



Glitch Busters

June 2014

Warbirds Over Delaware 2014

July 9 - 12, 2014

NEXT MEETING

June 3
7:00 PM
at the Field



AMA #197 / IMAA #687

FROM THE PRESIDENT



Mark wanted us to remind everyone that the meeting is on Tuesday **at the field** beginning at 7:00pm.

Bill Netta will present a talk about using multiple servos on the same channel/function.

FROM THE EDITOR'S DESK

Memorial Day weekend didn't offer the best winds, but that didn't deter a lot of members from coming out to the field and flying. Since it has been so windy and rainy this spring, few people have been venturing out. Memorial Day weekend offered a chance for old friends to get together again. The field was packed all day on Sunday and Monday (I wasn't there on Saturday to take stock). Aircraft of every kind from big gassers to micros, helicopters and multi-copters were flying. If you weren't there, you missed out on a lot of fun.

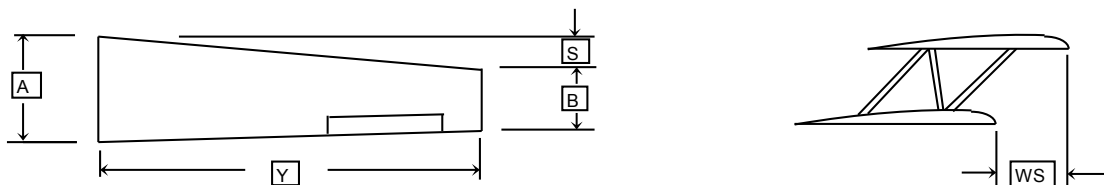


FINDING THE CG ON A BIPLANE - by Roger McClurg

Greg Schock gave me an article from an old RC Modeler magazine about calculating the CG of a biplane. He thought that others might find the information useful, and offered it for the newsletter. Not being one to turn down an excuse for an article, I gratefully accepted the offer. I took the essence of the article and combined it with some generic diagrams I found online. I also found an Excel spreadsheet for calculating the CG and MAC of monoplanes and biplanes. Just enter the measurements of your airplane and it gives you the location of the CG. This is what it looks like.

Biplane Balance Point CALCULATOR

This form will calculate the position of the Balance Point of a model biplane as measured from the leading edge of the top wing root chord for any given % M.A.C.



Wing Stagger

Enter Wing Stagger (WS) (Measured from Root Chord Leading Edges)

top wing

Enter Root Chord (At):	<input type="text" value="18"/>	Sweep Distance @ MAC (Ct) =	<input type="text" value="0.00"/>
Enter Tip Chord (Bt):	<input type="text" value="18"/>	Mean Aerodynamic Chord (MACT) =	<input type="text" value="18.00"/>
Enter Leading Edge Sweep (St):	<input type="text" value="0"/>	Distance from Root Chord to MAC (Dt) =	<input type="text" value="24.00"/>
Enter Distance From Root Chord to Tip Chord (Yt):	<input type="text" value="48"/>	Panel Area (PA _t) =	<input type="text" value="864.00"/>

bottom wing

Enter Root Chord (Ab):	<input type="text" value="18"/>	Sweep Distance @ MAC (Cb) =	<input type="text" value="2.25"/>
Enter Tip Chord (Bb):	<input type="text" value="18"/>	Mean Aerodynamic Chord (MAC _b) =	<input type="text" value="18.00"/>
Enter Leading Edge Sweep (Sb):	<input type="text" value="4.5"/>	Distance from Root Chord to MAC (Db) =	<input type="text" value="27.75"/>
Enter Distance From Root Chord to Tip Chord (Yb):	<input type="text" value="55.5"/>	Panel Area (PA _b) =	<input type="text" value="999.00"/>

Balance Point

Enter Desired %MAC Balance Point Balance Point @ Root Chord, Top Wing =
(Ex: For 25%, enter 25) (Measured from Leading Edge)

FORMULAS:

$$\begin{aligned}C &= (S(A+2B))/(3(A+B)) \\MAC &= A-2(A-B)(.5A+B)/3(A+B) \\D &= 2Y(0.5A+B)/3(A+B) \\PA &= (A+B)(Y)(0.5) \\X_t &= Ct+(\%MAC)(MACT)/100 \\X_b &= Cb+SG+(\%MAC)(MAC_b)/100 \\CG_t &= X_t+(AP_b/(AP_t+AP_b))(X_b-X_t)\end{aligned}$$

We uploaded the spreadsheet to Scott's website for your downloading convenience. The spreadsheet can be found at http://mcclurgstudios.com/glitch/CG_MAC_CALC.3.xls

For those who would rather use a pencil and ruler than a computer to find the CG here are the basics.

First you need to find the *Mean Aerodynamic Chord* (MAC) of your Biplane. The typical CG range for a biplane is between 25% and 33% of MAC.

Method 1

If the top and bottom wings of your biplane have the same sweep, then finding the MAC is easy. Using a scale drawing of the wings just extend a line from the leading edge of the top wing to the trailing edge of the bottom wing (Figure 1). If the wings have different sweep, extend a line from the top wing leading edge to the trailing edge of the bottom wing at both the wing root (Figure 1 measurement A) and wing tip (Figure 1 measurement B). Now add the A measurement to the top and bottom of the B measurement and add the B measurement to the top and bottom of the A measurement. Now draw lines from the top A to the bottom B and vice versa. Where the lines cross is the location of the MAC. Draw a line at the intersection parallel to the root chord. If both wings have the same area, you are done. Measure your desired CG location back from the MAC leading edge and draw a line perpendicular to it back to the wing root. You now have the location of the CG along the wing root.

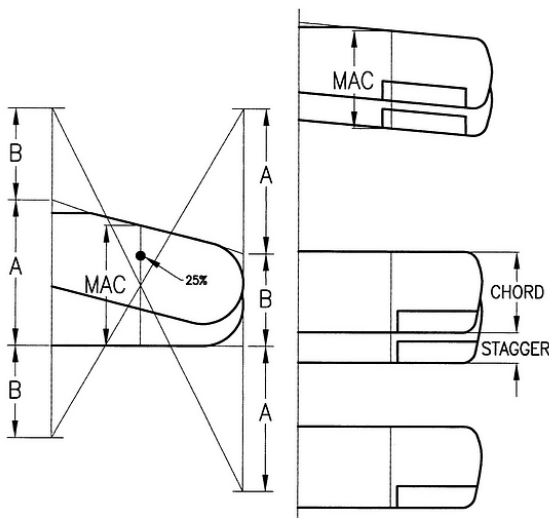


Figure 1.

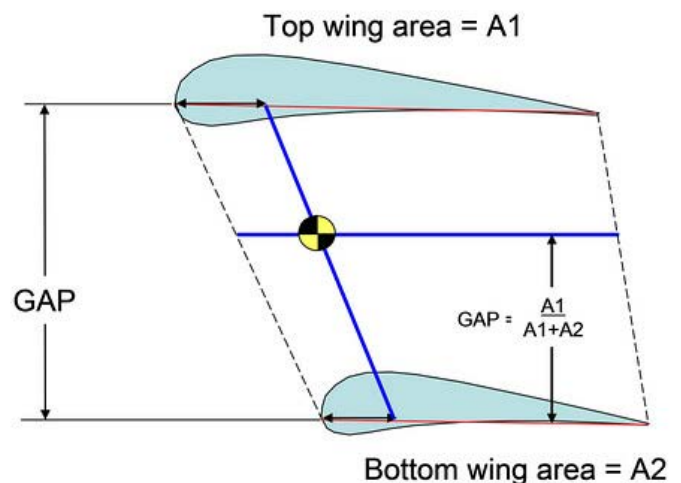


Figure 2.

Method 2

If both wings of your biplane have the same sweep, you can use a side view of the wings to figure CG. Draw lines connecting the leading edges and trailing edges of both wings at the wing root. Now measure back along each wing the percent of chord you are using for

the CG location (say 25%). Draw a line connecting those two points. The CG lies along this line. To find out where you need to do some arithmetic. Let's call the area of the top wing A_1 , and that of the bottom wing A_2 . Divide the wing area of the top wing (A_1 in Figure 2) by the sum of the wing areas of the top and bottom wings ($A_1 + A_2$). The number you get is the location of the CG along the line in percent from the top wing. Draw a line from that point parallel to the top wing connecting the front and rear lines. This is the MAC. Extend a line perpendicular to the MAC up to the top wing, and you have the CG location on the top wing.

In truth both methods are a lot harder to explain than to do.

WIRELESS BUDDY BOX – PART 2 - by Roger McClurg

When using a wireless buddy box, the student's transmitter is not connected to the instructor by a cable, instead it is bound to a receiver in the normal fashion. This receiver is configured to send the signals for all of its channel information out one wire in a format called PPM (it is sometimes called CPPM). The wire from the receiver is connected to the trainer port of the instructor's transmitter. The instructor's transmitter sees the output of the receiver just the same as if it came directly from the student's transmitter via a cable. It does not matter which manufacturer makes the student transmitter. All that matters is that the instructor transmitter accepts the PPM output from the receiver.

My son and I both have JR X9303 transmitters. I also have a FrSky Taranis transmitter. My plan is to use one of the JR transmitters for the student. The other JR and the Taranis will serve as instructor transmitters. Conveniently both the JR and Taranis use the same type of plug in the trainer port. In theory, I will be able to use the exact same receiver and cable setup on both transmitters.

The number of channels the student can control on the airplane varies from manufacturer to manufacturer. Using the 9303 as the student's transmitter bound to a 6 channel PPM receiver, all 6 of the receiver's channels are output to the instructor's transmitter. When acting as the instructor's transmitter the X9303 can only make use of the four primary controls (throttle, aileron, elevator, and rudder). The Taranis can use all 6.

Let's assume that the training is to be on an airplane that has retracts and flaps. If the instructor is using the JR, he will have to operate the retracts and flaps for the student. If the instructor uses the Taranis the student can operate the retracts and flaps. Since most training takes place on 3 and 4 channel airplanes the 4 channel limitation is not a big issue. Should the training be on a large airplane of 6 or more channels, then it is helpful if the instructor's transmitter supports training with the additional channels.

When I wrote the wireless buddy box article last month, my intention was to use an 8 channel receiver from Lemon-RX that had UART output. When it arrived I discovered it had a UART, but didn't output PPM. It seems that Lemon-RX is no longer supporting PPM output. Oh well, one more spare receiver.

I did some research and HobbyKing just came out with a revised version of it's Orange 6 channel DSM2 receiver. It now supports DSM2, DSMX, and most important to me PPM. I am using Orange 6 channel receivers in a number of foamies with great success, so I'm keeping my fingers crossed that the new receiver works just as well.



LUMS POND IMAC CHALLENGE 2014









PHOTOS FROM THE FIELD













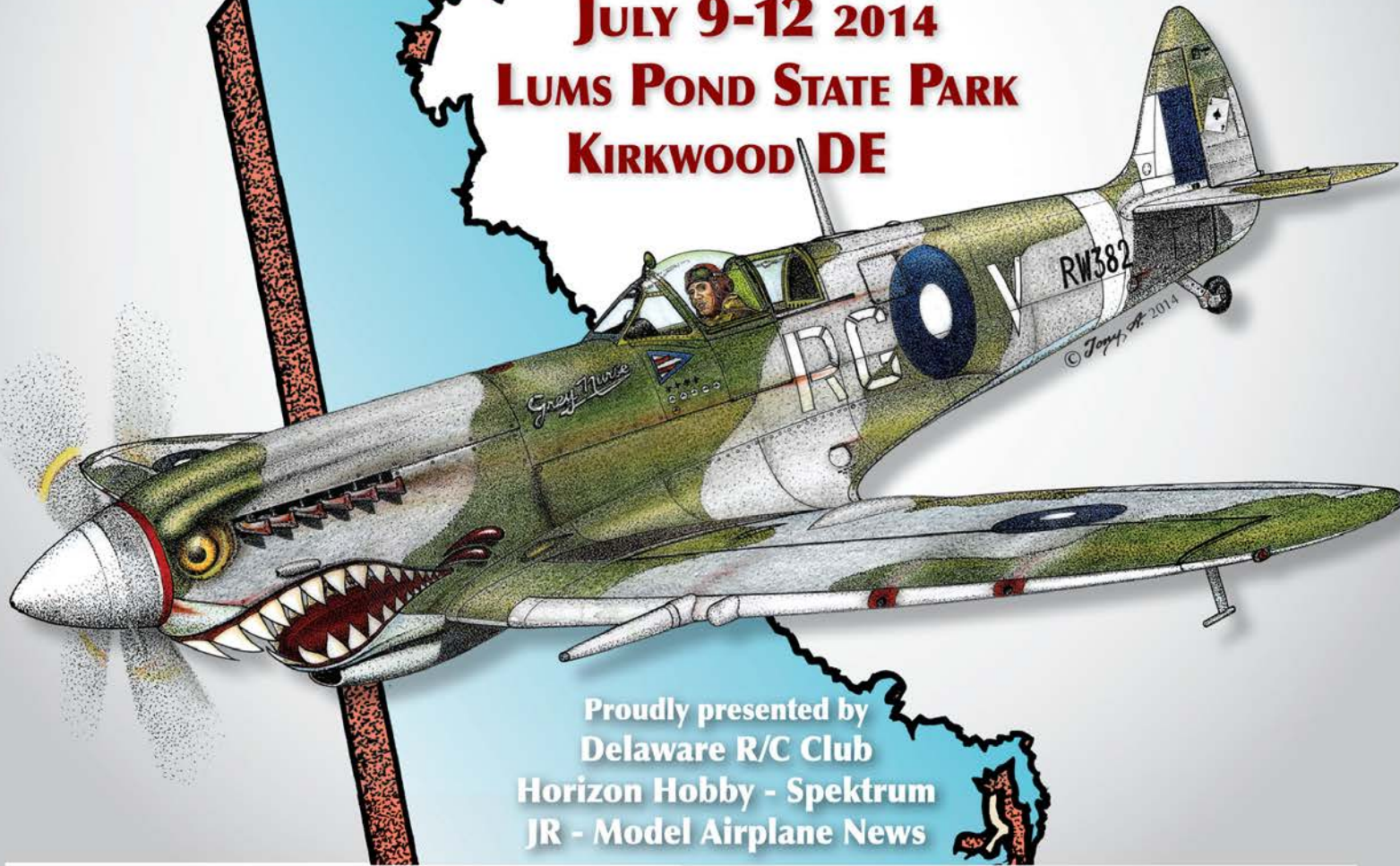






WARBIRDS OVER DELAWARE

**23RD ANNUAL
JULY 9-12 2014
LUMS POND STATE PARK
KIRKWOOD DE**



Proudly presented by
Delaware R/C Club
Horizon Hobby - Spektrum
JR - Model Airplane News

HORIZON
H O B B Y

Kimos Real Hawaiian Shave Ice

MODEL
Airplane
NEWS

SPEKTRUM
Leaders in Spread Spectrum Technology

JR

www.DelawareRC.org/warbirds

Jerry Kalonia
PrecisionCutKits.com

Sierra
GIANT SCALE

GREAT PLANES
MODEL MANUFACTURING COMPANY

SKS
VIDEO PRODUCTIONS

PRO MARK

Futaba

SONIC-IRONICS
INC.

McDaniel R/C
PRODUCTS
A Division of Sonic-Tronics Inc.

www.RCplaneWear.com

Sullivan

EVM
Jets

Zeko's Park
Scale
Models

AIRTRONICS
Get The Advantage

Balsa USA
ULTRA LIGHT Balsa Kits & Supplies
www.balsausa.com

FTE

- IMAA Warbirds flying 9am to 5pm every day
- Fun flying & mayhem 5pm 'till dark
- Breakfast & lunch daily by Boy Scout Troop #30
- Pilot Sign-up Fee \$35 (includes Park Entrance Fee & Saturday Night Barbecue)
- Registration forms and info at DelawareRC.org
- RV's on site (no facilities) or at adjacent campground w/facilities
- Giant Lunchtime/Halftime Show on Saturday
- Many vendors on site
- Pit Passes available to spectators \$10 ea (kids free)

2014
Family Fun Event

Antiques, Classics, Warbirds
KIDS CANDY DROP, R/C JET DEMO
FANTASTIC NIGHT AIRSHOW



**EASTERN PA IMMA GIANT SCALE
R/C AIR MEET**



**12-14
SEPTEMBER**

*New Garden
Airport*

www.newgardenflyingfield.com

NO JETS - TURBO PROPS OK!

JON MARTIN - 610-268-2619 PETE MALCHIONE - 610-656-6358

We'd like to thank G-Force Hobbies for their generous support of our club:



**119 Kirkwood Square
Wilmington, DE 19808
302-995-9035
302-995-9036
Fax 302-995-9037**



Glitch Busters

is a monthly publication of the Delaware R/C Club:

www.delawarerc.org

President: Mark Weiss

Vice President: Greg Schock

Treasurer: Mark McQuaide

Secretary: Joseph A Mongillo

Newsletter Editor-in-Chief: Roger McClurg

Newsletter Photo Editor: Scott McClurg

ama82824@yahoo.com

dadschock@msn.com

markmcquaide@verizon.net

joejello38@yahoo.com

roger@mcclurgstudios.com

scott@mcclurgstudios.com