ASHFORD RADIO AEROMODELLERS

A.G.M. 28th Nov

November News letter 2007

Welcome:

Hello everybody I hope you have all had a good summer of flying? Winter is now here good and proper.

First I must remind you that the A.G.M. is fixed for the wed 28th November so if you have anything to say or ask then please come along. There will be the usual hot food and some indoor flying, and maybe if Kyle doesn't brake my Zagi on bonfire night, some outdoor night flying. Look forward to seeing you all at sandyacres, Sandyhurst lane, Ashford, Kent. 7.15 7.30 start prompt.

Congratulations to Rod and Sally on the birth of their twins.

I think they should be called "Ebay" and "Pay pal" but he's not so keen on that can't see why!!

The field:

The field as you may or may not have seen has now been ploughed and the sheep have gone Yippee!! I know what your thinking Ploughed? But really its ok, the farmer is sewing winter wheat which won't be any where as bad as the sheep.

I am very pleased with the outcome of the roller earlier in the year, the patch is so much smoother, even when we has over 200 sheep on the field for three weeks. So we will be doing that again at the end of the winter when the weather turns in the spring.

Please be very careful driving over the field, as we are very restricted now its ploughed, if it is at all wet please park by the gate.

E-Mail & Web page:

I hope you all like the web site as it is we are adding stuff every now and then. Again please send me your pics I'll post them on. www.araclub.co.uk don't forget our e-mail address which is mail@araclub.co.uk so you can send any comments or pictures you have to that. Thanks to Darrell for his pic of his Raptor cutting grass.

BBQ's:

The final event of the year was our firework night and night flying evening on 10th November with bbq, the weather was good and the turnout was fantastic, we raised over £130 for the Air ambulance with the raffle. Hope to see you all soon.

Enduro bike dates:

If you would like more information then the web site address is:- www.sellindgemx.co.uk

We MUST NOT fly fixed wing on these dates until at least 4pm.

Sorry. You can however check their web site on the Sat afternoon before and it will tell you if they are running on the Sunday before you make a wasted journey.

The bikes are I am told will no longer be at the field opposite ours, the people running it say they can not get enough support so the sundays will no longer for the foreseeable future be a problem for the fixed wing guys in the afternoon.

A note from our chairman:

Glow fuel formulation

In a rash moment I promised to write a piece for the ARA newsletter. The topic is controversial among flyers, with heli enthusiasts, large engine users, 2 and 4-stroke operators all seeming to have conflicting views. One of the main points of contention is the supposed benefit of fully synthetic oil for lubrication. Some flyers have been talked into a sincere belief that this is good for their engines; though it is probably more true that it is the greater ease of wiping down the aircraft that is the underlying attraction. Anyway, let's just go through the function of the constituents of our fuel:

Methanol

This is the simplest alcohol, made from natural gas (methane) by steam reforming over a nickel catalyst. Burning it produces the heat to expand the air in our cylinders, making the engine turn round. It has quite a low calorific value compared with other liquid fuels; so why do we use it?

It oxidises in air in the presence of a hot platinum catalyst (the glow plug). Other fuels do not do this. The glow plug element is not made of pure platinum, but is alloyed with other metals to improve its mechanical strength. It has to be electrically heated to start the combustion process but, once the engine is running, it stays hot enough to catalyse the methanol oxidation process. Prolonged periods of idling can cause the plug to cool enough to stop combustion. In former times, a small percentage of petrol was added to the fuel to increase temperature, or an idle-bar (shielded) plug was used. Modern engines do not suffer from this so much.

It has a high latent heat of vaporisation, so it helps to cool the engine when running at high power. This is why it is used as fuel in drag racing and some other motor sports. Other properties of methanol are also worth mentioning here

It burns with an almost invisible flame as there are more hydrogen atoms than carbon atoms in a methanol molecule.

It is toxic to humans by vapour inhalation, absorption through the skin and by ingestion. The antidote to methanol poisoning is ethanol, so it is a good idea to have a can of beer on standby!

Methanol is hygroscopic, meaning that it readily absorbs water vapour from the air. Keeping the fuel can closed when not in use will limit the amount of water in your fuel. Small amounts do not affect performance, but old fuel which does not work as well as fresh supplies is probably just wet.

Nitromethane

Nitro liberates oxygen when dissociated by heat. This allows more methanol to burn in a given quantity of air, so we get more power. The more nitro in the mix, the more oxygen-rich is the combustion chamber. Real speed freaks use up to 40%, but 5% is good enough for most purposes. Because less inert, cold nitrogen is sucked through the induction pathways for a given amount of oxygen and methanol, nitro tends to increase operating temperature. This accounts for the improved idle as a side-benefit. Ideally, the compression ratio should be lower with high-nitro fuels. Our engines have a fixed compression ratio. Historically, American engines had low ratios because nitro was cheap in the USA, while European and Japanese engines had higher ratios suited to affordable low-nitro fuels. For international FAI competitions, only straight (no nitro) fuel is allowed.

Oil

Obviously this is for lubrication. Unlike our car engines, the oil does not perform a significant cooling function. Mineral oil and most synthetic oils do not mix with methanol. Castor oil is unique among vegetable oils in having a branched chain fatty acid moity. This allows it to dissolve in methanol. There are 2 groups of synthetic oils, derived from mineral or vegetable sources. The most obvious difference between them is their colour! The oil I use in Aeolus glow fuel is 15% ML70, which makes it purple, and 3% castor to give some protection from hot lean runs. At one time there was a fully synthetic fuel on the market called 'military fuel'. This was red. Using it spoiled at least 2 of my good engines as well as staining a few airframes. Other brands might be red, green, blue or yellow. To justify the high price of some fuels, various secret ingredients are included. Look up 'snake oil'. It has been found that a few drops of polymer car polish will prevent foaming in the tank. To finish, the following short essay is taken from Göran Olsson's control line website:

CASTOR OIL

By Bert Striegler.

Rescued from George M. Aldrich's web site, now closed down, after his passing away.

Some edits and additions by Göran Olsson.

Back in 1983 there was quite a controversy in Radio Control Modeler magazine about the tests that were necessary to measure the "lubricity" of various oils that might be useful in model engines. Castor oil was used as the benchmark, but it was obvious no one knew why this was so. They apparently got a lot of info on various industry tests of lubricants, but these were really designed for other purposes. This was my answer. I will remind you that I was a lubrication engineer and not a chemist, but I drew my chemical info from Bob Durr, the most experienced lubricant scientist in the labs at Conoco. Bob worked with my group on many product development projects and I can tell you that he is one smart hombre! Small changes were made in the text, but surprisingly very little has really changed since this was originally written. Here goes with the answer:

"I thought I would answer your plea for more information on castor oil and its "film strength", which can be a very misleading term. I have never really seen a satisfactory way to measure the film strength of an oil like castor oil. We routinely use tests like the Falex test, the Timken test or the Shell 4-ball test, but these are primarily designed to measure the effect of chemical extreme pressure agents such as are used in gear oils. These "EP" agents have no function in an IC engine, particularly the two-stroke model engine types.

You really have to go back to the basics of lubrication to get a better handle on what happens in a model engine. For any fluid to act as a lubricant, it must first be "polar" enough to wet the moving surfaces. Next, it must have a high resistance to surface boiling and vaporization at the temperatures encountered. Ideally the fluid should have "oiliness", which is difficult to measure but generally requires a rather large molecular structure. Even water can be a good lubricant under the

right conditions.
Castor oil meets these rather simple requirements in an engine, with only one really severe drawback in that it is thermally unstable. This unusual instability is the thing that lets castor oil lubricate at temperatures well beyond those at which most synthetics will work. Castor oil is roughly 87% triglyceride of ricinoleic acid, [$(CH_3(CH_2)_5CH(OH)CH_2CH=CH(CH_2)_7COO)_3(OC)_3H_5$], which is unique because there is a double bond in the 9th position and a hydroxyl in the 11th position. As the temperature goes up, it loses one molecule of water and becomes a "drying" oil. Another look at the molecule. Castor oil has excellent storage stability at room temperatures, but it polymerizes rapidly as the temperature goes up. As it polymerizes, it forms ever-heavier "oils" that are rich in esters. These esters do not even begin to decompose until the temperature hits about 650 degrees F (343 deg C). Castor oil forms huge molecular structures at these elevated temperatures - in other words, as the temperature goes up, the castor oil exposed to these temperatures responds by becoming an even better lubricant!
Unfortunately, the end byproduct of this process is what we refer to as "varnish." So, you can't have everything, but you can come close by running a mixture of castor oil with polyalkylene glycol like Union Carbide's UCON, or their MA 731. This mixture has some synergistic properties, or better properties than either product had alone. As an interesting sidelight, castor oil can be stabilized to a degree by the addition of Vitamin E (Tocopherol) in small quantities, but if you make it too stable it would no longer offer the unusual high temperature protection that it did before.
Castor oil is not normally soluble in ordinary petroleum oils, but if you polymerize it for several hours at 300 degrees F (149 deg C), the polymerized oil becomes soluble. Hydrogenation achieves somewhat the same effect. Castor oil has other unique properties. It is highly polar and has a great affinity for metal surfaces. It has a flash point of only 445 degrees F (229 deg C), but its fire point is about 840 degrees F (449 deg C)! This is very unusual behavior if you consider that polyalkylene glycols flash at about 350-400 degrees F (176-204 deg C)and have a fire point of only about 550 degrees F (288 deg C), or slightly higher. Nearly all of the common synthetics that we use burn in the combustion chamber if you get off too lean. Castor oil does not, because it is busily forming more and more complex polymers as the temperature goes up. Most synthetics boil on the cylinder walls at temperatures slightly above their flash point. The same activity can take place in the wrist pin area, depending on engine design.
Synthetics also have another interesting feature - they would like to return to the materials from which they were made, usually things like ethylene oxide, complex alcohols, or other less suitable lubricants. This happens very rapidly when a critical temperature is reached. We call this phenomena "unzippering" for obvious reasons. So, you have a choice. Run the engine too lean and it gets too hot. The synthetic burns or simply vaporizes, but castor oil decomposes into a soft varnish and a series of ester groups that still have powerful lubricity. Good reason for a mix of the two lubricants!
In spite of all this, the synthetics are still excellent lubricants if you know their limitations and work within those limits. Used properly, engine life will be good with either product. Cooked on a lean run, castor oil will win every time. A mix of the two can give the best of both worlds. Most glo engines can get by with only a little castor oil in the oil mix, but diesels, with their higher cooling loads and heavier wrist pin pressures, thrive on more castor oil in the mix.
Like most things in this old life, lubricants are always a compromise of good and bad properties. We can and do get away with murder in our glo engines because they are "alcohol cooled" to a large degree. Diesels, though, can really stress the synthetics we use today and do better with a generous amount of castor oil in the lubricant mix. Synthetics yield a clean engine, while castor oil yields a dirty engine, but at least now you know why!
Bert Striegler*Bert was the Sr. Research Eng'r. (ret.) at Conoco Oil Co. He's a graduate in aeronautical eng'rg., and a long time modeler. I never understood how he wound up in the oil research business, but I guess it's because he's just very smart ! I deserve no credit, Bert's the brain ! / George M. Aldrich*

New Stuff:

Ideal for indoor flying at Ashford market now the dark evening are here. This model is made from depron so it's a very quick build which will give you hours of fun. From beginner to full 3D.

All this, Model motor and gearbox £9.99 just add radio & lipo.

The factory applied colour scheme and interlocking parts mean it's fast and easy to build.

When you're at the field, get ready to hang on! Even with the stock geared 370 motor supplied you'll get a great performance.

But drop in a brushless and you'll see an INCREDIBLE hovering performance.

- Factory cut & printed foam parts
- Simple interlocking assembly
- 3 Dimensional fuselage for stiffness and no tail flex
- Outstanding performance
- Accepts a wide range of power systems

Futaba 2.4GHZ Module now available to convert your FF9 to 2.4ghz

At last the FF9 2.4ghz module is here and boy its good I have been using this for some weeks now and so far I've had no problems at all. This set comes with the module and receiver and is now selling for £149.99 at Elite models normal price £169.99 at the moment there is only the six and seven channel available at the moment, but the 8 and 9 channel will be available soon. The 7 channel module is available on its own for £99 and the receiver £69.99

MINI REVIEW OF BLACK HORSE 60 SIZE THUNDERBOLT
BY EDDIE FRUDENBERG

Spec 64 inch span for .60 2 Stroke or .90 FS. auw dry 7.7 lbs. retracts inc in kit.
Made in Vietnam. Cost £115.00 8 standard servos. 1 retract servo.

This is a model of the famous P47. Unusually not the razorback version usually seen. First thing you notice is how the picture on the box does not do the plane justice. However once you look at the contents you see you get a lot of plane for your money. All control surfaces are pre-fitted and pinned. Canopy pilot and basic colour scheme is also already in place. Wings and tail have to be glued, I used pva. Once you have the wings joined and tail stuck on its the usual ARTF assembly job. No problems were encountered and all the component went together very accurately. Assembly and adjustment of the wheels and retracts took some time, due to the need to get a bind free operation with the retract mechanism and servo. This system works very nice if you take the time to get it right. I fitted a cover over the retract servo to stop it chewing on the other leads in the fuz. All the supplied hardware was good and no additional hardware was needed. There are two servos on the elevators to take the loads. There are servos for each flap and aileron, with a servo on the rudder/tail wheel. The engine installation was easy and I was very pleased to be able to fit an entire ASP 61 with standard muffler, completely within the cowl. Tank and battery went in fine with no fixing problems and once the plane was fully assembled. There was no need to add any lead to achieve the stated c of g position.

I have flown it a lot through late summer. It must have clocked up 20 flights. From this I can say the take of and taxiing is not a problem with no great tendency to nose over. I take off on 15 deg flaps and land on about 30 deg flaps. I would not like to land it without using the flaps as it would probably need to come in a bit quick to avoid the risk of a stall. However you have slow down a lot to induce a tip stall, most experienced flyers would be aware of war birds and there tippy habits at lower speeds. I originally set the flaps too fierce at 45 deg. I needed a fair bit of throttle on to create a very, very steep decent, which looked great but flaring at the right point was very difficult. Starting the ASP is easy and the engine being almost inverted did not affect the running. Take off is scale like with good climb out. Gear up causes no real trim change but an increase in speed. Flying is very nice with the throws as per the instructions. I put some neg expo in to calm the controls around the middle, I also mixed some down (about two clicks) into the elevators when flaps were fully down and as a result no trim change was experienced on approach. As for flying all the usual scale manoeuvres can be done, big loops rolls etc and most of the non scale stuff to knife edge, four point rolls snap rolls but it don't look right. Landing is strait forward enough with a tendency to try and minimise any shock loads to the retracts. I bring it in fast on its tip toes and use all the patch I want. The tail keeps flying long after the wheels touch down. Its worth having some grips to hand for minor u/cart adjustment now and then. I have since rubbed the whole thing down with 1200 wet or dry. To give it a very convincing weathered aluminium look and also made some guns, for on the wings. So to conclude it's a good larger size plane kit. Which is easy to build and good to fly. They also do a mustang in the same size, looks interesting, though I am sure you would not be able to hide the engine so well. Come on Black horse lets see a 60 size war bird from the other side. So I can buy that as well.

Inter club:

If anyone has any ideas about anything happening let me know by e-mail to mail@araclub.co.uk or by Telephone 07956501510 I'll either post them on our web site or pop in the next news letter.

Finally:

I think this year has been a very good one for the A.R.A. the patch is looking great, the sheep have gone and now the bikes have gone. Look out 2008 to see what's next. We will defiantly be rolling the patch again in the spring. Thanks for reading this hope it was useful. Iain Stingemore, Rod Shoveller.