http://www.kapitimodelflyers.org.nz/

Kapiti Aeromodellers' Club Update --- May 2016

Texan and Beechcraft King Air B200 at Ohakea.

Photos by Kelly Lynn

Most times you have to make an effort to take your own photos. My daughter popped by Ohakea recently to see if she could capture some aircraft. (I must be having some influence to get her to go plane spotting). She was able to get to the timing just right and grabbed these guys getting ready for takeoff. Nice to get a wave from the pilot in the Texan as he taxied past. Just as well she is young as she ended up precariously perched on a fence post to get the shots.

(As they say in classics, don't try this at home)... not at our age anyway.

The Presidential Podium

Hi all,
It seemed to be extremely busy coming up to the AGM, following a very busy March.
I thought the AGM went well and would like to thank those that turned up on the night and those that have stood for office to fill the gaps we had.
It is a good feeling coming into the new year with a full committee and some new blood.
The first meeting of the new committee will be held in the coming week and part of the business to be discussed will be what our goals are for the coming year.
It is important that club members feel they have an input into what we set out to do, so if you have ideas or concerns, then feel free to approach any of the committee members with your thoughts.
I am forever hopeful that flying conditions improve, and there have been some good days, but infrequent unfortunately.

Fence:
Good to see everybody seems to have grasped the methods to put up/down the end fences.
I recently took a spade and opened up the holes where the posts go.
They were filling with sand and those posts secured by chains weren't going in far enough,
All is good now and it is just a matter of keeping the holes clear.
You will notice that the farmer has now erected the 'break fence' up and over the hill. This runs off the south end of our Eastern boundary fence. The fencing system used here is quite different, using Fibreglass
Posts and 4 wires vs 5, although the height is about the same. Wooden posts at intervals, I guess to supply some rigidity.
There is food for thought when comparing this fence with our permanent Eastern boundary fence.
This fence is rather interesting and following some enquiries I have found it is a the 'Kiwi Tech' system.
If you are interested, have a look here and view the 1st of the 2 videos.
http://www.kiwitech.co.nz/index.html

Steve

Club Night ... April 2016

April's Club night was replaced with the AGM. A nice short meeting thanks to all the work having been done prior. There were a few debates, and I think that it went very smoothly. Thanks to all those that attended or put in their apologies.
Also welcome to the 3 new members to the Committee, good to see members getting involved, (even if they needed some serious convincing) ... Welcome aboard.

Thanks to Brendon and Terry for their contributions during their time on the committee. (you can relax for a while now).

Once again the meeting culminated in a great selection of tea, coffee and biscuits supplied by Ron.

Conquering disorientation when flying RC aircraft .

I did this article back in August 2013 , and thought that since I often hear people talking about getting disoriented , it would be good to use again.

Disorientation simply means that the model looks like it is in a different attitude to what it actually is. ie. It appears to be going away from you, when it is actually coming towards you. One can become disoriented regardless of the distance the model is from the pilot, however keeping the model in a decent visual range does minimise the risk. Some pilots tend to fly "a long way out". Now I am no Top Gun, or guru on colour schemes and patterns, but thought I'd share what colour schemes and patterns work for me.

Your strategy may be different.

DON'T PANIC !!
The model is probably going the way you think it should be going regardless of the message your eyes are sending to your brain. You can have confidence that the model is most likely on the course you last set it on unless the model flew through some funny air that flipped the airplane over. Do not give any abrupt or prolonged control inputs. Close the throttle (unless you are going really slowly already), this will give you a bit more time to work things out. Move the ailerons or elevator gently and watch what the aircraft does. The response of the model will give you clues as to its attitude.

Situational awareness.
Before you take off you should know who else is flying and who is standing nearby your pilot station. If you become disoriented call out to someone by name and tell them of your predicament. They will most likely be able to tell you in which direction the model is heading. Observers are really valuable in this situation.

Visual clues

It is always a good idea to choose a highly visible, contrasting colour scheme for your airplanes — especially if you're a beginner.

Your first few models should have colour schemes that aid in orientation. Unfortunately ARF's are usually covered to make them look pretty, often with similar patterns and colours top and bottom, this does little to assist visual orientation. After you have more experience you can use your own judgment to determine the extent to which you need visual clues. Colour schemes that aid in orientation should differentiate between the top and bottom and if it helps, the right from the left of the aircraft - at relatively long distances. The way to do this is to choose colours that don't disappear or blend into the sky.

Colours, text and patterns

Everyone's eyes are different and although some people can see a model's markings from 500m others may struggle at 50m. The secret is to pick patterns and colours that suit you. After all you are the person flying the model. The eye can identify shapes a lot quicker that it can colours. In my case I have a colour deficiency with red and green. I can see the difference between them and in most cases can identify which one is which, but give me a colour chart test at the optometrist and I'm screwed. So what works well for me are geometric shapes. I like to have stripes or patterns running parallel to the wing on the top surface and across the wing on the bottom surface. To me, red, dark blue, black all look much the same at a distance.

Text (unless bold and big) is difficult to see at a distance and often appears to merge into one stripe or blob.

Wing and Horizontal Stabilizer Shades

The top of the wing and horizontal stabilizer is normally lit by sunlight. The bottom of the wing and horizontal stabilizer is shadowed. Colouring the top lighter and the bottom darker keeps this same relationship, even in changing lighting conditions.

Images and silhouettes

On a dull day the model is often seen as a silhouette. Fig 1 & Fig 2 (clipped from rc universe) below show just how easy it is to become disorientated. In each group, the aircraft is identical. The image on top is an overlay of both images from below the line, showing that in certain attitudes the silhouette is identical. Sure can play tricks on your mind.

Fig 3 is one that I have added some definitive markings. Once you know how you have marked your plane you can, at a glance, identify the attitude of the aircraft.

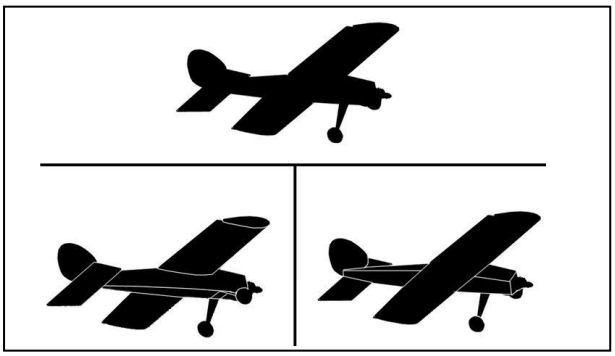


Fig 1

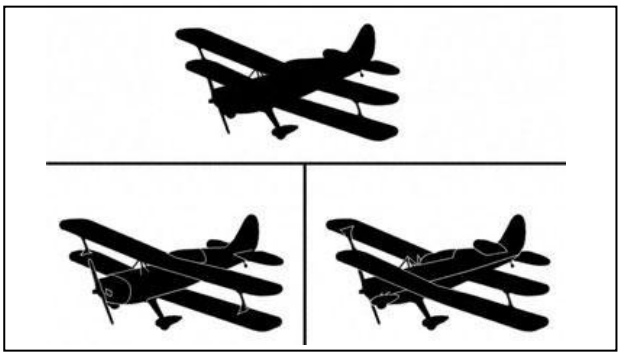


Fig 2

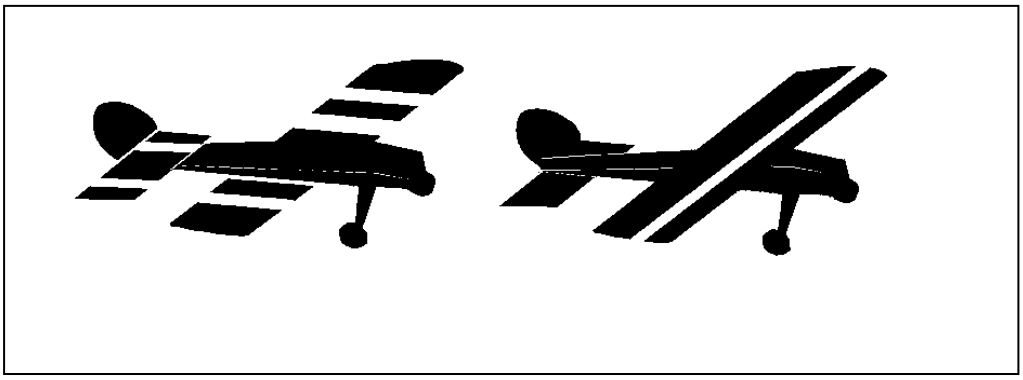


Fig 3

Conclusion

No doubt there have been volumes written about this subject, and I have just noted what works for me. If you constantly get disorientated then try out what works for you. If a couple stripes here and there can aid your flying and save a model then I have achieved something. Hope this helps.

Trainer Plane

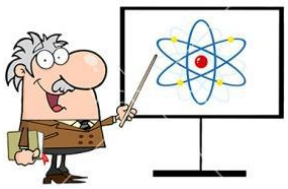
John Miller has a Trainer plane that he is willing to give away (free) to anyone that has a need for a trainer. He has indicated that he would prefer it to go to a new member , or beginner who needs to set up a 40 size glow trainer. If you know anyone that would make use of this please let John or myself know and we will do the rest. Note it is an **airframe only**, so requires all the important bits to get it flying.

Details as follows.

Wingspan 1500mm
Fuselage length 1100mm
Tare weight 1.9 kg.
Requires motor, servos, battery , receiver.

If we have numerous "possible recipients" I'd suggest that we then draw names out of a hat.

Professor Flapbracket talks on servo design



Prof. Fred Flapbracket is an expert on all things technical. Sometimes he may be useful, if you don't fall asleep during his lectures. Author of the best seller "101 ways to fall from the sky"

Ed's Note!
It has taken some negotiation, but we, or should I say, our Prez, Steve has managed to come to an agreement with Professor Flapbracket to use some of his articles in our newsletter, and visa versa. The articles may or may not resemble those that appear in the TMAC newsletter, which just so happens to be the home of our previous secretary. Rumour has it that he is also known to use other aliases, of Andy Avgas and Dave Marriott....

When most of us build a plane to an existing design we simply put in the servos recommended on the plan, without any thought as to their suitability or if they are the optimal solution for the job. If you are building from scratch, servo selection can be a matter of guesswork. As the hobby has developed over the years, there is now a huge range of servo options, many with useful features which were not available a few years ago. Some of these are:

- Metal gears – much more robust to overload conditions and shock.
- Ball bearings – less slop in the bearing, greater precision and greater load capability
- Digital vs analogue – faster response especially for helicopters with stabilization systems, at the expense of higher current drain.
- Coreless vs conventional. – better motor characteristics as has done away with the motor brushes. Less friction. You can tell these servos as when not powered, the control surface tend to droop.
- Greater range of package sizes – some with a choice of gear ratios to give you the ability to choose between fast response, low torque, and slower response, higher torque.
- Greater range of package designs – eg flat servos for wing mounting.
- Higher operating voltage – this produces a higher torque and enables a smaller servo package to be used with savings in weight.

How do you design for servo loads?. The process is relatively straightforward and if you have a bent for spreadsheeting, it can drop down to a simple formula based on a small number of inputs. The process generally follows the following steps:

a) Assessment of model speed. This is often conveniently assessed from the theoretical propellor pitch speed, knowing the propeller/engine/rpm configuration. Allow something like a 20% safety margin as the aerodynamic loads are proportional to the square of the velocity and you want to have enough servo capacity pulling out from a vertical dive.

b) Conversion of plane velocity into airflow dynamic pressure.
c) Calculating the area of the control surface exposed to the airflow (generally = control surface length x average deflection)
d) Calculating the thrust against the control surface. This is 'b' x 'c'.
e) Calculating the torque on the control surface. This is 'd' x the distance between the hinge and the geometric centre of the thrust force.
f) Finally – making any corrections for linkage geometry (eg you may want your servo to move +/- 45 deg while your ailerons move +/- 20 deg). Also add in a factor of safety of 2 for peace of mind.

This process is fully scaleable, it does not rely on "rules of thumb". It is equally applicable to an indoor model, a 200km/hr hotliner, or a 3D pattern ship.
Fortunately there is an easy way of doing this via many servo calculators available on the internet. I recently tested my home grown spreadsheet against 2 of these and they all agreed to within a few percent. (its 45 years since I studied fluid/aero-dynamics so I was quite pleased with this result !)
Check out:-
 www.radiocontrolinfo.com/information/rc-calculators/rc-airplane-calculator/#Torque.
This is a very simple calculation.
 http://www.pongo-air.com/servotorque.html. This is a more complex calculation which enables you to adjust for control geometry.

What does this mean in practice? I am currently building a 70 size 4 stroke sports model. Nothing dramatic, just cruisy aerobatics. Max roll rate 1.5/sec. I use a 6V system to give me security from voltage transients (2.4 GHz system). The plan calls for heavy duty servos on each of rudder, ailerons, elevator and throttle.

The calculation gives me torque loadings of
Rudder – 4.7 Kg-cm - use standard heavy duty 40 gram servo
Elevator – 2.1 Kg-cm – able to use a metal geared twin bearing 30 gram servo.
Aileron (each) – 1.1 Kg-cm – able to use metal geared twin bearing 30 gram servo
Throttle – insignificant torque requirement , able to use metal geared twin bearing 14 gram servo.
Overall there's a saving in $$$,and 50 gram mass which is useful, and the reduced servo size makes for simplified installation.

Note – most servo manufacturers specify their servos output torques in terms of Ounce-Inches or Kg-cm, where 1 Kg-cm = 16.5 oz-in. Strictly speaking the metric measure is a nonsense as Kg is a unit of mass, not a unit of force. The correct metric unit is Newton-cm where 1Kg-cm = 9.8N-cm

Thanks to Professor Flapbracket for allowing us to use this article... Ed.

Upcoming stuff for May.

Indoor flying	Sun 8th and Sun 22nd.
Club Night	Tues 17th
Silver Fox BBQ	Thurs 19th
Tomboy's	Tues 31st

Remember to check out our website regularly as well, events are on the "Club Events" page... funny that!.

And that's it for another month. If you have anything that you would like to put in the newsletter , please send it through to me at least a week before the end of the month. It is the formatting that takes most of the time, so appreciate it before the last minute.

Till next time.

Cheers
Don