

Servo Chatter

Palmerston North Aeroners

www.aeroneers.com

Model Aeroplane Flying Display

PN Aeroners Model Flying Club

Open Day

Sunday 7 April 10 a.m. to 4 p.m.

Static and flying displays of many types of model aeroplanes:

***Aerobatics *Warbirds *Gliders *Jets *Helicopters**

Combat Highlight:

High speed battles using home made cheap (and disposable) SPAD plastic aeroplanes. No quarter given!

BBQ sausages, tea & coffee, and cold drinks on sale.

Our Modelport is located at the western end of Spur Road. From Taonui drive 8 km north right through Colyton then take the first left on to Spur Road.

There is plenty of parking but wear your old farm shoes.

www.aeroneers.com

Entry Fee: Gold Coin Donation



PRESIDENTIAL PONDERINGS

A good attendance at the AGM saw 3 new members onto the Committee – Bradley Parker, Richard Manderson and Bruce McKay were elected. Bruce has become our new website manager. On behalf of the Club I would like to thank Allan Alach for his contribution to the Club magazine and website over the past few years.

I am often asked how can a flying discipline be made popular and well attended. Glider has established itself with good organisation and someone to run the score sheet, while Vintage has gone to fresh scones and jam to bring this group together. Ten Tomboys completed in last Sunday's competition and it seems that everybody is enjoying this discipline.

A number of new planes are appearing at the field. Jim Hines' Stearman, Wayne Bilham's Pawnee and Greg Findon's Super Sportster, while Kevin Burrows PT19 is not far away from its first flight.

In a lead up to our Open Day we have a couple of Saturdays of building signs at Pelco's Joinery Shop and giving the Clubhouse a spring clean. If you can help have a look at the Club calendar for dates and times.

Happy Flying

Peter Vining

President

March 2013



AEROBATIC REPORT

Weather was fine with a light to moderate wind blowing straight down the runway. We only had two entries which was disappointing, although some had contacted me saying they would not be able to make it, thanks for the heads up, as it is a pain wondering if people are coming to fly or not.

We were offering the choice between IMAC basic and Sportsman pattern schedules and both Tubs and Graeme opted for IMAC. Must also mention one club member said if he had known Sportsman was to be flown he would have brought a plane and entered...sorry for the miscommunication; next time hopefully.

Two rounds were flown with the IMAC sequence flown twice per flight, for a total of four flight scores. As take off and landings are not judged it makes this possible in IMAC.

So what are Aerobatics?????

Well aerobatics is a discipline where you fly a set pattern or maneuvers laid out in different formats depending on the class/skill level.

Here in NZ we have two types of Aerobatic classes, one being IMAC and the other Pattern, and both these are what we will aim for in the club.

IMAC consists of five classes, but at club we will be concentrating on the starting class for now, which is known as Basic. IMAC is normally flown with scale replicas of full size aerobatic aircraft; although in Basic you can use any type or style of plane you have no excuses there.

With IMAC you are not only trying to fly the set maneuvers as accurately as possible but also duplicate the maneuvers as would the full size aircraft.

Pattern on the other hand is a class where normally, purpose built aircraft are used, and there are three different classes that can be flown. The planes used in pattern have no similarities to full size aircraft and are designed for maximum aerodynamic precision, although there is no need to worry, as in the Sportsman class which we will be concentrating on at club any aircraft is suitable.

So, who is able to fly aerobatic.....anyone who has passed their wings badge and has the desire to improve their flying skills.

What will I get from flying aerobatics.....hopefully enjoyment and fun? I can also guarantee that if you do a little bit of practice (you get nothing for nothing) you **will** gain a better skill level, which in turn will make you a better Scale pilot, Turbine flier and generally better Rally pilot or whatever your main interest is. And heaven forbid just maybe Aerobatics may also become one of your main interests.

So take a deep breath, and rock up to the next aerobatics day and give aerobatics ago, as we will look at how things are going after a couple of events and make a decision from there. There is just so much time you can spend with a pointed stick pushing the proverbial up a hill.

Found on the Web – Need to know what prop to use on your electric motor??



eCalc are (Software-) Services to calculate, evaluate and design electric motor driven systems of any type.

- [propCalc for Propeller Airplanes](#)
- [fanCalc for Electric Ducted Fan Airplanes](#)



THE BASICS OF PROPELLERS

Propellers are the all-important part of airplanes that provide the necessary thrust for powered flight. Even our jet engines have bypass blades to assist in producing thrust. In the simplest terms, a propeller is an aerofoil traveling in a circle with a positive angle of attack relative to the incoming air to produce thrust. Propeller performance is affected by several factors. Among them are diameter relative to RPM, and blade area relative to power absorption and pitch.

Diameter: The measurement (usually in inches, but also in cm or centimeters) of the prop from tip to tip.

Pitch: Defined as the theoretical advancement of a propeller in one revolution (usually measured in inches). Pitch defines the speed and manoeuvrability characteristics of flying. Pitch is also known as the “Twist” of the blades. For example, a 10x6 describes a diameter of 10” and a pitch of 6”, or forward advancement of 6 inches per revolution. In metric measurement this would be 30x15. Further in this discussion is the formula for figuring the propeller speed in “feet per second” (fps) by using diameter and RPM. If you wish to measure pitch, note that industry standard is that pitch is measured at 75% of radius. Design characteristics will add certain pitches to other parts of the blades, but the true measurement of a particular propellers’ pitch is at 75% of the radius.

Now, more about pitch, this is the hardest part to visualize. With a 6” pitch propeller advancing 6” per revolution, the faster you turn the propeller, the more rapidly you will advance. However, model propellers have a practical limit on how fast they can turn (RPM), which is based on the power curve of the engine or motor and the diameter of the prop. Another practical limitation is due to noise considerations.

These limitations can be expressed by tip speed, which is explained below. Slow speed, aerobatics, great takes-offs and landings can all be accomplished with low pitch propellers. Higher pitches lead to less manoeuvrability, but faster flying. Because modellers do not have the luxury of variable pitch, most select a pitch based on how they like to fly, or compromise speed and manoeuvrability with a pitch somewhere in the middle - around 65 - 70% of the prop diameter. A limiting factor which will decrease propeller efficiency is engine horsepower and aircraft drag, meaning that a high pitch propeller cannot make an airplane faster than it is capable of being. Too low of a pitch can result in lower power and thrust.

Thrust: Refers to the force exerted by the rotating propeller in the direction of travel of the airplane. This is the whole purpose of a prop - to convert the power of the engine, which appears as a rotating force, or torque, in a linear force to 'propel' the airplane. Thrust is usually measured in pounds (lbs) or ounces (oz), and it is a function of AIR DENSITY, RPM, DIAMETER, ADVANCE RATIO, and REYNOLDS NUMBER. Figuring thrust is complicated, but what is important to remember is that thrust is different for every shape of propeller and changes with flying conditions.

Power Absorption: Refers to the power output curve of the engine. Power is the product of torque times RPM. As RPM increases, an engine produces less force (or torque) because the air/fuel mixture is not as efficient at higher RPMs. This is why a power curve becomes flat or decreases at higher RPMs, and means that the most efficient propeller is the one that allows the engine to operate at its optimum power band.

An interesting point in understanding power absorption is that propeller power varies by the cube of the RPM. Consequently, twice the RPM requires 8 times the power.

Tip Speed: TIP SPEED is measured in FEET PER SECOND and below is a formula to find this measurement. For model airplane purposes, the best tip speed for efficiency and noise requirements is 600 to 650 feet per second. This is due to compressibility losses, and that subsonic aerofoils do not work well in transonic/sonic speeds with required sound levels. FEET PER SECOND (ft/s) = RPM x diameter in inches x .00426.

For example, to find the tip speed of a 10x6 on a .40 size engine running at 13,500 RPM, the equation would be $13,500 \times 10 \times .00426 = 588.6$ ft/s. To find the correct diameter at 600 ft/s, use this formula: Diameter in inches = $138,000 / \text{RPM}$. Using a .40 engine running at 13,500 RPM, the equation would read: $138,000/13,500 = 10.22$.

Rounding down the correct diameter is 10". For both of these formulas use RPM for the optimum power band of your engine (not top RPM).

Building Signs at Pelco for the Open Day





COMMITTEE REPORT

Club Events

March

- 21st Club Night @ Pelco 7.30pm
- 23rd Working Bee at Airfield from 9am – Clean-up field and driveway
- 24th Combat
- 31st Easter

April

- 4th Committee Meeting
- 7th Open Day
- 14th Glider
- 21st Aerobatic
- 25th ANZAC day – Visit Ohakea museum 10am more details to follow
Flying at field after lunch
- 28th Vintage & Tomboy

May

- 2nd Committee Meeting

Club Subs

Family \$140.00	Junior (under 18) \$40.00	Associate (Flying) \$80.00
Senior \$135.00	Associate \$40.00	

Subs per annum. Now due by end of April. Please pay to Bruce Withell (Treasurer) or any Committee Member soon.

The club needs to pay the Insurance Fees to the [NZMAA](#) prior to July 1st to ensure all Club Members are covered by the MFNZ Public Liability Insurance

CLUB DETAILS

Opinions expressed in this publication are those of each contributor only.
The Editor and Committee reserve all right in respect of submitted material.
Contributors are reminded that the deadline for publication is the 20th of each month.

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