PROP TORQUE

Official Newsletter of Launceston Model Aero Club Inc. PO Box 1204 Launceston TAS 7250

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From the President

Hello All

This month, some musings regarding small models and free flight.

There seems to be resurgence of interest around the world in small free flight models, like the Tomboy designed by Vic Smeed. Perhaps this is not surprising, given the fact that the model is so easy to build and flies very well. However, I think there's a bit more to it. Demographically, aero modellers are ageing, along with the rest of the population. Nostalgia is a powerful force, and these days many aero modellers want to recapture the things of their youth, or just hark back to days when things were simpler. Just take a look at all the nostalgia/vintage flying web sites that abound.

From a practical viewpoint, if you don't mind the smell of diesel fuel and having your model covered in oil, then you can go out flying a diesel powered free flight model with only a few rubber bands for the wings and a small bottle of fuel (diesels are real fuel misers!). It doesn't come much simpler than that. There is of course also the chance of a long walk to retrieve the model if there's a breeze blowing!

Radio assisted free flight is increasing in popularity.

INSIDE THIS ISSUE

Although seemingly a contradiction in terms, it describes a model designed for free flight that has been properly trimmed for such flight, but fitted with a radio controlled rudder tab to keep the model in the general vicinity of the launch area. The philosophy here is that it avoids the 'long walk' on days when the breeze could take the model well downwind, without destroying the pleasure of watching your model doing its own thing in the air. And herein lies the notion about free flight that is not always understood by radio fliers - there is (in my humble opinion) a definite pleasure to be had from watching a well-trimmed model flying free, without any input. And it doesn't have to be diesel powered, either; as well as my diesel Tomboy, I also have a small free flight model that is electric powered, and that is just as much fun (again, my opinion) as a diesel powered model, although I do agree that the sound of a small diesel burbling away as a model flies high in the early morning sunshine is very nice....

Lest we fall into the trap of thinking only of the Tomboy (as nice a plane as it is), there are some other models worthy of attention. What about the little known, but robust and nice flying, "Buttsy" designed by Gary Button (Airborne plan), the Vic Smeed "Poppet", or the Scrambler 42 that was designed by our own Greg Waddle? (Who can forget the sight and sound of Greg's Scrambler flying in gentle circles overhead and making duck-like quacking sounds from its built in speaker?)

It's interesting that as a club, we tend to think of free flight only in the context of our scramble competitions, but free flight can be enjoyed any time.

*.....**Gerry.***

From the Secretary's Desk

Hi all,
Another month ticks over and it is surely the middle of winter now: as I am writing this the rain is pelting down and the wind is enough to strip the eyebrows off the proverbial brass monkey.
In this issue of Prop Torque you will find the latest MAAA Newsletter and an event calendar for the New Year ahead at Symmons Plains.

The issue of safety has again been brought to the forefront
1: It would seem that the problem of propellers coming into contact with human hands is an on going problem that is now encroaching into the realms of electric models as well as IC, as they become more popular.
So the powers that be are urging us to be ever more conscious of this dreaded problem: it would appear that out of all the insurance claims made, the majority are for this kind of accident which really is so simple to avoid, and is caused just by lack of concentration.

2. We have been informed that there was a near miss between a model aircraft and a Virgin Airliner coming in to land at Perth airport in April this year, in which CASA was involved.
It appears that the individual was not a member of the MAAA, which considering all the park fliers that are now available to the general public, this is not surprising. After a costly inspection of the Virgin aircraft the perpetrator could well be substantially out of pocket,
CASA is producing a brochure to be handed out to suppliers of these aircraft in order to try and educate those who buy them of the rules and regulations pertaining to remote control aircraft.

3. We have been notified that the unapproved use of 2.4 Ghz radio equipment is illegal, and anyone using equipment that has not been approved, is not covered by the MAAA insurance.
I have placed on our notice board at the field a list sent to us of the approved units, so have a look at that before you make any purchase, if you are planning to go down that track.

The committee would hope that members will join in with the events this year as they are listed below.
The first Free/ Flight and old timer /Vintage day was very exciting and we all had a great day. Chris will give his run down on that in his column.

For Members' information, the committee members, corporately, will act as safety officers for this coming year. Richard Cooper will again be the Newsletter editor and Chris Klimeck will still be guiding us in the role of Contest Director. We thank them for their willingness to serve the club in this way.

Thank you to all those who have rejoined us again this year, I still have some membership cards and receipts to hand out so if you have not received yours yet it won't be long. To save the club some expense, unless I see you prior to the sporting licences being issued I shall post them both to you at the same time.
Birthdays this month are: Steve Baldock, Kerry Gray and Alan Johnson, We wish them all the best for their special day and the year ahead.

I leave you with this thought: - ***Progress is turning impossibilities into possibilities***

Well that about wraps it up for me for now, so keep on flying and as usual,
Happy Landings all

Geoff.

Contest Director's Report

Old timer & Free flight comp 18th July
Only 4 competitors turned up for the free flight , we waited for some time to see if any stragglers would show but to no avail. It was cold , damp but most of all it was calm. Tim Sydes had already damaged one model when it flew into a pine tree in test flights rendering it un-flyable so out with the reserve! As misfortune would have it an altercation with the irrigator put him out of the competition. Meanwhile Tony Gray was keeping everybody on their toes as his model swooped low as are his normal flight characteristics. Scott Webberly was having some difficulty with his engine being reluctant to start. Merv & Kevin had their own problems with a hard landing breaking one of those floppy white props that never break and then a collision with the irrigator severely damaged the wing: cure a fist full of opposite rudder and a bit more "ohmph" out of the Mills to counteract all that drag and the best flights of their day saw them make a last 1/4 charge into 2nd place behind Tony with Scott filling the third spot.
After lunch we held the Old timer event. We had a few more competitors line up for this event, Greg , Dave , George, Merv, Andrew, Tony, Fred and Kevin. This time it was Tony who suffered the misfortune as his Lanzo Bomber went in without control , believed to be caused by a 2.4 GHz park fly receiver running out of range. Fortunately he had reserve model.
First round was a 30 second climb & glide with Greg Robertson more than doubling the other competitors' times.
The next round was as many touch and goes in 2 minutes. This was cause for quite a bit of amusement for the onlookers especially when Kevin began doing them in each direction with 2 in the length of the strip to score 21 touches in the 2 minutes!
The final wash up was Greg first with Kevin second & George third.

Chris…

From the Editor's Desk

Trimming Article.

Jacques Wakae has been busy again and has found a highly recommended article by Peter Goldsmith on trimming recently on the Web. I have reproduced an edited version of it below. I was unable to find the author nor the man (Mike Hurley) who originally posted the article on the web, despite several searches by me and by Jacques, for the courtesy of asking their permission to republish it in our newsletter for the benefit particularly of those who are not internet users. Hopefully I have preserved the sense of the article accurately; and that they will be happy to have had it reproduced in this form.
I have certainly been learning a lot from reading it, and have started to put it into practice already. It would be interesting to get feed back from readers as to what they think and how it affects their flying.

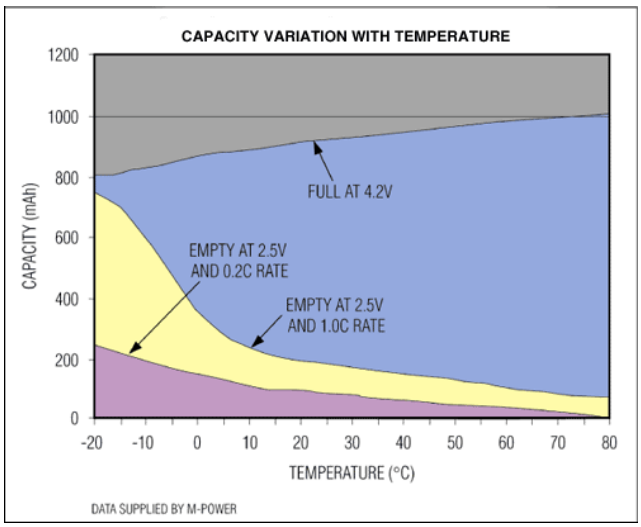
Ether.
At the recent free flight and old timer event at the Club, Tony Gray told us that he can obtain or has for sale ether in 2.5 Litre lots for $100.00. His email address is tonyrgray@internode.on.net
His phone number is 62681111.

Tomboy 3 Plans
Tony also can access Tomboy 3 plans for those interested. This is apropos the idea for this aircraft for competitions in Hobart, as advertised in our May news letter, and here as mooted also by Greg Robertson who has been building electric versions.

MAAA Newsletter
The MAAA newsletter no. 3 for 2009 is reproduced at the end of this month's newsletter.

Lipo Temperature characteristics.

I am indebted to Jacques again for drawing attention to an aspect of Lithium polymer (lipo) cells that was touched upon last month in Prop-Torque when discussing thermal runaway that occurs when these cells heat up to over 65 degrees C. He found the graph of charge capacity versus temperature in a lipo cell.
It is fascinating to interpret the graph because of the vital effect that temperature has on capacity and efficient function of lipo cells.
When the cell is fully charged at say 10 degrees C, showing a voltage of 4.2, and the cell temperature is increased to 20 degrees, the cell voltage may well rise above 4.2 volts and therefore overcharged. This does not show in this graph but you will see that increasing the cell's temperature will improve its charge capacity.
It is recommended therefore that charging to say 90 or 95 % is safer, particularly in summer when you might charge at a room temperature in the garage at night in Tasmania, at say 10 or 12 degrees Celsius, and when it is being discharged at say 20 to 30 degrees C, the cell may tend to drift into an unsafe temperature and voltage zone. The capacity will improve though, therefore power output will be more efficient.
It appears therefore that the lipo cell behaves like a tube of resin, molasses or treacle: if you heat it the contents will squeeze out of the tube more easily than when it is cold. That is the voltage or pressure on the tube being constant, as in the 4.2 Volt line on the graph, will result in easier or higher output with rising temperature.

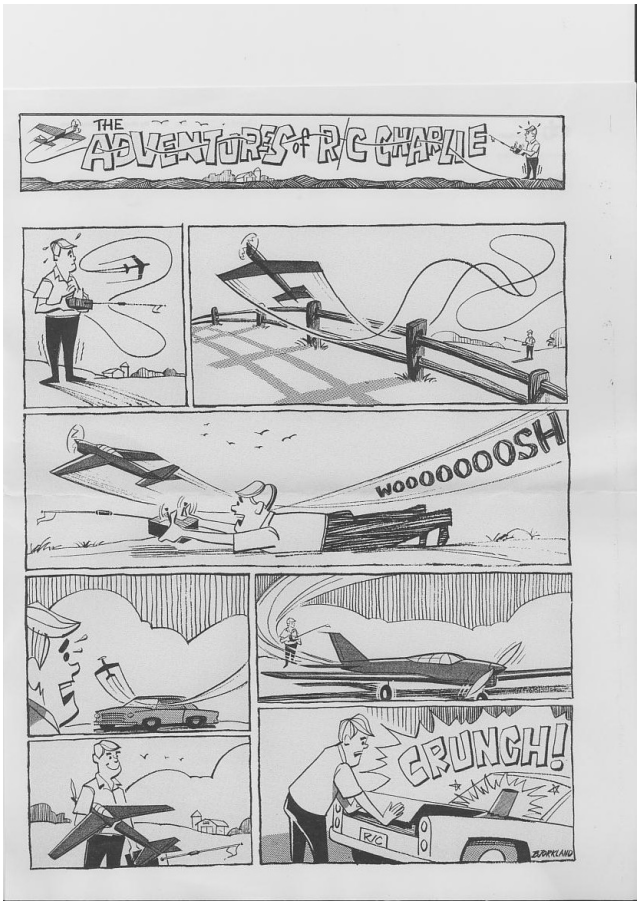


I would welcome any comments by electronic experts on this simple interpretation however!

It is also interesting to note that storage of lipo cells at about 40% charge is better at low temperatures in terms of increasing cell longevity and charge maintenance, than at room temperature.
Remember that cell temperature should never go above 54 degrees C and that permanent damage will occur above 60 degrees C.

(Source: barnson.org, Care and feeding of lithium polymer (Lipo) cells: Mathew's blog).

Richard.



Cartoon kindly supplied from Merv Cameron's collection.

Radio Control Scale Aerobatics: the importance of trimming

Mike Hurley 11542 Decatur Ct. Westminster, CO 80234 mike.hurley1@comcast.net

Article by Peter Goldsmith. Edited by Richard Cooper

Posted courtesy of Peter Goldsmith & Model Aviation (approved by Rod Kurek)

What if, from the very beginning, you learned to fly RC with the radio upside down? Then, two years later, someone said you needed to turn it over and fly right side up? It would probably be pretty tough because you learned all of the habits the wrong way. Flying a plane that's not fully trimmed is just about as bad. You get into the habit of correcting for poor flying characteristics and end up chasing the plane around the sky during the whole flight. Then when you move to a new plane you have to start over again and learn how to compensate for the new plane's different set of problems all over again.

In a conversation with top-rated TOC pilot Peter Goldsmith at this year's Nationals, Pete noted that it didn't look as though many of the planes were trimmed well. Some of the pilots, even in the top classes, were chasing their planes around the sky rather than flying the manoeuvres. Peter was excited to do something about that problem and I asked if he would write something for this SA column. He graciously agreed. I think this is one of the most important topics that you could get from this column. Peter's approach is systematic, comprehensive and complete. Tear these pages out of this magazine and put them in a notebook or your flight box. If you follow these steps in the proper sequence you're guaranteed to have a better flying plane than your competitors who didn't!

Peter Goldsmith was born and raised in Sydney, Australia, and began flying radio control at eleven years old. He still remembers his first radio transmitter called a "Bionic Baby", a two-channel dry cell system that his mother bought for him in Singapore. Young Pete had two weeks before his mother arrived home with the new radio so he put that time to good use and designed and built his first RC aircraft. Growing up, Peter says, he would design and build his own planes out of necessity. So, from the very beginning, he was a designer.

Peter's first love in RC has been sailplanes and soaring. He loved doing aerobatics with them and through an evolution of events decided to try F3A. His first contest was in 1978. Peter competed on an Australian National level in Pattern up until he came to the U.S. in 2000, and was the Australian National champ from '95 until 2000. During that time he was also a member of the Australian National team for the World Championships making the finals in three of the five Worlds and was awarded Oceanic Champion three times. In Scale Aerobatics, Pete has multiple top-level performances at the Masters and won it in '01. He has placed second in the AMA Nationals three times and won the Freestyle National Championship in '02. Peter competed in the Tournament of Champions from 1992 until its end in '02. He is currently the JR Team Manager and continues to compete at the very top level. One of the most telling aspects about Peter's RC career is that he has always flown and competed with his own designs, scratch built, and trimmed based on his 25+ years of experience.

Trimming by Peter Goldsmith.

Competing in this year's Don Lowe Masters I was inspired by the raw talent in pilots half my age—I was honoured to place 7th! I began thinking about all the help I had received over the years and felt driven to

give back to the new pilots of the aerobatic community, as had been done with me many years ago. Earlier in the same year in a discussion with Mike Hurley at this year's Nationals, I shared with him how passionate I am to share my life's aerobatic knowledge, and he invited me to write something about trimming and mixing. A properly trimmed model can reduce your workload in an aerobatic sequence by an enormous amount. First here is an observation: there is no such thing as a perfectly trimmed model. Our goal is to reduce our workload in flight when flying sequences. Even if we could get our models perfectly trimmed, we would need perfect flying conditions to benefit from the perfect set-up!

Servo and control setup

3D trim and precision trim typically work against each other. What I mean by this is that when pilots set up their new 40% something, they go straight for the big rates; 35°, 40°, and in some cases 50° of throw. Has anybody thought how this can affect the servo resolution? And more importantly the servo power? Most scale aerobatic events allow a separate aircraft for freestyle. Why not have your freestyle aircraft setup specifically for the free event, then have a precision setup for known and unknowns sequences? I know for me personally having a model just for freestyle will be something I aim to do in the future. That's not always a realistic option, so if you're using the same plane for precision and free, bias it toward a precision control setup.

For precision flying I would expect you to be running between 12° and 15° of elevator throw. If you feel you need more than this, check your exponential as it may be too high. Just as a starting point, 35% expo is what I call a linear feel. What I like to have with my expo is when at half stick, I get about 50% of the reaction of full stick, around 35% – 40% expo gives you this with modest control deflections. If I have my stick at full travel, my aircraft will roll around 360° per second; about right for precision. Now when I only move my stick half way, I should be looking for 180° per second.

If freestyle/3D flying is your bag, then you're stuck with the downside of long servo arms and will have to pay attention to the servo power delivered in this environment. With my 46% Cap 232, I use 1" servo arms on all surfaces with the exception of rudder which is 1¼". I have 28° on aileron, 32° on elevator and 35° of throw on rudder. For me, this is a good compromise for precision and free flying, but it's biased towards freestyle. With 1" servo arms, and 1½" distance from control horn attachment point to centre of hinge line, I'm getting a 1 to 1.5 ratio. More importantly I am maximizing servo power and control geometry. With 1" servo arms my resolution is better, control slop is reduced, and servo wear is greatly reduced. Another bonus is that I don't need as many servos per surface. Give it a try next time you set up your aircraft. You may be surprised. In fact in some cases you may see no difference in control responsiveness by going to 1" servo arms, as with the better geometry you may be reducing any control surface blow back.

Surface Blow Back. One of the biggest challenges I see pilots dealing with is surface blowback. Blow back is when the servos are overpowered by the amount of pressure on a given control surface during full deflection causing the surface to lose holding power and start to push back towards the neutral position. It can also happen when in neutral trying to hold the plane stable or stop it when exiting a manoeuvre. With blowback, your snap rolls will be all over the place, both entry and exits. Getting consistent flying is almost impossible. Every time your speed changes your control response will change.

Servo set up. When setting up your servos, make sure you run the numbers, do the maths and figure out just how much power you are delivering to the surface. All servos are rated at inch ounces—that is, at one inch from the centre of the servo. An 8611 is 266 inch oz. on 6 volts. With a 2" servo arm the applied force is reduced to only 133 inch oz., and around 200 inch oz. with a 1½" servo arm. Years ago I was able to measure the forces on my Cap. Believe it or not, the ailerons required well over 30 lbs of force to deflect at 100 mph! Today there are a lot bigger ailerons out there than mine. Please pay attention to this—it is crucial to consistent flying. If you have to use 1½" servo arms, or 2" servo arms, you will need more servos for each control surface.

Sequencing the trimming process. My concept of sequencing the trimming process is simple.
It is very important to trim your model in the correct sequence to make sure each adjustment has no affect on the previous adjustment. There is an intentional order in which I recommend trimming a model:

1) Model balance, Centre of Gravity (CG) is number one. You can't move ahead until you have a CG that you are happy with. If you change your CG later you will need to start all over again with your entire trim setup. Differential, knife edge flight and down line tracking will all be affected by the CG.

How do I know the correct CG for my model? If in doubt, read your model's instructions. For precision flying, forward is better, but… too far forward can be a problem. One of my favourite ways to determine the correct CG is spin entries. If, when entering a spin, your model mushes, and kind of slides into the spin with no real stall visible, the CG may be too far forward, another sign of which is excessive down elevator needed for inverted flight.

Rearward CG is probably easier to see for most pilots. Some obvious clues are the model is sensitive in pitch, unpredictable around the stall, or climbs when on an inverted 45° line. The important thing is to determine your CG before you work on any other aspect of trimming your aircraft. I would recommend at least 10 – 15 flights before making the commitment to where the CG needs to be if it's a new model.

2) Next is dynamic balancing, or "wing tip weight". Once we are happy with our CG, the next trim step is dynamic balance. This is really only relevant with wing tip weight. Most other axes on a model aircraft are not affected too much by the dynamic effects of high g loads. But the wings are. Just because they both weigh the same and don't carry any aileron trim doesn't mean you can't have a wing weight problem. I have seen a myriad of ways to test for wing weight trim. Loops, pulling to vertical and so on. My suggestion is to think about the sequencing argument. If you do loops, or pull to a vertical up line, the engine thrust can have an effect. But we haven't trimmed our thrust angles yet, so how do we check this? Think about it, what could you do to check your wing tip weight in flight that will not be affected by thrust? Some of you may have figured this out already but what I do is put the model into a vertical dive with the throttle back (minimum of 3 – 4 seconds) and pull a hard corner at the bottom into horizontal flight. No matter where your wings are in roll, when you pull to level, the wings must be level. Check this concept with your stick plane. It really doesn't matter where your wings are. As you pull to horizontal flight your wings must be level. If you attempt to pull a hard vertical from horizontal, you must be absolutely sure your wings are perfectly level. I don't know about you guys but I am not that good! If you go from vertical to horizontal, not only will the engine thrust have no effect, but your wings can be anywhere as you're on a vertical down line. When you pull the corner, the aircraft may be pointing in a different direction than you planned, but that is okay, as long as the wings are level. Now I know when some of you try this experiment you will notice one wing will consistently drop. You may have to add some weight to the opposite wing tip. I was never really sure if my tip weight was correct until I went to this method. Make sure you only use elevator through the corner. Perhaps, just for the trimming process, you can increase the aileron stick tension to ensure that you don't accidentally input a little aileron with the elevator and the elevators track correctly when you pull the stick back. Don't be quick to make a decision! Have patience and have a friend observe the proceedings. Do many pull outs and make absolutely sure before you move on to the next step of trimming.

3) Thrust angles.
Now it's time to put aside aesthetics and get that thrust correct. I sure see a lot of spinners perfectly lining up to the cowl these days. One of the biggest deterrents to adjusting for the correct thrust angles is that once the plane is built and you make an adjustment, the spinner won't line up any more. Once again, when building your model, pay attention to the instructions. Chances are somebody has figured it out pretty close. I like to test fly the model before I paint the cowl. Once I am happy with thrust, I can make the appropriate cosmetic changes to complete the model before painting. For all the money you spend travelling and time you spend practicing, do put good model trim ahead of aesthetics! Setting up the correct thrust angles is fairly simple. Well, it's simple to identify, harder to adjust. Now that we know our wing tip weight is correct, we should be able to, with confidence, pull to some accurate vertical up lines. Number one issue with this is making sure your wings are level. Don't guess! Be absolutely sure that your wings are level before pulling to a vertical line. I have seen people add unnecessary right thrust as they were not level when pulling corners, leaving an inside wing down (normal human behaviour) and the model would lean to the left. What I like to do is to fly directly overhead, into the wind, where I can clearly see my wings, then pull to a vertical up line. OK, up we go, first 100' is good, next 100' is good, moving through 500', still tracking well, up over 1000' now, still straight. If you working at it, the best you can hope for is around 1000 or so feet – plenty for most figures. Speed will have a huge affect on your thrust angle on a vertical up line. Entry speed, compared to speed under load after climbing to 100', will be as much as 30 – 40mph slower. My goal is to trim as best I can for the first 1000'. If I go for 2000' then I typically end up with too much right thrust at the start of the climb and not enough at the finish. Play the numbers, look at the figures we fly and set your model up accordingly.

Here's a great little tip for making the adjustments. Let's say, after many pull ups you really need more right thrust. As you pass through 500' you can clearly see your model drifting to the left. Here is the cool tip; apply some right rudder trim, and continue to apply it until it tracks straight. Bring the plane in to land and check your rudder deflection. Use a protractor to see how many degrees of rudder you required for a straight vertical. What ever it is, divide it by 2 and that will be what you need to add to your right thrust. For example, if you have 2° of right rudder, you will need to add 1° more of right thrust. It works both ways. If you need left rudder (too much right thrust) you can use the same equation.

4) Aileron Differential. Aileron differential is one of the most important aspects of model trim. With the multiple point rolls on both up and down lines in today's modern patterns, poor differential can be a

real headache. The good news is it's pretty easy to detect and adjust for axial rolls. Aileron differential is required when the drag of the down-going aileron does not match the up-going aileron. If your ailerons are not working in unison, then your vertical rolls will look like a mess.

Blow back. At this stage we need to make a quick diversion: make absolutely sure you are not getting surface blowback. You will never get your differential correct if you are. It's easy to check for blowback. Push to a vertical down line and roll to the right, stop rolling for a second, then roll again. The roll rate should be the same. If it is slowing then your surfaces are not reaching their intended throws. Another way to check is if your up line roll rate is faster than your down line roll rate. Do what needs to be done. Either increase your servo power, or improve your geometry, by reducing the servo arm radius, and/or increasing the distance the control horn pickup is from the hinge line. Or, if you have lots of cash, add more servos. Whatever path you take, you cannot afford to have surface blowback if you want consistent flying.

How do we know when to add differential? First of all, make sure you have a way to electronically adjust your aileron travel individually. Most modern radios have a differential program. I have used both the ATV function or the differential function and both work well. Checking for differential problems is pretty simple. I have used this method for years and it works. Use the same technique as before when checking thrust. Fly directly overhead and away from you. This time only pull to a 45° up line, making sure you are fluing either directly into or downwind. Using full aileron deflection, roll to the right. If the aircraft, "walks to the right", then you have too much down travel on your ailerons. If, when you roll to the right, the model "walks" to the left you have too much up travel in your ailerons. Repeat this process to the left as well until you are satisfied that your model is tracking true in the roll axis. Fortunately, with the correct aileron differential setting on your model, you will be amazed how easy it is to do hesitation rolls on lines. Another benefit is in point rolls on a horizontal line. Your rudder will now have an even feel on both sides, as your model will not be barrelling in the rolls.

Mixing

You will notice this topic is the last in the sequence but for many people it's where they go first! I get phone calls all the time from excited pilots. "Pete, I just test flew my new Edge; it only has 8% aileron mix and 4% knife edge mixing." Boy, I think, they sure got to the details of trimming their model faster than I can. If you stick to the correct trim sequence you may be ready only after 10 – 20 flights to work on the mixing to fine tune your model.

I've broken down the Program Mix (P-mix) topic into 2 sections. The first is the down line torque offset or throttle offset mixing. Second is the traditional rudder elevator/aileron mixing. Most pilots have a fairly good understanding of the latter, rudder to elevator/aileron, but same technique as the throttle to aileron (above). Fly above yourself, directly into the wind and push down in front of yourself and watch carefully. You will be amazed, especially at the start of the down line. If you haven't got any throttle offset to rudder, you are most likely flying around the problem and where I find it most challenging is in figure 9's and vertical and horizontal 8's. Any time you are using elevator and are off on the yaw axis, it's a bad day. I can hear all you guys thinking, yes it's true, your model perhaps could need a little rudder mix on low throttle. Give it a try and you will be amazed.

I know of some fairly experienced modellers that use the same theory but reverse where the mix is. They use little to no right thrust on the engine but have right rudder mixed on full throttle. That works well too, I've been told, but haven't tried it myself. One thing you may want to experiment with in both these scenarios is where the mix is activated. For a low throttle left rudder mix, I like to have the stick offset start at least above half and let it progress from there as you reduce the throttle. It seems to be the best balance; and I am not getting a sudden mix input—it progresses more or less with the speed of the model. This will vary from model to model but try to keep the mix activation well above an idle setting.

Rudder Aileron Mixing

Earlier I made reference to pilots applying programmable mixes in their trim program. Notice that this is the last thing you do. Looking through the sequence, each trim adjustment has complemented the next stage. In most cases, for rudder aileron mix, a linear P-mix is all that is required. What I mean by linear P-mix is that you don't need a progressive value to the mix, i.e. less at the start, more at the ends. The mix will be linear. What causes adverse roll coupled to the rudder is incorrect dihedral. Most modern designs, with the exception of biplanes, are really close and only require a small amount of rudder aileron mix. Some like to put their model on knife-edge, but I like to just do flat turns, simulating rolling turn inputs. Rolling turns require more precise mixing than sustained knife-edge flight. In fact, in a contest you don't do much flying on your side at all, but you sure do a lot of rolling turns. So, I like to do the flat turn thing. Doing a simple inside rudder turn to the left, using left rudder, the model should just yaw, with no roll affect. If the aircraft rolls to the left, then you need to mix 2-5% right aileron to left rudder. My Cap is a little unique as it has adverse roll. When I apply left rudder the model rolls right, so I need left

aileron mixed with left rudder. Repeat the process with right rudder. Now what I want you to do is vary the speed in which you do you flat turns. If you find, as you increase your speed, the mix becomes too much, you could be getting surface blowback. Sorry to keep harping about this but it is important. With insufficient rudder power, when you apply a P-mix for roll, or pitch for that matter, the mix value will become too much as the rudder throw reduces due to aerodynamic pressure. I see a few lights going on again. Could this be why you have your mix perfect for knife-edge, but you chase your aircraft all over doing rolling circles?

Rudder elevator mixing

I think about three times in my entire life I have had a model that didn't need rudder elevator compensation. As with the previous rudder aileron, start by doing a flat turn to the left and see what happens. If your model pitches down when rudder is applied then mix a small amount of up elevator, or if it pitches up, apply a small amount of down elevator. In some cases, even without blowback, the mix value will not be exactly correct for all throttle settings. Don't panic as with most modern radios suitable for aerobatics you can use what is called a curve mix. This mix allows you to have multiple points along your mix curve to increase or decrease your mix value at different rudder inputs. My Cap is a good example of this. At low rudder throws, I only need 1-2% mix, but as the throw increases I need up to 10%. If I just have a 10% mix it will be too much at small rudder inputs. The curve mix is designed to solve this problem.

Tricks of the Trade

I would like to share a few tricks of the trade to help you with your competition efforts. You probably now have a concept of how much work there is trimming a model. Considering all things equal, you will have a hard time beating a person with the same skills as you with a better trimmed model. It took me 20 years to figure most of this out. Be patient, be observant, and be objective. If your model is not flying right, investigate why. Chances are it's just not trimmed. Even if your models are not perfectly straight, you can trim them. I can almost guarantee my models are at the lower half of building accuracy. They all carry aileron trim and elevator trim. I don't have a nuclear powered building bench, with warp speed laser meters. Nor do I have a 12' x 12', 8" thick granite table to build on.

Don't feel you have a disadvantage if your model is not perfect. You can trim it pretty well. What makes me laugh is hearing people talk about how straight their wings are, how perfectly their model is trimmed, yet even with a perfectly trimmed model they fly with their inside wing down 5°-10°. If you're not level in all orientations, vertical and horizontal, both at the top and the bottom of the box, you will have a lot of work on your hands. Probably the biggest progression I've made in my flying career was when I learned to fly level. The truth was I didn't know I wasn't level! I started watching other pilots and noticed that everybody flew with their inside wing down, nobody flew level. From that point I went home, made up three flags – red, white, and blue—and asked my helper to go out and stand under the flight path and keep me level. I think red was for inside wing down, white was for level and blue was for outside wing down. The next month or so was one of the most dramatic learning times of my life. My workload doing manoeuvres was reduced immensely. I found myself just waiting for the next input, not my normal 54 inputs all the way up the vertical! I could now pay more attention to corner radius, centering rolls within legs and so on. It was a truly amazing breakthrough. I encourage all of you to investigate flying level.

Finally, many people ask me this question, "What's the best thing they can spend their money and or time on to improve their result at events etc. Should I get a more powerful engine, a better aircraft, what style should I fly?" ..,and so on. The simple truth is, all of these things are important but the best thing you can spend your money on is gasoline and oil.

Practice. Try to avoid letting your ego be your only motivation. Be objective, be humble, listen, watch, and experiment. That's what all the TOC and Masters pilots do. Sure, we all have egos, but at some stage of our lives our egos have let us down, we were humbled and forced to listen and be objective. Stay cool and hopefully we can catch up at the next aerobatic event!

CONTACTS

President	Gerry de Groot	6369 5284 / 0429 196 560	degroots@activ8.net.au
V.President	Kevin Hay	6326 2990 / 0417 011 839	zzkevin@iprimus.com.au
Secretary	Geoff Hays	6326 7967 / 0408 559 806	ghays7@bigpond.com
Treasurer/Webmaster	George Carnie	6398 2141 / 0418 134 672	george@thecarnies.ws
Committee	Greg Robertson	63431753	
	Merv Cameron	6344 5614	mervcameron@internode.on.net
	Terry Pearson	0438 053 255	tnt13@bigpond.net.au
Editor	Richard Cooper	63695142	richardlc@activ8.net.au
Contest Director	Chris Klimeck	0458 448 674	cklimeck@bigpond.net.au
Web Site	www.lmacrc.com		

COMING EVENTS

Date	Events
July 4th	**Club day**
18th	**F / F and Old Timer**
August 1st	Club Day
15th	**F / F and Old Timer**
Sept 5th	Club Day incorporating Fun Fly
19th	Electric Glider
Oct 3rd	**Club Day**
17th	**Thermal Glider**
Nov 7th	Club Day
21st	**Club Pattern**
Dec 5th	Club Day
19th	**All Models Family Fun Fly and B.B.Q.**
	2010
Jan 2nd	**Club Day**
16th	**Club Pattern Contest - Practice**
Feb 6th	Club Day
20th	**(State) or Club Pattern Champs**
Mar 6th	Club Day- AM Gen flying –- PM Electric Glider
20th	**State Electric Glider Champs**
Apr 3rd	Club Day
17th	**Fun Fly Novelty events**
May 1st	Club Day
15th	**Proposed scale fly in**
June 5th	Club Day
19th	**To be advised--Possibly special Old Timer event**

Note: Starting times: - F/Flight--------- 9 AM
Old Timer------11 AM
All Other events except where noted----- 10 AM

This Calendar is subject to change that will be notified as required

Club AGM will be held Thursday June 10th 2010 venue TBA

MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA INC.

N e w s l e t t e r

N O . 0 3 / 2 0 0 9

President: Mike Close, PO Box 146, West Pennant Hills NSW 2125
Telephone: 02 9872 6469 Fax: 02 9871 0408
Vice President: Paul Winter 25 Jasmine Drive Mill Park VIC 3082
Telephone: 03 9436 0717
Secretary: Kevin Dodd, 16 Illidge Rd Victoria Point QLD 4165
Telephone: 07 3207 9067 Fax: 07 3207 8175
Treasurer: Garry Anderson, PO Box 471 Devonport TAS 7310
Comp. Rules Secretary: Ross Cant, PO Box 670 Mount Lawley WA 6929
Telephone: 08 9227 9131

MAAA Internet: www.maaa.asn.au

Manual of Procedures

The Manual of Procedures is a "live" document and is continually being updated. Please check the MAAA web site from time to time to ensure that you are aware of the latest editions of the documents.

The MAAA has recently released the following new or amended documents in the Manual of Procedures:

Statement of Rules

MAAA MOP 058 2.4GHz Equipment

MAAA MOP 062 Noise Policy and Guidelines

The MAAA 2009 Conference

The 2009 MAAA Rules and Federal Conferences were held in Perth on the weekend of the 22 – 23 May. Delegates from all State Associations attended the meeting. Many areas of our sport were discussed and particular points are highlighted here.

Elections

In 2009 the positions of MAAA President and Competition Rules Secretary were scheduled for election. Mr Mike Close was re-elected as MAAA President and Mr Ross Cant as Competition Rules Secretary for a further three year term. Congratulations to both gentlemen.

2009 - 2010 MAAA Membership Fees

Willis Australia once again provided a favourable insurance quote for the 2009/10 period with only a small increase in premium. There were some increases in budgeted spending, however when establishing the MAAA fees for the coming year, the outcome was that they would remain the same.
MAAA fees are as follows: Seniors - $60.00, Pensioners - $60.00 and Juniors - $30.00. State Association and Club fees are in addition to the MAAA fee. Half year fees will apply after 1 January 2010 for new members. As has been the practice in the past, MAAA will 'test' the insurance market every three years and therefore will invite quotes from other brokers for the 2010/11 period.

Field Purchase and Loans & Increased Assistance for International Teams

The MAAA Executive proposed a standing item to Council which would mean that funds contained within several MAAA MOP documents, which are allocated to Affiliate Members, Clubs and State Associations could be reviewed on a yearly basis. The first is MOP011: Field Purchase and Loans. Council agreed to double all amounts in this MOP. The second is MOP024: International Teams where the Entry Fee Subsidy was increased to $1000 and the Uniform allowance raised to $500. These documents will be amended and posted on the MAAA web site.

MAAA Life Member & Hall of Fame

Following voting at the 2009 Council Conference, the Chairman announced that Ron and Irene deChastel were awarded Joint MAAA Life Membership for Pioneering Model Aviation in Australia. MAAA congratulates Ron and Irene on this award.

Hugh Simons and Grant Potter were inducted into the MAAA Hall of Fame for their outstanding performance at the 2008 F2 World Championships where they became the World Champions (F2C) and established a new World record. MAAA extends their congratulations to both these outstanding modellers.

Separation Distance – Pilot & Aircraft

Following an incident some years ago, a Field Safety Subcommittee was set up in 2007 to review several specific aspects of model operations. The final report was tabled at the recent Conference and the Subcommittee commended for their work. While there were many suggestions made in the report, it was agreed that the Executive would look at the recommendations in light of 'best practice' and consider the best way of incorporating them into the MAAA Procedures.
Two items were dealt with by Council at the time.

3D Aircraft

The motion was carried that:

- **Aircraft flying 3D manoeuvres outdoors, excluding electric models with a wing span of one (1) metre or less, are not to be flown any closer than 9 metres to all pilots operating at the time**.

Helicopter Flying

The motion was carried that:

- **Helicopters flying outdoors are not to be flown any closer than 9 metres to all pilots operating at the time**.

63rd MAAA Nationals

At the 2009 Conference VMAA presented the details of their organisation to date for the Nationals to be held in and around Albury from December 28 2009 to Wednesday
6 January 2010. These Nationals will host Team Trials for several upcoming World Championship events so the flying promises to be exciting for competitors and spectators alike. A program of events is available on the VMAA website.

Future Nationals

In 2006 a Subcommittee was set up to investigate the future direction of the MAAA Nationals. Following long and intense discussion at each Council Conference since, various options have been presented requiring additional research. At the 2009 Conference final options were presented and the following motion was carried:

The Nationals shall rotate around 4 States. Three years before the Nationals are due to be run, the prospective host State shall present a full proposal to Council on how they intend to run the Nationals. The format that they wish to run it on can be at their discretion and involve SIGs, alternate dates and venues. Council will ratify or reject the proposals.

The order of rotation for hosting future Nationals is: VMAA (63rd), MAAQ (64th), AWA (65th), NSW (66th).

The Nationals Subcommittee was disbanded at the 2009 Conference with expressions of gratitude to the Chairman and all members of the Subcommittee for their work over the three years.

Safety Issues: Starting Models on Stands and Electric Models

A recent Incident Report dealt with by the MAAA Executive highlighted certain dangers involved in starting models on a stand. While the stand had a restraint which held the tail of the model, the modeller didn't realise that his model was not completely engaged with the restraint which meant that the model was able to move forward several centimetres on starting, making contact with the operator's fingers. Starting models on stands, while a definite bonus for senior members, also brings with it other elements of danger to be aware of. After the model is started, the operator often bends down to place a starter unit or Glow Driver on a bench underneath and in doing so they bring their neck, face and eyes through the line of the spinning propeller.

Incident reports are still being received where injuries have been caused by the inadvertent energising of electric models. Is it getting to the point that these types of models need restraints? There is a trend both here and overseas towards a disproportionate increase in injuries from electric powered models

2010 F5B & F5D Electric World Championships

Team selection trials for the 2010 F5B & F5D Electric World Championships in the USA are scheduled to be held at the VMAA 63rd Nationals at Albury. Dates of the event are Sunday 3 and Monday 4 January 2010. Pilots wishing to fly F5D at the World Championships should contact the Organiser before September 1. For further details contact Ray Pike stingray_f5b@westnet.com.au

2010 F2 World Championships Team Trials
Still to be held: F2A and F2C, 3-5 October at Albury.
63rd MAAA Nationals (VMAA): F2A, F2B, F2C, F2D, 28 Dec 2009 to 4 Jan 2010.

2010 F4C Scale World Championships
Team selection trials for the 2010 F4C Scale World Championships in Poland are scheduled to be held at the VMAA 63rd Nationals at Albury. Dates of the event are Thursday 31 December 2009 and Friday 1 January 2010. Entry nomination will close on 30 November 2009, and a non-refundable entry fee of $150.00 which will be applied to team expenses will be required in addition to the Nationals entry fee. Entries, together with deposits, should be sent to the VFSAA secretary, Keith Schneider at 15 Darvall Street, Donvale, Vic, 3111.

2010 F1A, B, C & D Trans Tasman Team Trials
Notification has been received that an additional event will be held at Dalby QLD on 22/23 August 2009, replacing a previous event washed out in May.

World / Continental Championships and Trans Tasman Events Calendar

2009	
EVENT	**Awarded to**
F1A, F1B, F1C	Croatia. Bjelopolje **Dates:** July 19 to July 26
F3A	Portugal **Dates**: August 21 – 29 2009
F3B	Czech Republic **Dates**: August 2 – 9 2009
F3C	USA – Muncie **Dates**: August 2 – 11 2009
F3D	Germany **Dates:** July 20 – 26 2009
2010	
EVENT	**Awarded to**
F1 A,B & C	Trans Tasman
F2A, F2B, F2C, F2D	Hungary **Dates:** July
F3J	France **Dates:** August 14 – 22, 2010
F4C	Poland
F5B, F5D	USA
Space Models	Serbia
F3A Asia-Oceanic	Offers Invited
F3C Asia-Oceanic	China (Tentative)
2011	
EVENT	**Awarded to**
F1 A,B & C	Argentina- Late April early May (dates to be confirmed)
F3A	USA – Late July early August (dates to be confirmed)
F3B	China
F3C	Italy **Dates:**18 – 28 August
F3D	Australia **Dates:** 12-14 August
F3K	Sweden **Dates:** 4-10 July