

# Ampeer

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**Ampeer subscriptions are \$10 a year U.S. & Canada and \$17 a year world wide.**

**The Next Meeting:**  
**Date: Thursday, February 5 Time: 7:00**  
**Ken's house: Wear building clothes**  
**Note: earlier time (but when you can get here will be fine)**

**From the EMFSO *Electric Model Flyer***  
 edited by: Al MacDonald  
 5-2881 Lawrence Ave. E.  
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 (416) 267-8504  
 almac@octonline.com

*The first two articles this month from Robert Pike and Walt Grey come via the Electric Model Flyer, the newsletter of the Electric Model Flyers of Southern Ontario.*



**Canadair CL-215 "Water Bomber"**

By Robert Pike  
 The CL-215 is a purpose built flying boat used to fight forest fires in Canada, and around the world. It was developed by Canadair, in the mid '60's, and was designed to scoop up water as it planed along the surface of a lake. It then drops it's load of water on the fire as it skims the tree tops. It's a large aircraft with a wing span of almost 100 feet.

I've been fascinated with this plane for 18 years and have always wanted to build an R/C model of it. It's a very unique subject in that it's a flying boat, it's a twin and it's one of those rare planes that was not built as a killing machine or to simply carry passengers. Also, a model of it could be flown rather aggressively and still be flying in a "scale" like manor.

During my early days of R/C, it could be nothing but a distant dream. I was a young teenager and was enjoying flying gliders. I had a few "Glow" planes but nothing close to the complexity of a twin.

**What's in this issue?**

CL-215 - ElectriCUB - "Bee Special 50" Rating - X440 & Mixer - RS Multimeter - Upcoming S400 Races - Covering Material - AF 035 - 15 Gear Ratios - S400 Parts 3 & 4 - High Amp Fuse Holed - Find a plane - Foam wing sheeting tip - RF-4 Rating - Adding ball bearings to Magnetic Mayhem - Making Spinners - Sprite 20 Update

When I finished school and got a good job, I started to look more seriously at this model. I was considering powering it with a couple of Surpass .21 four stokes. I then discovered Electrics and the project suddenly seemed so much more feasible and enjoyable. This was in 1989.

I ordered the plans from RCM and started building. After several attempts at a light but strong structure and thoughts of several different power plants, I finally had a model well underway.

I met Marc Thomson in 1994 and discovered that he was building a very similar size of the CL-415 - the newer turboprop version of the CL-215. Marc had his finished



**Robert's CL-215 in background & Marc's CL-425. Both photos that appear here are from Robert's site at: <http://www.clo.com/~piker>**

and flying in late 1995 and has dazzled all spectators with his great building and flying skills ever since.

This Summer, I forced myself to finish off the Water Bomber for the Halton Hills Fun Fly. My main objective was to have it flying; "Finishing" would come later.

The test flight was to be performed on Sunday morning, the week before the Fun Fly. It was to be done from water as I didn't have any landing gear for the plane yet. This meant that the test flight was also the time when the water performance would also be proven. I went to the local beach at 6:00 am to beat the crowds, and more importantly, the wind and waves. The best place in my area was right from the open Lake Ontario! I had no retrieval boat, so failure was not an option.

I placed the plane in the water and started taxiing. I found the air rudder was not very effective for steering on the water, but I managed to get the plane into position for take-off. Acceleration was clean and fast. The plane climbed up on step and was in the air in about 20 feet. The flight was great and was comfortable enough for a roll and some playing with the flaps. I landed and taxied in. Good flight.

The plane has flown almost 20 flights since then. Most have been from the water. I've taken it to the Halton Hills Fun Fly, the Christie Float Fly and the Toronto R/C Club Fun Fly. It's been flown from several different water locations and in various weather conditions. It even had a collision with a swan on landing! I felt horrible for the swan, but he's fine. Anyway, the plane got the worst of the deal. It's patched up now but still needs some attention to detail.

This plane is a combination of successes and failures for

me. The successes are obvious, but the failures may not be. I found later (Marc was the first to bring it to my attention) that the plans I started to build from, were not very "scale". I modified the structure significantly to get it closer, but there are still some inaccuracies lingering from before. Also, the plane came out A LOT heavier than I had hoped. I don't know why. I built it VERY light, even building it MUCH lighter than most people would dare, but it still came out at

8 lbs !!. It still has plenty of power and flies very well, but I would like better duration.

To remedy the steering problem on the water, Stefan Vorkoetter let me steal his great idea of dropping a resistance across one motor to reduce the power to it

and, as a result, increased the power to the other motor.

I do this by having the rudder servo hit micro switches at it's limits which then places the resistor in the motor circuit. I do this with a 1 ohm, 30 watt resistor that sits in the fuselage. It's pretty neat. I can give more details if you like and if you see me at the field, feel free to ask me to demonstrate. Apparently this has also been done by someone in BC.

I'm running out of space here so I'll get to the important stuff. The specs are:

**Plane:** Canadair CL-215 "Water Bomber"

**Scale:** 1/15

**Wing Span:** 76"

**Wing area:** 790 sq.in.

**Weight:** 8 lbs

**Power:** 2 x Astro 05 geared (2.38:1)

**Cells:** 16 x 1700SCR

**Props:** 12 x 8 MA Electric (for now)

**ESC:** Horak

**Functions:** Rud, Elev, Ail, Throttle, Flaps

**Servos:** Futaba 148 (standard)

Even with all it's faults, I'm very happy with this plane. I'll like it even more as I fine tune it over the winter. I'm now looking for another twin flying boat project for my two Astro 25's.

If you have access to the Internet, have a look at my Web Page. The URL is : <http://www.clo.com/~piker>. There are more pictures there of this plane, as well as MANY others.

**MODIFYING THE ElectriCUB**

By Walt Gray(#411)

My modifications to the Great Planes ElectriCUB began at the building stage where I discarded virtually all the lite ply and, using old Sig Cub plans as a guide, substituted 1/4" stick balsa laid over the GP plans. I modified the cabin bulkheads to allow the wing to be bolted to the fuse with two bolts and a 1/4" dowel. The modified bulkheads were cut from a carbon fibre/foam sandwich material to further reduce weight.

Using the motor cradle supplied with the kit, I installed an AF 035G (3:1) motor with an MA 9x8 e prop, a 7x1700 mAh pack, a Horak SPC35 ESC and a 250 mAh receiver battery. I used two standard JR servos and a JR receiver. Flying weight was about 52 oz.

The first two or three flights in the fall of 1996 were not very impressive. The plane would not ROG from our grass field, and the final hand launch was poorly executed resulting in a sudden stop from about 10' which tore the cowl section, complete with motor, off the fuse.

Before rebuilding, I solicited advice from the E Zone discussion group ([www.ezonemag.com](http://www.ezonemag.com)) which proved to be invaluable. An AF 05G (3:1) was installed and the interior of the fuse modified to accept a 10 x 1700 mAh pack. The pack had to be broken up into two five-cell packs in order to get it into the fuse because of structural obstructions. The revised flying weight was 57 oz.

Propped once again with the MA9x8 e, the plane's performance this summer improved considerably. While still not a world-beater, she at least behaved like a flying machine rather than a brick. Further experimentation with different props indicate that an APC 10x7 appears to give the best combination of performance and duration with flight



EMF Photo

times in the 7-9 minute range (with good throttle control). While not really aerobatic, respectable loops are possible and I might even be able to get it to do a passable roll (because

of the large rudder). The MA 10x8 e gave a truly impressive performance but duration dropped by about 25%. I'm going to try an APC 10x8 and see if it offers any advantage.

In summary, the above modifications turned a wimpy excuse for an airplane into a very enjoyable one to fly. Now, if I can just get my heart out of my throat each time I try to land....!

**Lazy Bee Special 50" Rating**

From: Grant Calkins - CasinoOp@aol.com

Stars: \*\* (2)

**Equipment:** Master Airscrew geared (3:1) 050 electric, 11x7 APC prop JR Rx, 2 mini servos (R and E) and 1 Hitec micro servo (aileron), 600 mAh Rx battery, Hitec 217 ESC.

**Weight** about 49 oz

**Comments:** Fun to fly, although a little radical on the controls, but a nightmare to build. This plane has a severe tendency to ground loop during the takeoff run. You have to use reduced-rate rudder to even keep it halfway straight, and even then about 1/3 of the takeoffs have to be aborted.

**Instructions:** inadequate and sketches (there are no photos) don't necessarily match the particular version you are building. Short of wood in several places, and whole plane seems to be built from you-laminate-them balsa sticks. Plane ends up pretty strong except for a serious structural weakness at the front wing hold down point (top front of cabin) and tailwheel mount (part of rudder, which is only hinged to fuse!). A kit in name only.

*(Just a reminder for all of you Bee lovers out there. All of the plane ratings in the Ampeer are the OPINIONS of the builders and fliers of that model. km)*

**Want an X440 But Don't Have a Computer Radio?**

*Jim Ryan of Cincinnati, OH gave out some good information about where to get a small mixer to install in the SR Batteries X440. I sure wish I knew this when Richard and I were trying to put our X440 together.*

*As you know "the X-440 is designed for radio mixing of the V-tail, but if you don't have a computer radio, do not despair. Art Quillen of Quillen Engineering, sells a dandy little electronic mixer that is about the size of a postage stamp. It costs about \$30. You can reach Art at:*

Art Quillen  
Quillen Engineering  
561 North 750 West  
Hobart, IN 46342  
(219) 759-5298

**Radio Shack Digital Multimeter**

by EFO member - Don Skiff

I just bought a digital multimeter from Radio Shack, on sale for \$99US that has a computer serial connection and software for DOS and Windows to display, record, or graph everything that the meter measures. You can use it for data logging, and save the data into files for manipulation (such as calculating pack capacity). I used it for peak detection charging of a pack of six 600AE cells, which my

AstroFlight 110XL would not handle, and for cycling packs, it is easy to tell when the pack is exhausted.

It also measures frequency, capacity, and checks diodes and transistors.

It's a great new tool! Stock number 22-168A.

*(I also found out that Ralph Weaver like it too. Ralph has written a Windows program that will start beeping when the pack has peaked, and another that beeps when the pack is down to 1.0V/cell. Both of his programs graph the voltage vs time. You can reach Ralph by visiting his Website at <http://www.iquest.net/~weaver>)*

### Go Fast and Turn Left, With Speed 400's

Archie Adamisin of Adamisin Racing Concepts (email at: [ARCadam67@aol.com](mailto:ARCadam67@aol.com)) is planning on running Speed 400 races here in the Garden City, MI area this year.

As of this writing, there are still a lot of details to be worked out, but Archie his hoping get as good a turn out as possible. He's planning on having the first contest sometime in May or June, then the last contest sometime in August or September. He's also letting vendors know that they will be welcome to show off their products.

### Heat Shrinkable, Paintable Covering

There is a material known as Doculam that is available for about 5 cents per foot. It is 1.5 mil thick. It is applied at 275-300 degrees F with the final shrink taking place at 400F. It takes paint, and is puncture and sag resistant. It weighs 1.1oz per sq.yd. It is available from:

Grant Enterprises

Office: (800) 338-5370

Fax: (714) 863-1556

Web info at: [http://www.grant-ent.com/5ge4\\_03.htm](http://www.grant-ent.com/5ge4_03.htm)

### Astro Flight Gearbox Ratios for the 035 - 15

info from Robert Boucher  
<http://www.AstroFlight.com>

Astro Flight has two pinions for its 035, 05 and 15 motors. They are an 11 tooth and 13 tooth. With these pinions these ratios are available:

31/13 = 2.38 this is std gear box

31/11 = 2.82 std gear box with optional 11T pinion

48/13 = 3.69 super box with optional 13 tooth pinion

48/11 = 4.36 this is std super box set up

We also have 13 tooth pinion bored to 3/16 for MaxCim motors and 5mm for Graupner and Aveox motors.

### Getting Up to Speed - 400 That Is Part 3: Building the Speedy

Chris Boultinghouse & Dale O'Donnell

from DEAF Notes, the Newsletter of the Dallas Electric Aircraft Fliers, edited by Frank Korman, 9354 Forest Hills Blvd., Dallas, TX 75218-3633

*(Note: Part 1 was in the March '97 Ampeer and Part 2 was in the July Special Edition Ampeer. km)*

In the last two issues we talked about motors, props, airframe theory and construction methods. This time we have construction tips for "Speedy", designed, built, and written-up by my good friend **Dale O'Donnell**. **Speedy** can be used as a racer, or just a fun little sport plane for general flying. The plans reproduced here, (and the construction tips), reflect the use of a foam wing. Plans that are ordered from **CAB Designs** (See below) will also include instructions and drawings for a built-up wing. At some point in the future we may offer kits, but for now it is a plans only offering.

These construction tips are rather brief, and are meant to give you an idea of what is involved should you choose to build a Speedy. More detailed instructions are included with the plan set, along with full-size CAD drawn templates for all parts.

### Wing Construction

After the cores have been cut dehair them using a dry sponge. Lightly sand the cores to remove any bumps. Spray glue the cores together using 3M 77. Cut the sheeting to 30 1/2" and join if necessary. Sheet the wings using a good laminating resin such as West Systems or HobbyPoxy2. A good way to do this is to use a plastic filler knife (Bondo knife) and cut "V" notches 1/16" deep every 1/2" along the bottom edge. Use an un-notched knife to spread the epoxy until the wood is completely covered. Then come back and with the notched knife and scrape off the excess resin until you are left with little ridges of resin, and the area between the ridges looks dry. Run a piece of 1.75 oz. fiberglass cloth 10" wide in the center of the wing between the core and skin. Place the skins and cores back in the beds and either vacuum bag or place on a flat surface and stack about 100-200 pounds of weight on top.

After the resin is cured cut out the ailerons. Bevel the LE of the ailerons. Cut a 1/8" wide notch through the bottom wing sheeting from the inboard side of the aileron to the center of the wing. Remove carefully and place aside. Then carefully cut through the foam to the sheeting on the other side and install the torque rods for the ailerons then replace the piece that was cut out. Glue on the L.E. balsa stock and sand to shape. Drill four 3/8" holes through the top sheeting for the bolt hard points. Remove the foam down to the

bottom skin, but do not cut through the bottom skin. Cut the 3/8" dowel rod to fit in the holes and glue in place.

### Fuselage Construction

Cut 8 pieces of 1/32" balsa 3" long and join 4 for each side of the fuselage with the grain running vertical. These are to be used as doublers for the 1/16" balsa sides. Cut a piece of 1/32" and a piece of 1/16" balsa 3" long to use as the formers. Laminate the 1/32" cross grain balsa to the 1/16" sheets with a layer of 1.75 oz. glass cloth trapped between the sheets. Do the same for the 3" pieces. Run the grain of the 1/32" perpendicular to the 1/16". (See last month's article for tips on laminating fiberglass to balsa - **CAB**). After the epoxy cures lightly spray glue the patterns to the balsa using 3M 77 contact adhesive (rubber cement will also work). Then cut out using a bandsaw or a sharp knife.

On the other piece of 1/16" balsa draw a center-line the length of the piece and draw lines where the formers go square to the centerline. Using CA, glue the B and C formers to the 1/16" with the center of the formers on the centerline. Make sure the formers are square with the table. Glue the two fuse sides to the formers with the 1/32" cross grain facing in then pull the sides together at the tail till they meet over the centerline and glue sides together. After the tail has been glued glue down the sides from the B former all the way to the tail. Glue the firewall to the sides with it lined up on the centerline then glue to the bottom sheeting. Then run 1/32" cross grain sheeting inside on the fuse bottom from the firewall to where the other cross grain on the sides stop. (For extra strength run 1/8 x 1/8 square stock in the corners where the sides meet the bottom). Cut a strip of 1.75 oz. cloth the width of the fuse and spray glue to the bottom of the fuse from the firewall to the T.E of the wing. Coat the cloth with 5 minute epoxy and using a hair dryer warm the resin and wipe off the excess with a paper towel. (Again, see last month's article - **CAB**).

Using 1/32" balsa, place cross-grain sheeting from the L.E. of the tail to 3" behind the C former (this leaves a space that will be used to access the rear servo). Also run 1/16" cross grain sheeting from the firewall to the L.E. of the wing. Cut out the wing hold down blocks and epoxy in place. Drill the wing for the bolt holes and then with the wing sitting square on the fuse drill the hold down blocks and install the T-nuts. Nylon 4-40 bolts are quite sufficient to retain the wing. If you cannot find these locally, we have them available here at **CAB Designs**.

Using 3/32" balsa cut out the tails and

elevators. Then sand the roots to the correct angle and round the L.E. of the tails and sand the T.E. to a good point. Join the tails at 110 degrees between the tails. Then glue to the fuse with the wing bolted on to get the correct alignment. The slot indicated on the plans will give the correct incidence in relation to the wing.

### Final Assembly

Slightly round the corners of the fuse and cover with your choice of covering material. Tissue and dope would work well, as does plastic film. Just remember to keep it light! Install the servos and cut out the control horns from 1/16 ply. Glue the horns in and run the pull-pull cables. We've found that **Berkley Gorilla Braid** (30-40 lb. test) works very well for control strings. Set up the control throws as follows. Ailerons... 3/8 " both directions. Elevator.... 1/4" in both directions. Install the motor and battery pack. CG the plane 1.5" back from the LE of the wing for the first flight and gradually move back if desired.

So, there you have it. As you can see, there isn't much to building one of these little guys! Full size plans and instructions are available for \$12 (shipping included) from:

CAB Designs

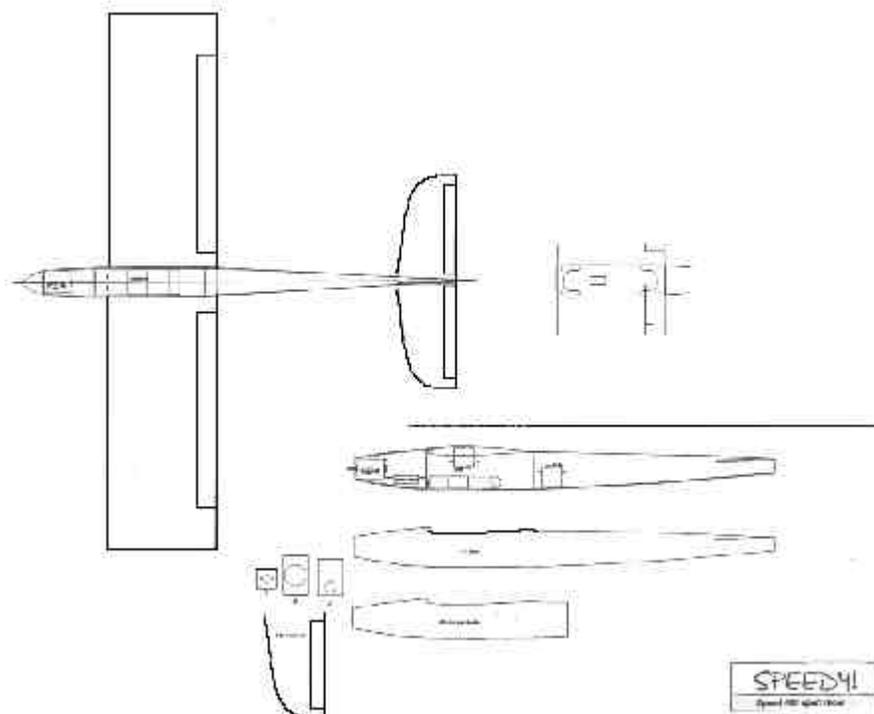
2007 Brook Hollow

Cedar Park, TX 78613

Email CABDesigns@aol.com

### Getting Up to Speed - 400 That Is Part 4: Let's Go Racing

Chris Boultinghouse & Dale O'Donnell  
Starts On the Next Page →



[This is the conclusion of a series that started in **DEAF** Notes. Part 1 was a general intro to Speed 400 airframes, power systems, props, etc. Part 2 explained how to build light and strong. Part 3 dealt with building the Speedy pylon racer. We hope this series of fine articles has whetted your appetite for Speed 400 generally, and pylon racing in particular. Thanks to both guys for these fine articles. Ed.]

Okay, so now you have your Speedy finished and you want to “go fast and turn left.” There are two separate schools of thought on the best way to race. I’ve only tried one, but both look like fun. Both are presented for your consideration.

### RULES

Motor(s) must be stock Mabuchi 380. This includes the **Graupner, Robbe, Johnson, Salt Creek Special, etc.** It does not include the **Kyosho AP-29, Graupner Speed 480 Race**, or the new **Astro 020 Brushless** motor. The only modification allowed to the motor is the advancement of the timing. Any prop is allowed as long as it meets AMA guidelines.

Battery is limited to 7 nickel cadmium cells (any size)

Airframe. No limits. The low power of the Speed 400 imposes its own limits on maximum airframe size, and equipment and wing loading concerns sets a lower limit. Want to race a Canard or flying wing? Have at it!

These are simple rules. This is intended to be a FUN event. Note the use of plural on motor. Yes, you could fly a twin on 7 1000 cells and complete 10 laps. P-38 racing anyone?

#### Method 1

##### Course worker requirements:

- 6 pylon judges (turn marshals)
- 4 timers
- 1 starter

##### Equipment requirements:

- 3 poles, 10 ft. high with flags
- 4 stop watches
- 4 “flip charts” with pages number 1-10 in large numbers
- 5 flags, each a different color (one green)
- hard-hats or bike helmets for all course workers
- optional chain link “cages” for pylon 1 turn marshals.

The object is to fly 10 laps as quickly as possible without “cuts” (flying inside the pylon instead of around it). Four planes are flown on the course at the same time. Each lap counter/timer and #1 pylon judge is assigned to watch a specific plane before the race starts. The 4 people at the #1

pylon signal (via colored flag) when their assigned plane passes the pylon. There is a single person at each of the other two pylons to assure no cuts. There are also 4 lap counters/timers. Launches are “staggered”. The four launchers/callers stand side-by-side about 10 ft apart. When the timer drops the start flag, the inside and middle planes launch, and a split second later when the flag comes back up the outside and remaining planes launch. This helps avoid mid-air starts at the start. After the planes are on the way the callers go back to their pilot and at about this time yell “TURN” as the plane passes the #1 pylon. The pilots and callers are standing near turns 2 and 3 so they can judge the turn themselves. As each plane passes around turn 3 the timer for that plane flips the page on the chart to the next number so the caller can keep track of what lap the plane is on. In the heat of competition it is not possible to keep count of the laps. Trust me! You are so intent on flying a tight course and avoiding the other planes you don’t think of anything else. If a pilot “cuts” a turn he or she must fly an extra lap. This usually means last place (unless someone else cuts). Two cuts and you zero the round. Scoring is strictly time. Fastest time around 10 laps wins.

The fact that speed is the emphasis raises concerns of “illegal” motors or just abusing the stock motor to the point of destruction just to get the fastest times. It would be nice to think that no one would cheat, but sadly it happens. Hence, the following rules (which I shamefully copied from Aveox’s web site at <http://www.aveox.com>. Thanks **Matt Orme!** FK)

#### Method 2 (By way of Matt Orme)

Here are my proposed 1/2A electric (“Speed 400”) pylon rules. They use rules adopted from AMA Event 614 (Class A (7-cell) pylon racing) except:

1. Pylon course length of 60 feet between pylons A and B, and 200 feet between A and C, and B and C as described on page 88 of the AMA 1996-1997 rules and regulations.
2. Limit the battery pack to 7 nickel cadmium cells.
3. Limit motors to those with motor constants (Km) of 1.15 or less.

Km is in inch ounces per root watt, and shall be calculated by dividing the Torque constant (Kt) in Inch-Ounces per Amp by the square root of the motors resistance. Kt can be calculated from the manufacturers published Speed Constant Kv (no load rpm per volt) which is divided into 1352 to calculate Kt. ( $Kt * Kv = 1352$ ). Resistance shall be taken as the manufacturers published or stated values. Manufacturers are defined as in, and can qualify a motor as in Q-15 supplemental 4.2 (page 97 of the 1996-1997

regulations), as they would apply to electric motors, either by supplying the Km, or the other values to calculate it from. A list of compliant motors would then be made.

The alternative task shall be 4 minutes, and the maximum number of laps wins, and in the event of a tie, the plane in the lead at the finish signal shall be the winner. An audible signal shall signal the start, and finish of the event. Planes that come to rest before the 4 minute signal shall score DNF (zero points) for that round.

Note. A **Graupner 6V Speed 400 (Mabuchi RS380PH)** motor has a Km of 1.02, the Robbe power 400/35 (their 6V equivalent, a Mabuchi RS380SH) has a Km of .947, while a Speed 480 race has a Km of 1.23. The rules would be simple, and eliminate all the bigger motors.

The Km values were determined for the 400 motors from the **Mabuchi** data, which differs from the **Graupner/Robbe** published data, while the 480 came from the **Graupner** catalog.

Mabuchi Numbering system: R-round; S-carbon brushes; 3-armature diameter; 8-magnet size, or case length; 0-poles. 0=3, 5=5, 3=12; and S-magnet type (S and P magnets are defined by Mabuchi as the same type, but P are called high torque magnets, H-metal and plastic rear end housing).

As you can see, instead of 10 laps at maximum speed, the object of this race is to fly the maximum number of laps in **FOUR MINUTES**. Note that if you do not fly for four minutes you get **ZERO** points! This effectively eliminates pushing the motor for maximum power and forces careful design and prop choices.

I'm not going to get into a battle over which type of racing is best. Heck, fly both types on the same day! This will really shake everybody up. They both look fun and challenging, and isn't that what this whole silly hobby is about? FK

[Chris may be reached at 2007 Brook Hollow, Cedar Park, TX 78613. Email = CABDesigns@aol.com. Ed.]

**60 Amp Fuse Holder by Howard Chevalier  
from Deaf Notes - Edited by Frank Korman**

[I've grown lazy lately not installing fuses in my planes, and justifying this by noting that 30 amps seems to be the largest auto type fuse available ... hardly enough for a competition motor. Ironically, it is these high amp systems that pose the greatest hazard if not fused.

**Howard Chevalier** to the rescue with the following. Should be pretty self explanatory. FK]

(I get my spade lugs, like shown in Howard's drawing, at Radio Shack. km)

**San Diego Meet in February 1998!**

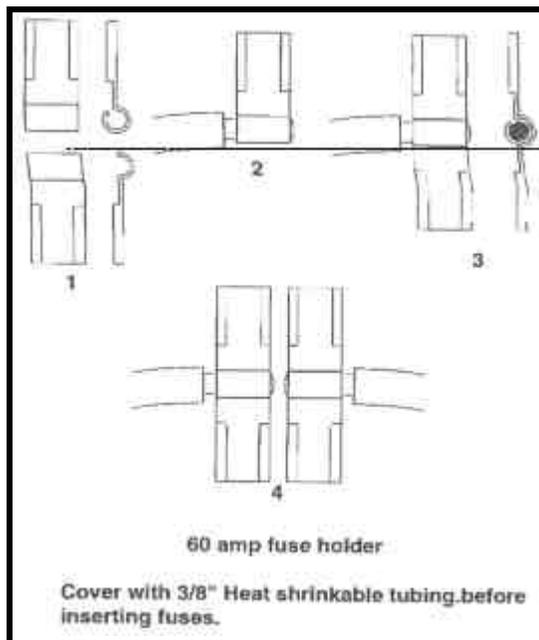
**TO ALL ELECTRIC FLYERS EVERYWHERE**

The Silent Electric Flyers Of San Diego proudly announce **THE SAN DIEGO WINTER ELECTRICS** -- February 13-14-15 1998.

A first ever fun-fly for snowbirds and escapees from winter's rigors. The meet will be held on the shores of Mission Bay next to SEA WORLD and a mile from our famous San Diego ZOO and AEROSPACE MUSEUM. We invite all builders and AMA flyers of electric aircraft to show us their best at a location just a mile from where Charles Lindbergh first lifted the SPIRIT OF ST. LOUIS into sky.

Details on this exciting meet can be found at our website <http://www.sefsd.org> A full schedule of activities is planned during daylight plus a tour of the museum and a banquet featuring as speaker, "**ASTROBOB**" BOUCHER, will be held in the evening.

Equipment manufacturers and vendors are invited to display their latest achievements. For details, e-address-[info@sefsd.org](mailto:info@sefsd.org).



**A Greeting Card Plane Finder  
via Watts Current - edited by Doug Ward  
R.D #1, Box 189  
Irwin, PA  
DWard79207@aol.com**

Just when you thought you knew everything...

Some months ago, **Greg Lee** presented the club with a neat little gadget which he salvaged from instant banishment

to the trash can. It was.. well, let's let him tell it:

Cheap? I like to call it *thrifty*. When it comes to silicon I hate to throw anything away. Even though my wife calls me a pack-rat, I know that someday I will find a use for it. This is a classic example of such a project.

The sound generator of a musical greeting card has some specifications that make it a good locator for lost aircraft, especially electric models. It has the following desirable characteristics:

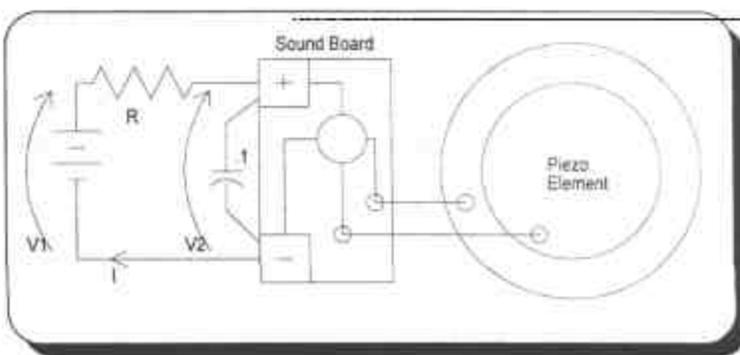
- 1) Light weight--2 oz. or six grams.
- 2) Low power requirement-- 15 mA @ 1.5 VDC which allows a theoretical 2.2 years of use from a receiver pack.
- 3) Sound level--55dB at one meter, audible to the un dead at 100 feet.
- 4) Small size-- 1 1/8" diameter; 1/4" thick.
- 5) Low cost--one resistor, \$.10, one capacitor, \$.35 and one servo plug \$???
- 6) Simple operation--if it has power, it makes music.

Most sound boards of greeting cards are powered by 1.5 VDC, although some might use three-volt batteries. By adding a resistor, you can step the voltage down for your receiver pack. You will also need a .1  $\mu$ f capacitor to smooth out the pulsation from the different tones. To calculate the value for the resistor, just follow the simple formula below where V1 is the receiver pack voltage, V2 is the sound board voltage and I avg. is the average current in amps:

$$R=(V1-V2) \div I \text{ avg.}$$

$$R=(4.8-1.5) \div .00015$$

$$R=22,000 \text{ or the closest standard value}$$



(Very clever, **Greg**. Now, if only someone would send me a card.. .DW)

### Foam Wing Sheeting Tip

from Archie Adamisin ARCadam67@aol.com

(This tip first appeared on the eflight-list in October last

year. I asked and received Archie's permission to reproduce it here in the Ampeer for you. km)

There is a simple, cheap solution to this problem. Go to your local hardware store and buy some presswood, some straight 1 x 2's, (4) 1/4 20 threaded rod, (8) 1/4-20 nuts, (12) 1/4" washers, (4) wingnuts, and a bit of time. Use these materials to build yourself a press. I have used this press when I didn't feel like using the vacuum bag and this gives you great results as well. I cut the press to be able to accept wings for speed 400 racers up to Q-40 racers. The outer dimensions are 14" wide x 32" long. I use the threaded rod in the four corners and jam nuts to adjust the space in between the press. I set the jam nuts 1/32" thinner than the core with cradles & sheeting. The compression gives you even pressure over the whole surface of the wing. As far as materials for sheeting, I would use hard 1/32 balsa and epoxy to sheet the wing. This should give you a strong yet light wing. I have had a lot of success with my speed 400 racers with this method.

Good Luck,  
Archie Adamisin



### West Winds Fournier RF4 Rating

Grant Calkins

Muroc Model Masters (Edwards AFB)

CasinoOp@aol.com

The model I've completed is the Fournier RF4 by West Winds models of the UK. The motor used is a Graupner 480 BB Race (the recommended Speed 400 wasn't strong enough to ROG!), 7x3 prop, 7x600mAh battery, AstroFlight #217 ESC, weight 32 oz ready to fly. On the first flight it was slightly tail heavy, and the recommended control movements were too extreme, but it flew beautifully. There was plenty of power, and it glides beautifully, like the motor-sailer it was modeled after. The first flight was contrasted to an actual SR71 Blackbird that flew by in the background! Not the same planes!! I have to give this model a solid \*\*\*\* (4 stars).

**Adding Ball Bearings to the Magnetic Mayhem**

from Mike Pfeiffer via the MARCEE Newsletter

The MM is a great motor for the price, but the bushings are really a weak point. I wore out the front bushing after only a few flights in a direct-drive configuration. The bushings seem to last much longer in a gear-drive configuration.

- 1) Obtain qty. 2 1/8" I.D. x 3/8" O.D. (available from Tower Hobbies, etc. For \$4-\$5 per pair - part #dyn3106.
- 2) Scribe a line on the end cap and case so that they can be reassembled in the correct orientation.
- 3) Use a Dremel tool with a cutoff wheel to cut approx. half-way through the locking tabs which hold the end cap to the case.
- 4) Remove the metal shavings from the motor case using masking tape.
- 5) Remove the brush springs and pull the brushes out of the holders (no need to remove the screws holding the brush shunts).
- 6) Use a small screwdriver to pry the tabs up and remove the end cap. **Note:** there will be one or two small spacers on the shaft or stuck to back of the bushing-do not lose these.
- 7) Remove the armature from the can - see spacer note above.
- 8) Use a vice and the appropriate sized punch to press out the bushings.
- 9) Use a 3/8" diameter dowel or brass tubing to press in the rear bearing.
- 10) Wrap cardboard or similar around the dowel/tubing to center it in the motor can and press in the front bearing.
- 11) Reassemble the motor ensuring that the shaft spacers are in the correct location.
- 12) If the motor or brushes are new, turn the end cap to neutral timing, secure with tape and run the motor for approx. 15 minutes to break in the brushes.
- 13) Turn the end cap to the factory setting and bend down the locking tabs. Apply a small amount of CA to the end cap to ensure it does not come loose. **Note:** this is also an excellent opportunity to re-time a forward rotation motor for reverse rotation (the forward rotation motors are usually available from Tower's stock but the reverse ones are frequently back ordered). The timing appears to be set correctly for most applications so I would recommend not changing that.

**Making Spinners**

*(Some of this information came from a conversation on the eflight-list, to which you can subscribe at <http://www.ezonemag.com> I'm always leery about posting*

*info from the list or other e-mails not sent directly to me, but this is such a great idea. I HIGHLY recommend that you get the EFI issue with Steve whole article in it, as this is very brief and sketchy, but the idea is here. Please note that I have edited Steve's comments to make it clearer and hopefully more readable. km)*

Take a lump (block) of balsa and impale it on a length of dowel. Chuck the dowel up into an electric drill. Turn the block to shape and then stick the dowel in from the other end and hollow the spinner to suit your prop nut. Cut notches on either side to clear the prop blades, and screw it to a ply backplate (essential!).

Like most other things, it gets easier as you make more of them. Since these are made from scrap balsa that would be thrown out anyway, you have nothing to lose. *(I really like this next part. I'd never thought of it before, but it is so simple! I don't know who said the next paragraph, but it's useful and Steve responds in the following paragraph. km)*

"Apart from Steve's ideas, I have also seen a normal spinner as the front half of the scale spinner with the rear half being made false and not rotating. This does result in the prop and motor being further forward, but it looks OK in the air."

This is more durable than balsa spinners, it really depends on your subject. If you want to make an exotic bird, say an Albatross D-III or Hawker Fury, you'll have to make your own spinner anyway.

*(Please note that these ideas and thoughts are from: Steve Kerry, Yorkshire, UK km)*

**Sprite-20 Update:**

From: pdelcast@idir.net (Patrick del Castillo)

Ken!!! Thanks for the spot in the Ampeer!

Unfortunately, the info you had was quite old, and is no longer accurate....*(Yikes! - even this little rage has problems with lead time! km!)*

I've shipped over 300 Sprite-20s in the last four months. They have been VERY successful.

I took the Griffin-40 and Griffin-60 designs and rolled them into a single design, the Griffin-50. It is a 50 amp continuous controller with BEC. It ended up only 0.7" x 1.2", so is smaller than I originally had thought. It will be shipping by the time you read this. It retails for \$95.00 and will be available at New Creations and NE Sailplane Products.

The Pegasus is still in development as a 50 amp controller -- and the Dragon data logger is in development, but will be an in-flight data logger only (logging voltage, current and G-loads) - so that it can be used with brushless motors as

**Upcoming Events:**

**February 13, 14, 15 1998 - THE SAN DIEGO WINTER ELECTRICS** -- February 13-14-15 1998. Equipment manufacturers and vendors are invited to display their latest achievements. For details, e-address- info@sefsd.org.

**June 13 & 14, Knights of the Air 1998 Land of Lincoln E-Fly in Springfield, Illinois.** For more information, contact Tim McDonough

**June 13 & 14** the River Valley Flyers announce The River Valley Electric Only Fun Fly to be held in central Wisconsin (Wisconsin Rapids area). The CD is their club newsletter editor, Richard Ida. For more information, contact Richard Ida at Inspctr398@aol.com

**June 26th, 27th & 28th MARCEE98** At the 3M R/C flying field. More information to follow.

**July 11 & 12** Mid-America Electric Flies to be held at the Midwest R/C Society flying field on 5 Mile Rd. near Napier Rd. in Northville Twp., MI, which is near Plymouth, MI. Hosted by the Ann Arbor Falcons, CD Keith Shaw, & the Electric Flyers Only, Inc., CD Ken Myers. Contact Ken for more details.

**July 18 & 19** Voltaires of Central New York Tenth Annual All Electric Fun Fly - Grenadiers Field, Caughdenoy, NY. Contact Garret Wikoff 315-695-4271, wikoff@ibm.net or Gordon Wheler, 5 Old Farms Ln., Cazenovia, NY

13035.

**August 2, 3, & 4** AMA/NEAC Electric Nationals, Muncie, IN at AMA Headquarters. Old-timer, glider and S400 competition. Contact Doug Ward, president of NEAC

**August 8 & 9** Fort Wayne ElectriFly The club is situated at a park that also has camping sites just a stone's throw away. Saturday will be exclusively electric flying, as well as into the evening. Sunday will be "open" flying to all members of our club, but the field is usually vacant on Sunday mornings.

**For Sale:**

**Brand-new: Airtronics Infinity 660** 6ch w/4 102 servos, 600mAh Rx pack on Channel 15. \$300  
Doug Kursinsky, 37752 Jerome, Sterling Hts.,  
MI 48312 (248) 264-5014

**Sprite-20 continued:**

well as brushed motors. It will also be able to log flights of over 2 hours (no longer limited to eight minutes)

Also, I have a phone number for **Castle Creations:** (913) 397-0813 - The phone number you gave was my home number. :) (*oops - km*)

Again, thanks for the spot! And let me know if you want pictures!  
Patrick del Castillo - Castle Creations



The Ampeer  
Ken Myers  
1911 Bradshaw Ct.  
Walled Lake, MI 48390

**Next Meeting: Date: Thursday, February 5  
Time: 7:00**

**Ken's house: Wear building clothes**

**Note earlier starting time**