

the

Ampeer

June

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2003

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Ampeer subscriptions are \$10 a year US & Canada and \$17 a year world wide.	The Next Meeting: Date: Saturday, June 14 Time: 9:00 a.m. Place: Midwest R/C Society 5 Mi. Road flying field	

What's In The June 2003 Issue:
Goldberg Eaglet 50 Conversion – Formula for CG Location – Sig Somethin' Extra Plane Rating – The Hastings NZ E-rally – Keeping Small Gunther Props On – Serious error in May 2003 Li-Po article – Aeronaut F-7-F Tigercat – Upcoming Mid-Am Info – Avro in Australia – Arial Photos & a Gear Ratio? - Upcoming Events

Goldberg Eaglet 50 Conversion
 From: Robert Van Housen
 vanhelsing@directlink.net

Hi Ken,
 I was trying to click on the link to your Eaglet 50 electric, but the link was too old. Could you email me some pictures and specs when you have the time? I was flying mine last year with an old Veco .19 baffled when she crashed, and I'd like to rebuild it so I can get more flying in locally. I'm new to electrics, but have built a few successful glow kits. Could you tell me exactly what changes you made other than building the fuse all balsa (sans plywood)?

Follow up:
 Date: 3/12/03 12:52:36 AM Eastern Standard Time

Thanks for the fast reply Ken,
 It's not critical that it be a true park flyer. That picture on the link looks great! (<http://members.aol.com/kmyersefo/myplanes.htm> KM) Nice color scheme. I tried to set mine up as a tail dragger last year, but couldn't work out a reliable tail gear setup. What did you use for that?

I just used a fixed tailwheel. Electrons are precious, therefore I don't taxi out. I set the plane on the runway and do a straight takeoff. I fly until the power is too low to fly or the BEC (Battery Eliminator Circuit of the Electronic Speed Control) kicks in. Then I land, with no taxi back.
 Also, when you converted to the balsa fuse, did you use solid sheeting on the sides and bottom (I probably need to look at the picture again) or did you cut sections in the balsa to lose more weight?
I used 1/16" balsa sheet. There is little advantage to "holing". You could just use cross-braces on the top and bottom, and that would be a good idea for the "Park Flyer" recommendation below.

I'm going to leave the sections for the windshield and windows solid for structural strength, because I had the wing tear off the front dowel rod in a crash last year. I also found the stabilizer to be ridiculously fragile, so I increased some of the dimensions there for rigidity and increased the elevator size by 150%. I'm looking at getting the Great Planes S-600 GD ESC system with gear drive from Tower Hobbies (62.89). Is that a good choice? Like I said I'm new to electrics.
That's a good idea about the windshield area. I had no problems with the stock tail.

The power system you've mentioned is probably not the best choice in this plane. I'm going to attach my unpublished notes on the Eaglet 50 conversion to this email, so that you can see my thinking about this plane, back in 1998 when I was constructing it. I'm also sending, via attachment, several more Ampeers with info on the Eaglet 50 conversion. You'll also find some info at this link:

<http://www.geocities.com/CapeCanaveral/Launchpad/5767/mommar98.html>

Be sure to read the "Getting Started In Electric Powered Radio Controlled Flying" in the January 2003 Ampeer: <http://members.aol.com/kmyersefo/ampjan03.PDF>

I don't know whether you used ailerons on your original plane, but I found them ineffective with this model, therefore I'd recommend just going rudder-elevator-motor (REM).

With all the information I've sent to you, you'll see my thinking evolving on powering this plane. The following are my latest thoughts.

Park Flyer:

Goldberg Eaglet 50 Wing Area: 432 sq.in.

Target Flying weight not to exceed: 45 oz.

Wing Loading: 15 oz. sq.ft.

Motor: Graupner Speed 480 Race 7.2v #6330,

Kv=3212 Io=2 Rm=0.129, 3.7 oz, \$22 –

<http://www.hobby-lobby.com/speed280.htm> or other sources

Reducer: MJ8104 4.1:1 Gearbox for 480, ball bearing, \$ 22.40 –

<http://www.hobby-lobby.com/gear480.htm> or other sources

Prop: APC 11x5.5E, \$2.85 -

<http://www.azarr.com/propsandadaptors.htm>

Cells: 9 Sanyo CP-1300SCR, \$3.75 ea., 1.23 oz. -

<http://www.rc-aero.com/biz/bandt/#nicads>, or a 9-cell pack from Diversity Model Aircraft \$58.00, 12 oz. approx. - <http://www.flydma.com/batteries/index.html>

ESC (electronic speed control) w/BEC Astro Flight 215D, \$49.95, 0.32 oz. –

<http://www.newcreations-rc.com> or JE350 Jeti 35 Microprocessor Controller, \$ 59.90, 0.88 oz. -

<http://www.hobby-lobby.com/jeti.htm>

Receiver: FMA Extreme 5 Sub Micro Receiver, \$44.95 + \$10.95 crystal, 0.4 oz. –

<https://www.fmadirect.com> or Hitec Micro 555, \$58.99 + \$10.99 crystal, 0.75 oz. –

<http://www.towerhobbies.com>

Servos: (2 rud. – elev.) Hitec HS-81 Standard Micro Servo, \$17.99 ea., 0.58 oz. –

<http://www.towerhobbies.com>

Onboard Radio System weight w/ESC, lightest = 1.88 oz. heaviest = 2.79 oz.

Power System weight w/prop est. 17 oz.

Target flying weight: 45 oz. or less

Estimated Static Amp Draw: 16 amp

Estimated RPM with APC 11x5.5E prop: 6,200

Estimated Flying Speed: low 30-MPH range

Orme's Rule: 8 – 12 cells

Ken's Modified Orme's Rule: 8 – 14 cells

Flight Factor: 1.99

Diameter Factor w/ 11x5.5E: 2.17

Pitch Factor w/ 11x5.5E: 0.50

"Speed" to RPM Factor w/ 11x5.5E: 2.44

Motor efficiency: 70%

System efficiency: 63%

Estimated flight time: 8-10 minutes with decent throttle management.

Easy Sport/Trainer:

Goldberg Eaglet 50 Wing Area: 432 sq.in.

Target Flying weight not to exceed: 52.2 oz.

Wing Loading: 17.4 oz. sq.ft.

Motor: Graupner Speed 500 Race 7.2v #1789,

Kv=2850 Io=2 Rm=0.075, 5.8 oz, \$16.11 –

<http://www.newcreations-rc.com> or other sources

Reducer: HLH712 Olympus Belt Drive 2.22:1, \$ 27.30, 2 oz. – <http://www.hobby-lobby.com/drives.htm> or other sources

Prop: APC 10x5E, \$2.60 -

<http://www.azarr.com/propsandadaptors.htm>

Cells: 8 Sanyo CP-1700SCR, \$4.00 ea., 1.62 oz. -

<http://www.rc-aero.com/biz/bandt/#nicads>, or an 8-cell pack from Diversity Model Aircraft \$55.00, 13 oz.

approx. - <http://www.flydma.com/batteries/index.html>

ESC (electronic speed control) w/BEC Astro Flight 215D, \$49.95, 0.32 oz. – <http://www.newcreations-rc.com>

or JE350 Jeti 35 Microprocessor Controller, \$ 59.90, 0.88 oz. - <http://www.hobby-lobby.com/jeti.htm>

Receiver: FMA Extreme 5 Sub Micro Receiver, \$44.95 + \$10.95 crystal, 0.4 oz. –

<https://www.fmadirect.com> or Hitec Micro 555, \$58.99 + \$10.99 crystal, 0.75 oz. –

<http://www.towerhobbies.com>

Servos: (2 rud. – elev.) Hitec HS-225BB High Performance Mini Servo, \$23.99 ea., 0.95 oz. –

<http://www.towerhobbies.com>

Onboard Radio System weight w/ESC, lightest = 2.62 oz. heaviest = 3.53 oz.

Power System weight w/prop est. 22 oz.
Target flying weight: 52.2 oz. or less
Estimated Static Amp Draw: 26 amp
Estimated RPM with APC 10x5E prop: 8,200
Estimated Flying Speed: low 40-MPH range
Orme's Rule: 8 – 12 cells
Ken's Modified Orme's Rule: 8 – 14 cells
Flight Factor: 2.3
Diameter Factor w/ 10x5E: 1.37
Pitch Factor w/ 10x5E: 0.50
"Speed" to RPM Factor w/ 10x5E: 2.7
Motor efficiency: 71%
System efficiency: 60%
Estimated flight time: 6-8 minutes with decent throttle management.

Sport/Sport Scale

Goldberg Eaglet 50 Wing Area: 432 sq.in.
Target Flying weight not to exceed: 61.2 oz.
Wing Loading: 20.4 oz. sq.ft.
Motor: Kyosho Magnetic Mayhem 22x1 Motor, Kv=2660 Io=2 Rm=0.090, 6.9 oz., \$19.99 – <http://www.towerhobbies.com>
Reducer: Modelair-tech H-750 MK I 2.4:1, \$ 53.95, 3 oz. - <http://www.modelairtech.com/belt.html>
Prop: APC 10x7E, \$2.60 - <http://www.azarr.com/propsandadaptors.htm>
Cells: 9 Sanyo CP-2400SCR, \$4.50 ea., 2.11 oz. - <http://www.rc-aero.com/biz/bandt/#nicads>, or a 9-cell pack from Diversity Model Aircraft \$74.00, 19 oz. approx. - <http://www.flydma.com/batteries/index.html>
ESC (electronic speed control) w/BEC Astro Flight 215D, \$49.95, 0.32 oz. – <http://www.newcreations-rc.com> or JE350 Jeti 35 Microprocessor Controller, \$ 59.90, 0.88 oz. - <http://www.hobby-lobby.com/jeti.htm>
Receiver: FMA Extreme 5 Sub Micro Receiver, \$44.95 + \$10.95 crystal, 0.4 oz. – <https://www.fmadirect.com> or Hitec Micro 555, \$58.99 + \$10.99 crystal, 0.75 oz. – <http://www.towerhobbies.com>
Servos: (2 rud. – elev.) Hitec HS-225BB High Performance Mini Servo, \$23.99 ea., 0.95 oz. – <http://www.towerhobbies.com>

Onboard Radio System weight w/ESC, lightest = 2.62 oz. heaviest = 3.53 oz.
Power System weight w/prop est. 30 oz.
Target flying weight: 61.2 oz. or less
Estimated Static Amp Draw: 27 amp
Estimated RPM with APC 10x7E prop: 7,500

Estimated Flying Speed: low to mid-50 MPH range
Orme's Rule: 8 – 12 cells
Ken's Modified Orme's Rule: 8 – 14 cells
Flight Factor: 2.7
Diameter Factor w/ 10x7E: 1.37
Pitch Factor w/ 10x7E: 0.70
"Speed" to RPM Factor w/ 10x7E: 3.25
Motor efficiency: 71%
System efficiency: 59%
Estimated flight time: 8-10 minutes with decent throttle management.

After providing Robert with the above information, I received the following:

Hi Ken,

That's a ton of great information. Sorry, I took so long responding, but have been working on getting my first glider airborne. Looking at your stats, I think I will build the Park Flyer version. Can you recommend a book or combination of books for building/converting to electric. Seems like quite a bit of math and I think I should have some reference books for future projects. I'll let you know how the building progresses.

Thanks again,
 Robert

Sorry, I can't recommend any books on conversions. Last month I gave several links that will certainly get you started.

One of the biggest problems with conversions, is defining the task. In the example of the Eaglet 50, I've designed three conversions based on the three tasks. I don't believe that there can ever be a really good "conversion" book, because electric motors don't have a glow equivalent, no matter how much we want them to. There are some general rules, but with e-power, for any given motor, you can just increase the power out until destruction of the motor or other electronics of the power system.

Keep reading the Ampeer, the Ezone Magazine, eflight list, the threads of the eflight news group and check the plane ratings on the EFO site for good ideas about powering e-planes and conversions from glow power.

For those who may have forgotten, or never seen, my Eaglet 50 conversion, I've provided an old photo on the next page.

Suppliers Mentioned:

- B&T R/C Products: www.rc-aero.com/biz/bandt
- Diversity Model Aircraft: www.flydma.com
- E Cubed R/C /Azarr: www.azarr.com
- Ezone Magazine: www.ezonemag.com
- FMA Direct: www.fmadirect.com
- Hobby Lobby: www.hobby-lobby.com
- Modelair-Tech: www.modelairtech.com
- New Creations R/C: www.newcreations-rc.com
- Tower Hobbies: www.towerhobbies.com

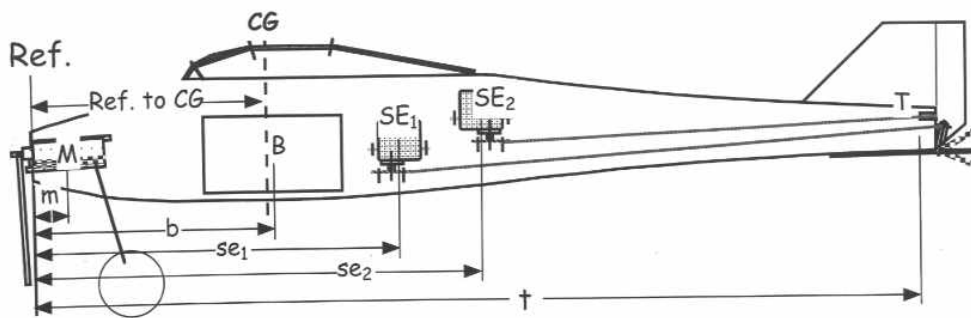


designers. The CG position is especially difficult to predict for electrics because the motor and battery and servos are such a high percentage of the total model weight that their relative location determines the CG position. Shifting components to other positions after the model is built may not be a happy experience. Designers of aircraft, and those upgrading to a greater weight motor and battery capacity, have a need to know the location options for all weighty items.

The formula shown can include other items such as landing gear or camera. If the desired position of the CG is known, then an item, such as a servo or battery that can be moved, should have its weight placed in the formula and the distance from Ref. to this weight can be calculated.

(Thanks Lowrie. Yes, there is a Walled Lake, MI. It located just a little north and east of Wixom, MI. Wixom is just off I-96, where the Lincolns and T-birds are made. KM)

CG (center of gravity) where you want it.



- Motor Weight = **M** -- Distance from Ref. = **m**
- Battery Weight = **B** -- Distance from Ref. = **b**
- First Servo Weight = **SE₁** -- Distance from Ref. = **se₁**
- Second Servo Weight = **SE₂** -- Distance from Ref. = **se₂**
- Tail Components Weight = **T** -- Distance from Ref. = **t**

CG Distance From Ref.

$$= \frac{(M \times m) + (B \times b) + (SE_1 \times se_1) + (SE_2 \times se_2) + (T \times t)}{M + B + SE_1 + SE_2 + T}$$

Formula for CG Location

From J. Lowrie McLarty
 Jmclarty@wi.rr.com

Enclosed is a CG formula for finding the best location for batteries and servos relative to the motor and each other.

Having the CG, (center of gravity), where it should be for safe flying, is an age old problem for aircraft

Goldberg Jr. Falcon

From: Pat Harvey
 patharvey@charter.net

Hi Ken:

We swapped e-mails in January regarding the Jr. Falcon. I went ahead with the project, sort of.

I did build the wing with a fiberglass spar and a fiberglass leading edge much like the X-250. The airfoil is the original Jr. Falcon except it has 1 1/4 inch ailerons added (8 1/2 inch total chord). There is no dihedral and no washout. It's a pure flat wing. The Hitec HS-81 servo is in the underside of the wing. This version has a 42 inch wingspan

J. Lowrie McLarty

with approximately 357 square inches of wing area.

The fuselage is balsa, much like a Simple 400 except it has a "domed" construction forward of the wing such that the wing actually nestles into the fuselage from the

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 1911 Bradshaw Ct.
 Walled Lake, MI 48390

rear. The wing is held on with rubber bands. All incidences are 0 - 0 - 0.

The stab and elevator are slab balsa with holes for weight reduction but the same outline as the original. The elevator is driven by another HS -81 servo mounted below the trailing edge of the wing, but in the fuselage.

The vertical fin / rudder is fixed. The outline is similar to a Falcon 56 with slab construction and holes for weight reduction.

Covering is a semi-transparent iron-on from Hobby Lobby.

Power is from a Rocket 400 geared 3:1 driving a 9x6 prop. The speed control is a Pixie 20P. The pack is an 8-cell 800 mAh Nicad. In level flight it pulls about 6 amps. At static full throttle it pulls 14.4 amps at 6,500 RPM.

It flies well with strong vertical and easy wide loops, much like MotoCalc suggested.

I just thought I'd let you know.

Thanks,
Pat

Sig Somethin' Extra Plane Rating

From: Dave Thacker DAVTHACKER@aol.com

Plane Rating: *****

Greetings,

Last winter I obtained (can't take credit for building) a nice Sig Somethin' Extra with Astro Flight 40G swinging a Master Airscrew 13-8 prop on 20 CP-2400SCR cells. The all up weight (AUW) was 7 lbs.

The original owner reported 6 minute flights, fun but no unlimited vertical. This looked like an excellent electric subject.

I applied some ElectriCalc salve to the project and converted it thusly. ElectriCalc did in fact verify no unlimited vertical on original setup.

I changed the pack over to a much lighter 1700AUP NiMH 24 cell pack. I changed the prop to 12-10. This gets the amps to about 34 at around 750-800 watts. This is OK on the 1700AUP for short periods (note, limit is about 30 amps normally on this cell). I discarded the museum 4.8V AA Rx pack and replaced with a U-Bec. I replaced the Astro Flight ESC with a new Orbit ESC and replaced Hitec 555 with a FMA M5. Servos were HS-85MG and I left them. I then replaced the standard wheels with Robbe light weight wheels.

The re-outfitted ship now weighs 6 lbs. The front 60 seconds or so has unlimited vertical. Ecalc says about 3 minutes at full throttle time, but this is a fun-fly model so

actual flying times proved to be much longer. Flight times average 8 minutes as I like to fly. I've calculated my average flight current at 11.45 amps.

I like models that I can fly close in and low and this model fills the bill. I enjoy every minute flying this machine. Comments from my wet friends are "looks as good as a glow".

This kit looks to be built 100% stock. I weighed the bird, less all electronics it's 3 lbs. In my view, if it were built with thinner ribs, lighter tail (rear of fuse is light but feathers are heavy as stock), replaced the ply with balsa, used a lighter more modern power plant and paid general close attention to electric detail it might be lowered to a 2 lb. airframe with a 5 lb. flying weight.

I'd like to build one thusly, just to see, but time is short always for me. Other options for this model would be maxing out the Astro 25G on 18 to 20 1900FAUP and a 12-8 prop giving a lighter weight machine (maybe just under 5 lb.) with similar output power. Of course there are brushless options as well.

If you've been thinking of doing this conversion, get on the ball, you'll have a "ball" with the Somethin' Extra.

Happy Flying!

Dave Thacker, www.radicalrc.com

RADICAL RC - The best in R/C electronics. Servos, Receivers, Wiring, Harnesses, Switches, Wire, Sanyo Packs NiCad and NiMH.

Thanks Dave. Here are the numbers that I ran on Dave's Somethin' Extra.

Wing Area: 614 sq.in. (mfg.)

Weight: 96 oz. - 6 lb.

Wing Loading: 22.5 oz./sq.ft.

Wing Span: 51.5 in. (mfg.)

Astro Flight 40

Wt. 13.5 oz.

Kv = 682, Io = 2.0, Rm = 0.121

1.68:1 reducer: Wt. 1.5 oz.

Total Motor + reducer Wt. = 15 oz.

24 1700AUP (1.27 oz.) = 30.5 oz.

Motor + reducer % of total = 15.6%

Cell weight % of total = 31.8%

Total motor + reducer + 1700AUP battery = 47.4%

Note the following mathematical estimations are based on the voltage near the beginning of the pack discharge and apply to static testing conditions. Amp draw will decrease in the air and as the pack discharges through the flight, but since most of us tach and test on

the ground, these figures can be used for comparison.

Using 12x10 prop:

Watts in 960 (32*1.25*24) Watt/lb. 160
 Watts to motor 767.7 Watt/lb. 128
 Watts to prop 603.6 Watt/lb. 100.6
 RPM 8,200

Orme's Rule: 12 – 18 cells

Ken's Modified Orme's Rule: 12 – 21 cells

Flight Factor: 2.649

Diameter Factor w/ 12x10: 1.18

Pitch Factor w/ 12x10: 0.83

"Speed" to RPM Factor w/ 12x10: 4.67

The Hastings NZ E-rally

From: Nick Furnmage maxsea@paradise.net.nz

One of the really nice things about the Internet is that it lets us share our hobby with interested folks around the World. Nick sent along the following that I wanted to share with you.

Hi Ken,

I just attended this e-rally a couple weeks ago. We all had great fun before the rain came (Bugger)! This one was in Hastings on New Zealand's North Island. The East coast usually has very nice weather, but not this day. Here is a link to some of the photos.

http://www.acehobby.co.nz/ossb2/club/hbrf/new_page_1.htm

The other link is to the North Shore E-rally in New Zealand's biggest city, Auckland, which is in the top of the North Island.

<http://www.acehobby.co.nz/ossb2/club/nsmac/club/Electricday2003.htm>

I hope they are of interest. Electric is growing quite fast down here, and we have all the whiz bang gear like everyone else.

Cheers, Nick Furnmage

Keeping Small Gunther Props On

From: Ray Williams rwilliams@campac.net.au

Hi Ken,

Like most modelers who use Gunther props, I have had them depart the aircraft at the most inconvenient times.

My first solution was a drop of cyano and slip it on. This worked for some time but, eventually the glue let go with the same results.

Whilst at the bench one day, I had a thought that it could be a small pocket of air in the spinner between the tip of the motor shaft and the pointy end of the spinner that expands with the heat of the shaft and pops the prop.

I used a pin and forced a small hole through the spinner. I placed a drop glue on the shaft and pushed the prop on and a small amount of glue dripped out of the hole.

This particular aircraft is a small v-tail aerobatic called a "Yorkee". It has been modified to take a modified 480 motor and runs on 8 cells. The motor pulls 10 amps and turns over at 14,900 rpm. The prop has now been on for approximately 8 months and had not departed once.

I have been toying with the aerial photo bit and have been reading about the problems. You may find a better picture will be produced if you take the pictures on the glide as even electric motors have a bit of vibration. My first effort is to place a one shot camera on the front of a big 2.3 m glider.

Keep Flying,
Ray Williams

Serious error in May 2003 Li-Po article

In my part of the article, right near the beginning of the second paragraph, I stated, "When cells are put in series, the total amp draw can be safely increased." THIS IS NOT TRUE! I either mistyped or had a mental lapse when I wrote it, as the rest of the paragraph is about paralleling the cells. It should have read, "When cells are put in **parallel**, the total amp draw can be safely increased." I've actually changed and reposted the May 2003 Ampeer in all formats online. If you have already downloaded it, please get the corrected version at <http://members.aol.com/kmyersefo/>

If you have already read it, please note that I meant paralleling allows for an increased amp draw, NOT putting Li-Po cells into series. I apologize for any confusion this may have caused.

If you receive the Ampeer via the mail, a new May 2003 page 3/4 has been included with this issue. Please replace the original.

Thank you Robert Comerford for reading so carefully and letting me know of this very important error.

Ken Myers



Aeronaut F-7-F Tigercat

From: Dan Parsons dapars@comcast.net

Hi, Ken,

It's been a while since I've sent you any info on planes or activities here in Albuquerque. My latest is the Aeronaut F-7-F Tigercat ARC that I have been flying for the last several weeks, and I now have around 18 flights on it. This is one that is really worth writing home about!

I've been flying scale planes since the late fifties and twins since 1960 and this Tigercat, aside from my deHavilland Hornet twin, is the best I have ever flown. As a matter of fact, it flies exactly like my 80 in. OS -61 powered Hornet and has no vices that I have discovered. It does everything well, from catapulting to all the way through the flight to landing on grass on its nacelles. It lands equally well at just above stall to high speed touchdowns. Speaking of catapulting, with all the cat shots off Navy carriers on TV these days, I'm well calibrated and the Tiger is right on the money.

This is a fine "kit" with everything first class from the fiberglass fuselage and nacelles to the built-up and sheeted wing. Although an ARC, there is a fair bit of work to do, but boy, is it worth it!

I made a few changes (as usual) by simplifying several procedures, reducing the ailerons to scale size, reducing the dihedral to improve flight characteristics (and looks, in my opinion) and filling in the sheeting of the open bay on the wing and the unsheeted horizontal stab so I could glass them.

Here are the specs:

- 1--- W.S.--52.3 in.; Area--2.96 sq.ft.
- 2---Wt--86 ozs.
- 3---Wing loading--29ozs./sq.ft.
- 4---Motors--Jeti Phasors 15/4 brushless in parallel
- 5---Controllers--Jeti Jes 30-P
- 6---Servos--Elev & Rud--Dymond 200/35 in.ozs.

Aileron- Cirrus CS 10BB/12 in. ozs., one for each aileron.

7---Props---Aeronaut white fiberglass 8.5 X 6"

8---Propulsion---10 cells Sanyo 2600 NiMH

9---Receiver & servo battery pk. --- 4 cells Sanyo 350 mAh

10---CG for first flight at 28% of the MAC then moved to 30% after the 5th flight. Plans at 33%

Final notes: The power/prop combination at full power (45A on bench test) provides both high speed and excellent climb, just like the full scale version. Flight at half throttle is smooth and still fast and even has some climb left. Speaking of speed, at full power it can quickly reach distances where it becomes hard to see so one needs to be a bit careful! Since the props I'm using provide exactly the kind of flying I like ("spirited"), I have not tried any other prop. The scale ailerons are quite a bit smaller than the plans show and work very well, though I had to increase the plan throws (not surprising). The stall is quite gentle; (I love the Clark Y airfoil). So far, my aerobatics consist of huge loops, slow rolls, 4-point rolls, reverse Cuban eights, inverted flight, stall turns and a couple I don't remember. The Tiger does them all beautifully and with authority. This is one outstanding flying machine!! When I get the new Li-Poly battery, that will provide 15 minute flights instead of 5-6 min and it will be 6 oz. Lighter. I will have the perfect plane. If any one is interested in doing this Tigercat, give me a phone call, and I'll be happy to help and give you further info. (505) 296-2353.



Mid-America Electric Flies

AMA Sanctioned

Saturday, July 12 & Sunday, July 13, 2003

Hosted by the:

Ann Arbor Falcons and Electric Flyers Only

Site Provided by the:

Midwest R/C Society

Your Contest Directors are:

Ken Myers phone (248) 669-8124 or

KMyersEFO@aol.com –

<http://members.aol.com/kmyersefo/>**Keith Shaw** (734) 973-6309

Flying both days is at the Midwest R/C Society Flying Field -

5 Mile Rd., Northville Twp., MI

Registration: 9 A.M. both days

Flying from 10 A.M. to 5 P.M.

Narrowband Transmitters are required - Channels 00 through 60, six 27Mhz frequencies, & eight 53MHz frequencies, will be in use. Flying on five 49 MHz frequencies may be accommodated on request - Narrowband receivers are recommended for flying on Channels 00 - 60 - Very Wideband 27, 49, & 53 MHz, receivers may be accommodated on request

Pilot Entry Fee \$15 a day or \$25 both days - - - -**Parking Donation Requested from Spectators****Saturday's Events**

All Up - Last Down

(No Li ion, Li-Po, etc.– NiCads or NiMH only in AULD)

Pilots' Choice

Best Scale

Most Beautiful

Best Ducted Fan

Best Sport Plane

CD's Choice

Sunday's Events

All Up - Last Down \$400 or smaller only

(No Li ion, Li-Po, etc.– NiCads or NiMH only in AULD)

Pilots' Choice

Best Scale

Most Beautiful

Best Mini-Electric

Best Multi-motor

CD's Choice

All Planes Must Fly To Be Considered for Any Award**Open Flying Possible on Friday****Night Flying Possible, Weather Permitting, Friday &****Saturday Nights**

Refreshments will be available at the field both days.

There will be a pot-luck picnic at the field on Saturday evening.

Come and join us for two days of fun and relaxed electric flying.

Even though this is called a contest, the purpose is fun and the enjoyment of sharing the electric experience.

Come, Look, Listen, Learn - Fly Electric - Fly the Future!

Saturday's & Sunday's Awards:
Plaques for 1st in each category
Merchandise drawing for ALL entrants

Map & Hotel List Available at
<http://members.aol.com/kmyersefo/page2.htm>
 or send SASE to Ken Myers

**Avro in Australia**From: Benny Laird lairds@iprimus.com.au

I'm just getting into electrics. I started with Tom Hunt's Lowwatt and now have Peter Rakes N28 built as well as his Avro504. Both are unflown as yet. Thanks for all your info, I have it printed up for easy reference.

I'm having a go at designing a Vickers Vimy for twin 400 with gearbox's. Started at 48 in. span but I'm thinking this may be too big?

Anyway here's a picture of the Avro.

Arial Photos & a Gear Ratio?From: David Summers ironsidz@look.ca

Ken:

Against all your advice, I have purchased a GWS Slow Stick and I am into digital aerial photography using the Mustek GSmart Mini 3 as per:

[http://webhome.idirect.com/%7eironsidz/airfo to.htm](http://webhome.idirect.com/%7eironsidz/airfo%20to.htm)

I have attached one of my shots - greatly compressed for rapid transmission.

Believe it or not, with a 6 cell 7.2 volt 600 mAh battery, 2 servos, ESC, motor, gear box, propeller and camera the All-Up-Weight is 1.5 pounds.

The CMOS cameras, such as the Aiptek and Mustek, cannot stand any vibration while writing the image to memory. Because they do not write to a buffer, any vibration results in wavy lines in the image. The trick is get to altitude, turn off the motor, trim for glide and snap a series of photos.

The only complaint I have about the Slow Stick is the rate of climb. These CMOS cameras are better at altitude as motion at lower levels gives some funny results. In looking for better performance. I have been looking at the data on the GWS EPS 370 motor/gearbox/



propeller combinations. I have searched your site for the answer to my riddle and am still confused.

Situation:

The GWS chart shows a 4.4 to 1 gear ratio and an 8x4.3 propeller as an Excellent match. Equally it shows a 13.0 to 1 gear ratio and a 14x7 propeller as Excellent.

In total, there are 7 combinations that are rated as Excellent. I have just given the two extremes.

Questions:

Q1. If I want to maximize hauling power to get to altitude, while minimizing forward speed, which gearbox and propeller combination is better?

Q2. Which combination is better for endurance?

Q3. In general terms, what is the relationship between gear ratios and propeller diameter/pitch?

David Summers

<http://webhome.idirect.com/~ironsidz>

Answers:

On a given motor, with the same battery pack, the larger the gear ratio the larger the prop diameter will be to pull the same current. The output power, at the same current on the same battery with the same motor does not change. Remember that all props are different and it is very hard to compare one prop to another, but for the sake of this example I'll say the 8x4.3 and 14x7 behave in the same manner. I'll say the 8x4.3 is turning at 6,000 RPM. (This number is made up and not from any actual testing – just a number to use.) PowerOut = $8/12^4 * 4.3/12 * 6^3 * 1.31 = 20$ watts out. For the 14x7 (20 watts out / $(14/12^4 * 7/12 * 1.31)^{1/3} = 2.417$ KRPM or 2,417 RPM.

The 14x7 has more static thrust, but no more output power, just more “pull”. The relative speed, and I mean relative, since the Slow Stick is not clean by any means,

is $4.3 * 6 = 25.8$ mph for the 8x4.3 and $2.417 * 7 = 16.9$ mph for the 14x7. This should answer your questions 1 and 3. There is no difference in endurance at the same amp draw except, unless you keep the prop from wind-milling, the larger prop will cause more drag, therefore less endurance. The more amps you draw, the less motor endurance/motor run time you have.

Upcoming Events 2003

May 30 - June 1, 2003 S.M.A.L.L., N. Little Rock, AK
Enignes limited to .26CID, *Electrics Welcome*. Indoor Flying Friday evening. Ron Stanfield CD, Phone: 501.851.1697 email: stanfieldr@aol.com

May 31, 2003 & June 1, 2003 FIRST ANNUAL INDOOR R/C CHAMPIONSHIP, Oakland Yard, Waterford, Michigan, 6 events planned, with trophies to third place + overall high point Championship Award, CD: Dave Robelen
aplusfarm@hovac.com, more info: www.nirac.org

May 31 Greater Lansing Area Soaring Society [GLASS] electric fun fly. Site McLeod sod farm 4 mi. So. of Grand Ledge on M-100 then E. 1/2 mi. on Davis hwy. Speed 400 F5J & open AULD. Otherwise, just fun. ROG is difficult. Contact is Tom Gates. Ph: (517) 339-8787.

May 31 Phantom Flyers Electric Fly-in, St.Charles, MO - No organized competition.No landing fee.
Map available on web page: phantomflyersrc.com
Contact Info: Brad Young mandbyoung@mindspring.com

June 1 F5B for 601(O), Salem, OR, CD Don Pesznecker, phone: 503.659.9624

June 6-7-8 River Valley Flyers Sixth Annual Electric Fun-Fly and Swap Meet, Wisconsin Rapids WI - This is a popular 3-day Midwestern fun fly event for all skill levels with two beautifully manicured runways in central Wisconsin, approx. 20 minutes from Stevens Point and Wisconsin Rapids.
information see our club web page at www.rvf-rc.org or contact Richard Ida, Contest Director at inspector@tznet.com or (715) 325-5309 or Charles Benner Event Coordinator at cjbenner@tznet.com (715) 424-5179

June 7 Electric Fly-in, PORTAGE AEROMODELERS, Silver Springs Park in Stow, Ohio - Plenty of open Flying. Landing fee \$5.00. Contact: Bill Gove 330.929.3549 or Robert Ferrante, CD 330.297.8955 Club Web site: portageaeromodelers.homestead.com/home.html

June 7 & 8 16th Annual LVRC Electric Fly, Easton, PA, CD Dale Hart phone: 610.821.0977 or dalehart@enter.net, mostly open flying

June 7 & 8 Keith Shaw Birthday Party Electric Fun Fly, Coldwater, MI, Balsa Butcher's Flying site, Coldwater, MI CD Dave Grife, email: grifesd@yahoo.com Phone: 517.279.8445, Field open Friday for early arrivals. Hours: June 7, 9-5, June 8 9-3. Landing fee \$10.00

June 7 & 8 Colorado F5B for 601(JSO), Denver, CO, CD Lenny Kerr phone: 970.352.1194 or email: lenny970@aol.com

June 7 amp; 8 Ray Edmunds Memorial Air Show & Fun Fly, Brockport, NY, CD Paul Weigand phone: 585.621.8524 email: pweigand@rochester.rr.com Open flying for any R/C models, electric only after the picnic on Saturday.

June 7-8 Ottawa Electric Funfly - Sat.: 9 am - 9 pm Sun.: 9 am - 2 pm. No fees!! Host: Rideau R/C Flyers, Current MAAC or AMA membership required. Info: Frank Reaume (819) 684-2571 Email: Frank

June 20-22 Southeast Electric Flight Festival, Andersonville, GA, mostly open flying, CD Ernie Schlumberger phone: 770.879.0890 or email: eschlumber@aol.com

June 21 TC/RC Electric Fly-in, Jordan, MN, CD Scott Anderson, phone: 952.934.1471 or email: andersonscotte@hotmail.com

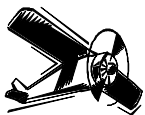
June 21 & 22 RAMS/PSEMF Electric Fly-in, Sumner, WA, CD Randy Smithhisler phone: 253.927.4672 or email: rsmithhisler@paccar.com open flying, longest running event of this kind in the USA.

June 27, 28 & 29 7th Annual MARCEE Fun-fly / Swap meet in the Minneapolis/St Paul area of MN, USA. Please note that this is one week later than years past. Information can be found at: www.marcee.org

June 28-29 Kingston Electric Funfly - North on Wilton Rd. MAAC or AMA required. Contact: Martin Irvine Phone: (613) 389-9457

June 28 F5B for 601(O), Salem, OR, CD Don Pesznecker, phone: 503.659.9624

July 5 Electric Fun Fly, Madison, WI, CD Pete Aarsvold phone: 608.845.3755, lots of open flying for electrically powered models.



The Ampeer/Ken Myers
1911 Bradshaw Ct.
Walled Lake, MI 48390
<http://members.aol.com/KMyersEFO>

The Next Meeting:

Date: Saturday, June 14 **Time:** 9:00 a.m.

Place: Midwest R/C Society 5 Mi. Rd flying field

All interested folks are welcome to join us – Must have AMA card on you to fly!