

How to Fly the fabulous

FMS

SUPER



EZ



Your instructor will love it



Version 4 with Reflex Stabiliser

Basic & Advanced Flying Tips

Not only is this fantastic little model a marvellous combination for learning to fly radio control it is more than capable of performing advanced manoeuvres.

After at least five hundred landings, touch n goes and

generally stuffing about at low level I can report the undercarriage setup is spot on. Which makes it an ideal model to practise take off and landing technique. Excellent manners for crosswind practice too. The Super EZ is as viceless as you can get. Stephen J Green



2.5 cc Cassutt in 1972

Thanks for purchasing my magazine. Kraft radio gear was the preferred brand for competition flying when I started flying in 1971. I'm flying Futaba now however the manual and computer settings for the Super EZ in this publication published here should work fine if you are flying another brand.

In 1972 racing my Quarter Midget Cassutt in a pylon race earned me a \$50 cheque for second place. In 2015 and 2016 I organised the Sandown F1 Air Race where competitors raced Seagull Cassutt ARFs, \$1,000 1st \$60 2nd \$400 3rd. Juniors raced F2 as a club entry. For 2024 I'm planning an F1 Speed Weekend and proceeds from this publication go towards prize money for the RCM News Trophy Race.



60 Cassutts in 2015

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FMS SUPER EZ

Version 4 RTF (Ready to Fly) and PNP (Plug and Play) Super EZ are marketed with the Reflex Stabilizer three axis gyro.

You might be considering purchasing a Super EZ to start flying RC. Perhaps you have already purchased the Ready To Fly version. As good as this combination is the stabilisation technology onboard it is not quite as foolproof as a drone. So, if you are going it alone your first flight with the aeroplane will also be it's first flight. If it went well you could go out by yourself and not crash but there is one key difference. Return the controls to neutral and a modern drone will stop and wait for another command. Aeroplanes don't.

You might want a fun little model to improve your flying skills or you may be interested in becoming an Instructor.

Suggestions and radio settings are not absolute but the latter have all been flight proven on both a

calm and a wet windy fifteen degree day, 100 feet above sea level. They offer a good setup to get you started. Minor setting changes could well be in order but in the unlikely event your instructor decides to pull them apart unfortunately you are dealing with another agenda.

Finding another instructor may not be an option in a small town or club so you might just have to go with the flow. Or you could be one of a myriad of those who have found a very large paddock and tried to fly it by yourself. Successive readership surveys by RCM News magazine consistently revealed more than half who purchased the magazine did not belong to a model aircraft club. Learning at club is the preferred option though.

The Model Aeronautical Association of Australia BRONZE WINGS is a basic solo Flight Test for model aeroplanes (aircraft) under 2 kilograms (4.4lb). This groovy little model is capable of performing many of the advanced manoeuvres in the 1972 FAI F3a aerobatic schedule. If the hobby for you is flying foam, even big foam, stowing 1 kilogram of ballast on board won't be of interest. However that extra weight transforms this light weight foamy into something a more traditional aeromodeller might be flying.

Some of the photographs are of earlier versions. The two piece tailplane and really nifty spinner have gone but the basic airframe has not changed so I didn't see the need to reshoot them.

Models and electronics may change but information published here isn't much different than a decade ago. The basics remain relevant no matter what aeroplane you are flying or learning to fly with.

Stephen Green. AUS 5932.

Futaba Pro Shop News is published by : Stephen Green

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Glossary of Terms

10x5	Diameter-pitch of Super EZ prop	Gyro	FMS Reflex Stabilisor 3 axis system
2.4 GHz	Frequency of modern RC systems	High Alpha	High angle of attack
2S	Two cell LiPo battery pack	Horn	Control linkage component on control surface
3S	Three cell LiPo	Kicker	Spray that sets off CA glue faster
4S	Four cell	KV	Revolutions per Volt
Acrobatics	Dufus description of aerobatics	NiCad	Nickel Cadmium battery
Adverse Yaw	Aerodynamic drag from downward aileron pulls aircraft nose to that side	NiMH	Nickel Metal Hydride battery
Aerobatic	Acrobatics performed by aircraft	LiPo	Lithium Polymer battery
Aerofoil	Curved shape of wing profile to create lift (AKA Wing Section)	Loop	Aerobatic manoeuvre
Aft	Point of interest behind CofG	mAh	Milliamps (capacity of battery pack)
Aileron	Control surface on wing	Mode S	tick configuration of Transmitter
Airfoil	USA pronunciation of Aerofoil	Nitro	Nitromethane fuel additive (hijacked to describe glo engines)
Airspeed	Speed of wing relative to the air	Old Fokker	Administrator who doesn't fly
AGL	Above Ground Level	Ops	Operation
Approach	Final flight path to land	Orbit	360 degree turn
Arrival Heavy	Landing	Pearshaped	Botched manoeuvre (see DOH!)
AUW	All up weight	Pitch	Angle of propeller blades as well as Longitudinal axis of aeroplane
Bank	Angle of Bank (refer roll)	Planform	Shape of wing looking from top
Bloopers	https://www.youtube.com/watch?v=WfqZ5CtDcuQ	PNP	Plug n Play
Buddy Box	Dual control system	Prop	Propeller
Bump	Landing then taking off again	RC	Radio Control
Camber	Curve of a Aerofoil	RF	Radio Frequency
CA	Cyanoacrylate Adhesive (Superglue)	RPV	Revolutions per Volt
CASA	Civil Aviation Safety Authority	Roll	Lateral axis of Aeroplane and Aerobatic manoeuvre
CH	Channels in a Radio System	RTF	Ready to Fly
Chocks	Blocks to stop wheel rolling	Rudder	Control surface on Fin
Circuit	Rectangular flight pattern for landing	RX	Receiver
CFI	Chief Flying Instructor	Solo	First flight unaided by instructor
Clevis	Pushrod attachment (AKA kwiklink)	Span	Wingspan measured wing tip to wing tip
Club	Potential four letter word for impatient beginners	SOP	Standard Operating Procedure
CofG	Centre of Gravity (longitudinal balance point of aeroplane)	Spinner	Nose cone on centre of propeller
Crash	Aeroplane not capable of flight immediately after an arrival	Stall	Wing ceases to create lift
Departure	Take Off	Stab	Tailplane
Drag	Aerodynamic force opposite to thrust	Tail	Tailplane
Doh!	See arrival	Tail Dragger	Conventional Undercarriage
Elevator	Control surface on tailplane	Tailwheel	Steering for above
ESC	Electronic Speed Control	Taxi	Ground movement of aeroplane
Fin	Vertical control surface on fuselage	Trees	Natural predator of model aircraft
Flaps	Inboard control surface on wing	Throw	Maximum angle of control surface deflection
Flare	Raising the nose to soften landing	Thrust	Force created by propeller
Fokker	Famous Aircraft Brand from WW1	Torque	Twisting force from propeller
Fokkers	Refer Old Fokker	Travel	See throw
Fore	Point of interest in front of CoG	Trike	Tricycle Undercarriage (nose gear)
Gear	Retractable Undercarriage	TX	Transmitter
George	Traditional name for autopilot	Yaw	Sideways axis of Aeroplane
Glide Slope	Angle of descent to land on runway. (Airliners use 3 degrees)	Yawn Patrol	People who don't know how to use rudder but sit back and criticise those who have a go
		WG	WG Gilderslag Famous RCM News Stunt Pilot

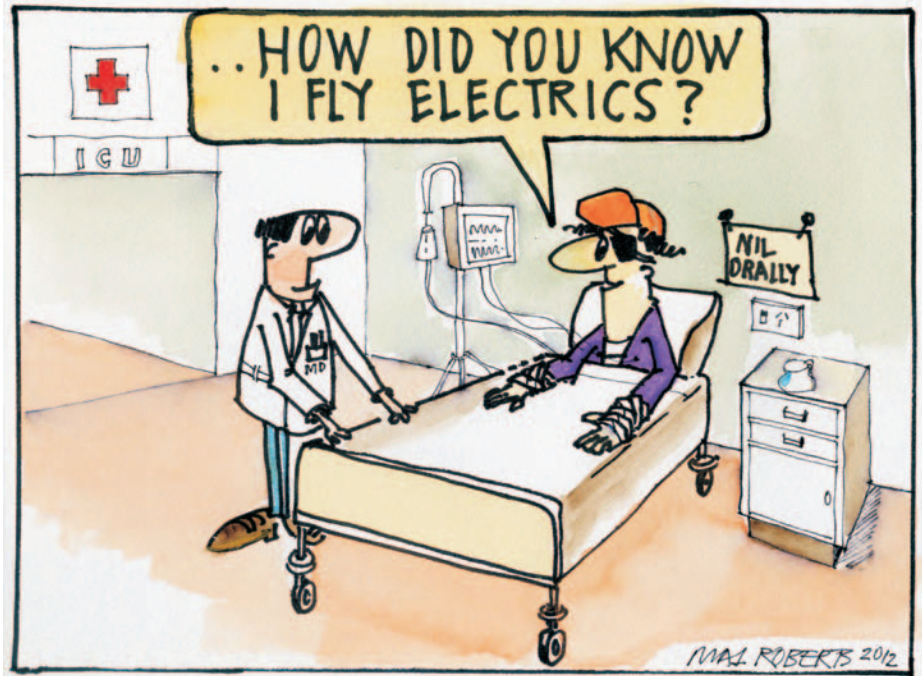
How to Handle a Model Plane

With electric power this is way more important that it looks. Even for experienced operators. It is very easy to fumble and knock the throttle open. Before programming your radio or making any mechanical adjustments the safest thing to do at home is remove the propeller. If not restrain the model.

TRANSPORTATION

There is an art to walking through doorways and not bashing the tailplane. Tail plane facing forward so you can see it is preferable to nose first. Until it becomes second nature that there is a wide vulnerable structure hanging off the end of the aeroplane, holding the model vertically is safest.

If going to the field in a sedan my first preference is sitting the fuselage nose first into the passenger foot well. Which presents a potential problem taking your significant other. She or he may not appreciate being relegated to to sitting in the back seat. Fuselage across the back seat be mindful not to have any force pressing the



horizontal stabiliser against the rear of the seat. In the car boot (trunk) I always try to point the nose of the models forward. That way if I have to hit the brakes and the model lurches forward, the spinner takes the knock, not the tailplane

AT THE FIELD

The best way to carry a model plane at the airfield is hand under one wing and the other halfway along the fuselage between the stab and wing. This makes it easy too swing the model around out of someone's way whilst walking. Makes it easy to put the model down too. Walking to the runway

to fly I carry the transmitter in the left hand, resting it on the wing panel.

It is odds on an untrained helper will gravitate to supporting the model by the rear of the wing. Grabbing the wing by the aileron in the process. Which could strip the servo gears.

If you do have a helper each person holding the model underneath each wing tip is another good method. The model will balance quite happily with a flat hand under the wing at its thickest point. Best not used when it is windy.



Knock the throttle it will fly off the bench in a nanosecond. Remove the prop or restrain the model - Saucepan in a shopping bag hooked on the the fin will do

Fine Tuning the Ready To Fly V4



Move Aileron linkage to the second hole out from the centre



Measured at the trailing edge the Aileron moves up 10 mm



Move Elevator linkage to the second hole out from the centre



Measured at the trailing edge the Elevator moves up 9 mm



Linkage setup moves Rudder 20mm each way



Change the propeller to an 8"x4"

Arming the Autopilot

1. Switch transmitter on, throttle low - connect battery pack

VITAL

2. Make sure model sits still Hold model still until the aileron and elevator servos cycle through the auto control check

3. When the ESC beeps you are good to go

REMINDER

Ensure the model remains still when arming the system. (I have tested this method in a 40 kph wind by holding one wing tip steady and a hand in the centre.)

HANDLING THE MODEL

A good method is two people supporting the model underneath each wing tip. The model will balance happily with a flat hand under each side.

If you have a helper it is odds on that untrained hands feel compelled to support the model by the rear of the wing. Make sure the helper does not grab the wing by the aileron

DANGER



When the throttle is live this is the safest way to hold a Mode 1 transmitter. Throttle on the other side



Compared to resting on its wheels setting the fuselage into the straight and level flying position when arming the autopilot pilot does makes minimal difference to the pitch trim in Stability Mode

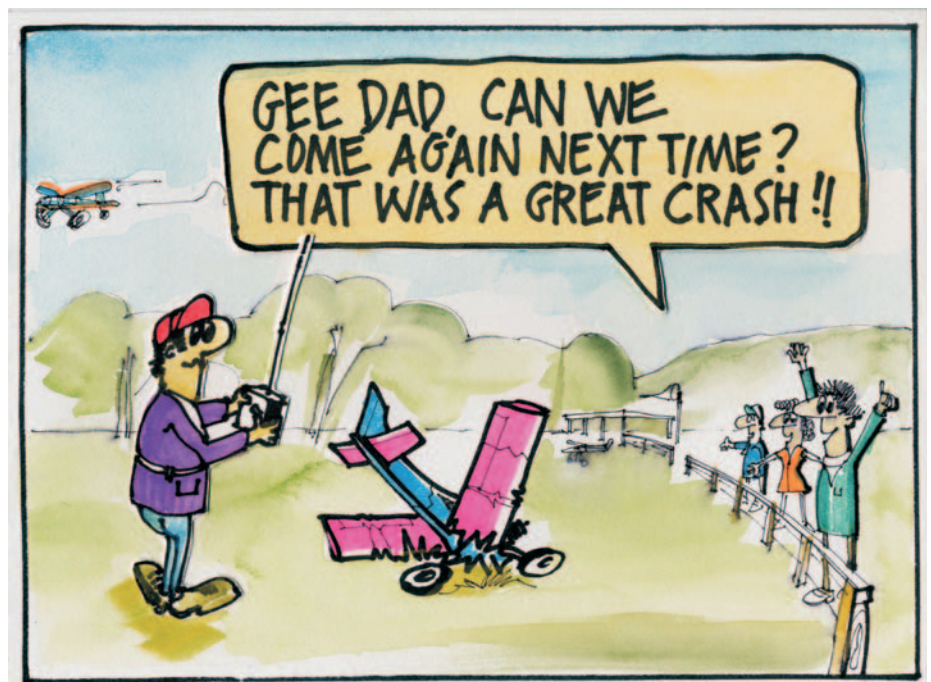
This ready to Fly product is very much like Drone Technology that has proven almost anyone can achieve successful flight.

The overwhelming majority of drone crashes are caused by not understanding the correct way to operate the auto stability. Failure to reset the current waypoint into GPS systems caused so many fly aways. Number three is simply crashing into something.

You don't need to know anything about flying or aerodynamics with

this Super EZ either. Just arm the autopilot correctly, select Stability Mode, hold half up elevator and open to full throttle and it will be airborne in five metres. Then you will discover whether it is trimmed to fly straight. It could be perfect but most likely it will be pretty close.

Steer the EZ around, cut the throttle it will do an acceptable landing. Somewhere near where it took off. Okay if you live on a farm. Not so in a city. Best to check out a Model Aircraft Club



Fine Tuning the Plug n Play Version



Ever bought something only to find out later if the person selling you the gear had shown you the next model up you would have bought it? Spending a bit extra on the radio system at the start also makes setting up models more satisfying where it counts. Up in the sky.

The Super EZ also can be further fine tuned using a few of the mixing programs such as Aileron Rudder Mix, Flaperon and Air Brake. On the ground Throttle Cut improves for safety when handling when the prop is live.

Best bang for your buck.
The eight channel radio sets represents the sweet spot. Has done for decades.

Futaba has gone about eight channels differently than the rest. The 6K can operate eight channels with telemetry but if your budget allows I suggest the 10J is the go.

If you want more bell and whistles my 16iZ has seventeen models geared up and flying. Telemetry in my racing planes is really handy for propeller choice. My simple little Super EZ is also fitted with an Altitude Telemetry Sensor.

You will also need a few spare propellers, battery packs and a charger. Cheap gear and model aviation do not make good bedfellows.

Resist the temptation to purchase cheap. A number of fires that have burnt vehicles, garages and houses to the ground have been traced back to a cheap battery charger that failed to cut off. I do not charge Lithium Polymer batteries unless I am in the room. If I duck down the street on a quick errand the battery is disconnected.



Futaba 10J



Futaba 16iZ



Fine Tuning Continues

Spending extra dosh opens up easier programming and more options.

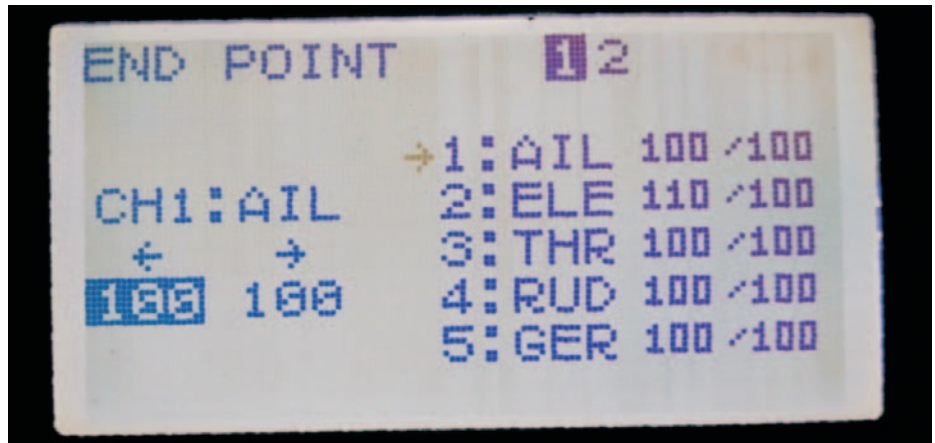
At the time of publishing all of my seventeen models are programmed into Futaba 16iZ. The majority need less than eight channels and use the T-FHSS receivers. A very few specials such as my Spitfire, Cassutt and Bell 47G are on FAASTest. Spitfire uses 12 channels and the Cassutt chews up same. If I go floatplane flying I avoid the small risk of dropping the higher priced set into the water but using the Futaba 10J.

The control surface throws were setup mechanically for the basic Futaba 6L set. The Futaba 6K, 10J and 16iZ all operate T-FHSS receivers. To get started on the EZ is a simple matter of leaving the end point adjustments at 100.

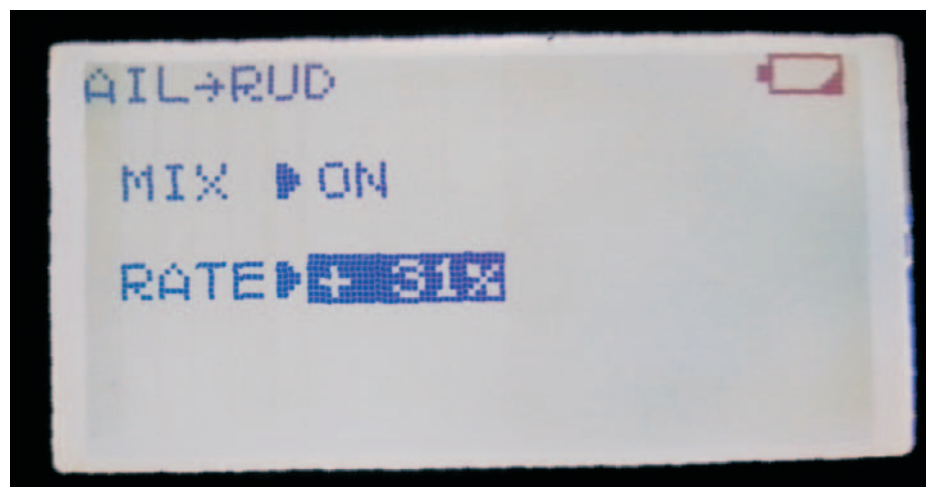
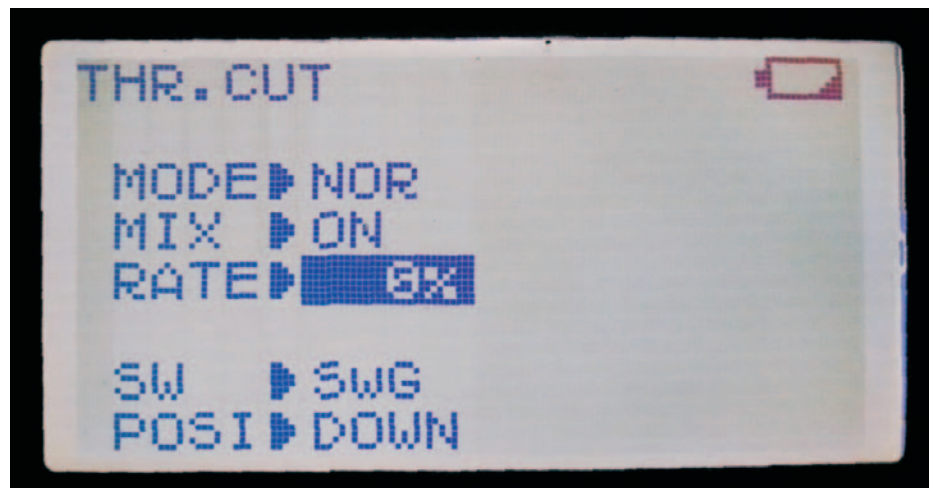
FUTABA 10J

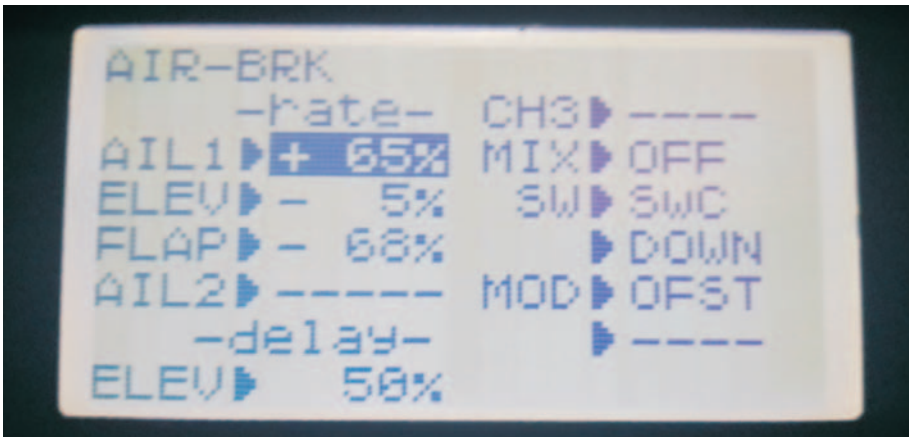
Function utilised are End Point, Throttle Cut, Aileron - Rudder Mix and Air Brake. Throttle Cut- Refer the cartoon on page 5. Notice the low battery indicator on the two middle screens? TX runs for a few minutes then shuts down. No need to rush but that means time to land

Notice the 110% value on elevator? That gives more down elevator than up. Pushing forward into an outside loop requires more elevator than an inside loop. Aileron - Rudder mix. As great as the Super EZ is this setting improves the way it turns. Adverse

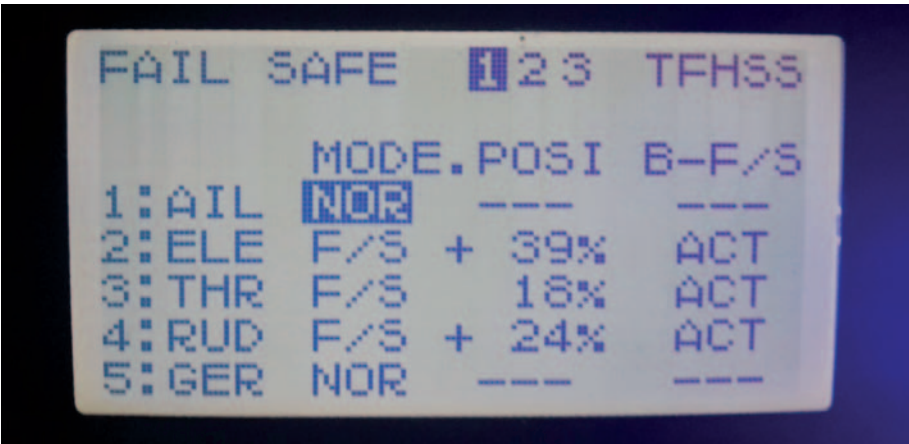


Futaba 10J but all values will be the same for 6k, 12K, 16iz, 18 SZ, 32MZ

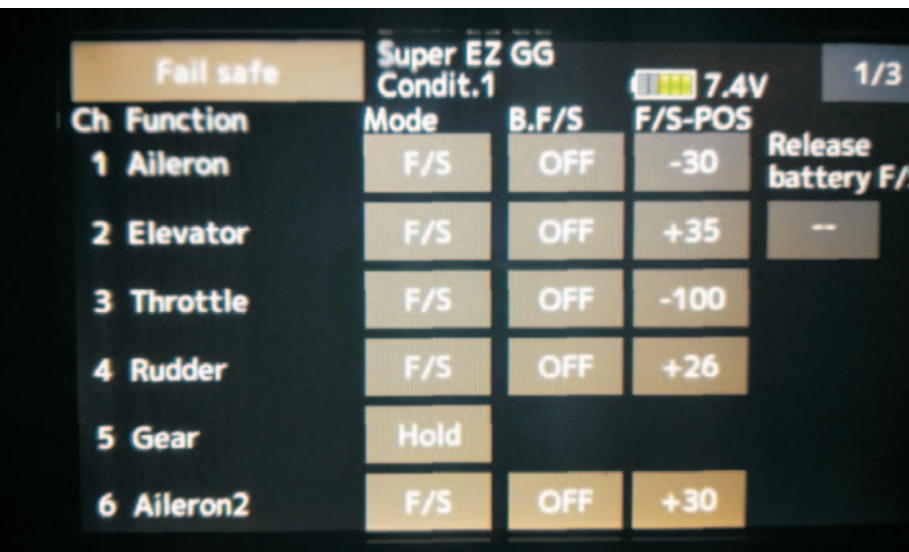




Screen from Futaba 10J but all values will be the same for 6, 16, 18 Ch sets



Throttle Cut



Yaw is most noticeable during the turn after take off and when aileron is applied during the flare.

Air Brake. Rasing the nose and holding that attitude is what this function is for. It can be done in two ways.

1. This value is set to fly the approach at 1/4 throttle. Basic up

elevator trim mix will raise the nose and keep it there.

2. Cranking both ailerons up reduces lift. It also pitches the nose up. Flown it at 1/4 throttle this results in a steeper approach path. If you have to Go Around, EZ will climb away in this configuration should you forget to switch it off.

Offset is a condition to program when a mix comes in or out. In this case the idea is Landing Configuration reverts to normal when the throttle passes half throttle. There's a bit involved setting this up correctly and it really isn't needed in this application. At any rate the only time I've used this function since 1991 is when gas turbine powered jets were new.

Telemetry. More than a gadget with the R3008 receiver and GPS Sensor onboard I've flown the Super EZ 800 metres way towing fishing line. Swapped that out and confirmed the entry level 3106G receiver is full range to 500 metres away at 100 feet AGL.

FAILSAFE

In the event of a failure, flat transmitter battery or radio interference these settings will see to it the model will enter a stabilised orbit to the left. Motor off.

16iZ

This set has so much programming capability it would satisfy anyone investing into the hobby for the long term . For example there are at least five ways I can reverse a servo direction. Not needed for the Super EZ but compared to the 10J you can do more a lot more when you accumulate more models.

Aileron Differential. This function is to counter aerodynamic drag by reducing the downward moving aileron travel compared to the upward one on the other side. For example turning left. Left aileron goes up - right aileron goes down. Air pressure under the wing is higher than on top. AKA lift. Right hand aileron creates more lift the left. It also creates more drag. Which pulls the nose to the right.

In a high wing flat bottom (cambered) aerofoil trainer this is most noticeable in the nose high climbing attitude turning after take off. Very easily noticed on a four metre wingspan glider during most in-flight manoeuvres too. Differential Aileron coupled with Aileron - Rudder mix is the go.

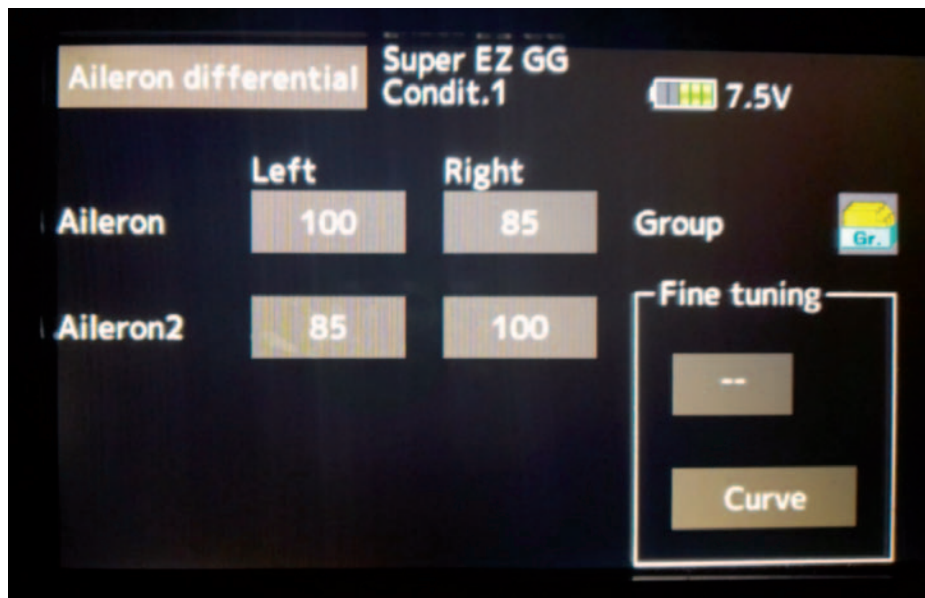
AEROBATICS

FAI F3a and IMAC aerobatic aeroplanes use a fully symmetrical aerofoil, ie the camber is the same top and bottom. Lift is generated by trimming elevator for a tiny amount of angle of attack. (refer page 3)

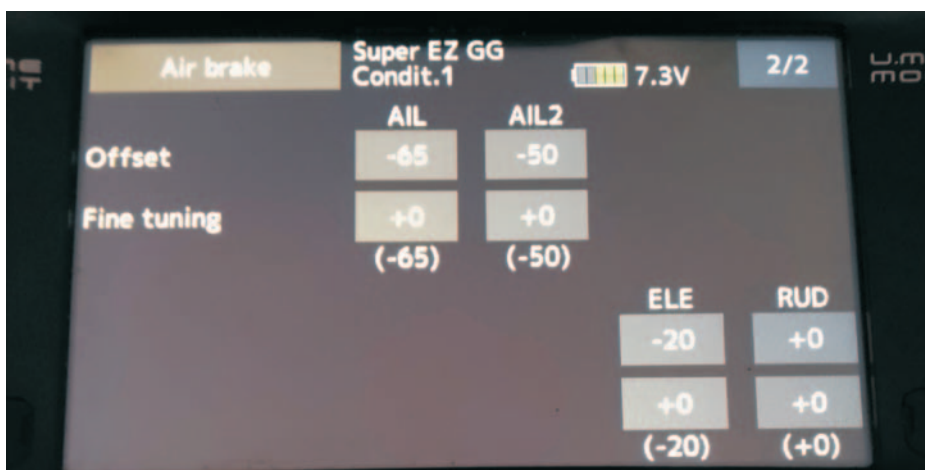
Compared to a 1970s Classic Pattern design a modern F3a machines is a complete doddle to fly nevertheless Averse Yaw still has an effect. In this style of flying Aileron Differential is set to assist in maintaining a straight vertical upline (climb) after a half or full roll in the middle.

A manoeuvre not included in the MAAA Gold Wings Test but a model that rolls true really helps with the hardest in the sequence.

Yes, the three Horizontal Rolls This manoeuvre requires inputs of



Screen from Futaba 10J but all values will be the same for 6, 16, 18 Ch sets



Higher value on one side required to fly straight with mix activated down and up elevator. Aileron differential also helps staying on line exiting the Immelman turn. Pulling up into a Split S then executing a half roll on line too. It can be setup mechanically but so much easier with a computer set. Also fine tuning is way more accurate by just inputting another value and launching again.

Mode 2 v Mode 1

There isn't much difference. I can do a reasonable job of the 1970s F3a Classic Pattern Schedule on both so don't get too caught up in this Australian debate. This really only makes a difference when learning circuits and bumps.

If you are right handed, fly full size aircraft or have spent some time on PC flight simulators or computer games, Mode 2 is the go. Having taught so many people to fly, on both, the major advantage of Mode 2 is the ability to set the throttle and forget about it.

When turning right, on Mode 1, most people inadvertently increase the power. So the model climbs. When they turn left the power is reduced. And the model descends. It takes some time for them to recognise this. Later it becomes evident during the landing approach, where changes to power affect the glide slope. From that perspective it is easier and quicker to teach someone on Mode 2. After you have achieved solo then it is a matter of swings and roundabouts. For example when I go slope



soaring and it's cold I can put one hand in my pocket and continuing to fly. Reminding my mates who are on Mode 1 of yet another superior advantage.

Seriously though, I'm right handed and originally learnt Mode 2. Competing in FAI Aerobatics (F3a) years ago I swapped from Mode 2 to Mode 3. Rudder and elevator on the right hand stick improved my slow, four and eight point rolls, reverse point roll and reverse knife edge. I had to become competent on Mode 1 when

I started my commercial RC flying school. I still fly helicopters on Mode 3.

If the local model aero club has no Mode 2 Instructors you can opt to fly Mode 1 or invest in more equipment.

TRAINER FUNCTION (BUDDY BOX)

This marvellous system speeds up the learning process because the student can be afforded far more latitude to correct a mistake before the instructor has to resume control. It really pays dividends on the landing approach.



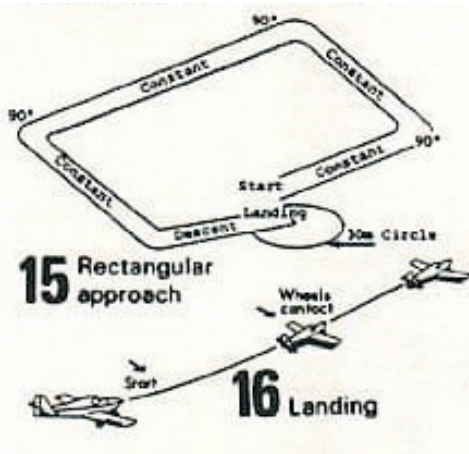
Mode 1 - Aileron and Throttle



Mode 2 - Throttle and Rudder

Australia is one of the few countries in the world where Mode 1 is prevalent at many if not at most model aircraft clubs. But that is changing. If instruction is not available on Mode 2 the dual control system or Buddy Box offers a solution. Consider purchasing a second transmitter. These basic Futaba 6L transmitter do the job but a computer set is a better investment because it has aileron rudder mix. Control stick tension is adjustable on the 16iZ and up but not adjustable on the 6K and 10J.

Circuits and Bumps



TAKE OFF. Hold 1/4 up elevator and apply full throttle. Don't dilly dally on the throttle. Practice opening to full with a one two count. You will knock the rudder if you ram it open.



ONE SECOND. A one count after the wheels leave the ground ease off the up elevator back to neutral. Climbout should look like this

A: NO STEEP TURNS. After take off a gentle bank in a climbing turn is what we're looking for. Back to half throttle at 150 feet

B: TURNING DOWNWIND. Banking till you see the top of the wing will give you a thirty to forty five degree bank

C: TURNING BASE. Thirty degree bank works best. In calm conditions roll back to level reduce power to 1/4 throttle. Not if it's windy

D: TURNING FINAL. No steep turns. A gentle bank similar to the climbing turn after take off is what we're looking for

E: ROLLING OUT. Start rolling out to level when the nose is pointing at your position

F: LINED UP. Reduce power to 1/4 throttle if it is windy. (10-15 kph)

G: STAYING LINED UP. Very minor corrections with aileron. If drifting of course all you need do is lower one wing level with the horizon. That's all

H: MODEL LOOKS TO CLOSE. Everyone does this. Drifting to the outside edge of the runway? Model looks to close? If it looks like

I: ROUNDING OUT. Five feet up (1.5 metres) Close the throttle and hold a smidgin of up elevator.

J: FLARE. Slowly pull in more up elevator

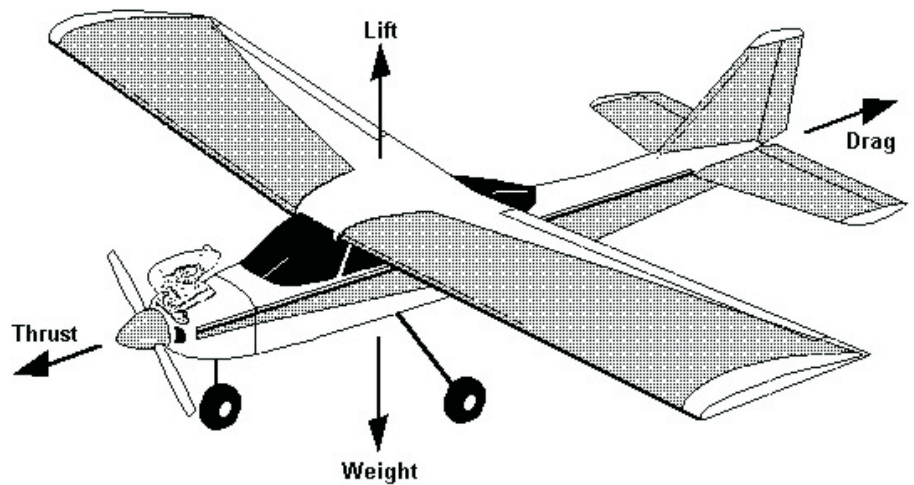
How Aeroplanes are Flown

Taking the time to understand this will speed up the learning process at the flying field. There are no dumb questions here however this subject is pretty dry so Ronnie Retail has come out of retirement to lighten the mood.

The wing makes flight possible. The motor makes sustained flight a reality. If the motor stops the wing will continue to work.

As the wing moves forwards the air has to flow over and under the aerofoil. Or, as they say in America, the "airfoil". This is the curved shape of the wing, the cross section or wing section as it is also known. It makes the air travel a greater distance over the top than underneath. That air increases in speed. This creates a low pressure area on top compared to what's happening underneath.

The force generated is lift which acts at ninety degrees to the wing.



Flight Forces

(Pic courtesy Thunder Tigre Trainer 40 instructions)

In the simplest of terms, when the plane is flying straight and level that force is lifting straight up.

The tailplane and fin are also wings. The control surfaces alter the shape of the wing section. For example, the left hand aileron moves up and the lift is reduced. The other aileron moves down. Which increases lift. Less on one side more on the other, the model banks (rolls) to the left.

Pulling in up elevator increases the lift underneath the tailplane. Less lift on the top, more underneath, the force pushes the tail down. Which raises the nose of the aeroplane.

The four forces that act on aeroplanes are weight, lift, thrust and drag. With an electric propulsion system, weight remains constant. As piston engines consume fuel the model gets lighter. This only makes a small change during the flight, usually to the elevator trim. The other three forces we can alter.

Flying straight and level the wing on a one kilogram model is producing that amount (1kg or 2.2 pounds) of lift. The faster the wing flies through the air the more lift it produces. Another way of increasing lift is to raise the nose of the aeroplane, with the elevator. At half throttle the drag equals the thrust and the airspeed settles around 70 kph. Lift equals the weight. Straight and level flight.

TURNING

Bank the model to the left. Roll the wing over and stop at thirty degrees. Thirty degree angle of bank. (Stability Mode). Lift is still straight up, but the wing is no longer pointing straight up. A percentage of that force is now pointing to the right. And the plane turns.

GETTING OUT OF THE TURN

Returning the control stick to neutral and the autopilot will



This is what a thirty degree banked turn looks like

command the model back to level flight. In Stability Mode that's all you need to know to turn the EZ. You can hold the aileron stick further over and the model will turn but start losing height. Either squeeze in some up elevator or let the stick go, (return it to neutral is better) and the Super EZ will very quickly snap back level.

A BIT MORE TO TURNING

There always is. The weight remains the same. Thrust remains the same, provided the throttle has remained at half. But we have altered the lift. Less lift is going straight up. The plane starts to descend. Going downhill it also speeds up.

With enough altitude, if the autopilot was off, eventually the increase in speed will create more lift and the plane will stop descending as fast. You could squeeze in a smidgin of up elevator. Which increases the lift. Which is what stability system does for you. Provided the angle of bank is limited approximately to 30 degrees. Near enough is good enough, it isn't that criti-



Way too steep after take off

cal. Once you go past 45 degrees things start to change, rapidly.

CLIMBING

To reiterate a common theme, once the model has been trimmed to fly level at half throttle applying full power increases the airspeed. Which increases lift. The aeroplane will climb.

LANDING APPROACH

The most difficult thing to master flying radio control is turning onto final approach and maintaining the glide slope to the landing point. This is where choice of training

aircraft makes a huge difference. During the past forty years manufacturers kept upping the horsepower in basic trainers. Managing elevator trim between full throttle and 1/4 throttle takes a lot longer to learn compared to what was the norm in the 1970s. Good design can only cope with so much speed range. Which is why I suggest fitting the 8x4 propeller.

DESCENDING

The natural tendency designed into every aeroplane is for the nose to lower automatically when power is reduced. Reduce power to 1/4 throttle. Lift reduces as the plane slows down.

DESCENDING WITH GEORGE

Stability Mode counters that nose down attitude by holding the nose level with the horizon. This delivers a stable approach at an acceptable speed leaving the pilot to concentrate on the important task at hand. Staying lined up with the runway.

GLIDING WITH GEORGE

Cut the power. The model will slow right down. Nose remains level with the horizon. This will produce a steeper glide slope. If you hold in up elevator here the plane will slow down even more and descend at a steeper angle.



Charlie's getting the hang of the most difficult thing to master. Turning onto final approach and maintaining the glide slope to the runway. Please note her father Byron is an experienced instructor capable of operating in this tight area



LANDING WITH GEORGE

The last two components of the approach is Rounding Out and the Flare.

Cut power and raise the nose to stop the descent we call Rounding Out. Rule of thumb is around one wingspan high, ie five feet or one and a half metres. As the plane washes of speed George will hold the nose level and the plane will sink towards the ground. Your task is to keep it lined up with the runway. In a few seconds the main wheel will touch. Phew?

Not yet. Save that for when it comes to rest. You've still gotta keep it straight with rudder. That style of landing is know as a Wheeler.

STALLING

There is virtually no chance of that happening with the autopilot switched to Stability Mode

An aerodynamic stall is when the airflow is unable to follow the contour of the aerofoil. Most wing sections (aerofoils) generate lift up to around 14 degrees of Angle of Attack. This is controlled by elevator. Which this takes us right back the very first sentence. As the wing moves through the air, relative to the air flowing over it, that is known as Angle of Attack.

Exceed that and the wing is no longer doing anything for you. The aeroplane's performance has is the same glide characteristics as a brick.

THREE POINT LANDING

Dropping a brick from two feet or twenty feet won't damage a brick. Dropping a model plane from twenty feet will but it won't break



The slower it goes the more up elevator is needed a Super EZ from two feet high. Nose held in the air with wings level, this is how we go about the most satisfying way to land. The object is for all three wheels to touch down around the same time.

GUILD OF STUNT PILOTS

Competing in the Annual Spot Landing Trophy the judges will be looking for a stall just as the wheels touch the nominated spot. That's really hard to do. Point being if you manage to stall this 1kg aeroplane, nose high, wings level two at two feet it will just plop onto the ground. The undercarriage will take the force. Doing

that with my 20 kg Spitfire would probably rip the undercarriage out of the wing.

MISTAKES TO AVOID

These are the most common. Small aileron corrections to stay lined up on the approach are required. Flying circuits we hold a small amount of control for a few seconds to initiate a turn. On approach we use a larger mount for much less time. If the model starts drifting off course to its left a small bump of aileron to the right is the go. How much? Enough to lower the right hand wing level with the horizon.



Lightweight and flexible is one of a foamie's best features

Go past that point you are over controlling and risk aborting the approach.

Same applies during round out and flare. Due to lower airspeed the only difference here is the ailerons are not as responsive. You may need to bump the ailerons stick a tad more. Just a tad though.

Now the usual occurrence here is beginners let the elevator off as the aileron correction is applied. Do that and plop. Model drops onto the ground. Often confused with a stall but isn't. You just let the elevator off.

Conversely if you happen to pull in a little too much up elevator during the Round Out this is what to do. Hold it and wait.

The plane will balloon up, settle, then start descending again. Ditto during The Flare.

HOW TO DEAL WITH A HAM FISTED CHUNK OF UP ELEVATOR

Quickly return elevator to neutral. As soon as the plane stops



climbing pull it back in and hold. This is where your instructor earns his or her keep. We're looking for you to have a go but ready to assume control and Go Around for another approach.

Anyway I could bang on in-finitum but that covers the basics. Another basic that has not changed. Going for a three point landing in strong crosswind is not the right thing to do. It's easy to up end the model and damage

it. Go for a wheeler. Yes this has all been written previously so to highlight that point the next eight pages were published when this stability technology was new.

If flying a different model and different radio the basics of flying with and without electronic stability have not changed. Once again I have to say use that the autopilot really helps speed up the learning process. Hopefully your instructor will agree,



Holding off for a three pointer on a windy day is risky



Up and over



Aussie Beach Flying

AEROBATICS

Last year I suggested two friends purchase a Super EZ each and go flying at least once a week. One lives in Big Hill, the other in Aireys Inlet and the halfway point is the start of the Great Ocean Road to Lorne and beyond. Off to the left where the road flattens out is a beautiful stretch of beach just past Moggs Creek, a popular hang gliding launch site.

Each session one chap chews through three battery packs. The other one does one or two. His time is also taken up looking after Bessie. (A three year old Labrador)

A month or so later we went flying off that beach and it was immediately apparent that advice had been acted on. Nicely controlled landings much closer to their position and generally in front of the aeroplane. They liked the model so much each purchased another because the kit comes supplied with them, to fly from the convenient stretch of water also within a few minutes drive. I'm not a bit liberty to tell who bought two models just to have an extra water rudder.

GOLDEN RULE

Remember, learning aerobatics the best thing is to stand pointing the antenna straight across the runway. Only do a manoeuvre when the model is right in front of your position. Just in case you get it wrong, not too close, at least fifty metres away.

TAILDRAGGER TECHNIQUE

Holding full up elevator to keep the tailwheel on the ground to taxi is normal. This also helps maintain directional control as the throttle is opened. This is standard procedure on a big heavy model like my Spitfire. Not so with a light weight high powered foamy.



Great way to start the day



Victorians don't see the value of the beach in Winter



Getting it rolling in soft sand replicates how to take off a conventional (aka heavier) tail dragger

This is the best way with a Super EZ. Hold 1/4 up elevator then gas it up and go. Relax off the elevator after the wheel leave the ground. This technique produces a great take-off. Open the tap quickly. No more than two seconds. Dilly dallying with the throttle is best avoided. Prop

blast over the fin and rudder produces instant response.

What becomes more important with high powered foamies is raising the tail into the flying position. Otherwise the model could and probably would lift off just

above the stall. This is where rudder and elevator input becomes critical. Large elevator and rudder inputs at slow speed is the recipe for a snap roll. If the model leaps into the air and it isn't heading towards your position, get off the elevator pronto and the model will climb away.



FMS Super EZs



Andrew Pain, seat forward tray table locked



Worried about being ham fisted co-ordinating the throttle rudder and elevator? It does matter but if you stuff it up you can safely drag a Super EZ off with confidence



Editor's wingtip dragging (*Andrew Pain pic*)



ZOOM ZOOM - 70 kph along the deck? Full throttle and don't let the tail come up. Risky but fun

Instruct the Instructor

This edited “Balsa Flies Better” article was published in RCM News #159 April 2021

In old black and white flying movies the autopilot was often referred to as George. Whether this is true I don't know. What I do know is I've long been a fan of gyros as a teaching aid. Ever since 1987 in fact, with a product similar to Futaba's Pilot Link which is still available today. Therefore I suggest to Club Presidents and Instructors still espousing “piston power and balsa flies better” that



All weather operation set up with George onboard for basic training at MAAA Come and Fly Days

mantra is way out of date. Foam trainer combos are what people are purchasing today and the Super EZ is the best of them.

The three axis gyro in a Super EZ is a brilliant combination. In 2021 I spent time during Summer teaching a Futaba Pro Shop customer to fly. He bought a 70th anniversary 18 SZ. The arrangement was I would teach him to fly on the basis I could write up the exercise in a magazine article. That was in 2021 whilst I was deliberating whether to carve out a living flying RC aeroplanes again. In addition to making a new friend, a sales guy, the other thing I got out of it was deciding whether I wanted to get back into earning a living flying RC Planes.

Deal was once a week for a morning or afternoon session with my Super EZ's set up with dual controls. Fourteen flying sessions later he passed the MAAA Bronze Wings flight test. To a pretty high standard I might add. We went out for one more session to consolidate. Out of fifteen sessions he experienced one calm day. The rest was in wind, hardly ever straight down one of the three available runways. Broke one prop. Then he flew every week for a few months in up to 25 kph wind.

I think we could have knocked it over in less sessions but I was a bit rusty plus it took me two sessions to realise the Student needed spectacles for flying. A bigger model may have helped but we tried my three different coloured Super Ezs on different days. Also he insisted on using just one of the three available runways. Which required a sharp turn a few seconds after take off.

F3A STANDARD.

Once again I teach all beginners to fly to what I call F3a Standard. Stand straight. Shoulders parallel to the runway and don't follow the

Learn to fly the fast way

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PROFESSIONAL FLYING TUITION 1980s

Back in the 1980s I started out with a two and a half hour private lessons charged out \$45 per hour at a private field. All equipment supplied running glo fuel. Also ran morning and afternoon group sessions. Wednesday and Saturday four Students per session. Fifty dollars per student guaranteed five ten minute flights. Man was that busy

model with the transmitter antenna as it passes by. Just like if you were flying in an F3a competition. Takes a little longer initially but it pays dividends down the track. Particularly when landing. Here's why.

Most people instinctively follow the model as it tracks downwind. When it turns on final and tension rises they forget to point the antenna the other way. So, they are pointing the aerial straight back towards the model as it is entering the low and slow phase of the flight. It takes heaps of time to learn the automatic left from right that way. Stand straight and make the model go where you want otherwise it will fly you around the field.

I digress but I used that example as a defence/explanation to a letter received from Australia's Civil Aviation Safety Authority (CASA) for my response to a complaint received about my flying operations at one of the three Qantas Australian World 500cc Motorcycle Grands Prix. The complaint was I flew over the crowd. Explaining these ops were no different to me than an FAI Sanctioned Aerobatic competition where the judges were behind the pilot there was no further correspondence.

BACK TO THE BASICS

Circuits should be flown with the model trimmed straight and level at half throttle. Concentration lasts longer. Battery too. It also makes

This is where Mode 2 shows one advantage. On Mode 1 the model climbs usually after right aileron has been applied. Descends after left aileron too because the throttle setting usually changes until the Student learns to recognise that and not do it. Increasing the stick tension helps reduce this



Stand straight point the antenna across the runway and don't move

initial circuit and bump training much - much easier.

HOW DO AEROPLANES TURN?

Stability Mode is brilliant for this. The instructor can have the student get used to the left and right thing by flying around just using aileron while George looks after creating a turn with negligible height loss.

Once they get it I set the master to give them elevator only and switch George off. Flying forty five degree bank orbits out in front, in both direction, where they can see it they quickly learn to hold the correct amount.



Thumb and forefinger on the sticks plus a neckstrap helped

They get to see elevator's role as a vital component in turning model aeroplanes. Teaching thirty degree banks doesn't work very well because the model flies too far away. Once they've got that I take elevator back and hand over aileron. Once letting the aileron off at the right time is consistent the get both controls and off we go flying orbits, ovals then figure eights.

Just like every other modern high powered trainer offering I've flown and reviewed the past few decades teaching climbing and descending using power revealed the model setup was not ideal. The model was holding him back.

Climbing at full power after a go around power reduced back to half pitched the nose up. Increase



This is what the Take Off should look like

the down thrust or reduce wing incidence is the correct mechanical way to change the rigging. No computer radio on the slave transmitter I reduced the wing incidence. First by packing up the trailing edge then by running both ailerons up a few degrees. Better in the air but not still what I was after. Another other option was elevator mix with throttle. I've tried that before with piston power but even extensive use of delay timers that method presented other trimming issues for beginners to recognise and cope with.

8 x 4 SIMPLE FIX

Reducing the thrust fixed the problem. Which is easy peezy with electric. I changed the standard 10x5 propeller to an 8x4. Less thrust produced the gentle climb at full throttle and comfortable descent at 1/4 I wanted. More than enough power for basic aerobatics too. Longer battery life with more that enough power to punch into a 25 kph headwind.

Flying dual I have found the handing over controls preferable to over ride mode available on the 16iZ. Each to his own but less concentration on my part and reduced tendency to correct little mistakes before the student realises.



Reduced the wind incidence

During take off I hold a touch of up elevator and full throttle. Landing it's a touch of up elevator and throttle at idle. This gives me time to make flick the switch make a quick correction and hand straight back rather than waste the manoeuvre.

If the student notices I sometimes pass it off as a gust or if it happens again I njust fess up. There is no point guiliding the lily and taking over sometimes I do forget to announce what happened until the plane is sorted. When the student has gained proficiency I reverse those throttle positions. That way should I lose concentration the sound of the motor alerts me I have let the lever go. Not so with

helicopters. Match the throttle settings and concentrate more.

Teaching take off my reverse method works a treat. Student's throttle is set to full and I hand over in the climb. A few of those until they fly a straight gentle climb out and turn. Next I hand over just after the wheels leave the ground. Next they hold a smidge of up elevator and I hand over just before lift off.

Followed by the model is stationary with their throttle at full power and a holding bit of up elevator. Finally they advance the throttle from idle. Job done. Well almost. High power to weight ratio even in de-tuned mode the thing is off the ground in a few metres. Even less in a head wind.

Which gives hardly any time to use rudder. Or getting off elevator to establish a shallow climb angle.

Which is where Stability Mode makes demonstrating an acceptable climb so wonderfully easy. Hold one quarter up elevator. Hit full power and do nothing else. Climbs out a shallow angle.

Why not try it first?



Two introductory flights with our RC model for just \$25
All planes are equipped with buddy box and are flown at our risk.

Stephen Green: Mobile 018 565 854

Fax: 03 723 187 Phone:AH after 8pm. 03 723 4580

This magazine ad also ran fortnightly in the local paper and paid for itself

HOW TO TAXI

Carrying the model out and placing it on the runway to take off is reverting back to flying standards from the 1960s when it was normal to stand behind the model to take off.

Teaching basic taildragger technique holding full up elevator to prevent tipping over due to bumps and long grass makes taxi lessons with a 1kg foamy in wind tricky. One answer was to commence that part of the curriculum taxiing back down wind after a full stop.

LANDING CIRCUIT

My general rule of thumb is a thirty degree bank turning crosswind. Which is usually a climbing turn under full power. Half throttle and sixty degree bank turning downwind and base. Thirty degree bank turning final. This is the hardest part to learn. Start rolling out when the nose is pointing at you is a good starting point. The hardest thing to teach is maintaining track to the runway.

One hundred feet AGL, give or take, on calm days we set 1/4 throttle after turning base. In wind that happens after turning final. Most common occurrence



Handles long grass really well

at this point is too steep a turn. Nose drops. Up elevator applied. Model turns rapidly and misses rolling out on the correct heading. Most of our flying was done on the Western Runway (now known as Runway Alex) with a gentleman's agreement when the F3a and Scale Aerobatic guys using the main runway that we wouldn't encroach their airspace.

So Alex had to learn how to turn very soon after take off. Which crammed the next part of the circuit. Occasionally he got to continue the climb into a conventional circuit when the other airspace was empty but more often than not wind was Sth Westerly and

at least 10-15 kph. Which meant Downwind Leg was rushed. To get in Base Leg was often flown at quarter throttle, sometimes at idle before turning in.

Compared to calm conditions higher ground speed with the tailwind component makes the Base Leg turning point much easier to miss. Which made intercepting and maintaining the glide slope more difficult. Model crabbing sideways on final too. Coping really well with that lot but one day rough conditions started denting his confidence.

When that happens to anyone I often switch to basic aros or deadsticks. My way of teaching dead stick landing is so much easier with electric power. I made him dump it in the long grass off each end and adjacent the runway a dozen times. This demonstrates if you put it down into wind, slowly, wings level the model can survive. The time to turn back into wind to set it down is when it reaches fifty foot altitude.

This time I tried something new. A theory I had long wanted to test. After much protesting by the



About to round out on his 1st Solo - Buddy box disconnected Instructor standing well back





Practising the Solo Flight test manoeuvres F3a style

student, due to tiresome rubbish that “gyros don’t make you a real pilot”, he agreed to give it a go. This is where Stability Mode was brilliant. The only control he had was throttle. George looked after pitch and roll. Heading was maintained by me using rudder.

Reduced workload he began to see how reducing or increasing power affects the glide slope. Having the aeroplane over flying the runway then going around numerous times in quick succession drummed in what the approach should look like. Another common mistake is most beginners feel the model is way too close and move it further away. Repeating this next time out in calmer conditions and he got it. George was switched back to assist mode. Stability mode never to be used again. After that Alex never really knew whether George was on or



F3a competitor Glenn Burgdorf congratulates Alex after passing the MAAA Bronze Wings Flight Test (Gyro was off)

off. I trialled that heaps and he didn’t pick up the difference. And so, fourteen flying sessions from go to being able to fly by himself.

Bumps in the runway, wind and long grass, a couple of cartwheels we broke one prop. (I did the cartwheels showing off how to taxi in the wind.) Seeing he passed the Bronze Wings test with flying colours, F3a Style, on the main strip it was time to add a bit of a thrill. Give the student a taste of things to come. In this case an old style



200 kph Classic Pattern model on the main runway



Still flying the F3a way in 2023

red hot F3a aerobatic model flying with the big boys on the main runway. I noticed that half throttle setting didn’t last long.

Alex has done quite a lot of Super EZ flying since then. With the Gyro removed. Well done.



Dead Stick Landing and Stalling

This Flight School article was published in RCM News Issue #121. Hopefully you have picked up on the recurring theme.

LANDING

One of the best things I have ever done was to take off in a light aeroplane and land it all by myself. Of course before anyone gives you the keys to an aeroplane to fly off into the wild blue yonder one has to undergo some flight training. This gave me a new appreciation of aviating from the ground, which is what we do with models. Before doing my first solo, I had to learn the different ways to configure the aeroplane for landing. Flapless, in case the flaps become inoperative, and a glide approach in case the engine quits. Most RC trainers do not have flaps so we can dispense with that. Then there was a glide approach on the downwind leg, to simulate an engine failure.

Which is learning when to cut the corner off the base or final leg to make it back to the runway. After that experience I incorporated that



Clear to land. Any people or dogs ahead?

into my RC flying school and doing so certainly sped up the teaching process of what is the most difficult part of flying. With many full size flying schools offering small two seat trainers, spending 250 for a hour with an instructor demonstrating a few circuits for an hour would pay dividends to any aeromodeller interested in learning more about setting up the approach to land.

THE SECRET

Yes a good landing is all in shooting a good approach. Once you reach the point to round out, where the throttle is reduced to idle and the nose is raised to check

the descent, all one has to do is keep the model aligned with the runway. And keep pulling in more up elevator as the speed keeps bleeding off. As mentioned this is needed to prevent the nose from dropping. In a few seconds the model will be on the deck.

The key point on page 20 was to just bump the aileron if a correction was needed. Just enough to lower the intended wing level with the horizon. This will be enough to have the model turn quickly off line, say twenty degrees, in matter of seconds. Another bump on the stick to straighten up. In short just a dab. Remember, holding correction until you see the model start to react will be way too much. If you find yourself trying to correct an approach that is say, twenty degrees off line, the approach isn't stable. Open the tap and go round. There is no shame in doing this. Actually, it's a sign of good airmanship.

During the round out, if the nose is raised too high the model will balloon. The trick is to hold the elevator where it is and see what



Pics by Phil McGrane



Steep turns after take off are best left until you have a lot more flying experience. Due to it being the engine's second flight this particular turn was primarily to stay within gliding distance of the beach

A spare pair of eyes is always a good idea at flying sites where access to the runway isn't controlled.

what happens. If the model is way too fast and you are too ham fisted and it balloons way up, if the nose is held high, the angle of attack must be reduced. Otherwise you might find yourself wishing you had more knowledge and experience with the next subject.

STALLING

When most wing sections reach around 14 degree angle of attack, air cannot continue to cleanly follow the camber of the wing section. Airflow becomes turbulent and a rapid loss of lift is the result. This is known as an aerodynamic stall. It can happen both at fast and slow airspeed. An example of a high speed stall is pulling a tight ninety degree banked pylon racing

turn with my Seagull Nemesis racing plane.

Whether cranked over on its side or it is straight and level getting out of a stall is simple. Reduce the angle of attack, by reducing or letting off the up elevator. It is possible to stall even when the nose is pointing down - remember, angle of attack is airflow relative to the wing, not the ground. Recovering from a low speed stall will still mean the aeroplane will still be descending. The other half of stall recovery is applying power. Full power is usually best.

Modern training aeroplanes have gentle stall characteristics, particularly the foam models. Light

weight for a low wing loading and the wing sections are so much better than the flat bottom wing so prevalent twenty years ago.

It won't be long before stall warning devices will become standard but until then, we have to revert to the tried and true method. If the nose is high, aileron response is sluggish and you are holding in up elevator, chances are the model is nearing the stall. Nothing to be afraid of with a Super EZ. Learning the warning signs and how to land at slow speed is another sign of good airmanship. That's the hallmark of an accomplished pilot.

Once the model is on the ground, you haven't yet completed the landing. Touched down yes but



Left; Ugh! Suspension works well



Leave whipping it back around like this to the experts. Remember, stall speed increases with angle of back. So don't attempt this once the aeroplane has slowed. I do this on the buddy box to help students get comfortable with larger than normal control inputs occasionally required when landing



Deadstick. Telephoto lens makes this flying site look much tighter than it actually is

the model is still rolling. Landing is when the wheels have come to a stop. Keep the model straight with rudder until it has done so. Then you have landed. Once you have accomplished a few, and there is enough runway, open the throttle and take off again. Circuits and bumps.

If the student's concentration gets a bit fried after trying so hard to land, the next subject is a great tool to make learning fun again.

DEADSTICK LANDING!

I have no idea who coined the phrase for when the propeller stops turning but people with little or no aviation knowledge think that if the engine stops, the plane will come thundering down out of the sky. This view, constantly accompanied by Stuka dive bombing audio, is re-enforced on the TV News and in movies.

Ask anyone who believes that to explain what makes gliders dif-

ferent? That will stump them. Now that we have established that air flowing over the wing makes flight possible, how much fuel (or how many amps) we have on board is what determines how long flight can be sustained.

Yes it's the wing that makes aeroplanes fly, the engine just makes sustained flight practical. Whenever I test fly a model, or if a new one is still being sorted out, I carry out a "what if". "What if the engine stops".

Now that we have established that the plane won't come thundering down if the engine quits, it's just a question of where it will land. If it happens just after take off there isn't time to do much except avoid whatever obstacle that may be in the flight path. Then land as slowly as possible. At altitude there is plenty of time to make the correct decision.

TIME TO HAVE SOME FUN.

Electric power makes this easy but if using an engine, it's best to check that the engine will idle for at least thirty seconds and accelerate cleanly away. Otherwise you will get the real thing. Hopefully your instructor will have already done this. Fly a downwind leg, higher than normal then cut the power to idle. The model will slow and start descending. Depending on the available power, wing and tailplane incidence (rigging) it may settle into a stable glide.

However, due to the amount of power in the majority of modern trainers that I have tested over the past few years, chances are the descent will get steeper and steeper. Most trainers are way over powered, fun for the experienced pilot





Ready to flare. Setting a 6% up elevator mix on a flight mode switch is a good starting point to trim for best glide on this model

but more difficult for the student. Holding in some up elevator to replicate the glide slope takes time to learn.

BACK TO THE SUPER EZ

The two most likely causes of losing power are exhausting the battery pack and the propeller flying off. Props have a habit of working loose during circuit and bump training. Assume that this one kilogram model, fifty metres high will glide for twenty seconds. This may not seem very long, but a bit of practice will change your mind.

The object is to get the model down in one piece. Preferably on the runway. If landing off the runway is the likely outcome, it is best done at the slowest speed possible. Just in case the model hits anything. Pothole, stump, rock, star picket are the usual suspects lurking in the longer grass or if it eventuates that your calculations to clear a boundary fence were a bit off the mark.

If it happens to you, I suggest this simple emergency procedure.

RULE NUMBER ONE

Limit the Angle of Bank to Thirty Degrees.

If you are flying the Ready to Fly Super EZ flick the switch to Stability Mode. Next wind in full up elevator trim.

If you are flying my PNP setup Flick the Air Brake switch if that function is active.

Both amounts of trim will be close enough to achieve best glide performance. This will stop the



More models are broken by pushing a bad position. Wings level is more important than touching down at the slowest possible speed

nose lowering too far, needlessly robbing you of altitude in a shorter space of time.

If all goes well, make sure the elevator trim is then reset before the next flight. Otherwise the next take off will have a surprise in store. Loops after take off are best done after you complete the stunt pilot training course.

RULE NUMBER 2

There are no absolutes but at ten metres high roll out of any turn and head into wind. The most important thing is to arrive with wings level. I have seen so many models needlessly damaged by catching a wing tip. Opting to hit a fence straight and level, slow, is not as risky, as banking to avoid the obstacle is.

RULE NUMBER 3

When the model is one metre up, raise the nose, refer to the Round-Out on page . Hold it off and concentrate on wings level. This is more important than landing at the slowest speed.

RULE NUMBER 4

Steep turns with no power are best left to the experts. Once you can fly by the rules you can then start to appreciate when it may be safe to cut corners.

PRACTICING DEADSTICKS RULE #5

Keep in mind those rules but the difference to Rule Number one is this. Still limit the bank angle but don't re-trim the elevator so you can Go Around. You will have to fly the approach holding a little bit of up elevator. Which is what everyone does when they have advanced and now fly the trim the plane to fly straight and level at full throttle.



Double engine failure after take off

Fly a circuit and when the model passes you on the downwind leg, cut the power to idle. (Sorry I used to teach this with glo engines too.) Just in like circuits and bumps the idea is to open the throttle and go round. Then you can assess how you would have gone and then fly another emergency approach.

Once you can cut power and arrive over the runway at the correct height, cut the power a bit further along the downwind leg. Then cut just after turning downwind. Follow that by simulating engine failure when over flying the runway. That requires a full 360 degree turn. Practicing these procedures from different points in the circuit will increase your confidence. And your regulation circuits and bumps will improve no end.

In case you advance through various models this section really applies to glo and petrol engines. So at one metre above the ground after a glide approach, the engine splutters and stops. Why?

The engine idled for twenty seconds then when it is needed most, it coughs and splutters. I have seen so many models damaged because the idle mixture has not been set. Most engines are shipped with a fairly rich setting. Even if it doesn't quit, the longer transition to full power puts pressure on you. It's quite amazing how many models are test flown by instructors who ignore this vital step. "Let's get it into the air, we'll worry about that later." This happens even more when engines are cowed.

I have been asked to test fly countless aeroplanes and when I want to change the idle mixture, there is no access. Off with the cowl and tune the engine.



Folding wing and homebuilt gas turbine engine
Then we are good to go. Applicable to piston engines, but electric power can also fail too. Most likely cause being the battery pack is all but exhausted.

One of the most complicated models I have test flown was my Dad's F-4 Phantom. Thirty five metres of wiring, five litres of fuel, small wing, heaps of grunt. With a good headwind and two thousand feet of bitumen runway available I could have been excused for omitting the "what if" because this model had two jet engines. Actually there was double that distance but we flew in the middle of two intersecting runways, each a mile long. Giving me a choice of two.

What are the chances of a double engine failure after takeoff? Turning after take off, at 400 feet, it happened. That model was going to be back down on the ground in twenty seconds, which was cool. All was in hand, except I hadn't factored in the Old Fokker* not clearing the runway who took umbridge at my demand to clear off. *(grumpy old club member who no longer flew and wasn't any good in the first place) Once I realised it was going to fall short I deliberated about raising the gear. The high angle of attack in the flare and the anhedral stab would most likely take a huge knock so I chanced the integrity of the fibreglass undercarriage mounts and left the gear down.

The 15 kg model fell short by ten metres and sustained slight damage to the nose gear. Mains were intact. A fault with a common fuel supply caused the loss of power.

Practicing these procedures from different points in the circuit will increase your confidence. And your regulation circuits and bumps will improve no end.



Everyone wants a Mustang



V12 Leslie engine in 1/5th scale Top Flite P-51 Mustang ARF

If a “What If” moment occurred on the test flight of this this 108 cc liquid cooled V12 engine in this 1/5th scale Mustang a dead stick landing would have to be spot on. Fifty percent heavier than what is normal at 16 kilograms instead of the usual 9kg. Thankfully that didn’t happen but if you want see a fast landing check out the video.

Which leads me to touchy subject. Anyone in the hobby trade will understand how many beginners are lost to the hobby. Sadly this product was not a commercial success. What a pity.

FORWARD BY STEPHEN GREEN

When the chance to review a P-51 Mustang marketed as capable of being a training aircraft I thought “At last someone has done it.” Rather than review this Ready to Fly package in the traditional way I felt it would be beneficial to give the Mustang to someone who was starting out and follow his progress over a series of articles. This would also give me the chance to include an overview of the learning process. Two years ago I reviewed the first



Wingspan 1,480mm weight 2.9-3.2 kg, optional flaps. Ready to fly includes Spektrum DX 6i computer radio and Evolution .46 engine



If you want to see a hot landing check this video (*Hot = fast*)

of the Hangar 9 models with the “PTS” (Progressive Trainer System). I found this to be an excellent concept and the beauty of this new model is not only does it fly great but a beginner can look great flying it.

There are five basic components that affect the time it takes to learn to fly a model aeroplane. Regardless of how you actually go about it accruing flying time is the most important. The more often you fly the quicker you advance.

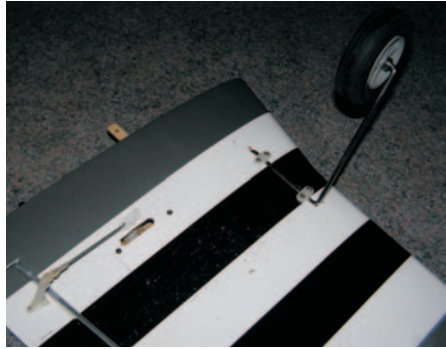
Obviously the type of model is an important factor. At the time of writing the P-51 has flown six times. Two flights one for trimming and checking out how it flew followed by a photographic sortie then four more with a beginner on the controls. For some this may not seem enough time but I have taught many beginners on a wide range of models and it is safe to say that the feeling you get when lifting the lid of the box the first time should remain long after your first solo and this P-51 really looks the part.

Then there is the aptitude of the student and the ability of the instructor. Some people learn more quickly and some try harder than others. Conversely a hot shot flyer doesn’t automatically make a good instructor because some people can impart knowledge better than others. It is this ability that has more impact on the time it takes for a student to understand and progress through each stage.

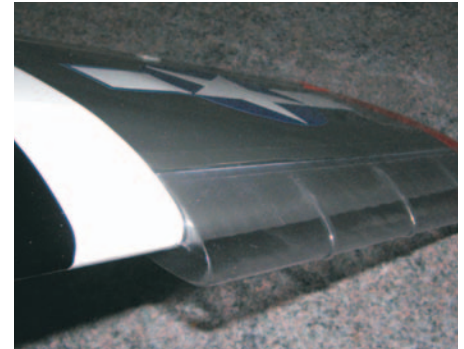
The way the model is set up is another factor (but you could lump that under the quality of the instructor) and from an instructors perspective



The engine and radio are not only included they are installed. I needed no help putting this model together. Assembly is so easy. I just screwed the tail and the wheels in place and connect the elevator and rudder pushrods. Then bolt on the prop and spinner.



To operate the optional flaps just add a Y lead and two servos to connect the existing the linkages.



NACA anti stall droops more useful for marketing than any practical difference

the factory setup on the Mustang is great. You will spend hardly any time at all giving it the once over.

The features and benefits of the model will also be covered but right now I am handing control over to Michael.

Learning to Fly the Hangar 9 P-51 Mustang

by Michael Haranis.

(Published RCM News #97 2008)

As a teenager I built and flew a couple of control line models. I had always wanted to build a radio model but back then radio control was way out of my league, just far too expensive.

In my twenties I started to build a Piper Cub from a Goldberg kit with a view to adding the motor and radio when I could afford it but any spare money seemed to vanish, along with any spare time. I was told that a scale model wasn't the best thing to learn with but I have always looked at models of actual aircraft and really prefer a model of a real plane.

One mortgage, two daughters, lots of tennis and a marriage later that project was never completed. My daughters have since grown up and my circumstances have changed to the point where I now have a lot more free time. Then I was offered a chance to try my hand at flying radio control and the deal was that my friend would teach me to fly if would write about the learning process through the eyes of an absolute beginner and allow him print my observations in the magazine.

I was assured it would be suitable for a beginner and one very appealing factor was the ready to fly concept meant not a huge amount of time would be spent getting into the air. When I was informed that the model was a Mustang my interest was immediately aroused.

The plane was delivered and when I read on the box that the P-51 Mk11 PTS is perfect for the entry level pilot I kept reading. PTS stand for progressive trainer system which means this aircraft will allow you to go from training to advanced sport manoeuvres with out upgrading or purchasing a new plane. The photo of the wing shows something called NACA Droops which are attached to the outer section. It says they produce added lift and wing area and can be removed to transform the Mustang from a trainer into to a great performing sport plane.

When I opened the box I could not believe how good the model was. It's a very realistic looking plane with a great colour scheme and as promised it appeared hardly any work would be required to complete it.

I now feel that this is probably the best deal I have ever done as the model far exceeded what was I expecting to receive. My how the hobby has changed.

OUT OF THE BOX

The Mustang is constructed from balsa wood and plywood and the colour scheme is really attractive. The cockpit is part of a large hatch and this is held in place by a spring loaded latch. Inside the radio gear, fuel tank and the engine are already installed and from a mechanical perspective access via the hatch for servicing the components would be excellent.

The stabiliser is simply bolted in place as is the propeller and spinner. The next step is to charge the receiver battery. The wings are in two halves and the landing gear just has to be screwed on. And that's it!

Each wing slides onto an aluminium tube and they are held in place from underneath the fuselage by two Allen head cap screws. The instructions are quite comprehensive and the only mistake I made





Taxiing out, I can't believe it's a trainer!



Oh-uh soon I will have to attempt this.

was installing the landing gear on back to front. The wheels must be angled forward. It only took me approximately one hour to complete the model.

I was then shown how to fill the fuel tank and Stephen started the engine. The initial start was with an electric starter then almost every start since has been by hand. Before heading off to the field I was told that to avoid eye strain it is imperative to take sunglasses and a hat. The reason given was "How many other activities can you think of that involve staring up into the sky for ten minutes at a time." A good point.

TEST FLIGHT

The program was to test fly the Mustang and take a few photographs then I would have a go. Because I am not a member of the national association my name was signed into the club visitors book. The Model Aeronautical Association of Australia's (M.A.A.A.) third party liability insurance policy would then cover me. The website shows if non members are accompanied by a member they are eligible for cover on four separate occasions. Then they are required to join via an affiliated club. This seemed very reasonable to me as by then I should have an idea if I liked the hobby. The club rules are different in that they only allow for two visits and I wondered if such a short space of time would be enough to know if I would take to the hobby.

Considering it costs \$600 for a competitive tennis racket the price of the aeroplane package is really very good value for money but the cost of joining a club gave me a few things to think about. Membership at the P.D.A.R.C.S. field in Melbourne requires a share to be purchased plus the ongoing annual fee. This club has excellent facilities and it owns one hundred acres of land and I can see the benefit for the larger more expensive and faster models. Clubs that lease the land have a much lower cost of membership which is about half the price of this model. This is quite a substantial outlay when compared

to the price of the model and I am not yet sure what I will do. At many tennis clubs you can pay on a casual basis to use the facilities and I wonder why there isn't a system like this.

While I assembled the model and filled the tank Stephen walked over to the main runway to inform the people practising aerobatics that we would be using the cross strip. The engine was started and the Mustang lifted off and after a few passes and a couple of landings the settings on the transmitter were changed. Another hop for the camera and we were all set to go after I refuelled the tank.

Then the engine was started and a club member came rushing over and demanded we not fly because this strip was only for helicopters. After a brief exchange (I kept out of it) we took the model over to the third strip and as we walked off I can still remember this guy yelling out "I'll report you to the committee".

What a wonderful welcome to the club I thought.

PRE FLIGHT BRIEFING

This started with a brief rundown on the controls, the way the wing actually works and how aeroplanes fly. I was told that if it seemed like the aeroplane was always climbing slightly that was not an illusion. The model was trimmed that way because beginners usually lose height in the turns and the trim will slowly regain the altitude without the instructor constantly having to take over.

The next part of the briefing concerned handing over control. I was told if I got into trouble not to hand the TX back, he would either take control of the right hand stick (*Mode 2*) or if need be just snatch the whole thing out of my hand. I then had to hold the transmitter and look up into the sky and pretend I was flying. Then it was snatched out of my hand. He then recounted a couple of stories about a TX being dropped and another time he had to elbow the student in the chest in order to get him to release it.



After the completion of thirty minutes of flying time over three flights I flew the tank dry on the fourth. Boy was I tired mentally.

The Spektrum transmitter does have a dual control or buddy box capability which we will be using for take off and landing but after hearing that last story I would have been happier if the controls were linked together.

My first concern was flying within the same airspace as other planes and I was told when the model passes our position that we must make a turn to avoid flying into the adjacent airspace. I was also told not to worry about crashing, That is the instructors job. The last thing he said was that the concentration level will be very high so only expect to last three or four minutes.

Engine start and the model took off then after a short display to show me how it looked in turns at various parts of the sky. Then it was then “over to me”.

INSTRUCTORS

When a beginner arrives at the field take a second look before suggesting they have bought the wrong type of model. Traditionally in model aviation trainers have always been high wing whereas with full sized aircraft you can choose either. So why not a model? It looks like a Mustang but in reality this model is a basic trainer.

The model has a lifting wing section and a low wing loading just like any trainer and so if it is hauled off the ground early it has a better chance of clawing its way into the air. Likewise on landing if it suffers a huge bounce the beginner gets more time to make a correction. It makes no difference where the wing is placed these attributes apply to any trainer.

The Mustang cruises very nicely at half throttle and climbs or descends steadily when power is adjusted accordingly. The three blade prop is designed to take the edge off the engine's peak performance

Gave Ted a go. 3,500 hours in GA showed through.

and in a dive prevents it unloading and excessive speed build up, a really good feature. The prop also reduces the noise level.

The P-51 will come into its own for teaching take off and landing. With no nose gear steering to overload when kept on the ground for too long the Mustang tracks nicely on take off. The undercarriage is well forward and only a real ham fist attempt would tip the model over.

The only changes I made to the P-51 were to the control throws. The elevator is a bit soft on landing and that was increased to 125% ATV and the rudder was reduce to 80% ATV. Oh and by the way we had to unscrew the undercarriage (main gear) and turn them around 180 degrees.

I used to teach model flying professionally and earning a reliable income required convincing beginners that they could still learn when it was windy. Out of the four models I used the two low wing types made it easier for me to teach the basics (including take off and landing) in up to 20 knots. The neutral roll stability of this type of model means they don't have to keep rolling the model into the turn. In most cases less overload for the student which made it easier for me to push them along. The so called advantage of strong inherent stability has its place but is not a pre-requisite if you have a qualified instructor. (It is refreshing to see the manufacturer also makes that point on the box)

I tend to push beginners to a high standard right from the start and insist they stand in one place and not follow the model with the antenna. The idea being they fly the model where they want rather than the model flying them all over the sky. This is slightly harder to start with but as soon as they have picked the basics of turning I load them up with figure eights which is where Michael is at now. He picked it up pretty quickly and if we can have a couple of hours of flying time in the next session I am confident he



Don't forget the wing joiner tube, agh! Also don't forget to take sunglasses and a hat, equally important.



Fantastic concept ahead of its time

should be taking off and landing.

At the end of the month I will be attending an M.A.A.A. instructor seminar in Sydney and I will be taking the Mustang, an E-Flite Apprentice and a Hobby Zone SuperCub. These are ready to fly products that indicate how the industry keeps moving ahead by continually reducing the cost and improving products that make it easier than it has ever been to get started. I feel that the Association would benefit by making changes as to how the value of club membership is pitched to beginners. The official side needs upgrading to take advantage of this potential new membership. (SG)

FIRST FLIGHT

During the first few flights my concentration lasted about five minutes of flying time and the model spent a fair portion of the first heading towards the ground until the control was taken from me. Over rolling was one problem but even once I had learned what a forty five degree bank looks like from the ground, the model still lost height. But now not quite so quickly. After a few turns I was told to open the throttle fully and after

the Mustang reached the required altitude I reduced it back to half. On the second flight we spent some time just circling. This was to teach me that I needed to keep holding elevator on in the turn. It became apparent to me I was letting go of the elevator before the turn was completed which was the reason I was losing altitude. After that things improved quickly. During the little rest I was given on each flight we gave another chap a fly and it was very beneficial to watch someone making similar mistakes to me.

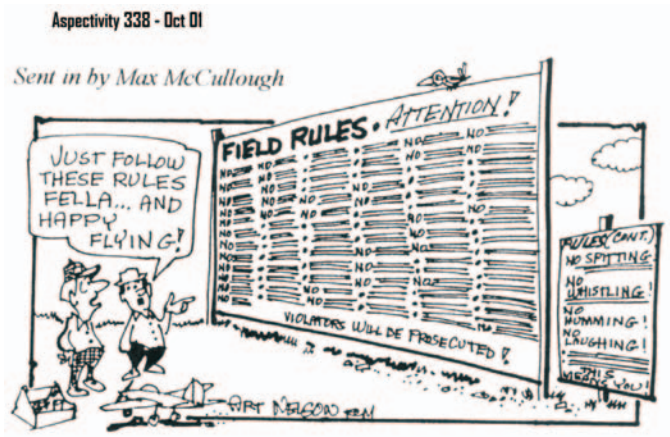
I thought I picked it up fairly quickly but I attacked it far too aggressively at the start. I needed to be more gentle on the controls and by the third flight I was able to fly for about six minutes without handing over. On the fourth I managed to fly unaided until the tank ran dry. I really enjoyed this last flight as I felt I had progressed quite a long way. I also learned that when the engine stops the plane will glide and I was surprised at how far it flew without the engine running. Comparing the noise to my recollection of un-muffled control line motors this new engine is very quiet.

The next session will include more of the same and after I can fly a figure eight pattern in both directions to a reasonable standard (maintaining altitude) we will move onto the landing approach. With the buddy box. We had planned to do the second session and I packed the model into the boot then we drove all the way to the field. Someone forgot to pack the wing joiner tube.

At this stage I have no understanding of the advantages of a computer radio other than you can save different model settings into the memory. Engine tuning is something that I have some understand of and in the next issue hopefully I will be able to report that I have accomplished a landing.

After looking at a few of the other ways of getting started into radio control modelling I am beginning to realise the value in this package. MH.

That article was published twenty years ago. How would a beginner go if he or she rocked up the the filed with one of these today? Ed.



Looks daunting but help is at hand. Please bear in mind that these are not for profit organisations run by volunteers

Model Aircraft Clubs

I penned this piece in 2018 to give an insight to those who want to go it alone and for someone wanting to rock up at a club armed with a model equipped with a stability system. Clubs are not for profit organisations run by volunteers. As are model aircraft associations in Australia. Most club websites suggest you contact a member of the committee and arrange to meet at the flying field. Don't become another person lost to a fantastic hobby. The overwhelming majority have an enjoyable RC flying experience at model clubs

THE FIRST VISIT

This can be a varied experience which is often baffling for the hobby trade which provides a constant supply of new people. You may have presented a radio system that does not meet the Australian C tick certification standard. You could be within your rights to own and operate it but the club's insurance policy is highly likely to have a condition that the radio meets the Australian standard. Some clubs and instructors worry about this. Some do not. You might arrive and the instructor feels the weather is not suitable. Any approved club instructor should be capable of flying this nifty little model in a 15 kph (8 mph) breeze but it is their call if they are not comfortable with the conditions. Be aware he or she may not fly on your transmitter mode.

Many large country towns have two model clubs. Started out with one and a disagreement on the direction of the club saw a split. The same happened in the city of Melbourne Australia where I live. But that was in the late 1960s.

HOBBY SHOPS

The RC hobby industry may not offer quite the same experience compared to dealing with a business selling consumer electronics. Hobby shops can be a bit quirky. You might purchase from a retailer who does not recommend one local club. I live in a major capitol city where the overwhelming majority of retailers are traditional bricks n mortar operations. This is changing rapidly to online where advice is harder to obtain. The country is slightly different. Often there is a traditional retailer and a back yard specialist operating from the garage. Many if not most clubs have at

least one member who also is a hobby dealer. Well meaning members trying to support their preferred business have been known to suggest to newbies that they have bought the wrong model.

CAREFUL WHO YOU ASK FOR HELP

One thing I would suggest is that if someone offers to fly your model, check out what they do with their's first. I used to do aerial photography from model aircraft. One of my regulars wanted a shot taken of a construction site in the outback. He had someone there who could fly models. I put together a .60 powered Nitro 5 kg ARF complete with 35mm SLR camera, with Autopilot. I didn't glue the wing panels together, test flew the model, set the trims, autopilot and camera settings. Shipped it along with instructions how to aim and shoot. All they had to do was glue the wings together and fire it up. The model was crashed. They didn't get one photo. If you present at the field with the model assembled and the instructor does not remove the wing to inspect the internals, that person should not be instructing.

SECOND VISIT

If your first visit was unannounced and it didn't work out as you'd hoped contact the Club Secretary. Thirty years ago most flying was done at the weekend. A beginner could rock on down with a new model and find someone in charge. More often than not weekends are now the quietest time at two of the three clubs of which I am a member.

I've made some great friends and met some very interesting people at model aircraft clubs. You also operate in controlled conditions from a prepared runway. No dogs, cats or people to worry about. Plus you get to see some amazing stuff fly.

2023

In Australia traditional bricks and mortar hobby shops that cater for beginners have all but disappeared. In Melbourne there is one specialist RC shop left. A couple of others stock foamies. The top end of the hobby has shifted to larger models. Getting advice from the Internet can be fraught. Which is what inspired me to publish proven information on this fabulous little model.





Mk1 Spitfire, OS GT60, 20x11 prop, 110 inch wingspan, 19kg plus fuel.

Airmanship starts here

Torque effect from the traditional clockwise rotating propeller is not the only reason a take off from right to left has a higher risk factor compared to departing left to right.

Holding some right rudder during a crosswind take off from right to left, when gas turbine engines were new, the 8kg Bolly Scorpion copped a gust and swung towards the pit area at RAAF Williams. No wheel brakes and a spool up - spool down time of five seconds I was committed. Hit the kill switch and retract the gear was an option. Which reduced the fire risk but not damaging models or hurting someone. Full right rudder and a touch of down elevator corrected the swing and the model climbed away. No prop blast over the fin and rudder the touch of down elevator was to increase the nose wheel traction. Raising the nose would cause the model to weathercock into the wind. One of those



Back tracking to turn around to take off from right to left thundering past the pilot area

instant decisions that came off. Correct decisions come easier with practice.

Plenty of available runway my next take off roll commenced almost adjacent the pilot area. Something I've been mindful of ever since. Not so much if the pilot position is not right on the edge of the runway but I haven't seen many fields setup that way.

In 2011 at the Cobram Air Races a large model swung left as it lifted off departing right to left. The model had passed the pilot area and continued the climb. Straight and level. Which busted the thirty metre line at a public display where I was the Display Director. After the flight I thanked the pilot for doing the right thing. Tub thumping Safety Gurus might well oppose my response but I grew up reading the Aviation Safety Digest. What went wrong, what went right, how can we do better next time. Aviate, Navigate, communicate also applies to model aircraft.

I'll go into bat for a straight and level climb any day rather than a low altitude steep bank at low airspeed in an effort to avoid being grounded. Once. A scenario I covered in the pilot briefing the next day. Along with a requirement to not apply full throttle until the model crossed a new line marked across the runway. This right to left departure procedure was included in the pilot briefing at Sandown F1 Air Race 2015.

Taking off with a crosswind blowing towards my Spitfire's left side can be quite tricky. In calm air it requires around seventy metres to lift off. To maintain heading it needs full right rudder as the tail lifts into



2016 Sandown F1 Air Race five plane final

the flying position. If the model cops a bump or gust which starts a swing to its left a reduction in power is all I can do. A technique employed taking off right to left at Sandown 2017 and again at Shepparton Mammoth Scale last year. Both locations have heaps of available runway so this isn't a problem. Sandown was easier because the acceleration on bitumen is so much faster. No bumps either.

At Shepparton it used up almost all the runway landing in the crosswind that increased quite markedly during the flight. The first bounce was really hard so I did a go around. The second was flapless. Way too fast, around again. Third was good. Until the right hand wheel left the aeroplane. The right hand oleo broke off during the landing roll.

Recently I competed in a scale competition at Burley Field in Victoria. For left to right departures there is plenty of available runway to commence the Spitfire's take off roll from the pilot area. Not so the other direction. Not a problem departing the other way



Landing this nineteen kilogram warbird means it has to touch down on the first third of the runway



2016 Sandown F2 Air Race Final

with my 60 cc 8 kilogram ARFs but departing right to left the Spitfire passes the pilot area doing around 70 - 80 kph.

What would you do if your model lost a wheel, hit a bump or crack, copped a gust and headed towards the pilot area? It's worth thinking about that before you open the throttle. After you have attained your Solo rating with a Super EZ I suggest starting the take off roll adjacent to the pilot area when taking off from right to left. The pic below shows another reason why a shallow takes off is much safer. This is what happens if climbing too steeply if the left wing drops and up elevator is held on after the wheels leave the ground. A common mistake.

ADVANCED SUPER EZ FLYING

After most people pass the Bronze Wings flight test thoughts turn to aerobatics. Don't make any changes to the setup and leave the 8x4 prop on.

In keeping with this safe flying theme position the first rule of aerobatics is establishing a flying line parallel to the runway. Start out only doing manoeuvres in front as it passes your position in the pilot area. Fly your Super EZ parallel to the runway about sixty metres out.

The easiest manoeuvre is an inside loop. Just as it passes your position apply full throttle then pull in full up elevator and hold. Let it off when the nose is level.



About to turn and overfly the pilot area after take off



Down elevator is required to sustain inverted flight. Aileron works the same as upright way but rudder and elevator are reversed. ie up makes it go down

Reduce throttle back to half. Don't reef the stick back. Take about one second to pull in full up. This will avoid those common mistakes.

Flying Mode 2 it is easy to pull in left aileron at the same time.

Flying Mode 1 it is easy to pull in left rudder at the same time.

Fly to close and that happens might see you overflying the pilot area.

The next easiest manoeuvre is a roll. Just as it approaches your position apply full throttle then quickly ease in a quarter of up elevator and release. Established in a gentle climb count to two and apply full right aileron. Let it off when the wings are level. Reduce power to half

Flying Mode 2 it is easy to pull in up elevator at aileron at the same time.

Flying Mode 1 doesn't present that problem. Practice that until you can enter and exit the loop or the horizontal roll with wings straight and level. To save time do the loop into wind and the roll downwind.

Apart from spins and stall turns the majority of aerobatic manoeuvres are a part combination of loops and rolls. Either of those manoeuvres can be used to experience flying inverted.

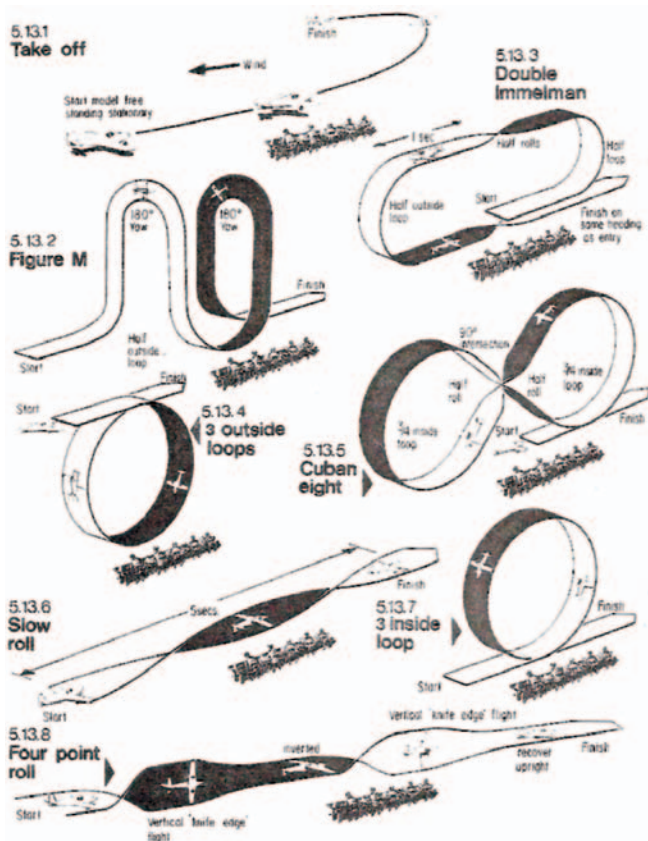
1. Pull a half loop in the usual way at the usual spot and let the elevator off. Apply one quarter down elevator and see what happens. The secret is to let the elevator off just before the plane reaches straight and level upside down. That gives you time to apply down elevator. Roll out when you are done. Get that down pat and you have performed an Immelman Turn

2. Enter a roll as described. Let the aileron off just before the halfway point and apply the down elevator. Roll out when you are done. Get that down pat then try this.

3. Go for forty five degree climb. Do the half roll. Establish wings level. Pull throttle back to half then pull in half up elevator. Exit straight and level. Get that down pat and you have performed a Split S you

4. Don't fly too low. One mistake high on a Super EZ is sixty metres of altitude. If you get confused inverted don't pull in up elevator.

Apply full right aileron instead. Otherwise you might perform a Figure 7 straight into the ground. Almost made it but didn't? That's a Figure 9. That's a few basics to get you started.



1972 FAI Aerobatic schedule manoeuvres may have changed but the basics and position of judges has not

Aviation Myth Busters



High wing



What the ?

HIGH WING VERSUS LOW WING

The great debate continues. You can obtain your full size General Aviation pilot license in a low wing Piper Cherokee or a high wing Cessna. Back in my RC flying school days I operated both. Not so in model aviation. The Hangar 9 P51 featured on page 43 is testament to that. Thirty years later model aircraft clubs are yet to catch on.

After RCM News reviewed the Phoenix Converta-Plane pictured above for a bit of fun I reconfigured it to high wing on one side and low wing on the other. That plane looped and rolled fine. In fact the only difference detected between all three setups was a slight change in elevator trim. Go figure.

The model met its demise when I was doing the clown flying at 2015 Sandown F1 Air Race Airshow. One of the gags was recorded Automated Terminal Information Service (ATIS) which pilots use when approaching an airport. Also recorded was a Radio call from a pilot. "Sandown Tower - Converta Plane 1 - Overhead Sandown - Inbound with Flight Control Problems - Require Immediate Clearance".

The gag was to have the plane circling out of sight of the grand stand and play that radio call over the Public Address System. Then the plane appears into view circling in what I call helicopter turns. Full left



Low wing

rudder is opposed by full right aileron, full throttle and down elevator, the plane circles in a steep nose down attitude.

When it landed Air League cadets would recover the model and take it to their exhibit inside. An hour later the model would be back on the runway with both wings in the correct position the take off would be announced and the model departed then flew out of sight. Not quite. We distracted spectators by firing up a jet or a helicopter.

I'd practised that heaps and was able to circle and slowly head towards the runway and belly flop the thing onto the deck. On the day a stiff crosswind blowing in towards the crowd a "was this a good look" thought occurred and I changed my mind. Bailing out I stalled the thing and if flopped in. Someone used the video footage and complained about dangerous flying. Once again I put in a plausible explanation which was accepted.

Another fun thing was Uber Air Eats. The announcer called a halt to aircraft movements when someone's lunch order from Uber Eats was reported inbound.



Pie in the Sky



Practised with the FunCub XI



A standard meat pie was unsuitable. I had high hopes for the Shepherds Pie but extensive flight testing revealed the cheese pie remained the most presentable after high g force delivery



Unsuspecting suspects for the Uber Air Eats gag
It worked a treat on the day. An Inbound Uber Eats call was made over the public address system the model appeared and released the Pizza. The light weight box floated down and landed on the announcer's tent. Smoked it.

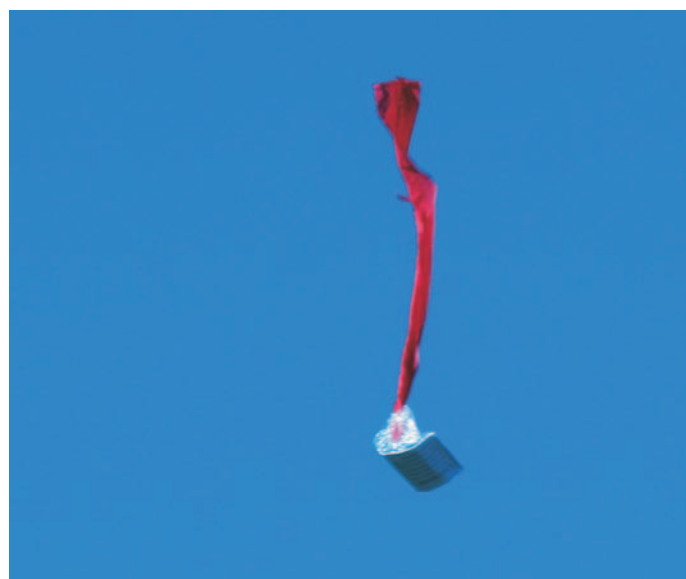
I've wandered off topic but the point is having fun. Another fun exercise was a drone delivery gag for my magazine subscribers. Yes promoting the hobby has been a life long passion of mine.



For target practice oranges were cheaper and recyclable. Not as messy as pies



Pizza box landed on the Announcer's tent



Magazine drone delivery testing continues

A Super EZ Off

At the end of a day flying our big models we often throw in a little fun flying competition. Most loops in one minute, touch n goes, climb and glide to name a staples held at any active model club.

Recently we introduced dead stick after take off and land within a short landing distance. Man that sorts out ones gliding skills. Night flying can be done under MAAA MOPs.



Night Flying



Still flying after a simple patch up with cyano and icy pole sticks



Carrier Landing



Touch n Goes



What happens on the field stays at the field



Aussie Bush Flying



Try this if you dare

Adding a 1 KG Payload

There can be a downside to flying foamies then swapping over to a heavy model like this scratch built Zirola Spitfire.



INTRODUCING THE TWO KILOGRAM SUPER EZ

To simulate what its like to land something with a heavier wing loading I added one kilogram of rice as ballast. I'm not suggesting you strap 1kg of rice underneath like I did. The plane lifted it no problem but the extra drag won't replicate the excellent flying characteristics. Better to place some lead weights inside. The EZ's undercarriage and fuselage structure can cope but I wouldn't suggest looping it.

If you have a crack at this it is vital to check the Cof G. With the 10x5 the Super EZ climb after take off is quite satisfactory. With 1kg on board the model will spin. Landing a 2kg Super EZ the nose needs to be raised higher and throttle applied to keep the whole show moving. Increased weight means the nose needs to be raised higher and flown in with throttle. Anyone having trouble coming to grips with a jet could try this.

One reason for doing this was a means of teaching taxi skills in when it is windy but the main benefit is to learn correct tail dragger take off technique with heavier models. That came about because I had done so much flying this little foamy I had problems getting a consistent take offs with my Spitfire. When I started flying the Spit I had a number of ground

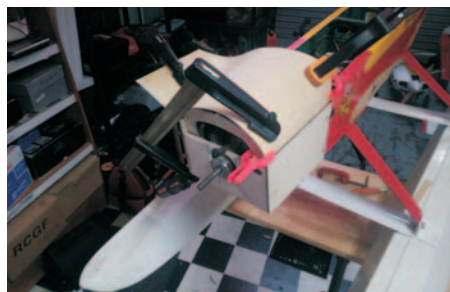


Lifts 1 kg easily on 3S

loops just after the tail rose into the flying position. It dawned on me I wasn't holding the up elevator on for long enough. More speed was needed for control authority with rudder by keeping the tail wheel on the ground longer fixed that.

Hold the tail down on a 1kg Super EZ with the standard 10x5 prop it will just launch into the air. Fitting the 8x4 basic training prop gives you more time. With the 10x5 you could try taking off at half throttle. Taking off downwind is another way but that would be too radical at a club field. Adding ballast the extra weight means reduced acceleration, so you can practise correct tail dragger technique holding full up elevator when full power is applied. To lift the tail into the flying position up elevator is reduced to 1/4 when it really gets rolling. Which what's needed to get the Spitfire into the air.

The ARF Spacewalker below met its demise due to a series of little events that resulted in what turned out to be a poor decision to go round for a third time. Turned out the structure was unable to withstand the load placed upon it by the person flying it. Caused by failure to arrest the high rate of descent in time for touchdown. The short version? Challenging the rules of airmanship by continued fangng my FMS Super EZ around ad-infinity came unstuck when this heavier model ran out of fuel in the turn and never regained airspeed for the flare.



Structure was unable to withstand the loads placed upon it by the pilot

Flying off Water



FMS haven't got the float setup bang on. It's pretty good but a little hard to lift off the water cleanly. More angle of attack when planing is needed. Extending the front wires to raise the nose wire relative to the floats is a big job. Ditto for shortening at the rear.

A flaperon mix drooping both ailerons 3 mm is an easy improvement. Not perfect but it is better. Still, it's great fun either way!



Leaps into the air - rigging not quite right



Holding off the conventional way is not the best way to land. Better to fly it on flat with power and skim it on



Water is smooth like glass? Taxi around and take off through the ripples. BTW Float rigging on E-Flite Twin Otter not quite right either



Ready to Float 2.4GHz brushless float plane recovery by UDIC has forward and reverse



Slight nose up attitude when planing - the Spacewalker is rigged correctly

The More Things Change the More They Stay the Same?

If you want to become more proficient at RC flying, aerobatics is the go. If you want to become one of those people who can turn up, fly almost anything, even in atrocious conditions, competition aerobatics is the go.

If you go to the flying field for just for a couple of flights and a chin wag, basic principles learnt flying competition aerobatics can still help improve your skill. Either way a five flight minimum is required each time you go to the field. Just like when you were getting close to going solo it takes two flights to settle the nerves.

Every few years a model aircraft publication will re-do a "How to do a Slow or Four Point Roll" graphic and pay lip service to aerobatics. The information here is different than what is freely available in today's virtual world. Our previously published Art of Aerobatics series was written by someone qualified. My Father.

FLIGHT COMMENCE

I expect my introduction into flying RC aerobatics was different from most. In 1971 I started flying RC with an OS .19 powered three channel Topsy Nipper at the DARCS Field in Police Paddocks, Brady Rd Mulgrave Victoria. Not long after that Dad retired from his profession as a LAME (Licensed Aircraft Maintenance Engineer) at TAA (Trans Australian Airlines). With Mum backing him all the way



Aeroflyte Invader Mk11

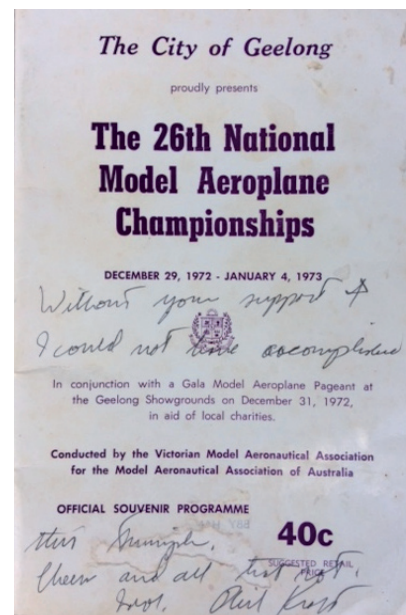
and family in tow he entered into a business partnership at Kraft Systems Australia and our family moved to Geelong. The company imported radio systems in knocked down condition to be assembled locally. Companies employing labour to manufacture could apply for an exemption from Australian Government import tariff which was 40% on imported electronic goods. Sales Tax was 15% on the wholesale price. The retail price for a 4 channel AM set with rechargeable batteries, 240 volt charger, switch harness, four servos and servo mounting trays was \$399.

Six months or so before the 1972 Geelong Nationals Dad started coaching me to fly the F3a Schedule. Went from my dog of a trainer to what was known at the time as a "Full House Stunter". Old wives tales on how hard these are to fly were incorrect. That name since morphed into "Pattern Ship". A term I've never cared for because those who coined the phrase weren't much good. That model was a John McGrane design, the Northerner Mk1. It was so much easier to fly than the Invader.

My recollection of three aerobatic fliers at the top of the tree, which I think would be backed up in the records, were John McGrane. Tom Prosser and my dad, Brian Green. Johnno lived in country Victoria, Tom Prosser country (NSW) and Dad in a capitol city, Melbourne Victoria. Another top flier was Ron De Chastel from Queensland. Banana benders faced a seriously long and somewhat arduous two day drive to compete in Victoria.



My first aileron model



Phil Kraft was so much better than the locals

Back then most aerobatic fliers also raced pylon. Competing with their own designs, these four flyers had National and State title credentials in both disciplines. Racing against the clock in pylon makes comparing yourself against anyone in the world easy.

Aerobatics is different. You can practise and practise, but to claw your way to the top level exposure to top level competition is a must. In 1971 my Father was the first Aussie to compete in an F3a World Championship. Equipment all worked, no lean runs but his scores suffered. Lack of exposure to top level competition, tyranny of distance the problem. Over the next few decades Dad's world champs experiences were put back into the Australian F3a scene. An instrumental factor in watching it slowly climb to world level. Bruce De Chastel remains one of many competitive Aussies on the world FAI pylon stage. Not so for F3a teams which peaked at the 1991 World Champs in Wangaratta. Slipped back since but it is great to see this country is hosting the 2023 F3a World Champs.

I didn't get to compete in F3a at the 1972 Nats. August and October used



My second aileron model

to be the windiest months in Southern Victoria. Practising in very windy conditions a month or two before the event I flew way too far down wind and my model spiralled in. Two out of three ain't bad, I raced my Supertigre 2.5cc Cassutt in Quarter Midget pylon and competed with my Graupner Foka in Thermal. The one stand out memory of F3a was seeing how much better American Phil Kraft was than Aussie top guns.

I won Novice F3a at the following Nats and started clawing my way up the ladder. Third in a Vic State Champs in Expert After flying with Canadian Ivan Kristensen when he lived in Australia I changed from Mode 2 to Mode 3. Flying Sankyo Digital back then so the sticks and rate switches had to be rewired. Rudder and elevator on the right stick. This is Mode for 4 for Futaba users, Mode 3 for JR. Ditto for the new kid on the RC block Spektrum. Don't know anything about JETI and the others newbies.

Ivan's logic that rudder and elevator being on the right hand stick was better for right handed people. (BTW Ivan is a big guy. He still owes me for over stressing my skateboard) Mode 3 worked for me but I stopped competing in F3a just before turn around came in.



Promoting a Ballarat Club at the local Airshow



Won this \$15 cheque for 2nd place racing my 1972 QM Cassutt in a paddock in the middle of nowhere

I've never been much chop at stringing three round loops together and the rolling and looping options to choose from in that last schedule made it much more interesting. Rolls had higher K factors. Slow roll, four, eight point, reverse point roll and reverse knife edge were all favourites. I no longer fly fixed wing on Mode 3 but still fly helicopters that way.

Competition flying and promoting the hobby has always been of interest to me. Even flying a simple foamy with a few mates an impromptu comp spot landing or climb and glide often starts up. Take off seems an innocuous manoeuvre yet a correction for a swing off line or picking up a wing to maintain centreline immediately reveals pilot experience. Ditto for landing. Whether you are sport flying with friends, competing or display flying landing is the last thing judges, spectators and your mates remember.

With the best advice and good quality equipment, sponsored by the Bank of Dad, all that time spent burning fuel to compete in good weather and bad gave me the confidence in my own ability to turn up and fly in some rather interesting places. Power line stringing was my favourite airwork. Pretty sure I was the first person in the world to fly a gas turbine powered model jet at a Motorcycle Grand Prix. That engine was hand built by my father.



Forty three years later the chaps raced 60cc powered Seagull ARF Cassuts at the Sandown Raceway for a \$2000 cash prize pool from Beta Home Living

Years later I thought it a good idea to offer others the same experience of flying in front of a big crowd. Forty eight years after adopting Phil Kraft's "help em till it hurts" mantra, my efforts promoting RC flying have come to naught. Being in the RC business, where egos have consistently taken precedence over making a sale has been very frustrating. Ageing membership and operating on a commercial basis is something model clubs really needed to consider a decade ago. The hobby has been in decline worldwide a few years now. It will continue but building your own plane and flying without electronic assistance will be a quirky thing from yesteryear. Just like vinyl records.

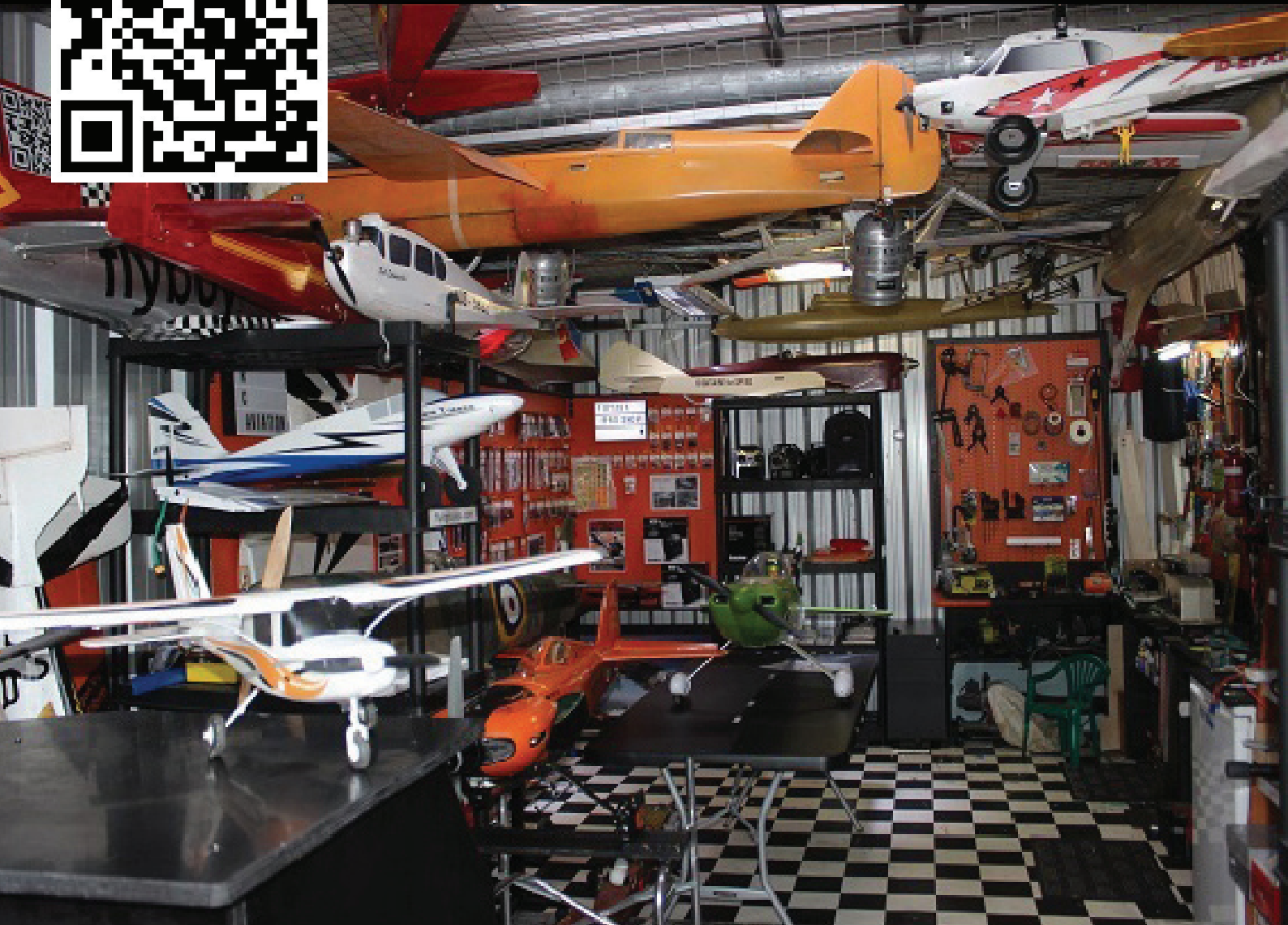
In my mind a successful RC flier is someone who can safely operate in up to a 15 kph wind and the plane remains in a serviceable condition. Practising that F3a schedule again with a Dragon Fli rekindled my interest in the hobby. It's a fantastic hobby. It doesn't matter what level you aspire too. I hope this issue assists your Radio control flying pursuits. Happy landings.

Stephen Green.

Stephen J Green's

Futaba Pro Shop

All I sell is Futaba



STOCKING THE BASICS



Receivers



Extension Leads



Battery Packs