

# HCRC Flyer

October 2021



AMA Charter #341



I think I speak for all of us in saying we have lost a great pilot and a even greater friend, Andre was a wonderful person through and through. If it was not for him and Eddie I would not know how to fly (my dad just taught me how to crash ... Kidding "sorta" ). Andre was one of the friendliest people I have ever met whether he knew you or not he was always kind and willing to help. He also served as club treasurer for six years AND was the longest serving president from 2000 to 2008.

Without a doubt he will be missed. –Alan Jr

## Obituary for Andre M. Bouchard

May 30, 1944 - September 15, 2021



Andre M. Bouchard 1944 – 2021 Feeding Hills – Andre M. Bouchard, 77, passed away suddenly on September 15, 2021 at Baystate Medical Center. Andre was born on May 30, 1944 in Springfield MA to the late Marcel and Laurette (Boudreau) Bouchard. Andre graduated from LaSalette in Enfield, NH and went on to attend Assumption College for a couple semesters before choosing to start his own business as a painter. Andre married the love of his life, Patricia Ann Walsh, in 1968 and spent 52 beautiful years together raising a family, before she predeceased him in 2020. Andre was a communicant of Holy Name Church, Springfield. Andre loved woodworking and was an avid skier. He loved building and flying his model RC planes and served on the board of the Hampshire County RC Club for many years. More than anything, he loved his time with his family and sharing their loves and interests. Andre leaves behind his children Claudine Bouchard, Linda Perlmutter, and Michael Bouchard; his son-in-law Brent Perlmutter; 2 grandchildren Nora and Gwyneth Perlmutter; his brothers Paul Bouchard and Gilbert Bouchard; his sister-in-law Deborah Bouchard, and many nieces, nephews and cousins. Andre was predeceased by his parents, his loving wife Patricia, his brother, Raymond, and sister Jacqueline. Family and friends are invited to gather on Monday September 20, 2021 from 4-7 PM in Colonial Forastiere Funeral & Cremation, 985 Main St., Agawam MA. Funeral services are Tuesday September 21, 2021 starting at 9:45 AM in the funeral home. A Liturgy of Christian Burial will follow at 11:00 AM at Holy Name Church, 323 Dickinson St., Springfield. Burial will be in Springfield Street Cemetery, Feeding Hills. To leave an online condolence, visit [www.forastiere.com](http://www.forastiere.com).



HCRC Meeting Notes from Thursday, September 2nd, 2021

No Quorum Present. 13 Members including 4 Executive Members present

Executive Members present: Mike Shaw, Dan Kapinos, Ron Paul, Bill Ewers

Members present: Ed Kopec, Mike Booth, Pat Malone, Bob Prosciak, Andre Bouchard, Tracy Page, Gordie Lauder, Leland Johnston and Santiago Mercado

Club finances for the month of August were reported and approved.

Wings Over Hadley was cancelled due to poor weather forecasts. In hindsight, Saturday could have been held.

Locking the Gate - Please lock the gate as shown in the signs posted at the field and at the gate. Do not pull the chain tight when locking the gate. This places stress on the turnstile bearings and results in the need to replace them more frequently.

There is a need to clean up sumac around the perimeter of the field. The club is exploring options.

Please consider volunteering for our Great New England Electric Festival. We need multiple volunteers to help make our event a success. Please remember that you do not have to volunteer for the full day. Please consider working a shift and then flying or vice versa.

Our upcoming event schedule:

10/3 All Electric Fly-In  
10/30 Fall Field Clean Up Party

Other Club's Events

10/2 Wallingford Swap Meet

New Member Applications:

Magnus Harrison was voted into the club.

**Message and article submitted by Ron**

## **A Note To Members**

Our October meeting will be held on Thursday October 7<sup>th</sup> at 7PM at the VFW 18 Meadow Street, Florence.

Food will be served around 6:30.

We will be serving a Pasta with pork and cabbage.

Hot coffee and cold drinks also available.

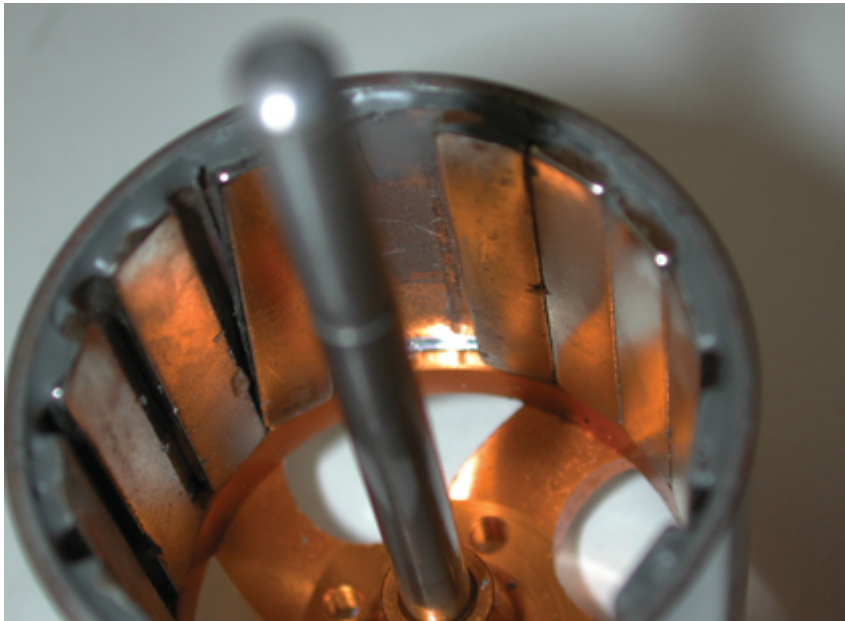
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**Don't cook your ESC!**



### **Avoid these common power system mistakes**

Electric fliers all have one thing in common regardless of the size or type of models they fly—the electronic speed control (ESC). It doesn't matter if you fly helicopters, airplanes, giant-scale, indoor, or micro models; at the heart of your power system is the speed control, and if it's unhappy, you will be too. The costs and types of speed controls vary in every aspect and that includes quality. The one constant, however, is your understanding of how to make them last, which in the end, saves money and your aircraft!



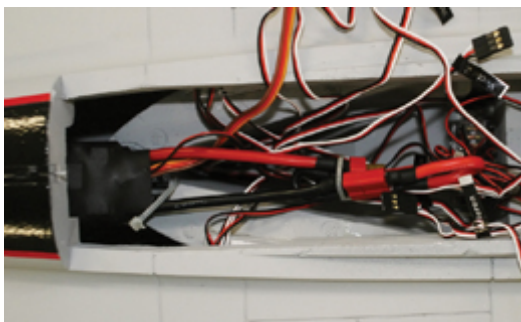
**Poorly constructed motors can throw magnets and cause extreme current spikes that will destroy a speed control.**

### **Quality Matters**

This pretty much covers everything. Quality motors, connectors, speed controls, installation, solder joints, etc., but let's talk about components. When encountering speed control problems, we don't often think about whether they might have been caused by a cheap (poorly made) motor, but it can and does happen. I recently experienced a catastrophic failure in a foam jet that caused the speed control to melt and

actually burn its way out of the bottom of the aircraft. Parts of it were left inside, but it unsoldered itself and melted completely. Upon post-mortem inspection, I found that the magnets inside the motor were unevenly spaced and one had actually come loose and been chewed into pieces as the motor spun. The funny thing about electric motors is when something starts to go wrong, the motor will just ask for more current so it can work to overcome it. My on-board data logger showed normal current at takeoff and shortly after, it began to climb until it spiked off the scale. This is an indication that the motor was failing and the binding of the magnet chunks caused the excessive current spike that subsequently melted the speed control. Some speed controls have over-current protection and others don't. Look for one that does! This doesn't guarantee that it won't be damaged by a sudden failure like mine, but it just may help save the speed control. This was an expensive failure due to a poorly made motor.

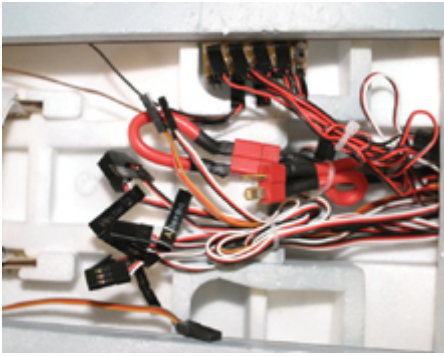
### **BE COOL!**



**The speed control in this foam jet is jammed into the nose, so it's fully insulated and gets no cooling air. With the heavy load from the motor and too many servos, this will overheat and die quickly.**

Install your speed control in a place where you can get maximum airflow across it. Remember that if you let cool air into the fuselage, you have to provide a place for the air to get out too. That exit hole should be about twice the size of the inlet hole. Heat is the enemy, so the cooler you keep your speed control, the happier it will be.





**Eleven servos and an onboard LED lighting system overtax the speed control's BEC.**

### SIZE MATTERS

The quickest way to get experience buying speed controls is to buy them too small for the application—meaning the motor voltage and current requirements along with the BEC (battery eliminator circuit) requirements if you're using one. If you're sizing your speed control based on the

maximum requirements of the system and you're just barely meeting them, go to the next size up. If you can use one with a heat sink, do so. If your BEC requirements match or exceed the ratings of the speed control's BEC, then choose a different speed control or disable the BEC and use appropriate receiver power. Remember, if your BEC fails, you lose the airplane.

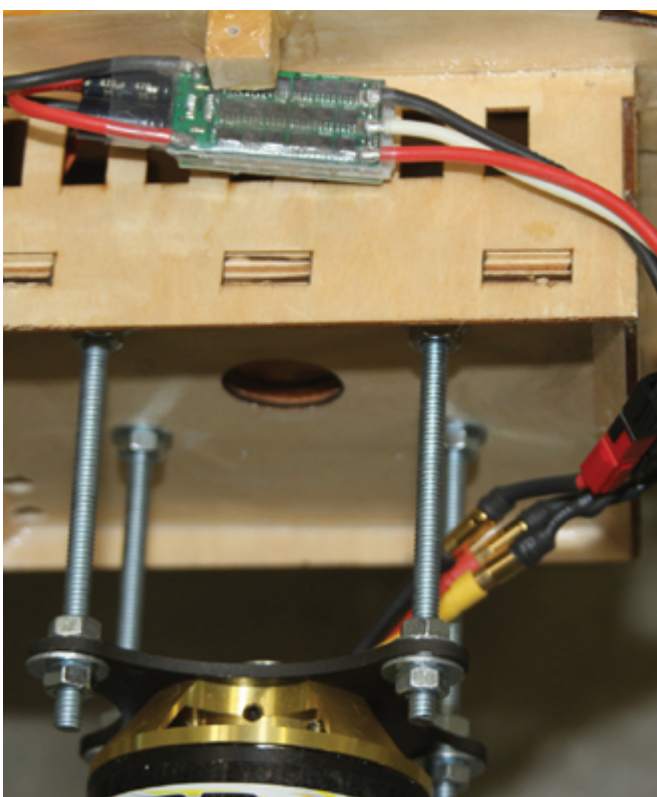
### Proper Soldering



**A good soldered joint between the wire and 6mm bullet will handle a lot of current. Note that there is no excess solder running all over the outside of the bullet and the joint is shiny clean.**

Many of the connectors in our electric power systems need to be soldered to wires. Always use properly sized wire gauges and quality connectors. Even the best soldering job can't make up for bad wire and poorly made connectors. A properly soldered joint is shiny! Your components can't be

too clean, so clean the components before trying to solder them. Your fingers will get oils on everything, so be careful with what you touch. Tin both surfaces before joining them and then use just enough heat to let the solder flow between the two pieces. If the iron is oversized and too hot, it will end up being a dark, burned joint. If the solder flows and ends up nice, shiny, and bright—you've been successful.



### Wiring Basics

**This is a big motor requiring a large speed control and unfortunately, this one isn't up to the task. Adding to the problems is the small gauge wire and adapter using uninsulated bullets. This system was caught and changed before there could be a problem.**

A question I often hear is, "Is it better to lengthen the wires from the battery to the speed control or to lengthen the wires from the speed control to the motor?" Online forums are full of ideas, opinions, conjecture, and debate over this question. Let me give the simple answer first; it is better to lengthen the wires from the speed control to the motor and keep the battery wires as short as possible. That's it, plain and simple.

The debate arises over resistance and inductance. It's argued that using a larger gauge wire reduces the resistance, making Recipe for a Cooked longer battery wires acceptable. While it does reduce resistance, it doesn't take into account the

increased inductance it causes. Proponents of lengthening the battery wires say that can be overcome by adding additional capacitors to the front of the speed control. This is a patch, not a fix. The speed control comes with capacitors installed as determined by the manufacturer for its intended application. Without specific knowledge on current and how good the flyback diodes are, along with the switching speed of the FETs, voltage rating of the FETs, and types of FETs, you're grasping at straws. If you do know those things, you'll still need to do a lot of math to figure out the appropriate caps to add.

### Recipe for a Cooked Speed Control

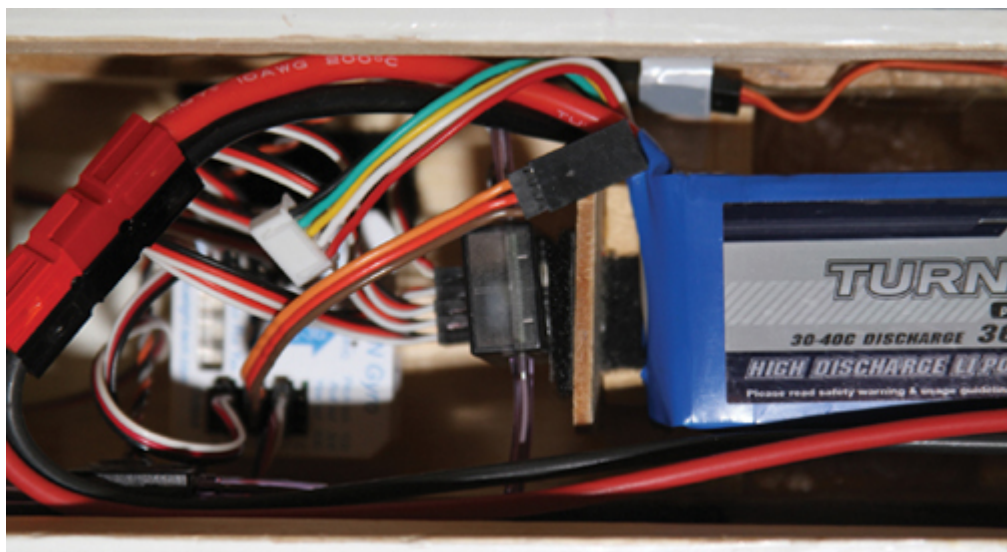
- Take one undersized speed control
- Add cold solder joints
- Use extra long wires from the battery to the speed control
- Pack it in a foam plane with no cooling air
- Fly partial throttle settings extensively
- Push the BEC to its max limits and beyond
- Fly consecutive flights without a break

Here are quotes from AstroFlight's Bob Boucher on the topic of which wire to lengthen:

- ***Wire resistance may rob you of a bit of power, but it will not destroy your speed control or motor.***
- ***Wire inductance will not damage your motor nor will you be able to detect any effect even with 100 feet of wire.***
- ***Wire inductance will kill the mosfets in your controller and may even blow the caps. Ed. Note: Bob is comparing inductance in the motor to speed control wire with inductance in the speed control to battery wire.***
- ***You must keep battery wires as short as practical. Short means one foot or less, brushed or brushless makes no difference.***

Bob is better known as "AstroBob," former owner of AstroFlight and holder of a patent on electric flight. When AstroBob talks, I listen. Always lengthen the wires from the motor to the speed control if needed. The best possible solution is to keep all wires as short as possible, but we know that's not always easy when you're doing that special scale project.

### NEATNESS COUNTS



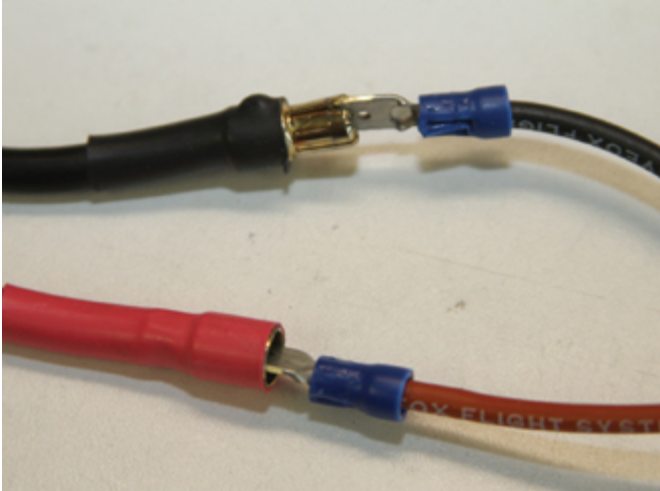
**All of these unsecured wires flopping around right over the receiver antenna will cause trouble. There is also 18 inches of wire from the battery to the speed control, and that's WAY too much!**

Remember what your mother told you, "neatness is important." A jumble of wires just stuffed into a fuselage can cause many problems,

especially if they are unsecured and flopping around on top of your receiver antenna. We have become overly secure with our robust 2.4 systems, but wires moving around in close proximity or touching the antennas can and will cause reception problems. If you have so much wire that you need to bundle them or tie them up, take



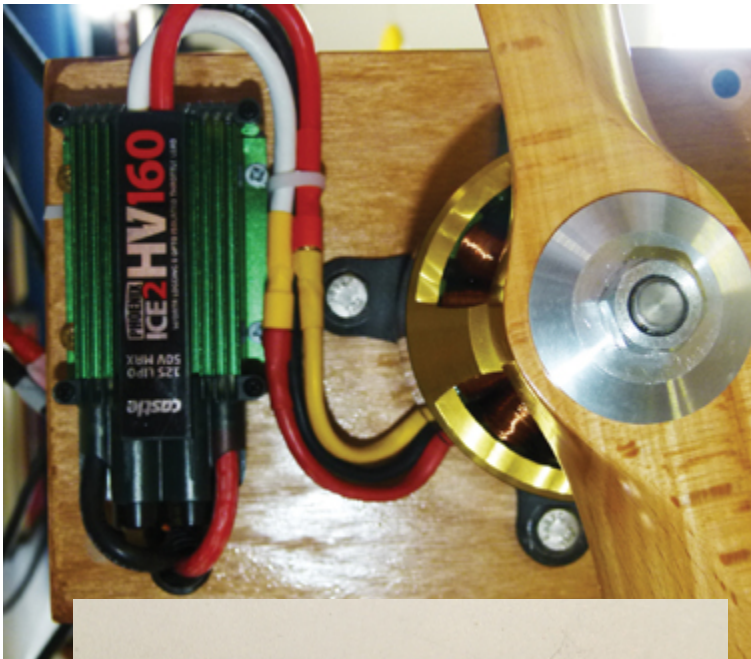
the time to trim them to the proper size. This makes the plane safer, but also shortens wires and decreases resistance. This counts whether it's for your motor/speed control or servos.



**Mismatched connectors are ALWAYS a bad idea.**

### Connectors & Adapters

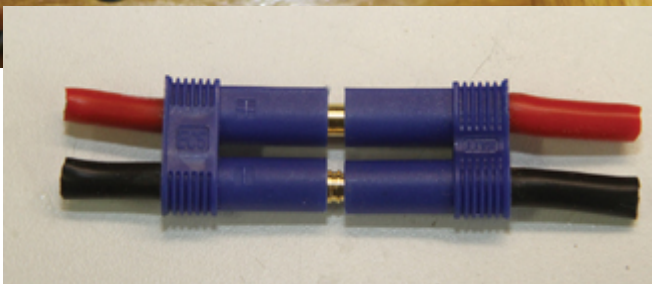
**Note the securely attached speed control for this big power system and how the connections are well insulated and secured. Short wire runs and a protective grommet in the firewall, where the wires pass through, ensures no shorts over time.**



**An improper extension made by jamming a bullet into the EC5 connectors. Great connectors ruined by a bad idea.**

**A homemade parallel battery connector in a plane; wire nuts belong at home, not in your plane.**

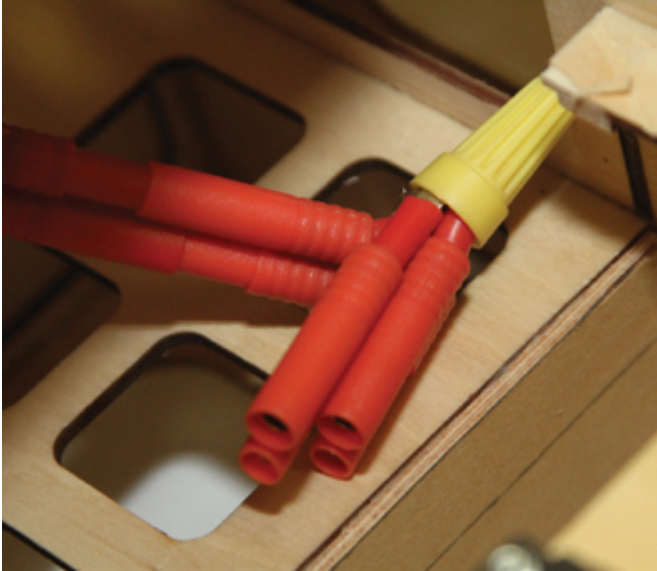
There is no standardization between connector types, so most of us end up using an adapter at one time or another. Be sure to wire and solder them carefully. Double check the adapter before using it. The goal in electrics is to reduce the possibility for increased resistance in our circuits. This causes heat and wasted power. It's best not to use an adapter, but if it's necessary, be sure it's properly sized and constructed. Wire nuts have their places in home wiring construction, but NEVER belong inside our aircraft.



4mm bullet connector, then go to a 6mm size. The same applies when you're using EC3s or whatever brand. You want the most surface contact and least amount of resistance you can get for maximum efficiency from your system.

### Tips for a Happy Speed Control





- Buy a quality speed control
- Buy one large enough to handle the load
- Don't exceed the BEC limits
- Provide cooling; all that you can get
- Keep wires as short as possible
- Use appropriate connectors

NEVER mismatch connectors. I've seen Dean's Ultras jammed into female bullet types and that is a recipe for disaster. I've also seen spade plugs shoved into the grooves between the contacts on a male bullet connector. Likewise, alligator clips have no place in an electric airplane. They may seem like a universal fix, but it's actually a universal mistake. All of these things can be inefficient, but more importantly—they are all dangerous and create a fire hazard.

## MOUNT IT SECURELY

It's not always easy to find the right place to securely mount the speed control, but it's absolutely necessary. Some larger controllers come with mounting brackets so they can be screwed to the front of a firewall, etc. Most smaller controllers depend on you to figure it out. Velcro is the usual method of choice and works well. Be sure it is secure though. If in doubt, use industrial strength versions or rigid lock tabs. Whatever you do, don't allow it to flop around inside your plane held only by the wires.

## BOTTOM LINE

No one wants to cook their speed controllers! As with everything else involved in our hobby, it's the small details that matter the most. Avoid these common mistakes and you'll maximize your airplane's efficiency and greatly lengthen its lifespan. —BY GREG GIMLICK

## Airplane of the month: **Stark Industries Helicarrier**



The Helicarrier, an aircraft carrier specifically designed to be itself capable of independent powered flight in addition to the standard functions of aircraft carriers, is the world headquarters and signature capital ship of the extra-governmental intelligence/defense agency S.H.I.E.L.D.. <sup>[citation needed]</sup>

Built by Stark Industries and designed by Tony Stark, Dr. Reed Richards, and former X-Man [Forge](#).

In addition to housing wings of fighters and other aircraft, the Helicarrier bristles with advanced weaponry, including an intercontinental ballistic missile.

## Upcoming Events:

10/3 (Rain date 10/10) Great New England Electric Festival

10/7 Club business meeting 7pm (location VFW Florence, MA **Come early for food prepared by Chef Ron**)

11/7 Club business meeting 7pm (Location VFW Florence, MA

**OUTSIDE Club Events**

## Message from Ted T



One of the guys I work with found this up by the park on Elm in Hatfield a few years ago. Just by chance we were talking RC and mentioned that he found it. Didn't know if this might have been a fly away from HCRC or if a member might have lost it. I think it's a freewing AvantiS jet. Looks like a 90mm EDF. If you find someone that can name the battery brand, size and cell count I'll be glad to return it to them.

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