To spend $500 or $5,000? This is the FREE BOOK

The Art of Flying RC Model Aircraft

Flown, written and published by Stephen J Green. - Futaba Dealer

Basic Flap Setup

Basic Aerobatics

When it's Windy

What's a good trainer

F3A Standard
How many models is too many?
Going for MAAA Gold Wings
Unfinished Projects
Antenna Installation
Futaba Extension leads
Flying in the wind
Mode 1 or Mode 2
Futaba U400 Servos
Transmitter Switches
Spitfire Sorties
Taming the RV-8
The ubiquitous Cessna 170
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The Leading Edge

"There seem to be few books written by experienced pilots in such a simple language that even a man who had never seen an aeroplane before might understand and appreciate the information, hints and advice given."

That paragraph was penned by a Flight Commander in the preface of Practical Flying, a book published by the Royal Navy Air Service in 1918. I happened across a reprint edition which inspired me to do something I've long wanted to do. Write something specific for model aeroplanes. Page 1 in that book starts with this very interesting paragraph.

"Before deciding to take up aviation, as a hobby or as a profession, it would be well advised for the aspirant to consider whether he is suitable for it, both mentally and physically. Generally speaking, anyone of average health and intelligence can be taught to fly, but at the present time there are comparatively few who will make really first class pilots. In peace time the demand will be greater for the ordinary class of pilot, and a much lower level of skill will be required than in war time."

Out of all the people I have taught to fly models there have been four who didn't pass the solo flying test. One was a twelve year old boy who didn't have the attention span. Despite the best intentions of his Father, every time a truck drove by he was more interested in watching that. We got Dad flying instead. Another was a retired bank manager who made it to circuit and bump stage. A cartwheel during a cross wind take off shhok his confidence. A change of prop and some superglue at the aft end the model was good to go in a few minutes. Alas he multiplied the risk factor by ten and decided the hobby wasn't for him. He gave up.

The third person was reliably flying circuits and bumps, but every now and then, when told to go around, he applied full throttle and full down elevator. At the same time. That kept me on my toes. Thinking muscle memory from years of driving an excavator might be the problem, after a few more paid sessions I asked if he wanted to continue. He thanked me for my time and purchased a model boat instead. Chap had been pensioned out of the workforce from industrial poisoning printing bank notes for the goverment.

The last fellow was a slow learner. After three $45 sessions he told me my lessons were too expensive. I bumped into him a few years later at a model club where he had taken up the standard offer of free instruction. Good on him.

Possessing a full size pilot license would put you a step ahead in term of theory, but not necessarily in practice. Manipulation of controls and orientation requires a different skill set than looking through a windscreen For example using all the available runway for take off does not instantly translate to an increased safety factor with remote controlled flying.

Working as an RC Aerial Photographer during the late 1980s I started getting work that could only be done from a full size plane. It struck me that learning how to fly, how to find an aerodrome and land the plane might be a worthwhile life skill. Before each lesson I put to one side whatever knowledge I thought I had and listened to the Instructor. I passed first solo in a Cessna 172 but didn't go any further.

Four kids later and at age 66 I decided if I don't finish it now when will I ever, Opted for the RAA Recreational License. Flying a nifty little two seat 100 horsepower Aeroprakt A32 Vixxen my goal is to toodle about cross country flying.

To that end I am very fortunate to have two model aircraft friends for further information and advice. Both are retired commercial pilots. One fixed wing, one rotary. Ex Navy Captain Grahame Goodson has landed heavy metal on aircraft carriers. Captain Damien Mould has landed heavy metal on oil rigs. aviating from the ground, who is better bteween my two mates and I? That will be decided in a wartime setting. Chaos at Camperdown is where we used to punt around all the good stuff. Then we put that lot away for slope soaring combat to try and smack each other out of the sky.

If you happen across a little biffo in this publication it was meant to be a combined Old Fokkers lazy read holidays edition. I split it in half instead. Here's a little advice. If it happens that RC flying isn't for you, but you've made new friends and decide to stay on an join a committee. Often it's because they become the first point of contact, but being Secretary does not make you an expert in model aviation. Appointing someone outside the aeromodelling community is a decision I continue to applaud.

Building your own model plane does not make you a better flyer either. Flying does. Today most RC flyers don't build yet still get much enjoyment chugging around the sky and having a chinwag with a few like minded mates. I like competition and commercial flying and what I have learnt from that. This publication starts with F3a standard and works back from there.

Most people I've met aspire to flying a WW11 warbird at some stage. That may not be your thing nevertheless the information here is to get you on your way to whatever level you aspire.

Stephen J Green. Futaba Dealer.

Australia's Brian Green flew an OS 60 powered Dragon Fli, design by Phil Kraft. He is Australia's current RC F3a Champion (RCM&E pic)

My private flying field in the 1990s. Every strip should have a centreline

Bank of Dad in the ready box at the 1971 Worlds

F3a Standard

To compete in F3a aerobatics in 1971 the model was placed on the strip in the take off position. When the Time Keeper started the stopwatch you had to start and tune the engine then leave the engine idling as you walked back to stand in front of the judges. The flight had to be completed within ten minutes. An engine that coughed and spluttered when you opened the throttle was not cause for a downgrade but it left the impression that you were not an expert. Not moving your body about as the model flew past was also part of that image. That discipline pays dividends for sport fliers too.

In a nut shell flying that manouvere schedule was all about keeping the ings level and coutering cross-wind drift with rudder.

How to become Proficient

Whether you spend five hundred or five thousand dollars in the first two years of RC flying, this book was written to give an an insight on how to improve your experience. Topics covered and debunked are here to assist progressing the super easy way. For sport flying and basic training, model setup and Instructor ability are important factors however if you take only one thing from this publication take this.

Five flights should be your minimum for each flying session

One or two flights a week it will take you one to two years to pass the basic flight test to fly on your own. The reason is this. Starting out it takes most people two flights to settle the nerves before they can replicate what the last session was about. The next three flights is how you consolidate and advance.

A good model, reliable radio gear and knowledgeable flying instruction were readily available when I started RC flying in 1971. The following year I competed in F3a aerobatics, 2.5 cc Quarter Midget pylon racing and thermal glider at a National Champs. A year later I took out first place in Novice Aerobatics at the nationals. Not because I had natural talent, my beginning was a little different than most. Not only was my Father the current Australian F3a Aerobatic Champion, he happened to be the Australian Agent for Kraft Systems Incorporated. That was the world leading radio brand back then.

Of course teenage eyesight and reflexes with Bank of Dad footing the bills helped, but a shit load of flying is how I advanced to that level in a short space of time. We used to go flying every Saturday and Sunday. I don't remember when I started teaching but in the late 1970s our flying school for Dad's customers was every Saturday.

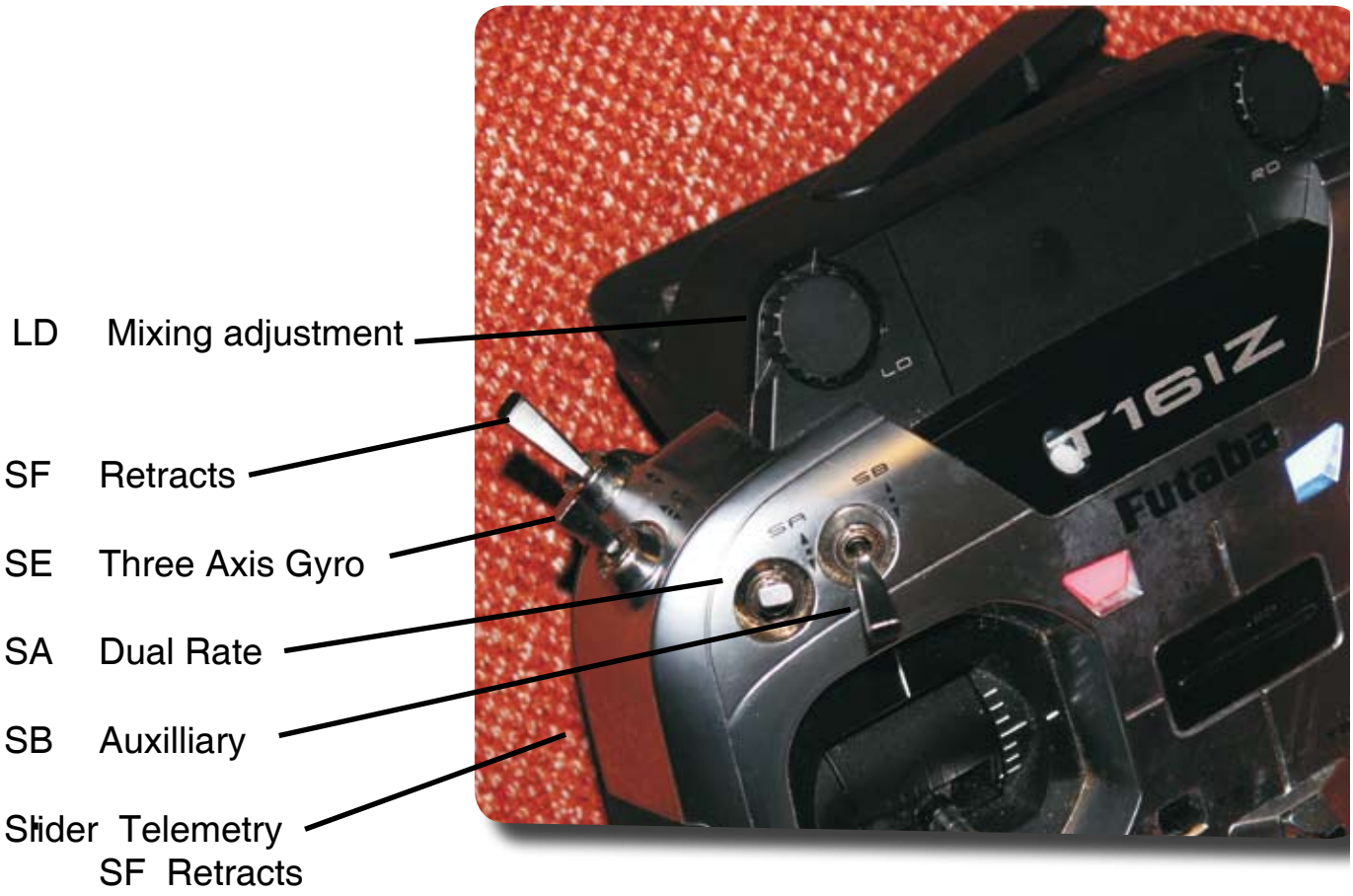
In the mid 1980s my commercial RC Flight School operated Wednesday and Saturday. Forty five dollars for five ten minute flights during a four hour morning session, sharing the time with three other customers. An afternoon session as well 2.5 hour private lessons available on other days. Professional instruction never really got off the ground in Australia. Demand was there and in the late 1980s my hobby shop operated a private field with two instructors on duty Saturdays. Three when I arrived after lunch. It was busy. Everyone flew circuits and bumps in up to fifteen kph crosswind. Any stronger we would introduce basic aerobatics and setting up for a dead stick landing. Flying skills are accumulative. The more you do the better.

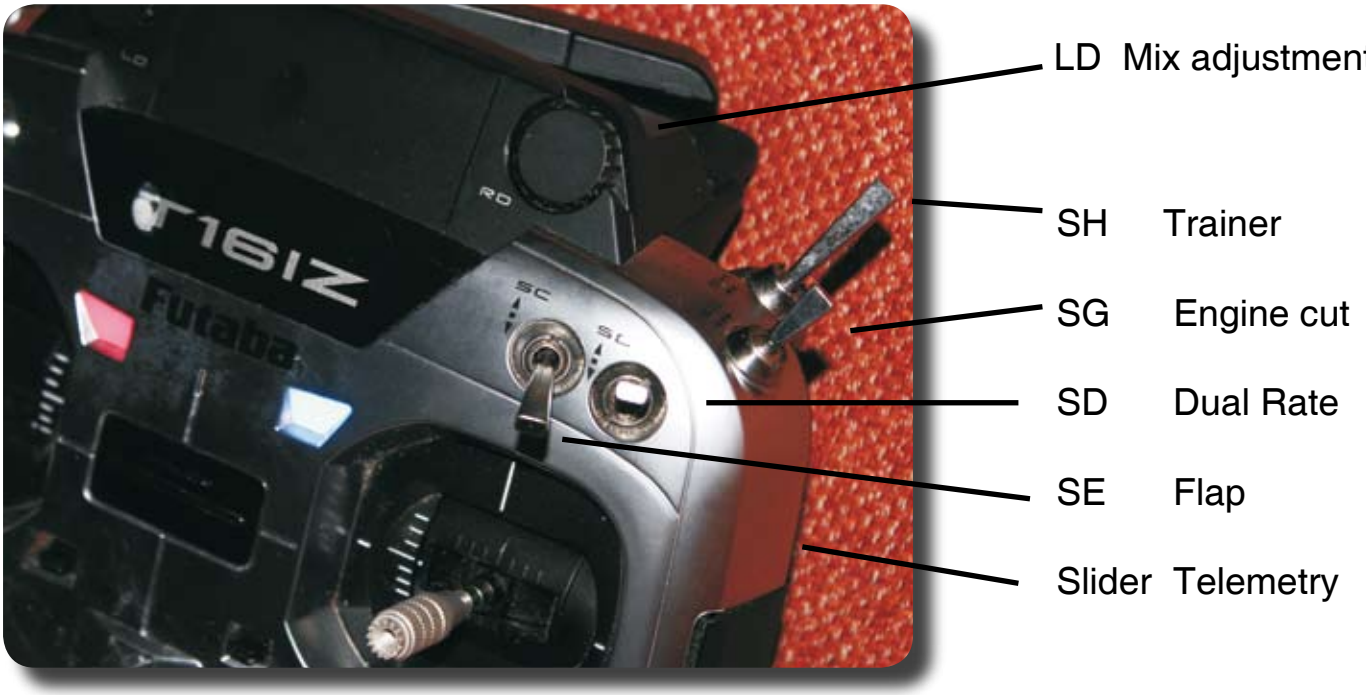
One difference between paid and voluntary? Most model clubs advertise flying tuition as a benefit of joining but many beginners feel a bit awkward taking up a club instructor's time. Having done both I found students try harder when they fork out some dosh. Six to ten sessions was usually enough for most to go solo. Five flights a session, someone under forty could usually achieve passing the basic solo flight test and it really didn't matter what the model was.

In 1971 a four channel trainer was considered radical. Rudder, elevator and throttle were the conventional norm. Old Timer designs are a blend of free flight design, interrupted by radio and usually limited to flying early in the morning when it is calm. The Balsa Flies Better campaign is so out of date now. Back then we were selling and flying Lanier and later Pilot brand ARFs, these were considered taboo by the establishment. Years spent setting up basic trainers and reviewing models for RCM News magazine, manufacturers continue to recommend extreme control setups counter productive to a successful test flight. Choice of model and its size becomes more important at sixty years of age plus. When in doubt spend more and go bigger.

*** Pocket Oxford Dictionary meaning last**

Transmitter Switch Allocation

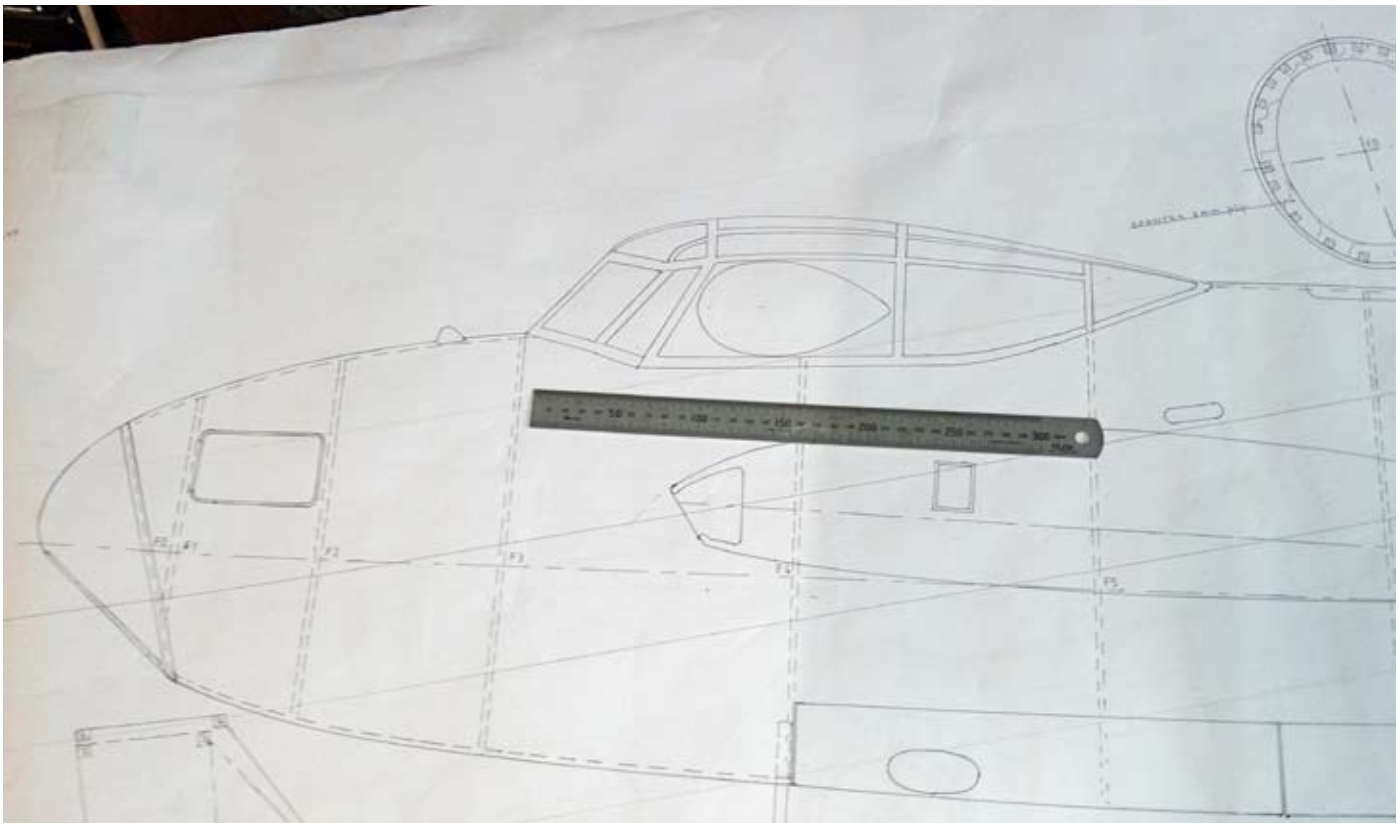




This page started with self preservation in mind and I have printed and laminated a couple of copies. One for the hangar and one in the TX case. This transmitter was a production sample on Mode 1 which I converted to Mode 2. My diverse range of model types include Fixed wing and helicopter with glo plug, spark ignition and electric motor, glider with flap and or spoilers, retractable undercarriage, telemetry downlink, gyro systems and flight training it has taken me ages to decide on a standard setup.

Sport flying with mates, competing are other factors. Telemetry switching requirements used for glider towing or air racing differ. Racers use airspeed and RPM on tl right slider. Ditto for glider tug wit altitude and variometer on the left. Voice gets drowned out as other pi ton and turbine engines take off sc ceiling height limits and low batter alarms are set with the buzzer. Low battery is the most urgent vibration alert.

What to buy Christmas is nigh



He who has the most toys wins?

Wearing my Futaba Dealer's hat I say that should read "He who sells the most wins." Thing is I'm not much into bling for bling's sake but friendly competition between mates by way of banter fuels this fire. It helps keep the hobby business alive too. Mine's bigger than yours and look what I've got plays out right across the country at flying fields and garages every day. All good fun

So how many is too many? Geared up in flying condition I have seventeen. One of my mates has fifty, ready to go. A good half dozen of those are in the 25 kg category.

Another consideration is the amount of real estate is required to hangar them. Children off my hands, eight years ago I downsized to a one bedroom flat, eight kilometres from Melbourne CBD. Models are hangared in a car size storage unit at Kennards. Twenty four hour security is a bonus. Another good thing about this arrangement is I can stuff around late into the night or early morning and not disturb the neighbours. Firing up the Dremel makes enough noise to wake the dead but I've never had a complaint from the Funeral Director next door. Should a build or repair project turn into a six can job I can leave the car or motorbike and walk six hundred metres back home.

How big to go is another consideration. Even if I could afford the really big expensive stuff, needing a team of people to put a model together does not interest me in the slightest. Everything in my hangar is a single pilot operation. Transported, assembled at the field by myself. Big models begine to cost a lot more when you need to purchase a new car or trailer. I've never been a fan of station wagons after we slid into a ditch on a dirt road half way through a 25 kph bend on the way to Cape Otway. No seat belts in the back seats in the 1970s I ended up jammed into door on the other side. The thought of a car accident with all that gear floating around the back still puts me off. A ute or a sedan with trailer behind is my preferred option.

Of course once you have one model, in any size, the merry go round starts revolving. With so many models monitoring battery packs becomes an important consideration. So is maintenance. As you become more proficient remembering how to fly each type isn't much of a problem but which switches do what becomes a challenge when you fly multiple wing types and propulsion.

With the New Year upon us thoughts of what to do next year abound. I would like to build something off a plan again. I've long since had a thing for racing planes. And warbirds. My favourite warbird is the De Havilland Mosquito. I already had the engines and ordered a set of plans for a big one.. Two OS GT 60s and two Moki 60cc twins. At 1/5th scale it turned out to be much much bigger than I imagined. Not only would I have to rent more space and re-engineer the thing into smaller components, to fit in my model trailer, nevertheless 120cc would make it quite a beast.

I only considered it in the context of racing against 1/5th scale WW11 fighters. People would pay to money to see that. After many years of frustration with air racing, I fnally realised there s no point of putting in that much effort and expense. I'm not all that interested in scale competition persea, mainly because the flying schedule soon becomes quite boring.

Then there is this quarter scale Supermarine S6. I've always wanted one of those too. Supercharged YS 140 four stokes on 30% nitro with straight out exhaust for noise for wow factor value. This was a hand shake deal with the Australian Grand Prix Corporation to race four at Albert Park Lake. Essentially the models were GT nothings, speed limited courtesy of a low pitch prop. Okay at board level, alas, feminine undermanagers, not interested in motorsport, made it too hard and ensured it never happened.

Back then it was a single 36MHz receiver with a servo for each control surface. That would still apply and if that thirty grand project was revisited today, a lot more redundancy is available today. Twin 2.4GHz receivers plus the 900 Mhz module FAASTest receivers split across each elevator and aileron servo.

At one quarter scale this big floatplane is much more manageable than the mozzy, and it has a few engineering challenges to keep me interested. The Schnieder Cup re-enenactment mentioned on the plans got me thinking to make it worth my while, that would involve building an event around it. The Moki 60cc twin cylinder would be ideal. As would the 58cc 3W single cylinder. Both engines were my father's. Each has a winning scale air racing heritage. Before I even contemplate such a task there is my Goodyear racer build project.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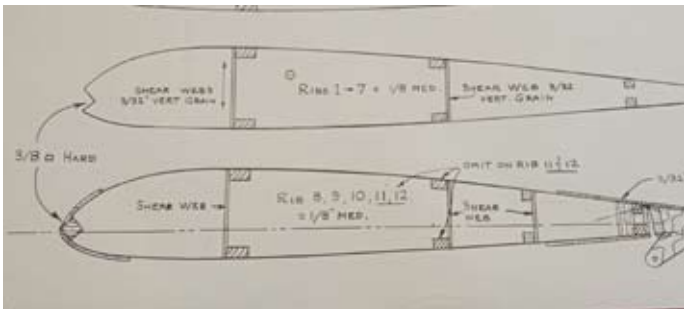
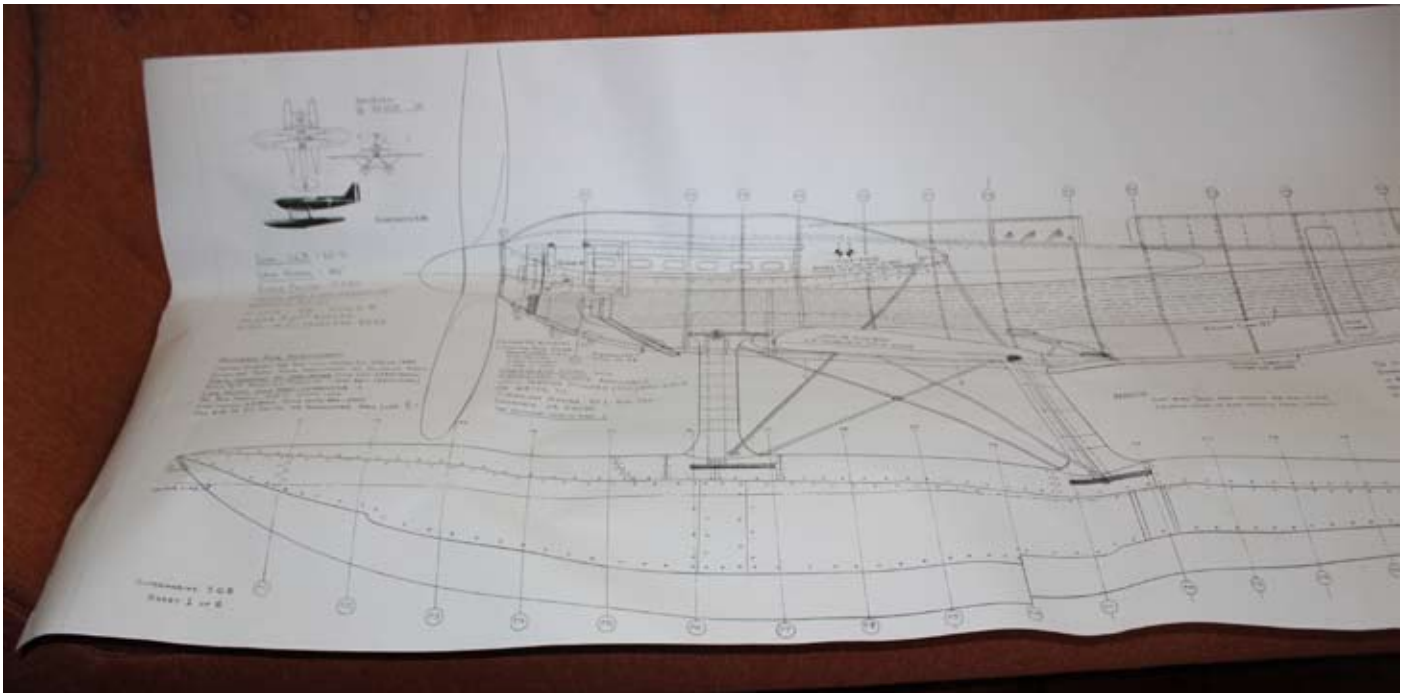


Dog aerofoil section has to go

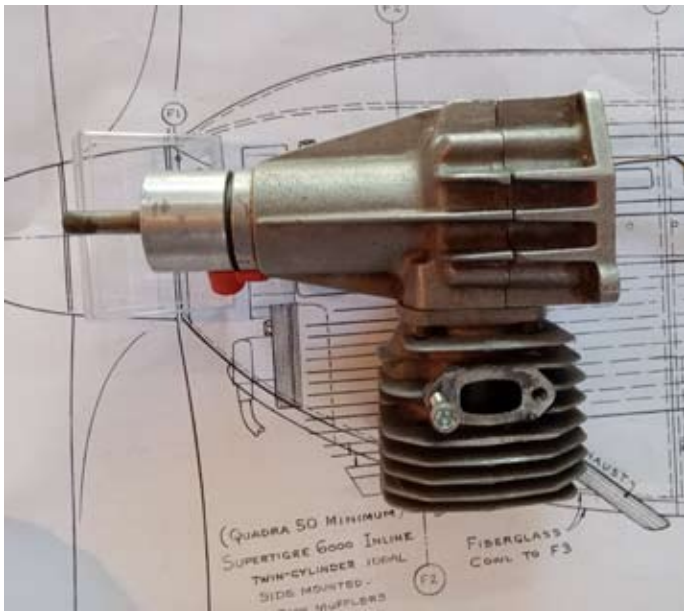


1/4 scale Supermarine S6B

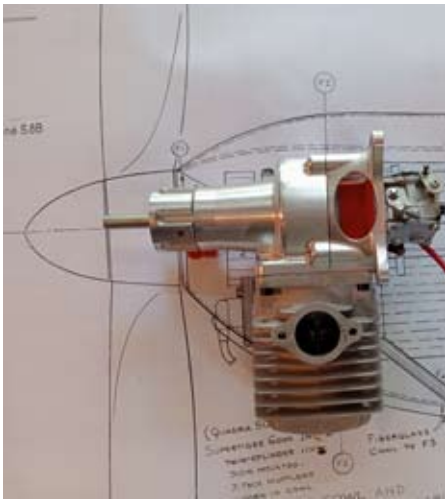
Relatively simple project that doesn't take up much space

Lil Misty was started a few years ago in the belief the national air racing scene was actually going to happen. Designed for a twin cylinder 60cc two stroke with twin canister mufflers, that engine setup was shoehorned into a Seagull Nemesis as a test bed to demonstrate an acceptable noise level to race at Burley Field.

Yes, I've long since had a thing for racing planes and this relatively simple project doesn't take up much space. Building from a plan means I can do a bit at a time when I feel like it. The RCGF donk in the Nemesis turned out to be rather disappointing. The easiest thing would buy a DL60 twin because that matches the canisters and manifolds as RCGF products were not out of stock at the time. The running theme with all three aeroplanes is speed and if that 3W could be made to fit, that would be one seriously quick scale model. Lil Misty has been shelved and the floatplane plans have been rolled up and put away until 2027. The next page might give a further inkling why.

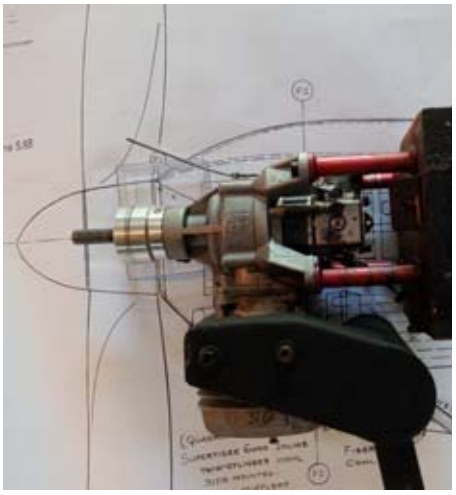


3W 58



DA 85

Moki 60



OS GT 60

Unfinished Projects

There's quite a list. How many were completed before this magazine was put to bed is revealed within these pages. By mid July, it became patently obvious I needed more room for a building bench. I have to fess up though. Number 15 was intended to be a lazy read over the New Year break. Number 16 was something I've always wanted to publish. Having wasted far too much time with 17 and 18 throwing good money after bad, Numbers 17 and 18 were combined.

1. **Scratchbuilt F-100 Super Sabre - 13kg thrust**
2. **Scratchbuilt Mile Hawk Speed Six - 85 cc**
3. **Scratchbuilt Lil Misty - 60cc**
4. **Scratchbuilt Mr Smoothie 60cc**
5. **Fibreglass and Foam Extra 300 - 85-100cc**
6. **ARC Seagull Cassutt - 60cc**
7. **Balsa USA SE-5a kit - 33cc**
8. **Scratchbuilt Foka glider - 5 metre span**
9. **Valenta Models Salto glider - 4.5 metre span**
10. **Hangar 9 MM339 ARF jet**
11. **JR Voyager Helicopter - 26cc**
12. **Hirobo Eagle SST helicopter 26cc**
13. **Align T Rex 450 electric helicopter - 3S**
14. **Align T Rex 450 Dominator helicopter - 6S**
15. **Lazy read Christmas holiday magazine**
16. **Learn to fly Book**
17. **Old Fokkers**
18. **Speed Weekend event**
19. **RePL and ReOC first sortie**
20. **RAA Pilot License**
21. **Overseas trip**
21. **The Evacuators Christmas gig**

A Series Servos

Before getting started on this list it seemed prudent to become more familiar with Futaba's new range of servos. My first port of call for any technical information is the Futaba factory website. There's a link to it on the "How To"page on my website. You can select Japanese or English. I was hoping to download the instruction manual for the new A601 servos but it was not there. Ditto for A500 and A301s. Checked the Oz, USA and UK sites as well so I had to wait for the stock to arrive. Then I could read the intructions sheet and answer a few questions. Soft start being one. Are they soft start? Yes.

The prospect of my needing a 41 plus kg/cm torque servo for a model aeroplane is practically nil, however, the A500 and A301 servos do provide good value for money to compete against the likes of SAVOX and other brands. Part of completing some of these models will be fitting these servos. One thing I don't quite get with owners consider switching to radio systems such as Powerbox and JETI for a few more bells and whistles is this. Those manufacturers do not have an extensive range of servos like Futaba. Powerbox offers one 40 plus kg/cm, coreless motor ball race servo in an alloy case Anything else you are left to your own devices. JETI does not offer any servos. Frankly I'm yet to see any servo out of Europe that matches the performance of Japanese product.

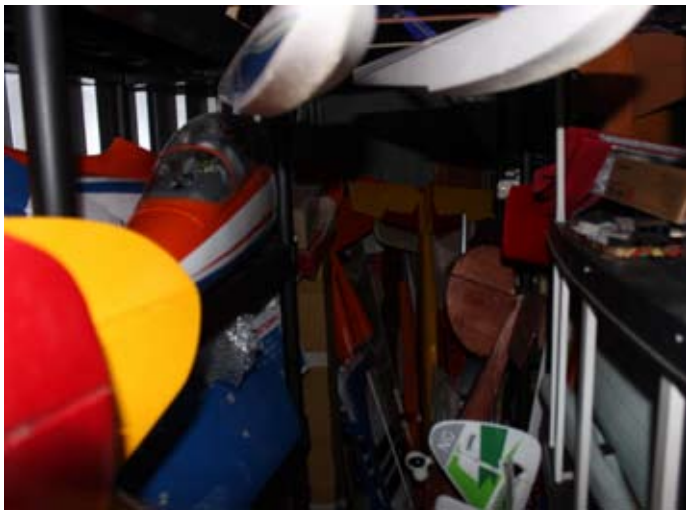
As far servos go the past few years has seen every small importer get their own brand name or logo printed on products ex China. I can say with quite a degree of certainty the warranty return rate on aftermarket brands is higher.

Futaba on the other hand has been manufacturing for decades. Of course there is no such thing as the perfect mass produced product but Japanese companies such as Futaba and OS engines, go as close as you can get. I've been around long enough to point out Futaba was not the leading brand when it first launched into this country. In fact its first servos were not up to the task in F3A.

It's a bit of a stretch to remember the particular model but I think it was S5 servos that used to strip gears at the commencement of three horizontal rolls. Competitors often crashed. The S6 fixed that. It didn't take long and a few years later Futaba knocked Kraft Sytems off its perch as number one.

Marketed with very attractive price points HiTech has done very nicely with its range of servos. I've done heaps of flying with that brand of servo. Very reliable, but from my own practical experience, they do not have the same punch around neutral as a Futaba product. Whether they have enough is an entirely different argument.

Mixing different brand PWM servos hasn't been a problem and digtal encoded servos shouldn't be either. In theory, but for me I would only use genuine SBus 2 Futaba servos



What to do with all this?

Putting the SBus 2 servo ID label on the top before it goes into the airframe is worth doing

for an SBus setup. If was still flying JR, XBus servos would be the go.

The instruction sheet confirms all A series coreless digital servos are SBus2 with soft start. Also stated is you can connect up to five to a single RX. When I get around to it the Extra 300 scale aerobatic design will geared up for glider towing as well as practicing the old Classic Pattern and early IMAC schedules. Not the manouvres young blokes are doing with IMAC models where the roll rate almost catches up with the propellor rotation. It's the only practical need I have for the grunt of a 601.

Servo power in the 1990s was was deemed insufficient for aileron, hence it was built for a pair. Another pair for each elevator, plus rudder and throttle. Setting that up for a single R7314 FAASTest RX fourteen channel receiver goes against the manufacturer's instructions. Fitting a DLPH-1 or DLPH-2 power bus unit is required. One alternative is a pair of receivers.

100 inch Extra 300

A601, had to have a peek inside

Each with its own battery pack and switch harness. R3008 TFHSS or R7318 FAASTest. Connect left hand elevator and right hand aileron to one, vice versa the other. Throttle through one, ignition cut off the other. Take your pick for rudder and other functions. Battery pack capacity becomes the main consideration and for this model it's a pair of Futaba LiFes through each receiver.

Snap rolls at full throttle require the most servo torque and Futaba's capacitor provides extra oomph to cover any instant power supply demands. Simple. ESW-J FET switch harness handles five amps continuous and a peak ten amp load for thirty seconds. Peak load on ESW-D with a Deans plug is 15 amps and 10 amps continuous.

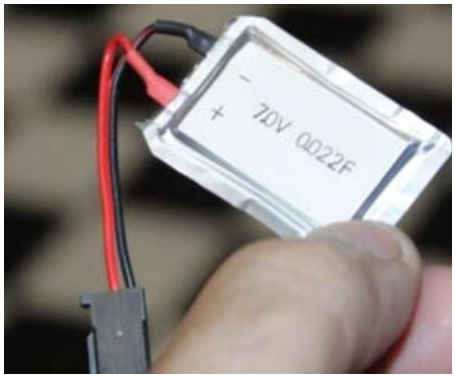
When burning fuel was replaced by consuming watts a competitor told me the Deans plug switch harness was superior. Reason given was constant plugging and unplugging the battery pack the Deans plug lasted longer than the standard Futaba J connector. I often wondered about that claim because the same happens with aileron and flap connections. Putting that aside, if you want more servo power fit a LiPo battery pack.

Which is somewhat perplexing because the company does not offer its customers factory LiPo RX packs needed for the 25kg plus market. Which has has been a fast growing category for yonks, yet the 3,000 mAh LiFes, with the standard J connector, are not available with XT plugs for the DLPH.

Not a problem if you can solder. I can solder well enough to be comfortable with my own work but it is nowhere near to the standard of factory OEM soldered connections. Most modellers just opt for something already available off the shelf. NXT battery packs in my 3, 4 and 6S electrics have proven a good value for money brand for a few years now and they would be my go to.

Fitting the DLPH gives me the opportunity to gain product knowledge. For commercial and personal reasons I've decided on the twin RX setup with five servo per side when I do get around to this model.

Losing potential market share to companies offering cheaper product with more features? Yep, the more things change the more they stay the same, it's business as usual in 2026. Futaba 32 MZ remains the go to brand for F3a. The disastrous mistake JR made converting its loyal 35-36, 72 MHz FM customer base over to Spektrum's 2.4 GHz protocol turned out to be a monty. JR has been relaunched as a competition brand and



2100 uf capacitor

Enough to complete my own models then bought more

is backed up by an excellent Australian agent..

Claims by open source software afficianados remind me of crashes by chaps who built their own radio from do it yourself kits available in the late 60s. Radio systems cost a lot more then than they do now. A crash followed by "It doesn't really matter the gear was so cheap" is history repeating itself. Whether genuine Futaba product will complete it's product range for the burgeoning big model market segment I have no idea. At any rate Futaba has a complete product range for my glo petrol, turbine scale glider and helicopter interests.

A while ago a friend of mine purchased this FPV equipped Bronco. It was set up for FR Sky gear. The easy option would have been to purchase a TX but I neither have the time nor inclination to learn how to program it. The real problem for me with that gear is insurance related. Just another brand not supported by an exclusive Australian Agent with any number of businesses flogging it that do not spend the money to have it ACMA compliant. MAAA published in Wingspan this may cause issues with insurance cover.

Bronco problem solved with a 26SZ and DLPH-2. My first experience with that gear will be in January when I spend a few days during the Christmas break in Gippsland with Teddy Angelo. Ted was one of my first RC flying school customers in the 1980s and we've been friends ever since. Ted manufactures an excellent range of stands for large ang giant models.

www.propheadproducts.com.au

Hiding the engine is next SE5 or SE5a

Graham Goodson has been plugging away at the 1/4 scale Balsa USA SE-5a. When it was time to decide what engine I opted for a Zenoah G26. It does not produce the fourstroke sound desired by many but simplicity and ease of operating a single cylinder two stroke is what I want. Plus it has one scale feature that is a nice fit. Magneto ignition.

That long straight out exhaust pipe and propeller selection should produce a lazy sort of sound.
Progress to date has been covered in the monhly newsletters. Side exhaust and carby the other side meant hiding the Zenoah inside the cowl was too fiddly so it now has an OS GT33. Servos are U400s.

Grahame's very adept at trawling the web and found an interesting small business. Bang! The 1/4 scale cockpit kit on its way. All the way from USA. Tarrif free. Looking for a 1/4 scale SLR camera to add detail to your model? This website has lots of nifty little things like that.

www.iflytailies.com

Swapping out FR Sky for Futaba 26SZ and DLHP-2 in this twin 30cc 26 servo Bronco

Engines

Loyalty and reminiscing about a particular engine is a thing for a lot of modellers. For me that means something that has served well in competitions. Difference between a sport mil and competition is quite simple. Easy to start is one thing but usually that's a case of learning what to do and how to tune it. What about how long does it last? Most sport fliers will never do enough flying to find out but burning heaps of fuel practicing competition aerobatics sorts that out quick smart.

Making the engine work flat out pulling up hill is the requirement. .60 two strokes on glo used to be what sorted that that out in F3a. Sorry chaps but now it's IMAC. Spare parts back up is another consideration for successful competition flying.

Top of that tree are the Desert Aircraft engines. Standing behind that brand in Australia is Ian Howard. Getting my Father's Miles Hawk Speed Six going is a great example of back up service. Model was geared up ready to fly a decade ago.

Engine was fired up in the model. Idle was set and run at full throttle for a minute or so. We never got around to flying, let alone racing the Hawk. Engine and gear removed. Engine put back in its box. Model now good to go again but I could only get it to run on the prime. Worked through the usual things, fuel supply being number one.

Checking and re-checking the fuel system three times a gummed up carburettor was the next suspect. Had a look but saw nothing. After removing, re-doing the plumbing out came the fuel system. Again. Then I cracked it and sent the donk back to DA Aust with a note it wasn't urgent. Engine came back a couple of weeks later. Fantastic service. Thanks very much Ian. Unfortunately the RX battery pack was dead flat. I had forgotten to disconnect it from the FET switch. This is something you need to be aware of. I just have to complete the wheel fairings. Or so I thought.

Mr Smoothie was next from the nostalgic air racing department. It just has to have the radio gear and

Tight and complex installation

the Moki 60cc inline twin cylinder engine installed. Actually the engine was already in but it has to come out for a new piston ring in the rear cylinder. I have spares but snapped up another as new engine. Just have to swap the backplate to run the fuel pump. And do something about the large gear doors not blowing off in a full throttle dive.

Four flap wing, single elevator servo, rudder, retracts and throttle the Hawk requires eight channels. Receiver is R3008 or R7308, in Mode A. The pitot tube on the wing has a larger ID than the Futaba one and my guess is that will be okay. Airspeed sensor measures relative air pressure. If not a GPS is an easy alternative. Two runs on reciprocal headings reveals straight and level airspeed.

RAA Pilot License

Started two years ago and wasn't far off solo. As mentioned that was put on hold to spend as much time as I could with my father. Dad was able to use Victoria's Voluntary Assisted Dying legislataion and went out on his own terms. This year I got stuck into finishing it. I had a fantastic experience with Damien Mould in his Christen Eagle flying to a Wings and Wheels show at Wangaratta Airport. We watched excellent four point rolls a hundred feet agl by the Ex Roulette PC9 and a most interesting a formation flight behind a P51. T28 and P-40

Scratchbuilt from a three view

Buffed right out

Ripping little plane

demos, the highlight for me was our flight home. Tracking towards the Glenburn gap in the Great Dividing Range, cloud base assessed as a no go we diverted to Mangalore for fuel. Almost took longer than the flight home.

Working out how to operate what seems a stupid system to pay for the fuel was quite problematic. World Fuel's technology leaves Victoria's infamous MyKi public transport card for dead. Haven't they heard of EFTPOS?

For the cost of purchasing lunch I had a first hand look at how a professional pilot assessed what bad weather looks like. Limited visibility looking over the long nose becomes immediately apparent during taxi but the workload visually navigating the VFR route back into Melbourne, punching along low level, VMC minimum at 130 knots blew me away.

Getting home safe and sound never an issue this was an experience of what that looks like with a highly trained and practiced low level endorsed commercial helicopter pilot in the rear seat. Thanks Damo. As I log more time it becomes increasingly obvious how important decision making is.

EFATO

A subject drummed into full size aviation training but not so with models. My RC flying school days used to cover engine failure after take off. Test flying a complex model I do the "What If". A couple of days spent over Easter flying off private property at Prop Head Products I had an unsual occurencewith his electric powered Draco. Not engine failure per sea rather loss of thrust just after lift off. No, the prop didn't fly off but the model decelerated instantly. More like it snagged a power line. Yes, I do know what that looks like.

Nose down just in time and it flopped on and turned over on its back. A few drops of Cyano on the slats and rear window she was ready to fly again. Phew! I could have blamed the radio. Guess what brand? Hah! Getting bettter at flying includes admitting your mistakes. Pilot error was the cause. Not Spektrum

I can change between flying Mode 1 and Mode 2 no problem. Not so for the switches. Flap switch on my Mode 2 TX is on the right hand side. Right hand switch above throttle on the DX-18 TX activated the reverse thrust feature. Switches identified and checked with a backwards taxi before take off, selecting flaps clean after lift off activated reverse thrust. Oops. My switch selections for fixed and rotary wing, glo, petrol and electric propulsion, telemetry and autopilot are offered as a guide. (Page)

Flying a multitude of types keeps the hobby interesting. Even chugging the old timer Super Quaker around on minimum throttle setting at dusk. Most enjoyable. Not a breath of moving air, the flight lasted thirty five minutes. Noise from the McCoy .60 not a problem.

Next day it was crosswind practice with my pair of 6S Flex Innovations foamies. Purchased to release cremated ashes, adding the 2kg payload to just under 7kg AUW makes little practical difference to the performance. One of the many requirements in my RPAS Operators Certificate is to log one hours flight time after uploading software to the TX before doing a commercial flight.

That is not a requirement for model aircraft flying but fitting brand new gear into a brand new high value model is something to ponder. Before swapping out the JR radio from Dad's Spitfire to Futaba I did a short low altitude test flight of the receiver

Old timer with retractable undercarriage

in the Power Chook. Extended range, 500 metres out, 100 up. Ditto for the TM 18 system. Why?

A crash witnessed years ago remains idlebly stamped. In 1971 the turn key F3A model in the advertisment below was built for a customer. It went in on the test flight. Kraft signature series 7 channel radio, Kraft Multicon electric retracts and I think a Kraft .61 engine. A few seconds after lift off Dad selected gear up the model rolled over onto its back and went in.

Compared to the ever increasing number of large ARFs people are punting around the skies today the Spitfire is not an expensive model. You cannot buy one off the shelf and it represents high value to me because it was scratch built by my Dad.. Still there is a sizeable chunk of dosh flying around up there. The six inch True True spinner alone is a few hundred.

I flew the Spitfire in a scale comp at PDARCS and current and FAI Scale World Champion David Law pointed out that my slow and point rolls were downgraded because it was a Mk1. The carburettor engine in that type could not sustain inverted flight. The engine should cough and cut out. Somewhat diappointing because this thing looks so graceful stringing out a classic pattern style slow roll. One could suggest this particular version was fitted with fuel injection but that would probably be dismissed by the judges and put me into the smart arse category. Blipping the ignition cut off during a slow roll? To manage that with some degree of finess, safely, is something I would not care to practice with this model.

I had planned to compete in the jet only category as well as the flying only category in the MAAA Scale Nationals at BADMAC in Gippsland. Unfortunately I had to cancel. Reading the results was interesting in that organisors allowed a turbo prop PC21 in the jet category. A poor decision. Building numbers would have better served by putting that prop job where it should be. Flying Only. Nothing to do with the pilot whose entry was accepted but I would have lodged an official protest.

Years go my brother Michael knocked off Tom Prosser in a WW11 scale comp. With a T28. A protest was lodged but organisors accepted Mike's argument that "because they took the money for his entry the scores should be allowed." And they were. Tom would have every right to be pissed off with that decision.

I once disqualified a chap because of a jettison. That rule was in place when I started competing. His argument was it wasn't published that in the rules. Model wasn't competitive anyway and I should have stood my ground but offered the choice of averaging his previous scores or a re-run instead. He chose the latter. The following year I added *"the event was conducted under the FAI and MAAA sporting codes."*

Charging a protest fee is something I've never agreed with. That seems more about reducing the number of protests to make it easier for organisors. The entry fee is the smallest cost of entering a competition. Travel and accomodation are often the biggest. Most of us know we aren't competing for sheep stations and not applying the published set of rules is the quickest way to burn a newby.

Of course there a few special people who don't see it that way. Aerobatics at Nationals in Warrnambool Dad zeroed a take off. It was rudder, elevator and throttle back then. Just like today the rules stated you get one attempt. Model was an Aristocat. Narrow track undercarriage it was prone to tipping over. Take off roll not quite into wind the manoeuvre was aborted for another attempt. The

Best landing to date with the Spitty happened at Christmas in July at Willie Emmet Field

Great model to try your hand flying three channel

very experienced competitor argued the toss and lost. The transmitter was seen sailing through the air.

If I was to build an early sixties design to fly the old Class Three aerobatic manoeuvers my choice would be the Super 60.

Fun Flying Comps

Even though I find the pressure of competitive flying most do not. Simple fun comps at club level do have their place but thay seem to have completely disappeared in Melbourne. Yarra Valley Aeromodellers had an STOL event proved there was planty of interest in basic task flying. I had planned to go but it slipped my mind on the day. Bummer.

It is inevitable that an inpromptu competition happens whenever Damien Mould and I go flying. At the end of a day a flying the big stuff out comes something small. Most times it is our Super EZ Off which consists of a few simple tasks flying the FMS Super EZ.

Engine failure after take off is one. Once the plane gets airborne the other person calls "CUT". Which can happen as soon as it seems possible to just make it back. Alternatively it could happen with enough alttiude to plan the approach. We're both very experienced so to add to the challenge the winning flight is also judged by how close the landing roll is to a given spot.

Much harder to achieve with our old timers. I don't recall which club used to roll one of these McCoy .60 powered Super Quaker units out every year for the VMAA Inter Club Trophy, but it used to win that category a lot. Engine screaming gear up as soon as it stated lifting into the air, pretty sure it was flown by Mike Pettigrew.

Keil Kraft Super 60

The electric motor setup in Damo's red Quaker has a better rate of climb than my Super Quaker. With its rettactable undercarriage, in theory mine should glide better but that has yet to be demonstrated. We have just as much fun boating these old clunkers around. Quite chuffed with the electric start setup on the McCoy 60 but taking off even slightly crosswind the Super Quaker has the same problem as the Aristocat.

Round one for me

Power Chook test bed is my FMS Super EZ in disguise

Mine has retractable undercarriage

Spitfire Sorties

Down and stopped in time. Again. Phew!

(Previously published article)

Ziroli Spitfire

In model aeroplane form this Mk1 shares a similar attribute to the Sopwith Camel. WW1's number one English fighter had the 130 horsepower 173 kilogram nine cylinder Clerget 9B rotary engine hung on it's very short nose. This first Spitfire variant had a 600 kilogram twenty seven litre sixteen cylinder 27 litre 1030 horsepower Rolls Royce Merlin 11 engine at the pointy end. A .60 was the big end of town when model aircraft engine crankcases were cast in iron.

The Ziroli plan for this Mk1 shows the ubiquitous Zenoah G62 engine and even though the OS GT 60 is somewhat lighter, that does not account for 4kg of ballast required to balance this baby. A multi cylinder Kolm would go a long way to replacing much of ballast. Neither a Kolm I can afford nor have I seen one running first hand.

Upgrading to a DA 85 will cost less than a Kolm but it still needs two kilograms of lead. Models are so over powered these days yet modellers who hang their hat on boasting their build does not require ballast are missing the point. I've never seen the point of that. Particularly when it comes to adding weight to move the CofG aft. If it needs it put it in but if that's your thing and your heart is set on a Spitfire, best to go for a later model than a Mk 1.

Another bug bear of mine is some of the fluff people post about CofG. After considerable flight testing to see how far aft the CofG can go, six flying sessions later I've shown the further most aft position in the next page. Suffice to say the first hop after modifying the original setup to remove lead mounted on the cowl, stable in straight and level flight it was not. So touchy it needed the tiniest poofteenth of elevator to turn. Gear back down and flown back in before more fuel was burnt. Lowering flap moves the centre of pressure aft, which calmed it down a bit.

Incidentally when my father contemplated building this model Steve Richardson's engine advice turned out to be spot on. Richo happens to be the Australia Agent for JR Propo and RC Depot Australia is a large model specialist. If I wasn't flying Futaba I would fly JR.

Sixty cc has proven to provide quite enough power and now that is is setup the way I like it, the Spit is a joy to fly. Split flap at 45 degrees produces the usual slight nose down pitch, trimmed by a 4% up elevator mix, it flies in at 1/4 throttle very nicely.

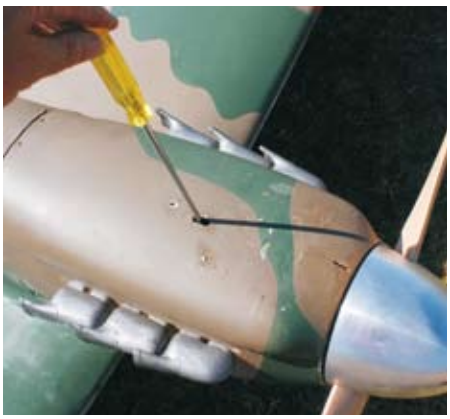
The model was a bit light on for rudder travel and I kept having trouble achieving a straight take off. I tried a full throttle - full right rudder mix for take off and this was se;lected with the retract switch. Which produced a nasty swing to the left on the climb when gear up was selected. Not good. Big yaw during the climb out. Oops, should have programmed a delay timer but I deleted that for the time being.

Actually experiencing full power for the whole flight was yet to happen because of insufficient cooling. The only time it really started to hammer was when the muffler rattled loose. Which has happened three

Tank empty, gear down the CofG is 195mm from the leading edge. Up elevator throw set at 35mm, measured at its widest point produces a good flying experience

In keeping with its heritage "Somewhat awkward to handle" is a classic British understatement

A rag protecting the empannage is the best way to assemble it by myself



Not scale but removing the cowl to tune the engine is not for me

times. The rest of the time the Spit was dragged off the ground bog rich in order to get enough flight time to sort of the centre of gravity.

Back to the ballast. Gluing lead sheet into every nook and cranny I'm very mindful of what happens should the weight work loose which is why I glue rather than screw. Standard Operating Procedure or rather my preference for engine cowl installations is they must be able to be removed very quickly. The same applies to the spinner. Which came in handy sorting out the centre of gravity and the next problem.

Finding the best propeller. Tried a few different combinations during those hops so the first modification to the engine cowling was installing a hole to access the needle valves. Purchased a long carby style screwdriver and a torch. The mobile phone torch is too awkward plus that is one less instance that device is ruling my life.

Juggling the aft CofG with an

Lead distributed into every nook and cranny

Lead glued with silastic

Cooling air stage one

Stage two - flight tested

overheating engine and prop selection resulted in quite a number of deadsticks. One landing was potentially nasty when the engine lost power but didn't stop. Not enough power to maintain level flight and try as I might for some reason the ignition cut off refused to work.

A few hundred feet up gave me time to plan the approach. A brief thought of switching the TX off to kill the engine was dismissed, established on final and repeated switched flicking abandoned to concentrate on landing. Slight incline up hill wasn't enough to pull up before the rough bit at the end. For the cost of one prop retracting the gear would do the trick but the radiators might be ripped out the bottom wing skins.

Chanced my arm and ran the wheels into the rough. Broke the prop and scuffed the cowl. A little damage by way of a dislodged fire-wall I was happy with that decision. Ignition cut off fault was mine. Working out switch logic across all my models I allocated the servo operated choke to the three position ignition switch. Allocated ignition to the same switch. Down for full choke ignition off. Centre position gives half choke, ignition off. Up is ignition on, no choke.

First start of the day is easy with a Sullivan Megatron starter, on 10S. Full throttle, full choke, ignition off, crank for ten seconds. You can hear the rpm increase when fuel reaches the cylinder. Back to a tad above idle, ignition on and bang. Let it tick over for twenty seconds. Rest of the day usually requires no choke. Unless it's a cold day. Warm up at full throttle takes about thirty seconds. I re-jigged the choke to 100% ATV both ends and with ignition at 100% ATV it occasionally does not switch off. Logic behind that mix was one less switch function to worry about. Extending the EPA on ignition might work but in the end I allocated a separate channel it now works as expected.

As mentioned Dead Stick landing is one manoeuvre this Spitfire has been put through quite a number

Rudder 50 mm either way
Elevator 35mm up 39 down

Stable approach with 2mm up elevator mixed and forty five degrees of split flap

of times. The first was at Northern Flying Group when the muffler rattled loose. The first of three at was Burley Field had me a little worried. Kept the speed up and left it clean until established on final. Lowered flap and gear when I was sure it would make it and the Robart struts clanged noisily against the stops as she bumped and bounced along the Farady Runway.

Thinking it might run out of room makes for an interesting decision with big models. When I say big, at 19kgs this one is big and heavy and a ground loop to avoid running off the end of the runway risks breaking the model. Possibly not such a problem for this home built airframe, or a full composite structure, but running any big model straight off the end one risks breaking a fifty to one hundred dollar prop, and dinging the spinner. The Tru Flight spinner on this is quite a few hunderd. In this instance I got away with a gentle ninety degree turn onto the main runway.

Finally got the Cof G and control throws sorted then I experienced two more deadsticks throttling back to idle after climbing for spins. It was time to fix the air cooling.

Airflow into the engine bay looked sufficient but the exit needed to be improved. Spent a day with Damien Mould in his fully equipped workshop. Damien did all the work and fashioned up two baffles. A plywood job cable tied to the engine standoffs and two Litho Plate numbers at the rear. To seal the front baffle Damo doped the plywood. Not with a brush but hand rubbed into the grain with a pair of disposable gloves. That worked a treat. A few hours later a coat of enamel. Job done. I checked out his next project. Sworn the secrecy all I could say his Mustang project is "very exciting".

After another outing I added a metal baffle each side of the cylinder and another behind the spark plug to duct air to another exit further back. Also added two small exits each side of the cowl.

Handling in the air is a breeze. Looks great through a slow roll. Flown gracefully she looks beautiful everywhere. Not quite so on the ground. Handling the long heavy fuselage in and out of the hangar and the model trailer is hard work. Fuselage being so long it's easy to bang into the ceiling. This model has to be held under the forward part of the wing saddle. Which tends to split the wing fillets. Battle damage

Beating up the East West strip at Burley Field

The stiff crosswind that blew up Shepparton Mammoth Scale resulted in two go rounds

around the tail, wing fillets and cowl plus hangar rash on the elevator and rudder adds authenticity. Well, that's how I'm selling it.

The 20x11 Menz wood prop turned out to be spot on. Take off requires full right rudder and pretty much hold that amount and gradually ease off when established in the climb after gear up. Compared to the lightly load ARFs and foamies I've been flying the past few years incorrect take off technique taking off by getting the tail up quickly resulted in quite the bit of head scratching. Modern balsa ply and foam ARFs accelerate so quickly and leap into the air I was mindful to get the tail up in case a gust lifted it off prematurely. Wrong. P Factor and insufficient rudder authority resulted in a few ground loops. A few dozen flights or so later I'm pretty confident now.

Measured at the widest point fifty mm of right rudder is just enough although operating in crosswind from its left requires a longer take off roll, because that amount is of throw is insufficient if full power is applied too early. I cannot get any more travel so sometimes I have to reduce power if it swings left. Not a big deal I've learnt to live with that. Importantly there is sufficient rudder authority to hold the nose up during the last sector of a slow roll. Which it does beautifully. When I get the timing right.

I took my time trialling the best needle setting for this propeller too. Scale Air Racing experience using higher pitch propellers I've learnt it can be quite easy to set too lean on the ground. After tuning a rich burbling setting on a cold ten degree winters day and dozens of flights later I richened the mixture a tad.

Haven't touch the needle since although I am yet to fly it on a very hot day. If it needs to be leaned slightly I don't have to remove the cowl to make such an important adjustment. I just fire it up using a Sullivan Megatron starter for a fast idle warm up for twenty seconds. Apply full power and wait until it starts two stroking. Which takes around thirty seconds.

Its first official outing was the 2023 Shepparton Mammoth Scale fly in. Crosswind from the left increased in strength just after take off early on the Saturday morning. Which got me wondering why I took off. I had not yet flown any crosswind ops and now I had to learn that in front of people. Another thing I still did not know for sure was the fuel burn and after a few passes I though it prudent to head in.

Looking good with left wing low holding right rudder the nose pitched down when I applied more rudder. It got untidy quite quickly and it thumped on just as I applied full power to go around. So hard, I was suprised not to see the undercarriage torn out. Next approach was flapless but the speed was way to high. Around again.

To avoid what happened on the first attempt, with rudder held to align the nose with the strip as much as possible, course corrections made with aileron, she flew on very nicely thank you very much. Phew. Rolling out towards the end of the runway the right wheel departed company and it skewed off line, tipped up momentarily and stopped. Wasn't the wheel, the oleo strut had broken. And that was that for the two day weekend.

Its first competiton flying in front of judges I learnt I was not meant to

Slow Roll is such a graceful manouvre

Blip the ignition when inverted?

This Old Fokker took on a Spitfire

DOH! Should have warmed the plastic first

fly it inverted because the engine was supposed to cut out. Keen to enter another scale competition I'm contemplating whether to learn how to blip the ignition through a slow roll. I enjoy the pressure associated with competiton flying and a big part of that is knowing and understanding the rules. Whether you agree with those rules is a moot point because it is up to you to figure out what the judges are looking for. Same as F3a and IMAC.

As I understand it scale flights are supposed to demonstrate an aeoplane being shown off at an airshow. I have a video where Sir Alex Henshaw explains how he flew a Mk IV into a half loop after a 200 yard take off run. Not an inertia takeoff just straight into the loop. My model isn't capable of that but how would I fare doing that if it had an 85cc big bangar in the nose? That's a rehtorical question. What if I dived a Pitts Special at full throttle to build up momentum for a hammerhead. Probably get pinged as well yet Grahame Goodson did just that competing in full size aerobatics.

Competiton flying is what drives product development. It's odd's on you may never want to build a warbird and operate a piston engine, let alone fly in a competition, nevertheless, the point of this publication is about flying. The old agage that one competition flight is worth fifty is on the money. A big part of getting bet-

Frost on the wings at Scale Aviators Christmas in July weekend

ter is learning from your mistakes. I have no problem admitting mine and making them public. The single biggest common factor in model aircraft crashes is the elevator. Up elevator.

On that point I feel compelled to mention the CofG and elevator throw again. Decades of poor advice about excessive control throws suggested in kits and ARF instructions, the very thin wing tip aerofoil on this elipitical wing has gained an unfair reputation within the model aircraft fraternity for tip stalling.

These control settings have been flight tested, in fact the model had a number of flights much further aft than what is suggested therefore I can safely state provided you use my suggested elevator travel the published balance point works well.

I use a higher rate of up elevator to taxi on the spongy grass runways, which is a feature common to many clubs where I live. Low rate elevator is selected before take off and that remains for the rest of the flight.

Hangar rash has added authenticity to its somewhat beaten up look. One broken undercarriage door adds to the look that it took a few hits in a dogfight. The canopy also took a hit. Not from a Focke Wulf but an old WW1 Fokker. Which fell off the roof and dented the canopy. from a Fokker.

A heatgun at my disposal I was a bit too clever by half and thought the dent could be prised out cold. Not so but the temporary sellotape fix can be passed off as one of the many 1941 overnight patch ups to get fighters ready for battle the following day. Which is how I explain why a Malcolm Hood styled canopy from a later variant is on this Mk 1. Peter Goff from Scale Aero Products supplied the correct unit. Which is yet to be swapped out.

One surprising thing about the Spitfire is the number of punters who ask if it is a Mustang. Another consideration with flying is currency. In that context sorting out the Spitfire came just in time as I was asked to test fly a 15 kg Top Flite Mustang with a twenty grand V12 in the nose. With a conventional model aero single cylinder engine the Mustang should weigh in around 9-10 kg. The first test flight was on a narrow bitumen runway. The next will be on the best grass strip in Melbourne.

Taming the RV-8

Turn key models are an ever increasing share of the hobby market. I bought this model for a number of reasons. After I started ground looping Dad's Spitfire on take off was one. Providing information for someone transitioning from this high powered light weight aerobatic machine to a heavily loaded warbird another. In short how would someone with less experience fare if they upgraded to a much heavier more expensive all composite warbird?

Another was to learn how to explain the benefits of Futaba's AFR function.

Flex Innovations RV-8 60E

Cutting up the foam packaging and cardboard box for the bin then checking out the huge control surfaces and long servo arms reminded me yet again that not everyone wants to hover an aeroplane. Confirmed by the factory demonstration on You Tube this is clearly setup to do just that.

The IMAC Hangover

A few years back I tried toning a 3D style foamy sold to an elderly gent by a young bloke behind the hobby shop counter. Customer had asked for something aerobatic. The salesman did his job and recommended a model and the customer walked out happy. That changed when he got to the flying field. Setup out of the box the receiver ready 3D foamy was a handful. Reaction time from a seventy five year old didn't help. To reduce the control surface throws I re-jigged the servo arms and control horns mechanically but even with 30% EPA (ATV for non Futaba owners) it was still touchy. The other problem that arises when you do that is the control surface centring is less accurate. Not helpful for anyone new to aerobatics let alone if reactions and eyesight aren't what they used to be.

Aerodynamic load on control surfaces is low when hovering but what about at high speed. By its very nature this model is way overpowered and the modified control setup here has been flown flat out straight and level for three horizontal rolls. Having said that I still would not wind it up in a full throttle dive first.

Something to consider

Teaching rudder skill is pretty much an afterthought in this country. Pilot barriers positioned on the edge of the runway are worth thinking about too. A runway centreline is an inexpensive safety initiative and would be the fisrt thing I would initiate if I was a club President. That line gives an immediate reference when a model begins to track off line. I can safely say that from experience from my own flying field for commercial RC training. Sooner or later surely someone standing at that

60mm of flap with 3mm of flap elevator trim mix

position is going to get cleaned up by a model veering on take off .

The first thing I look at to check someone's flying standard is does the model maintain centreline during and after take off? Pretty hard when model strips don't have a centreline. This model is off the ground so quicky there is no need to follow full size practice where making use of all the available runway is a safety consideration. I don't have that luxury with my Spitfire. Or a jet. What if either suffered a wheel or landing gear failure on one side as it hammers past the pilot postion?

Something else most fields lack is an aiming point after take off. A windsock placed on the inside line at each end of the strip is a good idea too. Can't get a windsock? Use ribbon. Cheaper to replace if someone hits it.

Setting up the 5.3 kg RV-8 to replicate for a newbie thinking to fly aerobatiucs, perhaps a warbird, I changed the 17.5 prop to a 15x8. Take off roll increased from three metres to ten. Improved flight time and still more than enough power to pull over the top with authority in a Top Hat. Which is a classic pattern manoeuvre. A 14x8 increased the take off roll to twenty five metres. Top Hat still possible but only if you nail it. Which is what F3a performance was like when I started.

I'm not recommending you do this with your RV-8 but for the sake of the exercise I added ballast to bring it just under 7kg. With the 14x8 and reduced rudder throw and having to wait and keep it straight as it built up speed this setup was getting close to replicating the Spitfire on take off.

Proved at my flying school in the 1980s a runway centreline is an inexpensive reference point which increases safety by ehancing ability to keep it straight. Every club strip should have one

On the landing side sixty mm of flap with a 3mm down elevator trim mix works well on this model. Flap deflection blanking off elevator response when the tail wheel settles onto the runway is something to be aware of but overall this is an easy peesy model to fly.

Gyro

I have no interest in hovering fixed wing aeroplanes nor do I have any use for the unit supplied with the model therefore I'm unable to vouch for its factory settings. Any product that does not accept Futaba servo leads is generally dismissed out of hand here but if you are interestd in hovering 3D style Futaba's GYA 553 is suitable for electric and piston power.

Adjustments made via a computer is another area of little interest to me either. Give me a few potentiometers that can be adjusted with a screwdriver at the field thanks. Unfortunately for some reason Futaba has discontinued the GYA 460 gyro fitted here. If you are after a simple technology to assist flying when it is windy, two Futaba options are the two axis GYA 451 or the 1980's Pilot Link PA18 optical stabilser.

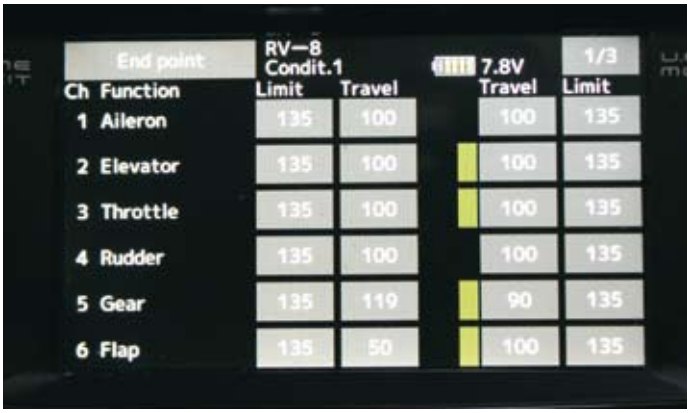
AFR

This function is one reason top F3a and Scale Aero fliers fly Futaba. The other feature Futaba offers is Hysteresis throttle stick mixing. The SZ and iZ series has a one point mix. MZ offers two. Futaba gear placed 1st, 2nd, 3rd and 5th in the 2023 F3a World Champs in Queensland. First place in junior too.

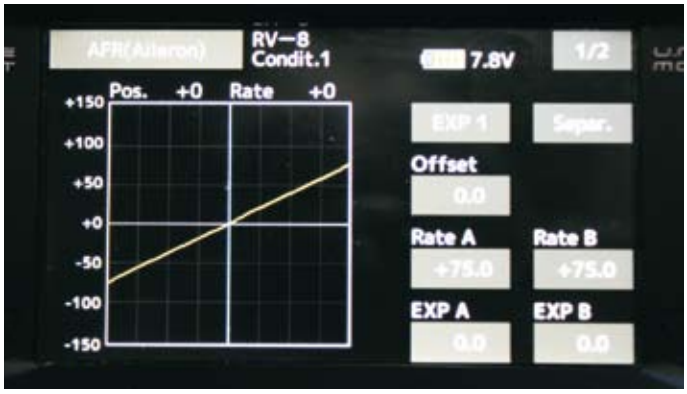
Leaving End Point Adjustment values at 100% then dialling the throws down with AFR retains the servo centring accuracy. Leaving the long servo arms in place I dialled down the control surface throws with AFR. Hovering a fixed wing is certainly one application for triple dual rates although for the life of me I cannot come up with a useful reason for triple rates in sport flying, How to do that is available from the Futaba Pro Shop website. The model has ten flights to date and one negative to be mindful off is the big control surfaces bang against the stops sitting on the ground when it is windy. I'm forever moving the rudder and eleva-

AUW to 7 kg? Not a problem

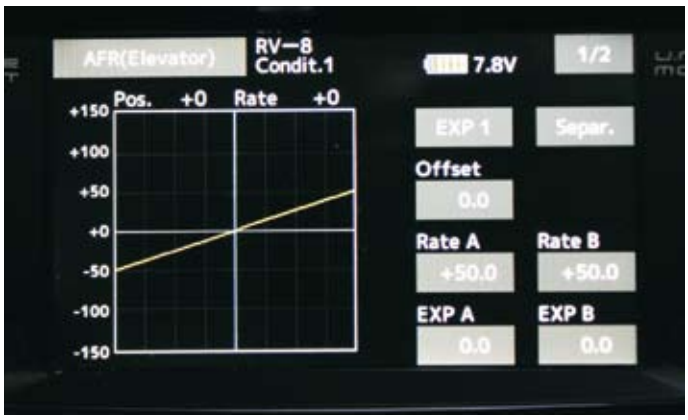
Checking the servo centring



AFR controls aileron elevator and rudder



Aileron travel reduced using dual rate



Elevator travel reduced using dual rate

tor back to neutral before putting the thing in the car.

When the left wheel copped a bump in touchdown on the first flight an almighty crack was heard. Expecting the plywood structure inside the fuselage to let go but I was pleasantly surprised the structure held up. A big vice on sturdy bench and a heavy hammer is required to straighten the alloy unit. Which I don't have. I had no intention of persevering with that unit anyway beacuse it is way too rigid and it was swapped it to a Dubro fibreglass unit with five inch Kavan air wheels. That undercarriage has been successfully trialled on my 9kg 60cc Cassutt. Still plenty of prop clearance on the RV-8 this works much better.

Paint peeling off easily doesn't bother me and the undercarriage this RV 8 is a great product. I wouldn't put it up there with Multiplex quality. In terms of engineering and ease of assembly at the flying field nothing, I've seen yet does. That company hasn't entered the large foamy market so alas, a big version of my Multiplex Fun Cub XL is not manufactured. By the way the tip stall characterisitc of Fun Cub XL is such that it is not a beginners model. Great model, just not for beginners.

Dubro 120 fibreglass plastic undercarriage

Flex Innovations C170

Contemplating a high wing tail dragger with balloon tyres I deliberated between this and the E Flite Cessna a50. I had checked out the E Flite model at a flying field. Puchasing a model has changed so much. In the old days you could go to a shop and an elightened proprietor would let you look inside the box. Somewhat akin to buying a car, the salesman has much greater chance of doing a deal if the customers drives it.

I spotted this model high up on the wall at Albury RC, a regional hobby shop some three hours from home. A year before I bought an E Flite Twin Timber using the staring up at the box wondering what it was like method. Model was okay but it didn't suit my purpose to drop ashes. I didn't want to chance spending another $1,000 that way. All I wanted to know how much room was inside the fuselage and where components were placed. Was there enough room to carry a 2 kilogram payload of ashes?

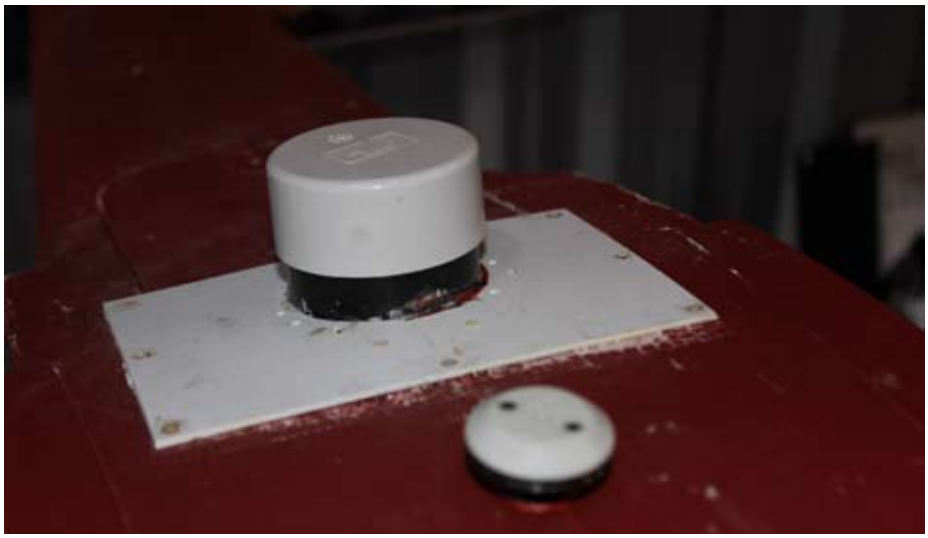
U Tube videos didn't help. Infulenecrs, (reviewers) seem to operate on the principle that a longer production gives better value to the company that supplied the model. A few minutes to describe opening the box bores me to tears. I try to make mine less than two minutes. Like most amatuer presenters, I too have a great face for radio hence my preference to be out of shot. Vanity comes into play here as well. I have enough reminders how old I am now and as aeromodelling tries to entice younger people into the hobby, it could do with less old codgers on the screen.

Down loading the instruction manual gave me the information I was looking for so I went for the Flex Innovations product. Very happy with the model. Particularly the undercarriage which even has a flat machined into the wire. This gives the wheel collar grub screw greater purchase. Nice one. What about the tailwheel?

The forward hatch mechanism is a bit fiddly. Which soon results in paint peeling off. Ditto if you pick the model up by the wing fillets and if you bang it about during assembly. Replicating what a full size version sitting out on the hardstand that that works for a living doesn't bother me. Someone new to the hobby who has never built a model might not think that way, but that is one of the attirbutes of a flying foam pained surface.

Control surface setup and video clearly demonstrate this model is set up for hovering. Out went the Aura

Hatch release a bit fiddly but does the job



Dome in front of the hopper is Futaba PA Pilot Link

Hinges are prone to work loose after a few knocks. November issue Flying Futaba newsletter has the repair

gyro and in went a simpler Futaba version. The PA pilot link is out of production now and I bought the last of them.

Control throws were reduced for normal flying operations using AFR function in the previous RV-8 article. Mechanical aileron differential was added by re-postioning the aileron servo arms forward. This moves the aileron up further than down. A 20 % aileron - rudder mix was added.

Then it was on to sorting out the flap. A standard out of the box setup using eight channels with telemetry is easy enough however if I wanted to setup a four flap wing, throttle rudder, elevator, gyro on-off , gyro gain and cargo door, ten channels are needed. SBUS 2 servos on auxillary functions with eight channel T-FHSS or FAASTest receivers is one way.

All PWM setup however the option with Futaba is either the 14 channel FAASTest reciver or add another 8 channel T-FHSS RX. Whether Futaba can produce a ten or 12 channel T-FHSS unit I don't know but this market segment is where the company does miss out a little and risks sport flying customers swapping brands.

FMS Ranger 1800

With its realistic scale size control surfaces this is a great model. As a basic trainer or sport model it is fit for that purpose, none of that 3D hovering shit here. Actually it does suffer one of those traits. This model is way overpowered. Take off rolls in ten feet might sell aeroplanes to experienced pilots however this is counter productive for basic flight training and sport flying.

Ab initio training with high power to weight ratio models industry produces has been a big problem the past few decades. Full size aviation doesn't do it. In model form this combo is the equivalent of a Cessna 150 with 300 horsepower, instead of the usual 100. There is an easy fix though. Before I get to that, here's a little problem. At first glance the marketing blurb for this model makes it quite useless for serious flight training.

Five minutes is recognized as being more than enough time for the overwhelming majority of beginners first go on the controls before they begin to lose concentration. Once they start catching up to the aeroplane the five minute flight time quoted on the factory website makes it impractical for circuit and bump work. Turns out that fugure is either a typo or just plain incorrect.

The average rectangular circuit with the Ranger takes ninety seconds. A 4,000 mAh battery pack was enough for ten to fifteen minutes of circuit and bumps. In practical terms this can compete with a typical .46 glo engine setup.

Another impediment to making the learning process easier is this. When a trainer is overpowered the change in pitch between full throttle, half, quarter throttle and idle slows down the learning curve considerably. Beginners have more than enough to manage during circuit work. All of this is predicated around trimming the model to cruise straight and level at half throttle. Full throttle produces a climb. Third throttle for descent into the landing approach.

This is yet another example of where a model and a full size differ in practice. With your backside sitting inside the thing and you are controlling an out of trim aeroplane it is quite surprising how much force is required to hold the nose attitude. Particularly in a go around with full flap.

A computer radio with mixing can be used to sort that out but with most overpowered electric models there is a much easier and better way. As it turned out this model copes really well anyway but reducing the propeller size can slow the whole thing down and increases the flight time considerably. Narrowing the speed range reduces if not fixes that trim change condition. Teaching someone to take off in ten feet happens so quickly it is counter productive for learning correct technique. Turned out not to be needed in this instance.

The control throws were set mechanically, the old fashioned way for a basic $150 Futaba 6 L transmitter. Aileron rudder mix does improve how the model turns so upgrading to a 6K computer set is worth doing. Then you get flap elevator mix and flight timer, rechargeable battery pack. And expotential. This is used to tone down the control response around neutral.

You also get free mixers. Which are quite handy. Not just if you move onto aerobatic types. Here's one example. Practicing crosswind take offs and landings involves holding in some rudder. When rudder is applied, to every model aeroplane I've ever flown, this produces a nose down pitch. With a free mixer you can command the elevator to move up slightly when rudder is applied. To get the correct amount requires trial and error but this can make the model easier to land using crossed controls. More advanced transmitters allows the mix to be activated by a switch. Then you can use a different mix for knife edge flying and slow rolls which are flown at higher speed.

I test flew it off a hard surface in a 35-40 kph forty five degree crosswind. Wouldn't be a problem on grass either although the extra rolling resistance does increase the chance of tipping it over. Getting it back in was okay. Flew it in holding the nose off wind with full right rudder and left wing down although the roll out was quite long, as expected.

Good looking model. Flies great.

Pilots don't get to change control thows in a full size

When it's Windy

Yes the wind gets blamed a lot but it does not grab hold of your model and make it crash. Trimmed for straight and level, training aeroplanes are designed to fly along all by themselves, with little input from the pilot. I demonstrate this to new students by putting the transmitter on the ground. Leaving a high wing plane to its own devices usually results in it drifting off course. The plane doesn't suddenly come thundering down.

What makes a model suddenly turn after a gust is an incorrect correction made by the pilot. The instinctive reaction when unsure what to do is pulling in up elevator. If the wings are not level the plane starts turning. A gust will usually tip the wing off from level or pitch the nose up or down. It may also yaw the model to one side. Sometimes it does all three. Which is of no great concern at altitude. Not so during the early stage of departure and late stage of arrival. Choice of model comes into play here. So does wing loading. Higher loadings ride out the bumps better.

My Classic Pattern Dragon Fli has flown in 80 kph. Extreme? Not not for me. I practice stuff like that. Harking back to F3a standard, the mistake most sport fliers make just after take off is not correcting wings level after flying through turbulence.Copping a gust incurs a down grade in a competition flight. Which is unfair I know. Judging the correction might be fairer.

Sport flying is different but not making the correction is considered poor airmanship. Oops. Airpersonship. That term is of little interest to me but the push to change it seems to be gathering strength. As a general rule of thumb, completing five successful flights in a session before wind begins to gather strength is easier to achieve in the morning. If, or when, the wind starts to blow another reliable factor you can count on is it will not be blowing straight down the runway.

What wind strength should convince you to cease flying for the day? Starting out with flying lessons?

A gyro really smooths out the bumps

Flying this Crusader at a mate's property

That's a question for your instructor. With a dual control setup I've found most students can comfortably continue shooting circuits and bumps in a steady 15 kph breeze. Aeroplane design comes into play here. In the small 1kg 3S powered trainer category this is quite achievable with an FMS Super EZ. This nifty model can be operated in 15 kph crosswind and taxi back after landing.

That is next to impossible with the E Flite Apprentice S. Putting aside all the American marketing hoopla around this very successful trainer the narrow track tricycle undercarriage lets it down. Conventional wisdom would have it a tricycle undercarriage would be superior to a tail dragger but whoever designed the Super EZ really nailed it. The undercarriage setup is spot on and the decision to fit large wheels was a winner. The Crusader pictured above ticked all the boxes but unfortunately it was a commercial flash in the pan. Someone I know has one and he loves it.

The day isn't lost if the wind gets up though. Give the actual landing a miss and continue to shoot circuits and go rounds or fly figure eights. Perhaps learn to loop and roll circuits.

Fifteen kph is a good bench mark when you start flying solo. If it gets uncomfortable before you are ready to land just switch to gyro stabilising mode. Don't be fooled by the argument gyros aren't helpful. Last century my RC Flying School had two aircraft and a helicopter fitted with Futaba's PA 18 Pilot Link stabiliser. The number of landing approaches that system salvaged instead of having to go around proved invaluable. It worked a treat teaching someone to hover helicopters too. That marvellous product increased my income.

So, when it got really blustery we swapped over to my models equipped with dual controls and stabilising systems. Which enabled me to convince people to fly in the wind. At my risk.

What not to do

Let's assume the wind is blowing straight down the runway. The mindset of getting the model off the ground and climbing steeply to altitude in the shortest amount of time is the first big mistake to avoid. Controlling an aeroplane in a nose up attitude at low airspeed is a skill that takes time to aquire. Learning that from zero feet as the model climbs out from take off is risky.

If you don't believe me try this aerobatic introduction to crossing the controls. Fly along the runway at fifty feet and when it passes your position pull into a forty five degree climb and maintain heading to 350 feet. Once you can do that repeat the exercise but this time fly to the end of the runway at fifty feet and pull into a vertical climb. As it slows down start leaning on right rudder and see how high you can get. With a high wing aeroplane this will induce roll to the right so expect to counter that with a touch of left aileron. That characteristic is not so pronounced with most low and mid wing designs with a small amount of dihedral. There are exceptions.

If the wind is blowing across the runway in towards you at a forty five degree angle and you are taking off from left to right, this is where crossed control technique is utilised. As the aeroplane gathers speed during the take off roll it will tend to weathercock into the wind. Right rudder is needed to stay straight. If you don't let that off when you rotate to lift off it will immediately start turning right as soon as the load comes of the nose wheel. Gets a bit busy but the aim is not letting the right rudder off and counteracting with a little left aileron. Hold both controls until fifty feet high the slowly back to neutral.

Phoenix Models Convertplane set up for crosswind ops?

Remember, during the climb you still have to maintain the runway centreline to some degree. Do that with aileron. A shallow climb is safer because the plane gathers airspeed faster. Ensuring the lift off after it passes where you are standing is recommended. Much safer. Engine torque and P factor makes departing from left to right a little safer than right to left.

Choice of model and standard of the runway is important but skill level of the instructor is a much bigger factor than aeroplane capability. Using my own dual control planes I've taught people in 60 plus kph and have also found most students can cope with crossing the controls from an early stage. This is where dual controls trainer function is fantastic.

When I began teaching for a dollar, one of my first customers used to drive two hours from the country for an afternoon session. It was in Winter and condtions were usually cold and blustery. No dual controls, he was on Mode 1. Shooting landings the system for taking over was refined to the point where I stood on his right hand side and reached down to the right hand stick to make the correction. Quite often there just isn't time to do the transmitter snatch and grab method. Which does not work very well at all if the person uses a neck strap.

That was forty years ago. What made that possible was his choice of model. Which was a Pricerite brand Western 40 trainer. Built from a traditional balsa kit. Strikingly similar to the American RCM magazine high wing design it featured trike gear with a thick symmetrical aerofoil and a 6.5 cc engine. Which had a much higher wing loading compared to a modern day foamy.

Low wing neutrally stable types like the RV-8 are a definately easier to operate in a crosswind. Almost anything can loop, roll and spin too but low wing types also make it easier to execute more complex aerobatic manouvres. If you are considering your first low wing model the general consencus is something with a constant chord constant thickness wing. Something along the lines of a Kyosho Calamato. That is a ripper.

Photo up top was taking the piss. Only difference? Elevator trim.

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Kyosho Calamato

ARF version of Carl Goldberg's Tiger 2

Fingers or Thumbs - Mode 1 versus Mode 2

Manipulating the controls most people just use their thumbs. I started out that way too. Competing in aerobatics and pylon racing I changed to thumb and forefinger. That came about when my Father instigated a program to raise the standard of flying by bringing a top level international aerobatic competitor to Australia each year. The theory being two digits holding the control stick increased control to make finer adjustments.

When the eight point roll, reverse point roll and reverse knife edge were added to the F3a manouvre schedule I changed to Mode 4 (Mode 3 on JR) which is rudder and elevator on the right hand stick. Logic being those two inputs are the most important for stringing long straight hestitation rolls together.

Statistically I have no idea if fingers and thumbs theory translated to more World or National Championship results however I can say when this has been suggested the majority of beginners I have taught found it better. The most important point is what's comfortable. Transmitter ergonomics and its weight along with the size of your hands are factors. Neck straps can assist. I used to use a neck strap but gave that up when I began instructing professionally.

Which is when I learnt to fly other modes some thirty years ago. At age 65 I still can make a reasonable fist of the 1972 F3a manouvre schedule on Modes 1 and 2. I never got around to re-learning how to fly helis on both so I still fly my choppers on Mode 4.

Mode 2 or Mode 1

Aileron and elevator on the right hand stick Mode 2 speeds up the learning process for right handed people. Personal computer flight sims default to Mode 2 so to quite a large extent time spent on one has already become instinctive. Ditto for anyone with full size flying experience.

Throttle and Aileron on the right hand stick, Mode 1, is more prevalent in Australia. Flying this mode

the Student has to learn to move the aileron without changing the throttle position. Increasing the ratchet tension can help nevertheless applying right aileron consitently results in an increase in throttle. Moving left a decrease. These subtle changes to power become apparent during circuit training and really show up in the landing approach. Which often results in more go rounds.

In Australia it is most likely your instructor will be on Mode 1. He or she may not have the same brand of radio or it may not be compatible for dual control either. If that's the case and you want to fly Mode 2 purchasing another transmitter for the instructor to use is the best way to go.

My dual control setup is for the MAAA Come and Try Days use the basic 6L Futaba for the slave transmitters. Dealing with a number of people new to the scene in the same day, the chance of fumbling and dropping the TX it seemed prudent to use a simple basic TX. You could do the same execpt you will be flying on the cheaper set. If the budget allows a Futaba 6 channel computer set with trainer function will suffice for the instructor.

Should you end up being diagnosed with a fully blown model aviation affliction, you will probably end up with a high end set. My 16iZ with all its complex programming for the exotic stuff is put to one side for my Super EZ Off 1 kg foamy fun competitions and Chaos at Camperdown. The 10J and 6K sets still offer telemetry, trainer function and various mixers. For me that is the 10J.

The gentle art of sledging can be another fun skill to aquire. My air racing models are fitted with T-FHSS receivers. Not because they cost less, rather for redundancy. The 10 J is also programmed for those models.

What if I arrived interstate for a two day race meeting only to discover the transmitter had been left behind in the hangar? Not only does that increase the cost per flight to an embarrassing level, it opens me up to sledging from my mates. That would be worse than had I just dropped the transmitter. Not to mention copping a good one liner from a competitor flying an opposition brand of radio.

Hence taking a spare.

U-400 Servos

Seven horsepower - upgradable to ten

(Previously published article)

The last Seagull Nemesis bought to sell to someone to race in the Speedweekend air racing event in Melbourne went to someone who kindly put his expertise into an electric powered setup. Bill Hamilton. Would it be competitive with a 60cc petrol powered model for a ten lap race?

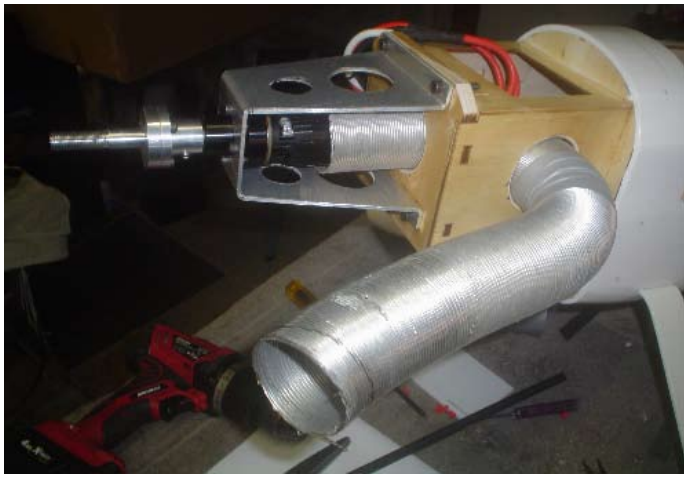
Despatching the electric aeroplane last would help. No need to use full power on take off either. With six horsepower available a tad under half throttle is more than enough. A run time of two and a half minutes would see the race through. Climbing high out of the circuit to loiter for landing clearance is not needed in the expert category. The pilot briefing at Cobram 2012 informed stragglers to expect to see models approaching to land if they were still completing the course. All they had to do was remain above the pylon height of six metres. This provides separation as a model on final below pylon height. Once people got used to this I had two landing together. Which saved heaps of time. It added interest to spectators and demonstrated a higher level of airmanship.

First flight of the EP Nemesis was on 10S. Cells were 25C and the APC 16x16 propeller produced a straight and level speed around 200 kph. This nifty little hand held radar showed 225 kph downwind, 175 clicks into wind. The following week was on 11S with 40C cells. In flight propeller RPM was 9500 for 248 kph straight and level. The photo shows 251 but that was after a slight dive on the first pass. Yep this thing was honking.

Sounded great too. Full throttle flight time calcuated to 2mins 31 seconds yet to be confirmed in practice but gut feeling is there is enough to complete a race. Vertical performance produced the same spectacle of an FAI pylon racer pulling vertical to exit the course.

With 11s this Nemesis has seven horsepower in the nose. If we go to 12S that increases to ten HP although Bill's calculations show that exceeds the ESC limit and battery pack C ratings. Delivering that amount of power reliably, even if it could, we won't be doing that as 250 kph is as fast as I think this balsa ply D box spar style wing should be subjected too. Next hop will be back to 10S with 40 C rated cells as Bill thinks this should result in 230 kph with a three minute run time.

Data was from the ESC and calaculations from E Cal proved to be pretty close to actual. One of Bill Hamilton's interests is F5B and he will be trying out for the Australian Team for the upcoming World Champs in Queensland in 2026.



Steve Neu F5B motor and gearbox

Futaba u400 standard HV digital servos

It never ceases to amaze me how people get locked into a position with the electric power versus petrol argument. Well, when you see this thing go there is no argument. It is fantastic.

It wasn't demonstrated at the scale air race meeting in August. I'd already pulled my sponsorship. Promoting the hobby is hard enough but throwing another two grand for prize money for just a few blokes who won't race because they don't want to turn right instead of left? Nor did I compete after the racing club stuck to the course that was laid out on June 2nd. Demonstrably unsafe.

Flying the Nemesis on a 10 degree day with Bill's recently aquired JETI TX I had to ask if he used gloves. Man that extruded alloy transmitter was cold. And heavy. JETI software updates come at a cost but there is no heater option. Back brace and chiropracter vouchers have to be sourced locally. Servos in the 250 kph Nemesis retail for $50? More than aedequate.

What a unit

What's a Good Trainer?

Polariod shot of my 1971 3.5cc 3 Ch trainer

Modern foamy with electro stabilisation

(This is a re-write of a previously published article.)

Let's face it the old fashioned box with a wing held on with rubber bands stuck on top of a two stroke engine powered trainer has all but had its day.

As a simple reliable power source the humble two stroke glo engine is hard to beat but five bucks a flight for fuel and twelve dollars for a plug, glo engines days for flight training are almost finished too. Motorcycles lost that battle against the four stroke. Outdoor power for the home handyman has gone electric. Lawn mowers too. Given the choice between the FMS Ranger or what had been industry standard for years, ad nauseum, what would most beginners go for?

I've long held the view when a beginner rocks up the club should do it's best to fly the model they present with. Sending someone away because the model may not be suitable for flight training is akin to not being served when you want to purchase a dishwasher. Once you leave you are unlikely to come back. One positive thing that has changed is the number of clubs now see the value in a club trainer on line ready to go.

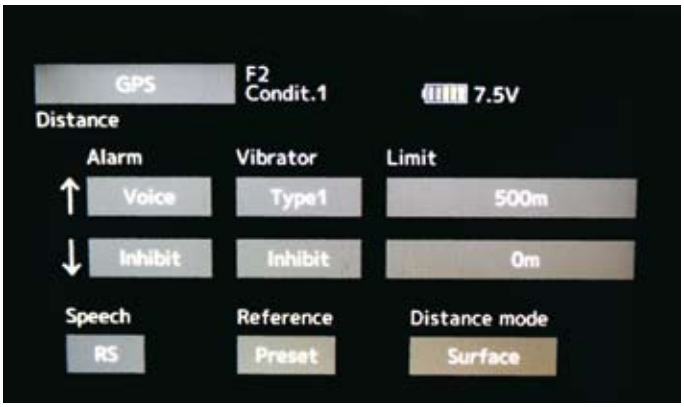
Clouded by my own experience the photographs below left might indicate my bias on what has proven to be a touchy subject. Back in 1972 what would be the chances of an instructor suggesting a second model like the Northerner? Zilch. Ditto for the 1980s, During the 1990s Horizon Hobbies introduced a fantastic basic trainer. Disguised as a P51 Mustang the concept didn't make it in this country. A friend of mine mystery shopped two model clubs and fronted up with one. "Oh no you couldn't possibly learn on that". Why industry has not produced a Piper Cherokee basic trainer escapes me. People would pay the money.

What about in this Millenium? With an MAAA Come and Fly Day initiative looming I setup a Seagull Nemesis to operate all day. I bought it second hand for F1 Air Racing but it was a bit rough. The 16iZ TX is good for quite a few hours of continuous operation but not knowing how long, I packed a spare TX pack. Zenoah 26cc petrol engine with magneto ignition meant one less battery pack to charge. Eagle Tree Guardian three axis stability system, a buddy box lead and a pair of basic Futaba 6L transmitters. Mode 1 and Mode 2. At $159 each it wouldn't be

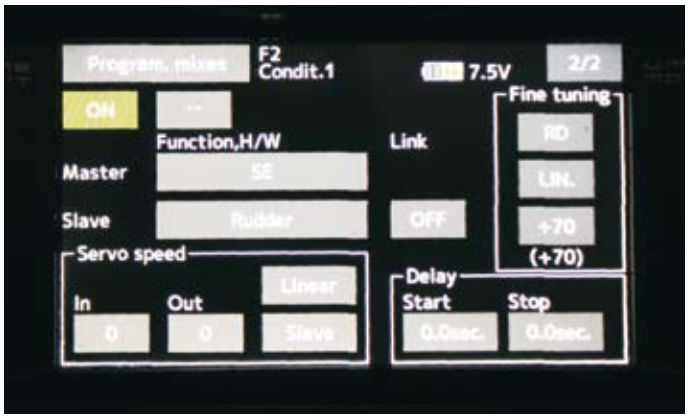
My first 4 ch model - F3a Northerner Mk1

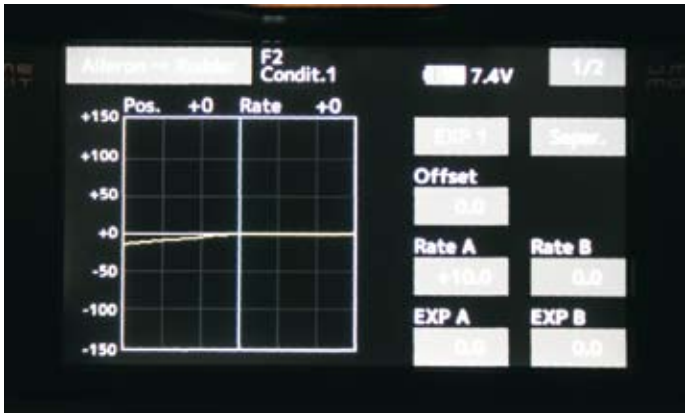
Basic trainer in disguise

Altitude alert

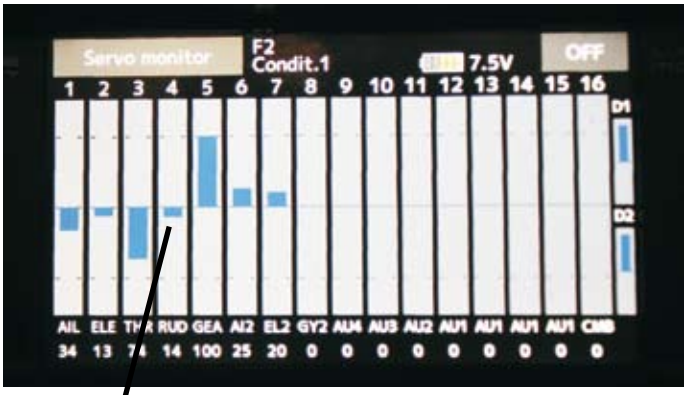


Distance alert

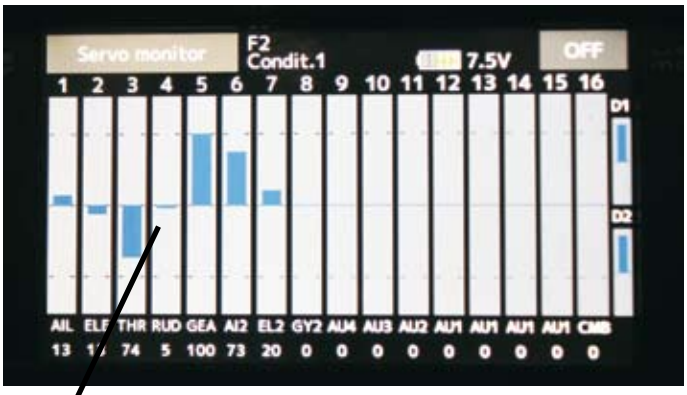




SE switch activates Stability Mode and a small left rudder mix with left aileron



Rudder channel neutral



Rudder channel with left aileron

uncomfortable if one was dropped. Slave TXs were allocated aileron and elevator.

Got to the field a few weeks before to fine tune the whole thing. First on the list was mechanically adjusting the linkages for straight and level at half throttle. That way if a beginner knocked the trim when handed the transmitter the reset was in the centre.

Pegged the model away from the pits and ran the engine at half throttle. Twenty seven minutes later it quit. Flight timer was then set for twenty five minutes. Timer activates when the throttle cut switch is selected to the on position.

Ceiling height at the club is 400 feet and the medium speed buzzer alert was set to 350 feet AGL. Operating over water, the distance buzzer was set to 500 metres. That figure is on the Area Approval on the wall at another club where I have membership.

Zero wind engine at idle the Nemesis would just make the strip from that altitude and distance. A dead stick would increase the gliding distance. It didn't take long to sort that lot out.

Not so with this next problem. In basic stability mode the plane did a nice and easy thirty degree banked turn to the right. All the student need do was steer it around on aileron and the model would maintain height. Once they got the hang of that George could be switched to the assist mode and elevator was introduced.

Getting it to turn left without losing height was not happening. Playing around with rudder and aileron trim didn't help so I set about using free mixers to sort that out. After trying numerous combinations a simple left rudder mixed to aileron solved the problem

Chuffed with how it all went. On the day I burnt three litres of fuel in blustery conditions. Changed the TX battery in the afternoon. Broke one prop when I had one guy landing. Should have taken over but thought he was going to round out in time. Had a slight brain fade myself and landed short. Doing the

In preference to handing over an expensive transmitter with lots of confusing switches, I use a pair of basic Mode 2 and Mode 1 Futaba 6 Ls for slaves

Super EZ combo as back up

walk of shame bought a cheer. Damien Mould operated his Super EZ and Mick Gunn a Boomerang 40 all day too.

Thanks to a very effective Face-book campaign Baw Baw RC Club at Blue Rock Lake picked up a few new members too. Job well done by a well organised and relatively new club.

Early morning shot when it was calm

Blue Rock Lake

Why a manufacturer has not produced one of these as a basic trainer continues to escape me

Go for Gold

Post Bronze Wings Test he loved this flight on my 200 kph Classic Pattern model

What to do after passing the basic Model Aeronautical Association Silver Wings flight proficiency test? Go for Gold. The hardest manoeuvre in the Gold Wings manoeuvre schedule is three horizontal rolls, but that's getting way ahead of ourselves.

The first thing one must learn in aerobatics is how and where to position the model. The ability to consistently fly a line parallel to the runway sixty metres out is the first step. A Procedure Turn at each end is how to do that. It's part of the schedule too. Then there are the inward and outward figure eights. Not too taxing a manoeuvre to learn but mote complex than it looks to complete a good one. Anyone who contemplates entering a scale competition quickly learns how difficult completing two circles of equal diameter is.

First aerobatic manoeuvre I introduce is the inside loop. Which should be attempted right out in front of you. Spotting the mistakes is easier. Just like correcting wings level and track after take off this will distinguish you from old hacks who suddenly do one in various parts of the sky. Once you can do a resaonable loop the Immleman Turn is next. Then a Split S. Those two are turn around manoeuvres that chew up less time than a procedure turn.

A half Immleman at one end is an easy way to gain altitude and position the model to head back inverted. The trick to exiting the top of the Immleman is elevator neutral before the nose is level with the horizon. Initiating the roll when the nose is too late. That results in a descent. Some times quite rapid. We don't want that. The idea behind half looping into inverted flight is to learn how much down elevator is needed to maintain straight and level. That way muscle memory kicks in when you go for the three horixontal rolls.

At the other end a Split S is an easy manouvre to learn teach positioning the model for an inside loop. After the pull to forty five degrees pause for a second. This gives time for the student to confirm wings are level before pulling back to half throttle then applying up elevator. That way the model should exit the bottom of the ipart inside loop on line.

Another turn around manoeuvre is the half Cuban Eight. A little harder than the Split S but once the Student can consistently fly up and down along the flight line and perform those manoeuvres and the five second inverted straight and level, I take a deep breath and introduce the three horizontal rolls.

Which is all about up and down elevator timing. I say that because in 1972 my Father demonstrated the manoeuvre a few times. He turned around half way through to check if was still watching. Turned back, model inverted pulled up elevator and splot. " See, don't do that" .

Mentioned again, ad nauseum I know, another thing I look for is to be able taxi and turn to take off maintaining direction with little on no yaw to the left after take off. Grate if you nail it but more important is the correction to get back on track. A stable approach and landing within ten metres of a chosen spot the back track to clear the runway demonstrates airmanship. Its alo far more satisfying that walking down to collect the thing.

Moving on to aerobatics I set about practicing for an up coming Classic Pattern competition with Dad's Whistler. First item on the list was to decide if the electric setup could complete the schedule. Prop

Stand straight, shoulders parallel to the runway and don't move is RC flight training F3a style

Basic Aerobatics

Dad's electric powered version of his 1973 World Champs F3A design was scratch built from a few photographs

for the Hacker A60 was the recommended 17x8. Provided heaps of grunt but it wouldn't complete the schedule. I cooked one battery pack in the process. It swelled up in flight and was quite the job to remove it from the aeroplane.

Rather than fitting telemetry sensors to provide accurate data, the quickest and easiest way to determine what prop to try was done by dead reckoning. I just ordered a few sizes to try where it counts. In the air. First prop was an 15x8 APC E. A 6S 5400 mAh pack and the 15x8 APC the Whistler now completes the Classic Schedule. On a windy day. Cooling system is up to scratch too.

Incidentally the framed photos of the Aussie team above are at odds with NSW F3a scribes on social media would have you think they had invented the caper. Moving on from that, the hottest day the Whistler has flown during Spring was 25 degrees. The hand thermometer was placed on the battery pack and ESC heat sink quite comfortably. Performance is good too. More than enough vertical.

In flight tuning to get roll rate and elevator throw for my preferred looping diameter is first. Followed by knife edge mix. That takes a few flights. Flying directly away from myself I fly an inside loop and check for wings level at the bottom. Followed by an outside loop.

A few grams in the wingtip sorted that. Ordinarily I don't go for conspiracy theories but did tyre companies collectively design teck screws for the construction industry. Each time I pass a building site that thought crosses my mind.

Next is aileron differential and loop tracking. The first is done by flying directly away from yourself and pulling to a vertical upline. Otherwise known as a vertical climb. Pull up then do a half roll. If the model yaws off line reduce the down going aileron travel. For example if the nose has yawed to your left after the half roll to the right decrease the differential. This reduces the drag from the down going aileron. Airspeed after the half roll decays plus side and down thrust also come into play.

CofG can be decided by the amount of down elevator required to maintain inverted. Last on the list is enough elevator travel for a reliable stall for the spin entry. Dual rate can come in handy here. Grass during Spring grows really fast in Melbourne. To satisfy club members still flying with small 2.5 inch wheels the mowing team would have to be on duty daily. The elevator travel set for F3a manoeuvres is insufficient to cope with hauling it off long grass. Triple rates is one answer but I went for a large travel with gear down, which reduces to the in-flight setting when gear up is selected.

As mentioned Dad built this model from a photograph. Dind have aplan. Years of designing his own and flying others aside it's nice to fly but there is one niggle. Hopefully the judges won't have read this beaccuse it has a stong nose down push after the half roll in a vertical upline. Sporting a tad of up elevator trim

Australia's 1973 F3a team Barry Angus, Jeff Tracey and Brian Green

straight and level is a tell tale sign it has too much downthrust.

The quickest way to check that is trim for straight and lever at full throttle. Pull the power back to idle. If it pitches upwards the down thrust needs to be reduced. Quite a bit of work to re do the spinner ring so I went for the easier option of just learning to fly as is. I quickly learnt to make a mental note not to make loops too big because it gets a bit ugly on rudder at lower airspeed.

Every model I have ever ever flown pitches nose down when rudder is applied but some are worse than others. My AT-6 Texan is notorious for that.

Harking back the very start, if you want to get better, not just practicing for Classic Pattern, two battery packs is not enough to get you anywhere. If you are going for Gold (wings) you should try for five flights each time you go flying. Less talking, more flying.

Using two of these infamous tech screws is a community service. It reduces the risk of a puncture on the way to the field

Two stroke engine screaming in for a manoeuvre remains a big part of the spectacle of Classic Pattern. Electric doesn't have that but clean quiet power in a great flying aeroplane is making up for it. If you intend going for gold, don't buy new shit thinking it will improve your flying? Even if its good good shit. Good advice helps too but I got out of the Novice Class into Expert at the 73 MAAA Nationals flying a model with a warped fin. Did so much flying I knew it backwards.

To pass the Gold Wings Test with someone like me testing, the ability to fly past yourself to pull vertical and maintaining a forty five degree upline for the Split S would be noted. Maintaining centreline after take off instantly demonstrates good discipline and awareness is far more important.

Practice that. Flying up from left and right up and down the field fifty metres outside the edge of the runway is next. Do that ad nauseum. If you don't know what that means, a crusty old Fokker would say "look it up". In other words do it again and again and again.

Get that happening then do a loop on the up wind leg. To turn around at the other end try a Split S. Exit that and gather it up so you fly past yourself straight and level. Keep doing that until you get that right. Then try a roll on the down wind leg.

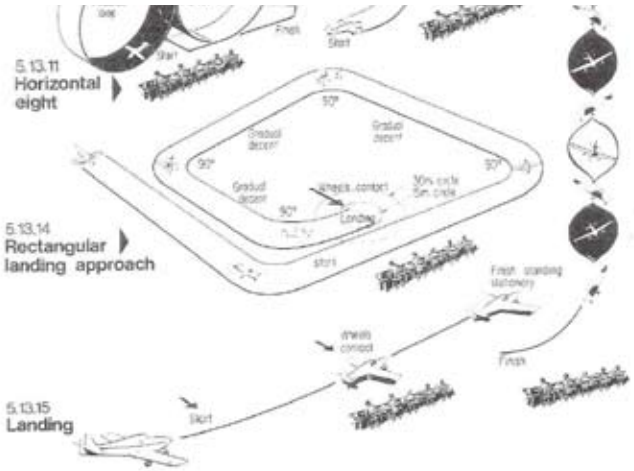
Avoid the potential Walk of Shame when practicing spins. Make sure you let the model fall vertically at least a few seconds to build airspeed before the pull out.

Perfect manoeuvres are not what I look for. The main point of the exercise is to verify if are you in front of the aeroplane's position and heading. For my mind the ability to avoid getting into trouble in the first place is what this test is really about.

Then there is this. Swapping my Instructor cap for a Display Directors, all a Gold Wings rating means to me is you have passed that test on a given day. That's all it means.

The important thing is currency in still conditions and windy. Morn-

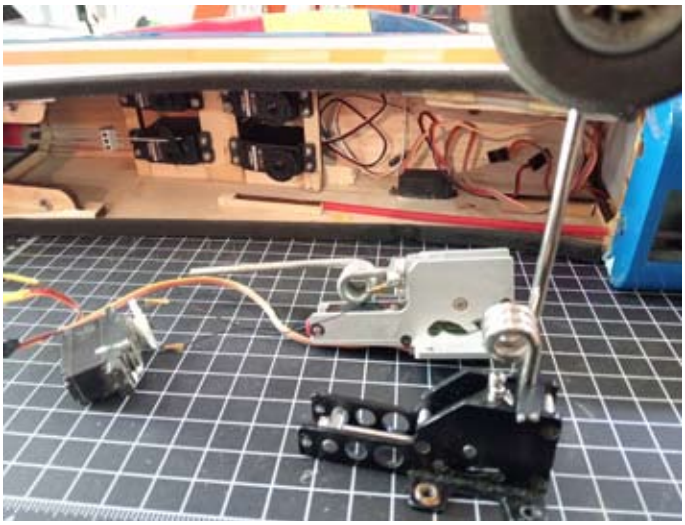
Undercarrige this far in front, this is a bad choice. Phoenix Babara Jean. Nice model. Nasty tip stall



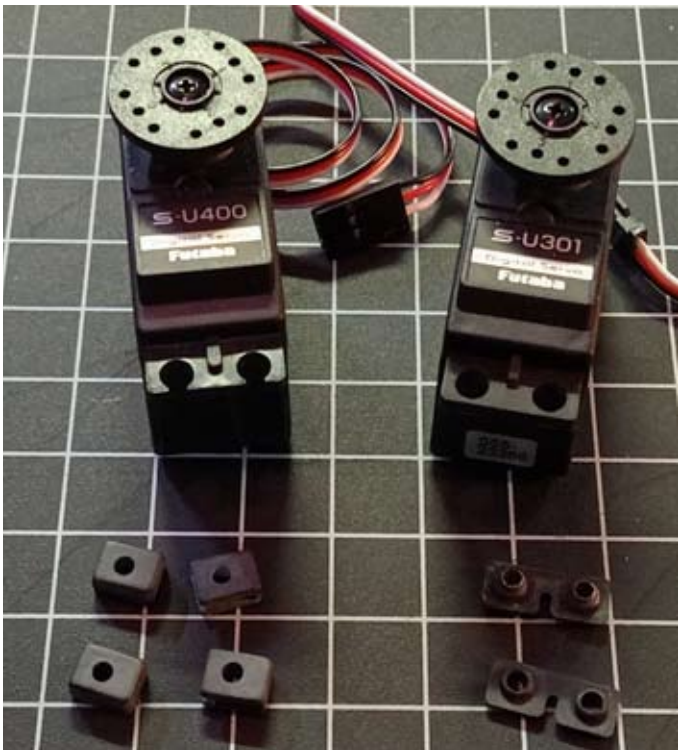
Unfinished Projects (part 2)

OS 55 AX Ugly Stick - OS 61FX in the Calibre

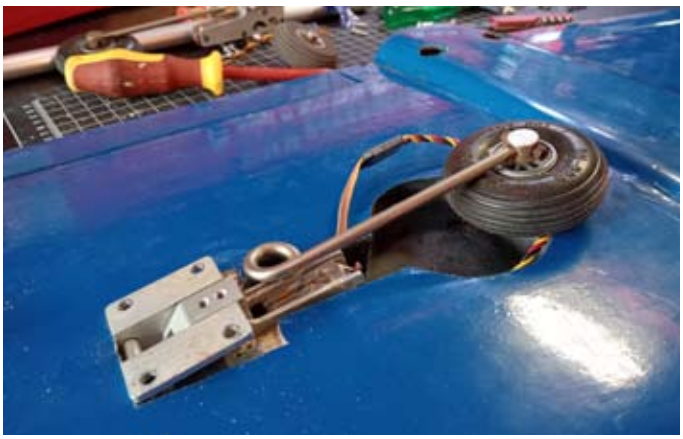
Hitecs out



Mechanical retracts out



Futabas in



Working through the list continues

Electrics in

What to keep and what to move on I decided to re-aquiant myself with a couple of scratch built planes with glo engines. A blast from the past yes. The Ugly Stick is aleardy a going concern. The Calibre was purchased from a Facebook advert. Swapping the servos in the fuselage was a non event. Not so for the wing. Indeed this model has been nicely built but the wing servos were installed in such a manner that removing them would be a big fiddly job.

In all my models I try to make it easy to remove any component at the field. As luck woul;d have it though swapping the retracts was a simple job. Mechanical legs were locked down and it was quicker to fit a set of surplus electric legs.

Bristol Freighter

Dad used to work on Bristol Freighters at Essendon Airport. Fuselage, wing, stab, fin control surfaces and cargo

Bristol Freighter

HD Model Design Extra

doors are covered ready for sanding to finish. The cowls are in a box somewhere. The white foam wing from my discared E Flite Twin Timber project. It has four servos, motors and ESCs

Dithering wherter to make this project is available for free to someone interested to finish it. Leaving it at the PDARCS club-house for the club's local bottom feeding model aircraft trader to snap up and sell on facebook is not an option. .

The scale aerobatic airframe is a 1980s fibreglass and foam HD

Can't bring myself to mount the donk inverted

Model Design Kit. The model was given to me by Cliff McIvor. It was professionally built by Bob Hirst. During his Hawthorn Hobbies days Cliff used to flick Bob some work to keep him going during quiet-imes. Starting at the pointy end I first have to decide what engine to fit. Nostalgia versus modern, the DA 85 will go in but the firewall has to be moved aft.

Firewall and cowl have been setup for a twin cylinder. Given the model's age I'd say that was a Zenoah G74. So before making that decison will be a visit to Hobby Supplies Australia to check out the 80cc version.

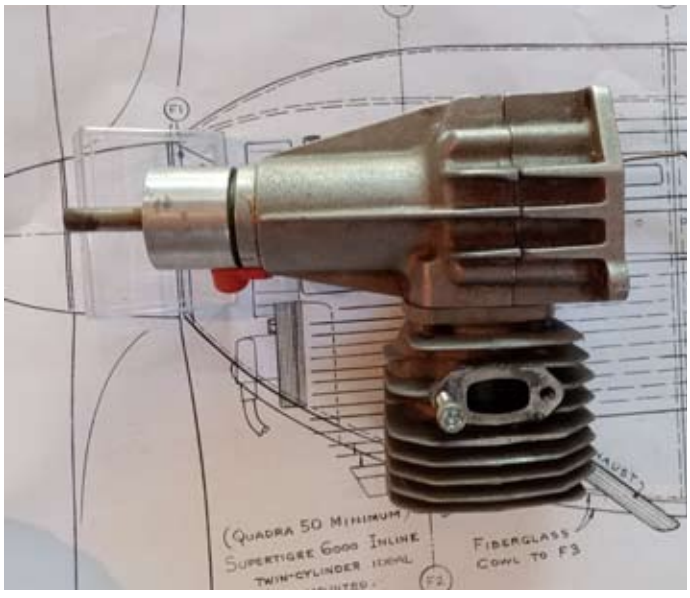
With no possiblity of racing the thing I've decided to hang it up

The Miles Hawk above was setup to go racing. After yet another go at flexing the K&S 5mm spring wire internal torque rods, to re-assess the distinct possibility of aileron flutter, I had two choices. Fly the model as is or replace them with a servo in each wing. Cutting through all that carbon fibre under the wing skins and boring a hole to run extension leads is a big job.

Test flying the Hawk Speed Six (above) at Burely Field would have been irresponsible. Not from a noise perspective. The huge internal canister and high pitch low diameter prop makes sure of that. Less annoying than a commitee member's .46 powered models.

This is a high speed aeroplane. Taking into account the club's current Area Approval, there isn't room to safely open it up to full throttle. If it crashed within the confines of the property clubs and started a fire, that's another risk to contend with. Next month I turn 67. Which is two years above the median average age of MAAA Affilate Members. My health is pretty good but I am no way fit enough to run a hundred metres lugging a fire extinguisher, climb a fence or two then jog a few hundred more to put out a fire.

Seagull Sparrowhawk -3W 58 cc



Too quick for the spats to retain shape

Antenna Installation

This is important. I often wonder how this subject was overlooked whenever radio failure is blamed for a crash. So do the manufacturers. Factory approved agents too. A correct installation can be next to impossible to achieve with some models. Much easier with Futaba's dual diversity antenna compared to Spektrum's inferior system offering multitudes of receivers.

Here are a few of my flight proven setups that have stood the test of time. Where it matters most. In the air.

FMS Ranger 1800 - R7304

Flex Innovations C170 - R7308

FMS Super EZ - R3106 GF

60cc Spitfire - R7104

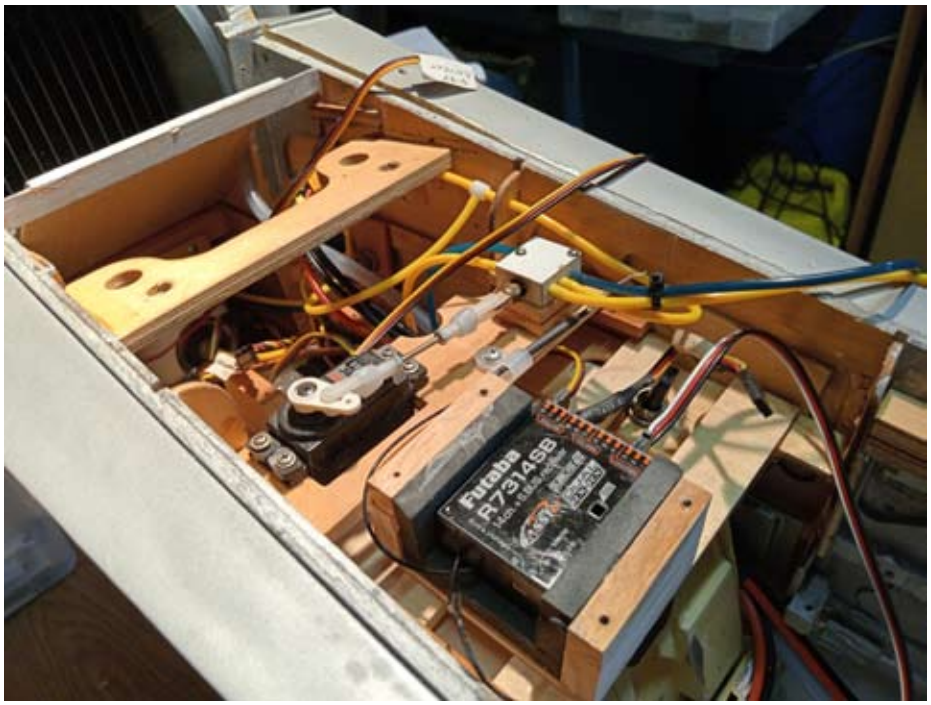
Flex Innovations RV 8 - R7304

Multiplex Fun Cub - R3008

Routing away from wiring is not always possible, particular in small electric powered models but it is important to do the best you can. The most important thing is not letting the end touch the structure. The instructions clearly sta e this. That can detune the antenna. Which reduces performance. Ends tucked neatly into the foam the Funcub above offers an example of neatness at the expense of overall peformance. Which has been rectified.

The Espadita hotliner on the next page has the most challenging RF environment of all my models. Very high performance electric motor. No room to keep atenna away for the ESC either. Which is why it has a FAASTest receiver. Fitted for the superior interference rejection. It's more expensive. No other brands come close.

Multplex Blizzard R3106GF
Antenna pokes outside underneath the wing



108 cc Leslie V12 - P51 Mustang - R7314

Mustang receiver test flown in the Powerchook.
(This subject was covered in the November newsletter)

Ditto for Multiplex Merlin - R3104

Hirobo Bell 47G - R7108

Dynam autogyro - R3106GF
dangles underneath

Espadita Hotliner - R7106

Flaps

Let's face it. Are they really needed? For prop jobs I'm yet to find a model club field where they are required. On the other hand flap on jets does have a practical use. Gliders too.

Holding the nose high attitude close to the ground with jets is important. Most have relatively high wing loadings and slower acceleration than props. Come off a bit steep, lowering the nose too early after lift off can produce a rather high descent rate. I got caught out with that with a touch n go at that Grand Southern Cross Scale Rally. That was the first time my stunt pilot, WG Gilderslag, flew in front of the public. At Luskintyre Park aerodrome.

I digress but chatting to Peter Coles a few days before I left, he revealed he was nervous about so called "Jet Jocks." There'd been a few incidents so he wasn't having any. Peter and Elaine threw an absolute shit load of money at that event. "You gotta have a jet Peter." Deal was "I'll bring it just in case you change your mind." Crowd liked it. A chosen few a bit miffed.

Coming in from left to right that turn into final was a bit tight. It took three attempts. Got caught out with the five second spool up on that second go around. The wheels touched just as the power came on. Closed the throttle again then changed my mind. It thumped on again just as the power increased. Runway diminishing. Nose gear hanging off the steering wires I landed long on the third. Right at the other end. Far away from the spectators. For the walk of shame.

Writing about this subject takes me out of my comfort zone. Not from a flying point of view. Programing the radio. Back then it was a Graupner JR MX 22. Which I knew how to program. Each flap config required a different elevator trim setting. Pitch trim was set for climb attitude with

Oh no - Gilderslag's got a jet

take off flap selected for airspeed a few seconds after lift off. Basically the trim was set to maintain attitude as it accelerated whilst I selected gear up. That switch also activated the flight timer. Great radio. I sent it back to the manufacturer but it was not economicl to repair.

Flying Futaba now and those flap settings seem a more conviluted proccess. Heard that before, across all brands of computer sets. And here lies my dilemma flying Futaba. It started with the 14MZ. Then 12Z now the 16,18, 26 and 32 channel sets. They're a lot like like my smartphone which has so many

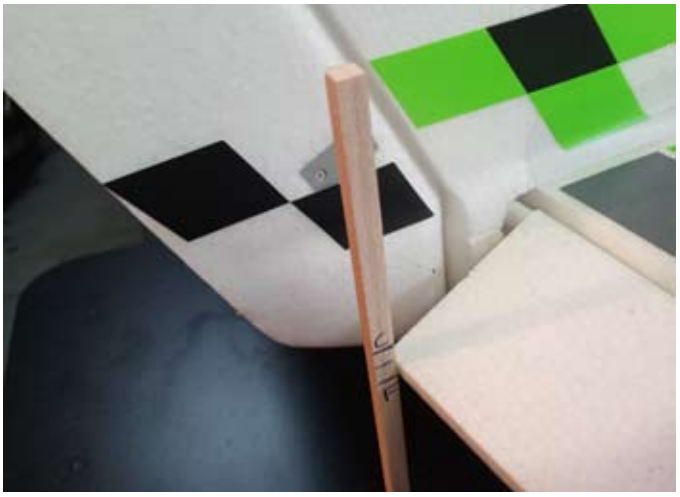
Programmable Mixers

Elevator trim - Flap clean

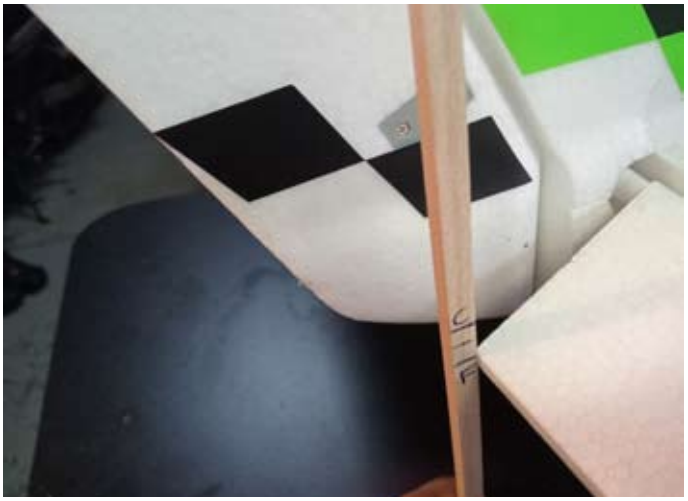
functions. Many I don't even know about let alone use. These Futaba sets have quite a few different ways of programming to achieve the same outcome. I can think of five ways to reverse a servo. What is the best way to set up this flap elevator trim mix?

Truth is I don't really know but I can get what I want to work. With that rather long winded disclaimer out of the way, this FMS Ranger shows one way.

After selecting a Mix and allocating to function go tp the second page



Elevator trim - Take off flap



Elevator trim - Full Flap

Elevator trim - Take off flap

Elevator trim - Take off flap

first. Activate the mix then allocate a switch. In this case I use SC. You can also set it up as a flight condition.

I did that on the four flap wing Funcub XL for my variable camber ALPACA function. Auto Linear Phase Aligned Camber Activation. Programming each aileron and flap to lower and raise at the same speed and travel took some time. Here's a little tip. After setting the order of each condition I had trouble getting the radio to switch on. Took a bit to get around that. Don't ask me how. I deleted and went back to Pro Mixes.

Offset, spline, point I cannot begin to explain how to use all the other functions and uses available with programmable mixers because I don't understand it myself. Let alone put it in writing.

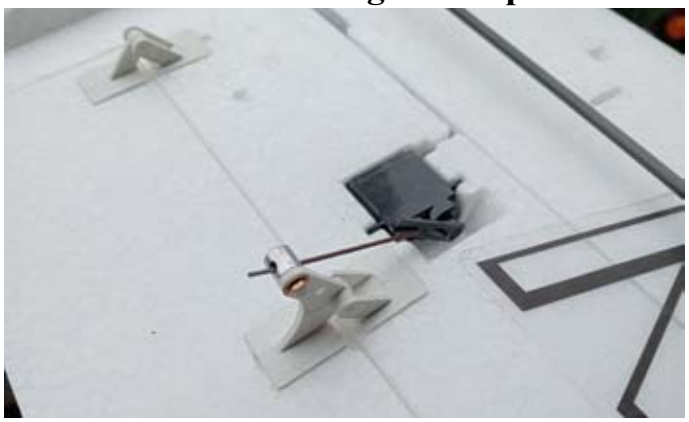
Available from Amazon, a few owners recommend Malcolm Holt's 600 page technical book on the ins and outs of Futaba. I've haven't

read it as I prefer to nut this stuff out myself. Perhaps I can ask Captain Futaba to explain his preferred setup in a future Flying Futaba monthly newsletter edition.

Flap is handy for my commercial ops. but are they really needed for prop jobs at model fields? That depends on wing loading, all up weight and line of trees. Getting a 25 kg model into a 200 metre strip is a lot easier with full flap. Even if you don't really need them to take off it is an other skill to learn. Looks better as the model taxis past too.

You may not ever desire to land into a tennis court but full flap on my original Fun Cub came in handy for the vertical approach over the trees. Video is on the You Tube channel

Setting the Flap Function as the master is another way



Power up the TX and RX and select any three position switch to the centre. Set the flap linkage for. That is the take off flap position. Sub trim is used to fine tune that setting. Use end point to set flap clean and flap full. Simple

Ninety degrees blanks out the tailplane. during the flare. Great for vertical descents into Prop Heads tennis court. Who does that?

Extension Leads

Anyone who has retailed Hi-Fi or servo extension leads would be aware tha cheaper after market leads have a much higher profit margin. Which is why staff are instructed to recommend them. Offering a longer warranty has been a hallmark marketing tool by new electronics manufacturers. Cheapest way to increase market share.

Quality and compatibilty becomes more important in high voltage servo setups. Futabas range are affordably priced to the point I don't see the need of using anything else. It markets both Heavy Duty and thinner, lighter, product for small models.

Futaba, JR, Sanwa and Spektrum are the last traditional, for want of a better term, mainstream manufacturers that continue to manufacture a complete line of extension leads for their servos. Power Box, Jeti, Graupner and FR Sky do not manufacture servos or leads. You have to rely on social media of a friend's recommendation. Hitec no longer produces radios. Sanwa, a recognised top quality Japanese brand, now only competes in the RC car space. Yet another indication of a shrinking RC market.

Fitting a different or aftermarket brand of lead you are making the assumption the pins, sockets and material are 100% compatible with your receiver and battery pack connections. How much the aftermarket brand has screwed the manufacturer on price is easy enough to discover. Cutting one open reveals the plastic to wire ratio. Plastic being so much cheaper than copper wire makes is easy to print "Heavy Duty" on the label and charge accordingly.

Selling quality against price can be hard Yakka. Using my PA gear as an example, servos are like speakers.

You buy quality and performance by the kilogram. Money for Nothing by Dire Straights is my go to song for assessing how speakers handle it when the drums kick in. The RCF powered speakers are the best you can get in small portable. When the load increases they do a much better job of that track than cheaper EVs and Behringers. The scratchy noise due to a dodgy guitar or microphone lead makes for uncomfortable listening but I've never had the speakers come crashing down at rehearsal or a gig. Crappy connections or high resistance servo leads on the other hand increases the chance of that happening to a model. Jittery servo? First thing I look at are the connections.

Punting IMAC aeroplanes and helicopters through 3D manoeuvres creates the harshest environments for servos and leads. People in the know, or who have suffered an unexplained crash and have made the move back, are flying complete Futaba or JR setups.

Setting up a large model with twin FAASTest receivers and budget became an issue, I would opt for a pair of FHSS receivers and not compromise on the extension leads. There is a much wider choice and greater servo power for large models since 1999 but "you get what you pay for" has not changed.

HD Extension Leads

100mm	$16	150mm	$16
200mm	$16	300mm	$16
400mm	$17	500mm	$17
1000mm	$26	1500mm	$27
		Y Lead	$24

SBus Leads

100mm	$35	200mm	$16
300mm	$37	500mm	$39
1000mm	$26	1500mm	$43

Light Duty Leads

100mm	10	200mm	$11

SVi-SVi

400mm $12 500mm $13 600mm $14

SBus Junction Box

4 Point $23 6 Point $26

From 1999-2001 this plane covered my monthly rent

Floaty Mc Float Face

The most enjoyable float planes I've had are low wing. Difference between high and low? Less chance of tipping over if the wind gets up. Water rudder is a must have for single engine if it does. The Space Walker sits quite low in the water because I couldn't get the hollow ABS plastic Captain Eddie floats sealed. Filling them with expandable foam added quite a bit of weight therefore the Space Walker sits quite low. To prevent the nose of the floats digging in I apply basic taildragger technique for a few seconds, then relax on the elevator as it gets up onto the step. The traditional flare to land on wheels doesn't work that well. Fly it on flat then cut the power.

The small electric Twin Otter on the next page is setup with two throttle channels. Mixed with rudder, great for taxxiing, stall turns and spins too. Switching any mix

Black Horse SpaceWalker OS 120 AX

Sits low in the water

Raising the nose to keep tips out of the water

Up on the setp - planing

Ripples created earlier helped

off is desirable. Applying rudder on approach can induce dutch rolling. Love to know the origin of that term. yway Iound that out with OS 25s in a Britten Norman Islander.

On floats the Otter has the same problem as the FMS Super EZ. Both manufacturers have not set the correct angle of attack realitve to the floats. They have to be heaved to unstick. Re-jigging to lower the aft end is quite some mucking around. Easiest solution with the Otter is flap. If your radio has flaperon mixing use that for the Super EZ. It really helps. Multiplex on the other hand got it right.

Needs a bigger fuel tank

E Flite Twin Otter

Phoenix Tigre 2 OS 70AX

Multiplex Fun Cub XL

FMS Super EZ about to lift off

Merco powered Ugly Sticks (1973)

Gliding

Slope or thermal I enjoy all facets. Particularly the high performance composite stuff. Tradionalists would have it that the purest form has no propulsion. True, but technology has advanced so much since the all balsa 2x6 and Goldeberg Gentle Lady kit days. In practical terms it's hard to make a good argument against electric power. Foamies are a great way to start. The pic below offers a launch tip for the high powered variety.

Full throttle usually takes it to the crash site. Slight nose up, right wing down, one third throttle is good.

Aquired the Caracho F3J during Chaos at Camperdown

And this Gulp. It almost outruns an eagle

One of Dad's F5B World Champs models flown in Poland

Captain Futaba enjoys stunning light air performance with this all composite F5J

Helicopters

Love the scale helis and my favourite is this petrol powered Bell 47G. Way before Skippy the Bush Kangaroo or MASH on TV, Sir Reg Ansett dressed as Santa arrived in one for the annual Christmas Party at Essendon Airport. That's part of it. Primarily it's just a cool looking thing and great to fly.

When I photographed every shit plant around Melbourne with a .60 glo chopper in the 1990s, Melbourne Water engineers referred to it as "The Product." An activity not something I put on my resume, but I snapped up the pair of Voyagers for future commercial work. The Thunder Tigre Raptor is for fun and to practice autos.

Willie Emmett Field, Scale Aviatiors Christmas in July

JR Voyagers - Zenoah 26cc petrol

Robbe Hughes 300 on 3S

Thunder Tigre Raptor 50

Another big gasser

What to do with this lot.....

..... and this

..... and this Blade 450

Futaba Pro Shop

Puchasing a genuine Futaba receiver in Melbourne was possible but extension leads and the like, forget it.

Recently it dawned on me there were more than enough models to last me the rest of my lifetime. So I bought enough Futaba product for that purpose. Now I don't have to wait for something gearing up a model.

To assist like minded people wanting quality radio gear, I bought more.

Futaba Pro Shop Price List April 2026

Deciding how much it will cost to set up a new model using a website can be a bit tedious. Here is a more convenient guide. Prices don't included cents and are rounded up to the next dollar. Please note the website is the actual reference for current pricing

Transmitters

32MZ WC	$3990
26SZ	$1625
16iZ Super	$ 985
12K	$ 585
10J	$ 585
6K	$ 383
6L	$ 145

Air Receivers

FAASTest

R7114	$279	R7308	$229
R7306	$159	R7301	$140
R7103	$159		

T-FHSS

R3008	$99	R3006	$89
R3104	$	R3106	$
R2008	$91	R2001	$69
990MHZ	-	R9001	$192

HV Servos

U301	$31	U400	$45
A301	$78	A500	$171
		AG300	$

Standard Servos

U300 (4.8-6 volt)	$20

Gyros

GYA 440 rudder elevator	$ 89
GYA441 aileron elevator	$ 89
GYA 451	$118
GYA 553 three axis	$233
GYA 750 3 axis with RX	$

Telemetry Sensors

Altitude 01A	$ 55
Airspeed 01TAS	$130
RPM Opto	$ 45
RPM Magnetic	$ 85
Voltage 01V	$ 52
Current O1C	$ 99
Servo O1VS	$ 49
Temperature TE	$58
Temperature	$125
GPS O2GPS	$225
CARVIN 700	$ 22

RX Battery Packs

F2FRF 1800 mAh 2S LiFE	$76
FTF1800 mAh NiMh 5 cell	$70

Switch Harness

ESW-J FET 10 Amp	$57
ESW-D FET 30 Amp	$81
SSW-J low voltage	$17

HD Extension Leads

100mm	$16	150mm	$16
200mm	$16	300mm	$16
400mm	$17	500mm	$17
1000mm	$26	1500mm	$27
Y Lead	$24		

SBus Leads

100mm	$35	200mm	$16
300mm	$37	500mm	$39
1000mm	$26	1500mm	$43

SBus Junction Box

4 Point	$23	6 Point	$26

The Stunt Pilot

by Captain WG Gilderslag

Invited to review yet another .46 powered balsa- ply-film covered ARF, to make it more interesting than the "glue here, drill there, needed no clicks of trim perfect test flight" advertsiers preferred. I felt this would help sell it against comparable product where undercarriage still let it down. This model took the punisment. SJG

Come outside chaps the graphics are unreal!

Not a fan of the modern flight sim but they do have a place for those who insist on trying to invent new ways to make or break their aeroplane. One of those barn door controlled surfaced 3D things. Virtual reality has saved the pain of replacing models whilst learning what to do and when to do it. When pushing the low flying envelope, of more importance is when not to do something, with the elevator.

To be considered as a prospective member of "The Stunt Pilot's Guild" daredevil feats do have to be performed in actual reality. Sooner or later you must do it in real time with real wood. Or fibreglass but wood is cheaper.

What do you start with?

Not your dream plane, save that for when you're ready to show off with something awesome. The obvious recommendation is a cheapy. This is a term we stunt pilots affectionately apply to an inexpensive model that doesn't let you down when you abuse it. Two decades ago the Trading Post was the way to peruse the second hand model market but that fertile ground was barren a week after the "Pay if you Sell" advertisment was killed off.

Now it's the modern ARF that removes the "Labour of Love" component that holds so many would be stunters back.

All around the country, clubs run simple fun fly competitions where barnstormers can learn their craft on basic trainer models. Anything with a constant chord wing is the way to go. Of the many aspects to correctly showing off an aeroplane the pilot is the most important. We can make anything look good (even a trainer) but how it performs is nowhere as important as how it looks. Just having the wing on the bottom puts you ahead of the pack because they've all been bought up to believe that a low winger is harder to fly.

Truth be told whether that wing is on the top or the bottom is neither here nor there, low wing loading is the key. To prove the point Terry Griffiths of The Hobby Specialists has kindly donated one VQ Models Mega Fly (he has seen me fly before) to be wrung out to within an inch of its life.

Those interested in following this program will be taken through the basics of how to show off an aeroplane. To show an aeroplane off one must therefore be able to fly it properly.

Megafly

Before we get into that a few words about the Megafly are in order. This article is not the typical how to assemble type of review rather what fun you can have with the thing. I have previously flown a couple of VQ war birds which performed very well and this model went together without any real hitches but there are a few shortcuts for young players which have been highlighted in pictorial form.

A couple of points worth mentioning. One could be excused for thinking this is rather unusual, first off the airframe is devoid of any hot glue. Judging by the way the screws can be torqued up it would seem the plywood is more substantial than many offerings from over the border that I have flown. (Abused? ED)

For ease of assembly the engine mount screws were replaced with #4 x 12mm self tappers. The wing joiner was a tight fit rectified by four scrapes of a Permagrit coarse sanding block. Prop clearance is not an issue with the 50 mm wheels supplied with the kit but the diameter was increased to 75mm to assist with the type of flying that was in mind.

The Dubro Diamond Tread Light Tyres reminded me of a pair of snow tyres purchased for a 67 Ford Galaxy during a trip round the USA in the eighties. The front end was shot and the fronts had to be replaced every 500 miles. The chap who accompanied me on the trip was a non aeroplane person (but I still went anyway) and he came up with the brilliant idea of convincing the tyre fitters to swap them around on the rim.

The increased range of a thousand miles got us to Salt Lake City where they refused to entertain our innovative idea and we were sold a used pair of snow tyres instead. Of the seven thousand miles covered those tyres accounted for half that mileage. More on the tyres later.

Stunt Pilot School

Here are three events that can be run as a simple fun comp. "Don't like competition" I hear you say." Well it's not for everyone but these little impromptu comps are the fastest way to improve your flying. Keep it small if you like. Just compete with a mate or against yourself. The only equipment needed is a stop watch.

Loops

The most loops in two minutes wins. Hold

Rack it over and reef it round. Twelve touch n go's in two minutes is a good score with a non specialised model.

Off the power.

Already on the power, hard on nose gears.

the model at full power and start the watch upon release. This teaches one to take off with the needle valve slightly rich.

When it's windy you learn to flatten out the bottom and tighten up at the top to prevent drifting backwards. Save that skill for an aerobatic comp because the increased loop diameter takes longer so don't do it. After the wheels leave the ground count to ten then drag that stick right back. Check the rate doesn't induce a tip stall first.

The Megafly will do fifteen loops a minute.

Climb and glide

A thirty second engine run is more than enough for most 46 powered jobs to bust the standard 400 foot ceiling height restriction so check the local laws before going vertical. Scan the horizon too for any

We love Top Gear and we love the Stig but can he fly? Okay Hotshots bring it on!

Commence looping now. Avoid digging up worms by making the first half a trifle bigger than the second.

Fifteen loops per minute is on the money.

Good!

Wasting precious seconds.

Perfect !

incoming spam cans also. Hold the model at full power and start the watch upon release. Up at the top the engine must cut out and the watch stops when the wheels touch. Novice pilots can have the engine idle but this practice does open the door for the less chivalrous to set a fast idle.

To negate the myth that a high wing glides better than a low wing, you hotshots should fly the last round inverted. (Make it easy for them and let them roll inverted at the top). If the model sports a flat bottom wing for this category you've been sold a Pup but if somehow it wins first place take up gliding. You were born a natural.

The watch stops when the model starts to roll out from inverted but that practice is for those who paid far too much for their A.R.F. A self respecting show off will land the thing inverted.

If the engine is mounted upright this will test the glue joint of the fire-wall. Smart Alecs who read this and swing the engine around ninety degrees to gain an advantage will find the quality of metal in the carburettor will be tested. Inverted landings can be tough on the needle valve. Speaking of that, the setting that got you through the loops should be the go here too. Even more interesting is deducting one second for every metre the model is away from a spot in the centre of the strip. Livens things up a bit.

The VMAX 46 was propped with an 11x8 APC at 10,000 rpm. Keeps the noise level

Best rate for thirty second climb and glide.

Hold it off as long as you can. My score was 2 minutes 37 seconds after take off.

The inverted landing, a sure fire way to get the crowd going and test the glue bond on the fire-wall simultaneously.

It's too late now baby, it's too late but if you must wimp it, first drop the nose to build up speed then roll out.

No worms or engines were hurt during the making of this article. All three competitions can be completed with these manoeuvres can be done with one tank of fuel. Those who espouse the virtues of EP are welcome to try all this with one 6S battery ! With all that ballast I'd love to see twelve landings in two minutes.

The dodgy way to line up ailerons.

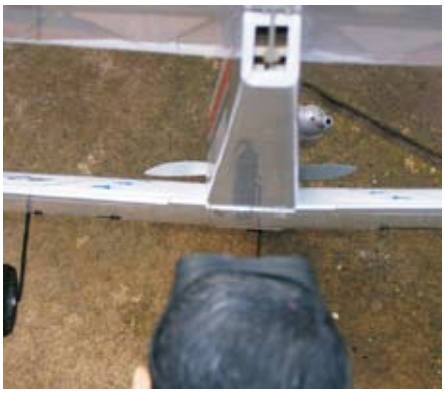
down yet still produces heaps of grunt for general sport flying. If you have to play the horsepower game to compete then drop the diameter an inch.

The climb component teaches one that somewhere around fifty to sixty degrees is the optimum climb angle and that leaning on right rudder throughout the climb helps. My first attempt with a thirty second climb was 2 minutes 37 seconds. Depending on how the entry at the top is handled the inverted glide should be around the same as upright.

Sighting everything from the rear makes it easier to correctly align all of the control surfaces.

Touch n go's

The most touches (and gos) in two minutes wins. Very entertaining but best left til last. Hold the model at full power and the watch starts upon release. Landing under pressure and maintaining absolute concentration for two minutes is what this is about.



Left aileron is low.

Tread pattern makes little difference on model aeroplanes but the advantage of an extra 10mm of prop clearance from the larger diameter wheels does. Dumping it on carrier style requires carrier technique. Do get that tap open just before the model smacks on to keep that engine running.

High wing models can remain cranked over for longer which may seem advantageous until you see one land on a wheel and a wing tip. Low wingers cartwheel less.

A good score is twelve and if you want me to believe that can be achieved using the flawed technique of touching at the bottom

A gentle tug on the hinges. No problems.

Was that LiPo battery charged? At least a glo engine gives an inkling it is going to stop.

Shake the model and listen for that clunk, most important!

Remove the plug fill the cylinder with fuel and spin it over. Be careful, if it makes your eyes water that's bad. Wear glasses.

Remove the needle and flush the jet through.

of loops I want to see the uncut video. That's been tried before and it's a dud.

Test Pilot

As your ever increasing skills are observed by the masses being asked to volunteer for test pilot duty becomes part of that deal. And it's a great deal so take it on. They won't even think about the main benefit which is the "Relentless testing of your saving skills." Being caught out with the unexpected goes with the territory therefore a few little tricks of the trade to protect your reputation have been included.

Ground School

Using this project as an example firing up an old engine is one typical example of what you may face when people are milling around watching your handwork.

The VMAX 46 engine had not been run for four years and it would crank over but not fire. Remove the needle, open up to full throttle then pump fuel though to flush out the jet. Then remove the plug and fill the cylinder with fuel and crank it over with the starter to blow all the fuel out. Re-install the needle and glo-plug, check it doesn't hydraulic then crank that baby up. Works every time and you look like a hero. Checking the clunk line isn't hard up against the rear of the tank is a must before taking off. Hold the model vertical and shake it around. Listen for the clunk. If it doesn't well there is enough fuel in the line

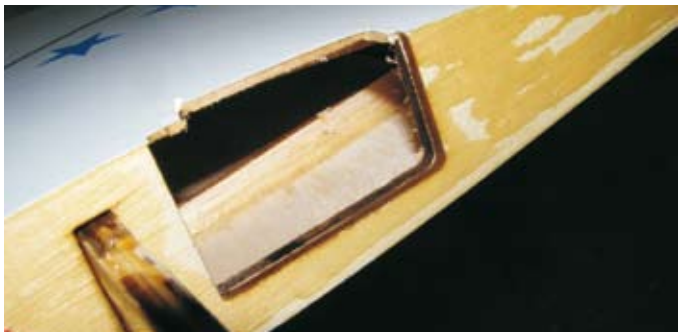
Always a toss up which event should be left until last but having survived this article the Megafly will be subjected to limbo and musical planes next. Spring is coming and another item on the list is creating a Megafloat. As much as we all love the Piper Cub on floats, no disparaging remarks on that subject thank you but this water based activity is where wing down under offers a distinct advantage. When that wind blows up.

The Guild of Stunt Pilots

Entry into the Guild requires dragging the fin through the water and that just isn't the done thing with a Cub. A seasoned campaigner also knows when to treat something deserving of more respect. Not to the model but those elderly chaps who love them so.

No matter how good you think you may be, there is always another walk up wanting to knock you off. Uncontrolled charging around the sky like a crash looking for somewhere to happen is not what this is about. That just scares people, especially me. And officials who also happen to be the people charged with grounding you. There is a lot more to showing off an aeroplane than this but when you become proficient in these manoeuvres in all weather you are on your way. The best pilots stay the best by flying a lot so get started. If you don't have a mount try a Megafly.

The Stunt Pilot (tricks of the trade)



A look inside reveals no hot glue. So that's why it coped with my rather rough treatment !

Make your own access to service the nose gear steering arm.

The flat has already been filed on the nose gear steering arm . Do yourself a favour, file one for each the wheel collars as well !

Snow Tyres ?

Some say this stinks! I say it saves time.

It's a great little aeroplane. Sceptics of the low wing theory can opt for its sister, "The Wasp". By all means send photo's of your exploits or check out some video on YouTube, WG Gilderslag STUNTPILOT

The VQ Megafly is distributed to hobby shops by The Hobby Specialists
www.thehobbyspecialists.com.au
tel 02 6260 2265

The Trailing Edge

Whatever level you aspire too this information should help.

Having spent considerable amount of time and energy sorting out problems for others who have followed by mis-information published in model aircraft magazines, that's not how I roll. "Don't touch the rudder" was USA's Radio Control Modeller advice for assymetric flying. How embarrassing.

""Don't get me started on this one. Pun intended, *"Engine starts backwards on compression, first flick, everytime"*

This is my next flying project.

Leslie V12 Model Aero Engine Test Flight Number 2

Manufactured in Melbourne by Philtech, I first met Phil thirty years ago when he took up my offer to test fly his .46 size 1/6th scale Great Planes ARF Mustang. Engine was a V6 two stroke to compliment his range of single cylinder diesels advertised in Airborne magazine. During a phone call about promoting his products in RCM News he mentioned the forthcoming test flight. There was editorial value anyway and I don't recall whether he took out an ad, but enquiries as to his RC flying experience is what prompted me to make the offer.

A bit of juggling throttle and rudder to get the thing into the air the model was underpowered and a fair bit more work required. I made the comment that it might be easier to do a larger 250 cc engine as the market had started moving towards much larger models. Some thirty years later I test flew the Leslie V12 in a 1/5th scale Top Flite P51.

An indication there's plenty of interest the short video on my You Tube channel created 104,000 views At 15kg, some 5kg over the usual flying weight with a single cylinder two stroke engine, finding a suitable grass strip in Melboure was a problem. One decent bump or a hard landing could see the undercarriage mounts in the balsa-ply wing let go. Not to run off the narrow bitumen at a private aerodrome was my main concern for the planned three minute test flight.

Got back in okay although sorting out speed and pitch trim on final with flap made it look like an unstable approach. Advise from an armchair expert how to approach and land reminded me of just that. Arm chair experts. Perhaps he was a magazine reviewer or an influencer and his test flights needed no trim. All were perfect.

Losing the tail wheel during the roll out was the only disappointment. Usual culprit, no flat filed on the wire for the grub screw. It's often missed. Model aircraft engineering has its own do and dont's. Phil being an engineer I assumed he knew. Anyway that had nothing to do with the engine. That could have been edited that out of the video to pump myself up. Think I'll leave that style of reporting to influencers. Flying info, not just Futaba, is published in my Flying Futaba monthly newsletters

Happy Landings. Stephen J Green

Good

Better

Flying Futaba is published by: Stephen Green