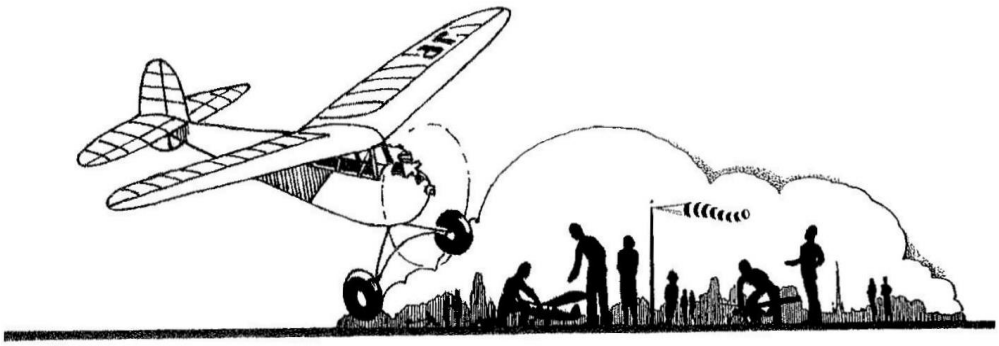


Sticks and Tissue No 143 – October 2018

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 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/

Writings and opinions expressed are the opinion of the writer but not necessarily the compiler/publisher of Sticks and Tissue.

Super 60 flying in Switzerland . Photo sent by Peter Renggli taken at the 2017 MG Bern Antik Flugtag. Photos by Urs Brand and Peter Ziegler.

New Own Design Model – My One by John Taylor

John Taylor brought along to DMFG his new own designed model a week or so ago and a delightful creation it is. I took a few snaps below but unfortunately only had my mobile with which to photograph here are mainly static photos.

<u>Model specification.</u>
O/Design span 59”.
Power – brushless motor running on 2,200 2s Lipo
9 x 6 prop gives 55W
Weight 27 ozs Wing loading 10 ozs / Sq ft
Covered on wings with Polyspan and Fuselage Oracover


MY
ONE


MY
ONE

RIOT-ACT.

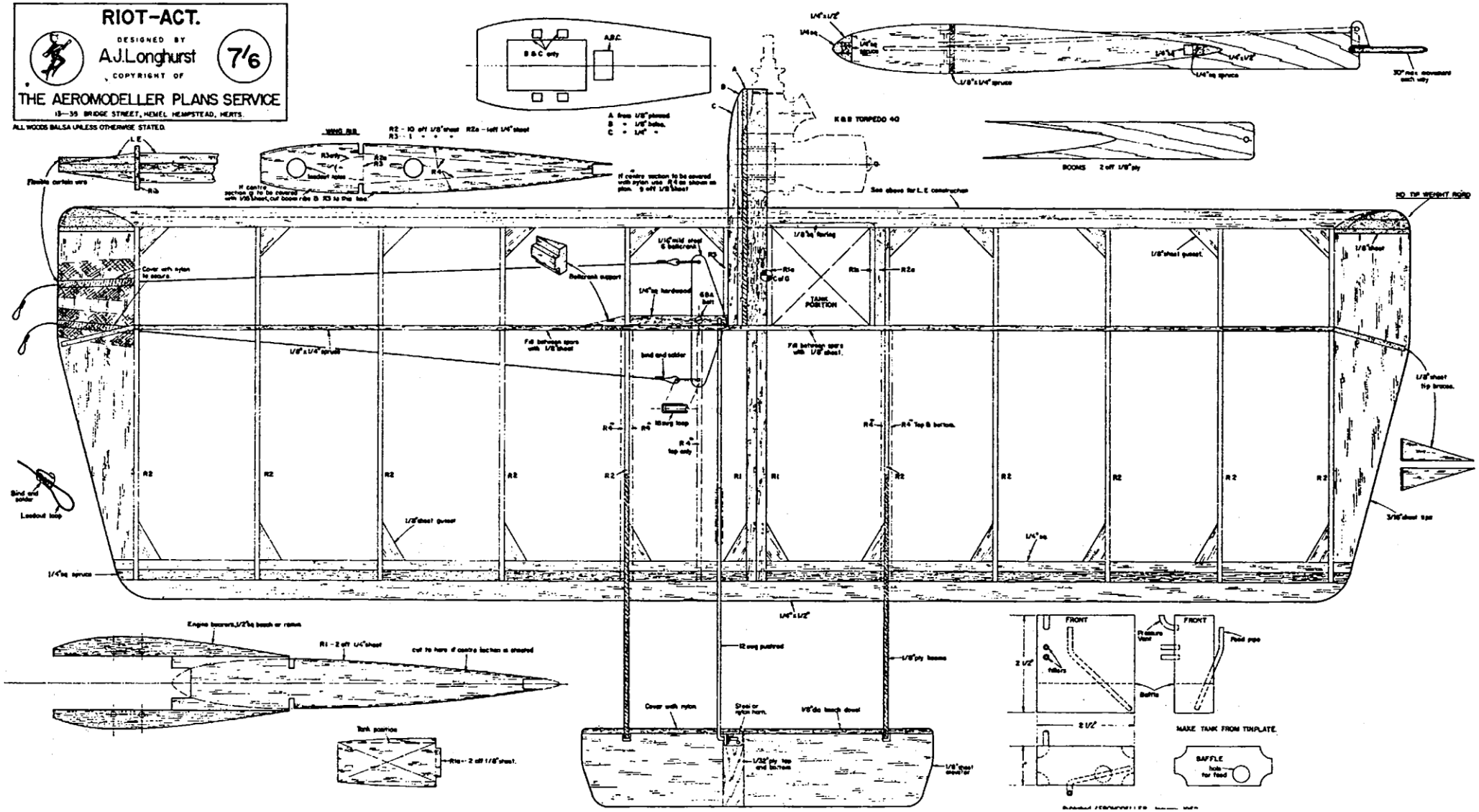
DESIGNED BY

A.J.Longhurst

7/6

THE AEROMODELLER PLANS SERVICE

13—35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



Riot-Act a class B combat design for up to 6.5 cc by Andrew longhurst from Aero Modeller January 1968

Based on the usual American layout with an all-moving elevator mounted on booms, this is the first Class B combat model in the APS range. In this design however, a development has been made, the elevator is mounted on extra-long booms for increase of effective moment, this in turn allows a smaller elevator to be used with less range of movement. The result is that very tight manoeuvres with a minimum of deceleration are possible. The basic design has been developed from three models and the structure is taken from a class "A" combat model which has many successes to its credit. Favourable comments have been made by all who have flown it.

The model is built around the Fox 36X or equivalent front rotasy engines. Be careful to observe that the C.G. position is not greatly altered. Other engines have in fact been fitted including a very powerful K & B 35 and an O.S. 29. An "out of the box", Fox 36X running on commercial K.K. Nitrex 15 fuel should achieve around 90 m.p.h. (with a Merco or similar silencer). Better motors will take speeds up to or over 100 m.p.h.

Constructíon

The fuselage ribs, bearers and fairings are cut out roughly to shape excluding the leading edge hole. The complete fuselage is now built up using "Cascamite" or "Aerolite 306" resin glue. This is done in two or three stages, holding the assembly together with clips and rubber bands at each stage, this is then cured in the oven at gas Regulo mark ½ for 10 minutes. The finished fuselage is now carved to its final shape using a razor plane and sand paper.

The engine mount holes are drilled and another small hole is drilled through the fuselage where the Leading Edge is going to be, through this hole a Fret-saw blade is inserted and the final hole for the Leading Edge is fret-sawed out. The fuselage being completed, the leading and trailing edges are assembled from the balsa and spruce parts and are carved to shape. Rib and fuselage positions are marked on both, and then the L.E. is inserted through the hole eut in the fuselage until the fuselage is at the marked point. The L.E. is then fixed into the fuselage using balsa cement and at this point the fuselage and L.E. should be carefully squared up. When the glue bas set the T.E. is stuck to the rear of the fuselage and aligned carefully with the leading edge. This may be done on or off the building board, whichever is preferred by the constructor. When dry, the result will be the L.E. and T E. stuck to the fuselage in perfect alignment, if any misalignment is present this can be corrected now to avoid any possibility of warps later.

Ribs are now stuck to L.E. and T.E. on points marked and the ¼ x 1/4 spruce spars are added. The 3/16 in. sheet tips can now be added after which the spars etc. can be cut to length and carved to shape. All gussets and tip braces from 1/8 in. sheet are now installed together with the fuselage stub ribs. The tank can now be constructed, bearing in mind that it will have to bear a considerable pressure from the motor. Use plenty of heat, solder and flux and re-solder any seams which appear too weak. The tank is cemented into position with scraps of balsa.

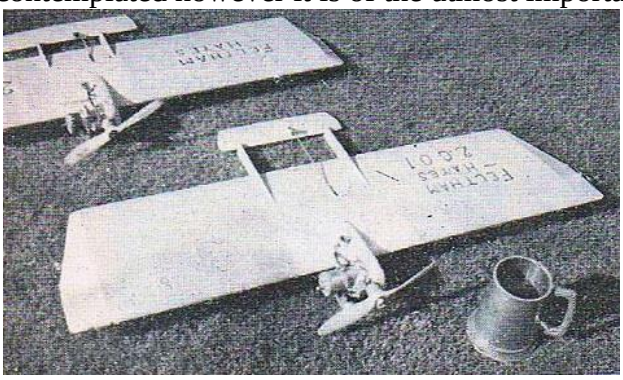
The next part to be fitted is the control system which is quite straightforward but it must be remembered that the pull from "Riot-Act", can be very strong and thus only the finest materials should be used (no aluminium or Bakelite bellcranks for example). The bellcrank is mounted on a 1 1/2- in. sheet 6 B.A. bolt inserted through the two 1/4- x 1/4 spruce mounts glued to the spars. At this stage the reinforcement for the ribs on which the booms are mounted can be added, alternatively the entire centre panels may be sheeted in 1/16 in. balsa although this incurs a small weight penalty. The fuselage to L.E. and fuselage to spar joints may be fibreglass at this stage if so desired. The covering is now undertaken in best quality nylon and one coat of dope is applied.

The elevator is cut from 1/8- sheet and the booms from 1/8- birch 3 ply. The pivot is a piece of 1/8- beech

dowel which is inserted through the holes drilled in the booms and which is then cemented to the LE. of the elevator. The elevator is then covered in nylon wrapped round the dowel to help retain its control horn is mounted on two small strips of 1/32 in. or 1/16 in. ply stuck either ride of the elevator. The booms, with elevator attached, can now be glued with cement to the reinforced ribs or to the sheeting as the case may be. Small strips of excess nylon are now glued, on the boom to wing joints to provide a strong fillet. Sufficient coats of dope are now applied to fill the nylon, then any trim or paintwork is added and here I would recommend a polyurethane based paint since cellulose based paints dissolve on contact with nitro methane fuels. A coat of fuel-proofer is added and polyurethane varnish is advised for this, all that remains is to connect up the pushrod to the elevator horn and it should be remembered that 20 deg. will be more than enough movement in each direction so try and limit it to this.

Flying

When flying, the lines should be such that the handle to centre of model distance is 60 ft. A Keil Kraft 9 x 7 in. nylon prop seems as good as any thing with the 36X although with a more powerful motor one might get away with a 9 x 8. Tight turns can be executed with virtually no loss of speed so the model is quite a thrill to fly even for sport. The streamer must be 10 ft. long, 11/2- in. wide on a 60 in. thread. 1f competition work is contemplated however it is of the utmost importance to know the motor and how to start it, because big glow motors all have a different starting technique. Getting into the air fast with a good motor run will carry you through the first few rounds of most "B" combat comps, although in the Feltham-Hayes clubs we hope that more competitions will lead to greater efficiency.



By American standards the weight of 20 to 24 oz. is heavy but in the designers opinion American models are excessively weak turning to instant garbage even on the slightest contact with the ground (or the opposition model).

Riot-Act is supremely strong and its hardwood spars help it to hang together through many misfortunes. At Finchley it was unfortunate enough to hit a set of wooden railings at over 90 m.p.h. during a combat heat. Surprisingly only minor damage resulted, leaving the model almost intact!

From David Tappin

I sent a copy of S&T to my Dutch friend Bert Hazeborg referring to the picture of the Desoutter (called Koolhoven in the article after the original designer) because Bert has designed and scratch-built a model of this aircraft to F4C standard.

His reply is revealing:

Thank you for forwarding the issue. Very interesting, also to see a picture on page 42 with my clubmate Gerben at the O.W. line-control. (2nd from left) He even took some pics for me of the Desoutter during that weekend.

As stated in the article: ***This Koolhaven flying at Old Warden was modelled by Arthur Searle of the Liverpool club. He complained to the experts at OW about its insistence on having a bad Dutch roll. Arthur was told that the full size suffered in the same way.***

My model has the same reaction to the yaw. So the remedy is to stay away from rudder in full flight and only activating when realy needed. This might give an unrealistic flight, so on the other hand; I have dialled in about 50% rudder to aileron movement and about 90% aileron differential, all to resist the reverse yaw movement. The oscilation and roll movement after using rudder is minimal on the model. This can be minimised by constructing the wing mass at a very low rate to strength and balancing the model on the C.G. at the correct "point".

I had the honour of taking Bert to Old Warden to study G-AAPZ and nearly two years later he emailed me as follows:

As you may remember, in May 2016 we had a tour in the Shuttleworth thrust Museum under the inspiring eye of Alan Newbery. He was also so kind to help us to make Photographs of the Desoutter MKI. This effort have helped me to build and finish the 1/4 scale model of this aircraft.
This morning was the first time I was able to assemble the model, all finished in the driveway at my home. The model's mass is just under 13 Kilo's, with a Saito 4-stroke petrol engine of 36 ccm. capacity, swinging a 19 x 8 wooden prop. Hope that will be enough to fly it. That day will come when the weather permits to do so.
The model has a span of 2.75 m. and the length is 2.06 m. I can tell you, I am happy it's ready. The model is too large to tinker with in my workshop (spare room at home) and that makes it a bit difficult.

I've attached pictures of his beautiful model.

Just to complete the portrait gallery I'm attaching a photo taken at Old Warden when we visited for the Great Measuring.
Bert Hazeborg in the middle, Bill Grimsley F4C judge on the left, in the background the subject Desoutter G-AAPZ. As it happens we are all International Jet Modellers Committee (IJMC) Judges too having, between us, judged at nearly every Jet World Masters all over the world. Should I now wash my mouth out with soap and water for admitting that last fact?!

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

Bruno Müller with his electric Kapitän

Alfred Genther Comet Webra Mach 1 Di. 2,5ccm

Peter Renggli Flamingo OS FS 48 mod.

Christoph Renggli Sioux MP Jet 0,6 Diesel

Walter Wolf Hast 5 3.5 Diesel Irvine


HOTT


BBC 20 D
20 D


MG
BERN


6
1937 Flamingo


" chérie "

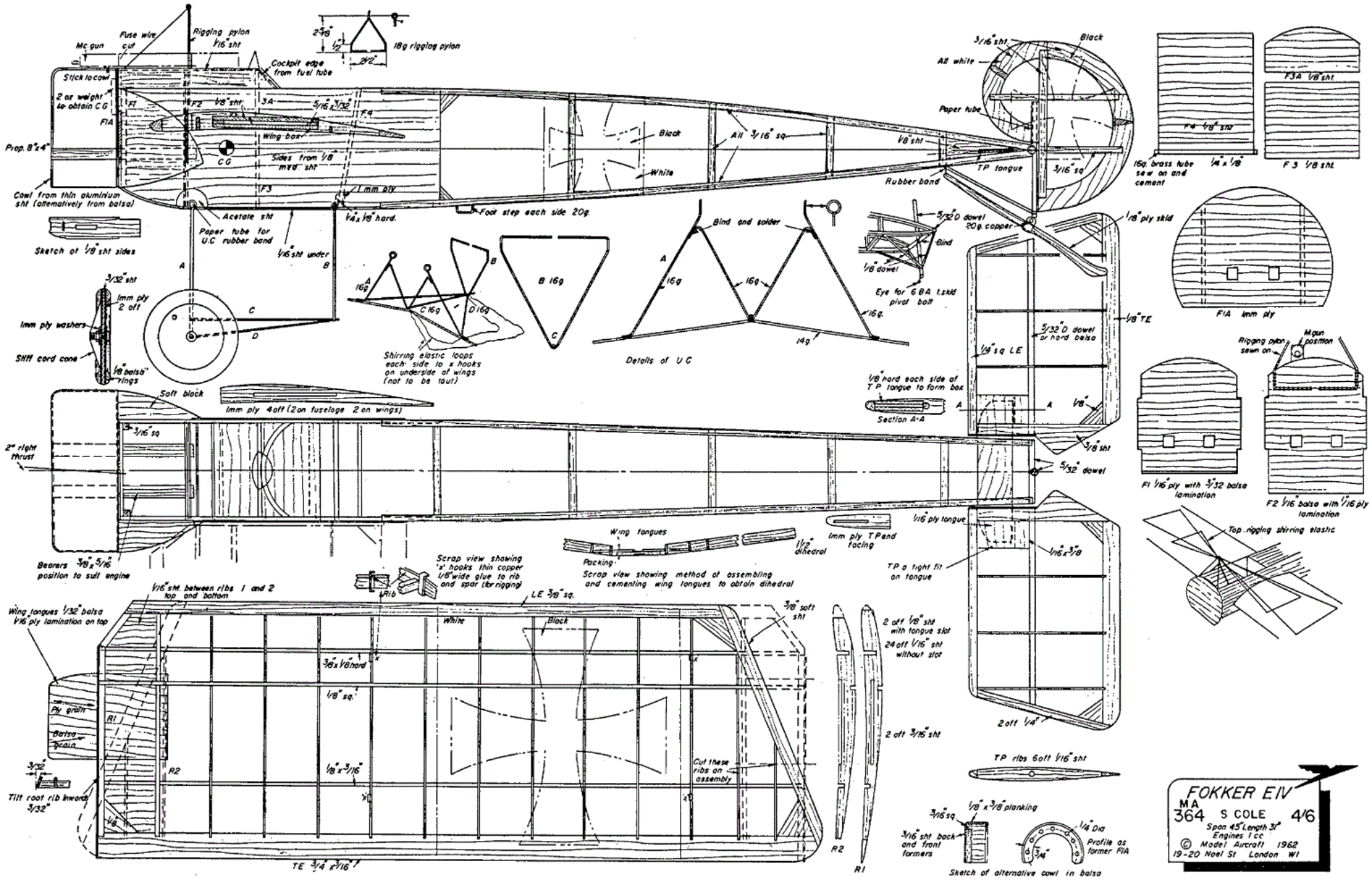

A-701
HB-HOP
A-703


BE - 02

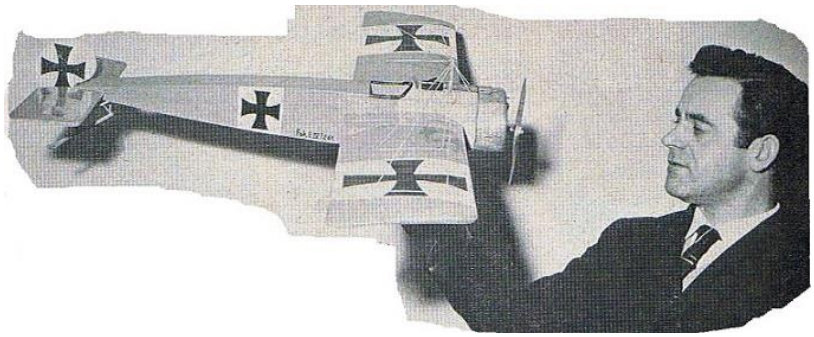

D-ENEX
P
F4

From Graham Crawshaw

Kloud King latest project ready to maiden


Rigging pylon 1/16" sht
Fuse wire cut
Mc gun
Cockpit edge from fuel tube
18g rigging pylon
Stick to cowl
2 oz weight to obtain CG
F1
F2
1/8" sht
3A
5/16 x 3/32
F4
F1A
Wing box
CG
Sides from 1/8" med sht
Prop. 8"x4"
F3
1mm ply
1/4 x 1/8" hard.
Cowl from thin aluminium sht (alternatively from balsa)
Acetate sht
Paper tube for U.C rubber band
1/16" sht under
Foot step each side 20g.
Sketch of 1/8" sht sides
3/32" sht
1mm ply 2 off
1mm ply washers
Stiff card cone
1/8" balsa rings
Soft block
1mm ply 4 off (2 on fuselage 2 on wings)
3/16" sq
2" right thrust
Bearers 3/8" x 5/16" position to suit engine
Shirring elastic loops each side to x hooks on underside of wings (not to be taut)
B 16g
Blind and solder
16g
14g
Details of U C
Black
White
All 3/16" sq
1/8" sht
Rubber band
TP tongue
3/16" sq
3/16" sht
All white
Black
Paper tube
5/32" D dowel 20g copper
Blind
1/8" dowel
Eye for 6 BA t.skid pivot bolt
1/8" ply skid
1/8" TE
5/32" D dowel or hard balsa
1/8" sq LE
1/8" hard each side of T P tongue to form box
Section A-A
1/8"
3/8" sht
5/32" dowel
1/16" ply tongue
1/16" x 3/8
TP a tight fit on tongue
Wing tongues
1mm ply T P end facing
1 1/2" dihedral
Packing
Scrap view showing 'x' hooks thin copper 1/8" wide glue to rib and spar (for rigging)
Scrap view showing method of assembling and cementing wing tongues to obtain dihedral
Rib
1/16" sht between ribs 1 and 2 top and bottom
LE 3/8" sq.
Wing tongues 1/32" balsa 1/16 ply lamination on top
3/8" soft sht
3/8" x 1/8" hard
1/8" sq.
1/8" x 3/16"
Ply grain
Balsa grain
R1
R2
Tilt root rib inwards 3/32"
TE 3/4" x 3/16"
Cut these ribs on assembly
2 off 1/8" sht with tongue slot
24 off 1/16" sht without slot
2 off 3/16" sht
2 off 1/4"
TP ribs 6 off 1/16" sht
3/16" sq
1/8" x 3/8" planking
3/16" sht back and front formers
1/4" Dia
Profile as former F1A
Sketch of alternative cowl in balsa
16g brass tube sew on and cement
1/4" x 1/8"
F3A 1/8" sht
F3 1/8" sht
F1A 1mm ply
Rigging pylon sewn on
Mgun position
F1 1/16" ply with 3/32" balsa lamination
F2 1/16" balsa with 1/16" ply lamination
Top rigging shirring elastic
FOKKER EIV
MA 364 S COLE 4/6
Span 45" Length 31"
Engines 1cc
© Model Aircraft 1962
19-20 Noel St London W1

Fokker E IV, the ideal subject for the newcomer to free flight scale and an all-time favourite with old timers by Stan Cole Model Aircraft March 1962 45" span and 1 cc motors



Two prototypes of this model have been built and successfully flown. The design has "built-in" crashproofness, with its plug-in wings and tailplane and pivoting undercarriage. These features, combined with its simple construction, make it a good subject for any modeller attempting his first scale free fighter.

Fuselage

Build the 3/16 in. sq. frame and 1/8 in. sheet sides directly over the plan. When building the second fuselage side over the first, some temporary 1/8in. packing is inserted between the 1/8in. sheet sides, thus producing a left- and right-hand basic fuselage side. These are next assembled to the wing box and cemented, carefully checking for squareness.

When dry, the3/16 in. sq. cross pieces and Formers 1 to 4 are added. Ensure that the 16 s.w.g. brass tube is securely sewn with carpet thread to Former 4, before fitting this former in place. Durofix or Araldite should he used for gluing the engine bearers to Formers 1 and 2 and when this assembly is dry, Former 1A is slid over the bearers and glued to Former 1. This gives the correct profile for the cowling blocks, which are added next.

Now add the 1/16 in. sheet to the top and bottom of the forward fuselage. Fix the 5/32 in. dia, rudder post in place and note that this is half-lapped and securely bound to the 5/32 in. dowel rear fuselage cross member. Finally, add the sail skid detail and sheet in the rear fuselage bays, before cementing the 3/16 in. ply tailplane tongue in position.

Tailplane and Rudder

These are of quite simple construction, but the tailplane halves must be a tight fit on the tongue and be accurately set at 90 deg. to the fuselage, when viewed "head on" with the wings fitted. The integral tube in the rudder should also be a snug push-fit over the rudder post, so that the rudder may be turned to any angle for trim, yet be resistant to accidental movement.

Wings

Build on the plan in the usual way, remembering to pack up the lower mainspars (front and rear) to allow for the undercambered section. To ensure accuracy and equality of the dihedral angle on each wing half, the tongues should be assembled "dry" (un-cemented) into the wing root ribs. The tongues are then mounted on 1/4in. thick packing and suitably held down with weights. The wing tips are now propped-up to 1 1/2 in. and the wing tongues cemented to the root ribs in situ. When thoroughly dry, the 1/16 in. top and bottom sheeting between ribs 1 and 2, is added, followed by the 1 mm. ply facing rib (f).

Finishing

The entire airframe is covered with heavyweight Modelspan and given one coat of clear dope, final colour trim on the original models consisted of" Humbrol ' enamel with two coats of fuel proofer around the engine bay and bearers.

Cowling

This may be beaten from thin gauge aluminium over a hardwood former; however, an alternative balsa cowling is shown on plan. This is equally successful, with no loss of scale effect and may be painted light grey or silver and fuel proofed.

Trimming and flying

Due to the long tail and short nose moments it may be necessary to add some weight to the engine bulkhead (cored solder wrapped round bearers or solder cast to a convenient block), in order to achieve the correct CofG. position. The original model finished up at 21 ozs. complete.

Test glide over long grass in calm weather. The prototype needed no adjustment (other than a little nose weight) to obtain a fairly flat glide. However, this can only be finally checked after a powered flight, as hand

launching can be deceptive. Start power flights on fairly low revs, adding down and side thrust to the engine if required. To cure any tight turning tendencies, a small amount of rudder may also be used. Any stalling tendencies on power (providing the glide is fairly flat) can he corrected by increasing the power turn.
Of the two prototypes built, one was flown in left-hand circles and the other in right-hand circles, behaving quite happily in either direction. On one occasion on launching the model, I
unfortunately knocked off the port tailplane half and, much to my surprise, the model completed a good power flight and glide, with only "half a tailplane"! This was as much a surprise to me as it was to the several witnesses; however, it could well have been a pure fluke and is a practice not recommended for general flying!
Both originals were powered with an ED. "Bee," with 8 X 4 nylon props.

From Bill Wells

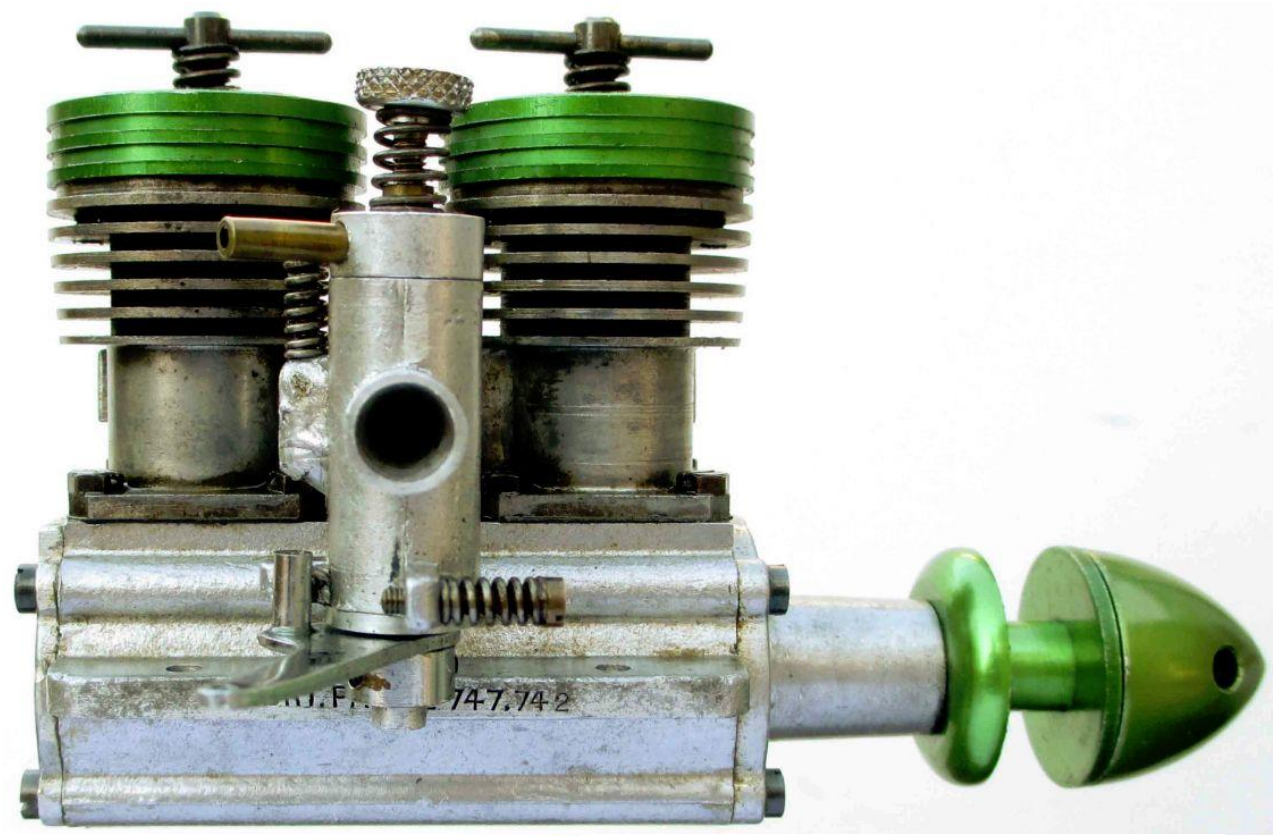
Taplin Twin

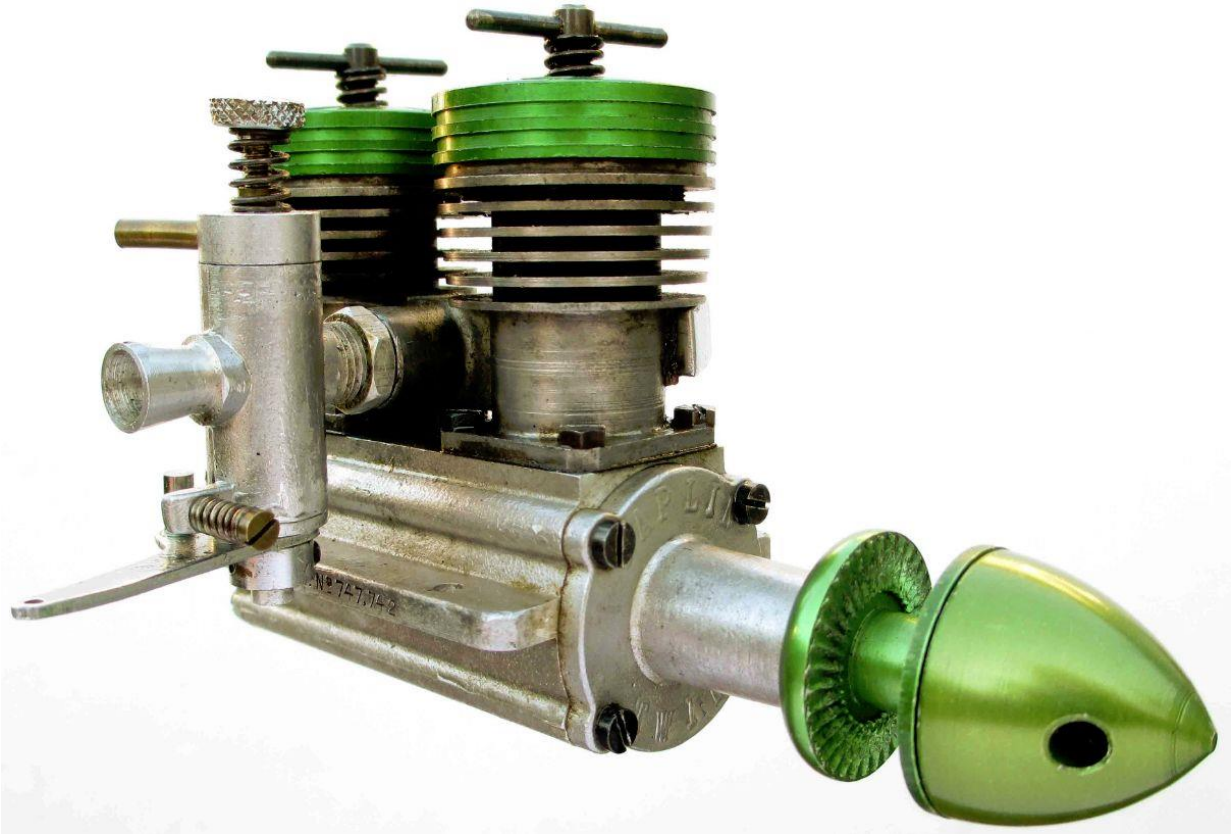
Because of my father's business we never went away on holiday. However we did have the odd day out which meant if I worked it right I might actually persuade my father to buy me something. It was on one of those days I first saw a Taplin Twin in a shop window in Ipswich. OK I was too young to know enough about model engines but it really was a super piece of engineering. But the price in those days was an astronomical £8-12-0 (£8-60 in decimal money). My father looked at the engine, it's price and moved on!!

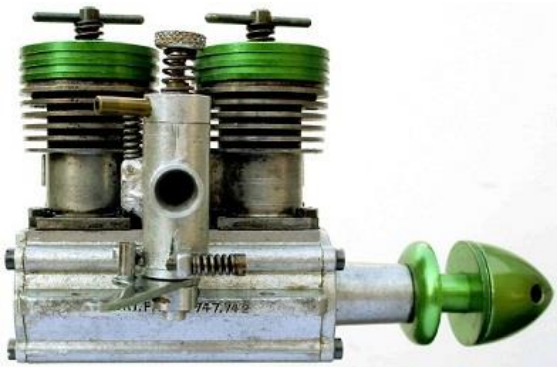
Forward on about 57 years, I found myself at an Auction and there was a boxed Taplin Twin 7cc for sale. I suppose we all get carried away now and then and I probably paid more than it was worth but looking at it another way you can not just go out and buy one!! Although the engine had been run it was in such good condition I doubt if it had ever been used in a model. A word of advice before you run an engine 'read the Instructions'! We are all impatient to get a newly acquired engine running, a well established fact even 59 years ago (See the Taplin Twin Instructions). I was using a home brew fuel with no ignition improver and a Master 13x8 propeller. A 13x8 prop is recommended but the Master is rather a sturdy affair perhaps a lighter wooden propeller with slightly less pitch might have produced slightly higher rpm. It took a few squirts of fuel to loosen things up especially just behind the prop drive where castor oil congeals. Using the default needle valve setting 1½ open and ¼ throttle it started surprising quickly on the rear cylinder but stopped. A suck in with the Needle Valve open 2 turns and it ran on the rear cylinder then the front cylinder was brought on line with the compression screw. After that it was just a case of full throttle and listening to the engine note while adjusting one compression screw at a time. The Needle valve adjustment was not critical and easy to set for best rpm. The adjustment of the air bleed was tricky because the slot in the bleed screw is a bit narrow. The throttle slow running screw was too dangerous to adjust while the engine was running. The engine would idle down to 1800 but was more comfortable at 1900-2000 rpm either way after prolonged running at idle, even sharply opening the throttle to a maximum of 5300 rpm produced a smooth acceleration. A 13x6 prop and ignition improver would no doubt increase the rpm. For the size of engine the noise level is low which is partly due to the exhaust collector and partly the low rpm. I did a very makeshift noise test from directly behind the engine it was 102db while at 14 feet it was about 74db. I stopped the engine by choking it at idle rpm and left it to cool down. Without any adjustment it started first flick. In fact restarts were so easy I just had to keep doing them! The engine was put aside for a week while dealing with other matters I just had to see how it started without adjusting the settings. It took a squirt of fuel into the intake plus a few suck ins before it started. There is a lot of engine to warm up so I didn't touch the anything and after a minute or two it was running just as I had left it a week earlier! Again stopping and starting when warm was not a problem.

The R/C carburettor works well but when compared with a modern one it is a bit on the heavy side at 0.9oz just slightly heavier than a Cox Pee Wee!! Searching through old Aeromodeller magazines there were regular advertisements for Taplin Twins some with monetary rewards offered for record breaking flights using one. My old Aeromodeller magazine collection is by no means complete but I have copied the

earliest Advertisement I can find which is dated January 1959. I noticed the advertisement proclaims the engine to weigh 15oz which is a bit optimistic my engine weighs 16.75ozs only a ¼oz lighter than an OS Max 63 with silencer! With regard to power output the modern Glow plug engines would easily knock the spots off this engine. At the time this engine was made it was one of the best available, ideal for big slow flying models capable of carrying heavy weight valve radio equipment and batteries. For a 59 year old engine it runs extremely well considering No CNC Machinery had been used in its construction!! An expensive buy but worth every penny!!







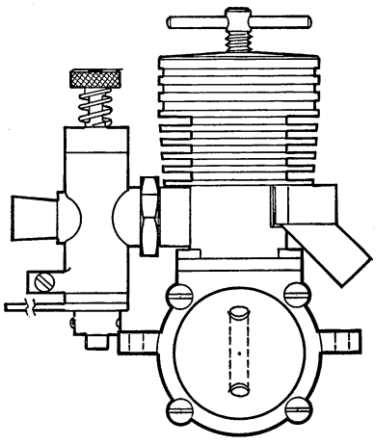
Taplin Twin seven cc twin provides wide range of operating speeds for 'Payload Power' from Aero Modeller May 1959

Unique as a production motor in this country, the Taplin twin utilises two 346 c.c. cylinders, with specially designed side porting and mounted in-line on a two-compartment crankcase, firing alternately. A genuine carburettor is fitted with a barrel-type throttling valve which gives quite outstanding flexibility and control. An exhaust manifold is also fitted with a single

stub exhaust pipe to which can be fitted a further extension
pipe, if required, ejecting all the oily waste associated with model diesel operation at one point instead of scattering it wholesale into the slipstream, as is common practice.
A number of the running and handling features are outstanding. Provided the fuel line if full to the carburettor and the compression settings are substantially correct—and new engines are supplied "ready to run"— starting is virtually instantaneous on flicking over with the throttle anywhere between ¼ and full open. The "Feel" on flicking over is odd, with two compressions appearing per revolution, but starting is so easy with established settings that it is comparable with a "full size" engine in this respect. If the compressions are way off the required settings, then you do have something of a game of "trial and error" to get them right. It did not appear practical to work on one cylinder only (with the other compression backed right off), but to increase the compression on one until the engine fired and then work on the other until continued running was obtained. Then final adjustment could be made on both cylinders. It is easy enough with the engine running to find the optimum settings for each cylinder. Excess compression on either cylinder produced a drop in r.p.m. and a laboured note; lack of compression, misfiring. The adjustments are by no means critical. In fact, the only awkward part of the procedure is that the front cylinder is rather near the propeller for comfort and one is apt to touch the propeller disc when working on the compression screws. With the compression settings correct, they can be left alone and the engine re-started at running settings. Using progressively smaller propeller loads, however, starting did deteriorate and with sizes corresponding to 10,000 r.p.m. load-speed and above it was not quite as easy to handle as a single-cylinder diesel. The double compression settings must be advanced, and the mixture leaned out, for consistent optimum performance at these higher speeds.
The Taplin Twin also seemed to prefer propeller loads with a good flywheel effect. Large diameter propellers suited it admirably. With the smaller diameters, it was happier on plastic propellers than the lighter wooden ones, but right down to 9 in. diameter sizes, we would not rate it a difficult engine to start, and on 12 and 13 in. diameter propellers it must rate as one of the easiest starting diesels produced.
Mixture setting is established by a conventional needle valve adjustment on the top of the carburettor.
The barrel valve controls the air supply and when the throttle is closed, cuts off the air entirely. The actual closed position is adjustable by means of a screw stop, just like the slow running adjustment on a full size carburettor. In this "idling" position, air supply is drawn through a hole in the side of the carburettor body, again adjustable via a screw. This bleed hole is closed off when the throttle is opened past the open position.

Good throttle control

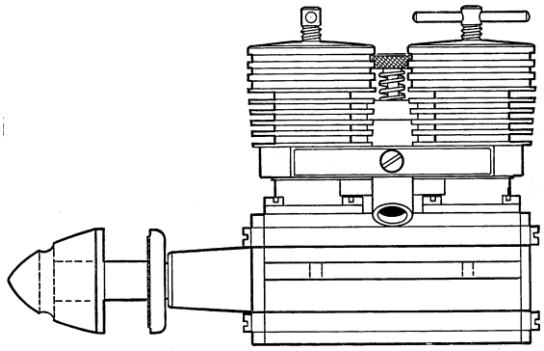
Throttle response is extremely good, the engine responding immediately up or down and two-stroking throughout down to minimum speed, with any propeller load. We found that the minimum speed which could be held safely, was just under 2,000 r.p.m. with the larger sizes of propellers and slightly more with the smaller propellers. Idling speed could be reduced to about 1,500 r.p.m., but at this stop setting the engine was on the verge of cutting. With smaller propellers the limiting low speed was when a misfire occurred, the normal running turned into oscillation. Being a sideport engine the Taplin Twin will, of course, run equally well in either direction. Again, with the smaller propellers it did sometimes misfire and start running backwards on occasions.
As one would expect from an engine of this type, the real performance comes at the lower end of the speed range. Torque is in excess of 40 inch-ounces at the lower running speed which represents real "slogging" power for driving a large diameter propeller. However, we found that the peak B.H.P. output was realised at 9,000 r.p.m. which is appreciably above the recommended operating speed—a 13 x 8 propeller is specified, corresponding to a speed of around 6,000 rp.m. To get optimum performance with the smaller propeller sizes, though, considerable fine adjustment is necessary. For example, with a 10 x 6 nylon propeller, apparent optimum running speed could be varied from just below 9,000 to 9,600 r.p.m. by persisting with adjustment. Beyond the peak the fall off is rapid. Because of the far superior handling characteristics, therefore, and the greater efficiency of larger diameter propellers, 12 and 13 in. diameter sizes are probably the best choice.



The B.H.P. curve drawn shows maximum performance as the full line

curve, the dotted curve representing the fall-off without this extra attention to adjustment at the higher speeds. A static r.p.m. figure of around 7,000- 7,400 r.p.m. would probably be the safest proposition for deciding the best propeller size.

Constructionally, the Taplin Twin is assembled around a stout—and heavy (3-ounce)—crankcase casting which is gravity die-cast, with two separate compartments. The centre portion is press fitted with two 3/8 in. bail-races, one either side of a bulkhead and the two-piece crank shaft assembled through these races. The method of joining the crankshafts is ingenious. One main shaft is used, incorporating one web and crankpin.



The other piece consists of a web and stub shaft which fits over the end of the first shaft. This shaft end is lightly splined before hardening and grinding and forced into a narrow shoulder inside the stub shaft (web end) to produce a rigid assembly when the two are driven together.

Triple ball bearing shaft

The drive is taken up at the front end with a conventional shaft and circular web, a hole in this web engaging the projecting end of the front crankpin. This shaft is housed in a separate bearing unit bolted to the front of the crankcase. A ball bearing is provided at the rear end, whilst the front end of the journal is bushed with a bronze sleeve. The two cylinders are joined by a fabricated induction manifold, soldered in place and this assembly bolts directly on to the crankcase. Induction ports are cut in the walls of the cylinders, being of very moderate area. Two transfer ports are machined side-by-side up each cylinder on the opposite side to the exhaust. A fabricated exhaust manifold attaches with a bolt to collect the exhaust and is sealed with a gasket. Gasket edges are very thin and. appear rather prone to failure, but the arrangement does produce a basically “clean” engine, particularly as a rubber tube extension can be used to drain away waste. A point of significance here, is that with sideport engines, in particular, an extension of the exhaust in this manner can have a marked effect on performance (both good or bad). By trimming the length of the extension pipe a little at a time, an optimum length can usually be found giving a measurable increase in r.pm.

The carburettor body, which screws into the induction manifold, is a gravity die-casting. The barrel valve is cold drawn from duraal and the throttle arm locked to it with a grub screw (Allen head). Adjusting screws are brass, also the fuel tube and jet tube. The needle is soldered to a brass screw and the adjusting screw at the top turned from dural and knurled. -

The piston and connecting rod assemblies follow standard E.D. 346 practice, also the cylinder heads, the propeller driver and spinner nut are from the same source. Gaskets are used at all crankcase joints.

Summarising, a most interesting design of engine, well made, and with the amount of work that goes into it, certainly anything but expensive at the price quoted for it. In addition it is remarkably economic on fuel.

Radio controllability

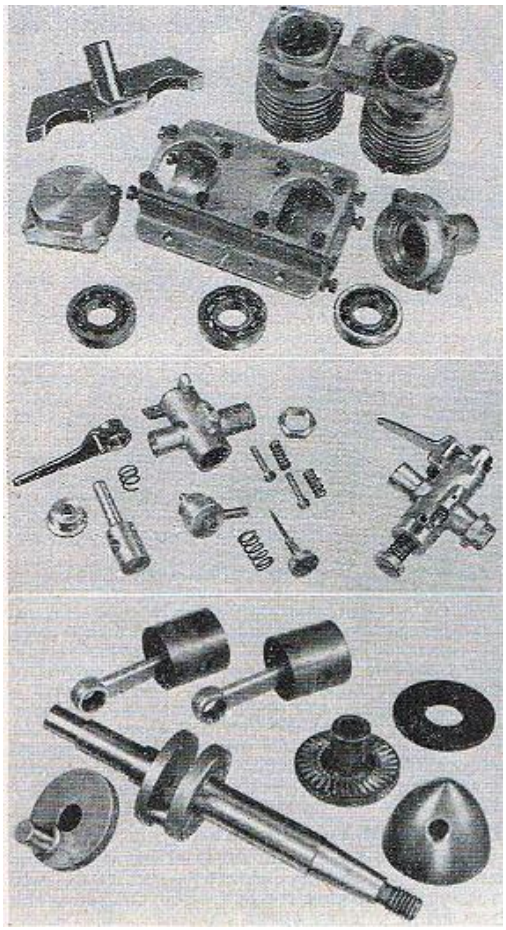
The alternate firing cylinders tend to minimise vibration, but we found the vibration level fairly marked on a non-rigid rig. Starting and handling characteristics are exceptionally easy with larger propeller sizes—provided you leave the compression settings alone once established. The throttle control is very sweet and smooth in operation—and you really can let the engine “warm up” on half throttle. Safe idling speed is about 2,000 r.p.m. minimum, at which speed very little thrust is being generated and there is little point in trying to get it to run slower still, and it two-strokes all down the scale ideal in this respect for radio control, except that its high weight is not in its favour for a fully acrobatic model. It would certainly fly a large, heavy model through simple manoeuvres and we would advise an all-up weight limitation of about 6 1/2 lb. for full-scale aerobatics including the outside loops. For modellers who have a dislike of “screaming power” and want a really flexible engine, the Taplin Twin should suit them admirably.

SPECIFICATION

Displacement: 6.920 C.C. (420 cu. in.)
Bore: 656 in. Stroke: -621 in.
Bore/Stroke ratio: l.06 Weight: 15 ounces
Max. B.H.P.: 29 B.H.P. at 9.000 r.p.m.

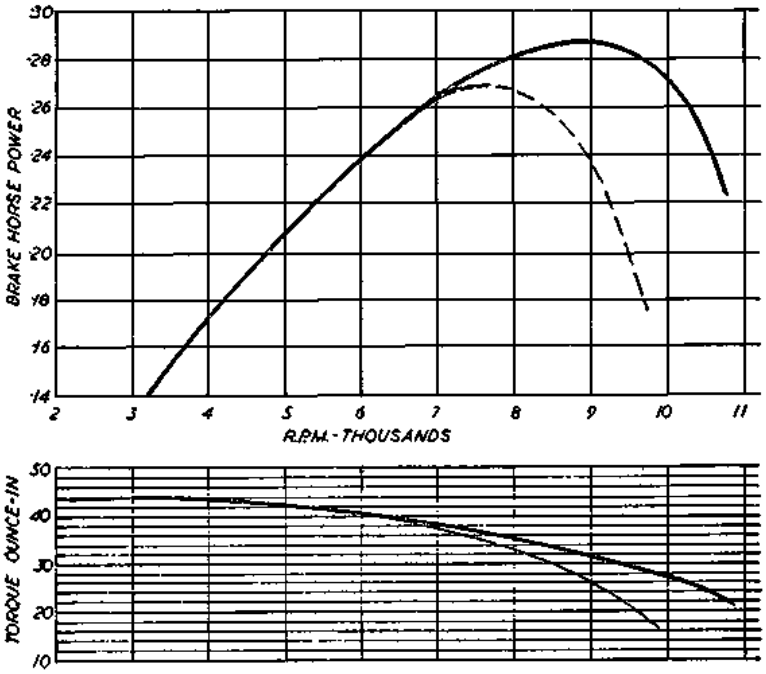
Max. torque: 44 ounce-inches at 3,500 r.p.m.
Power rating: .042 B.H.P. per c.c.
Power/Weight ratio: .0194 B.H.P. per ounce.

Material specification
Crankcase: light alloy gravity die casting
Cylinders: hardened steel
Pistons: cast iron
Connecting rods: dural forgings, bronze big end bush
Contra-pistons: cast iron
Crankshaft: hardened steel, split assembly, press fitted hardened steel front drive shaft
Bearings: main crankshaft—twin ball races front drive shaft—one ball race, bronze bush at front
Carburettor: body—gravity die casting fabricated components in durai and brass
Manufacturers:
The BIRCHINGTON ENGINEERING Co. Ltd.
Albion Road. Birchington. Kent
Retail Price: £8 12s.



This sturdiness is the keynote of this Twin design. Note the three ball bearings for the crankshaft, Size ample cylinder facing area on the crankcase and the stout bridging of the two cylinders with the common intake duct. At top left is the exhaust collector with tube odaptor to lend off all exhaust mess.
At right is a complete carburettor assembly and at left the ports as dismantled. Birchington Engineering specially cold drawn working parts in this very efficient unit on exclusive machinery, ensuring close tolerance work.
"Working" parts of the Taplin Twin show the shaft assembly, plain pistons and drive washer. Some camponents are adopted from the popular E.D. 346 unit, but it should be emphasised that cylinders in particular are quite different and are not interchange.able with she single cylinder motor.

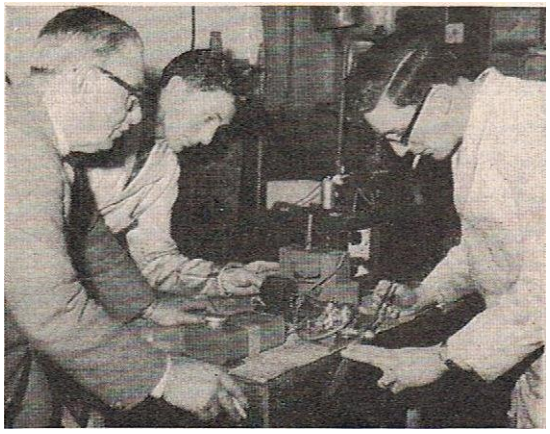
Below: B.H.P. and Torque curves



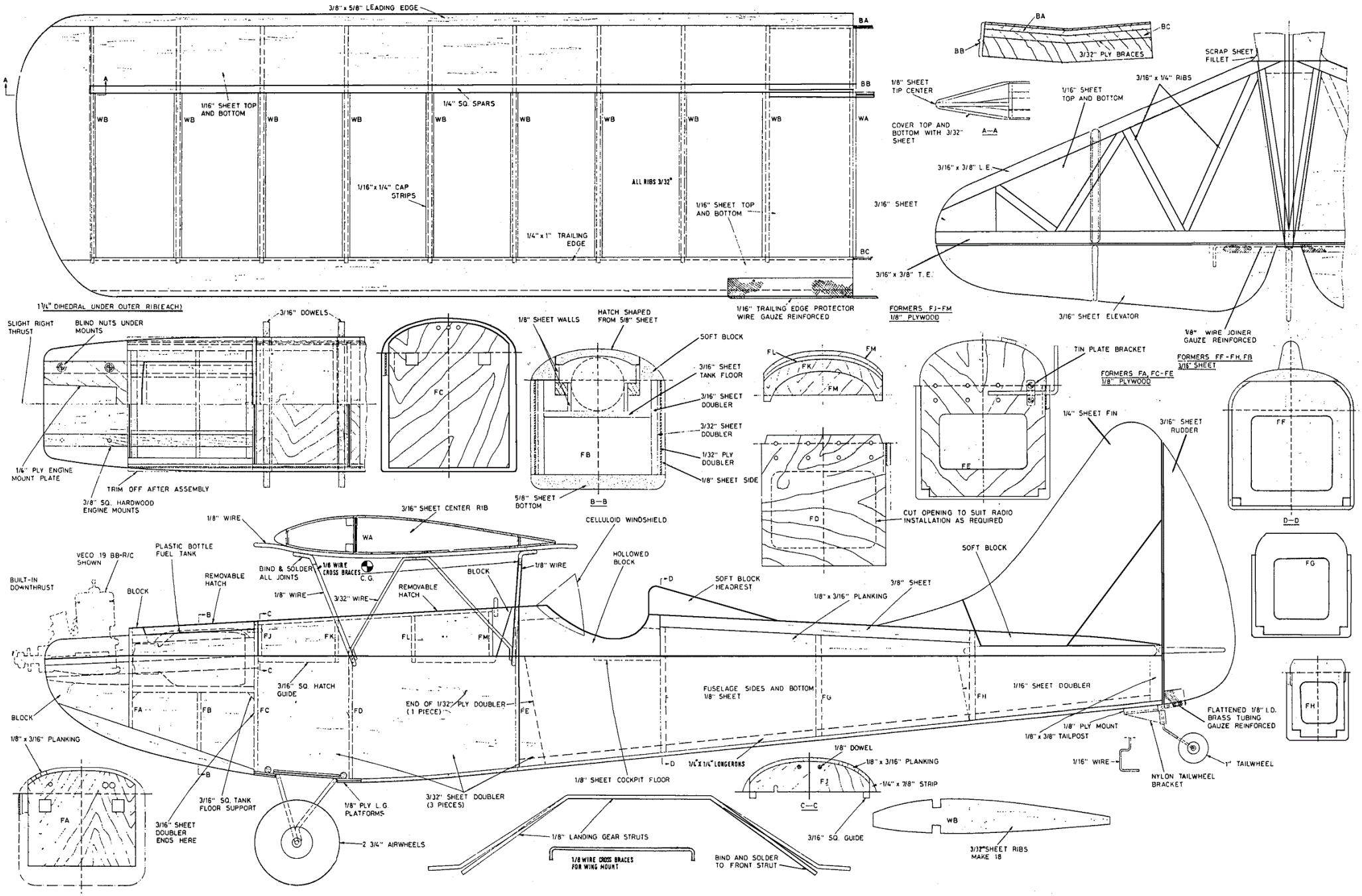
PROPELLER—R.P.M. FIGURES

Propeller	*R.P.M. (full throttle)*	*R.P.M. idling (throttle closed)* *Min. safe*	*Abs. minimum*
14 x 6 (Trucut)	5,600	1,750	1,500
13 x 8 (Trucut)	6,000	1,900	1,500
13 x 6 (Trucut)	6,500	1,900	1,550
12 x 6 (Trucut)	7,000	1,800	1,500
11 x 4 (Trucut)	9,400	2,200	1,700
10 x 8 (Trucut)	8,200	2,500	1,900
11 in. dia. Truflex	7,000	1,800	1,500
10 x 6 (Frog nylon)	9,600	2,400	1,900*
9 x 6 (Frog nylon)	10,500	3,000	2,400*

Fuel used: Mercury No. 8.
* *Engine backfires and starts to oscillate.*



Lieut.- Col. H. .1. Taplin with sons Michael and John bench test and run in every engine before despatch, including stroboscope r.p.m. check and assured one flick start. No engine goes out without this personalfinal check before boxing with the detailed Taplin handling instructions which make certain that even the least skilled buyer can cope.


3/8" x 5/8" LEADING EDGE
BA
BB
BC
WA
WB
1/16" SHEET TOP AND BOTTOM
1/4" SQ. SPARS
1/16" x 1/4" CAP STRIPS
ALL RIBS 3/32"
1/4" x 1" TRAILING EDGE
1/16" SHEET TOP AND BOTTOM
3/16" SHEET
1/16" TRAILING EDGE PROTECTOR WIRE GAUZE REINFORCED
3/32" PLY BRACES
1/8" SHEET TIP CENTER
COVER TOP AND BOTTOM WITH 3/32" SHEET
A—A
SCRAP SHEET FILLET
3/16" x 1/4" RIBS
1/16" SHEET TOP AND BOTTOM
3/16" x 3/8" L.E.
3/16" x 3/8" T.E.
FORMERS FJ-FM 1/8" PLYWOOD
3/16" SHEET ELEVATOR
1/8" WIRE JOINER GAUZE REINFORCED
1 1/4" DIHEDRAL UNDER OUTER RIB(EACH)
SLIGHT RIGHT THRUST
BLIND NUTS UNDER MOUNTS
3/16" DOWELS
1/4" PLY ENGINE MOUNT PLATE
TRIM OFF AFTER ASSEMBLY
3/8" SQ. HARDWOOD ENGINE MOUNTS
FC
1/8" SHEET WALLS
HATCH SHAPED FROM 5/8" SHEET
SOFT BLOCK
3/16" SHEET TANK FLOOR
3/16" SHEET DOUBLER
3/32" SHEET DOUBLER
1/32" PLY DOUBLER
1/8" SHEET SIDE
FB
5/8" SHEET BOTTOM
B—B
FL
FK
FM
TIN PLATE BRACKET
FORMERS FA, FC-FE 1/8" PLYWOOD
FORMERS FF-FH, FB 3/16" SHEET
1/4" SHEET FIN
3/16" SHEET RUDDER
FE
FD
CUT OPENING TO SUIT RADIO INSTALLATION AS REQUIRED
FF
D—D
FG
FH
1/8" WIRE
3/16" SHEET CENTER RIB
WA
CELLULOID WINDSHIELD
HOLLOWED BLOCK
SOFT BLOCK
VECO 19 BB-R/C SHOWN
PLASTIC BOTTLE FUEL TANK
BUILT-IN DOWNTHRUST
BLOCK
REMOVABLE HATCH
BIND & SOLDER ALL JOINTS
1/8 WIRE CROSS BRACES
C.G.
1/8" WIRE
3/32" WIRE
REMOVABLE HATCH
BLOCK
1/8" WIRE
SOFT BLOCK HEADREST
1/8" x 3/16" PLANKING
3/8" SHEET
FJ
FK
FL
FM
3/16" SQ. HATCH GUIDE
END OF 1/32" PLY DOUBLER (1 PIECE)
FUSELAGE SIDES AND BOTTOM 1/8" SHEET
1/16" SHEET DOUBLER
FA
FB
FC
FD
FE
FG
FH
BLOCK
1/8" x 3/16" PLANKING
1/8" PLY MOUNT
1/8" x 3/8" TAILPOST
FLATTENED 1/8" I.D. BRASS TUBING GAUZE REINFORCED
1/16" WIRE
1" TAILWHEEL
NYLON TAILWHEEL BRACKET
1/8" DOWEL
1/4" x 1/4" LONGERONS
1/8" x 3/16" PLANKING
1/4" x 7/8" STRIP
C—C
1/8" SHEET COCKPIT FLOOR
3/16" SQ. TANK FLOOR SUPPORT
1/8" PLY L.G. PLATFORMS
3/32" SHEET DOUBLER (3 PIECES)
3/16" SHEET DOUBLER ENDS HERE
2 3/4" AIRWHEELS
1/8" LANDING GEAR STRUTS
1/8 WIRE CROSS BRACES FOR WING MOUNT
BIND AND SOLDER TO FRONT STRUT
3/16" SQ. GUIDE
WB
3/32" SHEET RIBS MAKE 18

Roulet II a 54” span intermediate sport model for .19 to .40 engines and three function R/C by Ho Fang Chiun from Radio Modeller May 1969

Aiming for a different and nicelooking model, intended primarily for sport flying, I chose the parasol-type design because of its scale-like effect and its excellent pendulum stability. The basic idea of the Roulet was to provide simple construction and good flying characteristics in combination with a realistic appearance. It has also been designed with the idea of producing at least in some aspects, an out-of-the-rut style, but without the sacrifice of simplicity in structure. Therefore, the construction of the model has been kept as simple and as conventional as possible.

As you will notice on the plan, materials specified are often generous in dimensions. I feel that it is easier and more rewarding to work with light. oversize wood than hard and thinner materials. Always select medium to medium soft balsa wood throughout the entire structure and you won’t face any weight problem with the completed model. The prototype has an all-up weight of approximately 4-lbs.

Because of the large vertical tail area, the rudder response is excellent, making ailerons superfluous on this model. However, builders who want to go “full house” may of course add them; either full-span or orthodox built. in tip ailerons.

The wing airfoil is of semi-symmetrical section. This type of airfoil was selected in order to provide more stable inverted flight characteristics as well as smoother inside and outside loops without too much loss of lift compared with flat-bottomed sections. The model spans 54 inches and has a wing area of 500 sq. inches. The powerplant may be any engine of .19-.40 cu. ins, displacement. The first prototype was powered by an Oliver Tiger R/C engine and equipped with a German Variophon-Variton 6 channel radio set.

Later, the pictured Mark Il was constructed employing an Enya .29 for power and a Japanese K.O. DigiAce 4-channel proportional system for rudder, elevator and motor controls.

As you will notice, I did not specify any particular radio installation on the plan and this is, of course, because there are so many suitable systems available on the market. However, I believe that no difficulties should be encountered in the R/C installation since the fuselage compartment is amply dimensioned to accommodate either reed or proportional outfits.

Construction

Start with the wing, which is built in two pieces and joined at final assembly by adding ply wood dihedral braces and balsa sheet covering. After cutting the ribs and spars, pin down the lower main spar directly on the plan over wax paper, or polythene sheet. Glue all ribs in place over the spar, except for the centre rib. Be sure to prop up the semi-symmetrical ribs in alignment while the assembly is drying. Otherwise you will have built-in warps in the wing which will be difficult to eliminate fully. Add to main spar and leading edge stock while the panel is still on the building board. When all is set, remove the panel and lay it vertically on the leading edge. Carefully slip the trailing edge notches onto each rib end, checking frequently that the trailing edge follows the rib contour correctly.

Incidentally, when cutting notches in the trailing edges, make them slightly undersize for a tight fit to the ribs. The opposite wingpanel may be built on the same plan since all rib spacings are equal. To join the wing panels, bevel and butt the ends of each panel so they meet at the correct angle. When good joints have been obtained, glue brace “BB.” In place, Next, add the leading-edge and trailing-edge braces and cement the centre rib in place.

Now add all sheeting as specified on the plan, using white glue exclusively for this assembly. Capstrip all ribs, and build the tips as shown, and your wing is ready for sanding. Finally, add the trailing edge protector wire reinforced with gauze or fibreglass matting.

Construction of the tailplane is conventional and should not present any problems. Choose soft balsa wood for this part in order to keep the tail as light as possible.

Build the framework of balsa strips directly on the plan and then contact-cement the top sheet in place. Remove the assembly from the plan and add the bottom sheeting. The elevators are cut from 3/16 in in. balsa sheet and present no problem.

The fuselage is of straightforward box-type construction. Cut the fuselage sides from matched sheets of 1/8in, medium balsa. The sides are reinforced with several layers of doublers in the forward part, as indicated on the plan. Start by contact cementing the one-piece 1/32in. plywood doublers to the sides. Next, glue the three- piece 3/32m, sheet triplers in place, leaving a 1/8in, gap at formers ED and FE to allow for

these later. Finally, add the 3/16in. sheet quadruplers (!) in front of former FC and the 1/16in. sheet doublers at rear. While the side assemblies are drying, cut all formers to shape. Use aircraft plywood (5 layers) for all plywood formers and drill all holes required.

To assemble the fuselage, first cement formers FD and FE to the sides. Then add all forward formers. To lock the fuselage assembly into alignment, join the sides at rear with a piece of 1/8in.X 3/8in. trailing-edge to act as a tail post. Glue the remaining formers in place and complete the fuselage according to the plan. Before adding balsa blocks to the nose assembly, install blind mounting nuts in the motor bearers, or fix
bolts with soldered cross-pieces if preferred.

Construction of the radio compartment hatch should be carried out directly on the fuselage. Care fully pin down the two 1/4in. X 7/8in. main strips onto the sides and glue all hatch formers in place. Set the assembly aside, allowing several hours for complete drying. To plank the hatch, start on top and work towards the both sides simultaneously. Be very careful at this point, not pressing too hard on the hatch formers when pinning down the planking strips. Both the tank and radio compartment hatches are locked into former FC with small hardwood dowels. They may be retained in place either with rubber bands or built-in attachments. It is very important that the wire wing mount, the so-called “bird-cage” is made exactly to plan. This set-up will provide the wing with a +1 degree in cidence. To start with, bend the vertical struts and bolt them firmly to formcrs FD and FE with tin plate brackets. Then lightly solder wing saddle wires onto the struts, checking that all measurements are to the plan. When exact settings have been achieved, wrap the joints with soft copper wire and solder securely. Add brace struts and you have this critical part completed. Loosen tinplate brackets and remove “bird-cage” from the body.

Later, when the fuselage is finished the struts are inserted from each side and bolt in place permanently. Finish the fuselage with sand paper before the tail unit is cemented to it. Prior to this, shape the nose area in accordance to the various cross-sections for proper contour. Bend the landing gear from piano wire or dural aluminium, the former being shown on the plan and is used in the original model.

Finishing

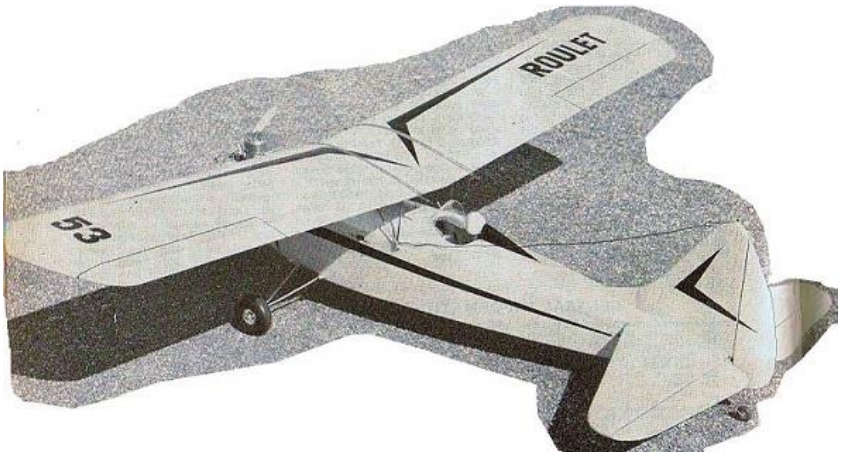
My finishing is started by brushing a few coats of thinned clear dope on the entire structure, sanded lightly between coats. Before this doping, I coated the entire nose, as well as the engine— and the fuel tank— compartments with two coats of fibreglass resin, sanded down wherever possible. This not only adds fuel proofing, but greatly increases nose strength.

For covering, I use lightweight silk, applied to the entire structure. I then give the silk covered model several coats of well thinned clear dope before final trimming and sanding. I used Wet sanding between last coats to obtain a smooth and shinning finish. My original model is covered with white silk and trimmed with orange and green decorative markings.

Installation

As regard to the radio installation, a general rule applicable to all outfits is to house motor servo and battery packs in the forward compartment and use the main compartment between formers FD and FE for the accommodation of the other servos and receiver unit. Cut an opening in former FD beforehand to suit your particular equipment.

Rigging and flying The engine should give about 3 degrees of right thrust to offset torque and effects of propeller slip-stream as it hits the huge vertical tail. The downthrust may vary from model to model and also depending on engine size used. To start with, the built-in downthrust should be sufficient.



Before commencing flight tests, check location and make sure there are no warps in the flying surfaces. If you have built the model true to the plans, with all settings as specified, you will need little adjustment to get it to fly properly. On your initial flights, start with a small amount of rudder and elevator throw, to avoid violent reaction. Also, use full throttle only to a limited extent, applying full power during take-off and climb only, and observe the flight-pattern carefully. Slow down the engine fully immediately, if any abnormal situation should arise. Try to obtain a straight power flight with rudder trim if necessary. If the glide is not satisfactory, correct it by adjusting the elevator trim or slightly shifting the CG. location. To
land the Roulet it is suggested that you use a little power during approach to maintain full control until touch down.

From Tony Tomlin

Photos of his new model a Swanee nearing completion

Powered by a PAW80.

From Jon Porter of Microaces

Calling all Taranus/FrSky users!

If you've looked at Microaces kits and thought, 'I'd like to give them a go BUT I don't want to have to buy a new transmitter', if you have an FrSky D8 compatible transmitter, you now don't have to fork out to enjoy our model aircraft. We have the receiver for you!

We've just ordered a small stock of our All In One (AIO) receivers with an FrSky D8 compatible chip. We can also special order the Super Micro Receiver used in the Airco DH2 as an FrSky D8 compatible unit.

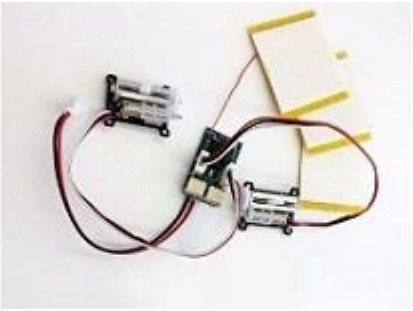
All the Microaces kits now have the option to select the Kit + Flight Pack. The updated drop down selection now includes the FrSky Flight Pack option.

You can also buy the FrSky D8 compatible Flight Pack or the FrSky D8 AIO receiver on it's own. Stock is due in 3 weeks so will be here to deliver before Christmas.

FrSky D8 Compatible
AIO Receiver
FrSky AIO D8 Compat.
Flight Packs

Microaces Airco DH2 Flight Pack - FrSky D8 Compatible

£53.00



Microaces Airco DH2 Electronics Pack - FrSky D8 Compatible

£39.50

Microaces AIO Aero Flight Pack - FrSky D8 Compat. (STANDARD Prop Shaft)

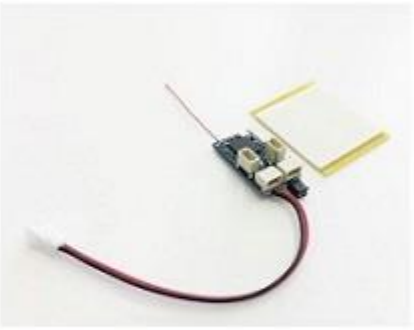
£49.50

Microaces AIO Aero Flight Pack - FrSky D8 Compat. (LONG Prop Shaft)

£49.50

Microaces AIO 5CH Micro Receiver - FrSky D8 Compatible

£35.00



FrSky D8 Compatible Super Micro Receiver

£20.50

jonporter@microaces.com

Dave Bishop apologises for not contributing an article this month due to pressure of other things, he will be back next month. James Parry

FLITEHOOK

Indoor Free Flight Meeting

West Totton Centre, Hazel Farm Road, Totton, Southampton, SO40 8WU

Contact: Tel. 02380 861541

E-mail flitehook@talktalk.net

Café on Site

Flyers £8 Juniors & Spectators Free Flyers must be BMFA Members Sundays 10.00a.m. to 4.00p.m.

2018

11th November 2018
9th December 2018
30th December 2018

2019

13thJanuary 2019
10th February 2019
10th March 2019
14th April 2019

Waltham Chase Aeromodellers

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, 2nd. October 2018
Tuesday, 6th. November 2018
Tuesday, 4th. December 2018
Tuesday, 8th. January 2019
Tuesday, 5th. February 2019
Tuesday, 5th. March 2019
Tuesday, 2nd. April 2019
Tuesday, 7th. May 2019
Tuesday, 4th. June 2019
Tuesday, 2nd. July 2019

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: alan@wcaero.co.uk)

or see our web site: www.wcaero.co.uk

Linnet Parts Set 43" span

Ref: ot-linnpk

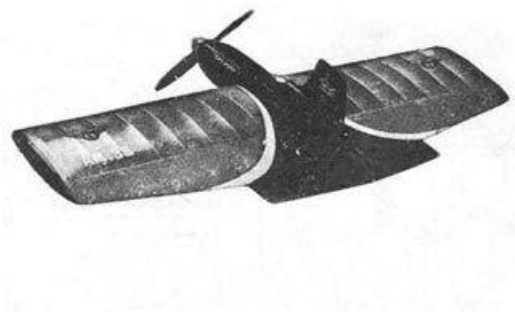
Quirky looking design by GR Woollett published in Aeromodeller January 1954
43in span suits 1.3cc size motors. Tricycle undercarriage and low wing, looks semi-scale and makes a pleasant change from the usual high wing cabin job.

Part Set includes all the laser cut balsa and plywood parts, such as cowl cheeks, fuselage sheet, formers, bulkhead, LG mount, shaped gussets, fin outlines, wing and tailplane tips, wing ribs, sub fin, wing seat, plus many smaller items.

Parts fit original Aeromodeller plan which is not included - shown for reference only. Builder to supply stripwood and covering to complete basic airframe.

Mercury Toreador CL Parts Set

Ref: ot-kktore



Parts Set for the **Mercury Toreador** model. Suitable for Stunt or Combat. Laser cut parts will save you hours of tedious cutting and include fuselage sides, fuselage top & bottom in one piece 1/2" balsa, bulkheads, formers, fin/rudder, wing tip shapes, wing ribs with additional tab to allow the symetrical wing to be built on a flat board without packing each rib, bellcrank mount, spinner ring, shaped trailing edge and elevator.

Also includes **full size plan, and canopy, vac-formed in clear plastic.**

Specifications

Wingspan - 36 inches, weight around 20 oz and suitable for 2.5 to 3.5cc engines (AM35 shown on plan). Builder to supply small amount of stripwood to complete.

Regards,
Leon Cole
Belair Kits
Tel: +44 (0)1362 668658
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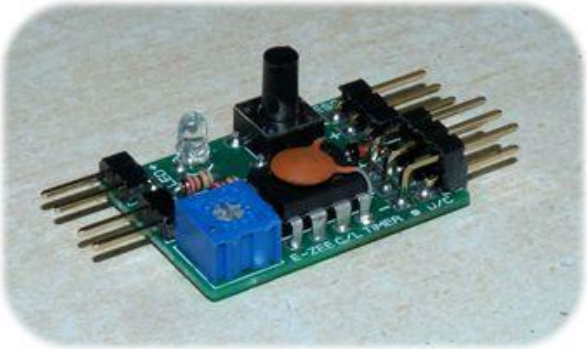
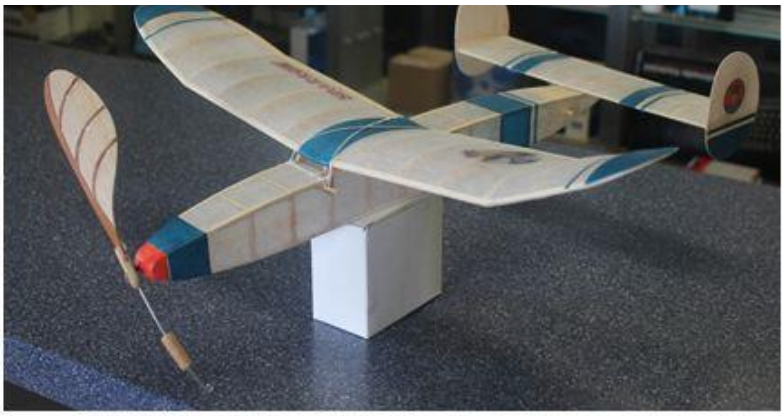
Tinplate CL tanks….Bellcranks, Lines, Handles, Cloth Hinge Tape, Leadouts etc

Cox Engines & Spares



Electronic Timers for CL & FF



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