



## Airfield Improvement News

I just wanted to say THANK YOU to the below listed people for building an outstanding helicopter pad for the Rogue Eagles R/C Club. This is one very nice helipad and I can assure you that it's an excellent addition to our airfield.

Thanks to: Doug McKee, Reggie Ayres, Paul Worth, Robert Wolcott, Joe DeAscentis, Bill Olson, Bill Inman, Mike Reed, Clark Wolf, Tim and Brad Bedingfield, Ray Wasson Sr.

I hope to have pictures to post (on our web page) soon.

*Danny Watson*

THANKS also to Joe DeAscentis, Reggie Ayres, Danny Watson, Bill Inman, Bill Olson, and Werner Bruckner who all helped with the July 27 concrete pour of the triangular piece connecting the big-bird taxi way and the pit area. Tim Burnett, Larry Myers and Bud Shirley also helped with this project. Several of these members, including Clark Wolf, also helped to frame and "rebar" the area for this concrete pour and the August 3<sup>rd</sup> pour.

ALSO, thanks to the following members who helped to complete the concrete connection between the pit area and taxi way on August 3<sup>rd</sup>: Reggie Ayres, Joe DeAscentis, Dann Johnson, Larry Masten, Werner Bruckner, Bill Inman, Larry Myers, Danny Watson, and Clark Wolf. Many of these folks also helped to extend the floor pad of the engine break-in area on the same day. The excavation (all done by pick and shovel) and framing of the extension were done by Danny Stanton (he's got blisters to show for this effort), Jim Conrad, and Joe DeAscentis.

Finally, Danny Stanton says the Kid's Day at Medford's Hawthorne Park was a huge success. Hundreds of flyers announcing the Rogue Eagles Airshow on September 7<sup>th</sup> & 8<sup>th</sup> were handed out and a lot of interest was shown for our hobby and the airshow. Danny Stanton, Bill Inman, Ed Martin, Sam Arrigo, Joe DeAscentis, Clark Wolf and several others helped and displayed their aircraft for the public's benefit and to promote the airshow.

*Editor*

## 2002 Rogue Eagles Airshow

The Rogue Eagles annual airshow is fast approaching. It will be September 7<sup>th</sup> and 8<sup>th</sup>. If you would like to show off your flying skills at the airshow, please contact Bill Inman, the contest director, by phone (779-2983) or at the next meeting (Aug 13<sup>th</sup>).

**Y'all come to the Aug 13<sup>th</sup> meeting.** Items concerning each of you will be discussed and voted on at that meeting (see page 4 announcing the meeting). DON'T MISS IT!

# Beginning Model Engine Operations

*by John Hunton*

We are in the age of the ARF. These Almost Ready to Fly models are attractive and seem to promise a lot. They bring a new generation of modelers to the flying field who may not be experienced in model airplane engine operation. ARFs will not begin to deliver on their promises if the engine will not start. It is hoped that these notes will assist the beginner to get going successfully and enjoy model aviation to its fullest.

Most trainer type ARFs are powered by model engines of the two-stroke cycle type. Two-stroke cycle basically means that the engine fires every time the piston goes up and compresses the air/fuel mixture (four-stroke cycle engines fire every other time). The big difference in the two types of engine is in how the fuel/air mixture is transferred to the cylinder. While the four-stroke engine uses the upper part of the piston to pump fuel/air in and exhaust out, the two-stroke uses the bottom of the piston as the induction pump.

When the two-stroke piston goes up it creates a vacuum in the lower part of the engine (crankcase), a port opens and fuel/air is inducted through the carburetor. After the piston reaches the top of its stroke the intake opening is closed. As the piston moves downward from the force of combustion it moves past an exhaust port which lets most of the products of combustion escape. The piston moves further downward and opens intake ports, which allow the compressed air/fuel mixture in the crankcase to transfer into the upper cylinder.

The amount of power generated by the typical combustion action is controlled by the throttle (amount of air/fuel mixture) and the needle valve (ratio of air to fuel). For any given throttle setting there is an ideal air/fuel mixture, which modern carburetors are capable of providing over a wide range of throttle settings.

While it would seem prudent to set the needle valve to the maximum rpm for every throttle setting, it is important to realize that lubrication for all moving engine parts is mixed with the fuel.

Therefore as the mixture is changed from rich (needle more open) to lean (needle more closed) there is less lubrication available for the engine. With a lean needle setting and less lubrication the engine will run hotter. With a rich setting the engine will run cooler. As we will see, neither rich nor lean is ideal: too lean leading to short engine life and seizing up at full power and too cool leading to unreliable idle.

Modern engines are generally not run-in at the factory. Parts are not seated yet and fits are tight. A new engine is not reliable at all, so it is prudent to run at least one tank of fuel through it before trying to fly. The way an engine is broken-in determines to a large part how long it will last. Make the first run on a new engine on the rich side to provide good lubrication and to keep the engine relatively cool.

If you are trying to start a new engine this is what will usually happen. The cylinder is cold, therefore the engine needs a richer mixture to begin the combustion process and start to heat up. You can choke the engine to provide that fuel rich mixture by placing your finger over the intake and turning the propeller (this gets fuel up in the fuel line ready to begin feeding) or you can prime it with raw fuel. In either case when you try to start the engine this super-rich mixture will usually cool the glow plug when it is transferred into the upper cylinder. This is why you cannot expect the engine to start if you are flipping or applying the starter continuously. It is best to choke or prime with sufficient fuel to start combustion, then wait a while for the glow plug to heat up again before flipping. Use the starter in short bursts, leaving a little time between bursts.

Modern engines use muffler pressure to the fuel tank. While there was much resistance in the modeling community to using mufflers when they were introduced many years ago, the use of muffler pressure has greatly improved engine operation reliability. But if you have started your engine and it quits for some reason, residual muffler pressure will continue to cause fuel to flow into your engine, perhaps even enough to cause hydraulic lock, which can severely damage your engine.

If you get to a hydraulic lock condition and you try to flip the engine, the propeller will stop dead as the piston moves upward (air is compressible, liquids are not). If you are flipping, and you experience hydraulic lock, your finger will move up the back edge of the propeller blade and it may be cut severely. It is a good idea to wear a glove while flipping an engine. With hydraulic lock it is best to remove the glow plug and flip over the engine by hand or starter to clear the raw fuel.

While you have the glow plug out, attach it to your glow driver to observe the color of the element. A bright orange color is normal.

# Engine Operation

A dull red color indicates that the driver may need charging or the plug needs replacing.

Notice where the fuel level in your tank is in relation to the middle of the carburetor. If the fuel level is above the carburetor this may cause siphoning into the engine. If it is below the carburetor, it may be difficult for the carburetor to draw it up in time to sustain running. Check this fuel level for first engine operations and add or remove fuel or tilt the model as required for the proper fuel level condition.

During break-in you will probably be adjusting the needle valve more than any other time. Please use a wooden propeller to save your fingers. Factory needle settings are usually very close to optimum so open the needle a few clicks to provide a good rich mixture.

You have started the engine and have run a tank through it. It is now time to prepare your engine for flight. At full throttle set the needle to optimum, which for now is just the rich side of maximum rpm. If your new engine will hold this setting without seizing it is ready to fly (if not run another tank through it). There are two conditions that will make this mixture setting invalid. One is that as fuel burns off the level in the tank gets lower and this causes the mixture to go leaner.

## 2002 Club Officers And Coordinators

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### Video Librarian:

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### Air Show CD:

Bill Inman 779-2983

The other condition is acceleration. With fuel tank behind the engine the force of acceleration during takeoff will tend to make the engine go lean. The usual result of this leaning tendency is engine failure at the worst possible time. Most modelers simulate the takeoff acceleration scenario by tilting the model to the vertical and setting the needle on the rich side of optimum at maximum rpm in that orientation.

A word about the other end, reliable idle. When an engine is idling and the model is coming down, massive amounts of cooling air flow over the engine with little heat being generated. A too rich idle adjustment will cause the engine to run even cooler and it will usually quit. Keep the idle setting fairly lean. Adjust the throttle linkage so full off trim will stop the engine and full on trim will cause a high enough idle setting to be completely reliable and you can adjust trim in the air to a low but reliable position.

It is hoped that these procedures can help you learn successfully in a day what it has taken many of us so many years to develop.

from *LadyHawks Aerie*

LadyHawks LLC

Ann Wilson, editor

## 2002 Events Schedule

Puyallup Trade Show  
February 2nd & 3rd

Wet and Windy Fly-Fun  
March 24th

Grants Pass Swap Meet  
April 20th

Spring Fun-Fly Contest  
April 27th

Float Fly at Lake Selmac  
May 4th and 5th

OMPRA Spring Pylon Race  
May 11th

Builders Contest  
May 18th CANCELLED

Ashland EAA Demonstration  
May 19th

Lee Renaud Memorial Contest,  
June 1st

Plat-I Float Fly  
June 15th and 16th

Military Fly-In Contest  
June 22nd

Bid Bird Fly-In  
July 6th and 7th

Selmac Float Fly  
July 20th and 21st

Kids Day at Hawthorne Park  
August 3rd

Airshow Interest Day at  
Wal-Mart, Medford  
August 31st

Airshow Media Day  
September 5th

Rogue-Eagles 2002 Airshow  
September 7th and 8th

OMPRA North-South Shootout  
Pylon Race  
August 24th and 25th

Fall Fun-Fly  
October 12th

OMPRA Championship Pylon  
Race  
September 21st

Rogue Eagles R/C Club,  
P.O. Box 8332  
Medford, OR 97504

Stamp

To:

**NEXT MEETING is Tuesday August 13th at the Lions Sight and Hearing Center, 228 N Holly, Medford, OR. It's important that you attend this meeting as the dues structure for upcoming years will be discussed and voted on. Also, Bring your show and tell projects.**

### **For Sale by Don Draskovich.**

Central machine Precision 7" X 10" Mini Lathe. Comes with gear sets for 18 different threads. Near new. Paid \$400, will take \$300.

Tradesmen 16" scroll saw. Like new with extra blades. \$40. Call Don at 541-882-6733. The above items are in Klamath Falls but can be delivered to the Medford area.

