

# DCRC

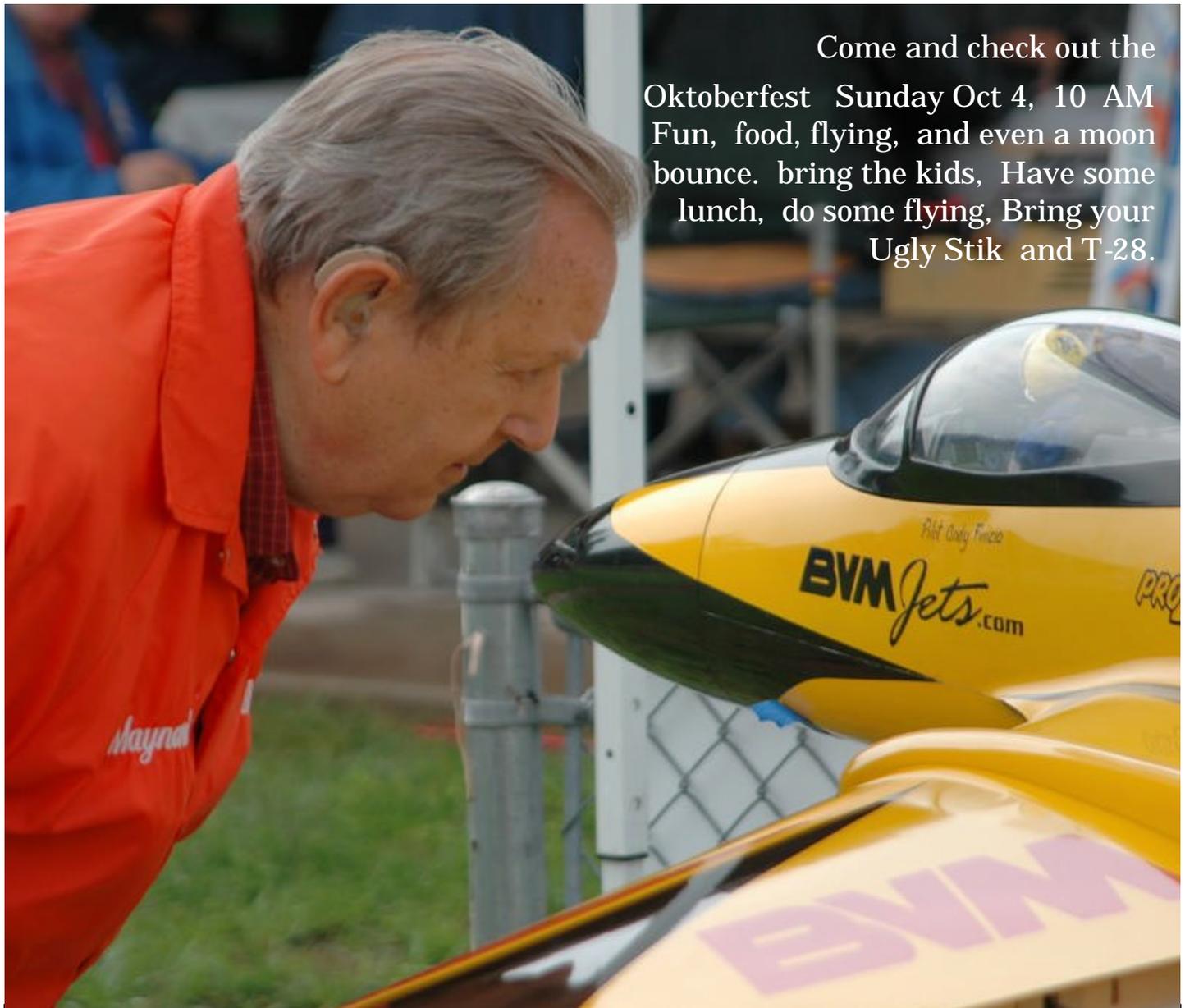


## September 2009

**DCRC Club Meeting**  
**Friday 9/18/09 7:30 PM**  
**Montgomery County**  
**Council building**  
**100 Maryland Ave**  
**Rockville, MD**  
**Meeting program:**  
**Nominations for club**  
**officers**  
**Meeting Raffle:**  
**Nir Schweizer**

### NEWSLETTER

Volume 55, Issue 9



Come and check out the  
Oktoberfest Sunday Oct 4, 10 AM  
Fun, food, flying, and even a moon  
bounce. bring the kids, Have some  
lunch, do some flying, Bring your  
Ugly Stik and T-28.

**PRESIDENT: Andy Kane**

V.P. Dave McQueeney  
 County Liaison: Jim McDaniel

**BOARD OF DIRECTORS**

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Thomas Pfarr

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**www.dc-rc.org**

*Did you know that any airplane brought in to the model shop will receive 3 free raffle tickets. Bring in your models each month for your free tickets, and to share ideas.*

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**Cover:**

**WINGS OVER PIPER**

By Doug Harper



A group of DCRCers made the pilgrimage to Lock Haven, PA, again this year to attend what has become one of the best fly-ins we go to – Wings Over Piper. What makes this event special is the location, the warm hospitality of the sponsoring club, and the relaxed atmosphere. Also, the drive up there follows the Susquehanna river which is just beautiful.

Attending this year were Terry Lamb, David Fepelstein, Fred Nielsen, Walt Gallagher, Joseph and Jim McDaniel, Andrea and Alan Hoffman as well as Rod Jagger, our friend from southern Virginia, and myself. There were many Cubs in attendance – I think we had 6 or 7 just in our group - as well as other giant scale aircraft. Terry had his large Waco, which flies beautifully, and Rod flew his B-25 and Corsair. You can see from the pictures the variety of aircraft. There were 62 registered pilots.

Wings Over Piper is held on the Piper Airport which is adjacent to the old Piper aircraft manufacturing plant in

Lock Haven. While the plant has been closed for over 20 years, it is still considered the home of Piper, especially the beloved J-3. The event is situated directly across from an active runway and many hangars and just down the road from the Piper Museum. We stopped frequently during the day to allow full-scale aircraft to either take off or land. This just adds to the fun.

The atmosphere of this meet is just very friendly. There is plenty of time to fly and getting the pin was never a problem. Balsa USA was a sponsor and they had a nice display of their products set up. There was plenty of good food provided by the local Lions Club.

DCRC was well represented at this meet. We not only flew more than anyone, Terry was awarded the “Best in Show” award. Rod received the “Best Flight” award as well.

We all agree that this is a great meet and we plan to attend again next year. After it’s all said and done, the fun of this hobby is attending events like this. If you like Cubs, try to make Wings Over Piper.

Reprint from 2005



## August Club Meeting Minutes

BY DOUG HARPER



The meeting was called to order at 7:30PM by President Andy Kane. Andy asked for introduction of guests or new members. Paul Gunther, a new member, was introduced. Paul flew today and unfortunately crashed. In spite of that, he plans to keep going since he has other planes ready to go.

### Committee Reports:

Flight Training: Training is scheduled for tomorrow. Instructors are needed.

County Liaison: Jim asked if anyone noticed the new paved road into the field. Jim said the county still plans to rebuild the bridge on White Ground Road sometime this fall. He will try to give as much notice as possible once he knows the date.

Events: Bealeton is scheduled for Sept 11 thru 13. Sept 26 is the date of the heli meet at our field. Oct 4 is Octoberfest.

Treasurer's Report: Scott reported that he wrote two checks over \$100. He has a copy of the financial report for anyone who would like to see it.

Webmaster: Tom Pfarr has updated the web with new pictures of the Rudder Only Flyin and Heli Meet.

Sound & Safety: Nir Schweizer had no report.

Field Maintenance: Allan Hoffman had no report.

Old Business: None

New Business: Next month is nominations for three new board members to replace Andy Kane, Jim McDaniel and Allan Hoffman. Elections will be in October.

Raffle: The raffle prize, a Sukhoi PNP, was presented by Nir. The ticket was drawn and the prize was won by new member Paul Gunther.

Model Shop: Bill Garner was looking for an unusual model to build. This past winter he bought a new book

about model design that contained an article about a new wing design. It looks like a large D and produces a very unusual model. Bill showed the finished model which was built using fairly conventional techniques, balsa and monokote. He flies it on a .40. It flies stably but it has a definite pitch tendency. Bill concluded it has a lot of drag and the lift is marginal. Thus, it has to be flown fast to keep it in the air. He already has a list of changes he would make if he ever builds another.

Don Gray presented a simple control line timer. He uses it to control the amount of time his electric model runs when using an old radio with no speed control. Don installed it in a small electric model he brought with him and gave a live demonstration of this device in action.

Program: Tonight's program was on the recent Warbirds Over Delaware in July. A DVD was shown of this event. Andy donated the DVD to the DCRC library.

The meeting was adjourned at 9:00PM.

## TUNING GLOW ENGINES

(Just a pinch will do it)

**Bob Yount**

After almost two decades of helping with the DCRC flight Training Program I have concluded that some of our newer members might benefit from a better understanding of glow engines operation and tuning. So here is what I hope will help on the subject of two stroke engines.

At the simplest level an engine needs fuel and air in an appropriate mix, compression and an ignition source to run. Let's assume you have compression and good ignition and go from there. We'll also assume the engine is mounted in a plane with fuel tank with no leaks in the tank or fuel lines etc. If you question the fuel line connections, disconnect both lines from the engine and blow in the muffler line. Fuel should come out of the line to the needle valve.

These engines come in both ringed (having a piston ring) and ABC (non-ringed) versions. Which one you have will make a slight difference in breaking in and adjustment. You should know which one you have and also read and understand the manufacturer's instructions.

To facilitate tuning it is nice to be able to get your fingers around the fuel line to the needle valve and in this article we will assume that is the case.

Most manufacturers want their engines to be broken in, which usually means running alternately rich and lean. Since the lubricant is in the fuel, a rich setting assures sufficient lubricant as well as some extra cooling. One technique is to set the needle valve very rich and during the break in run, pinch the fuel feed line once in a while to lean out and speed up the engine. I find this easier than turning the needle valve in and out. As a rule ringed engines require more break in running than ABC engines, but adhere to the mfg.'s instructions.

(Continued on page 7)



## Model Propellers Part 5, Static Thrust

Bill Gardner

Static thrust is the thrust generated when the forward wind velocity,  $V$ , is zero. The equations and coefficient graphs given in Part 3 of this document are generally not reliable under static conditions. Donald W. Brooks has published a document (ref 4) that describes extensive experiments and measurements he made on about 200 different model propellers under static conditions. His results are applicable to many static conditions. Among his findings are the following items.

For a given propeller the thrust changes as the square of the rpm.

$$T_2 = T_1 \left( \frac{N_2}{N_1} \right)^2$$

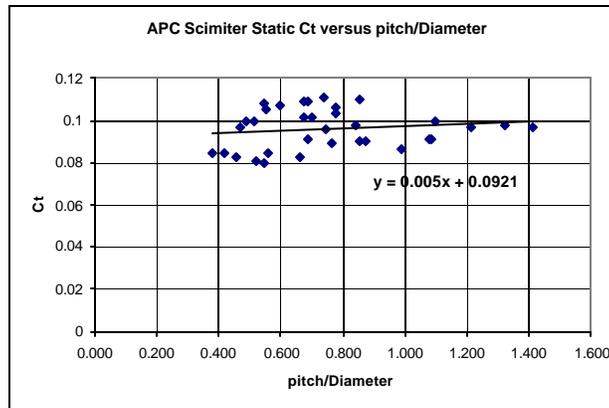
For constant rpm and a given propeller series (same manufacturer, same design) in which the pitch remains constant the thrust changes as the fourth power of the diameters.

$$T_2 = T_1 \left( \frac{D_2}{D_1} \right)^4$$

These two findings mean that if the thrust of a particular propeller operating at a specific rpm is known (by measurement), then the thrust can be

estimated when rpm is changed or diameter is changed. The conclusions on pitch changes are not as clear. **Figure 5-1** is a scatter diagram of the measured thrust coefficient,  $C_t$ , as a function of pitch/diameter ratio for Zinger wooden props.

The thrust coefficient increases more or less linearly for  $p/D$  ratios less than about 0.6. For greater ratios the values are more scattered and show a generally flat trend as the  $p/D$  ratio increases. The lower ratio propellers are operating with relatively little stalling while the higher ratios are



show major stall characteristics. **Figure 5-2** is a similar plot for APC Scimitar molded propellers.

### Figure 5-2 APC Scimitar Static Thrust Coefficients

These propellers have a different characteristic with the static thrust coefficient showing a fairly flat trend with  $p/D$  but with considerable scatter. The data seems to indicate that these props were designed to have this characteristic.

The conclusion is that there is no satisfactory way to predict the effects of pitch on thrust without making

measurements. Brooks describes how to make these measurements. Meas-

uring thrust is easy. Attach a scale to the tail of the airplane and anchor the scale to something solid. Fire up the engine and make the measurement. Measure the rpm at the same time and compute the  $C_t$  from the formula in Part 3 of this document.

### Propeller Unloading

A well-known phenomenon is that of propeller unloading in which the rpm increases in flight compared to that achieved under static conditions. The reason is that under static conditions the load may be greater than the engine can support so it slows down to reduce the load until equilibrium is attained. As the forward wind velocity increases the load decreases as the thrust decreases and the overall efficiency increases. The engine then can speed up until it reaches equilibrium again. If the load is too small the engine can over-rev, potentially resulting in damage or early wear out. **Figure 5-3** shows what happens if the propeller is either too large or too small for the engine. If the propeller is too small (12 x 6) the engine over revs. If the propeller is too big (15 x 8) the engine slows down or "lugs". The 13 x 7 propeller is well matched as it uses the maximum available power of the engine.

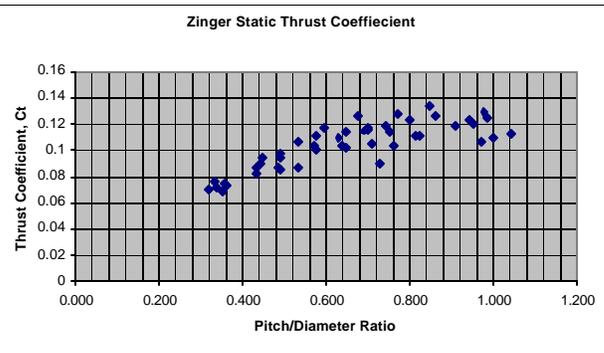
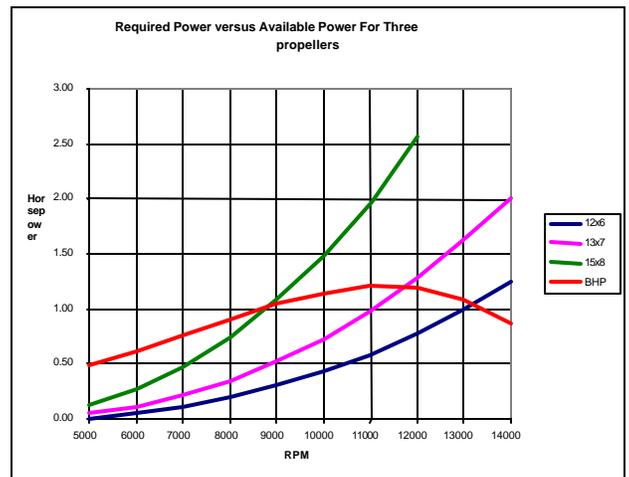


Figure 5-1 Zinger Static Thrust Coefficient vs  $p/D$  Ratio



$V = 40$  mph

Figure 5-3 An Illustration of Using a Too large or Too Small a Propeller on Engine Performance

## THINGS ELECTRIC

By Roy Day



### RECOVERING CRASHES IN THE TREES

Yes, it happens to nearly everyone sometime and it happened to me a couple weeks ago. A crash into one of the trees on the field side of the creek is bad enough, but my plane went some distance beyond that. Immediately after the crash, four of us pressed into the woods hoping for a glimpse of my electric powered LT-25. I went about 75 yards beyond the creek but sighted nothing. The overhead canopy is very dense.

A few days later, Gus Crosetto and I prepared for another foray. This time we were prepared with long sleeve shirt, long pants, old shoes for wading, and my "plane recovery kit." More about that later. Gus even brought a compass and a hatchet in case the plane was in a small tree.

Gus has built and been flying an improved version of my Stinson L-5 equipped with a digital camera. He surveyed the suspected crash area and took many pictures. However, none of the pictures revealed the crash. Unless the plane remains on top of the tree canopy, unlikely, it is nearly impossible to see from the air.

### GUS CROSETTO'S CAMERA EQUIPPED STINSON L-5

Before going into the woods, we agreed on a slightly different bearing than had been searched before. We went about the same distance beyond the creek as I had done before but more to the north. Bingo! I sighted something red hanging about 30 feet up in a large poplar tree. It was the fuselage of the LT-25 with the front end smashed. On the ground we found the wing, electric motor, and the 4 cell A123 battery (unharmed). We needed to get the fuselage down hoping it contained my 2.4ghz receiver and the ESC (which it did).

Now here is where we used my "recovery kit." See photo.

### TOOLS OF THE TRADE

#### Plane Recovery Kit

From left to right the articles are: 200 ft of 1/8 in nylon cord, good sport slingshot, 30# fishing line and a lead fishing weight. The piece of dowel is used with the roll of fishing line so it plays out like a fishing reel. The technique is not original but may be new to some new flyers. First, you fire the fishing weight with the fishing line at the plane or over the limb. Then attach the nylon cord to the fishing line and pull it up over the plane or the limb. Now you have something strong enough to break the plane/limb down. Gus shot the weight right through the rudder the first time and in less than a minute the plane was on the ground.



Photo by Gus Crosetto

Incidentally, when I got the equipment home the important parts (motor, speed control, battery and receiver) --- all checked out ok.

This is by far the easiest way to get a plane down from a tree.

### BALANCING A123 CELLS

As I mentioned in my last article, the general consensus seems to be that the A123 cells don't get out of balance

as bad as LiPos. I wondered how much the cell voltages would vary if there was NO balancing. So I made up a pack of 4 A123 1100 mAh cells WITHOUT a balancing connector. Wiring up a pack without a balancing connector is a lot easier.

Prior to making the cells into a pack, all cells read 3.38 volts. I charged the pack at a low rate (0.5amp) the first time on my modified Astro Lithium charger. I checked the individual cell voltage by piercing the shrink wrap with the probes on my digital multimeter as shown in the photo.



Cell #	Chg. #2	Chg. #4	Chg. #9	Chg. #20	Chg. #21
1	3.42 V	3.6 V	3.40 V	3.43 V	3.42 V
2	3.42 V	3.6 V	3.41 V	3.42 V	3.43 V
3	3.42 V	3.4 v	3.40 V	3.56 V	3.56 V
4	3.44 V	3.4 V	3.41 V	3.63 V	3.61 V

vent a charge from getting the absolute maximum charge in the pack, the difference is small. I can usually get a charge of 900+ mAh in the 1100 mAh pack without a balancer. Remember, the packs can be charged in 15 to 20 minutes, so you can do all the flying you want.

However, if you do use a balancer occasionally, such as the Astro Flight "Blinky," my experience is that the difference between the

cells will be no more than about 0.03 volts.

**MEASURING EACH CELL VOLTAGE**

The following table shows the cell voltages after successive charges. This data was obtained after the normal charges following flights. In most cases, the pack had been depleted 60 % to 80% for each flight.

**INDIVIDUAL CELL VOLTAGES AFTER SUCCESSIVE CHARGES**

(Without a balancer)

**CONCLUSION**

The largest differences between the highest and lowest cells is about 0.20 volts. While this difference will pre-

**SOURCE FOR A123 PACKS**

Radical RC will make packs of both sizes of A123 cells in whatever configuration you desire. They also sell individual cells.

www.davthacker@aol.com or 937 256 7727.

**HELP IN WIRING UP YOUR OWN PACKS**

The following website has an excellent illustrated tutorial on wiring your own packs, including the hook-up for a balancer.

www.aircraft-world.com



On August 15, 2009 "Red" from Reds Hobby Shop in Wheaton, MD has passed away.

He was 86 years old and is survived by his sons Allen and Barry and Daughters Karen and Nancy and 8 grand children.

This photo was taken last year at the Montgomery County Fair in Gaithersburg, MD

Submitted by

JANET DULANEY-SAUNDERS (NANCY'S MOM)

301-442-5273

CHANTILLY, VA

**October Club meeting program**

How I built a full scale airplane in my garage.

By Henry Bergen

Henry Bergen, a full scale pilot and model builder will make a presentation on the homebuilt that he built and flew. The plane was a Monnet "Moni". It is a single seater with a 30 hp engine which has a cruising speed of 110 mph and a cruising range of 320 miles. The plane was designed to be transported by trailer which will also be discussed in his program.

Presented by Ron Bozzonetti

## How big is your spinner

BY DAVID LITTLETON

Spinners look good and they reduce airplane drag when moving thru the air, but did you know they can make your propeller more effective?

The slow moving central 25% of your propeller provides less than 3% of thrust. Therefore a spinner that covers the inside 25% of your propeller pushes air out to the part of the prop with a higher rotational velocity and makes the prop more effective.

However, 25% of a 12 inch prop would be 3 inches wide or 5 inches wide for a 20 inch prop. A spinner this wide would look out of proportion to most flyers. But now you know, bigger is better when choosing a spinner.

After the engine has been broken in, start by setting the high-speed needle valve with the throttle wide open. Unless you are going to race the airplane, you don't need the last half-ounce of thrust from the engine. A few less rpm and a little extra lubricant will do great things for the life of the engine. An easy way to achieve the right setting is to have the rpm pick up slightly with a quick pinch of the fuel line. If a really quick pinch kills the engine, it is too lean; Start over. It may take a little practice, but you will soon find it easy to tune the top end with this approach. Ringed engines usually need to be a bit richer than would an ABC.

Setting the idle mixture is usually more complicated than setting the high speed. One problem is that many engines leave the mfg's. plant with the low speed adjustment set for 20% nitro fuel when most of us are using 10%. Why, because 20% enables a claim of higher performance. This matters because the higher the nitro content, the richer the mixture setting needs to be. In almost every case it is necessary to lean out the low speed mixture. There are two types of low speed adjustments. One is what is called and air bleed carburetor which can be identi-

fied by a small hole in the front of the carb and a spring locked adjusting screw on the right side. The other has a needle adjustment screw on the right, usually on the center line of the throttle body.. You have to know which one you have to adjust them.

The goal of low speed mixture adjustment is to be able after a fairly long idle, like flying an approach for example, too instantly go to full throttle and have the engine respond smoothly.

Remember the high-speed adjustment must be done first. After a bit of idling increase the throttle rapidly, but not instantly. If the engine quits, the mixture is incorrect.

Restart and after idling, pinch the fuel line, you may have to hold it a long time because of the amount of fuel in the line. If the engine rpm picks up smoothly, the mixture is too rich. On the other hand if the engine quits abruptly, with out speeding up, the mixture is too lean.

Assuming the engine is too rich; lean out an air bleed carb by letting more air through that little hole. To do that, turn the adjusting screw counterclockwise. I suggest a half turn at a time and maybe a quarter, even and eighth turn, when really fine-tuning. Other carbs with low speed needle valves will need to be turned clockwise to lean out the mixture. Again small increments, because it is easy to overshoot in either direction.

When the idle setting is correct there should be no problem in instantly going from idle to full speed.

One manufacture, in a misguided attempt to help the novice, put limit stops on the adjustments. In many cases it has been necessary to move the low-end limit which can be accomplished with a small Allen wrench,

Remembering that air/fuel mixture is what matters, it will be impossible to tune an engine if there are and leaks in fuel lines or contaminants in the fuel.

These procedures have worked well for me. I hope they work for you.

Reprint from 2005

## Calendar of Events 2009

### September 2009

- 10-13 Route 66 Jets Springfield IL
- 11-13 Rhinebeck Jamboree, NY
- 11-13 Bealeton IMAA VA
- 17-20 The Neat Fair, Downsview NY
- 18 DCRC Club Meeting Rockville, Nominations for Club officers
- 19 Black Dirt IMAC Challenge Goshen, NY
- 19-20 RDRC Fly for Tots, Raleigh, NC
- 19-20 Northern Virginia Pattern Championships, Warrenton, VA
- 19-20 Warbirds Over the Beach Virginia Beach, VA
- 19 DCRC Training Session
- 23 DCRC Board Meeting/Jim McDaniel
- 24-27 Super Jets South, Marietta GA
- 24-26 Spiderman Jets Winamac IN
- 26 DCRC Helicopter fun fly, Germantown, MD Mike Young
- 26 Piedmont Aeromodelers 24th Annual IMAA Fun Fly Fayetteville NC

### October

- 2-3 Warbirds Over VA Gretna, VA (C) Rod Jaeger CD
- 2-4 2009 Heli-Invasion Fun Fly Thornburg, VA Joe Coppola CD,
- 3 NMPRA District 6 Q500 Championship Upper Marlboro, MD Stephen Baker CD PGRC
- 3 DCRC Training Session, Walt Good RC Field, Germantown, MD
- 3 FARM October Skies Splash Down Bealeton, VA Douglas Cash CD
- 4 DCRC Oktoberfest Walt Good field
- 9-11 Hamburg Jet Jamboree Hamburg, PA Rick Boyer CD
- 15-17 Monster Planes USA Lake Wales, FL Frank Tiano CD,
- 16 DCRC Club Meeting Rockville, MD/ Program Henry Bergen Building a full scale plane in your garage
- 17 DCRC Training Session, Walt Good RC Field, Germantown, MD
- 21 DCRC Board Meeting/Andy Kane
- 23-25 Ocala Scale Aerobatics Ocala, FL Fred Johnson Jr CD,

**District of Columbia  
Radio Control Club**

First Class Mail

Andy Kane/Newsletter Editor  
305 Natick Court  
Silver Spring, MD 20905  
E-mail: dcrceeditor@aol.com

One of the oldest and largest RC  
clubs in the US.  
And now an AMA Gold Leader Club

[www.dc-rc.org](http://www.dc-rc.org)

**September 2009**

**District of Columbia Radio Control Club  
Announces our 2nd Annual Helicopter Fun Fly  
September 26th, 2009  
Walt Good Field, Germantown, MD**

- Gates will open at 8:30 AM and a Pilots meeting will be held at 11:00 AM
- Food and beverage will be available and lunch will be served around 1:00 PM
- Flying will be restricted to Helicopters and no open flying
- Family and friends are welcome!
- Registration is mandatory for all pilots, and there is no registration fee
- Those who would like to bring a covered dish for lunch are encouraged to do so.
- Bring your own refreshments, but **NO ALCOHOLIC BEVERAGES** are permitted.

For further details please contact  
Mike Young 240-498-2570  
Or  
<http://www.dc-rc.org>

