company's Schneider Trophy seaplanes. K5054, the first variant of what is arguably the most famous of all WW2 fighter designs, was powered by a Rolls Royce Merlin engine as it took off from Eastleigh Aerodrome, now Southampton Airport, in early March, 1936.

Following Mitchell's death in 1937 his successor, Joe Smith developed the design to make it faster and more powerful. Mk1 Spitfires finally entered RAF service in August 1938. When the war started the Spitfire proved to have the advantage in terms of speed, manoeuvrability and firepower during its aerial battles against the Luftwaffe. These attributes came to the fore during its decisive role in the Battle of Britain.

So what better way to celebrate this remarkable aeroplane than to build your very own Spitfire. But which scale and version should you choose? Fortunately the Traplet Shop is on hand to help, with plans for over a dozen Spitfires of various sizes to cogitate over. Our favourites have to be the ones designed by British National Scale Champion, Brian Taylor, many of which are available as sets. These contain a copy of Brian's highly detailed hand drawn plans on multiple sheets, a laser cut wood pack of intricately shaped parts (ribs, formers etc.) and other parts (if available) such as a cowl and canopy. For full details of all the Spitfire plans and related products please visit: **www.trapletshop.com**

Alternatively, you can buy them from: Traplet Publications Limited (Plans Service), Traplet House, Willow End Park, Blackmore Park Road, Welland, Malvern WR13 6NN. Or phone the hotline on: +44 (0) 1684 588599, fax: +44 (0) 1684 578558 or email: customerservices@traplet.com



More Spitfires!

If the broad spread of Spitfire designs available from Traplet Shop do not come in the size and scale that you require then don't forget to check out the My Hobby Store website. Here you will find lots more plans, parts and sets that are now also available from Traplet too!

There's even a plan for the Spitfire's gull-wing predecessor, the Supermarine Type 224.

www.myhobbystore.co.uk

Savoia-Marchetti S.55 X Conference And Exhibition

In the March, 2016 issue of RCMW, Franco Bugada told the story of Erick Marin's model of a Savoia-Marchetti S.55 X seaplane, which he made to celebrate the 24 Italian flying boats that undertook a formation flight from Italy to the USA and back again in 1933.

On Saturday, December 3rd, 50 years after the death of the pioneering engineer Alessandro Marchetti, a conference was held to celebrate his legacy. The conference, and an exhibition of parts from a full size replica of an S.55 X, was organised by the Volandia Park & Museum of Flight and the Savoia Marchetti Historical Group, in collaboration with the 'Group of Senior Workers, Marchetti Singularity Institute' and the 'Association of Friends, Volandia'.

The conference allowed some of the finished parts destined for the S.55 X replica to be presented to the public. The reconstructed parts use the same original designs and techniques that were used back in the 1930s. Also on display were a commemorative bust of Alessandro Marchetti, work from his drawing board, his diary, a book of flights (log book?) and an Isotta Fraschini 'Ace' engine of the kind that powered the aircraft.

Turn to page 84 to see more Italian model seaplanes in action on Lake Varese.

Adam's Models

Adam Chambers from Southampton has sent in details of his latest electric models:

"Hi Kevin

I thought you might be interested in my electric builds.

The Scram is a 107-inch vintage model built from the Belair kit. Power is from a Turnigy 60 motor on six cells, AUW 11 lb. The clever bit is how I got round the issue of battery access; the nose is detachable and rotates to allow easy access to the tray. An isolator fuse on the side prevents me from getting hurt.

Other models of interest include my Elan 100, converted to use a Park 480 motor on a three cell LiPo and 11 x 7 folding prop. The AUW is still below the recommended weight!

Finally, my electric Flair Fokker Dr.1, which uses a G160 on 10 cells. AUW 15 lb. Painted with household paints, she flies like a dream and is very docile."

Many thanks for sharing your models with us, Adam. You have a nice variety in your home hangar. And thanks also for sharing the clever use of the rotating nose on the Scram to gain access to the battery pack. Be sure to follow Adam's example of isolating the motor if you use this trick.

Australian Model Expo

Scale modelling is alive and well in Australia judging by this year's Australian Model Expo, which was held in Melbourne over the holiday weekend of 11-13th June, 2016. The number of models on display, primarily plastic types, was well over 2,000.

As well as the more traditional aircraft, car and armoured models there is a growing attendance from Gundam, Sci-fi and Diorama enthusiasts and their models. The organisers report that the 2016 event was a huge success. The event has been going for over 30 years and and is a real tribute to the hardworking volunteers who make it happen each year.

For more photos and information go to: **www.modelexpo.com.au**

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www.cmldistribution.co.uk

HACKER EDGE 540-V3 ARF

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www.hacker-model.eu

OPTERRA 2M FLYING WING

This model is a collaborative effort between George Hicks and Mike McConville, two of model aviation's premier aircraft designers. These guys have created some of the best flying R/C aeroplanes in the world and the Opterra is no exception. Its lightweight construction, long wingspan and efficient aerodynamics give it a wide range of capabilities that includes everything from sport aerobatics to soaring. It even gives you the ability to put yourself in the pilot's seat with FPV gear whilst using a GoPro Hero 3, Hero 4 or similar class camera to record HD video at the same time. The Bind-N-Fly version comes with the added benefit of a Spektrum AS3X receiver that features optional SAFE Select technology. Alternatively, the Plug-N-Play version comes with the motor, ESC and servos already installed. All you need to do is finish some final assembly, install the receiver, charge a battery and fly!

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HACKER MESSERSCHMITT BF 109F ARF

Hacker Model Production have added to their Fun Fighter series of EPP outdoor flying models with the iconic 840 mm wingspan Messerschmitt Bf 109F ARF. You can assemble this little warbird in an evening and go fly! Foam construction makes these models hard to damage, but they are easily repairable if they do. The model comes pre-painted with no decals to apply. Each kit contains: A coloured fuselage, wing and horizontal stabiliser, a clear canopy, engine mount, pushrods, complete hardware and an instruction guide. You will need a transmitter, servos, motor, ESC, prop, spinner and LiPo to complete.

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Dalotel DM-165

Peter Maw starts another of his popular scale model building series. This time he focuses on the Dalotel DM-165, designed by Peter Miller

Buy your own plan (MW3541) and wood pack (WP3541) from the Traplet Plans Service and follow Peter as he builds an electric version of the Dalotel

Building a scale model takes more time than creating a hack weekend plane, which means many people are careful and often only take them out on virtually wind-free days. This can make it seem that the reward for building a scale model is limited. Some people overcome the problem by buying big Extras or Edges. An expensive option, and transport and storage can be a problem.

Wouldn't it be nice if a scale plane could be built for the price of a small ARTF and it could go out in most weather conditions? It might also be nice if it wasn't an Extra or an Edge, or a CAP or a Yak. It would be even better if most of the shaped parts were already cut out as well, to reduce building time.

That is where the Traplet plan (MW3541) and wood pack (WP3541) for the Dalotel DM-165 comes in. The retro look of this 1965 designed plane hides positive flying characteristics; washout and loads of dihedral make the plane super-safe despite the large control surfaces. The proportions of the model make it easy to transport and inexpensive to build. No special tools are needed for this model; it can be built using just a knife, pencil, small hammer and ruler if you want. Other tools are useful but not essential.

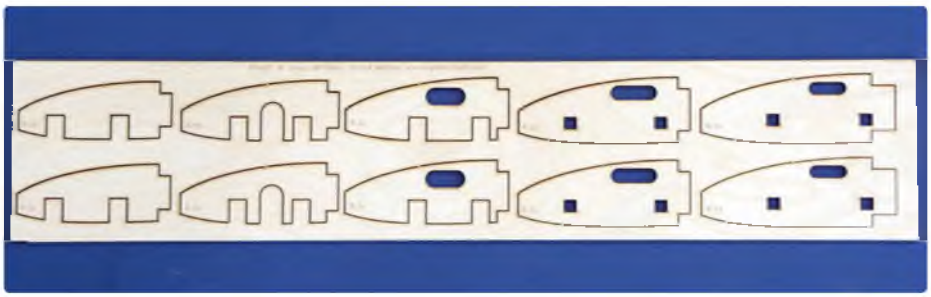
Packaging Masterpiece

Wood packs supplied by Traplet come in really small boxes and are masterpieces of cutting, design and packaging. That keeps costs down. We are all familiar with 6 ft long, 2 ft square colour printed boxes containing ready built aircraft. There is a lot of air in one of those boxes, which you are paying to have shipped from China.

The wood packs that Traplet supply arrive in boxes no more than 2 ft long, 3 inches deep and around 1 ft wide. The boxes are packed solid with cut wood and there's virtually no waste. Some of the finished components, such as the fuselage, are much bigger than the box size, which means they are made of several parts glued together like a jigsaw. Their wavy joints mean that it is impossible to join the wrong bits together and they also give a much larger area for gluing.

When it was designed and first published the Dalotel used a .32 size two-stroke engine, but nowadays an IC only model is a rare design concept. But building your own model from a kit of parts means that you can fit it out however you like, including using electric power. Just remember to make any modifications before joining anything up or building. This version is going to be fitted with an Axi 2826/12, which has an rpm rating of 760 KV and is probably slightly overpowered. A 4S 3700 LiPo battery gives about eight minutes of mixed flying time.

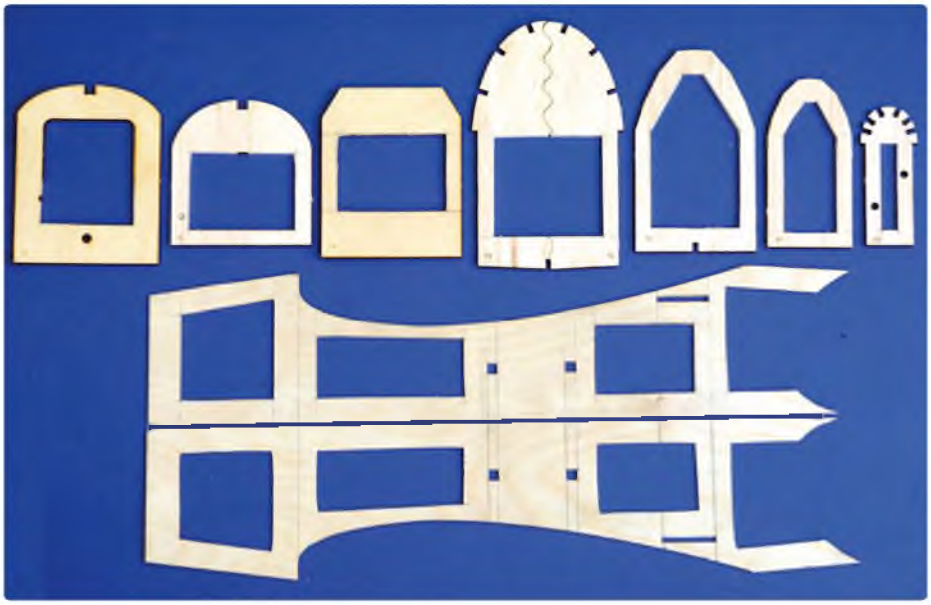
These articles will look at building the Dalotel specifically, however many of the construction techniques and tips will be useful for any model being built from scratch.



Top class cutting is a feature of all Traplet wood packs. These riblets for the undercarriage mounting would take ages to cut manually and they would never be so accurate

To make value for money kits it makes sense to cut wood from standard size planks. The wavy lines ensure close joints between the parts

If the trailing edge of the rudder and elevators are not supported by shims you will get warped control surfaces



An electric conversion of a plan/wood pack model can have lots of weight taken out as there is no vibration to worry about

Start At The Back

Starting with the tail surfaces is normally straightforward. The model has solid flying surfaces and built up control surfaces, which means part of the tail is very easy and part needs some thought. The first thing that may catch people out is that the trailing edges of the control surfaces (elevator and rudder) are made from thinner wood than the leading edges by 1/16". Unless they are supported by 1/32" shims during assembly all the flying surfaces will be warped. This is not conducive to smooth flying.

Most full size planes have shrouded hinges. It is relatively easy to create this feature on models using Robart hinges and rounded leading edges. Gorilla glue is excellent for holding Robart hinges in place as it expands when drying out to form a solid wedge around the hinge barbs. The wood will have to be broken before the hinge comes out with Gorilla glue. Just remember to coat the actual hinge point with grease or cooking oil to prevent the glue from disabling the hinge. The actual hinge line, when using Robart hinges, is in the control surface, not between the leading and trailing edge between it and the flying surface. Cut-outs in the controls show the hinge point position.

The decoration of the plane looks deceptively simple but it has to be accurately cut out and applied. It is much easier to do this while the components are easy to handle. The white and yellow colouring is Profilm (Oracover) on the model and the black lines are made from Solartrim. Note that it is essential that areas to be glued are not covered. In the picture of the tail components it is easy to see where the glue will be applied to the fin and tailplane.

Losing Weight Is Never Fun...

...But the results are worth it!

This is now going to be an electric model, which means that problems caused by vibration from an IC engine will disappear. Cut outs in the fuselage sides will save 48 grams; not much but think how much this feels like when the plane is pulling 3G in a vertical climb. That's why models can't keep going up for ever. The pull of gravity increases substantially in any deviation from straight and level.

The cut outs on the fuselage sides are perfectly safe on an electric model. If you look at most ARTF kits you will see how little wood there is in a fuselage. Note that there are holes in the doublers to take the servo rails and wing bolt holder. Never rely on a simple butt joint to secure such important components. These cut outs give important extra support for added safety and strength with no weight penalty.

Thrust Matters

The plan says no side or down thrust but the majority of models benefit from a couple of degrees of side-thrust (the engine/motor should point slightly to the right when looking from the back of the model) and possibly down thrust as well. The model is slightly over-powered with the chosen Axi 2826/12 motor driving a 12" x 6" prop, which means that side thrust will really help the flight characteristics. The dotted line on the F1 bulkhead shows the modified centreline for the motor. When assembled the bulkhead will be offset slightly and the modified centre-line will make sure that the propeller is in the

Holes cut in the F1 former to help cooling for the controller. The dotted line is an offset centreline. Do these things before gluing them to the fuselage structure

To fit the elevator horn inside the fuselage it needs to be angled to allow sufficient up movement

Above & below: The hinge line on Robart hinges is behind the bull-nose of the control surface, which means scale-like cut outs are put into the control surfaces

Formers need to be split to allow the 'Option 2' build type

centre of the fuselage instead of the right hand side. As we found out on the test flight this was a good decision and in actual fact at least one more degree of side-thrust would have been beneficial.

There are a couple of ways to build a fuselage. This model is designed with the formers from F2 to F5 being the same width. On this basis the centre section of the fuselage can be built on its side and each of the formers glued on at right angles to the fuselage side. Then you wait for the glue to dry and attach the other fuselage side to the assembly. Finally, pull the front and back together to form the fuselage curves. I have never been able to make a fuselage using this method without it ending up being shaped like a banana, which means an alternative has to come into play.

Alternative Techniques

The alternative option builds the fuselage upside down and with the sides pinned to the outline plan view. This guarantees accuracy. However, the formers need to be cut to the height of the fuselage sides, as shown in the picture. A little bit more work but with perfection the result. Before removing the fuselage assembly from the building board add the bottom sheeting to create a solid warp resistant structure.

The F1 former is the last bit to be glued in place before taking the fuselage assembly off the building board. Make sure that any 'T' nuts used to hold the motor onto F1 are fitted before gluing it to the fuselage. Before adding the top stringers to the rear of the fuselage fit the elevator control rod and rudder push pull system, as well as the servos, and a significant part of the radio installation is completed without problem. Although I have fitted the model with high torque servos this is not necessary. It just happened that they were the only two servos I had spare.

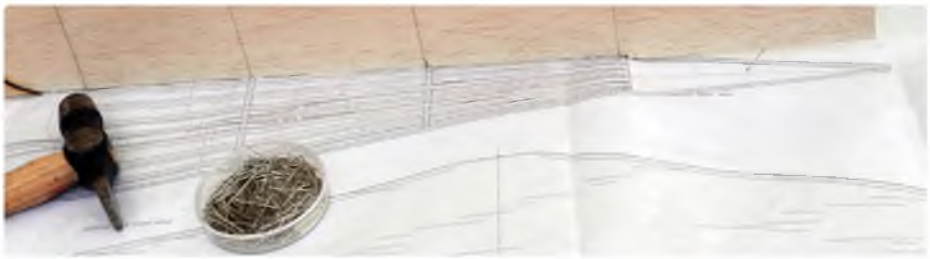
Incidentally, the plan calls for spruce stringers on the rear fuselage. With an electric model this is not necessary. Use spruce for the top two stringers to make sure the model is robust enough to be picked up easily, but the rest of them can be made from balsa. As an added bonus they can be cut from the wing rib holders in the kit and so cost nothing.

Electric Mods

Building the fuselage as a top and bottom structure means that as much or as little as you want can be turned into a hatch to access the flight battery and other electrics as required. The version shown here has everything between the front of the canopy and rear of the cowl as a hatched area. A 6" (160 mm) front hatch gives a very practical model. The model uses 4S 3300 or 3700 batteries, which are 136 mm long and can be easily dropped in place. There is also plenty of room for the receiver battery and the ESC. As the model is going to have electric retracts, which put extra load on the electrics, the receiver will have a separate battery. This is the safest set up in all cases and the extra weight of the receiver battery is well worth putting up with.

Make up a battery box before constructing the front hatch. The box should be longer than is necessary so the battery can then be moved around to get the correct C of G. The hatch should be built in position as it will then match the rest of the fuselage shape.

The first fuselage side is pinned to the plan along the fuselage outline. Note the clear poly sheeting laid over the top of the drawing to stop the fuselage sticking to the plan



Mark the fuselage sides with the former positions to make it easy keep them vertical whilst gluing

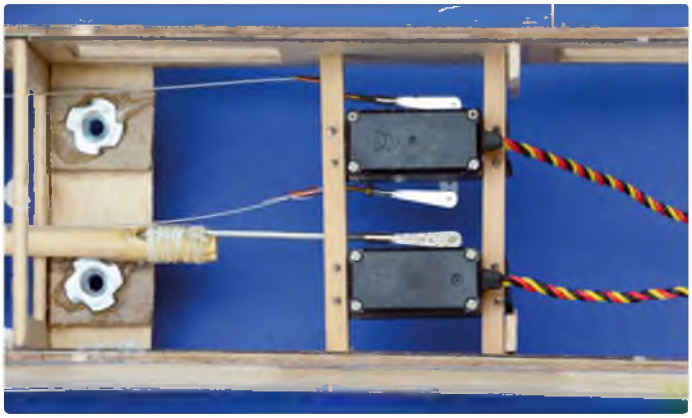
Only the top two stringers need to be spruce for the electric version. Make sure the control systems are installed before gluing the stringers otherwise the air will turn blue!

To get the correct shape the balsa needs to be thoroughly wet to cope with the curvature. Create a left side and a right side for the sheeting; it is much easier than trying to make the double curved shape. Pin the balsa in place until it dries out. It is never worth bothering with pins pushed in straight. Always push the pins at an angle and preferably at opposite angles to each other, as shown. This helps prevent the wood from moving as it dries out. There is plenty of space for the ESC and receiver battery. It's up to you if you want to create a hatch in the underside of the fuselage to access them.

Once one side of the hatch has been left glued in place and allowed to dry overnight it can have a surface cut put in it. This is so much easier than trying to guess where to cut the complete hatch once it has been fully formed. To hold the hatch in place in flight fit a couple of 4 mm dowels to the front of the hatch and a couple of rare earth magnets to the back.

More or less the last thing to do with the fuselage is to form the cowling. The electric motor is obviously shorter than the original two-stroke motor. Rather than go to the trouble of creating a motor mounting box it is possible to use stand-offs, such as the nice quality Secraft type. For an Axi 2826 motor the stand-offs need to be 35 mm long or 45 mm long for the Purple Power PO-3547-800 motor. The motor will be fully enclosed in the cowl on the finished model, which means it will need to be permanently fixed in place before the cowl is built and all the wiring will need to be routed through the F1 former to the rest of the power train. More of that next time. ***RCMW***

Continued overleaf

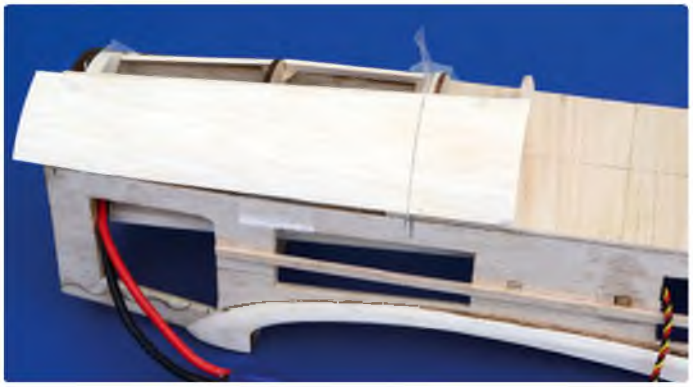


Closed loop system components and the elevator pushrod are installed before the rear stringers, otherwise it will be impossible to install them later

Completing most of the finishing before assembly makes life easy but make sure that areas to be glued are not covered

Building the battery hatch into the front decking is simple and it means a perfect fit

Hardly any building work done and the servos are already in



Form one side of the front fuselage. Mark where the hatch is going to be cut before forming the other side. It is better than trying to guess later

When pins have to hold difficult joints they will only work if angled opposite to each other, which stops the wood riding up on the pins

Use 1/32 inch ply shims to create a gap between the rear of the hatch and the fuselage

Since the front fuselage is curved in three dimensions the balsa used to form it will not be a straightforward rectangle

CONTACTS

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www.blackburnmodels.com

RC MODEL WORLD

MODEL SPECIFICATIONS

NAME:	DM-165 Dalotel
MANUFACTURER:	Traplet Publications
MODEL TYPE:	Low wing near scale monoplane
WING SPAN:	54"
WING AREA:	513 sq in (0.33 sq m)
WING LOADING:	24 oz/sq ft (7.2 kg/sq m)
ENGINE:	0.32 cu in two-stroke or equivalent electric motor (Axi 2826/12 used with 12 x 6 prop, 60 amp 4-Max ESC and 4S-3700 LiPo)
CONSTRUCTION:	Balsa and ply
WEIGHT:	5 lb 4 oz (2.38 kg), inc. 4S LiPo

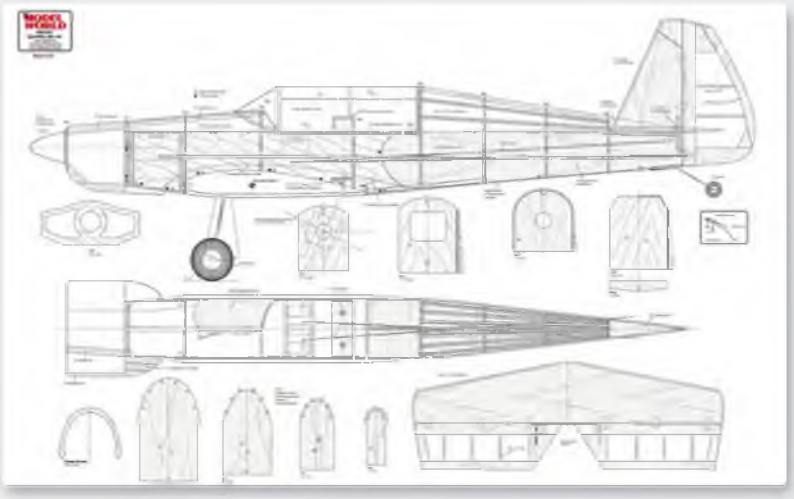
R/C FUNCTIONS

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

PLAN DETAILS

PLAN NAME:	DM-165 Dalotel
BUILD CATEGORY:	Intermediate
PLAN NUMBER:	MW3541
PLAN PRICE:	£17.55
***LASER WOOD PACK:**	WP3541
WOOD PACK PRICE:	£86.44
OR BUY AS A SET, WITH 10% OFF:	SET3541
SET PRICE:	£99.44

Plans and parts are subject to Postage & Packing charges at standard rates. Please note that our laser cut Wood Packs contain intricately shaped parts only, such as wing ribs and fuselage formers. No strip or sheet wood is included, although sheet wood can be ordered separately from **www.trapletshop.com**



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High Tension

Kicking off a new series on petrol engines, our latest columnist, Ivan V, introduces himself and explains his passion for model engines, especially gasoline powered types

Petrol engines old and new is what High Tension is all about

This is a Frog 100 diesel, the engine that started so many modellers on the path to IC powered models

Spark ignition engines were expensive and a bit of a specialist area as they had variable timing that had to be tuned, along with the carburettor, to get a good balance

Petrol Engines And I

Starting with me, I'm a long term modeller who favours aircraft, although I have a few boats and dabble in cars. But basically anything with an internal combustion engine for power suits me fine.

I like the quality of some of the current electric motors – nice engineering – but I haven't delved too deeply into electric powered flight. Not the right noise for me, so far. To qualify the internal combustion engine bit, while I have quite a few diesel engines and a number of alcohol fuel engines, my outright favourite are spark ignition engines running on petrol. Size is not a consideration – small, medium and large – they are all good.

In this series about petrol engines I will cover my background, engines used, adapting engines from other uses, squashing a few bugs that tend to spread and breed (engine myths), engine configurations, running in and setting up, trouble-shooting etc. There will be lots more about petrol engines, both spark ignition and glow ignition.

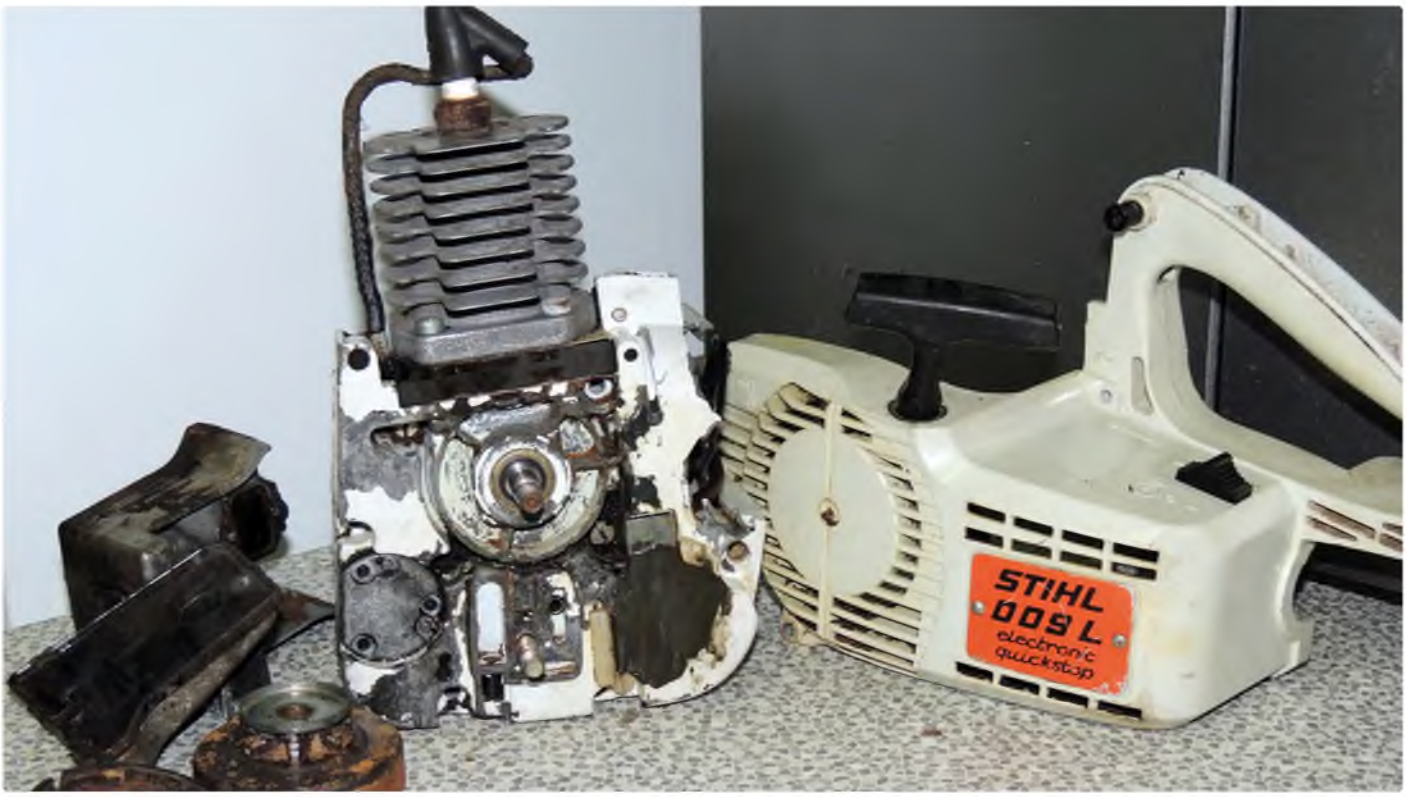
Way back I had an interest in non-IC model aircraft (rubber powered and gliders of various types) but my mind kept pushing me towards the engines that powered the 'big' models. I had seen a model aircraft powered by an engine and that was my 'waking moment'. I had to have an engine. There were a few petrol engines available at the time but they were out of my league due to the cost. So I settled on a simple little diesel that was very popular amongst my mates and, as a coincidence, it was a Frog 100. This was probably the most common engine for many modellers as they were extremely popular in modelling circles as a first engine.

Unfortunately, it couldn't be started when I purchased it, so my father (not a real great mechanic, but somewhat handy with tools) stripped it down to bits and bolts, but he couldn't find a problem. Then again, not being ungrateful, I wondered if he knew what he was looking for? He put the parts in a box and said he would take it back to the shop at a later date. It would probably have been a wasted effort as I doubt, even back then, that any warranty would have been honoured when the item was presented in a 'million' bits!

Well, here was a challenge that I considered with quite a bit of temerity. Should I try to put the engine together when my father was at work? Yes, what the heck, he could only yell at me, or look at me with 'that' look. So I got stuck into it and, by golly, I got

An example of the points used on spark engines. They had to be kept clean of oil and correctly adjusted. Spark erosion of the points was always a problem that needed addressing

One consideration, if you do decide to adapt a chainsaw engine, is the very deep head finning, which is ideal for tight cowls on models



Chainsaw engines are, generally, of high quality and performance. But adapting them to model aircraft use is a big job, requiring a lot of cutting, filing and head scratching when figuring out the problem of mounting to an airframe

it all together again and with no bits left over!

That was a good lesson and the next is one that has stayed with me ever since – RTBM (Read The Bloody Manual) – i.e. all the information that comes with an item. From what I could understand the settings of the engine were as they should have been, so I checked the fuel I purchased with the engine. Well now, what's this: 'Add one part of ether'? What's ether and where do I get it? The local chemist sorted it out for me and sold me some ether, with a warning to not sniff it as it would send me to sleep!

The engine eventually ran and it was the start of many. But my first petrol engine won me over completely, even though it was a bit old and needed a bit of fiddling with a coil, condenser (now capacitor), points and a battery of 4.5 volts. The battery was not a problem as that was what I had in the headlight of my push bike and the fuel was simply petrol, to which I added some Castrol R30, which I got from a mate whose father rode speedway motorbikes.

What a heady smell. And the sound of that engine...! A throaty bark that rattled your eardrums no end. Though I have garnered many model engines in glow and diesel configuration over many years, petrol engines are my all time preferred power source and, really, I am not that particular where they originate from. By that I mean if an engine can be extracted from some piece of equipment and modified for model use it is a good engine.

Back To My Beginnings

I am not putting a big hat on here, or turning my collar backwards for a religious sermon. It's just that I wonder how come I had a good understanding of internal combustion engines from way back, with no qualified training? Maybe it is like an artist who can paint, compose music or write stories, or the religions that preach an afterlife and return of the soul? Maybe I was a greasy handed mechanic on the Model T Ford assembly line, who knows? I certainly don't, but it is a point to ponder.

As an example, very early in my first year of apprenticeship I obtained an old motorcycle that had lain dormant for many years. In those good old days a second-hand motorcycle or car, running or not, was the start for many young blokes and my mates would rally around on weekends to fix, adjust, rebuild or just offer advice as to how it could be got running. I was certainly one of the mob now with my trusty motorcycle, which I disassembled and slowly rebuilt to be a serviceable means of transport.

I referred some problems with the bike to the tradesmen where I was training and what

This is an example of a flywheel magneto as used on most hand tool engines and...

...this is the pull cord method of easy starting – much faster than hand flicking

Note well the name 'Mahle' on the cylinder block. We will look into this in a future article

Weed whacker engines are generally a good choice for adaptation as the drive shaft is prominent and easy to adapt for driving a propeller

they told me was stored, used and kept for later reference. After servicing a few parts, fitting a new float in the carburettor (cork with a coating of shellac, in those days) and a new battery, the job was a success and I was able to ride in (reasonably) grand style. As I progressed in my training, I tried my hand at rebuilding car engines, which was quite a learning curve and one where I got to understand the principle of Kettering ignition and a few variations on the theme.

Earlier in my growing years I had spent time on several farms and picked up some good information on the workings of farm machinery. A great uncle had a large mixed farm growing vegetables and chickens, and he taught me how to drive and service a tractor. On another farm I used tilling and digging machines, and I also learnt how to fuel up and start the large diesel engines that drove the water pumps. On that farm I did a lot of driving in a Land Rover and that was excellent experience as I also had a part in servicing the unique L head engines, a great little four cylinder with the heart of a lion.

The few farm projects I enjoyed also taught me that an internal combustion engine is a very versatile and useful piece of equipment. No matter where it came from (machinery or a car) it could be utilised for many other tasks where power was required.

In one instance, on a large cattle property, the engine that powered the water pump for the supply tank spat its dummy and totally died in its tracks. Near the dwelling there was a large lagoon of sparkling clean water and this was the supply that was pumped up into a water tank on a high stand. The weight of the water and the height of the tank provided quite a considerable pressure to several water outlets, including the cooking area and wash room. Without the pump it was not possible to fill the tank and water flow would become non existent.

For some inexplicable reason somebody in the past had bought a lawn mower and it was stored in a shed as a hotel for spiders (it was totally covered with spider webs). What use was a blasted lawn mower on this property? There were no lawns and the animals ate the grass! Anyway, that mower had an engine and we had a load of tools. So after a bit of fettling of the mower, a little bit of servicing (freeing with oil internally) of the two-stroke motor and a bit of 'bush mechanicing', that engine was powering the pump like a Trojan. And it continued to do so for many years.

I think that was where I first picked up on the idea that virtually any engine within reason could be modified to be used in a model aircraft. It was a few years later before I was able to try this idea as I had to learn how to machine a propeller drive adaptor, balance the engine for smooth running over the rpm range (well, as smooth as you can get a single cylinder engine to run), design and fabricate an engine mount, and make a suitable exhaust system.

Eventually, I did pick up the necessary skills and I have modified and adapted more engines now than I can remember. I also learnt how to get the best out of an engine, as well as the better configurations, and that will be the most part of the discussions we will have over a time within these pages.

The Next Stages

If you are inclined to think I am dwelling on my engine experience, I simply intend it to show a possible learning curve for any modeller with a keen interest in internal combustion engines and for any young person who is prepared to strike out and 'give it a go', rather than simply digging into a bottomless wallet, purchasing the same old stuff and eventually losing interest as the challenge has waned. I am cracking on well in years now and I have never become blasé, lost interest or found wanting for an idea. I will have to live way beyond a century to carry out the ideas I have now, let alone those that keep coming. So if you are still with me, keep reading.

Let's see now. I served an apprenticeship working on, servicing, building and designing internal combustion engines. Everything from small two-strokes for lawn mowers, engines for farm equipment, marine engines, stationary engines and special parts for people carrying motor vehicles. There was a lot to learn but, then again, an apprenticeship in days past was a minimum of five years

What could be better than a leaf blower for a bit of skulduggery such as 'borrowing' the engine for a model aircraft? After all, this machine is designed from the ground up to swing a large propeller

and a lot can be crammed into those years if you are keen on that which you are learning and doing.

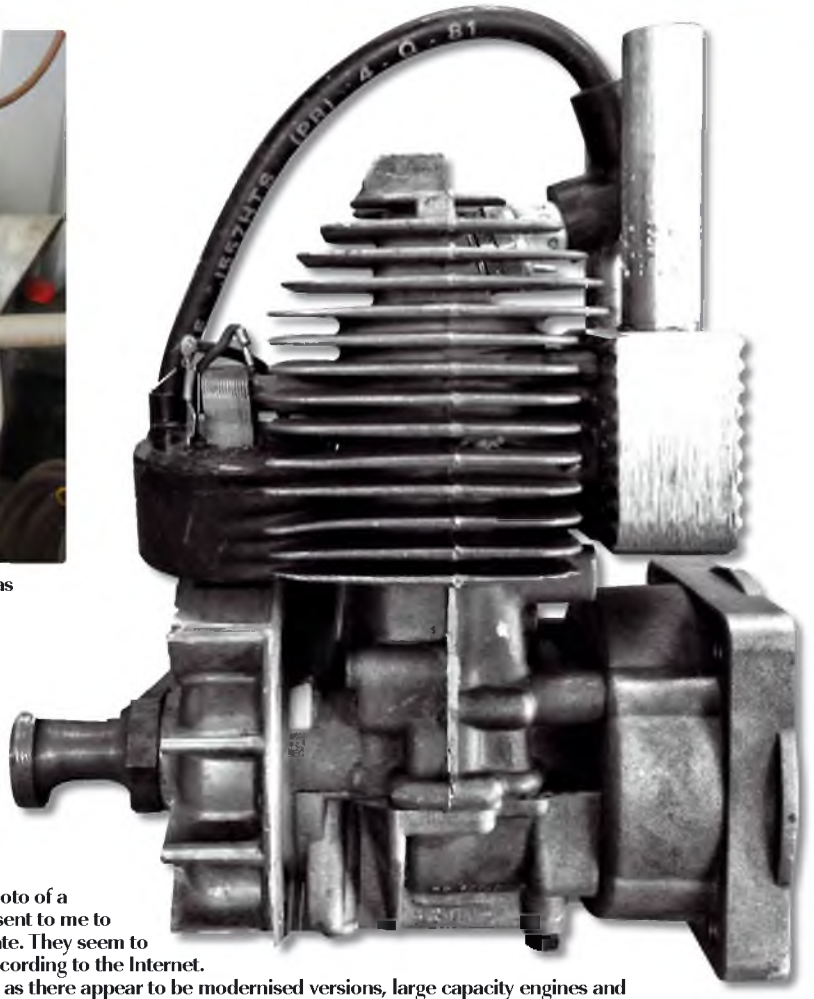
For my last two years I was transferred to a factory that specialised in large trucks and monster prime movers – diesel engines with engine bores large enough to poke your head into for a visual inspection. I loved those monsters and the work I did on them. I was also keen on the special starting fluid we sometimes used for the super large diesels for a first start-up. It was injected, the glow plugs turned on and the engine cranked. The start was almost an explosion (well it was really, in each cylinder!) and the exhaust belched a great cloud of black smoke as the massive engine burst into life.

I promised myself I would get a sample of that starting fluid or at least find out what was in it. I knew by the smell it had some ether but that was about all I could detect. I had a few model diesel engines and I would have liked to see if they would run on that starting fluid. I never did get around to it; it's just one of those things that you have it in the back of your mind for a later moment, then the chance is gone. And that was how it was for me. I had a very good offer from another company that had a slightly different line of work and it caught my interest. So off I went, but without my sample of starter fluid. Maybe some day...

Like most red blooded (I say that with reservations) young blokes of the times, in those days I had more than my share of motorcycles and cars, with a sprinkling of competition riding and driving. All good fun and absorbing, but I never moved far away from engines and model aircraft.

I did, at one time, with a mate, construct a full size airboat and we used a motorcycle engine and a homemade propeller (I had made many for my model engines). Shall we say, it was a bit of a hair raising adventure! A bit frightening, a good experience and a good item to sell to some buyer who saw it and was convinced he could use it on vast waterways. Best of luck, mate – it's yours for a very reasonable price.

Later on there was a bit of a craze to home-build a form of gyrocopter that could be towed up by a car or have an engine fitted. Seriously, these were not much more than a metal framed kitchen chair with a tow rope



Right: An old photo of a Quadra engine sent to me to identify for a mate. They seem to be still going, according to the Internet. Worth checking as there appear to be modernised versions, large capacity engines and multi-cylinder options

and a whirling propeller mere inches behind your head. I did ponder things for a while, then my love of life made the decision for me – stick with model aircraft!

Moving Into The Large Model Period

Though there were a few others in the early days, the Quadra petrol engine was the 'be all and end all' to have in those tentative steps of large models powered by petrol engines. These were hand tool engines (post hole diggers, garden tools and the like) so they were a bit agricultural but very rugged in construction. Whoever was adapting them (in Canada and the USA, I believe) for model aircraft use was fitting a multi screw drive hub that was quite a good job.

There was a fellow in USA, Dario Brisighella, who really knew these engines and he would super balance and tweak your engine so it became a real powerhouse. His modified engines were extremely popular and got a lot of modellers interested in large petrol engine power and, subsequently, large models.

The Quadra ignition was by a flywheel magneto (common with those types of engines) that needed a fair turn of speed to produce a good spark and this was a small problem. Used in a tool for which they were designed, starting would have been initiated by pulling on a starter cord or a spring release (like a large clock spring that was wound up and instantly released when starting the engine). Both these methods spun the engine quite fast so the spark at the plug was quite healthy and the engine started readily. Flicking a prop is really no substitute unless you are an accomplished flicker and know the little trick for setting the propeller position (which we will deal with later on).

Before you jump in, yes, electric starters were becoming quite popular in those days but they were nowhere near strong enough to spin a large petrol engine with a flywheel magneto. There were various methods employed, both commercially and by modellers themselves, and one was a real worry...

You may have had experience or seen the little springs fitted to small engines, such as those from Cox and Wenmac, that connect to the propeller when wound backwards to build up the spring tension and which are then released to spin the propeller quite fast, more often than not causing the propeller to snick a finger when it wasn't pulled far enough away as the spring activated! If so then think about this:

Somebody came up with the invention of a recoil spring for the Quadra and also for Zenoah engines. It was fitted on the rear shaft (most adapted engines have a shaft front and rear; one for the magneto and one to drive an appliance) and, like the Cox engines, you wound the propeller clockwise until the spring was fully tensioned, then released the propeller blade and the spring spun it anti-clockwise to hopefully start the engine – or whack you hard on the fingers if you weren't quick enough! A bit of a brute really and not at all popular after a while.

There are now good techniques for flick starting engines with magnetos, as well as CDI ignition, and we will look at these in another article, as well as today's powerful electric starters. ***RCMW***

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Gadgets & Gear

Andrew James offers a selection of ideas on how to spend those monetary gifts given to aeromodellers at Christmas by relatives and friends who don't quite know what to buy for their loved ones with a passion for R/C aircraft!

Spektrum DX6e

The DX6e is the latest in a long line of affordable radio control systems aimed at club flyers. It features all the usual tech that we have come to expect from Spektrum sport radios, including DSMX 2.4 GHz technology, telemetry and AirWare programming software for Airplane (sic), Helicopter and Sailplane (glider) models. There's also a new suite of functions for Multirotors, which reflects the growing popularity of these types of R/C aircraft.

DX6e has a whopping 250 model memory but if that's not enough (!) then you can save more models to an SD card (not supplied). The SD card's more usual function will be to transfer firmware updates to the Tx and it can also be used to download pre-programmed set ups for the latest Horizon Hobby models from the company's website.

The DX6e also features a wireless trainer link, allowing you to 'buddy box' with a similarly equipped Spektrum transmitter without having to plug in a training lead between the two radio sets – much safer as it removes any risk of the lead becoming disconnected.

A notable new feature is the 'Patent-Pending Gimbal Design with Spring Configuration Switch'. This lets you change the gimbal spring configuration by simply moving a slider switch on the back of the transmitter. No tools are required and you don't have to take the back off the case to access the springs. Just select the spring configuration that matches the mode you are using and the model type you are flying. There are four spring configurations:

Normal Throttle, Modes 2 and 4 (Air, Heli and Sailplane)
Spring Centred Throttle, Modes 2 and 4 (Multirotor)
Spring Centred Throttle, Modes 1 and 3 (Multirotor)
Normal Throttle, Modes 1 and 3 (Air, Heli and Sailplane)

The switch is protected by a hinged cover to prevent accidental changes to spring configurations in flight.

We will be giving this neat radio a full work out in a forthcoming review but when handling the high grip textured finish of the newly designed case for the first time a couple of features stand out:

The stubby fixed antenna of the DX6 has been replaced by a more angular affair that can be angled to give the best radiation pattern depending on whether you are flying models at high, medium or low altitudes. And the power switch is now a press type rather than a sliding switch. Initial concerns at being able to easily turn it off in flight were soon dispelled when we discovered that the switch has to be depressed for several seconds to shut the transmitter down.

www.horizonhobby.co.uk (search spm6650)

Etronix PowerPal Touch Duo

Having a charger with more than one output is a real time saver when it comes to charging a bunch of battery packs in readiness for a flying session. This new touch panel charger provides two chargers directly from one AC/DC powered unit.

The Touch Duo's panel is easy to adjust by using the tip of a finger but anyone with large digits may find it easier to have the pen stylus provided close to hand to select some of the smaller icons that are displayed. This neat charger can be used to charge, discharge or cycle Li Ion, LiPo, LiFe, LiHV, NiCd and NiMH battery packs and each output can be set to show either a Unit or Graph display. Unit shows the state of charge of each cell as both a voltage and as a virtual battery casing that fills up as the charge cycle nears completion. Graph shows the pack's voltage against time.

Touch Duo can be powered either from the mains using the plug-in lead supplied or from a DC source, usually a leisure battery, using a lead that comes in the box and which is fitted with an XT connector. Also supplied are two charging leads with Deans style connectors at the battery end and two XH balance boards.

Charge current is selectable from 0.1 A to 10.0 A and discharge current is between 0.1 A to 5.0 A.

Maximum charge power is 100 W, with a maximum discharge of 12 W. Balance current is a maximum 350 mA to a tolerance of ±0.01 V.

Touch Duo will charge pack sizes of between one to sixteen cells in its NiCd/NiMH modes and up to 6S Lithium packs.

In use I found the PowerPal to be very user friendly and it worked well to charge, balance and then storage charge my favourite LiPo packs. It's well worth the very reasonable recommended retail price of £114.99

www.cmldistribution.co.uk (search ET0212)

Neo For Iwata Gravity Feed Airbrushing Kit

At some stage most aeromodellers will be interested in learning the basics of airbrushing to add some precisely controlled areas of paint to their models. This is especially so if you have an interest in scale models on which even some fairly simple airbrushing tricks, like feathered edges around dummy access panels, can have a tremendous impact on the scale appearance of a model aeroplane.

The 'Neo for Iwata Gravity Feed Airbrushing Kit' is the perfect answer for anyone who wants to learn some basic airbrushing techniques. And it is also well suited to the occasional user who may only want to perform some simple airbrushing tasks every so often during the build and finishing of a new R/C model.

The kit comes in a carry box and contains:

A 'Neo Air for Iwata' air compressor with international plugs and air hose

Three speeds (1-15 PSI / 0.07-1.03 Bar / 0.007-0.103 MPa) for small, general airbrush applications

A 'Neo for Iwata' CN gravity-feed, dual-action airbrush with two cup sizes for fine to medium spray performance, which is ideal for small to medium sized projects

Three bottles of Medea Com-Art Colours (1 oz), airbrush-ready, non-toxic, water-based acrylic paint

Medea Airbrush Cleaner (1 oz), a ready to use, water based cleaner

This comprehensive package, which retails at £190.00, also contains a leaflet that gives access to a special URL of Online Practice Exercises. This takes the form of selected exercises from the book, Basic Airbrush Techniques, A Complete Course by Robert Paschal.

As always with Iwata airbrushes the dual action brush supplied is of excellent quality. The compressor may only be a simple affair, with a simple on/off switch and a maximum 10 minute run time (plenty for most jobs, but it can be turned on again immediately if not), but it is efficient and runs very quietly thanks to its four pointed rubber feet. The hose is a plastic type, with a threaded collar at the airbrush end and which just pushes on over a long outlet tube at the compressor end – simple but effective!

Iwata airbrushes and associated products are sold by the Airbrush Company Ltd., Lancing, West Sussex. Tel: 01903 767800

airbrushes.com (search C-IW-120)

JML Lazer Bond

Whilst I am not a lover of making field repairs to my models when I damage something whilst out flying (I prefer to take the model home to do a proper job), I adopt a more relaxed approach when flying indoors with lightweight, mostly foam sheet models. When indoor flying I make sure that I pack a tube of foam safe cyano and a kicker spray but there's always the danger of the CA bottle getting knocked over and leaking over the school gym's benches or the caretaker's carefully polished wooden floor!

I was therefore pleased to see a bottle of JML Lazer Bond in the package of products that the Editor sent me for this feature as it is quite a viscous adhesive and shouldn't drip even when the thin tube gets knocked over. This is no conventional adhesive either as it is set using UV light emitted by the small torch located in the bottle cap!

I experimented with it using test pieces of balsa and Depron foam (you should always do this before using a new type of glue on your foam models) and I found that it made an excellent bond where the joints are edge on, such as when reattaching a fin to the rear of a model. The fine metal applicator tube allows a thin, well controlled fillet of adhesive to be run all along the joint, after which the UV torch is switched on and shone directly over the joint where it instantly activates the glue.

I did not have much luck though with my overlapping test piece as the UV light doesn't penetrate very far and so it cannot set any adhesive that is hidden by large areas of material. So Lazer Bond is best kept for those quick repairs to reinforce cracked or broken off parts where the joints are relatively thin.

A definite keeper for my indoor model toolbox though. You can buy it from JML Direct for £11.99 a bottle, although I have seen it on display locally at large DIY stores.

www.jmldirect.com (search Lazer Bond)

The cap contains a UV torch that is used to set the adhesive

Edge on joints work well on either Depron or balsa

This overlapping test joint was not a success as the UV light doesn't penetrate even quite thin balsa

Progressive RC EC5 Assembly Punch

If you have acquired a few electric models from Horizon Hobby's various brands you are likely to have encountered their favoured type of battery connector, the distinctive EC series with their polarised blue housings.

While it is, of course, possible to buy LiPo packs with such connectors already fitted, both from Horizon and elsewhere, many modellers like to fit their own connectors to packs that come with bare leads. I have tried this a few times with mixed success, as there's a definite knack to making sure that the connectors are well seated in the blue housings. If not the wires can be pushed out of the back of the plugs or sockets when they are joined together.

When I mentioned this to a helpful chap on the Horizon stand at a model show he told me place the housing front end down on a firm worktop and then use a narrow, good quality slotted head screwdriver blade to push down on the back of the lip machined into the rear of the connector's pin or socket until it clicked into place. This does work but rather than relying on using a straight blade to push the round lip down into place, wouldn't it be great if there was a circular tool to do the job properly?

This is where the Progressive RC EC5 Assembly Punch comes in as it is purpose designed for exactly this job. Once the connector is soldered up simply align the semi-circular end of the punch over the back of the lip of the connector, where it will allow you to apply even pressure around just over half the diameter of the pin or socket. You can now press the connector down until it clicks into place. You may find that it is possible to do this by hand but if not then a gentle tap with a small hammer will do the trick.

The Progressive RC EC5 Assembly Punch is machined from stainless steel so it should last a lifetime. It's a sure-fire addition to my soldering toolbox (yes, I have a separate one for that job too!) Having been so impressed by the EC5 version, I asked KC to check whether Progressive RC had an EC3 punch, which would be even more useful. Sadly the answer was no at this time, although they are running the idea past their product development team.

So keep an eye out on the Progressive RC website for developments and while you are there you will also see some other interesting electric flight products. You can buy an EC5 punch direct from their site, where it is priced at just 7 USD plus P&P.

www.progressiverc.com (search AC-EC5P)

Tomcat Motors

With so many different brands of brushless electric motors being available today it's difficult to know which brands to choose. Personally I would opt for a brand that offers good UK based customer support at reasonable prices. With Tomcat Motors that's exactly what you can expect to receive as their extensive motor range is backed by CML Distribution, who offer these motors at fair prices to the model shops they supply to, together with well proven customer support from their warehouse in Bromsgrove, near Birmingham.

Tomcat Motors is a professional brushless motor company with extensive development and production experience, their engineers having been focused on brushless motor research and development for more than 10 years. The company has its own sophisticated workshop, with over 20 sets of CNC and automatic winding machines, and quality control test equipment. Their products are CE certified.

I was sent a broad selection of motors to look at, small, medium and large, and whilst I haven't actually flown with any of them yet they do look to be of excellent construction and should be capable of good performance when fitted to club level models.

I was particularly taken with the monster sized G50cc brushless motor (8825-180KV-5T), which allowed me to get a good look at the high quality of both the external components and the windings inside. This powerful 180 KV beast is supplied with a four bolt prop driver.

www.cmldistribution.co.uk/brands/tomcat

Safetech ST60 Drone Parachute Kit

Having recently crashed an aerobatic drone whilst practising flips and getting badly disorientated, I asked the Editor to let me know if any drone parachute systems ever needed reviewing. Shortly afterwards this Safetech kit arrived, courtesy of Opale Parachutes, an offshoot of Opale Paramodels, whose products have been shown before in this magazine. To be honest it is a bit bulky for fitting to my 3D drone, having been designed to add a layer of crash protection to larger camera carrying photo drones, where it is mounted upright so that the 'chute deploys vertically upwards when a safety pin is withdrawn by a servo (supplied) mounted on the base-plate.

It's a very well made product though, with the one metre square parachute being packed into a carbon fibre tube (92 x 60 mm) that is bonded to the carbon fibre base-plate. The lines are from Dynema/ Spliced Aramid Kevlar (with no knots) and the parachute is packed in such a way that the strong ejection spring doesn't apply permanent force to the 'chute, which stops it from getting rigidly packed down and so ensures a safe ejection.

The unit weighs 170 grams and it can be mounted in conjunction with an optional Universal Mount that allows you to mount the ST60 to plenty of different models of multi-rotors.

When the parachute is deployed, which takes between 0.3 – 0.8 seconds, Opale claim that it offers a low sink-rate of 7.2 to 18 feet per second with a maximum impact energy of 48J for a 3.2 kg (7 lb) drone weight. A video on the Opale website shows the system being deployed from a typical camera drone and whilst the package doesn't exactly float down, there's no doubt it comes down a heck of a lot slower that a heavy multi-rotor would in free-fall! Your expensive drone and camera would probably suffer a bit of a heavy arrival but they would have a much better chance of working again than would be the case in a straight crash. Perhaps more importantly, as with the failsafe of an R/C system, the main reason to fit such a device is not to save your expensive investment but to minimise any potential damage to third party persons or property.

The Safetech ST60 – 3.2KG S3 DGAC kit is available direct from Opale Paramodels and has a retail price of 219 Euros. The Universal Mount costs 16.90 Euros.

www.opale-paramodels.com (search ST60)

The parachute is ejected by a strong spring when the servo operated pin is withdrawn. A safety pin is also inserted for storage, fitted with a 'Remove Before Flight' flag

Using the optional mounting plate the ST60 can be fitted to a wide range of drones

Great Planes Easy-Touch Bar Sanders

Sanding blocks have always had a place on model building benches and over the years various commercial versions have appeared to replace the traditional lump of softwood wrapped in sandpaper. Some feature permanently bonded hard wearing grits while others stick with tried and trusted replaceable strips of sandpaper. I have to say that I prefer the former, despite their additional expense, as sandpaper does have a knack of tearing at the edges, which can dig into the work surface and create additional marks and dings.

With their Easy-Touch Bar Sanders, Great Planes have come up with something that sits in the middle of these two options. Formed from different lengths of contoured aluminium extrusion these bar sanders offer a comfortable grip combined with a flat, 2.25 inch wide sanding surface onto which you stick lengths of Easy-Touch Adhesive Backed Sandpaper.

The bars come in 11, 22 and whopping 33-inch lengths so they are ideal for sanding large areas of a wing or fuselage. The extrusion is .055" thick, making it resistant to bending or twisting, even over such long lengths. Great Planes say that the bars disperse pressure more evenly over a wider area than sanding blocks or sandpaper alone and this, combined with a perfectly smooth surface that remains flat to within ±.008", can enhance your model's aerodynamics and makes for a more attractively finished model. I don't know about the aerodynamics, but there's no doubt they will help in giving you a nice, smooth airframe, which is the first step in getting a good finish on any model.

There's also a 5.5 inch (140 mm) Hand Sander for those smaller, every day sanding jobs. This comes with pre-cut lengths of 80, 150 and 220 grit sandpaper sheets.

Although Easy-Touch Bar Sanders can be used with any sandpaper cut into 2.25" strips, including making your own by applying double - sided tape to sandpaper sheets from the local DIY store, this is likely to require joins along the length of the longest bars, which could start to lift and cause damage. So these sanding bars are really best used with the matching 12 foot rolls of Adhesive Backed Sandpaper offered by Great Planes. The width of the rolls fit the Easy-Touch Bar Sanders perfectly and you just need to cut off the length required to match the bar you want to use. The rolls are available in 80 grit, 150 grit, 180 grit and 220 grit.

www.greatplanes.com (search Easy-Touch)

Volantex X Pilot 6-Axis Stabiliser

Having flown a few ARTF models fitted with gyro systems I can fully appreciate the benefits of R/C stabilisation systems. But such technology is not restricted to ready built models with on-board gyro systems as it is possible to retro fit one to an existing model. Indeed, my hack winter model, which I am just about to take out of storage to fly once again, was fitted with such a device a year or two back. It's a 3D style affair and not only do the gyros help when practising 3D stunts, it also helps smooth out landing approaches in windier weather than I might otherwise feel comfortable flying in.

The X Pilot from Volantex RC is one such auto-pilot system and it is connected to the receiver using a ribbon style patch lead. The connections required are shown in a clear diagram at the start of the instruction leaflet so using the ribbon lead is not quite as daunting as it first appears. It does, however, use a single pair of wires to take power from one pair of +/- pins from the receiver, the remaining single wires being plugged into the signal pins of the various receiver outputs. I'm not sure of the loading capabilities of such a hook up, so this device is probably best used for models with low to standard power servo set ups. However, the X Pilot can also support S-Bus systems and models fitted with a serial bus often use higher power servos so maybe I'm being a bit over-cautious here.

Priced at just £25.99 and supported by a well respected distributor in the form of CML, the Volantex X Pilot is well worth a closer look if you want to fit gyro stabilisation to an existing model.

www.cmldistribution.co.uk (search AX601)

Sparmax ARISM Viz Compressor

Those modellers who are already well versed in the benefits of owning a decent airbrush set up may be ready to upgrade their compressor to a unit for more regular use, such as the Sparmax ARISM Viz shown here.

Regular readers may remember a review of the original Arism unit several issues ago and this new unit offers a similar level of high performance for experienced airbrush users. However, the ARISM Viz has a DC motor for more universal usage when mains powered (100-240 V) and this, coupled to the fact that it is smaller than the original Arism, means that it is ideal for travelling with either in the UK or abroad. It also draws less power than comparable AC compressors and runs quietly. The DC motor also means that it can be powered by an optional NiMH battery pack; a combined set including a compressor, battery and charger is also available.

The Viz has an innovative feature called Smart-Stop that pauses the compressor when the airbrush is placed into its holder and restarts it when it is taken off again. Using Smart-Stop the working pressure is maintained upon restart, which is comparable to pressure stabilisation when using an air tank but without any extra space being taken up on your workbench! Smart-Stop can be used with either single action or dual action airbrushes.

Features of the Sparmax ARISM Viz compressor include:

- Working pressure up to 50 psi (3.4 bar)
- Silver Bullet Plus moisture trap
- 2 M braided hose
- Airbrush holder
- Pressure gauge
- Air flow: 16-18 lpm (0.57-0.64 cfm) at open flow
- 1/8 BSP outlet on the compressor
- Size: L20 x W12 x H18 cm (7.9" x 4.7" x 7.1")
- Weight: 2.5 kg (5.5 lb)
- Voltage: 100-240 V, 50/60 Hz
- AC adapter: Input 100-240 V, output 12V-5 A max.
- Duty cycle: 40 minutes continuous use or approximately 30 minutes if using optional battery pack

Priced at £180.00 SRP, the Sparmax ARISM Viz is available from the Airbrush Company Ltd., Lancing, West Sussex. Tel: 01903 767800

airbrushes.com (search C-IW-120)

Views of the uncluttered front and rear panels

Viz comes with an improved version of Starmax's moisture trap, the Silver Bullet Plus

Detrum Gavin

I started this edition of Gadgets & Gear with a look at a state of the art six channel radio set and to be honest I expected to close it with a rather less sophisticated R/C set that hails from Detrum. This is the branding used for R/C equipment that hails from Dynam, who are best known in the UK for their foam scale warbirds distributed by CML.

However, while this Detrum set has arguably fewer features than the DX6e and certainly looks to be of an older generation, using styling similar to the earliest 2.4 GHz 6-channel sets, it turns out to be quite a feature rich transmitter. Just one problem – it has a rather odd name: Gavin...

No disrespect to anyone reading this who goes by that moniker but it is rather unusual to pick up a radio with an actual name rather than a combination of letters and numbers. Which led me to immediately call up the Dynam website to see if they had a Stacey in the range too! The answer is no, but they do make a surprising amount more than just those neat foam warbirds, including eight channel sets and even a dedicated multirotor transmitter.

Anyway, back to Gavin. Like the first radio in this report it offers programming for airplanes (sic – again!) and helicopters, as well as those new interlopers, the multi-rotors! There's just a 30 model memory this time but that's more than enough for most people. It uses 2.4 GHz direct sequence spread spectrum (DSSS) and multiple frequency hopping spread spectrum(FHSS) technology and Dynam claim that the transmitter has strong anti-interference capability

The case design, being based on well established Tx design principles, is comfortable to hold but I did find that the stick springs were a bit firm straight from the box. Stick tension can, however, be easily changed in the old fashioned way by taking the back off the case to access the stick units. You will also need to do this to change the stick mode if you don't use Mode 2, as supplied, but there's nothing unusual about all of this.

The bright LCD offers a simple, clear display that automatically dims if menus are not used for a short while. Menus are accessed and values changed using a set of three buttons on each side of the display and they are easy and intuitive to use. Anyone with prior experience of programming sport level radio sets will have no problem menu surfing with this one, although the handy diary size manual is always there to help out if you forget anything and, unlike some Chinese manuals, it is actually quite well written. Whilst browsing I was pleasantly surprised to see some very useful and easy to set up features like dual timers that can be set to start and stop depending on throttle stick position. You can also set up a three position Flight Mode switch to give you different levels of controls (dual rates etc.) for different phases of flight.

Power is supplied by four AA cells (not supplied) and next to the battery box is a USB port through which the transmitter's firmware can be updated. A two-piece USB interface lead is supplied.

Gavin also has the usual set of failsafe and trainer functions (wired this time), as well as a servo monitor. This is handy if you use several different transmitters and forget which switch you have set up to do a particular job. I find it invaluable if I have not flown one of my helicopters for a while and I forget which switch operates Throttle Hold, which I always set to zero throttle so I can carry the model out to the flight-line with no fear of the throttle stick catching and spinning up the blades.

Gavin-6C is supplied with an RXC7 seven-channel receiver that measures 27.5 x 42 x 16 mm and weighs 11 grams. It sports two flexible aerials which should be fixed in the model at 90 degrees to each other, as is usual practice. Communication distance is claimed to be greater than 1.6 km so it can be considered full range for conventional line of sight flying.

At the time of writing the Detrum range of radio control systems and products are not shown on the CML website, nor was I given an indication of the likely retail price of this Gavin set. So if you want to learn more about it then you will have to contact CML Distribution using their website. But if the price is right then it could be well received thanks to its surprisingly high level of sophistication for a budget style radio set.

www.cmldistribution.co.uk

GT PD606


GT C607D

4max The Electric Flight Specialists


GT T610


Duo D07

Battery Chargers

Part No.	Watts Output	LiPo	Ni-Cd/ Ni-Mh	Lead Acid	Input	Charge Amps	Discharge Amps	Balance Load Per Cell	Price
GT PD606*	50W	1-6	—	—	10-18VDC 100-240VAC	0.1-6A	TBA	300mAh	£35.99
GT C607D	80W	1-6	1-15	2-20V	11-18VDC 100-240VAC	0.1-7A	0.1A-1A	300mAh	£39.99
GT Duo 607	160W (2x 80W)	1-6	1-18	2-20V	11-18VDC	0.1-7A	0.1A-1A	300mAh	£67.99
GT 3B6-D	160W (3x 60W)	1-6	1-15	2-20V	11-18VDC 220-240VAC	0.1-6A	0.1A-1A	300mAh	£99.99
GT T610 Touch Screen	200W	1-6	1-18	2-20V	10-18VDC	0.1-12A	0.1A-5A	300mAh	£59.99
GT A612-D	200W	1-6	1-18	2-20V	11-18VDC 220-240VAC	0.1-12A	0.1A-5A	200mAh	£69.99
GT Duo 612	400W (2x 200W)	1-6	1-18	2-20V	11-18VDC	0.1-7A	0.1A-1A	200mAh	£99.99
GT X-Drive 607	320W (4x 80W)	1-6	1-15	2-20V	10-18VDC	0.1-7A	0.1A-1A	300mAh	£99.99
E-Flite Celectra 4 Way 1S	4x 1S	1	N/A	N/A	Internal Batteries or PSU	4x1S@ 300mA	N/A	N/A	£28.49

* = Can charge 6x1S or 3x2S or 2x3S or 1x4S+1x2S or 1x6S LiPo batteries

GT 3B6-D


GT A612D


GT Duo 612


GT X-Drive 607

Introducing The New Black Professional Brushless Outrunner Motors

Part No.	Diameter	Length	Kv	Shaft Dia	Weight	ESC	Price
PO-2826-1040	28mm	26mm	1040kv	4mm	48g	20A-30A	£22.99
PO-2830-980	28mm	30mm	980kv	4mm	60g	20A-30A	£25.49
PO-2830-1210	28mm	30mm	1210kv	4mm	60g	20A-30A	£25.49
PO-2830-1350	28mm	30mm	1350kv	4mm	60g	20A-30A	£25.49
PO-2834-910	28mm	34mm	910kv	4mm	69g	30A-45A	£27.49
PO-2834-1020	28mm	34mm	1020kv	4mm	69g	30A-45A	£27.49
PO-2834-1160	28mm	34mm	1160kv	4mm	69g	30A-45A	£27.49
PO-3535-870	35mm	35mm	870kv	5mm	94g	40A-60A	£28.99
PO-3535-1090	35mm	35mm	1090kv	5mm	94g	40A-60A	£28.99
PO-3541-920	35mm	41mm	920kv	5mm	127g	40A-60A	£33.49
PO-3541-1070	35mm	41mm	10700k	5mm	127g	40A-60A	£33.49
PO-3541-1270	35mm	41mm	1270kv	5mm	127g	40A-60A	£33.49
PO-3547-800	35mm	47mm	800kv	5mm	154g	60A-70A	£35.99
PO-3547-960	35mm	47mm	960kv	5mm	154g	60A-70A	£35.99
PO-3547-1190	35mm	47mm	1190kv	5mm	154g	60A-70A	£35.99
PO-5055-595	50mm	55mm	595kv	8mm	303g	60A-80A	£61.00
PO-5065-360	50mm	65mm	360kv	8mm	396g	60A-80A	£75.50
PO-5065-420	50mm	65mm	420kv	8mm	394g	60A-80A	£75.50

This New Series of Professional Outrunners are of the highest quality and are comparable to the well known quality brands but at a fraction of the price.

All motors are dynamically balanced in the factory to ensure super smooth and vibration free operation along with longer bearing life. They also feature larger diameter shafts for superior strength.

A standard rear mounting kit comes with all motors which includes the "X" mount and bolt on prop driver and screws.

Please visit www.4-Max.co.uk for more information on all these motors plus many hundreds of other products we keep on the shelf

Tel: 01256 782512 — **www.4-Max.co.uk** — Sales@4-Max.co.uk

Breeze 4K

The Editor takes Yuneec's compact camera drone for a spin

Breeze comes in a discrete white box

The drone is best transported in its flip top carry case

Yuneec have been making R/C models for many years, their radio controlled flying spaceman, a cleverly disguised mini helicopter, being perhaps their most well recognised product – until they started to manufacture drones that is! Nowadays there cannot be many R/C enthusiasts who have not heard of Yuneec and their hugely popular camera drones.

Until recently good quality camera drones needed to be on the large side in order to carry cameras, gimbals and the necessary batteries etc. But in the last couple of years we have seen good progress being made on more compact drones that can be carried around in normal sized backpacks without needing large and special carry cases to transport them.

Breeze 4K is one such device and it weighs in at just under a pound. It is supplied in a flip top carry case, which can be dropped into a bag or rucksack without taking up a huge amount of space. And since Breeze is controlled by an iOS or Android device, via the downloaded Breeze Cam app, there's no need for a separate R/C transmitter, which saves even more space in whatever type of bag you use to take your drone to its take-off zone.

Hard cased 3S-1150 mAh LiPo and matching charger

Bottoms up! Here you can see the optical flow and infrared positioning sensors

Clip on prop guards are easy to fit for when flying indoors. But don't forget to drop the retractable legs!

Styling Takes A Bite

The presentation of the Breeze, in a discrete white box, wrapped tightly in clear cellophane, is clearly designed to appeal to users of a certain brand of smart devices. I'm one of those and iLike it!

The crisp, white theme continues as the wrapping is taken off and the box lid is lifted to reveal the carry case and three card boxes, the largest of which is marked Accessories and the smallest containing a spare set of props. The middle sized box contains fold out instructions and a Quick Start guide.

Accessories supplied (all white, of course) include a mains Li-ion battery charger with a 1.5 A output, a 3S 11.1 V 1150 mAh LiPo and a short micro USB lead to connect the Breeze to a computer to download recorded media.

Opening the carry case reveals the Breeze, which is supplied ready to fly, with folding props already fitted. The case also contains a set of four propeller protectors that help prevent the props from coming into contact with other objects such as furniture when flown indoors. The protectors clip on and are very easy to remove if you want to fly the Breeze outside. To further minimise the size of the box, Breeze is fitted with fold up legs – something I missed when taking studio shots of it. So apologies for its rather squat appearance in those pictures!

There's also a slot in the case for an additional battery pack, which you'll probably want to invest in as just one flight per flying session is a little restrictive, especially if you have a specific filming task in mind.

Get Started

Preparing the Breeze for flight is very intuitive and anyone with prior drone experience will have no trouble getting it into the air in short order. However, Yuneec are at pains to present the Breeze as an easy to fly drone that can be flown by anyone without any previous R/C flight experience. If you are in this category then a good read through of the instructions is recommended, and then follow the Quick Start guide to get your Breeze safely into the air for the first time.

The first thing to do is to charge the battery, which takes approximately 30-40 minutes and gives flight times of up to 12 minutes, depending on conditions.

Whilst it is charging you can download the Breeze Cam app to your preferred smart device and then you are ready to connect the Breeze via WiFi. Once this has been done for the first time and if you are flying outdoors, with no other known WiFi networks available, then the phone and Breeze should pair automatically.

Drone Settings

The Breeze Cam app welcome screen is split into two, with a Tasks icon on the left and Gallery on the right. The latter will start to populate once you start using the drone, whilst pressing Tasks will bring up a screen showing icons for five automated flight modes. Before that though it's worth taking the time to scroll through the Settings menu that is situated at the top left of the welcome screen. Here you can change drone and camera settings; there's also a General Settings screen but this is used to select between metric and imperial units of measurement.

In Drone Settings you can give your Breeze a unique name, swap between control modes 1 or 2, set the take-off height and task distance, set maximum speed and the height at which the Breeze will 'Return Home'. You can also set the Geo Fence parameters, up to just over 260 feet (80 m) high and 328 ft (100 m) distant, as well as entering the Compass Calibration sequence, which is recommended when flying at a new flying site. There's also a handy screen that allows you to switch back on task tutorials, which run just before you start individual tasks – very handy if you've not flown for a few weeks and forget what each task offers.

Camera Settings

Pressing the camera icon allows you to choose a video setting, these being:

UHD - (4K) 2160p @ 30 fps

FHD - 1080p @ 30 fps with Digital Stabilization

HD - 720p @ 60 fps with Digital Stabilization

You can also select between Medium and Ultra High still photo resolutions

Five Flight Modes

Pressing the Tasks icon on the welcome screen will bring up five flight mode icons. With the Breeze, Yuneec wanted to make a product that was easy for anyone to use and so they custom designed five highly automated modes that put the emphasis on helping you capture great pictures and cool videos instead of having to constantly worry about controlling the drone. The five modes (also known as Tasks) are:

Selfie Mode

This is used to position Breeze to snap an aerial selfie using the distance, altitude, and position sliders to fine-tune the position of the drone. Breeze will hover automatically at the set height, with the camera pointing at you and any friends that you want to include in the shot.

Pilot Mode

Pilot mode allows you to fly using manual controls and offers the most R/C like experience. The screen displays two virtual control sticks, which can be set to either Mode 1 or 2. There's also a handy button on the side of the screen that when pressed allows you to control the drone by simply tilting your phone or tablet from side to side, as well as forwards and backwards.

Orbit Mode

In Orbit mode you can task Breeze to orbit around you or an object. After fine positioning the Breeze using the control sliders you can select orbit left or right, or pause the orbit at any time. If you try orbiting at the default distance setting then you will find that the Breeze will track in a very wide circle. The orbit is easily changed by shortening the task distance though and I now have this slider set to a much smaller value. About 15 feet seems about right.

Journey Mode

At first I thought this would be a form of GPS route planning but it's actually a clever means of recording smooth climbing and descending sequences. You will often see such shots being used on TV to reveal a viewpoint, as the drone climbs slowly above trees and rooftops. To do this smoothly the drone needs to climb or descend at an angle so that it is not disturbed by its own propwash. The camera pitch slider determines the angle that the drone will fly at, so you can easily change the trajectory of the aircraft. When Journey Mode is activated the Breeze will climb away from you, stop briefly and then will come back to you, all at the same angle – clever stuff!

Follow Me Mode

In Follow Me, Breeze uses GPS to track your movement. After fine-tuning the drone relative to your position using the on-screen controls the Breeze will react to your movements and follow your route. Like other Follow Me drones I have flown, Breeze is a bit laggy when flown to the side so it is best used to track your movements from directly behind. Keep a good eye on the screen though as Breeze does not have collision avoidance, so be careful if your route takes you through bushes or trees. If the ground you are travelling over rises or falls the infrared sensor will constantly scan and maintain the same height over the ground.

Sensors

Breeze features an Indoor Positioning System (IPS) to hold its position when flown indoors. IPS comprises of optical flow and infrared positioning sensors that use textures on the ground to hold position. The sensors are also used to facilitate the auto-landing and return to home features.

If you are flying inside a building, or the drone detects a poor GPS signal when flying outside, you will be limited to using Pilot Mode for controlling the model as the other flight modes require a good GPS signal for accurate positioning. I tested the Breeze in a moderate wind and everything worked well to eliminate drift.

Breeze uses a GPS and compass to maintain orientation when flown outside so when you take-off from a new flying area it is recommended to perform a compass calibration. Animations on the app screen take you through the series of hand-held manoeuvres that are required. Luckily, I gave this to my son, James to do as it took much longer to perform than any previous drone we have tested! If you have a bad back then do make sure that you get help before performing a calibration.

Camera Work

As the name suggests, Breeze 4K is capable of 4K Ultra High Definition video recording, although this is not stabilised. If you want to benefit from digitally stabilised footage then you need to choose either the FHD (1080p) or HD (720p) modes. Test footage at the FHD setting was clear and well stabilised when viewed on my laptop screen, although it needs a bit of practice to get subjects well centred when using the various automated tasks. However, in just the short time I had available before handing the

Legs down, props out and all is ready for the Breeze's maiden flight

First flights are made in selfie mode, which helps you get used to controlling the drone

model back to Yuneec, I could see it has lots of potential for helping the user to generate some great looking footage. You can also use the camera to view a live 720 HD stream of your flight on your smart device.

Still pictures from the 13 megapixel camera are also sharp and well focused when using the default Ultra High quality setting. Due to time restrictions I was only able to take JPEG test shots using the default Saturation setting, but these were perfectly usable straight from the drone, as you can see in the aerial pictures used in this article. JPEG file sizes average around 7,500 KB.

Once you've captured photos and videos with the Breeze you can download and share them via social media. You can also write a message by viewing the image or video you want to share and tapping the Dots icon. A text field will pop up for you to write something about your photo. You can share to all popular social media sites like Facebook, Twitter, Instagram, Flickr, WhatsApp etc.

If you just want to download media for personal use then you can either view the images in the gallery on the home screen of the app, at which point they will be downloaded to your phone at full quality. You can also plug the micro USB cable supplied into the Breeze to directly upload images onto a computer, although you will need to have the drone powered up to do this.

Connection Issues

During the course of several test flights the Breeze operated pretty flawlessly. A couple of times it seemed to hesitate midway through a climb, but this was only momentary. However, if your phone does get disconnected from the drone in flight then it will hover in its current position, which is probably what happened in those momentary pauses I just mentioned. But should the Breeze not re-connect with the phone after a minute, it will fly back and land at the take-off point.

Likewise, if your phone battery dies the drone will wait for one minute in its current position before returning to the take-off point to land. But you wouldn't go out flying without fully charging your flying device beforehand, would you…?

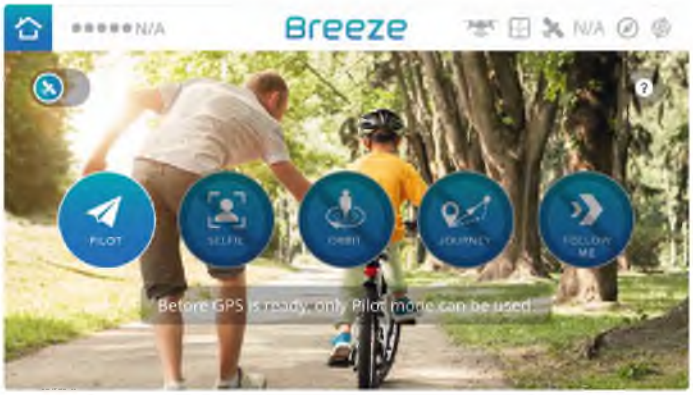
Also, if you get a call whilst flying, Breeze has the ability to hover in position and wait until you finish the call. However, if you are flying any model then safety comes first and any telephone calls can wait; hence I would strongly advise against making use of this facility while you are flying the drone

In Summary – It's A Breeze!

I really like this model. It's intuitive and easy to fly whether you are a beginner using the automated flight modes or a more experienced pilot who wants full control using Pilot Mode.

Easy to follow guides pop up prior to using each task

The Geo Fence screen is typical of the Drone Settings pages. You can change height and distance with a swipe of a finger



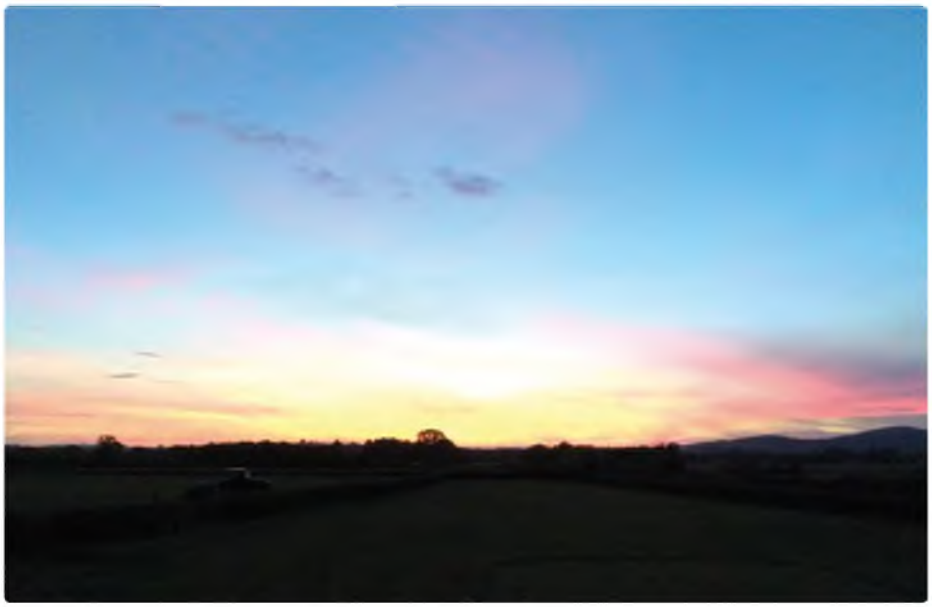
Press the Tasks icon and you are presented with five different automated flight modes to choose from

Pilot Mode offers the most R/C like experience. The two virtual sticks can be set up in either Mode 1 or 2. A live view from the camera appears in the background when the Breeze is switched on

Automated modes, like Orbit shown here, use sliders to give you fine control of the quadcopter

The multi-coloured indicator embedded in the power switch is the only light source on the model but it's so stable that it doesn't really need lots of flashing LED's to maintain orientation

Our usual aerial view of the Traplet offices shows that decent quality images can be taken with the 13 mp camera



Making the most of the last chance to fly before handing back the Breeze!

If you want a small, compact camera drone to take with you on your travels then the Yuneec Breeze is highly recommended

Although primarily designed as a selfie drone, whereby the controls are initially reversed so that they make sense to non-R/C pilots as they face the camera, a message quickly flashes up when the drone hovers after take-off to offer you 'normal' controls. So no matter if you have not flown a done before and have not encountered reversed controls, or are a fully trained R/C pilot, either way you can enjoy flying the Breeze to the best of your abilities. The only thing that experienced pilots should note is that when you want to land you need to tap the 'Land' or 'Return To Home' icons. You cannot land Breeze by pulling down the throttle stick.

The Breeze Cam app seems to be well thought out and is also easy to use. The five task modes are simple to operate and each works well, especially if you like to be the centre of attention in your aerial pictures or videos! You can use them to film other objects too, so the Breeze is not just for selfie work; however placing the object in the centre of the frame, particularly during the orbit mode, needs a bit of practice. It's fun working it out though and the results are clear and a pleasure to view, whether they be pictures or video clips.

So if you are interested in buying a small, compact camera drone to take with you on your travels then the Yuneec Breeze is highly recommended. What's not to like? ***RCMW***

MODEL WORLD

MODEL INFORMATION

NAME:	Breeze 4K
MANUFACTURER:	Yuneec
DISTRIBUTOR:	Yuneec Ltd, Barnet, EN4 9PA
WEBSITE:	yuneec.uk
PRICE:	£449.00
MODEL TYPE:	Compact camera drone
PARTS SUPPLIED:	Airframe, carry case, battery, charger, micro USB lead
PARTS REQUIRED:	iOS or Android smartphone or tablet with Breeze Cam app

MODEL SPECIFICATIONS

DIMENSIONS:	196 x 196 x 65 mm
TAKE-OFF WEIGHT:	385 g
BATTERY:	3S, 11.1 V, 1150 mAh LiPo
FLIGHT TIME:	Up to 12 minutes
MAX FLYING HEIGHT:	80 metres
MAX HORIZONTAL SPEED:	5 m/s
MAX CLIMB SPEED:	1 m/s

CAMERA SPECIFICATIONS

SENSOR:	1/3.06 CMOS
EFFECTIVE PIXELS:	13 Megapixel
PHOTO RESOLUTION:	4160 x 3120 pixels (13 mp)
FIELD OF VIEW:	117°
SHUTTER SPEED:	1/30 – 1/8000 s
WHITE BALANCE:	Auto, Sunny, Sunrise, Sunset, Cloudy, Tungsten Light, Glowing or Disabled

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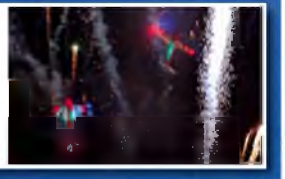

Dogs Welcome Must be kept on lead.

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RC MODEL WORLD

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LMMAS_RCMW.17

Scottish Aviation Twin Pioneer

In the first part of a two part plan feature Chris Golds describes the conception and part construction of his 120 inch span scale model of the Twin Pioneer C.C. Mk 2 twin electric transport aircraft

Feature Plan

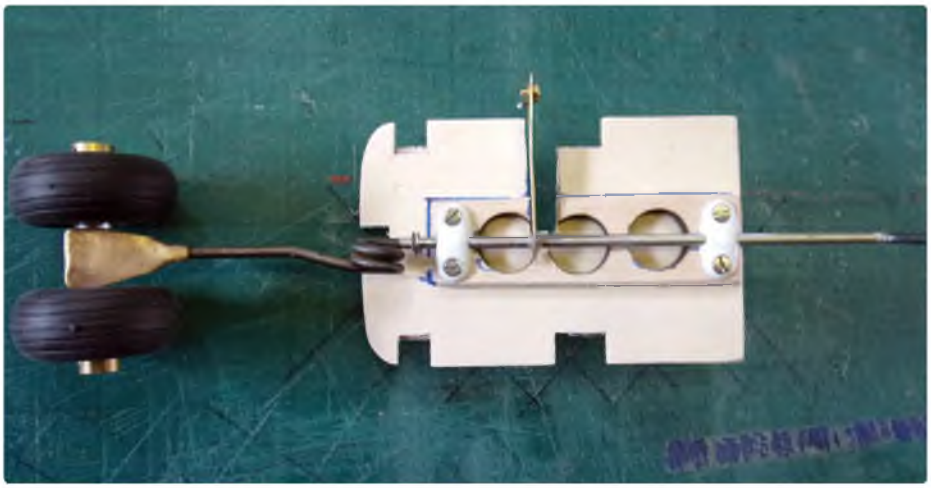
RC MODEL WORLD

At A Glance

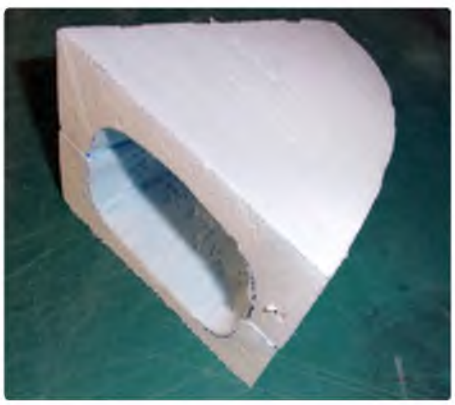
MODEL:	S.A. Twin Pioneer CC.Mk2
SCALE:	1:7.65
TYPE:	Twin electric
WINGSPAN:	120 in/3.05 m
LENGTH:	70 in/1780 mm
WEIGHT:	20 lb approx.
RADIO:	Five function (Ail, Ele, Rud, Thr, Flp)
MATERIALS:	Balsa, plywood, blue foam
MOTORS:	2 x JP EnErG C5030 brushless outrunners
ESCS:	2 x JP EnErG PRO 100A OPTO
BATTERY:	2 x 6S 3700 mAh LiPos (or 2 x 3S for each motor)
PROP:	2 x EMP black carbon-nylon 16" x 8" three blade

In April 2015 I received a shortlist of 'possible' prop-driven twins for me to consider for my next Traplet plan. One on the list certainly had a personal appeal for me as I had enjoyed a thrilling passenger ride in the aeroplane, down inside the Ol-Doniyo Volcanic crater in Kenya. I had flown top-cover over the area during ops in Aden and while I thundered swiftly about in my armed Hunter this aircraft flew 'ever-so-slowly' up country to land on a tiny piece of flat(ish) rock and disgorge twelve Royal Marines, who were very grateful not to have had to walk that far up into the Yemeni mountains, in enemy country!

These memories helped me decide on the choice of the Scottish Aviation Twin Pioneer CC.Mk2, which was a very practical STOL aeroplane just before heavy-weight helicopters became available.



Twin tail wheel assembly



Rear foam block

About The 'Twin Pin'

Scottish Aviation at Prestwick won the contract for specification A.4/45 of 1945, which called for a five seat light communication aircraft capable of operating from airstrips as short as 100 yards. Steep angles of climb and approach were required, as well as servicing by 'semi-skilled' labour

Fuselage parts

Fuselage 'boxed-up'

Fuselage sheeted

(I think by that they meant the pilots!) 'Operations under all possible climatic conditions' were also stressed.

Thus was born the Pioneer, powered by a single 570 hp Leonides radial engine, of which 59 were produced. Being capable of taking - off, fully loaded, in a mere 75 yards and landing and stopping in 66 yards, the Pioneer could certainly do what was asked of it. So much so that S.A. suggested to the R.A.F. (the prime user) that a twin engine version, able to carry up to 16 people on two Leonides engines, would make a much better carrier of 'almost anything into almost anywhere'.

The R.A.F. agreed wholeheartedly and so the S.A. Twin Pioneer was born, known to everybody of my generation as the 'Twin Pin'. On 22nd June, 1955 the aircraft was first flown at Prestwick and was demonstrated as G-ANTP at the SBAC show of that year. With a loaded weight of 14,000 pounds, it had a maximum level speed of 186 mph and a cruising speed of about 120 mph for 670 miles. But its most important attribute was the ability to take-off and land almost anywhere. To do this it employed large slats on the outboard wings and immense flaps on its inboard and outboard wing panels.

Designing The Model's Features

I had never done slats before, though I designed the Vigilante (Traplet Plan MW 3070) to employ full-length leading edge 'droops'. These worked very well indeed in reducing the heavy twin-jet's approach and touch-down speeds.

But try as I might, I could not design a practical method of sliding out the slats on curved metal arms to achieve their quite critical distance (and trailing edge gap) away from the leading edge of the outboard wing panels. After much cogitation (and many glasses of Scottish falling-down fluid) I decided to go the same route as did

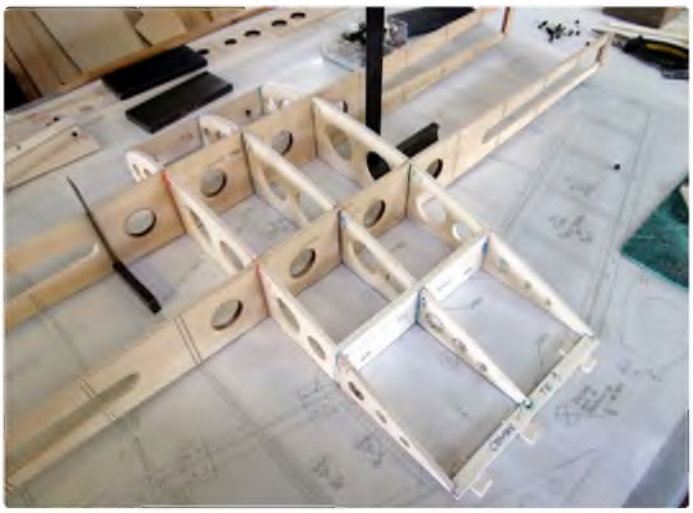
Tail wheel assembly and rear fairing in place

Foam nose cone fitted

Nose cone with windscreen fitted

Tailplane being sheeted

Triple fins in place



Squaring up the wing centre section

de Havilland when they nailed fixed slats to the wings of the Venoms, which were my first operational jets in 1956. So, fixed slats solved that problem.

But another was the Fowler action of the real aeroplane's flaps; again a curved metal beam method, which I doubted that I could fashion. So, to match the fixed slats, I decided upon ordinary split flaps (of vast area) to be lowered to the real 'down angle' of only 30 degrees.

Phew! Much cogitation (and much fluid) had lead me to a plane that would be easily built and with a slow flying approach and landing ability, which I hope will provide the very essence of the Twin Pin and its pre-Harrier STOL ability.

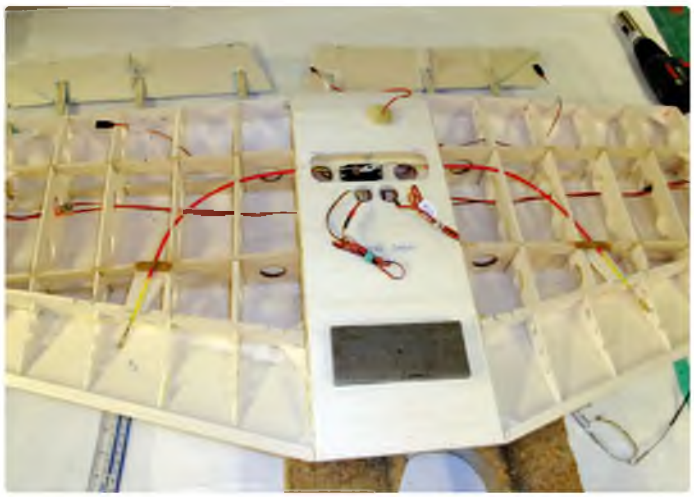
So I began to draw the building plans on 1st May 2015 and they took 19 days to complete. The real aircraft is quite short coupled, so close attention was paid to both the tailplane area and tail moment arm as these are the major factors in the positioning of the Centre of Gravity, or balance point as it is sometimes called.

Since I desired the very minimum of rear end weight I chose to servo drive only the central rudder, thus saving two servos and all their cabling for the outboard rudders, which I designed as fixed, with outward splay (Ackerman). Steerable twin tail wheels would weigh quite a bit that far back so the battle with balance is (as ever) important to be firmly waged.

Building Commences

Eventually, the drawings came together and balsa could soon be bashed!

(Note: The detailed CAD plan sheets are complemented by a 16 page A4 Instruction Manual, providing step-by-step construction details and a materials list.)



Inboard flap drives

Inboard wing top surface skin

Outboard wing panel in build

Nacelles boxed up

Nacelles with air intakes to ESCs

I began with the fuselage and rapidly had a large and long box, to be followed by the tail-end flying surfaces and then the major job – the wings.

With those large parts completed I could begin the interesting bits, the nacelles and the main undercarriage. The Twin Pin sported twin main wheels on a generous oleo leg at the bottom outside edge of the 'U/C brace' winglet. A long faired leg ran from there up to the nacelle. I had purchased, from Mike's Models in the West Midlands, a pair of Robart half-inch diameter oleo legs with cross-axles to carry twin 3.5 inch main wheels. After much searching I discovered a thin-wall aluminium tube just bigger than the oleo leg, which would only require some thin shims for a tight fit. I had the whole main U/C structure 'in my head' as I went about cutting all the nacelle parts.

To build the nacelles I chose 2.3 mm lite ply as the flat sides and used 4 mm ply for the round cowling, and balsa for the cowling ring lips. No problem really, it's just like making two small model aeroplanes!

The slats cover the whole of the outboard wing panels' leading edges and are painted before being attached to the wing.

The whole airframe is relatively simple to construct being (mercifully!) flat sided with parallel chord outboard wing panels. The only semi-difficult bit is mounting the winglets and getting the long main gear legs properly located on the sloping nacelle bulkheads N4.

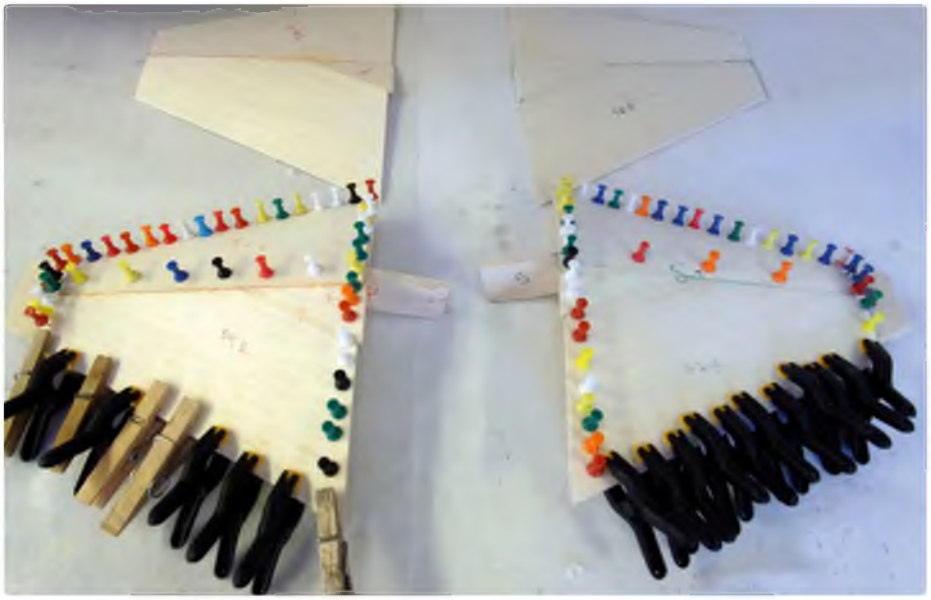
Lauri photographed me holding the assembled airframe on the 22nd August 2015 and although it is large at 120 inches span it is not heavy at all. Hooray!

Next Month

In part two of this STOL saga I will cover the finishing of the outboard wing panels, fitting the ailerons, mounting the removable wing-struts, tissue/doping all but the foam areas, the camouflage colour scheme of sand/stone and black undersides, the decals, radio and electrics fit, weight and balance and – finally – flying and photos. Quite enough to look forward to, believe me!

RCMW

Continued overleaf



Winglets being built

Robart oleo legs with aluminium tube extensions

Wing centre section mated, temporarily, to fuselage

Leg extension bolted to nacelle bulkhead N4

Winglet mounted and U/C leg fitted to nacelle

Winglet spar connecting bars inside fuselage

Leg extension fairings epoxied in place

Leg extension fairings are completed with 0.4 mm ply

U/C leg finished with brown paper, PVA'd in place

Twin Pin assembled

CONTACTS

CHRIS GOLDS,
Hideaway, Lower Loxhore, Barnstaple, N. Devon
EX31 4SX
Tel: 01271 850456
Email: chrisgolds@loxhore.org.uk

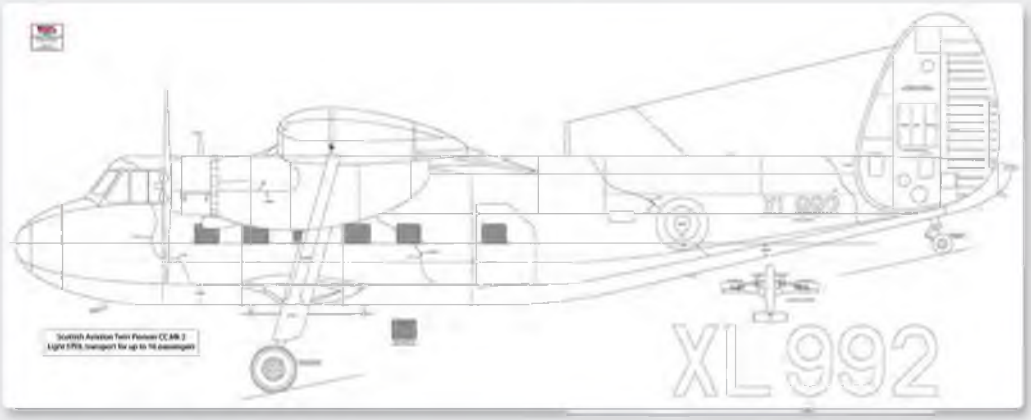
PLAN DETAILS

BUILD CATEGORY:
Advanced

PLAN NUMBER:
MW3776

PLAN PRICE:
£58.99 ($100.99)
(inc. 16 page build manual)

A laser cut wood pack is being developed for the Twin Pioneer. See next issue for details.



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*Note: All Laser Wood Packs are intricate shaped parts only. No strip wood or sheet wood is included.
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E-Vulcan

A simple to build, 42" wingspan, three-function R/C sport scale design by Graham Dorschell, built from Depron and using a pusher prop and 3S power set

RC MODEL WORLD

At A Glance

MODEL NAME:	E-Vulcan
MODEL TYPE:	Pusher sport scale
MATERIALS:	5 or 6 mm Depron
WINGSPAN:	42 in/1067 mm
LENGTH:	40 in/1 m
WEIGHT:	90 g approx.
MOTOR:	28 mm, 1250 KV brushless outrunner
ESC:	60 amp
PROP:	APC-E 8" x 6"
BATTERY:	3S (11.1 V) 2200-3000 mAh LiPo
C OF G:	8.75 in (225 mm) from LE

Following the final flights of the Vulcan bomber in the UK, I wondered if I could make a small foam model to fly just as well as the full size? So I decided to make a 42 inch span Depron model to best represent this great aircraft.

The construction of the design is simple and utilises a folded wing. The wing is folded over to make the various shapes of the wing (three times) and these are then glued together with a single Depron spar.

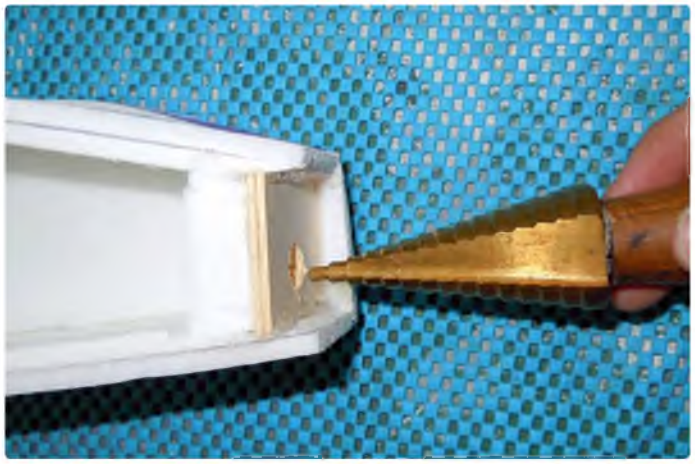
The materials needed to build the airframe are very simple and you only need basic tools. Construction is an easy process using 5 or 6 millimetre Depron, which is covered in clear parcel tape for strength.

Cut out the fuselage sides and laminate with spray adhesive

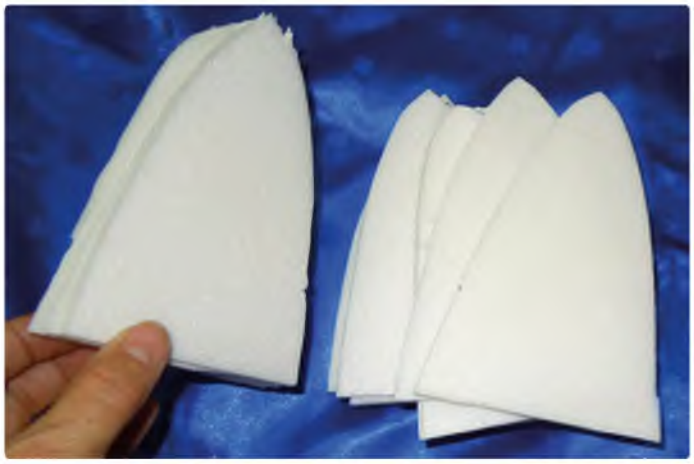
Sand edges smooth

Make the battery floor and fit a hook and loop strap

Hot glue pieces in place



Fit the plywood motor mount and adjust the hole size



Cut out the nose section and laminate with spray adhesive

After attaching to fuselage, sand the nose to shape

Laminate the cockpit dome

Fuselage

First, you will need at least four sheets of 5 or 6 mm Depron measuring 3 ft by 2 ft, which you can buy from model stores or stationery shops. Cut out templates from cardboard and draw around them to make the fuselage sides. Remember, you will need to make two sections laminated together to make the fuselage strong enough. Laminate them together with spray adhesive.

Straighten the edges with a sanding block and glue the fuselage sides to the base. You can use foam adhesive and a hot melt glue gun.

The battery plate is easily constructed from a plastic sheet, with a hook and loop strap, and using a 'rubber non-slip mat' surface. Use a hot melt glue gun for making up the battery plate.

The motor mount is a simple ply doubler hot glued into place at the rear. Cut a small access hole for the motor wires.

The nose section is from 5 mm Depron, cut out with cardboard templates.

Shape the fuselage sides with a Stanley knife and sand as required.

Using spray adhesive, laminate the various sections of nose together to make a block and sand and shape as required after they have been glued to the fuselage.

The fuselage can then be covered in various materials but I choose to use clear packing tape.

The canopy is a simple construction of laminated foam sheet that is shaped. Then, using a permanent marker, you can make the necessary markings for the windows

Decal the model using vinyl and a marker pen. Roundels can be made using a 'Gyro-Cut' tool and 'Easy Roundel Kit' available from the Traplet Shop:

gb.trapletshop.com/gyro-cut-2

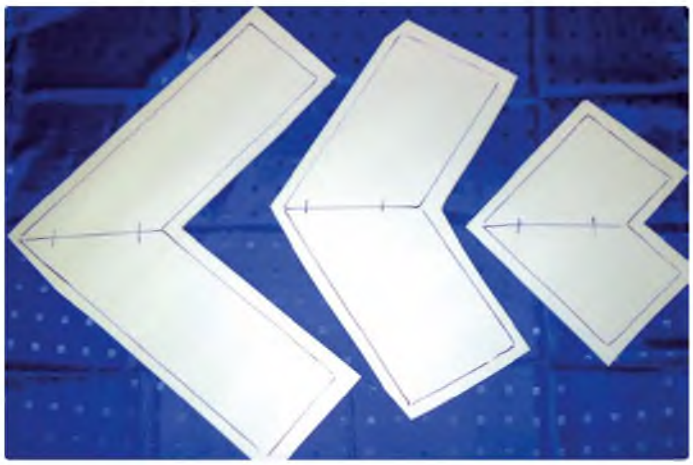
Wing Construction

Prepare the various wing templates, drawn from the plan, and place on the Depron. Leave enough space around each template to cut out pieces later from the sheet.

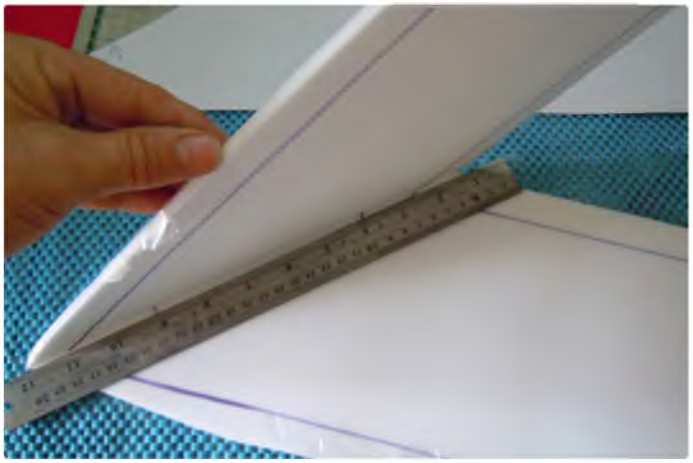
Each section is placed and then flipped over on each side, denoting the fold line. Cut each section out with at least 1 inch around each side.

Cover generously with clear packing tape. Take special care and attention around the folded area and smooth down with a credit card or scrap balsa. Make a very light 'score' line with the knife but be careful not to go

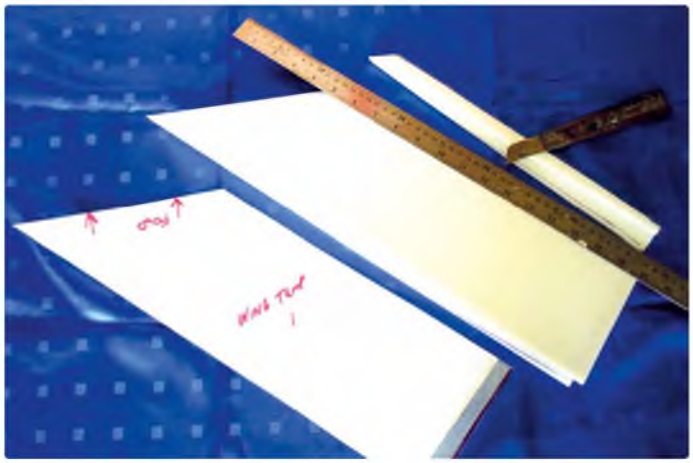
Completed cockpit ready to attach



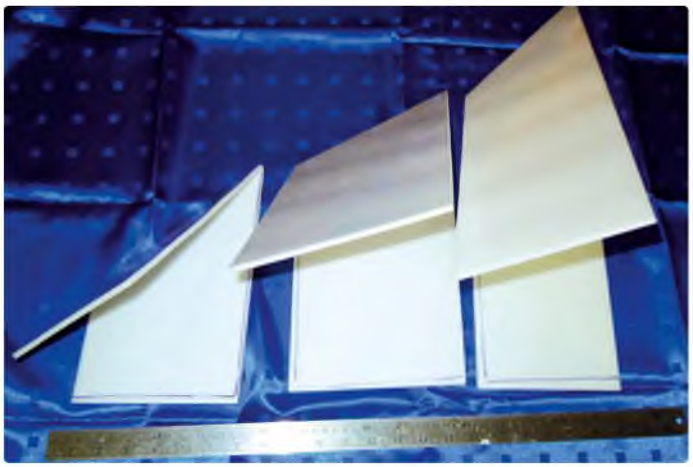
Cut the three wing parts for each wing from sheet Depron



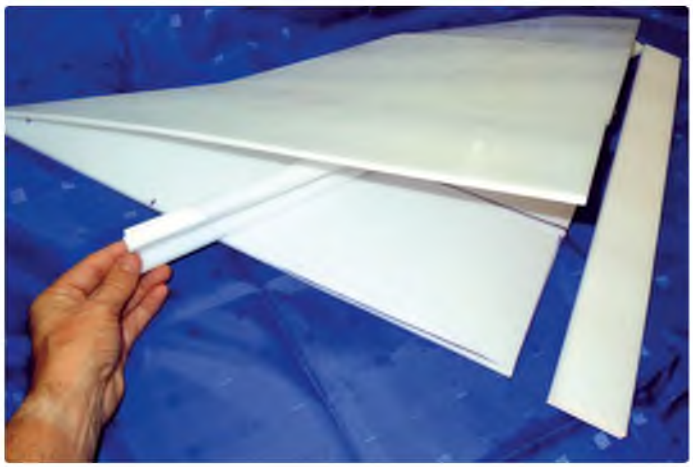
Score lightly and fold the wing panel



Check the shape against the template



The three wing parts have been folded and marked for final cutting



Fit the Depron spar inside the wing panels

through the foam. Fold the wings over firmly with the ruler sandwiched between. Be sure you have enough clear tape on the spot where the fold is taking place.

Place the template on top of the whole folded section and, with a craft blade, cut all around the area – but not the folded section! Repeat for all the inner and outer sections. Simply connect all the sections with clear tape.

Cut out a spar from Depron and build up two sides for strength. Also, cut the trailing edges, which I glued together, and mount inside the wing section.

Chamfer the elevons, add glass tape on both sides, then add the clear tape covering. A permanent marker comes in handy to 'line' the wing panels.

The engine nacelles are easily built up with laminated foam and are then glued to the wing surface.

Tail Fin

The tail fin is simply built up from 4 mm sheet and shaped using a card template. It is covered in white sticky back vinyl and decorated with a marker pen.

There are two versions of tail fin. I chose XL123.

Hatch Construction

With a craft blade, cut out the top of the fuselage and run around the edges with glass tape for reinforcement.

Cut out the foam supports and insert small magnets, then secure with a hot glue gun. This provides easy access to the battery compartment.

Servo Installation

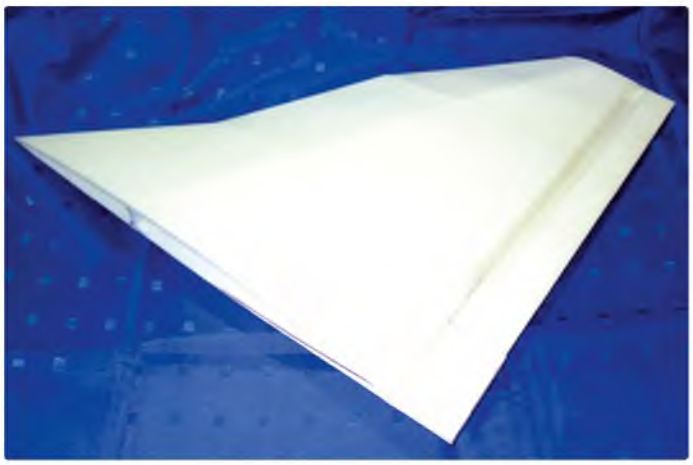
Place the servo on the wing's undersurface. Cut out the Depron carefully and insert the servo, then use the hot glue gun to make it secure. Make sure you have an access hole in the fuselage.

Wing Bearer

Using 5 mm hardwood supports, sight up and make level to the fuselage. Hot melt glue in place and cut out foam strips to place on the top and underneath. Chamfer to accommodate the wing section. Test the fit to the wing each time to ascertain the best fit.

The wing can be glued together with slow setting epoxy or hot melt glue – if you have two glue guns at hand!

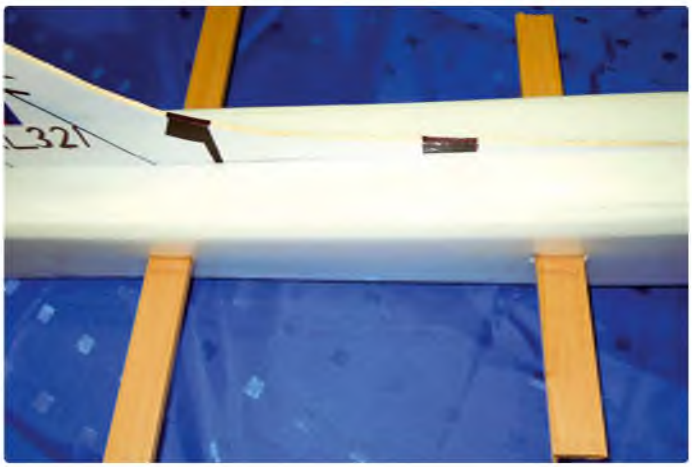
Use glass reinforced tape for attaching the TE and ailerons



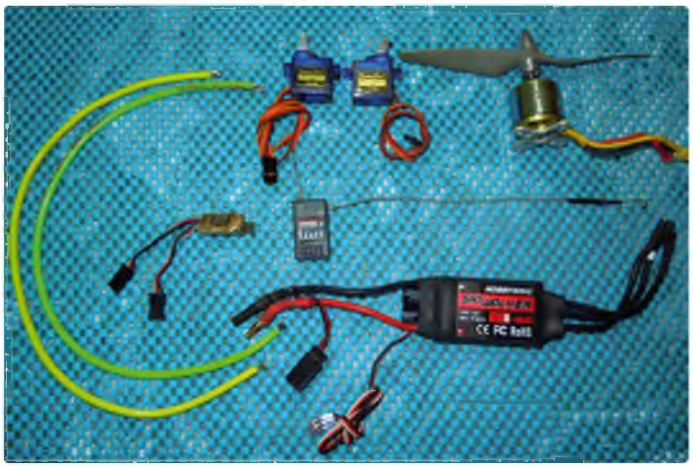
Wing ready for decorating

Panel lines and roundel added

Glue up sheet balsa roughly to shape and mark out the fin using the template



Fin and wing joining braces added



Have the power set and servos to hand

Wing Joining

Glue one wing section to the fuselage, making sure it is straight and level to the fuselage. Dry fit the opposite wing and when you are satisfied that the wing is in the correct position glue it in place using slow setting epoxy or the glue gun.

Finally, position the tail fin and cut a hole to accommodate it, and glue in place with hot melt glue.

Installation And Setting Up

Bind the radio and connect the ESC to the motor to correctly ascertain the direction of the prop. Then mark the three wires so they can be reattached correctly utilising long lengths of wire to the battery.

Drop the main lead on the ESC through the hatch at the front of the fuselage using a long lead. Attach the three motor wires and pull them through to the small access hatch at the rear of the fuselage, then connect the wires to the motor and use self tapping screws to secure the motor.

I used elevon mixing in my transmitter and set the servos accordingly to give 15 mm throws. The C of G is set around 8.75 inches (225 mm) from the leading edge. Flying weight is around 90 g.

Flying

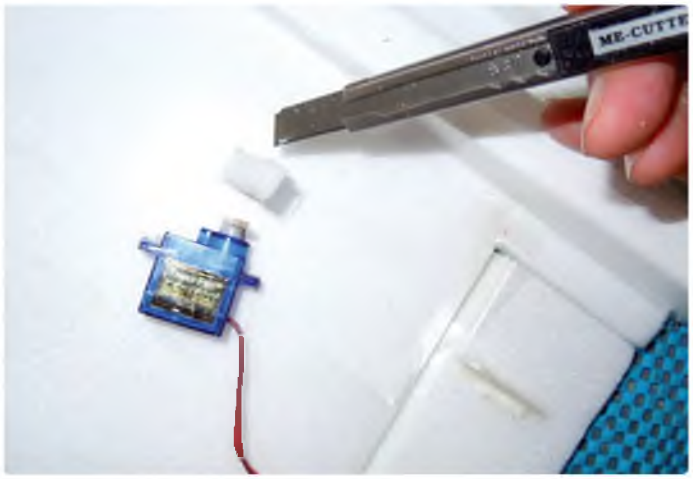
The first flight was amazing as I seldom have a model that flies straight 'out of the box'. My colleague, Jim Fox held the model high as I opened the throttle. Then away she went. Trust me when I say that I needed no correction to the trims – E-Vulcan simply flew brilliantly. I can fly the model extremely slowly, possibly due to its very lightweight construction. There's nothing like blowing my own trumpet, but this model truly fits the bill; it flies so smoothly and rolls and loops. And whilst E-Vulcan can do a lot of aerobatics she can also fly around in scale fashion all flight long, making slow, pleasing passes. She is also easy to belly land gently onto grass.

E-Vulcan can be flown by a relative novice but will also please a proficient pilot. I'm sure that they would get the best from the airframe whatever their style of flying.

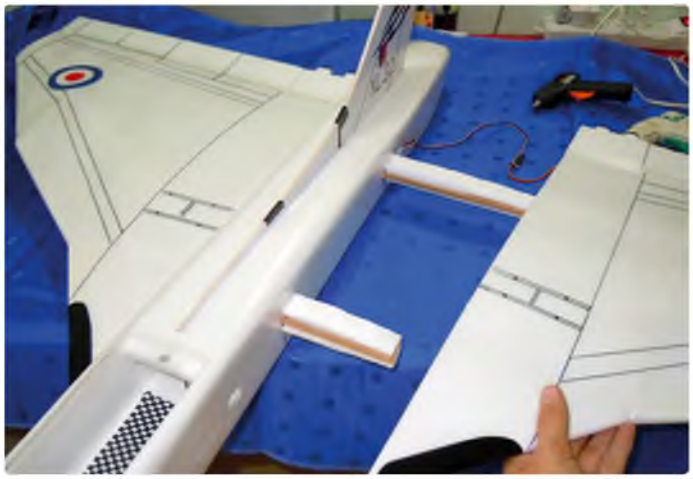
This is a great model to simply throw in the back of the car and have a quick fly around with. Plus it is inexpensive, and is easy and quick to construct

A brilliant little design – even if I say so myself! ***RCMW***

Continued overleaf

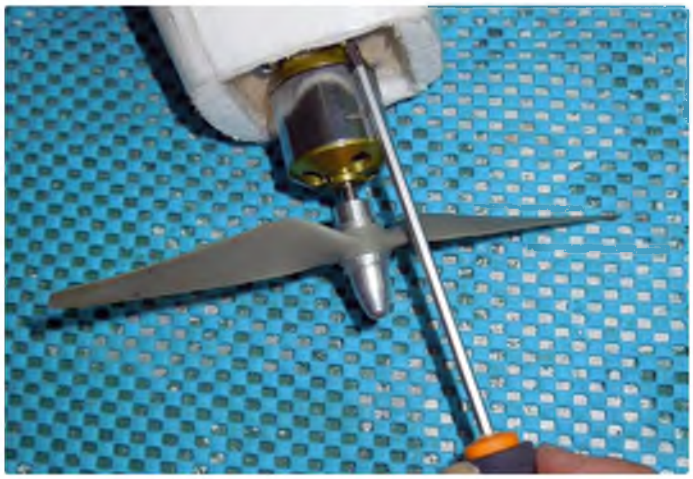


Install the elevon servos in the wing



Attach strips of Depron to the joining braces for a snug fit and glue the wings in place with hot glue. Note the rubber mat inside the battery box

All lines and markings have been added



Fitting the motor to the plywood mount

E-Vulcan is ready to fly

This model of the famous V bomber is very graceful in flight

She is also impressive when flown low and fast!

A gentle landing approach onto the grass

CONTACT
GRAHAM DORSCHELL
g.dor42@gmail.com

PLAN DETAILS

PLAN NAME:	E-Vulcan
BUILD CATEGORY:	Beginner
PLAN NUMBER:	MW3797
PLAN PRICE:	£11.99 ($20.99)

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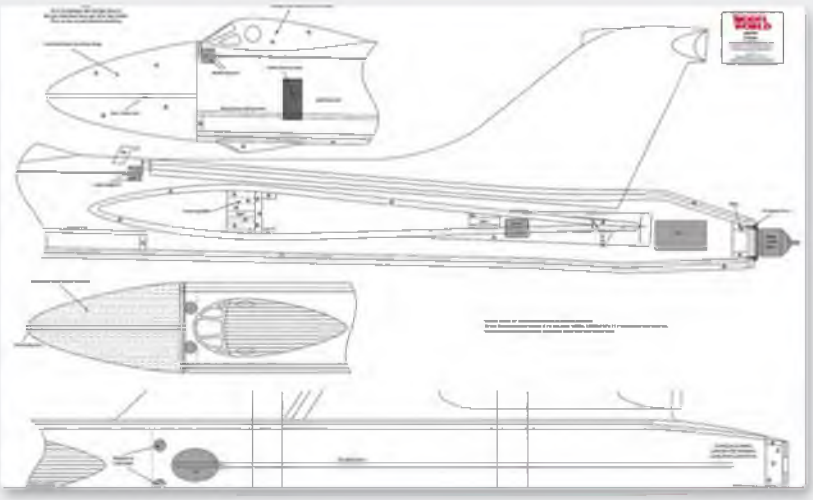

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Light Flight

John Stennard looks back at a couple of favourite full size and model events before turning his attention to lightweight aeroplanes for autumn and winter indoor flying sessions

Above: This FK 10 Quadruplane flew extremely well at the Bath SpaRCs E-Fly-In

F-35 hovering at the RIAT. A fantastic sight and one that almost replaces the Harrier!

A P-51D and F-35 in formation. Sadly the F-22 had a technical fault so was missing

Suddenly the summer flying sessions and the model and full size shows are just a memory and some photographs. Although the RIAT 'big one' initially had some weather induced restrictions on both days the flying displays were excellent and it was great to see the F-35 in the flesh (and in the sky!) and it was suitably impressive. Clearly at this stage the F-35 is not going to indulge in dog fighter extreme manoeuvres but it can do what no other fifth generation aircraft can and that is hover. This was very exciting to watch and both the entry and exit from hovering were very smooth. If YouTube videos are anything to go by modellers are making more progress with this VTOL aircraft than they did the Harrier. If you want to fly an F-35 in hover mode the Carrier Landings app for the iPad has a good one and it's quite demanding to put her down on the carrier deck.

E-Fly At Colerne

On the model front I enjoyed a number of shows and again they were a rewarding mix of model flying and bargain hunting. Careful 'trader tent trawling' is the secret! A non-commercial local event is always a favourite of mine and it's the BathSpaRCs E-Fly-in at the old RAF Colerne in Wiltshire. This was one of my plane spotting haunts as a schoolboy, along with RAF Hullavington and RAF Lynham, all easily in reach with a bit of pedal power!

Highlights of this fun-flying day were the Armstrong Whitworth FK 10 Quadruplane from Tim Hooper, the Miles M.52 from Will Beavor, Terry Mitchell's Hunter and an unusual Me 262.

The FK 10 flew well in a quite strong and gusty wind, a truly odd sight with its four wings. At previous meetings Will had flown a yellow, bungee launched Miles M.50 but this time it was a larger model with the whole works, including retracts. The model flew extremely well and looked fantastic in the air; if only the full size version had not been

The Carrier Landings app gives you a chance to pilot an F-35. Carrier landings are very stressful, even on a screen!

A riggers nightmare, I would think. Tim Hooper's FK 10 flies over the strip

A pause for thought before Terry Mitchell's new Hunter flies. Quite a large but extremely light model

Another of Terry's Depron miracles! The Hunter had a wonderful presence in the sky

Will Beavor's new, larger M.50 has a complete retract system with functioning doors – some tricky installation issues, I'm sure!

Looking like it really could go supersonic, the M.50 looks fantastic in the air

Will made landing the M.50 look really easy, although slow speed handling must be a bit critical

This beautifully built Me 262 was unusual as it used two pusher motors

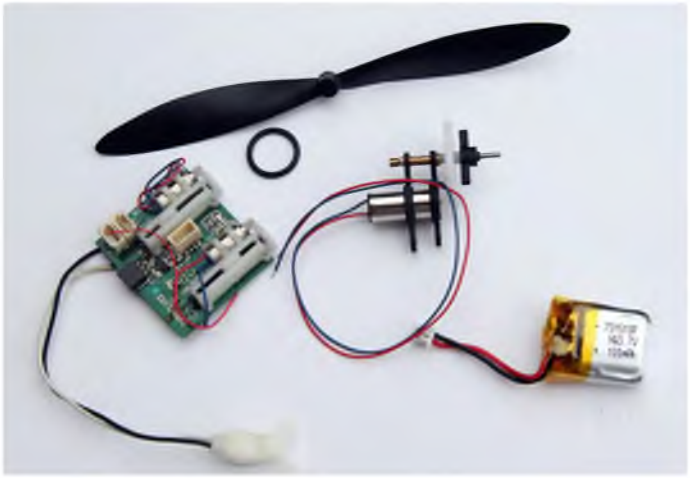
cancelled – what a sorry story of conflicting interests. Will said it was tricky to land but he did a superb job of bringing this narrow track undercarriage aircraft down safely and smoothly.

Terry's Hunter followed his usual practise of 'large but light' and was built from Depron. It looked superb on the ground and in the air. The low airspeed of this model means it flies very close to the stall speed and unfortunately, after several impressive circuits, a loss of airspeed in the strong wind resulted in a crash, which damaged the nose area. I'm sure Terry will rebuild it as it was a great sight in the air.

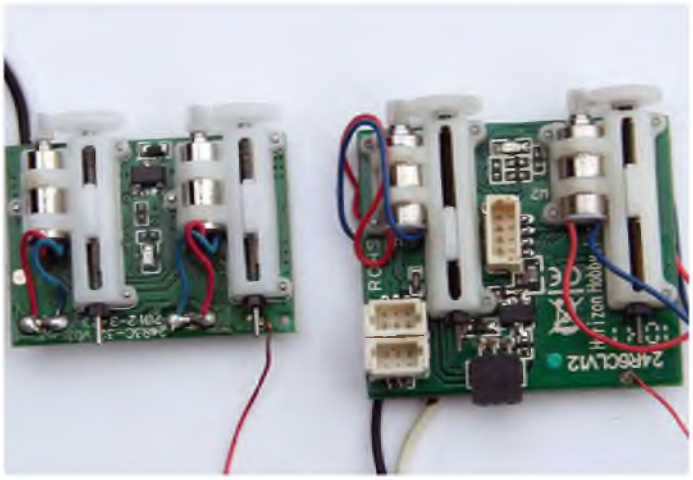
The Me 262 was very unusual as it used a twin pusher prop system, with the motors in the rear of the jet nacelles. It was beautifully finished and flew well in the tricky wind conditions. Unfortunately I do not know who built the model.

This flying day is always thoroughly enjoyed by all who attend and is an opportunity to see some wonderful scratch built electric models in action.

By the time this edition reaches you our club will be well into the September to Christmas indoor flying sessions. A good attendance at the early start in mid-September reflected the interest within the club for indoor R/C flying and I'm starting with an interesting micro size build with a difference.

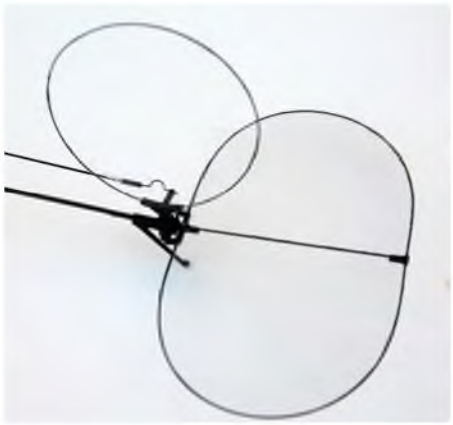


Main parts of the TY Black Flyer V2. Lots of CF rod and associated bits are not shown



The relative sizes of the sullied AR6410 module and a Super Lite version

The main assembly fits together very easily. The supplied motor unit was fitted for test flights



The 'all moving' fin/rudder caused some issues as I managed to break the thin rod

After test flights I replaced the supplied motor unit with a Mini Vapor version, as shown here

TY Black Flyer V2

Over the years I've enjoyed flying Vapors, Night Vapors, FPV Vapors and Mini Vapors and often wondered if one could make a similar sized model oneself. The complexity of what initially appears to be a simple design has always made me abandon the idea. I have built micro size models using CF (carbon fibre) rod but the Vapors tend to use specialised parts in their construction.

When I saw the TY Black Flyer on the Banggood website I wondered again about building a Vapor type model. My experiences with lightweight indoor rubber powered models have usually ended disastrously, so I did wonder if my heavy fingers could cope with constructing a model of this size using extremely thin CF rod. Anyway at just over £30, including P&P, I reckoned it was a 'win every way' situation. If I could build it and get it to fly that would be great, and if crushed parts were the outcome at least I would have a micro AR6410 Rx, a 1S 100 LiPo and a neat brushed, geared motor and prop to use on another model.

The Black Flyer has a wingspan of 340 mm, 13.4 in (the Night Vapor is 380 mm, 15 in and the Mini Vapor 230 mm, 9 in) and is designed to use a 50-150 mAh 1S LiPo; a 100 mAh LiPo is included. The flying weight is shown as 13-18 g (the Night Vapor is around 19 g and the Mini Vapor 13 g). The Black Flyer duration is shown as six minutes and it is suggested that the indoor prop is replaced by a 4530 for outdoor use.

A slight surprise is that the geared coreless motor is bigger than the one used on the Mini Vapor, although the prop is smaller, 100 mm rather than 120 mm. I did wonder about changing the motor unit for the lighter one used on the Mini Vapor but I decided to fly the model before looking at this option.

What I was tempted by was the option to change the supplied AR 6410 3.9 g Rx module for a Super Lite DSMX 3ch (PKZU1252), which weighs just 2.7 g. This is the Rx module used on the Mini Vapor. This replacement would be best fitted at the building stage, whereas I could easily replace the motor unit later, so I decided to do this.

The assembly instructions have to be downloaded and run to 18 pages! In fact the instructions are in the form of large and very clear photographs with notes, usually only two photos per page; these are essential as the model has a quite complex construction.

Provided you are very careful with the cyano (CA) the model assembles quite easily. It really is an amazingly well designed aircraft and the combination of CF rod and fittings leaves one full of admiration for the designer. The CF rod is already cut to the correct lengths. I had a failure making the all moving fin. This requires 0.5 mm CF rod to be bent in a circle and I managed to break this very fine rod. Luckily, I had some spare to use instead.

Material is supplied for covering the wings and tail surfaces, and this is easy to apply. I used UHU POR rather than spray mount adhesive. The Rx module and pushrods are best fitted before the wing is attached and I decided to fit the smaller Super Lite Rx module; these are not always easy to find but I located a good source on eBay. After this had been fitted, the pushrods connected and the motor tested, the wing could be fitted.

This is where the fixing method proved unsuitable. As designed the wing root CF struts fit into grooves that hold the wing at the correct dihedral angle. The wing LE and TE rods should be held in place by tiny screws, with the screw head holding the CF rod in place. Unfortunately, the heads of the screws were not of a large enough diameter to make this work correctly and the wing could easily become detached. A dab of CA was therefore used in addition to the screws to hold the wing in place.

The weight of the Black Flyer without a battery was 11 g and the supplied 1S 100 mAh LiPo weighs 3.2 g. So this gives a flying weight of 14.2 g. This could be reduced by using a 1S 60 mAh LiPo, which weighs 1.7 g, so would reduce the flying weight to 12.7 g.

I was very pleased with the finished Black Flyer and found her very easy to fly with a performance similar to both the Vapor and Mini Vapor. After the successful first flights I decided to try fitting the smaller motor unit from a Mini Vapor, just to see if the slight weight reduction improved the flight performance and if the smaller motor had sufficient power for easy flying.

The Mini Vapor motor unit was quite easy to fit and the proved to have ample power to fly the Black Flyer. The motor unit reduced the weight slightly, 9.6 g instead of 11 g, and with the smaller motor a 1S 70 mAh LiPo could be used. The Black Flyer experience had been very interesting and has provided me with a nice alternative to the Night and Mini Vapors.

A size comparison between the Black Flyer and a Night Vapor

Another size check, this time between the Black Flyer and a Mini Vapor

Something's growing at our farm flying site! Steadily filling up a dirigible using a portable cold air fan unit. Hot air goes in next

The envelope now has a name. The two-person crew are in the gondola and ready to fly

Very slow forward speed makes this a low wind flying machine

Outdoor tests with my latest indoor model, a lightweight Yak 29

More hot air but this time indoors! These R/C balloons certainly filled up our flying zone

Lots Of Hot Air!

Half way through a very pleasant spot of summer evening flying a van drew up emblazoned with 'CAMERON BALLOONS'. My first thought was that they were waiting for a balloon to land but this proved not to be the case. In fact, they were about to test fly a dirigible and after a quick check on the wind direction the van was positioned in the first field for unloading. A few days earlier and the dirigible would have had problems with all the hay bales covering the field.

While the team were unloading and positioning the dirigible I decided that I needed to watch the unfolding event rather than carry on flying. The dirigible had been semi-inflated using a petrol powered fan unit when Don Cameron arrived to supervise the final stages of pre-flight preparation. With the dirigible now well inflated the propane gas burners were fired up to complete the inflation. The crew of two sit in an open pod under the centre of the dirigible and steering is via cords to the rudders; there is no elevator control. The pusher Rotax type motor is fixed to the rear of the pod and drives a four blade prop. The dirigible was further inflated with the burners until at neutral buoyancy it was cast off.

More hot air lifted the dirigible gently up and several take-offs, flights and landings were made with different crew members piloting the dirigible.

Altogether a fascinating experience and maybe R/C model hot air balloonists are now contemplating dirigibles? It would add a bit of 'pace' to a rather slow moving aspect of model flying. R/C hot air balloons were on show and flown in our indoor flying zone at the Bristol Model Engineering & Model Making Exhibition in August. I've put a short video on YouTube and here's the link:

www.youtube.com/watch?v=yulhDQt04x4

RCMW

PSSA Skyhawk Mass Build

Phil Cooke reports from the Power Scale Soaring Association's A-4 Skyhawk Mass Build event

Top Gun A-4E Aggressor built and flown by Phil Cooke, seen against the magnificent blue skies over Llandudno. Matt Jones photo

Model line up on the Saturday, There were fourteen A-4s in total on the practice day, ranging from the Silver and Orange prototype (rearmost), right up to the last ever built A-4M airframe number 2960. A full spectrum of Skyhawks!

On Sunday 11th September 2016 the UK's Power Scale Soaring Association (PSSA) ran a Mass Build Fly-In at The Great Orme in Llandudno, North Wales, the penultimate meeting of their busy 30th Anniversary season. The event marked the end of a six month build window, with PSSA members in the UK and around the world having been invited to simultaneously commence work on their models from March 1st.

The model at the centre of this activity was the McDonnell Douglas A-4 Skyhawk. A twelfth scale, 36" span two-channel PSS model was designed for this event by PSSA members Phil Cooke and Matt Jones. Having worked with Traplet since the prototype's maiden flight in October 2015, the plan, laser cut wood pack and canopy were put into production in good time to allow a timely start to this venture! (See the Feb/Mar 2016 issues of RC Model World for the full A-4 plan feature.)

Benefits Of Building On Mass!

This was the second Mass Build event organised by the PSSA. As in 2014, when members built the much loved Jet Provost from the Traplet plans of Andy Blackburn's design, the primary aim was to increase awareness and interest in PSS flying and Association membership. Secondary benefits would see more modellers building from plans with traditional materials, developing and honing the skills we would like to think will never be lost within the PSS community.

Thirdly, with the forums and social media presence that now goes with any event run in this manner, it would improve the sense of association away from the slope, with members having the common goal to complete their model by the set date in workshops around the country. Internet activity prior to the A-4 event had generated the PSSA an international following, with Skyhawks being built in Europe, the USA, New Zealand, Australia and Japan. Although the majority of these builders couldn't be with us in person on the day, they were certainly with us in spirit!

The fly-in proved very popular, with the A-4 theme forming just part of the weekend's entertainment. People had travelled from all over the country to take part; a group had even travelled from Belgium and the event was one of the PSSA's best ever attended. With well over 100 PSS models of all types

Prolific PSS builder Bob Jennings couldn't decide between two A-4 colour schemes so he ended up building BOTH! Here he holds his US Navy Aggressor Skyhawk next to his brilliant Royal Navy FAA example

Bob Jennings' stunning Douglas-Blackburn A-4 Skyhawk S2 in a 'what if?' RNAS scheme from HMS Centaur, 803 Naval Air Station, Vietnam circa 1967. Note the wing root gun and refuelling probe details

Harry Twist with his superb looking A-4D prototype. The model was covered in 25 g glass cloth and Eze-Kote prior to a spray paint finish, giving an AUW of just over 3 lb

Harry Twist's lovely rendition of the A-4D, the second prototype airframe, looked stunning in silver and orange

Matt Jones' A-4 was modified with a spine hump and larger canopy to accurately portray the lines of a later A-4M variant, and finished in a stunning three colour Aggressor scheme from the US Navy Fighter Weapons School

John Hey always presents his models to museum standard and his Skyhawk was no exception. Finished to represent a US Navy A-4E from VA-94 'The Mighty Shrikes', the model was riddled with scale detail and fine craftsmanship

on site the pit area and skies were always active. A total of 23 Skyhawks were gathered on the day, 19 of which were successfully flown in the 25 mph southerly winds which dominated proceedings throughout.

With a number of new faces and travelling modellers not having flown from the Great Orme before a pilots' briefing was given in the morning to explain the few rules and recommendations to help ensure the day proceeded as smoothly as possible. After all, there were a lot of new, untested models to be flown – in fact I think I'm correct in stating that 16 of the 19 Skyhawks flown had their maiden flight on the day!

Why The A-4 Skyhawk?

The A-4 was chosen as the 2016 Mass Build subject after a lengthy debate and selection process conducted between a number of PSSA members. Three-view drawings showed it to have ample wing area and a simple, clean fuselage design, which leant itself well to the all built up construction methods we were wanting to employ. It had not been over modelled on the slope and, better still, the type offered a huge array of variants and colour schemes to choose from, with the full size aircraft having been operated by air forces around the world.

With the Traplet wood pack providing all of the pre-shaped balsa and lite-ply parts the allocated six month build window should have proven more than ample time. Indeed, a few A-4s were started much later than March and were still successfully completed just in time for the event after only a few weeks work.

However, it's worthy of note that despite us achieving a tally of 23 models on the Orme, two of those were not quite flight ready and there were a few more models known to be close to completion that just weren't quite finished in time.

Chris Barlow's A-4 was bristling with mods and scale features. His model portrays 'The Last Skyhawk' built, an A-4M, airframe number 2960

Chris Barlow's A-4M Skyhawk was crowned winner of the 'Most Innovative Build' prize on the day

Peter Garsden with his Israeli air force A-4 Skyhawk, one of only three Skyhawks flown prior to the Mass Build weekend on the Great Orme. A great performer!

ISA member Steve McLaren with his superbly finished Australian Navy example of the A-4. Covered in a mixture of tissue and film with brushed paint, this A-4 was one of the lightest built at 2 lb 6 oz

US Navy Aggressor schemes were popular. Here are some 'Scooters' at rest, built by (left to right): Bob Jennings, Matt Jones and Phil Cooke

Ian Hammerton looking rightly pleased with his Argentine Skyhawk. It would later be crowned 'Best Finished Skyhawk' by the judges. The model flew superbly on more than one occasion during the day

Skyhawks On Show

The A-4s were 'parked' in a separate enclosure from all the other PSS models at the event, enabling builders and spectators alike to enjoy viewing them all lined up together – a sight very reminiscent of full size air shows! The judges also appreciated this as it enabled an easy comparison of scale details, colours and finish.

It was great to see so many colour schemes and variants on show. Almost every version of the A-4 had been modelled, from Harry Twist's superb silver and orange A-4D prototype, right up to the last Skyhawk ever produced, the A-4M in a commemorative roll-out scheme built by Chris Barlow.

With the wind blowing from the south the most preferred SW slope was not quite working properly and the best flying was to be had just further along the coast at the southerly facing bowl. So it was here, following a 15 minute hike from the cars with all our kit, where the vast majority of A-4s were tested.

From the off it felt like there was a constant procession of new, unflown models awaiting launch into the strong lift that was delivered consistently on tap. At times I saw there were six or seven Skyhawks being flown simultaneously – an awesome sight! The vast majority of maiden flights went without a hitch, the models climbing away with wings level from launch. A couple of models were over controlled, with their untested R/C set ups in need of a little tailoring with expo and rates, but these issues were easily resolved.

Everyone quickly seemed to get to grips with their models and A-4s were soon performing aerobatics and being flown close in for the camera. There were a lot of happy modellers and beaming smiles on show as, one by one, the Skyhawks were brought into

The superbly finished Argentine Air force A-4 Skyhawk built and flown by Ian Hammerton. The full depth cockpit and pilot detail added a sense of realism to this fine build

When they weren't being flown the A-4s were parked together for the cameras and to aid static judging. This acted as a superb focal point during the meet. 23 Skyhawks were present on event day, 19 of which were flown!

Bryan Tucker's A-4 Skyhawk gets away safely from the launch on her maiden flight. 16 of the 19 aircraft flown at the event had their first flights during the weekend

Steve Houghton with his lovely RSAF 'Black Knights' A-4 Skyhawk. The model still required some finishing touches and sadly was not quite flight ready in time for the event

This colourful Skyhawk was built by Steve Houghton. Slightly modified from the RCMW plan, the aircraft is a A-4SU from the Royal Singapore Air force display team 'The Black Knights'

the circuit and dropped in for a safe landing behind the slope at the end of a successful maiden flight!

At 4 pm, with the judges marks collated, aircraft were temporarily landed out and a short presentation was held back at the car park. Having supported the event throughout, Traplet had kindly provided magazine subscription and plan voucher prizes for those recognised in the Skyhawk Mass Build, and in keeping with the aims behind the event, prizes were awarded for the Best PSSA Newcomer, Most Innovative A-4 Build and Best Finished A-4, with the following results:

Best PSSA Newcomer – awarded to Phil Sellwood for his commercially operated 'Draken International' A-4E with a contrasting black and white camo scheme. It was finished in 25 g glass cloth and epoxy resin, with some excellent detailing including working scale airbrakes on the rear fuselage!

Most Innovative Build – awarded to Chris Barlow for his A-4M – 'The Last Skyhawk'. Beyond the stunning commemorative scheme featuring homemade decals, Chris had also modified the plan and modelled the dorsal avionics hump, a homemade A-4M vac formed canopy, a magnetic refuelling probe mount, under-wing pylons and a droppable centreline fuel tank.

Best Finished A-4 – awarded to Ian Hammerton for his Argentine Air Force Skyhawk. The model was built with a balsa skinned foam wing and finished in Solartex with a beautifully sprayed camouflage and just the right level of surface detail. It was also fitted with a full depth cockpit which brought the model to life!

Congratulations to the winners and well done to all that took an active part in this PSSA event. It was seen as a huge success by those involved in planning it and making it happen. Not only did it result in a whole fleet of home-built scale models arriving on the slope, it has improved the PSSA's active 'footprint' on social media, raised awareness of our division of slope soaring and generated a number of new Association members.

The atmosphere at the event was very relaxed, with people flying as and when they chose throughout the day and the newly finished A-4s sharing the slope with all the other types of PSS models.

Having quite so many maiden flights on one day was unusual but everyone mucked in to help with launching and with final model checks and set ups. There was a large number of spectators and participants' families in support, giving a real family atmosphere to the event. In fact it was described to me by one flyer as almost having a 'carnival' feel to the day.

Work is already underway in establishing another similar PSS event for 2018, so expect to hear more about that at some point next season. If you would like any further information on this Mass Build event, the A-4 Skyhawk or on PSS flying in general, do please visit the PSSA's website at: www.pssaonline.co.uk

Or contact me, Phil Cooke, at: webmaster@pssaonline.co.uk or telephone 07772 224719. **RCMW**

A low topside pass, expertly piloted by Matt Jones. Matt's A-4M US Navy Aggressor is film covered, then sprayed over a Prymol base coat

Chris Barlow's A-4M in flight. The commemorative scheme details all the nations' flags who operated the type. Note that the central fuel tank is fitted; the store is dropped safely upon command prior to landing

Andy Meade prepares to launch the A-4M Aggressor 'Red 32' of Matt Jones. Another successful maiden flight ensued

Bob Jennings (left) runs through the final checks prior to his maiden flight with his US Navy Aggressor A-4 'Red 23'

The skies were busy with Skyhawks! This photo by Matt Jones captures a chancy opposition pass with Phil Cooke and Chris Barlow at the controls

Phil Cooke's A-4E was finished as 'Jester's' jet from the Top Gun movie, seen here on an overshoot prior to landing out on its maiden flight. Matt Jones photo

A-4 Skyhawk Mass Build PSSA group shot taken on the Sunday afternoon after the majority of maiden flights were completed! Shona Meade photo

Phil Cooke (left) presents Phil Sellwood with the 'Best PSSA Newcomer' prize. Matt Jones photo

The prize winning pilots and their models. From left to right: Phil Sellwood won the 'Best PSSA Newcomer' award with his Draken International A-4E. Ian Hammerton took the 'Best Finished A-4' prize with his superb Argentine example and Chris Barlow was awarded the 'Most Innovative Build' award for his superb example of 'The Last Skyhawk'

Chris Barlow (right) receives his prize for the 'Most Innovative Build' award. Matt Jones photo

Ian Hammerton receives his 'Best Finished A-4' award at the end of Sunday's proceedings. Matt Jones photo

John Hey prepares to launch Mark Kettle's lovely Skyhawk for its maiden flight late in the day

PSSA event organisers (and co-designers of the Skyhawk model) Matt Jones (front) and Phil Cooke with their own examples of the type

Brian Boucher (left) and Dave Gilder with their matching 'Blue Angels' A-4 Skyhawks. Both models are finished in film with custom made decals from ModelMarkings.com

It wasn't all just Skyhawks. All types of PSS models were flown throughout the weekend, including the superb 1/6th scale A-10 Thunderbolt II built by Andy Meade. Here the 110" span 'Hog' gets a launch from a band of helpers

Aerobatics As It Once Was

Former GB National Champion, Terry Westrop, takes another look at the Classic Aerobatics scene

Scratch built OD 'Sabrina' bipe by John Ashby. It could be straight out of the 50s!

John Ashby's real classic, the 'Super 60'. Typical of F3A styling back in the 1950s

Brian Ball's RTF Curare is raring to go. Weston engine, Burley pipe (1980s), electric retracts

Flair 'Super Lightning' in classic decor by Martin Fox. 5065 EP, 8S LiPo

A group of aerobatic enthusiasts – or eccentrics, some might suggest – met up on a private airfield in North Lincolnshire in late September. Another great Sunday of flying, and the weather was perfect too!

The models, however, were not current F3A types but those of yesteryear. Some were from the distant 1950s, up until the early 90s. Many were built from plans, some from three views, and some were modified appropriately to improve upon their flight characteristics but still looked the part.

For this is 'Classic Aerobatics'...

Low Cost Airframes

The majority of these airframes are produced at a cost of less than £100. Many of the pilots are average club flyers, who aspire to fly something a little more interesting and challenging from normal sport models, but with minimal financial commitment.

Power plants range from old engines (mostly .60 size) to new generation IC motors. EP is preferred by some and is proving increasingly popular. Although some may consider this far from 'Classic' it can be a very practical way of providing easy, clean power.

Most use silencers on their IC engines but some have not only rescued classic models

James and Simon Ford retrieved these models from their loft when they noticed there was a group dedicated to Classic Aerobatics, the GBCAA. The 'Curare' in the foreground has an OS61 FSR up front

This 'Jetta' is shared by the Ford brothers. OS46 FSR power

Top left rudder for an effortless knife-edge with the author's 'Upset II'

Model Tech 'Calypso' flown by Graham Fox. Originally powered by OS RFP 61, it is now converted to an OS 502 motor and 6S LiPo

On finals. 'Clean' classic models benefit from a higher angle of attack to reduce speed otherwise they can come in a bit fast

from the loft, but also redundant tuned pipes that have lain forgotten for years. Now is the perfect opportunity to put that old equipment back to good use

James and Simon Ford had recently retrieved their 'Curare' and 'Jetta' from their loft and both were still in very nice order and fitted with IC engines. The Curare was used for the competition, powered by an OS 61 FSR and 'OPS' pipe, all straight from the 1980s and still proving to be very effective and reliable.

The majority use two-stroke glow motors and just a few use four-strokes. As one might expect modern 2.4 GHz R/C gear dominates but two were still using 35 MHz – and why not?

All pilots behaved with good discipline and no crashes occurred. However, the most obvious problem, particularly for pilots flying the faster types, such as the 'Lightning', appeared to be lack of speed control during the landing approach. 'Clean' models need a high angle of attack to reduce speed; in windy conditions they co-operate more readily during most of the flight envelope but in light winds induced drag is required to slow things up.

In total contrast came John Ashby's OD 'Sabrina' biplane, displaying an obvious 1950s look, which was at its best in the calm weather conditions. With flat bottomed aerofoils and considerable dihedral on both wings this model would easily fly at walking pace. I suspect inverted flight might prove somewhat tricky, however! John also brought his trusty OS FS 52 powered 'Super 60'. A true classic from 'KeilKraft', it was originally designed for single channel back in the late 1950s and is proving very popular for 'Multi' R/C today.

Fox brothers, Martin and Graham, have decided that EP is the way to go. Their 'Joker', powered by an Axi 4130/16 motor, 8S LiPo and 14 x 11 prop was, indeed, a superb set up. It sounded nice and flew brilliantly, despite the 9.5 lb AUW!

Graham's Model Tech 'Calypso' was originally powered by an OS 61 rear exhaust pumper, a motor very popular in F3A during the late 1980s. Now converted to EP using an OS 502 490KV, with a 6S LiPo driving a 14 x 11 Graupner Sonic prop at 9,000 rpm, it draws just 60 amps.

Martin's 'Lightning' was built from the Flair plan and uses a Leopard 5065 435KV on an 8S LiPo. Pulling about 68 amps, driving a 12 x 10 G-Sonic prop at 12,500 rpm, the performance appeared to be unlimited.

Paul Saxby managed to find a rare Flair 'Super Lightning' kit (produced during the early 80s) at the 2015 Nationals. Built over the winter, the model was appropriately fitted with a 20 year old OS 61 pumped engine and an OS tuned pipe, plus Spring Air Retracts. At 8.75 lb AUW and finished in classic

Martin Fox returns to the pits after another enjoyable session of classic aerobatics with his Lightning

Paul Saxby's 'Super Lightning' on dead stick, The model is fitted with an OS61 RFP and retracts

Do you have any classic aerobats tucked away in the loft or at the back of your garage? If so, why not dust them off and get air under their wings once again!

'Upset II' settles in after a perfect three pointer. Watch out for a full plan feature, coming soon in RCMW!

1980s colours, the model tracked very nicely through each flight.

Brian Ball, a former F3A competitor, was flying his 1960s 'Moonglow' with a 4260 motor and a 5S LiPo, as well as a 'Curare' with a Weston 53 glow engine and 1980s 'Burley' tuned muffler. Despite the fact that both were suffering from ailing bearings they performed beautifully. 'Moonglow' is perfect for Classic Aerobatics and even when compared to today's models the design is sound. It is easy and economic to build, and inexpensive to power. My example initially used a 3548 motor, with a 4S LiPo driving an APC 13 x 6½ prop, with an AUW of less than 4lb. This was replaced by a 4250 on the same LiPo, providing unlimited performance. The complete model, motor and ESC, but less LiPo and R/C, cost less than £100.

Martyn Kinder brought along no less than four models, an 'Aurora', 'Magic', 'Kwik Fli' and 'Meteor 40'. However, he experienced engine issues and never had time to fly at all!

Informal Competition

For this event a schedule was devised for those who wished to try their hand at competition flying. To test their ability, perhaps? Brian Ball, acting CD and Judge, also prepared the score sheets.

From eight manoeuvres, pilots could choose any five to be flown in any order. Whilst almost anyone can fly simple aerobatic figures to a recognisable standard it takes a little more attention to get the presentation correct and placing them where they can best be judged. Nevertheless, most managed to fly their chosen schedules, some very well indeed. Perhaps more competition slots will materialise during the course of coming seasons, as seems to have been the case overseas.

The results were:

1st: Graham Fox, Joker, 1990s
2nd: Paul Saxby, Lightning, 1980s
3rd: James Ford, Curare, 1980s

Classic competitions may indeed become more popular here in the UK but essentially Classic Aerobatics is intended for aerobatic enthusiasts to meet up, share thoughts and study the various designs of the periods. Of course, those attending such events can see just how the various models would have flown typical schedules of the day.

Design Tweaks

As I've mentioned in previous articles on the subject there are many classic aerobatic designs from which to choose and they all fly very nicely. However, If you find a classic design that appeals in most respects but certain aspects cause concern, it is entirely legitimate to modify those areas of the design. Many older aeroplanes employed semi-symmetrical aerofoils, a product of single channel (rudder only) R/C that required an excess of stability. Some used heavy construction methods and the extra 'lift' was a safeguard. But a fully symmetrical section is invariably beneficial.

Excessive dihedral was common, again for stability. Simply reduce it to what would 'look' appropriate.

The tail moment can be lengthened by around 2% to improve smooth flight and stability. However, do note the C of G and lengthen the nose appropriately if installing servos at the rear end.

Fuselage width can be increased, particularly for electric power. This is not required for the motor, as these are obviously less bulky than IC types, but for fitting a large LiPo and the required access hatch. Always allow for one size greater LiPo, just in case you need extra capacity.

Hopefully this article will have provided inspiration and will motivate you during the cold winter months to indulge in building a new 'classic' model, ready for the return of warmer times. And, perhaps, to revisit 'Aerobatics As It Once Was'. ***RCMW***

CREDITS

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Soaring Over The Long Mynd

Frank Skilbeck visits the Wolves MAC Scale Glider Fly-in on the Long Mynd

Unusual Genesis 2s designed and built by Colin Waite and Neil Tricker. They needed careful launching but flew superbly (Photo: Robbie Brisdon)

Cliff Hamman's K8 on finals into a soft heather landing spot

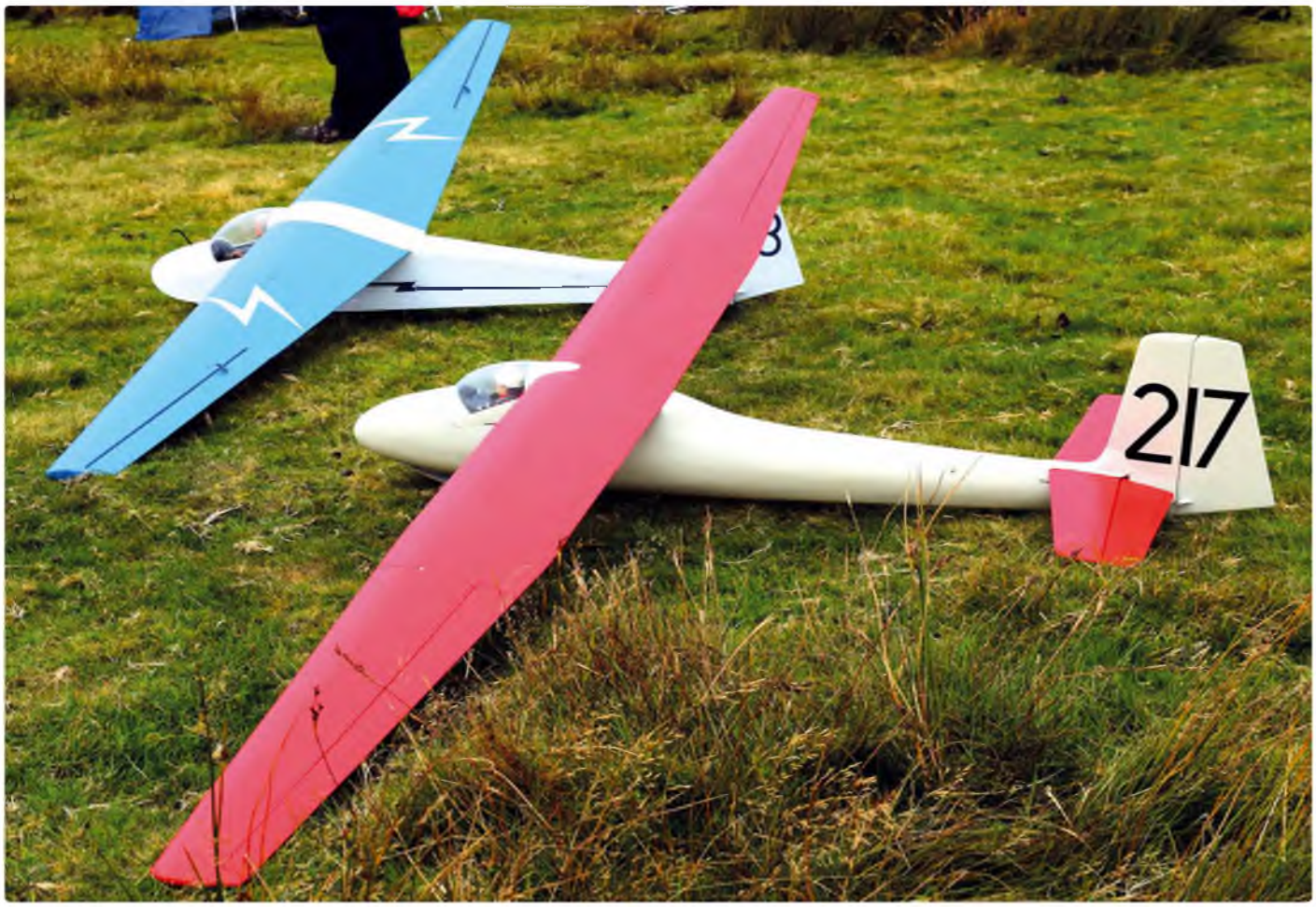
Andy Gough's Fly Fly 1/5th scale ASK21 in Air Cadets colours flew very nicely

The Long Mynd has always been a coveted spot for slope soaring enthusiasts, so living in West Gloucestershire and less than a couple of hours drive away I was long overdue to fly from there. When the dates for the 2016 scale fly-ins were published on the Scale Soaring UK website, I pencilled them in. Unfortunately the one scheduled for the 10th July met not only with a bad weather forecast but also the wind direction would have meant quite a walk to the slope. This didn't bode well for my hip, which was still on the mend following an accident earlier in the year.

So it was with some delight when the weather forecast for the 4th September meeting showed 10-20 mph westerly winds directly on the slope, if somewhat overcast. Arriving around 10:30 am the car park at the Pole Cottage site was already full and cars were spilling out onto the road.

Taking our gliders the 150 metres or so from the car to the slope spot where all the pilots were assembled revealed that many other flyers were taking advantage of the conditions and by the time everybody had assembled there were 25 pilots with just under 40 gliders. Mark Richards, the organiser, welcomed us all and established the no fly areas and landing zone. It was decided to limit the number of gliders in the air at any one time to a maximum of five and soon the first pilots were airborne.

Although the sun didn't make an appearance, the rain held off and the wind was constant on the slope all day, starting off at 20+ mph and dropping off a little in the afternoon. There were often five gliders in the air, with pilots queuing to launch. The lift was



1/5th scale Skylark 3B and T45 Swallow by Lez Hey (Photo: Robbie Brisdon)

Simon Cocker's 1/3rd scale DG808 ripping up the slope

Simon Cocker giving the heave-ho to Paul Watkins' 1/3rd scale Salto

so constant that to give everybody airtime pilots were requested to limit flight times to around 20 minutes.

The lift, while not stellar, was sufficient for Simon Cocker, Ray Watts and others to really ring out their big glass ships. Ray was particularly entertaining, with his ASW28 ending its flight with a flick roll, with insufficient height to pull out! We all expected Ray to reappear with several bits, after venturing down the slope to collect the model, but damage was limited to a broken rudder control and a detached wingtip. I don't know if Ray bought any lottery tickets that week! For those not of a nervous disposition there's an onboard video on you tube: https://youtu.be/QYBUBXq94d4

Colin Waite and Neil Tricker were flying their own design, very unusual Genesis 2 gliders. This is essentially a swept forward flying wing with a small fixed horizontal stabiliser on top of the swept back rudder. The models flew very well but they need a long run up when launching and I was advised that the pilot has to be ready for them pitching up when released. Neil used a surgical latex glove to provide grip on the fuselage for launching, but when I first saw him putting it on I was worried he was about to perform some internal investigation on one of the other flyers!

Aside from the large impressive glass ships there was a good turnout of vintage models, including a very nice fifth scale Airspeed Tern by Peter Dutfield, which supported a scale replica, sculpted from blue foam, of himself in the cockpit – utterly delightful! Paul Watkins and myself flew our 1/15th scale Foxes from Paul's kit and these belied their small size by performing very well, providing they are kept moving. Their small size and low weight also came to the rescue when they were inadvertently dumped into the heather!

Prizes

Although this was a fly-in and there was no competition element, Mark had asked everyone to vote for their favourite modern and vintage gliders and bottles of wine were on offer for the first and second places.

First place in modern went to Ray Watts for entertaining us with his ASW28, with second place being shared between Colin Waite and Neil Tricker with the Genesis 2s. As the other pilots had voted for the model and not specified any particular pilot, Mark felt it was only fair they shared the prize.

Best vintage went to Robbie Brisdon with his 1/4 scale Weih, which looked fabulous in the air, with Lez Hey's 1/5th scale Skylark 3B in second place.

Flyers had come from different parts of the country to join in, including Norrie Kerr, an old Aberdeen and District Soarers club mate of mine from over 25 years ago. Norrie was making the most of his trip down by staying over for the Clwyd Scale Gliderfest the weekend after.

Mark advises that, all being well, they will hold two scale fly-ins next year on Sunday 16th July and Sunday 3rd September, 2017. For both events there will be camping over the whole weekend, with the usual Friday Night Campsite BBQ and Saturday evening pub meal. So if it's too far to travel for one day you can make a weekend homage to this famous soaring site. If you are coming up from the south, past Ludlow, I also recommend that you call in at the Ludlow Food Centre to stock up on local goodies for the day.

Also don't think you need to bring along some expensive large glass ship or 1,000 hour vintage masterpiece. Many were enjoying the flying and camaraderie with almost ready to fly gliders, including an FMS foamie Blanik and a 1/5th scale Fly Fly ASK21

We will definitely be back next year. Keep an eye out on the scale soaring website calendar at ***www.scalesoaring.co.uk*** for details. ***RCMW***

Paul Watkins' diminutive LMA Fox had much more presence in the air than it should have done for its size

Roo Hawkins' 1/4 scale Slingsby T53 flew majestically (Photo: Robbie Brisdon)

Simon Cocker was press ganged into launching much of the big stuff. Here he gets John Minchell's 1/3rd scale ASH 26 away on its maiden flight

Colin Waite lends some scale to the Genesis 2

Phil Smith's Olympia 2B on finals

Robbie Brisdon's DFS Weihe was voted best Vintage Scale by the other flyers

Neil Tricker launching fellow builder, Colin Waites' Genesis 2

A limit of five gliders in the air was set and just about all day there were five pilots enjoying excellent soaring above the Mynd

Look closely and you can see a replica pilot, sculpted from foam, in Peter Dutfield's Airspeed Tern

Norrie Kerr travelled all the way from Aberdeen with his Slingsby Kite 2B

Peter Dutfield about to launch his 1/5th scale Airspeed Tern

Just a small selection of the gliders present on the day

Robbie Brisdon collects first place in the Vintage Scale section for his DFS Weihe

Lez Hey collects second place in Vintage Scale for his Skylark 3B

Ray Watts collected 1st place in modern with his ASW28, which entertained us with some great aerobatics, ending with a flick and spin into the heather!

Lots of pilots voted for the Genesis 2s and as there were two of them, Neil Tricker and Colin Waite shared second place in modern

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Sumners Pond

Pete Glover describes the running of a popular southern model show, which helps to support the Kent, Surrey and Sussex Air Ambulance. Pictures by Matt Parker and Gareth Greener

Precision Aerobatic 3D plane belonging to Nigel Carver

Brett Houghton's R2D2 was popular with visitors both young and old

Kevin Lever lines up to land his Quick UK/Roban Cobra

Planning for this year's show started in September 2015. Dates were considered to avoid a clash with the Weston Park show but we were unable to find a suitable date. So we stuck with the traditional Father's Day weekend, which has proved popular for the last three years, as the show attracts a lot of families on a day out.

2015 saw us introduce FPV racing in the earth works of a new lake. This year the lake was full of water, so it was not an ideal place to be flying! So we needed a new venue, and we were also aware that this would probably need to be larger due to the likely demand.

After lengthy discussions with the main show organisers and venue owners (Sumners Ponds Fishery & Camp Site) and several site visits, an agreement was reached that we would use the 'Ditch Field' for FPV racing, located between the main show area and the Heli/Plane flying field.

Also new for 2016, Airborne decided to open up the entry to include control line flying. A bold move as most of us knew little about this aspect of aeromodelling.

Early in 2016 pilot entry list was opened and within a few days the FPV list was full, and the Heli and Planes also had a healthy entry. This gave us confidence that the show was, again, going to be a success.

Supporting The Air Ambulance

As in previous years Airborne was supporting the Kent, Surrey and Sussex Air Ambulance (KSSAA) over the weekend so we needed to find some sponsors. We were also fortunate as the KSSAA would have volunteers on site all weekend.

Although we needed event sponsors for the raffle, we also wanted to provide the hobby trade with a chance to advertise for free on the flight line to the expected 2000 plus visitors. I never realised how difficult it is to give something away for free and uptake on this offer was zero from the trade!

Luckily the event has been supported/sponsored by a number of leading companies for a few years. These include OptiPOWER, Sussex Model Centre, RC Hotel in Corfu and the Henry Surtees Foundation.

Another of Kevin Lever's scale helicopters in flight, from Vario this time

A few of the aerial platforms on display

Drone's eye view of the FPV course

FPV racing provided lots of close and fast action

This year we were also fortunate to welcome Scorpion Power Systems as a sponsor and we hope that this relationship will continue in the future.

Many local clubs have now realised the benefits of attending the show as it gives them a great platform to not only promote our hobby but also attract new members. Clubs attending in 2016 included: Horsham & District Radio Control Model Club (Host), South Coast Helicopter Club, Crawley and District Model Aeroplane Club, Surrey Radio Control Club, Sussex Radio Flying Club and the FPV League

As in previous years, Brett Houghton and Eddie Oliver offered to come along and do all the commentary on the flying. These guys can talk for England but they also have great knowledge of how the Air Ambulance Service operate. This really does add value to the show as many of the visitors didn't realise that the Air Ambulance get no Government support. Brett also offered to bring along his R2D2; this proved to be a great move and R2 spent many an hour posing for photographs with the children (and other not so small people!) and raising money for the KSSAA.

Setting Up

The weather in the week leading up to the event was wet. This gave us a few issues with grass cutting as the ground was so wet and we were concerned we wouldn't be able to get it cut short enough in time for the control line flyers. As it turned out we still had tractors, grass sweeps and lawnmowers on the field on Friday evening and also again over the weekend as the grass dried out. The ground conditions were not as we would have wished but the control line guys coped well in the end (we will try harder next year).

Pilots started to arrive on the Thursday and set up their caravans and tents, and then they gathered to enjoy a relaxed pint and something to eat down at the Café by the Lake. Sumners Ponds is a beautiful venue, with lakes, fishing, country walks and the Café and bar, which are right on the banks of the main lakes. Another plus for this show is that not only is pilot entry free but so is the camping, to those that are flying. What more could you ask?

Come Friday and the 'big' set up started. The two flight lines were a hive of activity. The FPV guys were busy laying out a course that would be suitable for all levels or pilot skills and also provide a good spectator view. Not an easy thing to achieve but I think they did a great job. The Heli/Plane flight line is now pretty well established so it was generally as previous years.

Come 6 pm and set up was complete – and then it started to rain! But the rain soon passed, the wind dropped and it was time for some evening flying prior to the show. Most people flew until dusk, with the FPV guys flying late into the night.

On Saturday morning the weather was a little overcast but with light winds, so ideal for model flying. Following registration and the mandatory pilots' briefings we were underway on schedule at 10 am. By mid-morning visitor numbers were picking up, although it didn't seem that they were as good as the previous year. The flight line was kept busy all day and we mixed up the disciplines so that the public had something different to see all the time. Flying continued all day until the close of the show at 5 pm.

Show Highlights

During the day Kevin Lever flew both his Quick UK Roban Cobra and Vario scale helicopters, which the public loved as he flies them in such a great scale fashion. Other notable flights came from 12 year old Lee Mathews with his Goblin 500 and 700. Last year Lee was flying a Blade 180, but this year he was doing some great 3D with both helicopters.

Lee Knowles with his trusty T-Rex nitro heli also flew well and kept the crowd on the edge of their seats as Brett urged him to fly lower and lower – and lower! I'm not sure why we bothered with the lawn mowers as Lee could have cut the grass for us!

The South Coast Helicopter boys also flew their delta wings at various times during the day and it was unusual if all of them stayed in the air until the end of the flight. Keith Wright from the Horsham club flew his Spitfire and Hurricane in a scale manner, which the crowd loved and many wanted to have their pictures taken with the models after the flights.

The aerial photography guys from ACE UAV did a number of display slots and talked about the industry. They also had a stand on the flight line where the public could see all the equipment up close.

Dick Stepney and Kim Jones from the Crawley club flew various control line models, both IC and electric. Many of the public had never seen a control line model fly and Dick certainly put on a good show for them, with some precision aerobatics. Dick even had an experimental model, which was half control line and half R/C. The R/C system controlled the throttle, I believe.

Early evening and the BBQ was alight and a good after show social was had by all the pilots. By 8 pm the skies were full of models once more and this continued until it was too dark to see. By then the conditions were so calm that a few Night Vapors were seen flying in the dark around the camping area.

The FPV flying kept the crowds interested all day. The course layout meant that the main pathway ran along the edge of the course, providing for great spectator viewing. In addition to blasting around the course at high speed and low level, a number of pilots also put on a great display of free style flying.

Probably an area for improvement was the location of the pilots in relation to the crowds. Due to transmission issues the pilots were positioned a little too far away and as such some of the interaction with the spectators was lost. This will be sorted for next year.

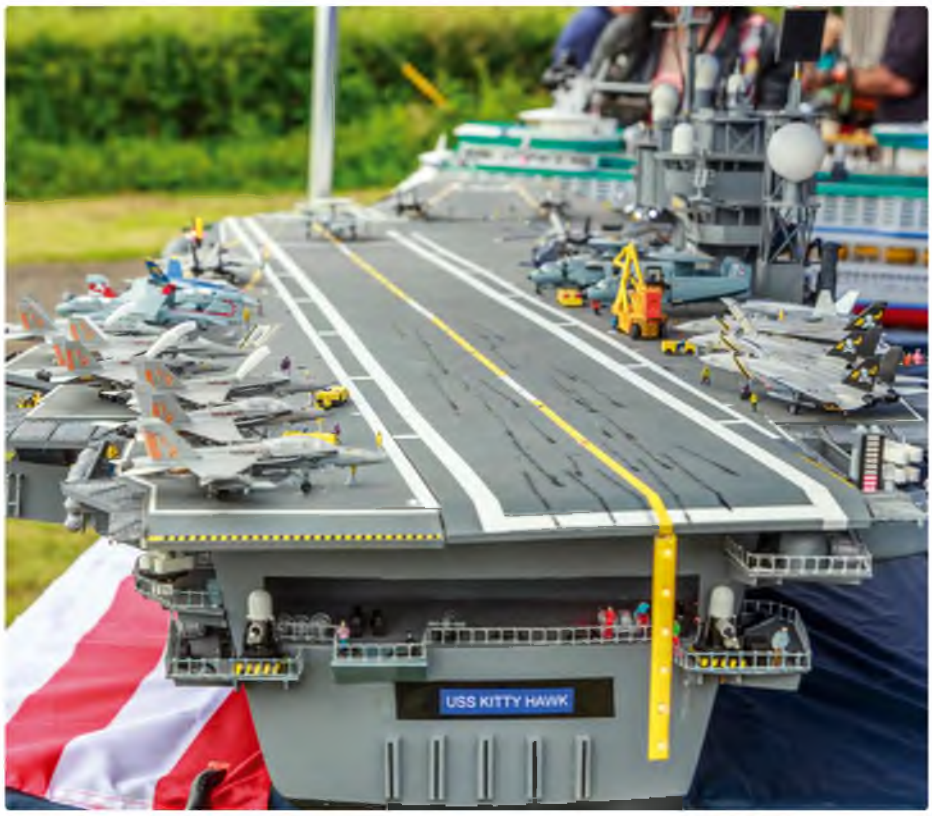
The FPV boys love their flying and they kept the flight line busy all day and a great variety of models were being used. Radio C from East Grinstead were again on the

FPV pilot Jonathan Banton and others at the controls of their racing quadcopters

Heli and plane pilots line up prior to the show's start on the Sunday

A few of the aeroplanes on display

It was great to see yachts and other boats making full use of the space provided by the top lake



A superb model of the USS Kitty Hawk was on display down by the lower lakes

All sorts of aeroplanes, large and small, were flown by local model club members

Tim Brown's R22 scale heli hovers after a spot of grass collecting

flight line and their trade stall was busy all weekend. It's so good to see local retailers supporting an event such as this.

FPV flying continued until dark and beyond, with night vision cameras being used on a flying wing. I understand that this worked really well and the picture quality was great; the only problem was when you landed and took off the goggles it was so dark you couldn't find the model, even though it was only a few feet away!

Sunday dawned and the skies were clear blue. There was a forecast for rain later in the day but fortunately this held off during the show and it only arrived once all the packing up had been done at the end of the day. Flying continued pretty much as Saturday with no major mishaps. Gavin from Kaos RC arrived and put on a great display of 3D flying with his Thunder Tiger G4N.

The visitor numbers on the Sunday were well up on the Saturday – it must have been all the Dads out for Father's Day! The KSSAA team were busy ensuring people were relieved of any loose change and by around 3 pm they were just about sold out of any goodies they had on their stand. Following the show we had a count up of all the monies raised and these came to over £1000, which is well up on last year's amount.

Other Model Types

Having taken a wander round the rest of the show it was great to see such a variety of models and modellers enjoying talking to the public. The boat displays were superb and used two of the lakes on the site. It's nice to see boats at a show on proper lakes and not small man-made ponds, allowing the models to be sailed as scale-like as possible.

The R/C cars had two tracks laid out that catered for 1/10th up to 1/5th off road cars. Once again the area provided for them was one of the largest I have seen at any show.

The kite flyers always seem to enjoy themselves, even when there is little or no wind. The trader in their field appeared to be doing a roaring trade in kiddies kites. I believe a good few of the kite flyers had been on site since the previous weekend!

There were plenty of other craft stalls and children's rides and catering outlets to keep everyone happy.

As last year the show attracted around 2000 visitors from across the south of England. We had hoped for an increase in numbers but the weather prior to the show probably put quite a few off from visiting on the Saturday. By 4 pm on the Sunday visitors were thinning out and the clouds were building so we stopped flying and the big pack up started.

Thanks to all those that came along and supported the event either as a pilot or spectator, especially to the Horsham & District Radio Control Model Club members who gave up their weekend to help set up and run the event.

Preparations for next year's show will have already started by the time you read this, so keep an eye on our Facebook page and website for more information (see Contacts).

RCMW

CONTACTS

www.sumnersponds.co.uk
www.facebook.com/airborne.sumnersponds

Seaplanes On The Varese

Franco Bugada reports from the annual international seaplane meeting held at Biandronno on Lake Varese in Italy. With additional pictures by Nicola Calò and Carlo Martegani

A perfect replica of a Cant Z 501 seaplane by Carlo Martegani (N.Calò photo)

Carlo's Z 501 is marked I-AGIL, like the famous long distance seaplane used for a flight from Monfalcone (close to Trieste) to Massawa in Somaliland (F.Bugada photo)

Push-pull electric twin Dornier Do 18 by Armin Selinka from Germany. The full size was manufactured for the Luftwaffe but Lufthansa received five aircraft, which were used for test flights (N.Calò photo)

Bellanca Scout by Sven Siedentop from Germany. A very nice electric model (N.Calò photo)

Sven Siedentop prepares the Bellanca Scout for another flight (F.Bugada photo)

The Varese area, in the Italian region of Lombardy, has an old tradition of seaplanes and floatplanes. Other famous floatplane flying sites like Lake Maggiore are close by, as well as those in Switzerland, Piedmont and Lombardy. Sesto Calende in Lombardy was the birthplace of the SIAI and the area is called the 'Wing Province'. Here, Italian aeronautical history has developed since 1900 and the names of Gabardini, Caproni, Savoia Marchetti, Agusta-Westland and Macchi are now very famous.

The people of this region have an ongoing active tradition in manufacturing aircraft and components, as well as model aircraft. Italian aeromodellers well remember hydro versions of vintage free flight Wakefield and Coupe d'Hiver rubber models built there, as well as the high performance diesel and glow plug engines of the '50s and '60s, the U-Control Schneider Race replicas of the '60s, and then the R/C versions of the same famous floatplanes in the 1980s.

These days Italian model seaplane meetings have no particular regulations concerning the choice of models or their scale. They can be sport models or one-off designs, or built from commercial kits. Model size is not regulated but they must respect the limit of 25 kg, as governed by ENAC's (Italy's CAA) rules. Electric motors or internal combustion engines are both allowed, but

Carlo Martegani's replica of the Savoia S.22 Schneider Cup model uses twin IC engines and is very impressive in flight. The pilot was Max Comolli (N.Calò photo)

The Schneider S.22 takes - off (N.Calò photo)

Taxying the Martegani S.22 with just the front engine running (N.Calò photo)

the electric option is more widely used as the motors can be started on the lake and so there's no danger when transferring the model from the beach to the water with the motor running. When you examine the models equipped with two or more motors they are practically all electric powered.

Idromeeting Internazionale

Every summer for more than 20 years the traditional 'Idromeeting' has been run and carefully organised by the aeromodellers of this area, supported by the Varese Aero Club, the Italian Aeronautical Associations and Pro Loco of Biandronno. Invitations to the meetings are extended to include international participation, with friends coming from France, Germany and Switzerland.

In 2016 we had five modellers from Germany, who came with some beautiful models, like the replicas of the Dornier Wal (Bern Schwelkhard), Dornier 24 (Rolf Breitinger), Dornier 18 (Armin Selinka), Bellanca Citabria (Klaus Daiger) and the Bellanca Scout (Sven Siedentop). These large models, so carefully built and finished, were an absolute feast for the eyes. Their flights were so good, and their take-offs and landings so precise, that when the three Dornier replicas flew together in close formation the other modellers and spectators applauded at the end of their impressive flight. These German modellers live not so far from Friedrichshafen, where Zeppelin airships and Dornier planes were designed and built, and where everybody can pay a visit to interesting local museums that show their contributions to international aeronautical history.

Another plane flown by a foreign visitor was the lovely Piper 3 Cub presented by Sig. Masini. Then there was the always beautiful replica of the Caproni Ca.100 built by Reno Fiori, which was presented in RCMW a short while back. During some take-off manoeuvres the Caproni's propeller got showered by spray from the front of the floats, but the combustion engine had sufficient power to allow it to get 'onto the step', following which it flew perfectly.

Take-off of the Macchi M-7 bis built in approximately 600 hours by Carlo Martegani (N.Calò photo)

The Macchi M-7 bis is carefully lowered into the waters of Lake Varese

The M-7 features a replica Isotta Fraschini V-6 250 HP motor engine made from wood. In 1922, Giosellino Gorgnolino came third with this plane in the Schneider contest at Naples . Power is from an OPS 60 Speed SPPRCA turning a 13 x 5 pusher prop

The beautiful Dornier Do.24 of Rolf Breitinger from Germany (N.Calò photo)

Three electric motors power this perfect scale model of the Do.24 when in Spanish service

Aerobatic 'Wind 110' of Massimiliano (Max) Comolli – a very good pilot (N.Calò photo)

One of the three Macchi MC 72 racers built from Sebart kits that were flown at this event

Not everyone flies scale aircraft at the Idromeeting. Sport models are welcome too!

The replica of Sig. Nazzari's twin engine 'Canadair' showed similar difficulties during take-off, probably due to its weight compared with its hull size, so the propellers had a tendency to touch the water's surface. But the pilot was still able to perform a good routine.

There was a very impressive flight by the big Savoia S.22 replica manufactured by Carlo Martegani. With its 2.60 m span and two IC engines in a push-pull configuration, this aircaft participated in the model Schneider contest of 1991 and is still flying. Its long life shows that seaplanes, like other models, do not suffer through old age if properly built.

Commercially speaking, we saw some lovely flights using semi-scale replicas of the Macchi MC 72 built from Sebart kits. These models have a different appearance in comparison with the original Italian record racer; there are no twin contra-rotating propellers, no bracing between the floats, wings and fuselage, and the cross section of the floats does not exactly follow the original. Also, the wings have a higher dihedral for improved stability when flying. Three of these MC 72 semi-scale models were flown by Signores Schwelkhard, Biscotti and De Santi, one painted red, one silver and one yellow. Frankly speaking, I am not that keen on liveries that differ from the original 'racing red' but I understand that, not being exact replicas, these models have to appeal to all tastes on the open market and so they need to show a few different looks. But they do fly very well and good pilots can even use them to draw some aerobatic figures in the sky.

Another semi-scale model was presented by Sig. Baudino, who displayed a replica of the MC 33 Schneider racer. We also saw another pure aerobatic design from Sebart, the Wind 110 of Max Comolli, who flew it through some good figures and had a nice flight.

Max Comolli is also the 'official pilot' of the beautiful Cant Z 501 and the fantastic Macchi M.7 bis Schneider racer, both built by Carlo Martegani. These models are perfect scale replicas. The flight of the M.7 was keenly followed by the former General Manager of Macchi, Mr. Valdonio. Amongst the other VIP's were Sig.Leoni, President of the Aero Club of Italy, and Carlo Ferrarin, son of a famous pilot, Arturo Ferrarin, who undertook a long distance flight between Rome and Tokyo in 1920. Carlo Ferrarin is the designer of the Caproni 'Calif' sailplane, as well as the Caproni jet trainer, the Vizzola Ca 22 J.

Some other sport models participated at the meeting, including two delta North Stars and two hull designs. ***RCMW***

Floatplanes In The UK

While it's great to be able to feature the wonderful scale models built by talented Italian and German modellers, here at RC Model World we would also like to feature more updates from the UK floatplane scene.

So if you are a regular flyer at a British lakeside please write in with some details of your current models and send a decent picture or two. And if you feel like penning an article about your passion for water flying and are willing to pass on some helpful advice to our readers then please email the Editor with a brief outline of your intended text:

rcmw@traplet.com

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TRANSPORT AIRCRAFT

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Designer: Ron Hudson
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Designer: Chris Golds
Plan code: MW3468
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The Sport Channel

More sport model subjects from 'Gray', including a Winter Project sorted before winter!

"Can't Stop The Rock!" (Apollo 440)

Owe Carlson from Sweden with his British- designed 'Radio Rock' in 1959 and as recreated 'Technostalgia' style today. Original was shot down by a taxi! See text

This Month's Wise Words

Speaking as someone who very shortly will officially have been involved in our hobby for a 'Very Long Time', the opportunities now offered to us by today's technology and skills to recreate our favourite models of yesterday is a constant source of amazement and pleasure.

We've followed the seemingly unstoppable progress of the 'Technostalgia' approach to Vintage and what are termed 'Retro' models, as it's crossed the world. We've featured the work of many Scandinavian readers in the past and we were pleased to hear from Owe Carlson of Asarum in Sweden.

Owe writes: *"I have a small Vintage/Oldtimer story to tell and maybe find a place in your magazine. The year was 1959. When I was visiting my town's library, I found an English book dealing with R/C models. In the book there was also a plan of a model called 'Radio Rock', suitable for beginners. I borrowed the book, copied the drawing to full scale and decided to build the Radio Rock.*

This was my second R/C model and it was of course, rudder-only controlled. I had a .15 Elfin diesel motor which could be used for the model. The R/C equipment was from Sweden (Telepilot Tx and Rx) and 'bang-bang' actuator from England. Radio Rock was easy to fly and I learned to fly with one push-button. It had had a lot of flying time when it crashed due to interference from the radio phone of a passing taxi. The crash was total and RR did not exist any more.

One winter day 2013, I was looking in my album where I have all my R/C models pictured and numbered. At the moment there are 160 models. There was No.2 Radio Rock ,1959/03 Span 1480 mm, length 800 mm and weight 1.3 kg. I decided to build it again (nostalgic memories...), but my drawing was lost and I couldn't find one, so from the data I had and some images, a new drawing was made.

The No.141 Radio Rock 2 has a BL electric motor and 3 channels. RR2 flies very well and even softer than No.2. It's 54 years between these pictures and I still fly my #141 Radio Rock sometimes and I think what fantastic progress R/C flying has achieved since the 1950s."

Congrats on a splendid project Owe, particularly the level of dedication needed to draw up the model from scratch, from memory! This is the first time I've encountered the Radio Rock. Do any readers remember it or have any experience of it? It would be nice to discover some background details on this one.

Owe Carlson's fleet consists of real SC types, including vintage, scale, 3D aerobatics, R/C skydivers and indoor rubber duration, not to mention his 'Radio Rock'

Viva Rabolini!

Thanks to everyone who's been in contact to say how much they enjoyed the extraordinary video on YouTube of a tour around the Keil Kraft works in the mid-1960s. It's proving popular as its viewing stats have climbed impressively since it was posted. Readers have commented fondly on the glimpses it offers into factory life and practices in the 60s. One noted that even the youngest workers on the KK production lines would be in their 70s now!

One related mail we received mentioned the sheets of die-cut balsa being carefully packed into their kit boxes. Our correspondent reminded me of a technique that was apparently used by several kit manufacturers.

It seems that die-cutting balsa could be problematic at times with varying cuts and quality of wood. I would imagine a large percentage of SC's readership would know about the special frustrations of 'die crushed' kit components!

One trick to ensure a cleaner cut was apparently to soak the balsa sheet in water before cutting. When suitably saturated, the grain swelled and the fine steel blades on the die would slice smoothly through. But, and there had to be a 'but' – as the cut sheets dried out, they naturally shrank. This left all the components cut out by those expensive and carefully made dies ending up undersize.

Theoretically anyway – the simple but clever solution was to initially make the dies slightly oversize, so that the components in the wet sheet, once dry, would have shrunk to the correct size! That process must have been an exacting blend of art and science and is a tribute to the skill and ingenuity to model craftsmen of the past.

I experienced some contemporary die-cutting earlier in the year, which although not model-related was astounding to watch. I had cause to visit a factory which makes and distributes equipment for display and advertising in shops and supermarkets.

One of its high volume products is a clear PVC tray which is folded from a development blank. These are cut on a magnificent machine called the Rabolini 'Imperia', a glorious piece of Italian engineering that looks like a piece of old school sci-fi technology.

Using tons of force to chop out the tray blanks, the mighty Rabolini thunders and grinds through its production run like a big, scary robot (which I guess it is!). I was offered a go, which I couldn't resist and the feeling of power under one's fingertips, driving this massive mechanism with its wheeling cutter bed just inches away was awesome!

No, sadly I don't think it has any modelling applications, plus it would probably drop straight through the average workshop's floor! Pity.

Currently your author's favourite machine, although not used by the model trade, the mighty Rabolini 'Imperia' does serious die-cutting!

Seasonal Shark

Somehow, we seemed to have reached that time again when we start wondering about Winter Projects. We know that they're still a central part of countless modellers' building output and that they can magically expand to fill the months until the start of the next flying season. If you have anything on the building board at any stage that's going to make its maiden flight in the New Year, we'd love to hear all about it.

We're pleased to sign off this year's SC with a project that most definitely didn't take months in the execution and is a recurring favourite design here. George Stringwell mailed from his chalet workshop in France to enthuse about his latest rework of a well-known retro subject.

George writes: *"Finding myself at a loose end building-wise I decided I needed a quick project and as I wanted another windy weather 'hooligan' model I knocked together a Sharkface. Ninety watts of power in a model weighing just over 10 oz should guarantee a lively performance, and it does! No first flight issues with this one, it goes like the proverbial rat up a drainpipe and is as violently aerobatic as any rudder/elevator model could ever be.*

In particular the rolls are remarkably axial and huge loops, reversals and Cuban eights are all delightful. Switch to full rates and it becomes wild, the flick rolls blending rapidly and the rotating spins are enough to satisfy any adrenaline junkie. A great return for a few weeks work using mainly balsa from the scrap box!

The Sharkface is an absolute blast and has had a lot of outings since I finished it. I keep it bolted together ready to go and the 850 2S LiPos give nine or ten minutes per charge. Considering it took three weeks or so to build and cost practically nothing as most of the wood was in the scrap box it has to represent just about the best return in fun per pound that you can get."

Another masterpiece from the single channel era, George. The Sharkface has made so many appearances here; it's surely an affirmation that Eric Clutton's design has what it takes to still inspire modellers fifty years after its publication.

A Winter Project built before the winter had barely started! George Stringwell did his usual flawless job on Eric Clutton's legendary 'Sharkface'

Despite George's classy decoration on the upper surfaces, the Sharkface still sports its distinctive snarly nose art. Electrification takes this design's lively qualities and boosts them off the scale. Email us for the plan!

Best Evidence Yet!

My apologies that it's taken until the end of the year to get around to this, but I must thank the reader who mailed in to discuss the collection of images he'd collected from model publications that had inadvertently captured UFO's in the background!

At one time, this might have stimulated my interest sufficiently to run a whole feature and ask for readers' own contributions. Speaking personally though, what used to be a truly fascinating fringe subject has been rendered ineffectual through the onslaught of crazed outpouring of opinions and video fakery on the Internet (hence our headline here). Funny thing that – I still don't get how a modern miracle of communication can nonetheless advance misunderstanding and illiteracy!

Model-flying has though had an ongoing relationship with the phenomenon of Unidentified Flying Objects. From the Flying Saucer boom of the 1940s and 50s, designers have created models with extraterrestrial styling. For some classics with a whimsical slant, we only have to look at the output of masters like Ray Malmstrom and Roy Clough (if you'd like some copies of their UFO oeuvre, drop me a mail!).

Some of the greatest Saucer inspired models ever were the RTFs made by Cox from the 70s. These very simple disc craft were really torque reaction helicopters driven by reed valve .049 glow motors. Spinning furiously and climbing to a great altitude on a full tank, the Cox .049's scream was augmented by a weird beating sound caused by the rotation. We had some hysterical fun with them back in the day. You can still pick them up on auction websites, if you're interested...

Interestingly, I once spotted a photo in a respected UFO textbook that to a modeller's eye was quite clearly a Cox Saucer in flight, complete with protruding spinner and inlet vanes around the top. In yet another, the description that a witness gave of an alien craft dropping silently into a wood was a perfect account of a 'Charybdis' style monocopter autorotating down. I think we've had a lot to answer for! Plus, today's models, particularly drones, can almost be described as true UFO's in their own right.

But, I will tell you this – the most jaw-dropping and spine tingling UFO story I've ever heard was told to me by an old Vintage modelling friend who passed away just last year. In the late 1940s/early 50s, he was a designer and development engineer in the aircraft industry. While working abroad then, he worked on some famous projects.

The story he told me though of something he witnessed while returning home one evening has stayed with me thirty years after he first told me. Particularly because with his classically logical trained engineer's mind, he didn't 'want' to believe what he'd seen, but was still perplexed by it decades later. No, I won't fill this column with his story, but if you bump into me next season, just ask! And with that, thanks to all readers for their support in the past year, let's see what the new one has to offer.

Contributions, please to The Sport Channel, c/o the Traplet Publications address. All Email correspondence to: gray_rcmag@hotmail.com ***RCMW***

This indisputable image of an alien craft on the ground is actually a Cox Flying Saucer, flew by torque reaction from a Babe Bee range.049 reed valve glow. Once mistaken by the 'real thing' by the UFO community!

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INDOOR

27th Dec '16, 31st Jan, 28th Feb, 28th Mar, 25th Apr 30th May, 27th Jun '17

Waltham Chase Aeromodellers Small Indoor R/C Model Meeting, at the Main Hall at Wickham Community Centre, Mill Lane, Wickham, Hants PO17 5AL. All meetings will run from 7 pm to 9.30 pm. This is the venue at which we hold our popular indoor F/F meetings. The hall is not large enough for conventional shock flyers, but has proved suitable for smaller indoor R/C models. Models to be flown at these meetings are limited to a maximum weight of 95 g (3.5 ounces) for fixed wing aircraft, in flight trim, including battery (not to exceed a 2-cell LiPo pack). Helicopters are to be limited to a rotor diameter of 12" (305 mm). All models will be weighed before flight, and will be judged on their suitability for the venue on the evening. Admission to the meetings will be £4 for flyers and £1 for spectators, whilst accompanied children will be admitted free. Junior flyers will be charged as adult spectators. Flyers will be required to show proof of insurance. For further details please contact: Alan Wallington, 'Wrenbeck', Bull Lane, Waltham Chase, Southampton, Hants. Tel. 01489 895157, or see our website: www.wcaero.co.uk

7th Jan, 4th Feb, 4th Mar '17

Waltham Chase Aeromodellers Indoor Meetings, held in the Main Hall at Havant Leisure Centre, Civic Centre Road, Havant, Hants PO9 2AY. The events will run from 7 pm to 10 pm. Please note that free-flight models may not be flown at these meetings. Admission to each meeting will be £7 for flyers and £1 for spectators, whilst accompanied children will be admitted free. Junior flyers will be charged as adult spectators. Flyers will be required to show proof of insurance. For further details please contact: Alan Wallington, 'Wrenbeck', Bull Lane, Waltham Chase, Southampton, Hants. Tel. 01489 895157, or see our website: www.wcaero.co.uk

21st Jan, 18th Feb, 18th Mar '17

Waltham Chase Aeromodellers Indoor R/C Meetings, at Fleming Park Leisure Centre, Passfield Avenue, Eastleigh, Hants SO50 9NL. Each event will run from 7 pm to 10 pm. The Main Hall at Fleming Park Leisure Centre is a ten badminton court size sports hall, with a very high and obstruction free ceiling, and is particularly suitable for lightweight indoor R/C models. Please note that free-flight models may not be flown at this meeting. Admission to each meeting will be £8 for flyers and £1 for spectators, whilst accompanied children will be admitted free. Junior flyers will be charged as adult spectators. Flyers will be required to show proof of insurance. For further details please contact: Alan Wallington, 'Wrenbeck', Bull Lane, Waltham Chase, Southampton, Hants. Tel. 01489 895157, or see our website: www.wcaero.co.uk

5th Feb '17

BMFA South Eastern Area, 42nd Crawley Indoor Meeting, at the K2 Leisure Centre, Pease Pottage, Crawley, West Sussex, RH11 9BQ. Free Flight from 11 am until 6 pm. Competitions and plenty of fun flying time, comps include 12" Catapult, Glider, HLG, Peanut, Scale, Open Scale, EZB, Living Room, Stick, Gyminnie Cricket, Legal Eagle, Mass Launch of Butterfly and Hangar Rat. Further details contact Comp Secretary, John Dart on 01293 420830. Or Email: johndart17@aol.com or cadmac.org

GENERAL

8th Jan '17

Croydon Airport Military & Aviation Collectors Fair, at the Hallmark Hotel, Purley Way, Croydon Surrey CR9 4LT (see the link for directions: www.hallmarkhotels.co.uk/our_hotels/croydon/location/). Items available: Aviation Collectables, Book Dealers, Model Collectors, Uniforms, Medals, Toys, Kits etc. Doors open at 10:30 am, £3.50 entry, children under 10 free. Free car parking. Traders contact Aviation Antiques on 07973 885754, stall plots to be pre-booked. Croydon Airport Control Tower open for visits. For more details contact Dave Sutton, Email: davidsutton16@aol.com Mobile: 07973 885754

4th Mar '17

Brightlingsea MFC Swapmeet, at St Osyth Village Hall, Clacton Road, St Osyth, Essex CO16 8PE, from 9.30-11.30 am. Entrance £2, Tables (set up from 9 am) Single £4, Double £6. Refreshments available, hot drinks and bacon sandwiches. (Have your breakfast with us!). For further information and pre-booking tables contact Bob Goodenough, telephone 01206 303749 or check out the website: www.forjac.co.uk

17th Mar '17

DADMAC Auction, hosted by the Dumbarton and District Model Aircraft Club. This Bring & Buy Auction will take place in the Chivas Community Suite of Dumbarton Football Club, Castle Road, Dumbarton. Book-in items from 5.30 pm. Auction kicks off at 8 pm. Entry fee, but no commission on sales. Bar and food available. Auction forms available on website: www.dadmac.org.uk Contact Maurice Irvine on 01475 689711 for more details

16th to 18th Jun '17

Weston Park International Model Air Show, organised by Wrekin MFC, at Weston Park, Weston Under-lizard (M54 Junction 3 and 8 Miles off M6 Junction 12). Helifest RC helicopter flight line all weekend with commentary by Dave Bishop (D.B. Sound) and Nik Johnson. A host of top pilots and fantastic trade support with over with 100 Traders. Full size display all three days including the Swift Display Team. The show also includes quad racing and a quad fair, off road buggy racing, model boats and other family attractions. On site camping available, with Night Show spectacular Friday and Saturday night, with evening entertainment. For more information contact Steve Bishop: 01952 587298, Mobile: 07758 895068, Email: stevenbishop@blueyonder.co.uk, Show website: www.westonparkmodelairshow.co.uk, Trade Enquiries to Peter Whitehead: 01952 684169

18th to 20th Aug '17

Festival of Flight at Ragley Hall, run by the Wrekin MFC. New dates confirmed, further details to follow but show will include many famous international flyers from the UK and Europe, as well as the amazing Richard Goodwin with his full size Pitts Special, which will guarantee to give the event that special Wrekin MFC touch. Plus the Glider FX team will be there all weekend. Running concurrent with the air display but on different parts of the park will be the Helifest model helicopter competition and displays, quad First Person View racing, a large boating regatta on the eight acre lake and model car racing. Saturday evening will featuring laser lights fireworks and light show! A large trade participation is anticipated as well as a swap meet. Admission prices: Adults £14.00, Children £7.00, Family £30.00, Camping £65.00 pre paid, £70.00 on gate. For more details contact: Steve Bishop, tel: 01952 587298, mobile: 07758 895068. Email: stevenbishop@blueyonder.co.uk Trade enquiries call Peter on 01952 684169. www.festivaloflight.uk

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MODEL WORLD

Next Issue

DON'T MISS OUR FEBRUARY 2017 ISSUE!

Turbulent Times

When a group of modellers get together a question that often arises is, "What's your next build?" And so it was, when Chris Bowler found himself chatting to well-known Cotswold based model aeroplane designer Sid King, that the seeds for a 38 cc size Druine Turbulent were sown. Chris had taken a keen interest in the restoration of a Druine DR1 Turbulent not far from his home and Sid had been involved in the building of three Turbulents – this was number four! Inevitably the subject of a model build arose and Sid suggested that they build two airframes. The new models would be finished in different colours to the full size when it was badly damaged whilst landing, the idea being to render a version as it was and another as G-ARRU will be when restored. Over the next three issues Chris describes the construction and first flights of his tribute to 'Romeo Uniform'.

Drawing Instrument Panels

Scale models vary greatly in quality, finish and detail. But whatever the level of detailing, building a scale model often demands that at least some attention is paid to the cockpit and its fittings. In the past various cockpit kits and graphics have been made available, again with varying degrees of scale fidelity. But there is also the DIY method that can be pursued and it is this route that was taken by Greg Thompson. A couple of years ago a friend of his purchased an excellent ARTF of a P-51 Mustang but he was disappointed to see that it only had a very basic and inaccurate instrument panel graphic for the cockpit. But after just a short while on his computer, Greg had drawn up a much more realistic graphic in CorelDraw. In this informative article, Greg describes how he researched and drew up the new panel, as well as instruments for other scale aircraft.

FEBRUARY 2017 ISSUE ON SALE THURSDAY 19TH JANUARY

Catching Up With Cri-Cri & Bergfalke

Sometimes, despite our best intentions when anticipating the articles that we will use in the following issue, we are forced to change our plans. Sadly this happened to both the Cri-Cri and Bergfalke articles that we highlighted in last month's 'Next Issue'. Both articles are fairly long and it has proved impossible to fit them in this time. The good news is that they are both pencilled in at the front of the February magazine so you won't have long to wait to read all about this pair of fine scale model aircraft.

PLUS... *More features, columns and reviews from across the complete spectrum of the R/C model-flying hobby*

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