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# Ampeer

February

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2012

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The Next Meeting:  
Thursday, February 16, 7:30 p.m. Ken Myers' house

**What's In This Issue:**

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**Indoor Information Needed**

By Ken Myers

I have had several requests for more information regarding indoor planes and flying from several *Ampeer* readers. Since I do not fly indoor types, I could use your help and input.

Ken Myers kmyersefo@theampeer.org

**Indoor RANS S-6ES Coyote  
From Jeff Kelety via email**

Find below a link and photo to my holiday offering.

<http://www.facebook.com/media/set/?set=a.329027987113626.99696.100000192814930&type=1&l=c6667c9764>

I haven't flown the S-6 just yet. I'll do some test taxiing today in the gym but may not fly until I get some calm "over the tall grass" opportunities outdoors.

Thanks for the interest and have a great holiday.

Cheers,  
Jeff



**Span:** 16"

**Channels:** Four: aileron, rudder, elevator, throttle with steerable nose gear

**Weight:** 27g (including 130mAh 3.7v LiPo battery)

**R/C Gear:** Parkzone micro Rx and servos (i.e. from UltraMicro Corsair or T-28)

**Motor:** Geared motor, prop and spinner from Parkzone Mirco Cub

**Building material:** .05" and .025" Durobatics foam and miscellaneous foam block

**Wing construction:** Built up (.05" Durobatics bottom/.025 Durobatics top with airfoil pre-formed by shaping over a rounded desk or tabletop edge)

**Aileron linkage:** Parkzone aileron linkage from T-28 (nose gear linked to aileron horn)  
**Struts:** Flattened swizzle sticks from local pub (first purchase gin and tonic <g>)  
**Wheels:** From Parkzone Vapor  
**Fuse construction:** .05" Durobatics foam sheet sides and bulkheads; top and bottom .025 Durobatics foam sheet  
**Tail feathers:** .05" Durobatics sheet with carbon fiber rod stiffeners  
**Decals:** Lettering and numbering printed on Office Depot Window Decal sheet (Item 212-881) with ink jet printer  
**Paint:** Testors sprays (this is foam safe)  
**Window trim:** Scrap gloss black Monokote trim (circa 1987; never throw away anything!)  
**Adhesive:** Foam safe CA for sandable, external joints (fuse sides, wing leading and trailing edges; UHU Por contact cement for internal joints (bulkheads, wing ribs, etc).  
**Elapsed build time:** About 5 weeks (most of that time spent drinking in pub to collect swizzle sticks for struts)

*I wasn't familiar with Durobatics sheet foam. I looked it up on the Internet and found this site:*  
<http://www.a2zcorp.us/store/category.asp?Cguid=%7B6300AAFA-1FAC-4B84-8FD9-185EDBADB805%7D&Category=BuildingMaterials:Depron%20Foam>

*It appears to be similar to Depron except that it doesn't have the heavy skin.*

*Jeff has posted a lot more photos at the link noted earlier in this article.*

*Thanks for sharing this project with us Jeff. KM*

### **Indoor Info from Canada From Art Lane via email**

Morning Ken,

Wow, have you done a job on the January issue of *Ampeer*. I was amazed at the info on props, batteries, and comparisons of Nitro to Electric and especially, the pictures of your last club meeting. "Vely Intelesting," as Shultz would say.

Also, you finally put some thought into the "Small" electrics for indoor or Park flyers. Hey, yer learnin! By golly, we'll have you converted yet.

OK, I did promise something along the lines of an indoor Flyers perspective, but with the holidays coming up fast, my excuse is "I've been too busy".

I won't bore your readers with indoor planes like the Vapors, Parkzone Ultra Micro models, or micro helicopters as these are all set up for this type of flying, already.

I would like to mention a manufacturer of the GREAT indoor 3D models, Gaston Boissoneau, of Hanmer Ontario, just south of Sudbury, who has been instrumental in making fantastic foamies, like the YAK 54's, YAK 55's and his newest one, the sBach. His first models were of the 29" and 29.5" sizes and his latest creation, another sBach, is down to a 20" wingspan. Really suited for indoor sites with confined areas. His web site is, <http://www.foamstarmodels.com/index.php> and his prices are well within the reach of modelers all over. (Oh ya, tell him "Foamball" sent ya.)

His kits are fantastic CNC cut and he supplies these with or without electrics. His suggestions for motors for these models is the HK 2204-14T on a 8x4.3 prop and 2C/350mAh Li-Poly. Aerobatics and 3D maneuvers are very easy to do with this combination. Gaston is presently flying his newest sBach 20 on the above suggested motor but is investigating other motors, smaller, for the 20" models he will be manufacturing in the near future. (He has a good stock of the Sbach 20" now in stock, ready for shipment, almost immediately. I got mine in two days!!)

Unfortunately, my knowledge on electrics isn't up to yours or Keith's, but, I've been an experimenter on these foamies since 2001 and have run through lots of experimentals up to the present 3D models, and so far, touch wood, I've had great success with them.

Here is a little info on our club and indoor site. Our gym is at the "Boys and Girls" club on Horton Street here in London, Ontario. We meet once a month, usually the second Sunday of each month. Start time is 9:30 a.m. and we fly until noon.

It would be nice to see some of the clan from the U.S. come over and join us in a great day of indoor, climate controlled, flying.

For further information on our flying events, contact me, [art2lane@bell.net](mailto:art2lane@bell.net) and I'd be glad to send more info to you.

Again, thanks for a great newsletter Ken, I really get a kick out of each month's issue. Well worth the reading.

Best Regards,  
Art, aka "FoamBall"



Photo of the Sbach from Gaston's Web site

**Information About Kline-Fogleman (KF) Airfoils**  
From James M. (EFO member) via email

The book covers the history, variations, published research, theory, and applications.

If you are not familiar with this type of airfoil, this source is an excellent place to start.

These are "flat plate" type airfoils that are seen on many of the foam type planes designed for indoor or outdoor flying.

Carlos puts this type of airfoil into practice in his book RCadvisor ModiFly.

<http://rcadvisor.com/tag/modify>

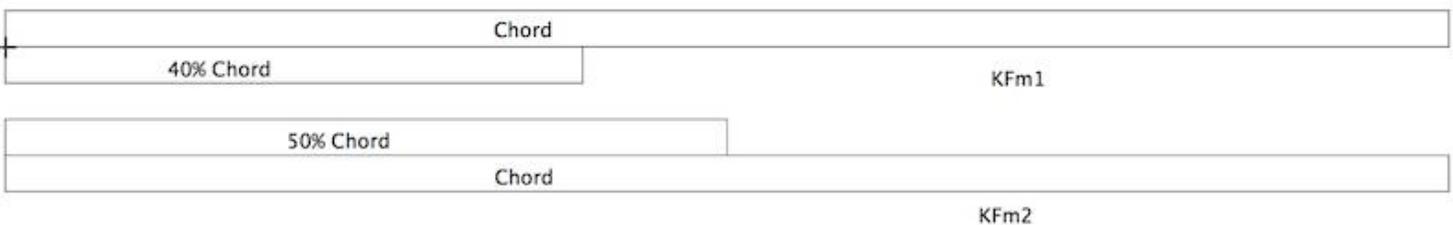
I reviewed the book in the August 2009 *Ampeer* and shared my build of a modified version of this plane using the KF type airfoils. The issue is available online at <http://www.theampeer.org/ampeer/ampaug09/ampaug09.htm>.

**January EFO Meeting**

The January 5 meeting, at Ken's house, was very well attended.

**Ken Myers** started off the meeting with a discussion of the March 2012 edition of *Electric Flight*, which he'd received earlier that day. Grumpy Ken noted that it only took him about 20 minutes to read the whole magazine.

The members looked over the edition and noted that it is a magazine targeted at a much younger demographic than the majority of our group. There was a general agreement that the article Top 7 Chargers should have had a qualifier in its title, as



James sent a YouTube link for a video with information about this type of airfoil which is commonly used on foam indoor and outdoor models.  
<http://www.youtube.com/watch?v=ROHE-YpV4Kk>

And from Ken Myers

Carlos Reyes, in his book RCadvisor's Model Airplane Design Made Easy, has a lot of information on this family of airfoils and its variations starting on p. 56.  
<http://rcadvisor.com/tag/book>

none of us would have chosen any of the chargers presented as being in the top chargers on our list.

Ken noted that he did like the little history section provided for the ARF scale planes as the folks reading this magazine might not even know what a Stearman is.

The discussion of magazines continued. Most of the members said that they always look forward to the latest edition of *Flying Models*. Ken noted that he really liked *Fly RC* and thought they did a

good job, especially since they've added articles from Bob Benjamin.

As the group was discussing the latest issue of *Model Aviation* and the good articles in it, Jim Young's Meteor construction article was being viewed when he walked in. We all congratulated him on his great job!



**Hank Wildman** showed a Kyosho F-16. He'd modified it by adding a 70mm fan unit and retracts. It will be flown on a 4S Li-Poly.



**Richard Utkan** lead off the show and tell with his version of a "Blue Wonder". It is constructed from Dollar Store foamboard with the cardboard surface removed. That is a technique described in Carlos Reyes' [RCadvisor ModiFly](#) book. It uses a KFM2 type airfoil, discussed earlier in this issue. Richard constructed a full fuselage, instead of a profile type, to more closely resemble the Sig Wonder this plane is based on. It features green LED lights on the right wing tip and red on the left.

He also demonstrated a unique feature of the Dynam 2.4GHz transmitter he's using with this plane. There is a toggle switch on the top of the transmitter that is used to arm the speed control. Until the switch is toggled, the ESC is inactive.

I tried to find a photo of this transmitter online, but couldn't. He got it with his Dynam A-10.



**Jim Young** brought along his son's Animal Planet Remote Control Falcon ornithopter to share with the group. It is available at Toy R Us. It was a Christmas present to Tim from his grandparents. Jim said that he and Tim have had a chance to fly it at the Ultimate Soccer Arenas and it flies quite well.

It didn't do quite as well in Ken's small living room taking out a cup full of peanut M&Ms.

There was a general discussion about speed controls and many members noted that they have tried several different "brands", but they have now settled on Castle Creations. Ken noted the excellent service he got on the replacement of his HV-60 and the \$22 exchange for his broken Thunderbird 54.

**Hank Wildman** said that he was looking for a new charger, one that was capable of charging "A123" 2300mAh/2500mAh cells. Several folks recommended the FMAdirect CellPro 10S or 10XP. It was suggested that he purchase it from Progressive RC. (<http://www.progressiverc.com>)

He was reminded to purchase adapters that match his balance/node connectors.

**Bill Brown** sought advice on purchasing motors for his proposed Wright Flyer "B". Jim Young had drawn up plans for it that were shared at the December meeting.

Ken and Jim Young looked up the specifications for the Dualsky XM2812RTR-33 and thought that it might be useful. It has the ESC built into the motor. [http://www.dualsky.com/pro\\_list\\_for.asp?sid=119&Keywords=RTR&id=165](http://www.dualsky.com/pro_list_for.asp?sid=119&Keywords=RTR&id=165) It has a Kv of 1470 RPM/v and is rated for 70 watts in. It weighs 25.7g.

The members decided to move the monthly meeting to the third Thursday of the month.

About 9:00, Ken received a call from his son, Donovan. His newest granddaughter, Ever, had entered the world. Mom, Somer, and baby, Ever, were doing fine. Of course Ken announced the exciting news to all present.

What a great night. Remember that anyone with an interest is always welcome at EFO meetings. Hope to see you at the February 16, 7:30 p.m. meeting at Ken Myers' house.

### **Twins: An 80" PBY Power System**

From Harvey via email

Hello Mr. Myers,

I hope that you can help me out?

My name is Harvey. Presently I am constructing a 80" wingspan PBY Catalina, scratch built, however I am having a hard time trying to match the two .60 nitro's intended with the equivalent in electric.

I have been reading article after article on the subject and I have come to a conclusion, I think that you need hold a PHD in pure mathematics to figure out all of the info out there.

My questions to you, if you wish to help me out, are as follow.

- 1.) What would be the motor(s) size recommended?
- 2.) Would it be wise to have 2 power packs with 2 speed controllers for the motors and a 3rd power pack for the servos and transponder?

However, thank you in advance for any help that you could give me, it would be greatly appreciated.

Best wishes for 2012 and thank you,

Harvey from Montreal, Canada

*I wanted to know more about whether Harvey had the skills and knowledge to actually achieve a successful build and replied:*

Hi Harvey,

I could use a bit more information on your model.

You noted that you are scratch-building it.

Does that mean you are drawing up the plans yourself?

Do plans exist?

Any idea of what the ready to fly flying weight would be as a glow plane?

What is the wing area?

Will it only fly off of water?

Will it only fly off of land?

How scale will it be? (i.e. will it have retractable landing gear, etc.?)

I'm not sure why you think an 80" twin-engine plane would require two 60 glow engines. Where did you get the engine size from?

Thanks,  
Ken

*The answers to those preliminary questions would help me to decide what the ready to fly weight might be and what the wing cube loading (WCL) might be. The more scale, and the more options like retractable landing gear and retractable tip floats, the heavier the finished model will be.*

**Harvey replied:**

Hi Ken,

Thank you for your reply.

I am using a plan that I acquired on Ebay. It was designed for a 108" wingspan. I downsized it to 80".

The original plan, with a 108 inch wingspan, calls for 60-size nitro engines. I estimate 50s for an 80" build.

Wing area is approximately 800 square inches.

It will have the option for both water and land.

The estimated weight before engines, batteries and servos should be around 10 to 12 lb.

This plane will be highly scaled and will be constructed with 90% composite.

My background is composites and I have worked with racing sailboats and in the aeronautical industry with my business in the past.

For the scaling of this PBY I am getting help from a friend. Maybe you have heard of him, Chris Trump. Chris is a top gun in large scale jets in Canada, however he knows Nitro and turbine technology and has never worked with electric motors. When it comes to airplane design he is quite knowledgeable. He is the one who convinced me in getting into composite RC planes after seeing what I was producing in competitive RC sailboats.

I love the challenge of all of my builds. This is why I am into RC.

I have attached a PDF of the plans. Maybe you can use them.

PS: these are not the best detailed plans however they are quite accurate regarding to scale.

Thank you and best regards,  
Harvey

*When I replied again, I wanted to make sure that Harvey knew what type of project he was in for.*

Hi Harvey,

It looks like your estimate of twin glow 50s is in the ballpark. Unfortunately, there is no direct relationship to glow and electric power. The glow motor is chosen for the prop size it can turn, and not necessarily the power of the given internal combustion engine.

See my article in the January 2012 *Ampeer*.  
<http://www.theampeer.org/ampeer/ampjan12/ampjan12.htm>



I found this similar size PBY online:

<http://www.rcairplane.net/index1.html>

It confirms the glow engine size, as well as the proposed weight.

Adding options like retractable gear and tip floats adds to the complexity and weight.

You should read through this article by my flying buddy Keith Shaw.

<http://www.theampeer.org/shaw/chrg2ef.pdf>

In it he states, under the heading: THE FOUR KEYS TO SUCCESS:

“When approaching a new challenge such as electric flight, a carefully considered plan of action will minimize frustration and maximize results. First, set an achievable goal with several measured steps to reach it. If your dream is to fly an electric B-17 or a WWII fighter and you are presently flying a basic glow-powered trainer, there will be many steps! Don't expect to learn everything at once. Even if you have well-developed flying skills, I would still recommend starting with a sport electric plane just to get used to the technology of charging Ni-Cd (short for nickel-cadmium) batteries, maintaining electric motors, optimizing prop selection and building structures appropriate to the task. Even after flying R/C for over 30 years, I still build "test-bed trainers" to check out an unconventional aerodynamic layout or bizarre configuration. These test-bed aircraft have the desired configuration, size, wing area and power system but use simple structures and no "fancies" such as retracts. I practice flying the test-bed until I'm comfortable with it, then start ballasting it up to what a serious version might weigh. This way, I'm not fighting all the battles at once”

I would also suggest that you download and read his article on designing RC planes. Even though you have plans, sometimes they are not done well and lead to problems that can be avoided with Keith's advice. The article is formatted in four linked Acrobat .pdf files.

<http://www.theampeer.org/shaw/SHAW1.PDF>

<http://www.theampeer.org/shaw/SHAW2.PDF>

<http://www.theampeer.org/shaw/SHAW3.PDF>

<http://www.theampeer.org/shaw/SHAW4.PDF>

It sounds like you are an excellent modeler. You'll most likely be able to complete a successful build of this aircraft.

Who is going to fly this plane and where?

Are you, or the pilot, willing to invest several hundred dollars into an electric power system and support equipment; two motors, two electronic speed controls a battery, battery charger, power meter, and on and on?

I have one *Ampeer* reader in your area. (sent name and email address)

My friend, Tom Hunt, wrote an article on multi-motor brushless power systems. It was in the November 2004 issue of *Fly RC*. It would be useful to have a copy of the article.

I'll continue to look at what might be a good power system for you, and get back to you soon with my recommendation.

Later,  
Ken

Since I have NEVER created a twin, I did a lot of research on the Internet to assist me in recommending a power system for Harvey's PBY. What I learned amazed me!

At first, I tried to related what I knew about single motor propped airplanes to twins, but I found it to be a dead end. I couldn't figure out a relationship, and I could not figure out why.

### A Look At Twins

I gathered plane data for past and present glow and electric powered twins. It is presented in the table.

Plane	Wt. oz.	Wing Area	WCL
G&P Sales 81" PBY-5A Catalina	168.0	876.00	11.20
<b>Great Planes PBY Catalina Seaplane EP ARF</b>	<b>52.0</b>	<b>395.00</b>	<b>11.45</b>
Hobbico TwinStar 25	88.0	560.00	11.47
<b>Silver B-25J Mitchell 52 - 71" Multi Twin Engine Nitro</b>	<b>148.8</b>	<b>778.00</b>	<b>11.85</b>
Transall C-160 26 - 72" Scale Nitro	100.5	581.25	12.39
<b>Piper Twin Comanche 46 ARF by Seagull</b>	<b>176.0</b>	<b>830.80</b>	<b>12.70</b>
Rittinger Super Sportwin	71.0	450.00	12.85
<b>Jim Young's Gloster Meteor</b>	<b>130.0</b>	<b>668.00</b>	<b>13.01</b>
P-82 Twin Mustang 40 - 70.5" Nitro	152.0	736.00	13.15
<b>Pica Dualist</b>	<b>172.0</b>	<b>795.00</b>	<b>13.26</b>
CMP DeHavijland Mosquito 25-32 - 73" Nitro	184.0	825.00	13.42
<b>Electric Brushless/Nitro Gas OV-10 Bronco 15 - 48"</b>	<b>70.4</b>	<b>434.00</b>	<b>13.45</b>
Top Flite Douglas DC-3 Twin GE Kit	160.0	750.00	13.46
<b>VQ 1/9 Scale P - 61 Blackwidow</b>	<b>328.0</b>	<b>1177.50</b>	<b>14.03</b>
E-flite Deuces Wild	168.0	740.00	14.42
<b>Twin-Engine Sky Trainer 46 - 71" Nitro/Electric Powered</b>	<b>176.0</b>	<b>763.00</b>	<b>14.43</b>
eRC B-25 Apache Princess EPO Twin	61.5	356.00	15.82
<b>BH Commander Twin 46 ARF w/Air Retracts 81"</b>	<b>169.6</b>	<b>697.00</b>	<b>15.93</b>
B-25J Mitchell ARF by Hangar 9	248.0	851.00	17.26
<b>Twin Otter ARF by Hangar 9</b>	<b>211.2</b>	<b>738.00</b>	<b>18.20</b>
BH Commander Twin EP ARF 58"	73.6	360.00	18.62
<b>Top Flite Cessna 310 Twin ARF</b>	<b>320.0</b>	<b>914.00</b>	<b>20.01</b>
Keith Shaw's Aerocommander Shrike	36.0	200.00	21.99
<b>ESM F7F Tigercat</b>	<b>371.4</b>	<b>944.64</b>	<b>22.10</b>
VQ A - 26 Invader	176.0	510.00	26.41
<b>VQ P-38 Lightning</b>	<b>265.6</b>	<b>645.00</b>	<b>28.02</b>
average:	164.5	675.97	15.80
median:	168.0	737.00	13.74

I found the wing cube loadings (WCL) very interesting. Remember that the WCL is a good indicator of the "fly-ability" of the model and the piloting skill required to fly the plane successfully.

### The WCL Levels - a review

**Level 1:** Indoor (0.00 oz./cu.ft. - 2.99 oz./cu.ft.)

**Level 2:** Backyard (3.00 oz./cu.ft. - 4.99 oz./cu.ft.)

**Level 3:** Park (5.00 oz./cu.ft. - 6.99 oz./cu.ft.)

**Level 4:** Sport (7.00 oz./cu.ft. - 9.99 oz./cu.ft.)

**Level 5:** Adv. Sport (10 oz./cu.ft. - 12.99 oz./cu.ft.)

**Level 6:** Expert Sport (13 oz./cu.ft. - 16.99 oz./cu.ft.)

**Level 7:** Expert (17+ oz./cu.ft.)

The WCLs for twins indicate that an above average, experienced pilot, skilled at flying heavily loaded models is required to fly the majority of twins.

I found four aircraft that were "out of range." They should be somewhat easier to fly than the typical twins listed in the table.

1.) De Havilland DH-84 Dragon-2, RC electric scale 94.7" wingspan, 232 oz., 1700 sq.in. and a WCL of 5.72 oz./cu.ft. The biplane configuration and the modeler's building skill and technique contributed to the lower WCL of this plane, which should fly like a big "Park Flyer".

<http://mysite.verizon.net/milkyway99/id3.html>

2.) Keith Shaw's DeHavilland Comet w/28 Nicads, 136 oz., 900 sq.in. with a WCL of 8.70 oz./cu.ft. Keith's extraordinary design and build skills

contributed to the relatively low WCL sport-like flying capability of this plane, except for the sharply tapered wing plan form that keeps the pilot's attention!

3.) SIG Do 217, 35 oz., 335 sq.in., with a WCL of 9.86 oz./cu.ft. It flies like a sport plane because the designer enlarged the wing. Using the fuselage length to scale the plane, it is about 1/19-scale and the scale wing area would be 242 sq.in. Using the wingspan, the plane scales to about 1/16-scale. At 1/16 scale the wing area would be about 349 sq.in. The given wing area for the model is 335 sq.in.

The fourth example, based on my experience and research, just cannot be correct.

4.) New 310-Scale 90 - 92.5" Twin Engine Nitro Power, 176 oz., 1318 sq.in. with a WCL of 6.36 oz./cu.ft. The numbers just don't "add up" for me. The Web link is:

<http://www.nitroplanes.com/new319092twe.html>

## Back to the Power System for the PBY

The median WCL for twins is 13.75 oz./cu.ft. If that is used to set the **target ready to fly (RTF) weight** for the proposed PBY, then 800 sq.in. / 144 sq.in. = 5.56 sq.ft.  $\wedge$  1.5 = 13.1 cu.ft. \* 13.75 oz./cu.ft. = 180.125 oz. or 11.25 pounds.

With the target model weight of 11.25 lb., and to keep it simple, about 1,125 watts in (100 watts in per pound) should work. Each motor would then be used at about 565 watts in.

A 3-view drawing that I found on the Internet indicated that the largest possible diameter prop(s) would be 10". The PBY could use 3-blade props. I have no experience with 3-blade props.

I remembered that when Lucien Miller of Innov8tive Designs, added the Cobra line of motors, he tested Master Airscrew 3-blade props.

I know that for a motor to handle 565 watts in, it should weigh between 565 watts in / 3 g of motor weight per watt in = 188g to 565 watts in / 1.75 g per watt in = 323g.

I started by checking the Cobra motors for their weights. The Cobra C-3510 series weighs about 141g, too light. The Cobra C-3515 series about 178g, too light. The Cobra C-3520 series about 216g. That should be okay because 565 watts in / 216g = 2.62 watts in per gram of motor weight.

I started with the highest Kv Cobra 3520 outrunner, which was the 980 Kv motor. I checked the prop chart and found that there were no 10" MAS 3-blade props that required about 565 watts in.

I did notice that the APC 10x5E and the MAS 10x5x3 pulled about the same watts in and amps and the APC 10x7E and MAS 10x7x3 were pretty close in amp draw and watts in with the APC being 6% or 7% less.

Next I looked at the 820Kv motor. I found that at 18.5v (5S Li-Poly) the MAS 10x5x3 was just about right.

30.16 amps, 558 watts in, 12,388 RPM, 58.7 mph pitch speed, 85.08 oz. thrust

[http://innov8tivedesigns.com/Cobra/Cobra\\_3520-12\\_Specs.htm](http://innov8tivedesigns.com/Cobra/Cobra_3520-12_Specs.htm)

Generically, outside diameter in mm, length in mm (**NOT** shaft length), dash Kv and comma followed by weight in grams, it is a 4346-820, 216g motor. The generic motor name allows easy substitution. For example the Tower Hobbies Rimfire .32, generically is a 4250-800, 198g. The 2

Dog RC Dualsky XM4250CA-6 is a 4250-840, 200g. The Turnigy 4258 is a 4251-800, 265g. The Head's Up RC Power Up 32 Sport is a 4243-800, 212g motor.

Before selecting the battery and ESCs, in case the power needed to be increased, I checked the Innov8tive Designs prop chart for the Cobra C3520-12 motor and found the data for the MAS 10x7x3 at 18.5v, 42.36 amps, 784 watts in, 11,516 RPM, 76.3 mph pitch speed, 102.29 oz. thrust

A 42 amp draw per motor, for practical purposes, eliminates one large 5S1P 8400mAh battery. It would be almost impossible to find.

Combining two 4200mAh Li-Poly packs in parallel, to become a 5S2P 8400mAh, pack would work and is probably the best option.

The MAS 10x5x3 should pull between 60 amps and 70 amps from the 5S2P battery when both motors are running at full throttle through both ESCs. If the MAS 10x7x3 is used, the amp draw from the battery might be 80 to 90 amps.

Since each ESC and motor is only seeing half of the amp draw, and allowing for the MAS 10x7x3 pulling up to 50 amps near the beginning of the pack discharge, a 50 amps \* 1.25 (the inverse of 80%) = 62.5 amp speed control would be a good choice.

Castle Creations Phoenix ICE or ICE Lite 75-amp ESCs, would allow plenty of safety margin if going to a bigger prop pitch was necessary. The ICE or ICE Lite 50 would be fine, if the MAS 10x5x3 or APC 10x5E were sufficient.

### Returning to Harvey's Original Questions

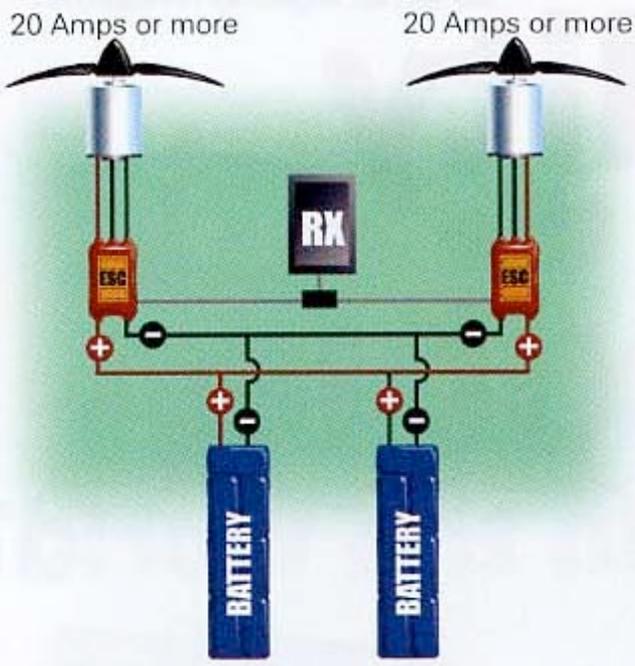
1.) What would be the motor sizes recommended?

Electric motors are not sized in the same manner as glow or gasoline model engines. I've explained how I've size the motor(s) and selected the battery and ESC.

2.) Would it be wise to have 2 power packs with 2 speed controllers for the motors and a 3rd power pack for the servos and transponder?

As noted in Tom Hunt's article, it is best to have one battery, no matter how it is configured, to feed both ESCs at the same time. That is Figure 3 in his article. A 5S2P (2 battery packs of 5 cells in series hooked together in parallel) is considered one battery no matter whether the two battery packs sit next to each other or are separated by some distance, as shown in Tom's illustration.

**Figure 3**  
**Two motors, two batteries:**  
**Motors draw off one larger "tank"**



You may choose to either use the built-in switching battery eliminator circuit (BEC) of one of the Castle Creations ICE ESCs to power the receiver and servos, or use a separate switching BEC, or use a receiver pack, such as a 2-cell A123 2300mAh pack.

A power meter **MUST** be used to check that the power system is operating at the expected levels and not exceeding the maximum amp ratings of any of the components. The system may be checked as a whole, or the two individual motors and ESCs tested separately with the power meter inline with one 5S 4200mAh Li-Poly battery.

Here is a YouTube video on twin wiring:  
<http://www.youtube.com/watch?v=aADN7iCx9E4>

I am sure the *Ampeer* readers would be very interested in the rest of the build and the flying of the model.

### Skymasters Ultra Micro Racing

By Joe Hass [joehass@gmail.com](mailto:joehass@gmail.com)

Our Ultra Micro Racing was a complete success with 32 pilots flying 20 races in 2 categories (Polecat and Warbird) in about 90 minutes. 16 year old Danny Craig easily won the Polecat races, followed by Paul Zabawa, Sean Fidler and John Hoover. Bill Klems won the warbird class, followed by Tom Andras, Mark Ugo and Les Baron.

Purchasing the aircraft from a local hobby shop got free entry into the races. It definitely drove sales. Some folks bought their aircraft on site from John Hoover from Flight Line Hobby who set up a small booth.



Six foot folding tables, laid flat on the artificial turf, formed the takeoff runways. Decorative cones from the Red Bull racing series formed the course.

The "Race For All The Marbles" (see below) with a young buck challenging a seasoned veteran started with a bit of a challenge from Tracy Hoover between Chris Hass (the young buck) and John Hoover (the seasoned veteran). After one false start the race was on. John had the lead until he cut a pylon. After 4 laps Chris was the winner.

They continued flying, first demonstrating some close formation flying. Then John remained upright while Chris flew the course inverted. Then Chris flew the course continuously rolling. The difference in speed was amazing. Chris finished by hovering a Polecat in front of the crowd.

Chris also demonstrated the new small Model Aero Polaris (our featured speaker on January 25 at Larson) and an ETOC routine. I flew the Model Aero Stinger (a very neat, easy to build aircraft).

1st through 3rd place received a specially created Retro R/C Wallet preloaded with some cash.

There were pilot's prizes for all the flyers and plenty of prizes for the spectators and helpers. Two entrants drove over 90 miles to participate. Given the number of requests for a date for the next race I think we have a winner in this format.

My sincere thanks to all who helped us with the races. It would not have been so successful without

(cont. on p. 10)

### Upcoming E-vents

**Feb. 16** Thursday, EFO meeting, 7:30 p.m., Ken Myers' house. Everyone with an interest is welcome to come.

Ken Myers  
1911 Bradshaw Ct.  
Commerce Twp., MI 48390  
(248) 669-8124

(Skymasters Racing - continued from page 9)

you. Thanks to John Hoover and Chris Hass for the initial idea. Thanks to Jim Held and Fred Engelman for the continued ideas, brainstorming and creativity. Thanks to George Maiorana for the idea to use tables for "takeoff runways".

All The Marbles" is a coveted award, made up the night before (it is very hard to find marbles at 9PM) Hellman's mayonnaise jar filled with marbles and a shiny ALL THE MARBLES AWARD label.



**Special thanks** for their generous support to: Flightline Hobby, Prop Shop, Castle Creations, Retro R/C, *Model Airplane News*, *Backyard Flyer*, RJR Cool Tools, and Hobby Lobby.



The Ampeer/Ken Myers  
1911 Bradshaw Ct.  
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<http://www.theampeer.org>

#### The Next Monthly Meeting:

**Date:** Thursday, Feb. 16, 2012 **Time:** 7:30 p.m.

**Place:** Ken Myers' house (see address above)