

Newsletter of The River Valley Flyers

Club #948-----June 2021

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From the Club President: Summer is about ready to begin, what a great time of the year it is in Central Wisconsin. With the long daytime hours and the comfortable daytime temperatures, it's a great time to get outside and enjoy the early summer season.



Take advantage of the summer days this year and have some fun with friends and family again. You may even want to take a model aircraft or two down to the flying field to hone your flying skills again. Either way, make a point to get out and have some fun again this summer!

There has been a fair of flying activity going on at the field so far this spring, and it is good to see that our members are starting to get out again this year. I have been out numerous times this spring setting up my Trex 500 helicopter and flying a few airplanes too. The Trex is flying great and I have the set up kind of where I want it to be, but still have some minor issues that I need to resolve with an occasional tail wag in fast forward flight.

I am quite happy with the electronic flybarless control system, as the rotorhead setup is a lot easier to do than with the old flybar rotorhead systems. The electronic stability also helps control the aircraft in a cross wind, which is something that affected the flybarred rotor systems of the past. I still need to spend more time just flying it to get comfortable with the way it feels and handles.

There seems to be an increase of ducted fan jets in our club this year. These newer designed jets seem to have more power than past versions, and the stability of the aircraft seems to be a little better too.

They are still pretty fast and require a faster takeoff and landing speed, and can cover a lot of distance in the sky in a short time. The pilot has to pay attention and always stay focused on the aircraft in flight. They are exciting to watch, and I'm sure they are exciting to fly too.

The club field is looking good this year except for a few signs some burrowing on the north and east edges of the field. So far, it seems to be staying off the runways, but we should watch this in the months ahead. The field is scheduled to be mowed weekly throughout the summer and fall season, and will most likely get mowed early in the week depending on the weather that week and the amount of growth we have during the season.

The storage shed has been updated to get the mower inside, but still needs some door work on the east end. That will get done in the next few months. Thanks to all who helped out with the field maintenance days we had early in the season.

Starting again this summer, perhaps we can go back to having Club Night on Monday evenings starting in June. This would be a night each week to get together, have some fun together, and help out anyone who needs help or has questions about getting started in the hobby.

If the weather is bad on Mondays (windy or rainy), we would just not have it that one week. Just something to consider as we head through the summer season.

That all I have this month, let's plan to have the June meeting out at the field again on Wednesday June 2nd around 6:30 P.M., with some flying beforehand. We don't have a lot of club business to discuss this month, so we can keep the meeting short. If the weather looks bad, I will notify everyone about the change of plan. Hope to see you then.

Don

Upcoming Area Events

If anyone hears about any up coming events, please let me know. (Rick Ida)

Also, check out our Facebook page at <https://www.facebook.com/groups/124394500927324>

River Valley Flyers Monthly Meeting Notice:

The monthly meeting at the field unless rain. Stay tuned for email updates!

Website: www.RiverValleyFlyers.org

Don't cook your ESC!

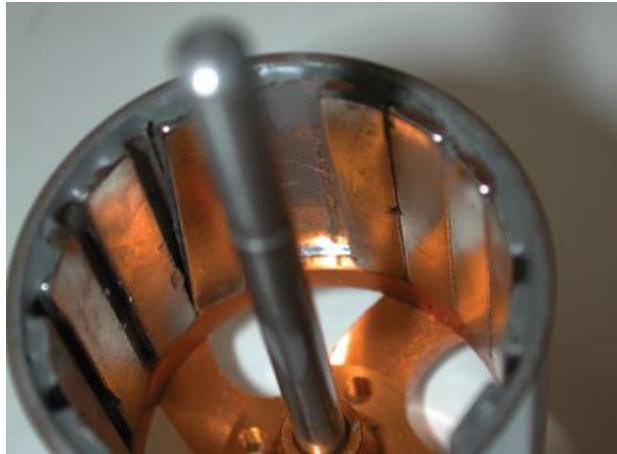
Model Airplane News



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.

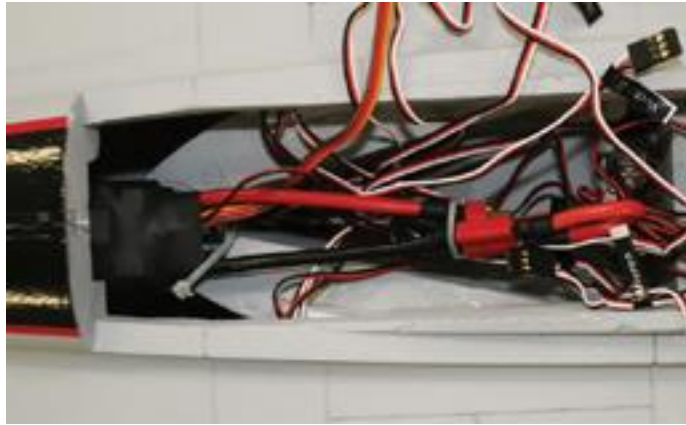
Quality Matters

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

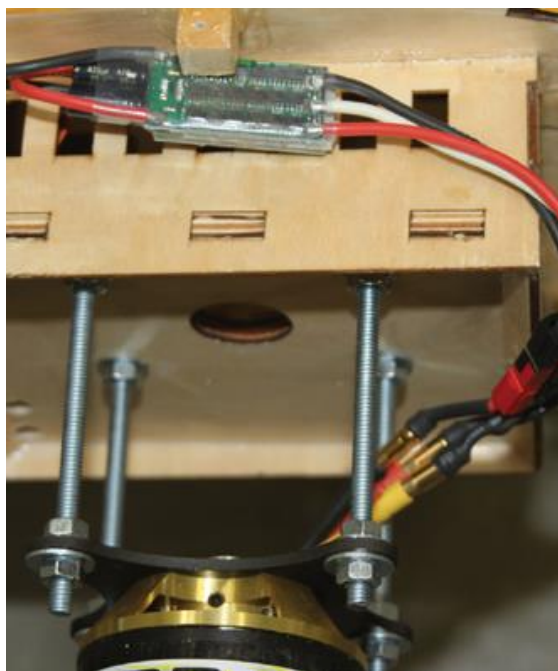


A good soldered joint between the wire and 6mm bullet will handle a lot of current. Note that there is no excess solder running all over the outside of the bullet and the joint is shiny clean.

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

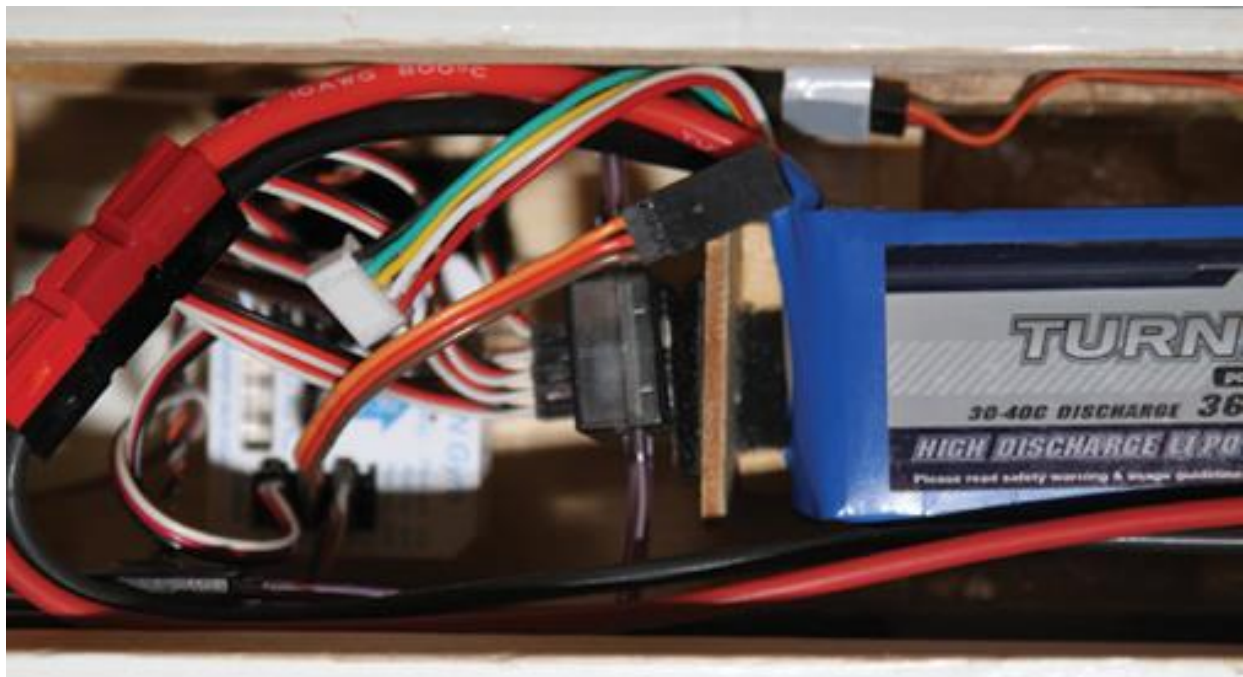
- Take one undersized speed control
- Add cold solder joints
- Use extra long wires from the battery to the speed control
- Pack it in a foam plane with no cooling air
- Fly partial throttle settings extensively
- Push the BEC to its max limits and beyond
- Fly consecutive flights without a break

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.**

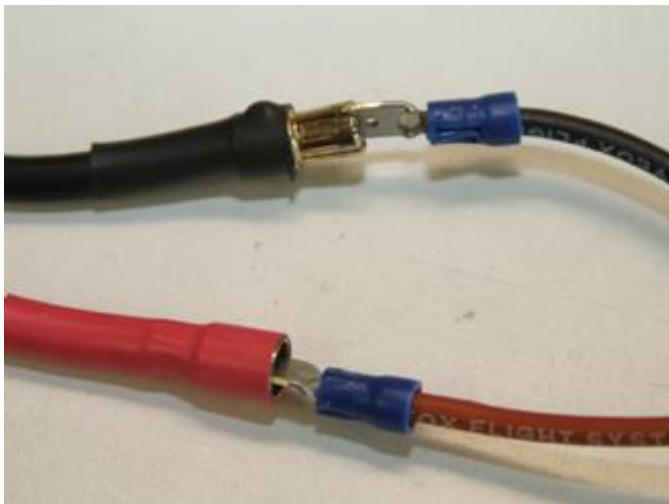
Bob is better known as “AstroBob,” former owner of AstroFlight and holder of a patent on electric flight. When AstroBob talks, I listen. Always lengthen the wires from the motor to the speed control if needed. The best possible solution is to keep all wires as short as possible, but we know that’s not 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.

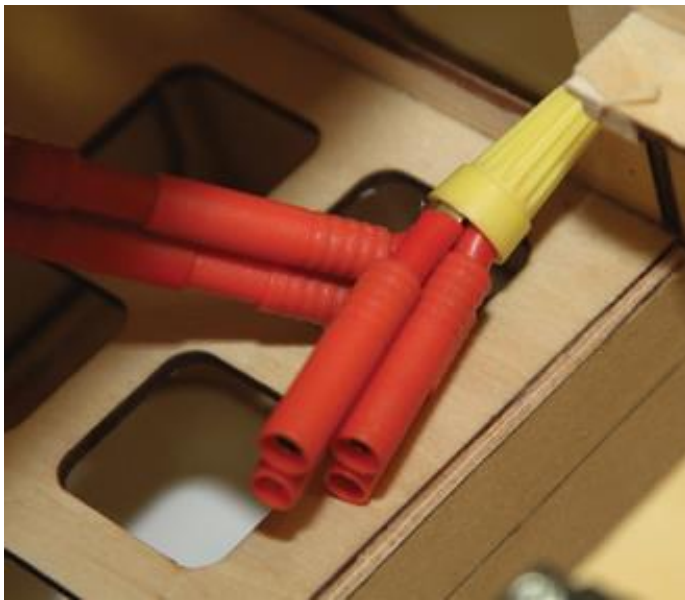
Connectors & Adapters



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.

Check your manufacturer's website to see the limits of their connectors. If you're pushing the limits of your 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

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SAFETY REPORT

Hi guys,

As I'm writing this I realize I will be in Florida for the June meeting so I hope you don't miss me too much. Not to worry, I'll be back on June 8 to continue the supervision of all the safety infractions going on so please be careful while I'm out of town.

Y'all be careful now,
See you next month,

Larry Chamberlin
RVFRC Safety Officer



FOR SALE (let me know when sold - Rick)

FOR SALE

Spad advanced trainer made from Coroplast-almost indestructible. YS45 for power, dual aileron servos, ski setup for winter flying also.



\$125.00

Tom Marty

715-340-1708

ysrcflyer@yahoo.com

GREMLIN flying wing combat plane. wings are fully sheeted.
YS45 for power.



\$100.00

Tom Marty

715-340-1708

ysrcflyer@yahoo.com



I have 2 brand new still in the package 1100kv motors complete with motor mount and prop adapter. I ordered them and then found out I didn't need them.

Asking \$8 each.

Thanks.

Don Horne



Hobby Eagle A3-L Stabilizer,
basic 2D, 3D style. New, decided
to use a different brand. Cost
about \$19.00, asking \$10.00

Thanks
Rick Ida

For Sale Continued...



FlightLine F7F-3 Tigercat 1600mm (63" wingspan)

It comes with the upgrade landing gear-not installed

I fly it with 2-4000mAh 4s batteries. It flies great. Batteries not included

I also have some spare prop blades

It has Callie Graphics "King of the Cats" graphics

It is in excellent condition.

\$300 with Admiral Receiver(RX600SP) which has gyro and recovery

Bob O'Connor oconnorfam1@gmail.com



River Valley Flyers Model Aircraft Club

2021 Membership Form

The “River Valley Flyers” are a model aircraft flying group interested in all aspects of Model Aviation and are located in Central Wisconsin. We are a chartered Academy of Model Aeronautics [AMA] club. All club members must also be AMA Members. We maintain a flying site in southern Portage County in the Township of Grant in the Central Wisconsin area.

Membership Categories and Dues

Full Adult Membership.... \$50

Age eighteen years and older by January 1st of the year of application. Includes voting rights and club field usage rights.

Family/Group Membership.... \$55

All members covered by a Family/Group Membership must have a direct spouse or offspring relationship, Father-Son, Husband –Wife and or Junior Member. Includes voting rights [except for junior members] and club field usage rights.

Junior Membership.... \$15

Under age eighteen years old by January 1st of year of application. All junior members need to be sponsored by a Full Adult Member even though they are not related by an offspring relationship. Includes field usage rights but no voting rights.

Guest Membership.... \$30 For someone who belongs to another local club but wishes to access our field for flying as well. Includes field usage rights but no voting rights. Must send a copy of current AMA and Local Club Membership Cards with application.

MEMBERSHIP APPLICATION (PLEASE PRINT CLEARLY)

Please bring completed application form below with proof of AMA to RVF meeting or mail to:

Bob O'Connor 2220 Lovewood Drive Wisconsin Rapids Wisconsin 54494

Make checks payable to **River Valley Flyers** (Only Cash or Check Accepted)

Name: _____

Address: _____

City: _____ Zip: _____

Phone: _____ E-Mail _____

AMA# _____ Membership Category: _____

Dues Enclosed: _____ (Cash or Check Only)