



# THE KNIGHT FLYER



Jul - Aug - Sep  
Editor

2006  
Jim Devlin

## Summer Fun

What a great day for a picnic!

Our first fun-fly of 2006 could hardly have been better.

Sure, there was a little wind, and it was a tad cool, but there was plenty of sunshine.

The flight line hosted a large number of airplanes, and few remained on the ground during the course of the day.



George checks under the hood.

George Fox did a super job on the hot dogs, after a couple of flights on his plane.

There were plenty of great dishes to pass and everyone had an excellent time.

It was a great start to our summer season, and if our luck holds weather wise for the next picnics, we are well on our way to a super summer.



Winding up Bob's Christen Eagle

There were plenty of trainer type planes. Bill Scaglione flew his quarter scale Extra-300 a number of times and Don Domon put his Chaos through it's paces.



Keeping an eye on the pilots



Flight school in progress

## Motor Mysteries

Following our May meeting, Bill Hauth gave an excellent presentation on the mysterious aspects of electric motors.

Many of the power plants are readily available from manufacturers, but, there are reasons why one might want to become familiar with the innards of electric motors.

Bill showed how simple it was to build a motor that would fit your own special requirements.

He displayed his balance machine, which he uses to measure the thrust that the motor produces.

Constructed of wood, the right angle beam transfers the push of the prop to a sensitive scale that reads out in ounces of thrust to several pounds.

By using a wattmeter in the line connecting the motor to the battery, it is an easy task to read the power that is going to the motor under actual load.

A watt meter is a key piece of test equipment for those who would like to better understand their electric planes.



Thrust force beam

The prop / horsepower program Bill uses, is freeware and he has posted it on our website forum.

Besides, no messy fuel, electric motors lend themselves to a much wider range of involvement.

You can run an electric motor in your house. Try that with a gas motor.

The noise and fumes would soon have you looking for a new house.

And maybe a new spouse!

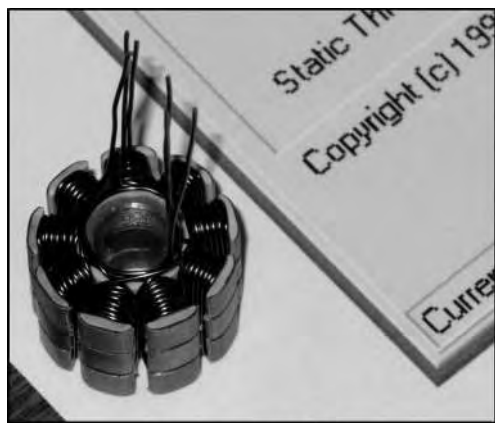
Convenient measurement, reams of information, hands on techniques abound.

But they do have a downside. A simple mistake in wiring can destroy a very expensive controller or battery pack in the blink of an eye!

Just like gas engines, lots of energy resides in the system

As always, careful and knowledgeable handling is a must.

Bill has researched this new venue in depth and is more than willing to share his expertise with our club members.



Nicely wound stator

**10th annual  
" Fly over Niagaa"  
RC air show.**

Sat. - Sun Jul 16 & 17. 10 am to 4 pm **j^ club**  
Reservoir Park, Exit 24 from I-190 Info: charlie  
Niagara Falls/ Lewiston, NY (716) 837-6128

**Summer Picnics**  
July 16th, alt July 23rd.  
Aug 20th, alt Aug 27th.  
Sep 17th, alt Sep 24th.

**Flight Instructors for the 2006 Season**  
Jerry Piscitello Stu Brierly Tom Filipiak  
Mark Chamberlain Bill Scaglione  
Bill Eberhart Frank Shattuck Bob Waldruff  
**Check roster for contact information**

# VIEW FROM THE TOP

A unique opportunity was presented to the members this summer to visit the control tower on Holtz Road at Buffalo International Airport.

Arranged by Mark Chamberlain, the tour took place on Tuesday, June 13 th.

About 24 knights assembled in the conference room at the base of the tower.

Supervisor, Darla Richter, divided the members into 2 groups. The first group ascended the 160 foot tower



Looking out over the runways

while the second visited the radar room.

She explained the operation in great detail.

It was a chance for everyone to actually see what takes place there.

We were able to look out over the runways and watch the planes arriving and taking off while the staff coordinated the operation.

Below, in the radar room, operators were busy tracking the various aircraft, out 20 and 30 miles around the Buffalo area.

Everyone left with a better appreciation of how the controllers maintain the friendly skies over Western New York.



160 foot observation tower

## Nike Base Info

The policy at the Nike Base is for "members only" flying.

This means, that if you are not a member (or guest) of the RC Crafters or the Flying Knights you can't fly there.

All of our club members should find their name and AMA number posted at the field. All of the improvements introduced at this facility have come out of the pockets or

### "The Prez Sez"

Give some serious thought to your responsibilities to your club, as when you joined, many people before you made this club what it is ,only you can keep it that way only you can make it better.

Attending regular meetings in itself shows "all" that your membership is as important now as it was when you joined.

If you have valid reason as to why the club should impeach me, please come to our meeting and speak your mind,you probably won't be heard ,but, come anyway. Remember it's O.K. to have fun, so do it.

Your Prez, The Honorable No "B S, err",  
**George**

## Finding the Lift

When we build our model airplanes we seldom think about what makes the airplane fly.

Where does the lift come from?

You can't see it. You can't hear it. You can't feel it. It's not in the box the plane came in. **Fig. 1.**

But you can be sure that the designer of the kit knew the details of his design.

Even those famous builders of the first full size airplane were very much aware of the principles of flight.



Fig.1 Where's the beef?

The Wright Brothers had calculated every detail of the plane they designed.

There were those who did and there were those who didn't.

### Fluid flow

People long before the Wright Brothers, had derived the basic properties that went into the expressions for airflow, which was just another form of fluid flow.

Daniel Bernoulli who lived 100 years before the Wrights, had discovered the principle, that, in a moving stream where the fluid flow is fastest the pressure is the lowest. **Fig. 2**

And, 100 years before Bernoulli, Isaac Newton, had formulated the first expression of how objects and forces interact and expressed them as the laws of motion.

So, the basic understanding of fluid flow had been well developed long before the Wright brothers took to the air.

Wilbur Wright, was a keen student of mathematics. He performed meticulous calculations and ran hundreds of experiments to verify them.

The brothers built the very first wind tunnel to prove to themselves that the factors that went into making flight possible were in fact true.

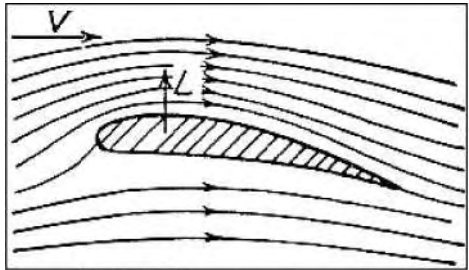


Fig.2 Airflow over wing section.

What they found out, was that the equations used at the time did not give the correct answers for lift.

So they fixed them.

Today, these equations describe every form of aircraft from the behavior of jet's (fast), to million ton cargo planes (big) and even our models (small).

Lift depends upon four things.

1. Density of the air.
2. Area of the surface.
3. Speed of the surface.
4. Angle of the surface.

Let's look at each in turn.

### Density

The thicker the air the more force it provides. This is true whether it is a lifting force or drag. See **Fig. 3.**

There will be more lift when the air is cold than when it is hot.

There will be more lift at sea level than there will be at higher altitudes.

At sea level, there are 15 pounds on every square inch of any surface

That means, top, bottom and sides.

There will be more lift when air pressure is high and less when low

We say, therefore, that lift is proportional to the density of air.

### Surface area

The second factor is the area of the lifting surface.

The greater the area, the greater the lift. Big wide wings provide more lift than short skinny ones. But, more drag.

# The Knight Flyer The Knight Flyer

Since the lifting force acts on each square inch, of surface, the more square inches we have, the more lift we will generate. See Fig. 4.

Since there are 144 sq-in in one square foot, there are 2160 lbs per sq-ft. at sea level. That's like 2 tons on every sq.ft of area.

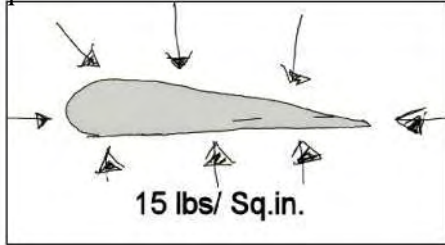


Fig.3 Atmospheric air pressure

You don't feel it because the pressure is on both sides of the surface.

## Speed

The third parameter is the speed.

The faster the surface moves through the air, the greater the amount of lift generated. See Fig. 5.

The wing moving at 20 mph might generate 1/100 lb of differential pressure per sq-in. (times 144 equals 14 lbs per square foot).

But speed affects the amount of lift to a much greater extent than the other factors.

When you double the speed you quadruple the lift (or drag).

Lift depends upon the "square" of the speed, not just the speed itself. If you double the speed, you generate four times the lift.

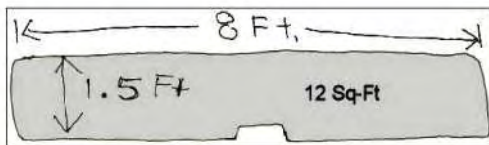


Fig.4 Wing area

Tripling the speed generates nine times the lift.

This is great for lift, but a disaster for drag..

For example, if your car presents 50 pounds of drag at 20 mph, it will develop 200 pounds at 40 mph and 800 pounds at 80 mph.

It should come as no surprise, that gas mileage sucks at 80 mph.

## Attack angle

The fourth factor involves the angle the surface takes to the oncoming air.

This gets a little complicated. Picture a sign board, as in Fig. 6.

When flat, the lift is zero as air zips across the surface.

When perpendicular, it completely opposes the flow and presents an obstacle we call drag.

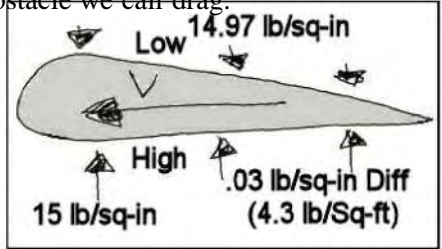


Fig.5 Speed creates pressure difference

Now let's place it at some in between angle. Here things get interesting.

Place the board at an angle of about 10 degrees to the wind.

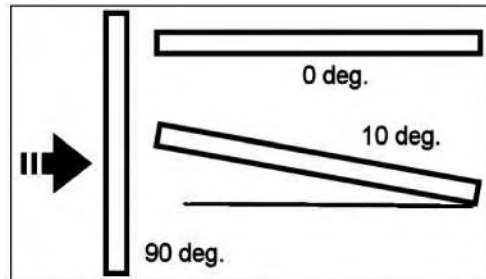


Fig. 6 Lift depends on orientation.

A force tries to lift the board upwards. Increasing the angle increases the lift.

When we reach an angle of about 22 degrees, we suddenly lose lift and the board blows backwards.

## The lift curve

All this behavior is easily displayed by a single diagram called the "Lift Curve", shown in Fig.7.

Different types of wings will have different responses to the angle of the wind.

This angle is called the **attack angle**.

Entire catalogs exist containing Lift Curves, for almost any shape of wing.

continued on Page 6

# The Knight Flyer

Continued from page 5

The curve shown in Fig. 7 is for a Clark-Y shape, the so called flat bottom wing.

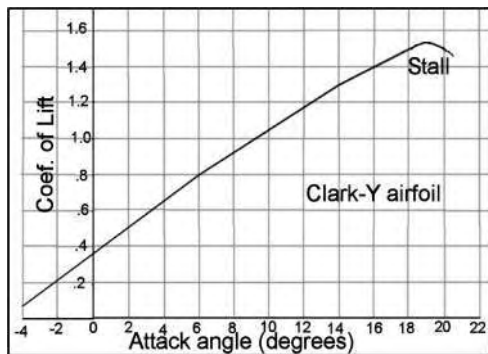


Fig. 7 Typical lift curve

Above 22 degrees no lift is generated.

The number is not the angle, but a number that represents the attack angle. It's called, the Coefficient of Lift.

$$L = C_L \times \frac{R}{2} \times S \times V^2$$

Fig. 8 Equation of Lift

You can put these 4 items together to compute the lift of your plane.

Fig. 8 shows you how. Simply measure your wing and solve for any speed and attack angle.

The units are:

**CL** = Coef. of lift, no units.

**R** = .0024, air mass density.

**S** = wing area, in square feet.

**V** = Velocity, in feet per second.

**L** = Lift, pounds.

Note: The air mass density units will cancel as long as you use the proper units for the other values.

## KNIGHT'S SWAP SHEET

### Original "EZ" Diablo 120 ARF.

Span 69", Length 54", Area 837 Sq-in.  
flying weight- approx 9 lbs.  
(No extra charge for pretty blond pilot)  
Includes Adj. Metal motor mount.  
Set up for OS120-4cyc.  
Without radio or motor.  
Looks Great- Flies Great, Price \$98.00  
Call Jerry Piscatello at 649-7947

Completed Models- ready for engine and radio.  
Engines - Planes  
Many new in box.

Call Elmer Gross at 896-1183  
Knights-Take 20% off asking prices!

### "Ready to Fly"

Complete with engine & radio!  
Call Andy Paskewicz at 627-6684  
or E-mail [tmkp@netzero.net](mailto:tmkp@netzero.net)

### Beautiful Red & White Cessna 182-ARF, with flaps.

Span 72", Length 58", Area 724 sq-in.  
Flying weight approx 8 lbs, struts  
included.  
Requires 5 channel radio with 6 servos.  
Includes adj. metal motor mount, flown  
with OS91 4cyc.  
Without radio or motor, Price \$95.00  
Call Jerry P. at 649-7947

### Classic kits!

Great winter project.  
Sig Citabria -.40 69' span - \$50.00  
Call Bill Scaglione at 693-7486

**Disclaimer:** This feature is presented as a service to the members of our club. All transactions are between the buyer and the seller only. Neither the Knights, its officers nor any entities will be held accountable for any dispute. Do not call Knights or Editor to execute sales.

# The Knight Flyer

TO: ALL MEMBERS OF THE FLYING KNIGHTS

SUBJECT: SUGGESTED GUIDELINES AT THE NORTH COLLINS FLYING FIELD

ALL OF THESE SUGGESTIONS and/or GUIDELINES ARE BEING OFFERED FOR YOUR ANALYSIS AND REVIEW. I AM SURE THAT THERE ARE CERTAIN POINTS THAT SOMEONE MAY DISAGREE WITH. THERE ARE ALWAYS MANY VARIABLES TO ANY GIVEN SITUATION.

- 1] AS A COURTESY TO THE PERSONS ON THE FLITE LINE AND IN THE PIT AREA., AFFIX A CHANNEL NUMBER IDENTIFICATION ON BOTH SIDES OF YOUR AIRPLANE'S VERTICAL FIN OR RUDDER USING 3/8" TO 1/2" LETTERING. [IE: CH 52]. THIS WILL TELL EVERYONE WHAT CHANNEL YOUR AIRPLANE IS ON WITH OUT HAVING TO WALK AROUND ASKING.
- 2] ALSO, AFFIX CHANNEL NUMBER IDENTIFICATION ON YOUR TRANSMITTER ANTENNA USING 1/2" TO 1" NUMBERS. ALWAYS SHOW THE NUMBERS HORIZONTALLY, NEVER VERTICALLY. [VERTICAL NUMBERS CAN BE MISTAKENLY READ BACKWARDS]
- 3] ALWAYS PULL YOUR RESTRAINING STAKES OUT OF THE GROUND WHEN YOU ARE READY TO FLY. AT ALMOST EVERY FLYING SESSION , **SOME-ONE TRIPS** OVER GROUND STAKES LEFT THERE WHILE A PERSON IS AT THE FLITE LINE FLYING HIS AIRCRAFT.
- 4] A PLANE LANDING OR IN TROUBLE HAS **ABSOLUTE** FIELD PRIORITY.
- 5] DO NOT MAKE LOW PASSES OVER THE RUNWAY WHEN SOMEONE CALLS OUT "**MAN ON THE FIELD**".
- 6] DURING A WEST WIND AND A CLOCKWISE PATTERN, AVOID VEERING TO THE NORTH-EAST ON YOUR DOWN-WIND LEG. THERE ARE THREE [3] HOUSES WITH FAMILIES THAT CAN GET ANGRY AT THE AGGRAVATING MOTOR NOISE THAT WOULD BE IN CLOSE PROXIMITY TO THEIR RESIDENCES. THIS COULD RESULT IN LEGAL ACTION THAT MIGHT CAUSE THE SHUTDOWN OF FLYING ACTIVITIES AT THE NORTH COLLINS FIELD. [DON'T THINK THAT IT CAN'T HAPPEN].
- 7] WHEN TAKING OFF OR FLYING INTO AN EAST WIND, **VEER SLIGHTLY TO THE SOUTH-EAST** BEFORE STARTING YOUR 180 DEGREE TURN TO HEAD DOWN-WIND. THIS LITTLE MANEUVER WILL AUTOMATICALLY WIDEN YOUR TURN TO THE SOUTH-EAST AND HELP AVOID INADVERTENTLY FLYING OVER THE "NO FLY ZONES" NEAR THE 3 HOUSES AND HORSE CORRALS.
- 8] KEEP THE WOODEN AIRPLANE STANDS AT THE EAST END OF THE PIT AREA TO AVOID DANGEROUS PIT AREA CONGESTION [NOTE: THIS IS NOW A CLUB FIELD RULE].
- 9] CARRYING AN AIRPLANE, WITH THE MOTOR RUNNING AND A TRANSMITTER IN YOUR HAND IS DANGEROUS AND AN **ACCIDENT WAITING TO HAPPEN**. AN ALTERNATIVE METHOD IS TO HAVE SOMEONE CARRY YOUR PLANE OUT FOR YOU AND FOLLOW HIM [or Her] WITH YOUR TRANSMITTER ALSO, TAXING OUT TO THE FLITE LINE IS PERMISSIBLE ONLY IF YOU HOLD ON TO THE TAIL FIN WHILE TAXING.
- 10] BE EXTRA ALERT AND CAUTIOUS WHEN SMALL ELECTRIC AIRPLANES ARE IN THE AIR. THEY ARE ALMOST SILENT AND **YOU MAY NOT BE AWARE** OF THEIR PROXIMITY TO YOUR AIRCRAFT. **FOAMIE TYPE** AIRPLANE S SHOULD BE FLOWN OVER THE HELIPAD AREA AT THE EAST END OF THE PITS WHEN LARGER AIRPLANES ARE FLYING.
- 11] MAKE EVERY EFFORT TO EQUIP YOUR ENGINE WITH **ENOUGH MUFFLING** TO FALL WITH-IN AN ACCEPTABLE SOUND LEVEL.
- 12] WHEN THERE ARE TWO OR MORE AIRPLANES IN THE AIR. **NEVER FLY AGAINST** THE TRAFFIC PATTERN OVER THE RUNWAY.
- 13] IF YOU HAVE A DISAGREEMENT WITH A SITUATION OR ANOTHER PERSON'S ACTION, BE A GENTLEMAN AND GET THE PROBLEM RESOLVED. TALK TO EACH OTHER. AVOID GETTING "**HOT-HEADED**" OR "**SHORT-TEMPERED**" WHICH WILL ONLY LEAD TO MORE PROBLEMS AND HARD FEELINGS.
- 14] ALWAYS REMEMBER THE VALUE OF THE **THREE [3] "C" s** WHEN AT THE FLYING FIELD OR AT A CLUB MEETING:

- 1] == "CONSIDERATION"
- 2] == "CO-OPERATION"
- 3] == "COMMUNICATION"

CONTRIBUTED BY JERRY PICITELLO

# 3rd Q 2006 Schedule

**Fri. 7/21, 8/11, 9/1**

**Nike Field 7:30 pm**

**Fri. 9/22**

**St. James Church**

**New members - 6:30**

**Reg. members - 7:30**

**Board meeting**

**Tues. 7/18, 8/8, 8/29, 9/19**

**7:00 pm - Pegasus**



## Officers

**President:** George Gard  
**Vice Pres:** Mark Chamberlain  
**Secretary:** Dave Kobie  
**Treasurer:** George Fox

## Board

**Jim Pravel**      **Bob Rodgers**  
**Bob Waldruff**   **Orv Chatwood**



## EVENHOUSE PRINTING

DESIGN & PRINTING SOLUTIONS FOR BUSINESS

5203 Camp Road

Hamburg, NY 14075

(716) 649-2666 • Fax: (716) 649-0266

# The Flying Knights of Hamburg, NY

Academy of Model Aeronautics - A Chartered Radio Control Flying Club

[www.theflyingknights.com](http://www.theflyingknights.com)



The Flying Knights  
c/o 5761 Diana Lane  
Lake View, NY 14085