

## Sticks and Tissue No 158

If you can contribute any articles, wish to make your point of view known etc please send to or phone 01202 625825 [JamesIParry@talktalk.net](mailto:JamesIParry@talktalk.net) The content does not follow any logical order or set out, it's "as I put it in and receive".

Thanks to Mark Venter back issues are available for download from <http://sticksandtissue.yolasite.com/>

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*Peter Renggli sent this photo taken at the 2017 MG Bern Antik Flugtag*

## From John Salmon

I enjoyed reading John Ralph's item on "JETEX" in the last Sticks and Tissue.

In 1948 I had passed the entrance exam for Redhill Junior Technical School and my parents rewarded me with a Jetex 100 outfit and a kit from "Veron".

The balsa/tissue aeroplane (was it called Aerojet?) was much like a "pod and boom" glider of some 30 plus inches span with a cut away area at the rear of the "pod" into which the motor fitted.

I had no problems with the construction and painted the fuselage with light blue dope and the tissue covered wing bright yellow. Quite smart!

My early efforts at getting the motor to fire up were not successful until I realised that the gauge disc had to be pushed down quite hard to ensure that the fuse was in firm contact with the fuel charge.

Lighting the fuse with a match was always a fraught business with the danger of setting the whole thing on fire until somebody explained that life would be safer if we held the plane "upside down" to start the motor! You live and learn!

There followed quite a number of flights – some of several minutes duration. This was much more success than I had been achieving with rubber powered models.

In the early 1950's the Caterham Club existed only in name and had dwindled down to a small group of enthusiasts with no formal organisation, but we were lucky to have permission to use a large clubroom in the local council school on a Friday evening.

We would sit and chat, show our latest projects and even indulge in a little balsa bashing.

At this time several of us had Jetex50 motors and we decided to have Friday night R.T.P (Round the pole) excitement.

A "Meccano" tower was constructed and a selection of small Jetex50 powered planes quickly built. Each plane was attached to the swivel at the top of the tower by a 6 foot length of thread and most flew round quite well at surprising speed.

Our next experiment involved increasing the thrust of the "50" motor by drilling a hole through the centre of the fuel charge and inserting fuse so that the burning could take place on more than one surface. This resulted in a dramatic increase in speed and the tower had to be weighted down with several house bricks to prevent it falling over!

Some planes detached themselves from the thread and enjoyed "free flight" for a few seconds. The spectators sheltered behind up-turned desks!

We used a stopwatch to time say six laps and calculate the speed. The best effort was in the order of 60 MPH, not bad even it may have been wildly inaccurate!

This was 70 odd years ago and my flying is somewhat more sober now with vintage type planes, bumbling around at treetop height.

I enclose a photo of my

150% Mamselle drifting by. Note the repair to port wing trailing edge, due to a rather heavy arrival!



## Jetex from Stephen Winkworth,

What a pleasure to read John Ralph's 'recycled' article on Jetex! These little gadgets are remembered even by people who have long since given up any association with model aircraft. To give just one example, we have some neighbours here in France, who have a large and beautiful old property, grand enough to be used for TV shows, weddings and other events. They are the Turcat family – a Turcat cousin was the French test pilot for Concorde. It was Francine Turcat, a contemporary of ours, with the haughty manner befitting her aristocratic lineage, who startled me one day while we were having tea in her prestigious Paris flat in the Avenue Gabriel (up the road from the American Embassy). She suddenly declared, a propos of my aviation interests "and Jetex – did you have Jetex?" It turned out that as a little girl she built and flew Jetex models in the Bois de Boulogne. She had an English cousin who encouraged her in this rather ungirlish pursuit, but she had evidently enjoyed the experience and had had considerable success with a Sabre Jet.

So impressed was I by this revelation that I actually found a Replikit version (this all took place some ten or twelve years ago). I purchased an Aerographics JET-X 50 to power it. We attempted to fly it in the grounds of her house down here, but found that the JET-X, though looking and even sounding much like the Jetex, was all smoke and no poke.

Why has noone succeeded in repeating the success of Jetex? Surely it should not be above the powers of modern chemistry to produce a pellet which produces the necessary amount of gas at the right speed – since this appears to be the problem. Would there not be a pretty substantial worldwide market for a successful version?

The 'Mijet' was a simple all-sheet model for the Jetex 100 which appeared around 1949. The simplest version had squared off sheet balsa flying surfaces and an exposed motor, but you could round everything off and streamline the motor housing – though any aerodynamic advantage was minimal. In its simplest version it could be assembled in an hour or so, and I remember asking my parents to bring one down so I could build it during an afternoon holiday break from my dreaded prep-school (tea and sticky bun being the preferred option on these occasions). They flew – well enough for 11 year-old-me – and I had many happy afternoons flying mine in Regent's Park.

I then progressed to the 350-powered 'Dura-jet' – see the advertisement: 'New Jetex Kits' (Ralph's Figure 19). It also appears, I believe, as the swept-wing model held by the contestant in Figure 9. I bought mine in 'Hamley's' toyshop in Regent Street. The staff were most helpful in explaining how one applied the tissue and dope, though I remember I failed to allow enough time between the 'water shrinking' process and the application of dope, and experienced for the first time the phenomenon of 'blushing', with white patches all over the surface of the wing and tail. I found this picture of me as a small boy holding it, while my sister looks on with a suitably bored expression. Next to it is a photo of a helicopter (NOT the Jeticopter), flying on the sacred grounds of the Walton Heath Golf Club.

My 'Dura-jet' had its maiden flight in Hyde Park, where it rose majestically to the height of the surrounding trees, landing in the environs of the Marble Arch, to the displeasure of a police constable. Curiously enough, I have no memory of any other flight by this model, my first attempt at built-up flying surfaces. Possibly contact with the memorial masonry proved too much for it. The '350' was later used to power a model boat, which sank during a holiday on Lake Garda in Italy.

Another Jetex model which attempted flight in this unsuitable site was one I assembled from a promotional kit, produced for the Paramount film 'When Worlds Collide' (1951), of the escape rocket 'Zyra'. This looked more rocket-like than flyable, but I built it anyway and painted it black. Returning from an unsuccessful maiden flight attempt I was accosted by a wealthy looking gentleman wearing a coat with an astrakhan collar, who asked me about the model. I explained that I didn't think it was much of a flyer. He gave me half a crown, so all was not lost.

I 'built' a couple of 'Jeticopters' (they required assembly but little actual building), and these performed well enough in my grandmother's garden at Walton-on-the-Hill. The blades would invariably break in any less than decent landing, so, as there was not much control over where they came down, they needed frequent repair, until they became too unbalanced to fly.

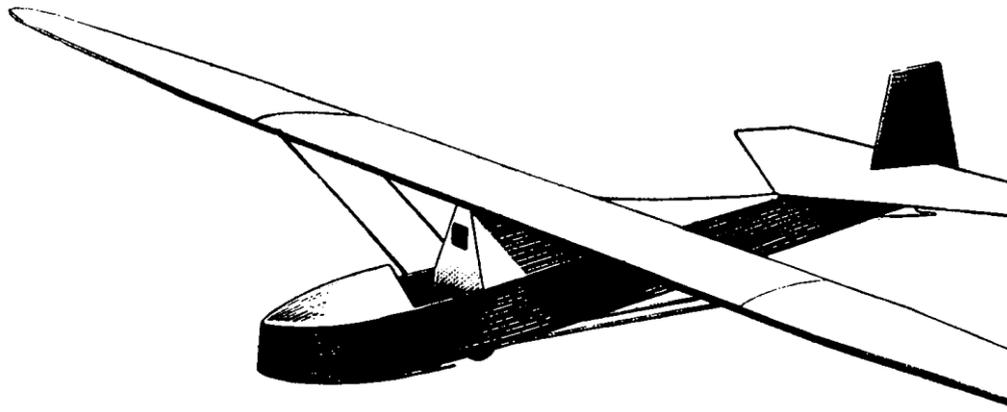
My next experience with Jetex was as a member of the Epsom District Model Flying Club. There were evening Club meetings, to which my grandmother's chauffeur would drive me in her Vauxhall car. The club had the idea that record speeds could be obtained with tethered model jets. This worked pretty well, and speeds rose as more and more in the way of wing and tailplane was whittled away in successive designs, until there was little more than a Jetex motor on a string. An account in the Christmas 1953 issue of Aeromodeller mentions that "Jetex speed jobs, R.T.P., were shown at Radlett by EPSOM D.M.F.C., V.Bolt's Jetmaster model turning in over 100 m.p.h. The clubroom is always full of this type of model..."

Presumably the models first shown off by the Selfridges display team were tethered, to fly round the pole. (I seem to remember similar displays in the Seymour Hall, not far from Selfridges.) So, full circle, you might say.



Photos of yours truly at a very young age should be no problem that I can see. By the way I am a little curious about the Durajet and am thinking of making a replica, maybe for a couple of the Derek Knight KP aero electric jets. **Does anyone have a plan of the Durajet?** Stephen





This flying scale model of the Royal Air Force intermediate training glider combines strength with good looks, to produce a most realistic performance glider. It should be of interest to the scale enthusiast, who, until now has not had any design of a medium-sized scale glider or sailplane.

In building this model, it was found that no really efficient and strong method of wing attachment could be made without having the centre section permanently fixed to the fuselage—due to the layout of the actual machine. The answer to this problem therefore was to have an attached mainplane, with plug-in outer panels. The centre section was conveniently designed to incorporate permanently fixed struts which help to add rigidity to the wings.

#### Fuselage Construction

The fuselage is made up of 1/8 in. balsa sheet sides, with formers 1 - 6 notched into them, which results in good strong construction which will stand up to rough handling on the flying field. Between formers 2 and 3 run two 3/8 in. X 1/8 in. bearers to accommodate the wing joint—these are built in flush to the sloped sides, and converge towards former No. 3. The fuselage backbone is cemented in the centre slot of former 3, and is fitted in, and cemented to formers 4 and 5, terminating at 6. The backbone is of 1/8 in. sheet and cut to a depth of 3/8 in.

The keel runs from the bottom of former 1, fitting into all the formers, terminating at No. 4. At the tail the converging sides are filled, top and bottom with 1/8 in. wedges (9). The bottom one takes the 18-20 S.W.G. wire skid, while the top one has part so placed on it—to which the fin and rudder are cemented.

The wheel housing is made of two additional 1/4 in. X 1/8 in. sheet supports, cemented to each side of the keel between formers 2-3. These are sanded to the contour of the keel—also a piece of 1/8 in. x 3/8 in. strip is added to the inside of the fuselage sides, which later will be drilled to house the 1/8 in. dowel struts, which are positioned 2 1/2 in. apart.

This section is now best covered with 1/16 in. sheet, when the struts have been securely cemented.

A central stringer runs between former 1 and 1A on the nose, and a weight box is built in forward of the cockpit. Sixteenth inch sheet fills the top of the weight box, whilst a shaped piece of 1/8 in. sheet is cemented in position for the bottom. The lid of this box can be so constructed as to fit in without cementing until the model has been trimmed.

The nose block is of solid balsa, or laminated sheet, and is sanded to its six-sided shape.

When covering the fuselage, it is best to cover the sheet sides also, to ensure a similar finish all over.

#### Wings

The 1/16 in. centre section of the wing is built up of seven “A” ribs, of which the two outer of each side are drilled to house the drinking straw plug sockets. The outermost spars are flanked by 3/8 in. x 1/8 in. sheet, into which the wing struts will fit. The outer sections are straightforward, with 1/4 x 1/8 leading edge and 3/8 X 1/8 trailing edge, in common with the centre section. Care should be taken in drilling the holes in the two “A” ribs of each outer panel, which will take the 1/8-in. dowel plugs, to ensure that they line up with the socket holes.

These dowel plugs should protrude 3 in., as well as passing through two spars—to ensure a firm fit.

The inner panel immediately each side of the centre rib of the centre wing section, should be covered on the underside with 1/16 in. sheet for added strength, as on a heavy wingtip landing it is this section which will take the stress. Also it is strongly advised to reinforce former No. 3 with an additional sheet of 1/8 in. balsa, to strengthen the fuselage/wing joint.

#### Tail

The tailplane, fin and rudder have no aerofoil section at all, except for the usual rounded leading edge and tapered trailing edge.

The tailplane is cemented to part 9, the forward point fitting into the step of the backbone; the fin and rudder are cemented to part 10, and the rear of the fuselage.

#### Assembly

Having covered the fuselage and the centre wing section, these two should be joined by cementing thoroughly, and fitting the 8 in. struts—having drilled holes at the appropriate angles in the fuselage sides and the centre section tips. The leading edge is set forward of former 2 by 1/4 in. The forward strut should join the fuselage at, or immediately behind former 2, and fit in the wing 1/4 in. from the leading edge.

## From Bryan Passey

Very often, when viewing the many photographs submitted by our friends in Switzerland I believe, but among the splendid gliders and powered models, one particular one stands out and that is the Graupner Kapitan, a small free flight biplane originally for diesel power .

This lovely model came into my life in 1957. I was stationed at RAF Buckeburg in Westfalia Germany at the time, and the local model shop was some way distant in Minden. Now this particular town was not the place to find yourself alone in as there were still many Nazi sympathisers living there, as was Obenkirken the nearest town, that was famous for its girls choir (remember the happy wanderer ). To go shopping in Minden for my modelling needs I was advised to take an escort, the biggest I could find, and never in uniform. But I needn't have worried, there must be something about the Aeromodelling fraternity that binds us, as once they knew of my interest they couldn't have been more helpful, especially the frauline behind the counter, but we'll skip that bit.

It was on such a visit to buy something or another that I was shown two new kits they had just received. Both were products of Graupner, the first one I was shown was a control line FW 190, (that long nosed version ) the other was the Kapitan. I would have liked to buy both but my finances wouldn't allow it, as I was saving for a new Triumph Tiger Cub that had been ordered from a Triumph dealer in Cologne, so my I chose the Kapitan. If I cast my mind back, it was quite expensive at around 30dm !

The build was straight forward with a beautiful plan and printed copy of the parts, and I still have them today. Trimming and flying the model was so easy with a Webra diesel up front Needless to say dethemalisers were not of the day in sport models, and I paid the price with a fly away.

Buckeburg airfield covered a huge area, and it was heart breaking to see the model disappearing towards Obenkerken. Lots of driving around didn't locate it and to go into the town and ask if anyone had seen the model would have been somewhat risky. A couple of weeks went by, then I had a call from the guardroom asking if I knew anyone who had lost a "toy" airplane. My hope was that it was my lost Kapitan, and this was confirmed when I saw the model. It would appear that someone had found it and tried to fly it. It must have been found among trees as the tissue was punctured in lots of places but an attempt had been made to patch up the holes with pieces of a Nazi propaganda leaflet--honest! The Webra diesel had been tried to be started using petrol by the smell of things, and the compression screw was screwed down so tight that the motor couldn't be turned over. But never mind, I had my model back and with no idea who found it. It was eventually recovered with modelspan and the motor rebuilt, where it continued to fly with ski's on for the winter. It stayed with me even with a new posting to RAF Laarbruch where it continued flying. When I returned to England 2 and a half years later I gave it to my old friend Neil Webb who I believe continued to fly it.

I noticed in the last couple of days an original kit for the Kapitan being offered for sale where it fetched £324.00 + postage. As previously mentioned, I still have the plan and printed parts for the Kapitan, nostalgia will probably get me building another quite soon.

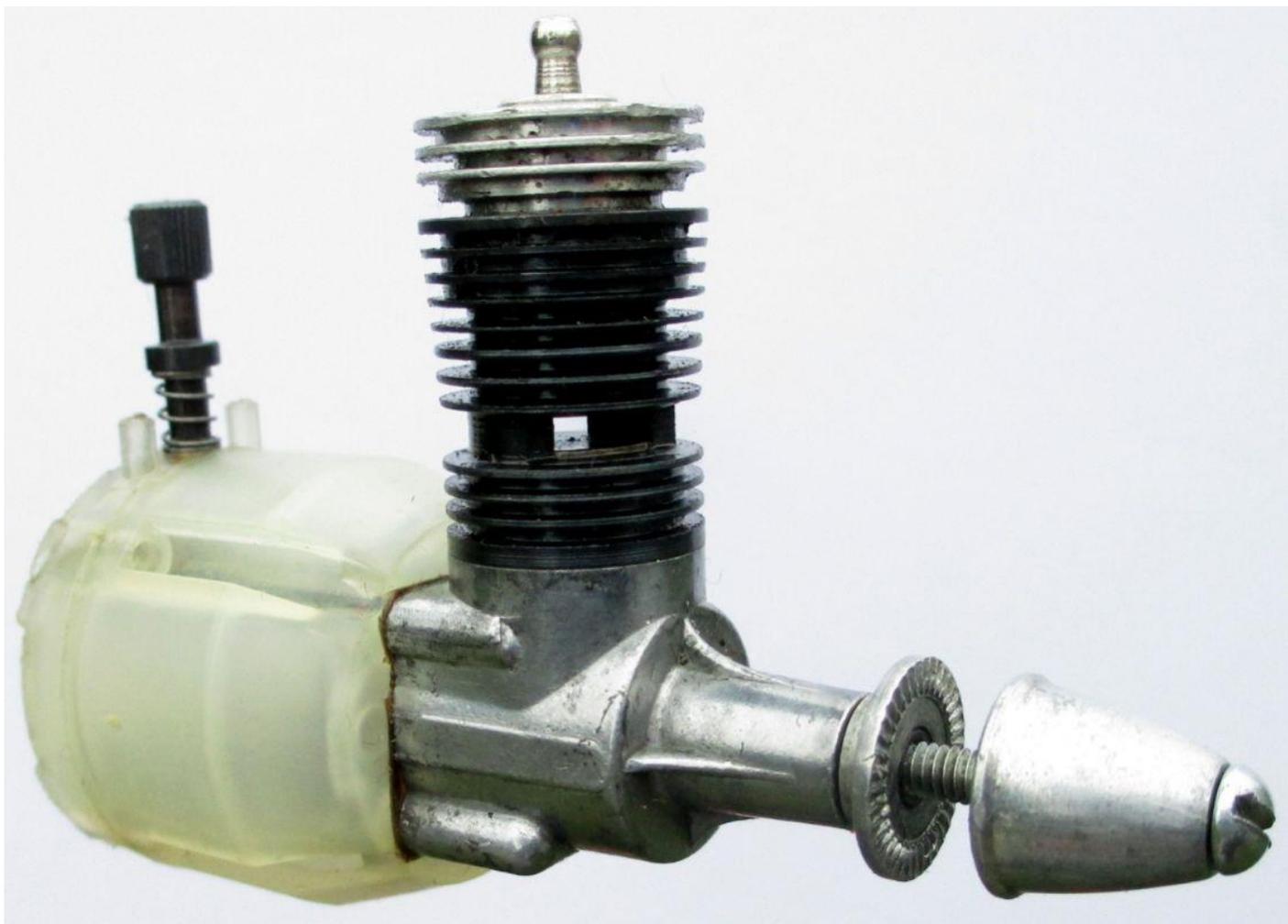
## From Bill Wells

### K & B Tornado 049 From Model Aircraft March 1961

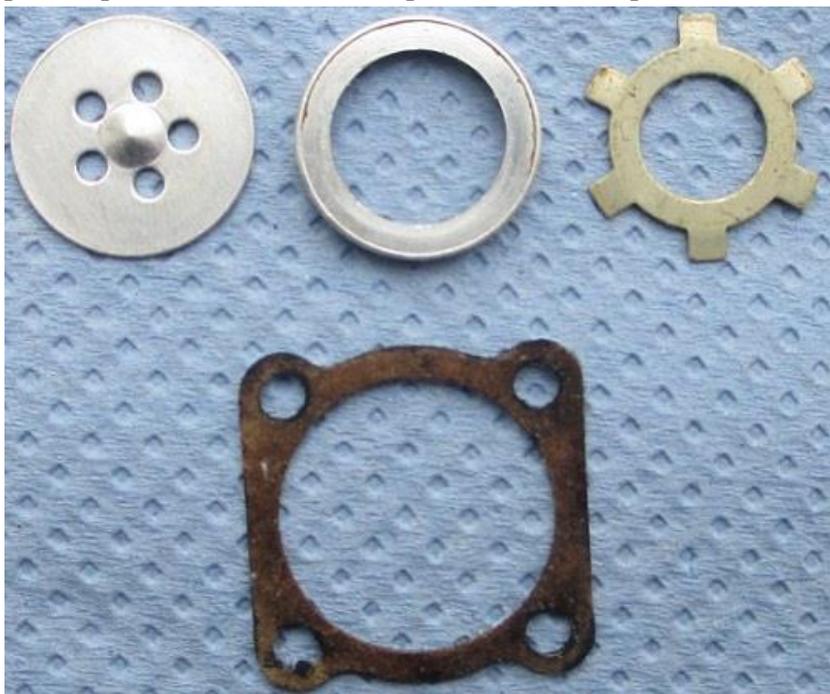
In the early 1960s there was a proliferation of ready-made plastic control line models. Model Engine firms realised there was a ready market especially for 049 size engine. Cox brought out a slightly down rated version of their Babe Bee, Wen Mac (McCoy Testors) also made engines for this RTF bonanza and perhaps a little less known this side of the pond, K&B got in on the act with their Tornado. The Tornado was fitted to Aurora RTF models so became an Aurora Tornado 049 (stamped on the crankcase) it came out in 1960 and was very much on the lines of the Cox Babe Bee. It featured a ball joint little end, a customised glow head, reed valve inset in the integral tank. The tank formed a radial mount for the engine as well as the needle valve assembly. This arrangement allowed the complete power unit to be attached to a plastic model with just four screws. The tank is made of some sort of semi-clear plastic which enables a check of the fuel level. The big disadvantage of this is a hefty impact might break the tank which would disable the engine. In the case of a plastic model if the impact had been that severe it would most likely destroy the model anyway! If the tank was exposed to sunlight over a prolonged period it may well degrade and render the engine unusable.



The engine shown was bought from a trader at Old Warden for £15! My thoughts were the glow head plug might be history or the reed valve passed its sell by date. Luckily the Glow head was OK. The widening venturi tube terminates and is capped by aluminium disc with five holes around a small domed centre. The reed must have been a ring of material pulsing up and down over this disc, covering and uncovering the five holes. This doughnut shaped membrane was held in position by being trapped between two pressed together light alloy rings. This double pressed together ring being held in by a large star alloy washer. The reed had rotted away leaving an aperture too wide to fit a Cox Reed, so I utilised a redundant



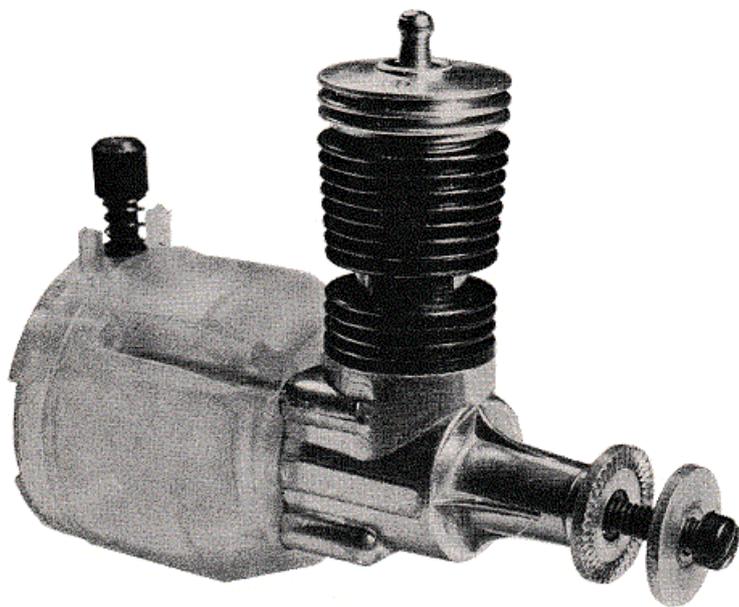
Cox plastic Reed Valve holder cut down to fit inside the Tornado tank aperture. This preserved the original exterior of the engine and tank. Once the needle valve setting has been found the engine is easy to start hot or cold. The problem of a finger choke prime is the air inlet is a slot 90 degrees to the needle on the right side of the tank but up close to the mounting face. The easy way to prime the engine without flooding it is put the piston over the exhaust port dribble a drop of fuel on the side of the piston and then it usually starts



first flick. Like the Cox engines it likes a bit of nitro in the fuel. As on some of the Cox engines made for plastic models there is only one internal induction flute, see my article S & T No 91 June 2014 pages 25-26. A muffler on this engine is not a good idea because it has sub-piston induction. A tip for removing the old fuel tubing inside the tank. First make sure there is NO FUEL present in the system (obvious fire risk), the tubing will be rock hard, brute force will break off the plastic fuel nipple avoid this by softening the tube using a hair drier. There is a very small diameter close wound spring inside the fuel tube to prevent the tube kinking when curved back on its self. To remove the spring use a small rod that fits inside the

plastic tubing then warm the tube with a hair drier until spring can easily be pushed out. Avoid pulling the spring (stretching) unless it is moving freely.

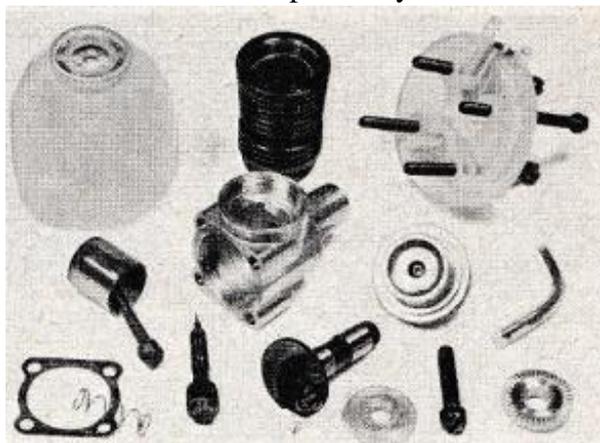
It seems incredible especially after 60 years that this mass produced engine partly constructed of plastic could still be used on a control line model. The pictures show the engine with a spinner which may well be from a Cox engine. The gasket between engine and tank is interchangeable with Cox Babe Bee tank gasket. What I am trying to say is it may be possible to put a Cox tank or back plate on the engine if the tank is damaged. I have not checked fits. I am just saying it might be possible if you have a Tornado with a broken tank. The mounting bolt spacing is the same width as the Cox but there is a height difference, the Cox being much deeper so the engines cannot easily be interchanged on a model. This particular engine is surprising clean and in good condition it must have been kept in a draw or box who knows? With a clear tank and a bit of experimentation it could be used on a free flight model. The long recesses in the tank for the mounting bolts would make a gouged screw head a bit difficult to remove. Like most small American engine it likes a bit nitro in the fuel.



### **K & B Tornado 049 From Model Aircraft March 1961**

From time to time, an engine is received for test which, in some particular way, proves outstanding, perhaps to the extent of setting a new standard for subsequent comparison. Such an engine was the K & B Tornado 049, for, out of the hundred of model engines which we have handled, we have never encountered one which is simpler to start than this American 0.8 c.c. glow motor. In fact, we are sorely tempted to suggest that this engine could justly claim to be the world's easiest flick-starting model engine to date. Certainly it is just as quick starting as the better starter-equipped beginners' engines.

Only by reason of its inherent easy starting qualities, in fact, did the Tornado 049 get into production at all. The engine was designed, not for the general model market, but to a rigid specification laid down by the Aurora Plastics Corporation, who wanted an engine for their then impending entry into the ready-to-fly toy field: an engine that could be guaranteed to respond to totally inexperienced handling without the aid of starting devices. It was only after the engine had been built in several tens of thousands for these plastic models and after the K & B Allyn Company had become the K & B Manufacturing Corporation and a subsidiary of the Aurora Plastics Corporation, that the Tornado 049 was released as a separately available item for the model market at the end of April last year.



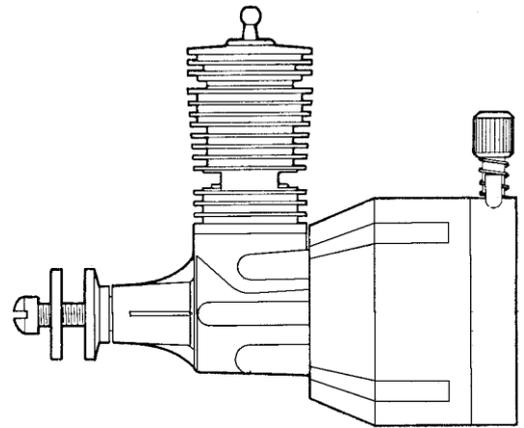
One may ask, at this point, what is the particular brand of magic that makes this such an easy starter. Obviously, there are several factors which are conducive to easy starting in any model engine: good piston seal, suitable cylinder port design, etc., but if any one feature of the Tornado 049 requires special mention, it is the system of intake valving used. This, known as Flex-O-Valve" is a variation on the reedvalve principle and, like the reed-valve, is operated by crankcase depression and compression as the piston reciprocates.

Construction, however, is quite different. As on a number of small American glow engines produced during recent years,

notably the Cox "Pee-Wee" and "Bee" and more lately, certain revised Herkimer Cub models, a self-contained fuel unit is employed, comprising tank, carburettor, induction tube and admission valve. In the Tornado, the body of the unit is moulded in two parts from a special material, 100 per cent, inert to all fuels, similar in appearance to nylon but having a higher tensile strength, and better resistance to heat. The rear part, or backplate, carries the needle-valve in an inserted brass bush.

This is joined to the front, or tank section which carries an induction tube through its centre, emerging in a central boss at the front which plugs into the rear of the engine crankcase. This boss carries the valve parts, consisting of a perforated aluminium disc, the valve diaphragm and a keeper. The disc forms the valve seat and has five 1/16 in. dia. ports spaced around a shallow cone in the centre. The valve diaphragm is of a plastic material, 3 thou, thick, with an aluminium rim and has a 7/64 in. dia. hole in its centre. This hole is scaled by the conical centre of the valve seat when crankcase pressure is positive, the diaphragm scaling off the five small ports at the same time.

When crankcase depression draws the diaphragm away from the seat, fuel mixture is admitted through the ports in the valve seat and thence through the hole in the centre of the diaphragm. The remaining parts of the engine are fairly representative of modern U.S. small engine practice and are detailed below.



#### Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged, two-stroke cycle, glowplug ignition. Automatic diaphragm valve induction. Flat crown piston.

Bore: 0.400 in. Stroke: 0.394 in.

Swept Volume: 0.0495 Cu. in. = 0.818 cc

Stroke/Bore Ratio: 0.985 :1.

Weight: 1.7 oz. including integral fuel tank.

#### General Structural Data -

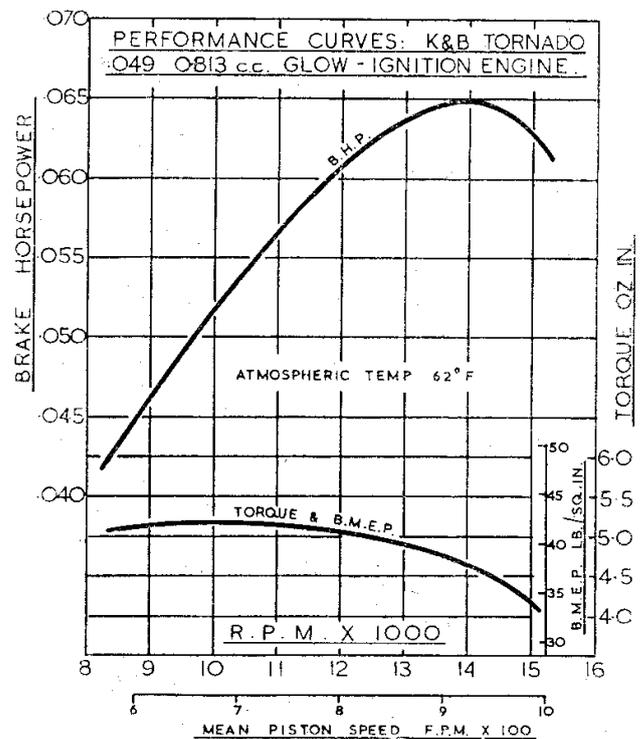
Pressure diecast aluminium alloy crankcase with plain unbushed main bearing. Hardened, counterbalanced pattern crankshaft, with two 7/32 in. dia. journals, 7/64 in. dia. crankpin and splined and internally threaded at front to receive alloy prop driver and prop retaining screw. Hardened steel connecting-rod, ball-jointed to hardened skirt piston via swaged socket in under side of piston head. Blued steel cylinder with integral fins, twin opposed exhaust ports and single internal transfer flute and screwed into crankcase. Alloy screw-in cylinder head with integral glow filament. Translucent, large capacity moulded fuel tank and back plate unit with integral carburettor unit and intake valve assembly and secured to crankcase with four screws. Four-point bulkhead type mounting via fuel tank.

#### Test Engine Data

Running time prior to test: 1 hour. Fuel used: KK-Record Soper-Nitrex (30 per cent. nitromethane).

#### Performance

Some indication of the remarkable starting qualities of the Tornado will be apparent when we mention that, after setting up this engine for the first time, priming it and connecting the battery leads, it started on the very first flick of the prop. This ease of starting continued throughout the following tests. For hot restarts it was not even necessary to choke the intake (which, incidentally, is fortunate, since it is not too easy to seal off the narrow intake channel in the backplate), a single flick being all that was necessary to get the motor into its stride again.



On some props it was found that, if the needle was closed down too far, the motor would begin to slow, then cut abruptly before the needle could be opened up again. On props best matched to the engine output however, such as the Top Flite 6 X 4, this did not occur. The only other slight bother experienced (one common to most non-rotary valve engines especially on light loads) was a tendency to start in the reverse direction. This could be counteracted by stopping the motor and flicking the prop the other way.

Torque tests of the Tornado revealed an output appreciably exceeding that generally associated with beginner class Half-A models and a maximum of just under 0.065 b.h.p. at 14,000 r.p.m. was recorded using Record Super Nitrex. A high nitromethane content fuel is specified for the engine and Super-Nitrex was chosen as being the nearest British equivalent to the K & B Supersonic 1000 recommended. This, of course, gives a slightly flattering comparison with the performance of recently tested British 049's using medium nitro content fuels. Brief checks of the Tornado indicated that, on these latter fuels, the Tornado's output would drop to about 0.058 b.h.p.—which, however, is still above average.

To sum up, we would rate this as near to the ideal beginner's engine as anything yet offered anywhere and wonderful value at its U.S. price of \$3.95.

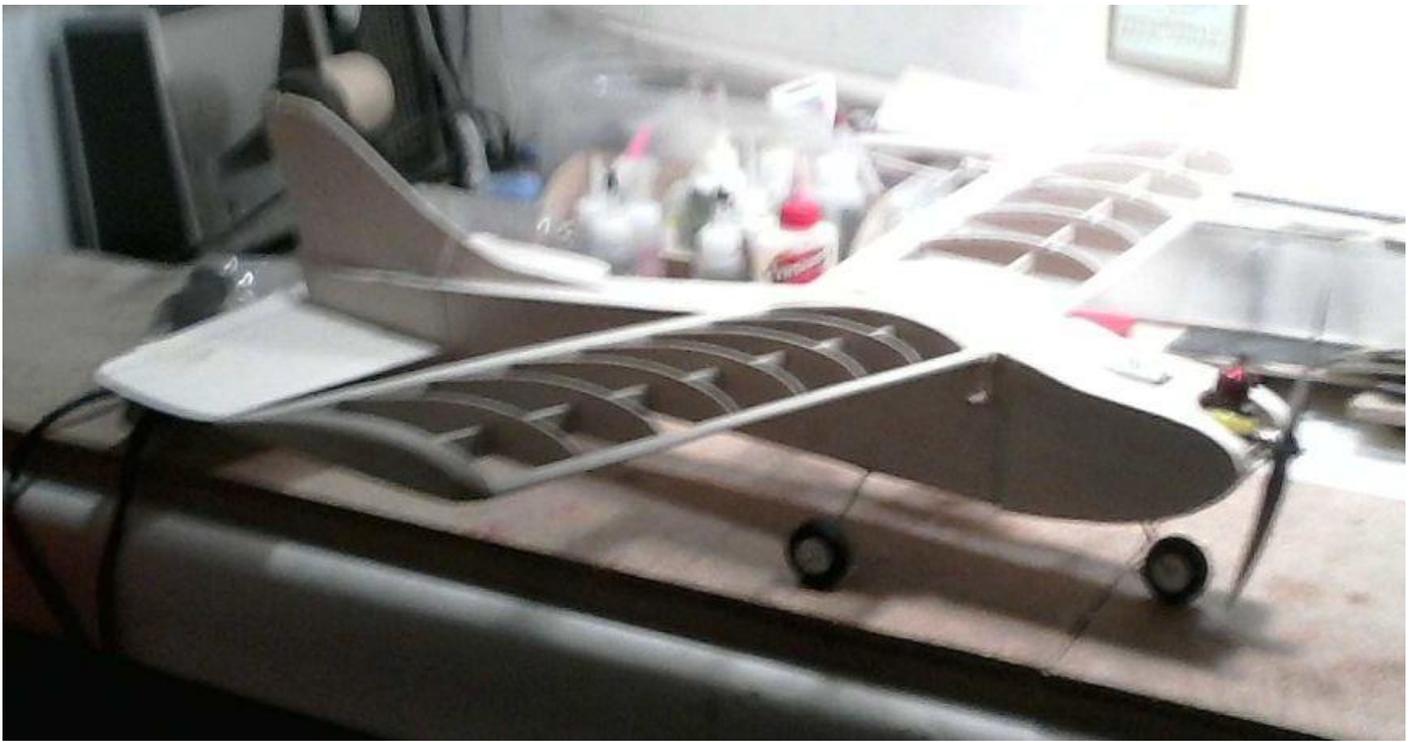
Power/Weight Ratio (as tested) :- 0.61 b.h.p./lb.

Specfic Output (as tested) : 80 b.h.p./litre.

## From Jürgen

Hi James sending you some Indoor and outdoor Pic,s of models ricently built.





Photos sent by Peter Renggli taken at the 2017 MG Bern Antik Flugtag.  
Photos by Urs Brand and Peter Ziegler.









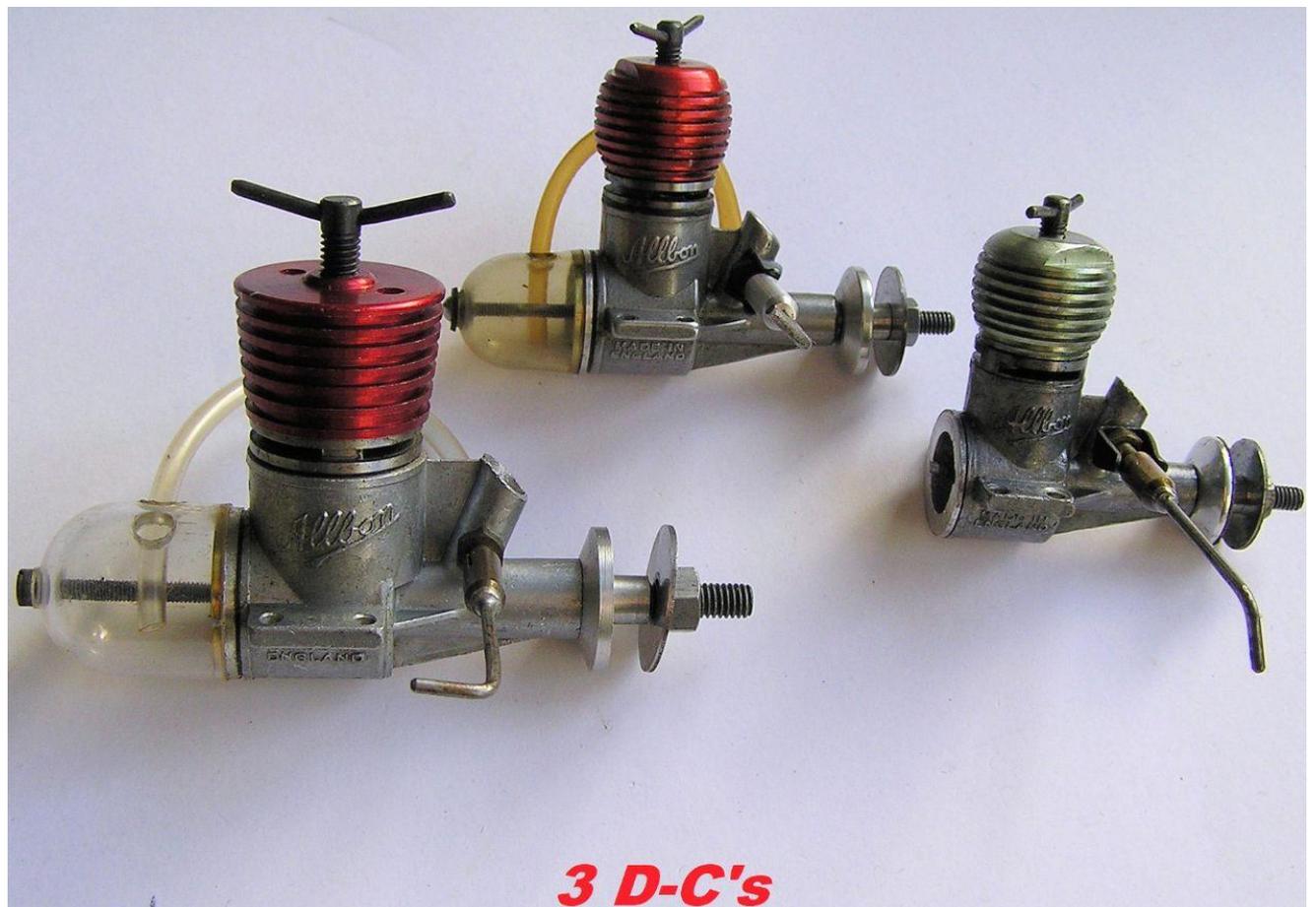








Peter Scott's twelve days of Christmas resulted in a few requests to see full photos if possible well here are some more next month





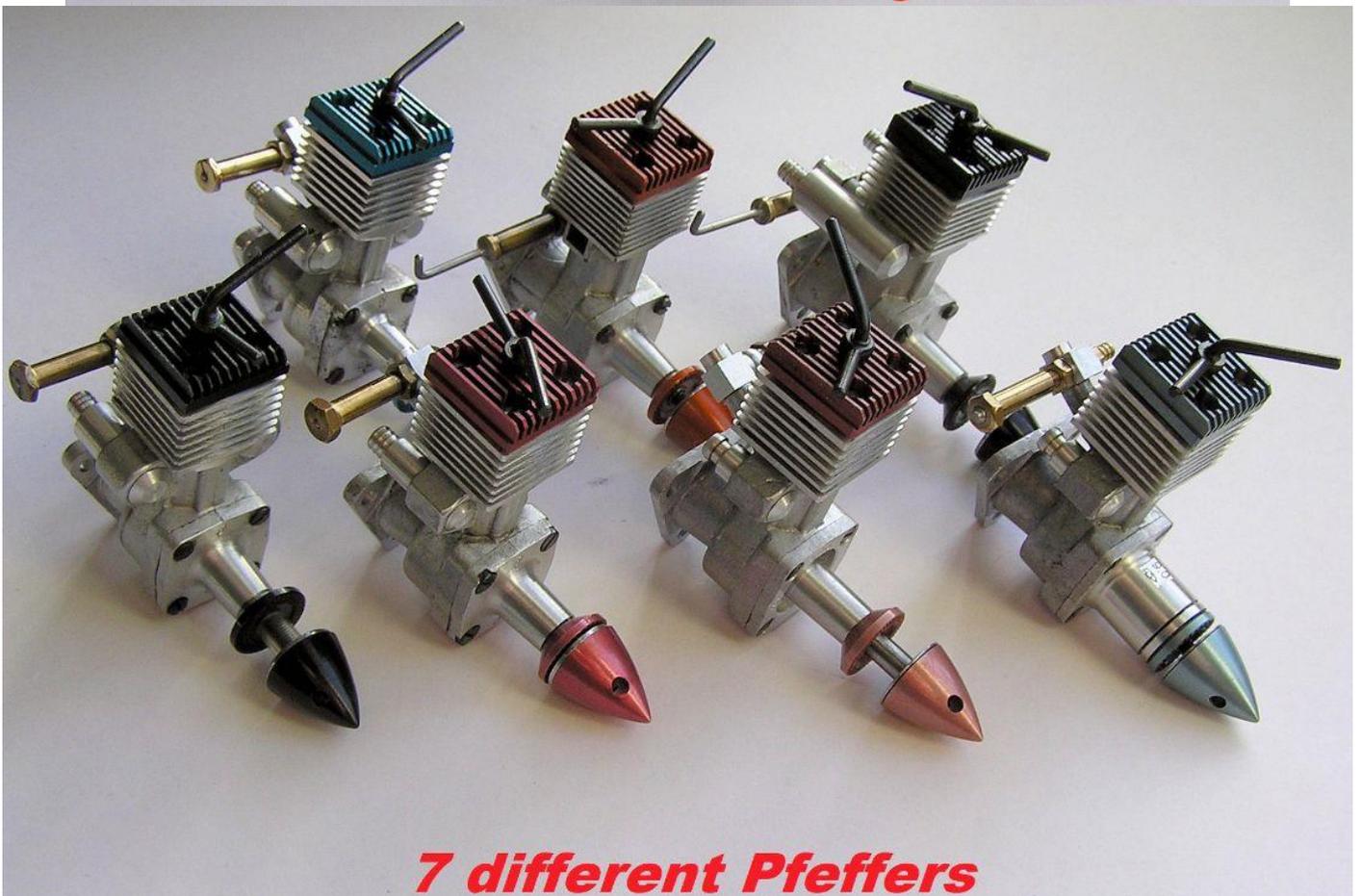
**4 Kalpers**



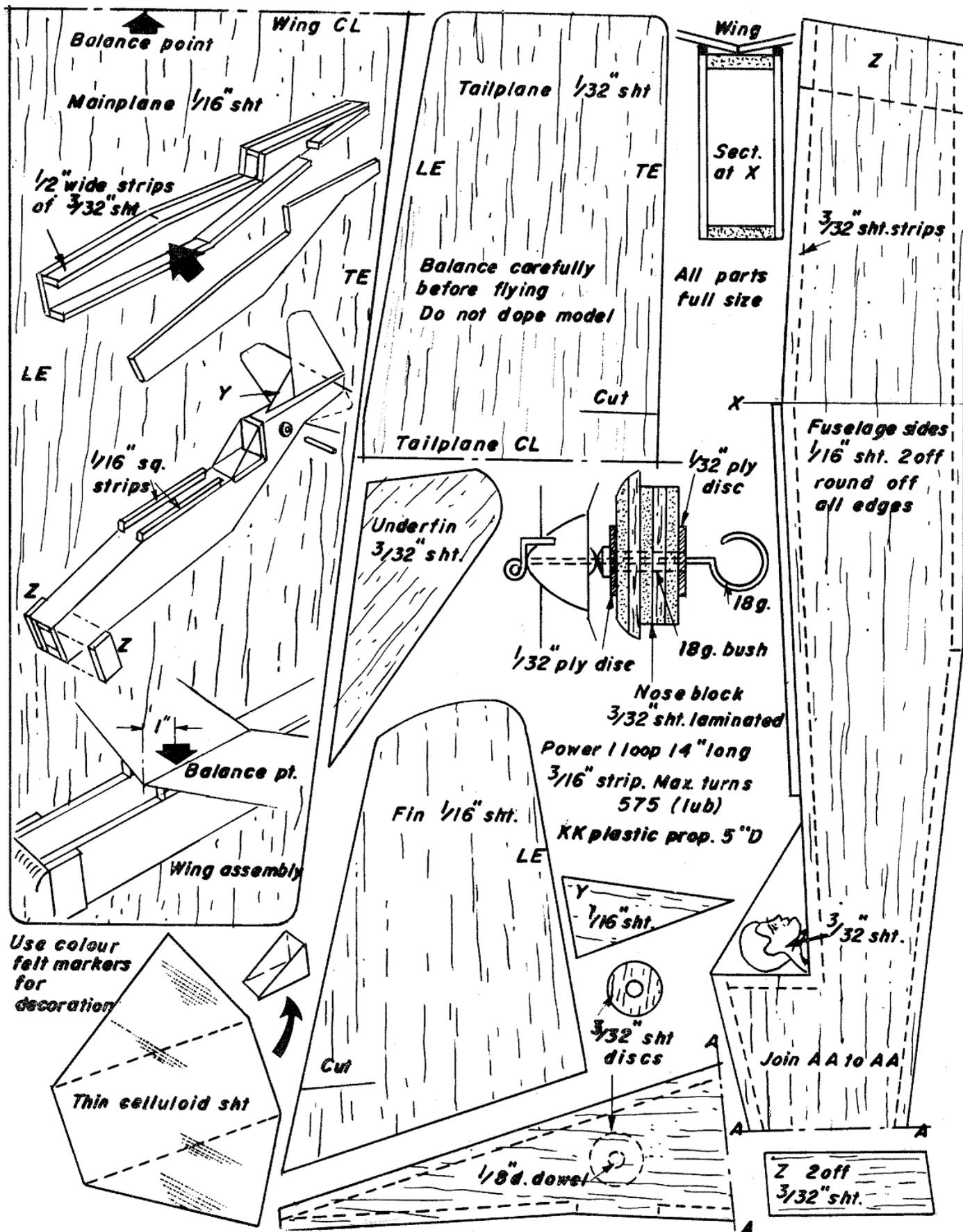
**5 old Mills**



***6 E.D. Babys***

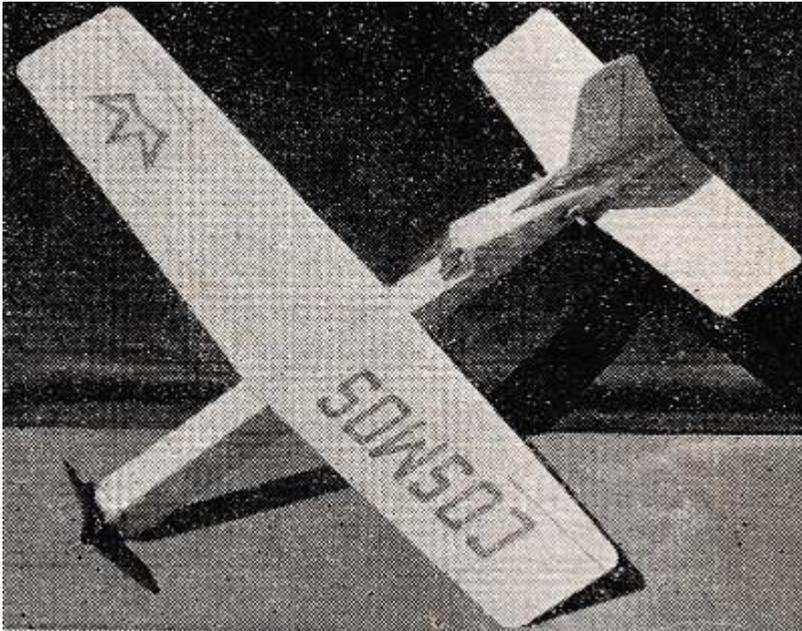


***7 different Pfeffers***



Cosmos by Ray Malmstrom from Model Aircraft March 1963

# Ray Malmström's MODEL n TIP



## THE RIGHT GRADE OF BALSAWOOD

Choosing the correct grade of balsawood for your model is far more important than most aeromodellers realise. Balsawood is usually sold in three grades—Hard, Medium and Soft. For small rubber-powered models, quickie “sheet models”, and small scale jobs MEDIUM grade is the choice. Hard is for bigger power and R/C models and C/L jobs. Soft is used mainly for covering fuselage structures and wing leading and trailing edges. Using hard balsawood where the designer specifies medium grade, can ruin the balance, put up the weight and seriously affect the flight performance. One well-known balsawood manufacturer colour-codes “the ends” of his sheet and strip. Green for medium, red

for hard. Pressing the balsawood between finger and thumb affords a rough and ready guide.

Soft compresses easily, medium offers a little resistance. Hard can be compressed hardly at all. Use medium grade for Cosmos, the snappy little all-sheet job herewith. Have it ready for that next club meeting.

Incidence and down thrust are built-in. Just carefully balance as shown. On tests my original Cosmos climbed almost vertically—has a good glide too ! Get out that MEDIUM balsa and help yourself to some real get-up-and-go “flying right now.”

## 2.4 conversions (or ignorance is bliss)

I've put this article together not just to bore you all but as a filler necessary due to the inclement weather in Dorset and no doubt everywhere else judging by the news of fires here there and everywhere or flooding, this I guess has had a knock on effect that actual aeromodelling when it can happen outside is a rushed grab the chance type of affair hence not many photos or things happening, well as far as I'm concerned. That's another paragraph filled.

Back to the subject as no doubt you will not remember a few issues ago I was blowing my horn about converting several Digifleet transmitters and couple of Futaba to 2.4 ghz from 35 mhz using ther Frsky DHT hack module. Surprisingly, to me, the system actually worked (surprise due to me not being electronically savvy) and I now hardly ever use the Spektrum stuff I have in favour of the conversions. It was OK converting the above however I have some older Fleet Tx's going back to latter 70's and early 80's converting these whilst not out of the question was a bit iffy due to black wire and messy stuff to the edge of PCB boards which put me off trying to cause flashes and bangs. Before anyone points out I'll say yes the batteries were removed when I got hold of the stuff, the spoiling by gunge accumulation had already

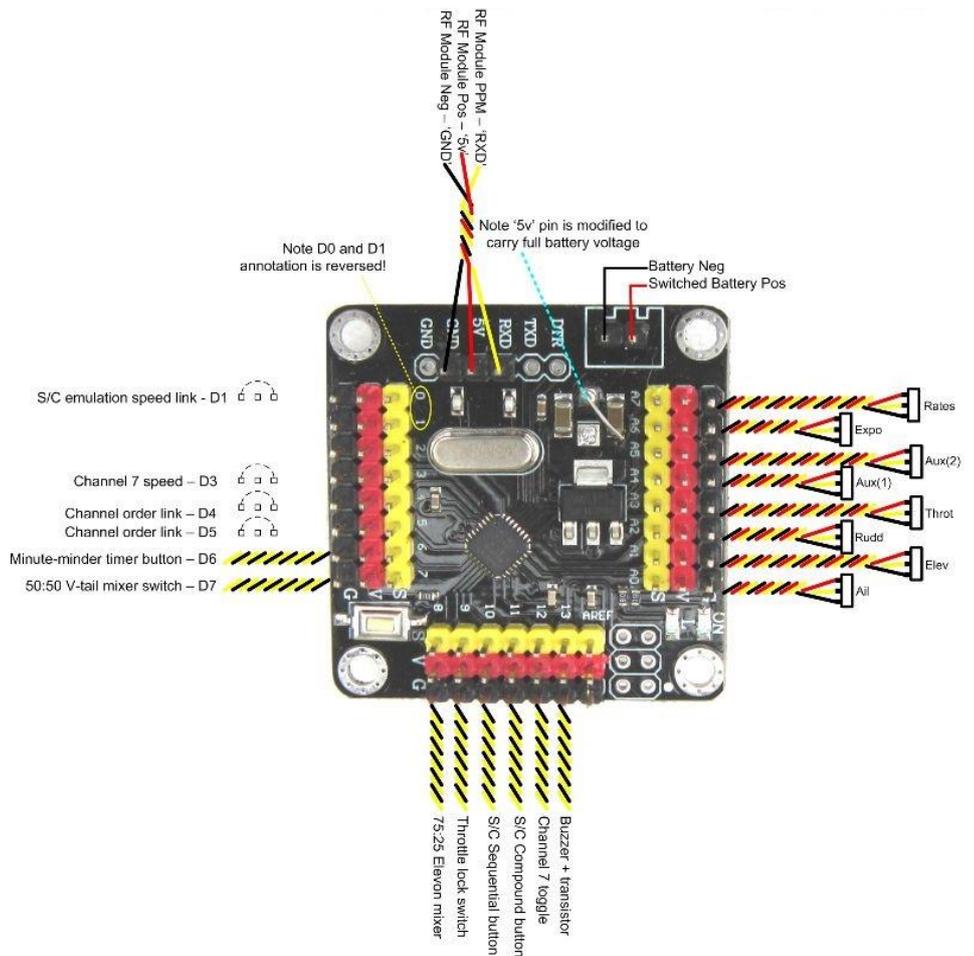
occurred. The items were all happily stored away in the loft and I was too lazy to get them down and dispose of them (there were 26!) and whilst as nice as they look (beauty is in the eyes of the beholder) they were useless and likely to remain so for ever and ever. Wrong again.

Well that all changed when Andrew Squires told me of an article in which Shaun Garrity had written about 2.4 conversions, after reading what a revelation my eyes nearly popped out of my head and a big smile appeared, could I get the plder Tx's working again?

Phil Green has for a few years been using a DIY- more Arduino based board as an encoder having designed things and written the code. All information being on website details I'll include later. Not actually knowing anything useful about electronics I of course had to have a go and possibly sacrifice aforementioned transmitters in the process. That was fine my only concerns were causing another flash bang and setting fire to the house or welding my pinkies to a PCB, you may snigger but it doesn't half hurt, for days.

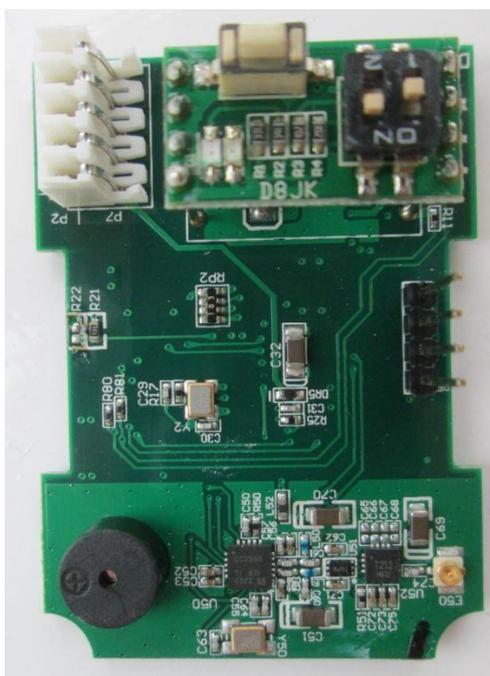
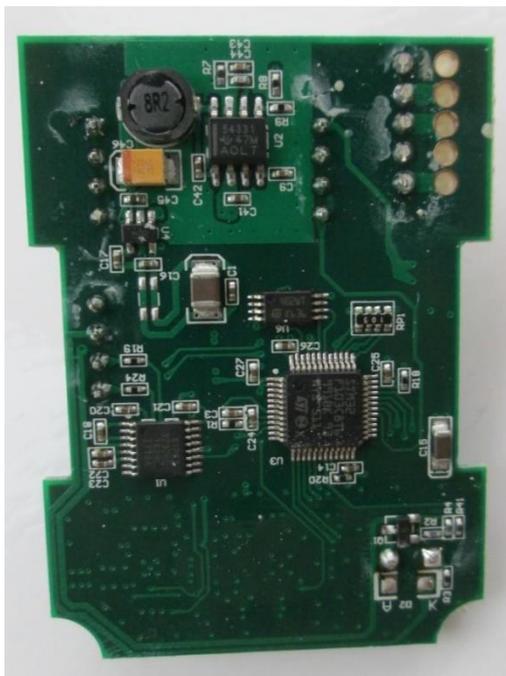
So there I am ordering all the bits and pieces and I was shocked at the cost the diy-more board were £2.65 each free P&P and of course switches, LEDs, resistors etc etc were bought by the hundreds for next to nothing. Only pain in the backside was the boards come from China, yes I know I was surprised too, and wait for delivery a long time up to two and a half months, I guess they were on the slow boat from China. Of course I could have paid postage but at an estimated £50.00 I shied away. I daresay you can get them quicker and cheaper postage if you try. Things were put on hold until Phil very very kindly sent me a board so things could commence. At time of writing the project has just started so you will have to wait a month or two to see what happens in meantime things are at this stage:-

*This board is tiny 4cm x 4 cm. As you can see it is 7 channel, rates, expo, timer, V tail mixer, throttle lock, servo reverse elevon mixer you'll have to go to the website for all the details but £2.65 + components a bargain. The diagram was taken from the website.*

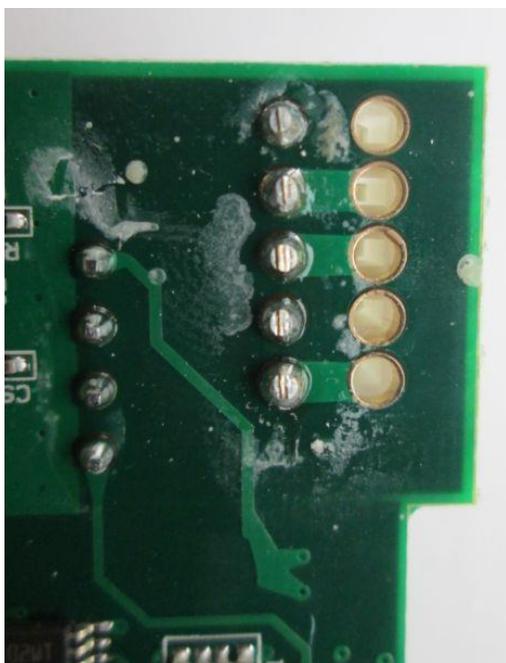


You will require a RF board I use the Frsky hack board, DHT, but of course these are now discontinued however I believe others have used salvaged boards from Tx's that have died there is mention of a DX6 RF

bits being used. DHT frsky modules are all but impossible to get hold of unless you pay a fortune, looking at the Frsky website it seems they are discontinued. Whilst I have a couple I decided to send off for a Frsky DJT module (for JR Tx's) and see if that can be used it looks like it can, I'll find out in next few days, might buy a fire extinguisher just in case.



*The DJT module in bits. Module innards removed from case reverse side and topside shown. Picture right the white block is the connection point to a JR transmitter which already has a module facility. Picture left is shows the five holes to top right where the white block is soldered on reverse side. The PCB measures 4cm x 5.8cm so quite small.*



*This photo shows a close up of the top right. Top hole is aerial, ground, positive, 6vdc and bottom PPM. Interestingly as far as I can see the aerial and 6v go nowhere? I'm hoping that connecting the positive to a supply in this case will probably be a 2S li fe 6.6v\* via the diy-more board, negative to negative connection and of course PPM to PPM will make things work. The board diagram below shows where connection is made.*

*Why use Li fe well I use them for receivers linked up to a UBEC, is that right I'm getting out of my comfort zone using electricrky terms. I bought a few 700mah and 1100 packs a year or two ago they only cost about £3 then.*

*If anyone has experience of these modules and eletrics in general and can see a glaring blunder in my lack of knowledge with likelihood of a flash bang moment don't bother to tell meit's be too late just send a get well soon card.*

It's well worth looking at the "mode-zero" site as it has all the info and far far more all of which is extremely interesting its not all about RC. Start with these and work your way around the site from the home page.

The DJT module Came from RC Life down in Cornwall. They sell Frsky bits and pieces, give a good service that includes keen pricing and reasonable P&P you certainly won't feel ripped off.

<https://www.rclife.co.uk/>

The mode-zero is as below and the whole site is really interesting with articles and discussions not only restricted to RC but a variety of model aeroplane subjects e.g. vintage engines etc etc a must for anyone to take a look at.

<http://www.mode-zero.uk>

<http://www.mode-zero.uk/download/file.php?id=4328>

<http://www.mode-zero.uk/viewtopic.php?f=27&t=844>

<https://www.youtube.com/watch?v=kywaMAOaD1M>

[https://www.youtube.com/watch?time\\_continue=40&v=4I9uHY7qV60&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=40&v=4I9uHY7qV60&feature=emb_logo)

My thanks go to Shaun Garrity and Phil Green who between them have given me something else to diddle around with and put to use old redundant each converted Tx having a new lease of life.

Last point before I'm asked why go to all this bother when you can buy equipment so cheaply well simply really its great to be able to use these old Tx's and feel the solid nature of them and positive feel of the sticks and keeps these old brands dropping out of memory, they also compliment older style models. I'll have one vintage model to each converted TX and thoroughly enjoy flying along with FF and C/L models.

One day later when I gave in to urge to do more messing around when I should have been doing other useful things the following progress was made.

Couldn't help trying out the DJT module despite having no time however I removed the DHT module from another converted Tx and wired up the DJT in its place and miracle of miracles switched on, bound to Rx and moved the sticks and all worked albeit at a range of 3m (long range test to be carried out in due course and by reducing power using the module FS switch) so as far as I'm concerned the DJT modules can most likely be used although this has yet to be tried and confirmed either way. One benefit of the DJT being the bind button Rx selector (Between telemetry and non telemetry) are attached to the board so all can be kept together within the Tx case to bind to Rx or change Rx selector just remove back of Tx thereby no need for installing a separate switch and button to Tx externally. In my case after setting up the single model they'll never need to be used again.

If you have a go at conversion make sure all is functioning properly before flying as my findings may be a fluke and not repeated by others.

Here is what I did as regards connections and how I'll use finally.

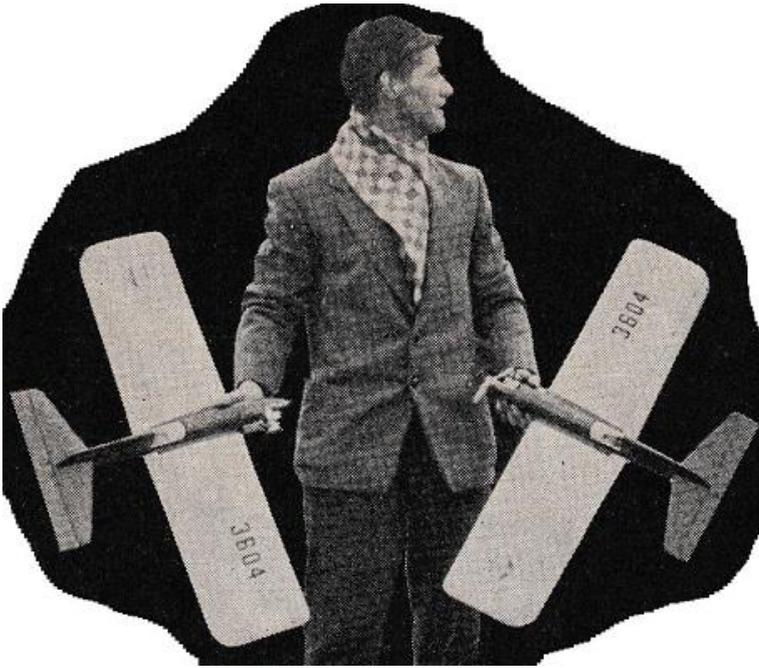


*Here is lead with bared end to modeule and other to install into the encoder board. The free ends have been soldered to make semi rigid.*





## Super Chopper a combat model for 2.5 – 3.5 cc motors by R Gordon from Model Aircraft July 1963



Developed from a 1.5 C.C. Stunt model which was very manoeuvrable, fast and intended for 1.5 c.c. combat, the first Super Chopper was entered in a club contest which it won. Last year it won three out of five club and local contests and a Super Chopper, built and flown by one of our clubmen, took the "Brian Trophy" from the Five Towns M.A.C. in February of this year. About eight Super Choppers have been built for the present season and more are on the stocks to allow for the inevitable "wastage."

The kind of model I had in mind when the plans were drawn up was one that would be smooth to handle, have the speed of a Team Racer turn as tightly as a big stunter and have the strength of a good Combat Wing. I think that Super Chopper fills this specification as closely as possible. The rather thin airfoil

and small wing area give good level flight speed

and the use of wingflaps enable the model to make sharp smooth turns. The only drawback to the design is, of course, the comparatively complex construction, but if you want a model which will leave the "Wings" standing, this is it.

### Construction

It is advisable to use a good resin glue, not Balsa cement, for all ply and hardwood joints. The wing is built first over the plan and bellcrank, leadouts and flaps fitted. It is then covered with nylon and given one coat of dope. The fuselage sides are now made as shown on the plan. This method of bonding ply to balsa is easy and the result very strong. The sides are slid over the wings, then the engine bearers and formers are added. A good joint is essential between the fuselage sides and the wing. Now cement the tailplane securely in place and connect up the elevator horn making sure that the elevator and wing flaps are both neutral. Add the formers, fuselage bottom and top blocks, install the engine bolts in place, then glue the cowl blocks to the bearers. Carve the top and cowl blocks to shape, sand fuselage and add celluloid windshield.

Cut away the outboard fuselage side to install the fuel tank which is secured by Araldite. Some Super Choppers have been built with a smaller tank enclosed within the fuselage, but one pit stop in a 5 min. combat joust is required if this type of tank is installed.

Give two more coats of dope to wing, two coats of sanding sealer to the fuselage and tailplane, followed by two of colour dope and finish whole of model with a coat of fuel proofer. Super Chopper will fly "hands off," and will hold the top of the circle in the strongest winds, standard P.A.W. 19Ds were used in the originals, but performance with a tuned motor would really be great.

# Dens Model Supplies



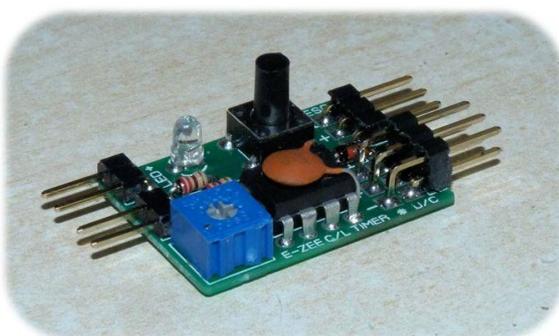
**CL Kits including the ACE + Plug & Play Electric CL Starter Kit...just add glue and a battery !!**



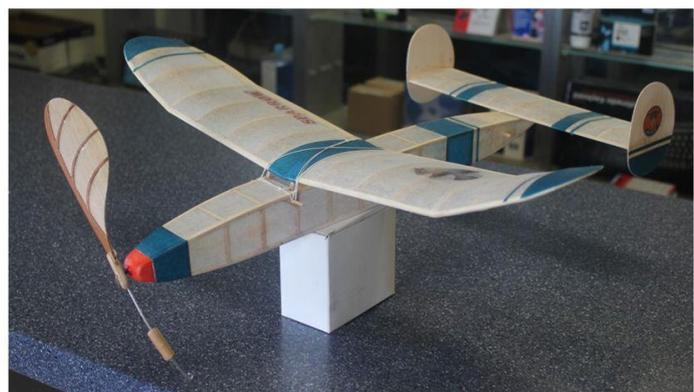
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[www.densmodelsupplies.co.uk](http://www.densmodelsupplies.co.uk)  
Or phone Den on 01983 294182  
for traditional service**

*Shilton events 2020 from Boycott Beale*

*Hi all. These are the dates for our fly ins*

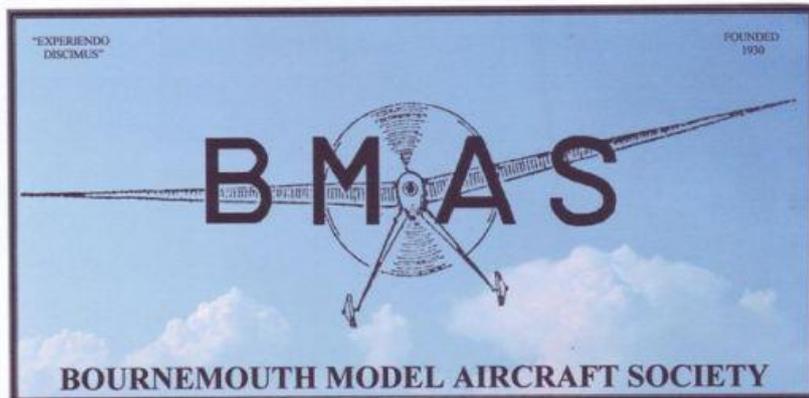
Weekend ~ 16<sup>th</sup> 17<sup>th</sup> May vintage

11<sup>th</sup> 12<sup>th</sup> July E soar

12<sup>th</sup> 13<sup>th</sup> Sept vintage

As before any fixed wing electric models on the Saturdays with the Sundays for the designated model class.

Campers / caravans as before welcome on site from mid-day on the Fridays till Monday.



**BMAS Indoor**  
**Flying 2020**  
**We Have Moved -**  
**Again!**

Unfortunately the venue at Boscombe was not a suitable location for a number of our regular flyers and so we have re-located back to our old venue of The Allendale Centre in Wimborne. Flying sessions commence again in January. Below are the dates for the first half of 2020.

Tuesday 25th February

Tuesday 24th March

Tuesday 28th April

Tuesday 26th May

Sessions will be 7.00pm to 9.30pm

Fees will be: - Flyers £6 Juniors £3 Spectators £1.50

Hope you can make it. Regards, Keith Fredericks

# FLITEHOOK

Indoor Free Flight Meeting West Totton Centre, Hazel Farm Road, Totton, Southampton. SO40 8WU

Contact: Tel. 02380 861541 E-mail [flitehook@talktalk.net](mailto:flitehook@talktalk.net)

Sundays 10.00a.m. to 4.00p.m. Café on Site

Flyers must be BMFA Members Flyers £8 Juniors & Spectators Free

12th January 2020

9th February 2020

8th March 2020

12th April 2020

## INDOOR F/F MEETING



Waltham Chase Aeromodellers, in association with South Hants Indoor Flyers, are pleased to announce the continuation of the Indoor F/F Meetings held at the Main Hall at **Wickham Community Centre, Mill Lane, Wickham, Hants PO17 5AL**. These meetings will be held on the following dates:

**Tuesday, 3rd. March 2020**

**Tuesday, 7th. April 2020**

**Tuesday, 5th. May 2020**

**Tuesday, 2nd. June 2020**

**Tuesday, 7th. July 2020**

All meetings will run from 7.00 p.m. to 10.00 p.m. The Main Hall at Wickham Community Centre is particularly suitable for indoor free flight models of all types, with a ceiling free of obstructions. Tables and chairs will be available in the hall, the organisers are always grateful for assistance with moving furniture. A hot drinks machine is available on site.

Admission to the meetings will be £5 for fliers and £1 for spectators, whilst accompanied children will be admitted free. Junior fliers will be charged as adult spectators. Fliers will be required to show proof of insurance. No R/C models may be flown at these events.

Flitehook, who carry a large stock of indoor models and accessories, will attend many of the meetings.

Waltham Chase Aeromodellers look forward to welcoming all indoor F/F fliers to these events.

For further details please contact:

Alan Wallington, "Wrenbeck", Bull Lane, Waltham Chase, Southampton, Hants. (Tel. 01489 895157)

(e-mail: [WCAero@outlook.com](mailto:WCAero@outlook.com))

or see our web site: <https://wcaero.bmfa.org>

## 1939 Korda Wakefield

Ref: ot-39kor

A parts kit for the famous 1939 Wakefield Winner.

The Belair kit includes wing ribs, fin outline, stab ribs, motor mount, ply wheels, fuselage sheet. Just add a plan and strip.

This kit is only designed for the Bob Jones plan available from Mike Woodhouse.



Price: £30.00 Inc VAT  
33.00 USD | 35.51 EUR

## Bazooka Parts Set

Ref: ot-bazpk

A great performing rubber job that will do well in Mini-Vintage comps. Good wing with sheeted leading edge.

Quick to build.

Price: £15.00 Inc VAT  
16.50 USD | 17.76 EUR



## Magician Stunter inc plan

### Ref: ot-magcl

Parts set and plan for the Magician designed by J Silhavy published in Technical Model

Specs - 48in span for 40 size engines  
Includes all shaped balsa and plywood parts, such as fuselage sides, doublers, wing ribs, shaped and notched spar, tip shapes, upgraded 3/16" tailplane and fin/rudder, ply bellcrank mount, plus smaller items.

Full size plan included. Builder to supply stripwood and other items to complete. 3 inch bellcrank and leadout kit available below.

Price: £55.00 Inc VAT  
60.50 USD | 65.11 EUR



## Lofty Lady Parts Set and plan

### Ref: ot-loftlad

The Lofty Lady is a 52" span cabin model, originally designed as the smaller Loftie Lassie by Vic Smeed. The design has been redrawn by Andy Brough and is presented as a Parts Set containing all the shaped balsa and plywood parts, such as fuselage sides, wing ribs, tip shapes, bulkheads, formers, dihedral braces, gussets and many smaller items required to build the basic airframe. Builder to supply stripwood and covering. Full size plan included.

The Lofty Lady suits 1 to 1.5cc engines and single channel radio assist and is exclusive to Belair Kits.

Price: £45.00 Inc VAT

49.50 USD | 53.27 EUR



## Spook 48 Parts Set and plan

### Ref: ot-spook48

Parts Set and full size plan for the Spook 48. This model retains all the unique characteristics of the original including the gull wing.

The parts set includes all the balsa and plywood parts to build the basic airframe, such as formers, bulkheads, cowl sides, wing ribs, gull wing dihedral braces, tail and fin parts, shaped spars, tip shapes for wing, tail and fin. The gull wing is not too hard to build and the plan guides you on how to build it strong and quickly.

Saves hours of tedious cutting, just add stripwood to start building today. 48" Span for small i/c engines or electric. Our model uses an Enya 09.

Price: £50.00 Inc VAT

USD | 59.19 EUR



## Contact us

Our opening times are Monday to Friday 9.30am to 5.00pm

**PLEASE NOTE** - Between 4-5pm, an answering service may sometimes take calls during our busy packing period. We hope this does not cause any inconvenience, please leave your details and we will call back.

To contact us please use one of the following;

By phone : 01362 668658 or International 00 44 1362 668658

**By post** : BELAIR, 86 HOLT RD, NORTH ELMHAM, NORFOLK NR20 5JS

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