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PRESIDENT'S REPORT

The last two months have not been kind to model flyers - hail, rain, gale force winds and even snow. While these conditions are frustrating to the model flyer, it is good to have a project going on in the model shop. Whether it be a new plane or maintenance, a good modler will make the most of the winter gloom.

The good news for the Club is the purchase of our new mower. Many thanks to those who put money in the "poki machines". Yes, the Gambling Trust has funded our new mower.

Members please look after our strip by putting the fence back up properly around the flying field. Mainly that the wires be on the outside of the standards and that the standards are spaced evenly around the strip.

To those new members who are learning to fly, the Club is well aware of the frustration that the bad weather has on your flying. As the conditions start to improve speak to your Club Trainer or to me and some time outside of Sundays maybe able to be arranged for training.

Remember that the Club auction is in September this year because of the rescheduling of indoor flying. Club night this month is at the Sports Stadium, 28th August at 7.30pm.

Good flying

Peter Vining
President

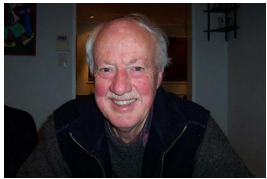
August 2008

Club night 28th, 7:30pm

**This month club there will be a combined
Club night and indoor electric flying at Arena stadium.**

Club night next month will be the annual club auction, so get any surplus gear ready.

A face to the name of your committee, it was decided on due to the number of members



new



Bruce Withell



(trea)

**Fred
Harris (Sec)**

Har-



Peter Vining



(Pres)
Kevin

Burrows (Vice Pres)



Anthony Hall (editor)



Hamish Loveridge (club captain)



- ◆ *Cake Decorations* ◆ *Decorated Cakes*
- ◆ *Fundraising Pies* ◆ *Craft Supplies* ◆ *Bakery & Café*

Robert McNabb

107A Fergusson & MacArthur Street, Feilding
Phone 06-323-6765

The Rosebowl is now able to supply you with all your Aeroner supplies. We can source Futaba, Du-Bro, Sullivan, Great Planes, OS Motors and OS glowplugs, Oracover and more. We also have balsa, paint, static models and more. Please contact Derek at the Rosebowl



Galtech Models

28 ~ 30 Sutton Place, Palmerston North

Phone: (06) 3555 747

Email: rene@galtechmodels.com

For all you're modelling needs!

Fit a plug suitable for the engine.

Use fuel containing a moderate percentage of nitromethane unless essential for contest use. Do not run the engine lean, or leave the plug connected while adjusting the needle valve. What happens if you use the wrong plug? If you have used a plug that is too hot or too cold for your application, this will be revealed in one of two ways. If the plug is too hot, the engine may suffer from detonation, pre-ignition and high running temperatures. Detonation occurs when the fuel mixture explodes quickly rather than burns. You don't want this to happen because it can damage the engine. The telltale signs of detonation are a "miss" in the exhaust tone at high speeds and a pitting of the cylinder head around the glowplug and the top of the piston. Severe detonation can cause the coil element of the glowplug to come loose, and this can severely damage the engine. The primary cause of detonation, however, is excessive compression. Simply using a hot plug will not usually cause detonation; so don't be afraid to experiment. If you're using high-nitro fuel and have increased the compression by reducing head clearance, however, a hotter plug may just push the engine too far and cause damage. At the very least, an excessively hot plug will cause pre-ignition, in which the fuel mixture begins burning well before the piston reaches the top of the cylinder. Using a plug that is too cold will result in a loss of acceleration and top speed and will cause poor engine idle. If the plug is much colder than it should be, you might notice an excessive raw-fuel discharge from the exhaust pipe. Don't confuse this with an excessively rich fuel mixture.

<http://members.lycos.nl/helisonly/GlowplugHowTo.PDF>



Capt Roland and Lew Woods showing us the non-classified part of the UAV project during June club night.

This month's "**Members Shed**" belongs to Kevin Burrows. Kevin has been a member of our club for three years, at which time he was new to our hobby, and has a very productive "Shed". He is currently working on two new models. One of them shown in the picture is a quarter scale Sig kit Clipped Wing Piper Cub that will be powered with a 125 4 stroke Saito motor and is nearing completion .

Also on the current building programme is a 120 size Corsair that will also be powered with a Saito 125 4 stroke .



What is a Glowplug

Every RC model Helicopter engine needs a glowplug for the ignition. Depending on things like the percentage of nitro used in the fuel, the outside temperature and the humidity you might need to select the right glowplug. Without the benefits of electronic ignition, the two-cycle engine in your RC model Helicopter has to rely on the physics of the two-stroke principle. Upon initial start-up, the glowplug needs a little help - in most cases, a glow battery. When the engine is running, the heat generated by the combustion process continues to keep the glowplug lit. What actually happens to the plug during the whole cycle? It actually gets hotter at the instantaneous combustion point, and then cools as the new mixture arrives from the intake. Too cool and the engine misfires or dies. Too hot, and the mixture detonates prior to the complete compression. This is called pre-detonation. Glowplugs are numbered 4, 5, 6, 7 or labelled with names like HOT, MEDIUM or COLD. All glowplugs are not created equal. The housing, wire element, type of plating and hole size determine the relative temperature range of a glowplug.

How does it work

As every manufacturer uses different names or signs for their glowplugs, you cannot say that a no.6 from brand A is the same as no. 6 from brand B. To start the motor we must first heat up the element (the small coil of wire inside the plug) by connecting it to a battery. Most plugs are designed to use 2 volts but some can only handle 1.5 volts. Make sure which one you have! A 2-volt plug will not get hot enough on 1.5 volts for easy starting while a 1.5-volt plug will burn out on 2 volts (the coil melts). Once the motor is running the battery can be disconnected. However, the plug will continue to glow with an orange heat to provide ignition. How does it do this without a battery? The general rules to follow are: The faster you run the engine, the cooler the plug. The higher the Nitro content the cooler the plug. The higher the compression, the cooler the plug. If you use a tuned pipe choose a cooler plug. The Very Hot plugs are for four-strokes. If your 2-stroke engine needs one of these, then it's time for a rebuild.

With model engines, you can alter the ignition timing by changing the heat range of the plug. It's not an exact science, but without changing to spark ignition, it's the best you can do. Essentially, the quality plugs are supplied in the following heat ranges. Very hot, Hot, Medium/Warm, Cold, Very Cold. A warmer plug will advance the ignition; a cooler plug will retard the ignition. If you run an engine with too cold a plug, you'll get less power, an unreliable idle and an engine that's a pig to start. If you run an engine with too hot a plug you may get pre-ignition which can also result in less power, overheating, damage to the plug and in extreme cases damage to the engine. Starting an engine is one of the functions of a glowplug. When a glow igniter is attached to a glowplug, it causes the glowplugs coil to "glow" white-hot. This ignites the air/ fuel mixture in the cylinder when the engine is started. Once the engine is running, the heat generated during compression and combustion keeps the glowplugs element hot enough to continue igniting the fuel mixture on it own without help of an external power source. In the simplest terms possible, that's how a glowplug works.

Nitro percentage

Now that the engine is running decently, what changes to the plugs have to be made if the nitro percentage is increased? To do this you need to understand a little more of the theory behind the process. In glow fuel the catalytic reaction is generated between the methanol and platinum only. Castor oil, synthetic oil, nitro methane etc do not generate a

catalytic reaction with the platinum. Next you need to understand that a certain surface area of platinum is required to generate a sufficient catalytic reaction to keep the internal combustion process going. Also it is necessary to allow extra surface area for the reaction to be great enough when it diminishes with the available methanol dropping as in the case at motor idle. Simply put, cold plugs are manufactured using a thicker wire to give greater surface area to facilitate a greater and thus the required catalytic reaction where less methanol is present in the fuel mixture. So! More nitro means less methanol, which in turn means a greater surface area to platinum will be required to generate a sufficient catalytic reaction. Suddenly it all makes sense! To work out which temperature plug to use, you need to know how much methanol is in your fuel, not how much nitro or oil.

As a rough rule of thumb;

- 80%: methanol or above, use a hot plug.
- 70%-75%: use a medium plug.
- 60%-75%: use a cold plug.
- 65% or less: use a very cold plug.

• Nitro-methane burns hotter than methanol, the other principal ingredient in fuel. Because of the additional heat, which is produced when changing to a higher nitro content fuel, the easiest way for a glowplug to withstand this higher heat is to change to a glowplug that uses a thicker element, in other words, a "colder plug".

- For engines with a nitro percentage below 10% a HOT plug will do OK when the outside temp is 15/ 20 degrees Celsius.
- For engines with a nitro percentage between 10 and 25% a MEDIUM or COLD plug will do OK when the outside temp is 15/ 20 degrees Celsius.
- For engines with a nitro percentage above 25% (for fools only) a COLD plug will do OK when the outside temp is 15/ 20 degrees Celsius. A lot of testing and experience has yielded the following formula that seems to work pretty well. For every 10% increase in nitro over what is normally used, a corresponding change in plugs of one range colder is required. So if the engine is running well with 30% using a 6TF plug, then it will probably make more power at 40% using a 7TF plug, providing that the weather hasn't changed too much, and provided that the head clearance has been adjusted properly.

