AMOS September 2015 Newsletter

AMOS Board Meeting Minutes 8-31-15

Agenda: Flight Fest-- No info at this time. They have not responded to e-mail or home calls.
Year End Committees:

Chairman Bob Rives of the Board Nominating Committee will give a Report at the October General meeting. Member Katy Rives could use more help.

Budget: Chairman Fred Light will give a Report at the December General meeting

Audit: Gloria Irey, Mal Toy , Audit Chairman Tracy Trammell David Jenkins and Dean Crump will give a report at the December General meeting.

Remaining Events for 2015
OCTOBER Jets Oct. 10th Randy Sizemore to run.
DECEMBER Xmas Dinner Dec. 6th (Sunday) Turkey Creek)

Board Reports Vice-President- Mike Haston—Discussed Board Meeting start times.

Treasurer—Gloria Irey—We have $1919 in checking and savings. Still considered OK. Loan Balance is down to $27,500.

Membership- Jim Irey—We are now up to 240 members.

Event Chairperson—Richard Cross. Wants us to consider expanding heli shade covers. No action taken.
Field Marshall—Glen Gibson-Runways are patched , but new holes have appeared including heli pad.
New Items: Membership - in exchange for items for sale A discussion pro and con ensued. A motion made by Marv Bennett and 2nd by Jim Irey was that we would assist members in selling equipment and then they would pay for their membership themselves. Motion Carried.

Garbage left at field - Each Event chairman is responsible to see that the field and garbage is cleaned up after an event. There are garbage bags in the wooden shed.

General - We have zip ties for the shade covers and will be installed as needed. Vent holes have been inslalled in the metal shed to facilitate storing propane cylinders in the winter time. In the mean time they are stored at Jim Irey's.

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AMOS General Meeting Minutes 9-8-15

Unfinished Business:

Flight Fest - No Go, They are looking for a larger Venue.

Thunder Valley Jet Fly. October 10th. Randy Sizemore to run. This will be a big event. Expecting a large pilot turnout, even some arriving on Thursday to camp out. Would like help from club members. Contact Randy to volunteer to help.

Christmas Dinner - Sunday Dec. 6th. To be at Turkey Creek, cocktails at 6 and dinner at 7pm.

End of Year Committees Nominating: Chairman Bob Rives Report at Oct. General meeting. Members Kathy Rives and Marv Bennett Budget: Chairman Fred Light. Report at Dec. General Meeting. Members Gloria Irey and Mal Toy Audit: Chairman Tracy Trammell. Report at Dec. General Meeting Members: David Jenkins and Dean Crump

New Business - Senate Bill 142 is on the Governor's desk and is not friendly to our activity. John Sorenson said we should read the e-mail from AMA.

Randy Allen would like to see us put on a Profile Event. John Sorenson to get with him to see if he has specifics.

Board Reports :

President—John Sorenson Chaired tonight's meeting.
Treasurer—Absent-- Jim Irey commented we had paid off $2500 plus interest and we were now down to $27,500 in loans. We have $1900 in checking .

Membership—Jim Irey-- We now have 224 members in the club.

AMOS 2015 Upcoming Events Reminder

10/10- Jet Fun Fly - Randy Sizemore, Mike Haston

12/19- Christmas Dinner - Turkey Creek Golf Club - Jim Hill

September Event News:

9/12-Presidents Fun Fly -

This was a good fun day at the field. The turnout was good around 10 pilots showed up to enjoy the nice but overcast weather. The club Members and there Families that showed up enjoyed a free lunch. Activities like the Limbo and Combat flying were enjoyed by pilots and spectators. The sun did come out around noon.






9-26-Thunder Valley Rally of Giants

This turned out to be a very well attended event with around 30 Pilots and many spectators. Sun and 6 mph wind made the conditions ideal!! Giant Scale R/C Planes of all types were flying in the event. It was good to see a mix this year instead of all 3D planes. Many large Warbirds were present. Great Music and BBQ made the event very special. The profit from food after expenses was $130.

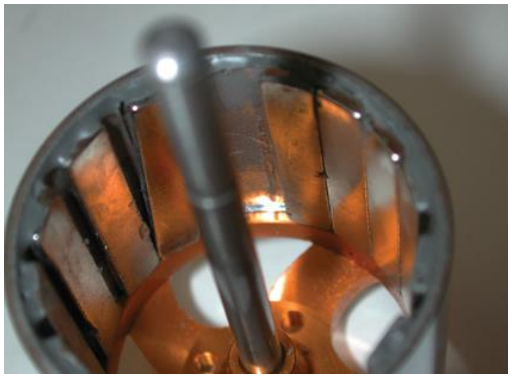





Electric R/C Model Electronics - ESC's Motors and wiring - Common Mistakes

Here's a informative article I found for the members burning up there electric planes. It has some good tips on setting up electric models so they don't cook!!

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

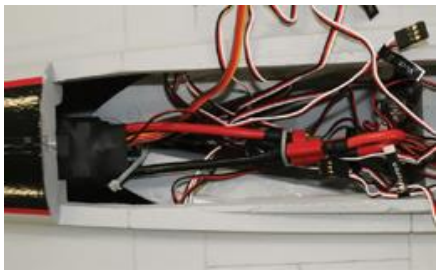
This article pretty much covers everything. Quality motors, connectors, speed controls, installation, solder joints, etc., but let's talk about components. When encountering speed control problems, we don't often think about whether they might have been caused by a cheap (poorly made) motor, but it can 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.

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.

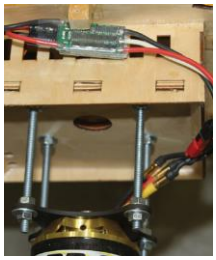
Proper Soldering

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 un-insulated bullets.

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 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 Astro-Flight's Bob Boucher on the topic of which wire to lengthen:

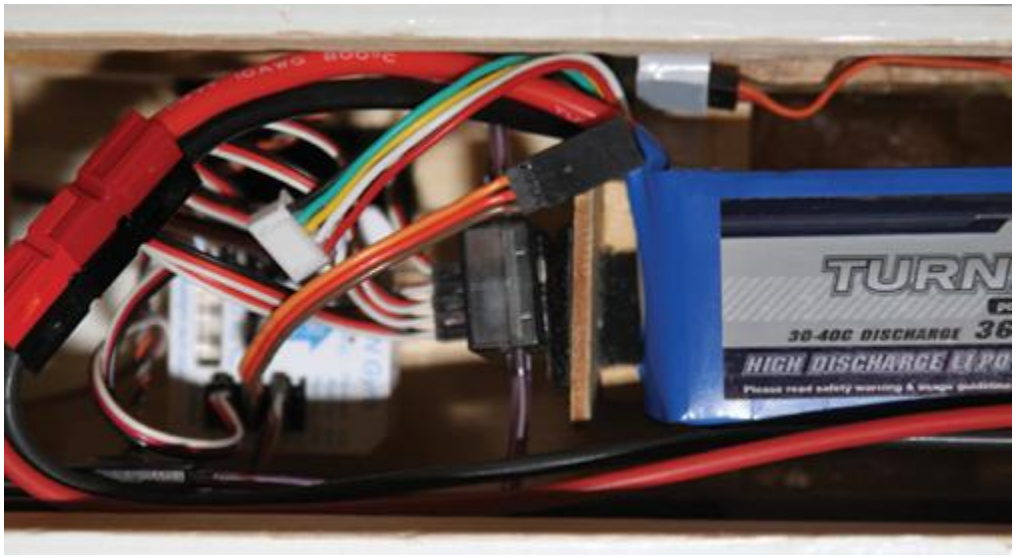
•Wire resistance may rob you of a bit of power, but it will not destroy your speed control or motor.

•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.

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.

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**

<u>Never mismatch connectors</u>. 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.

<u>MOUNT IT SECURELY</u> - 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.

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.

<u>Blonde Jokes</u>:

Why can't a blonde dial 911?
- She can't find the eleven key

Why did the blonde tip toe near the medicine cabinet? Because she didn't want to wake the sleeping pills!!

Did you hear about the blonde that got excited? She finished a jigsaw puzzle in six months, when the box said, "two to four years."

<u>Yo mamma Jokes - for the teenagers!!</u>

Yo mamma is so fat that when she went to the beach a whale swam up and sang, "We are family, even though you're fatter than me."

Yo mamma so fat when she registered for MySpace there was no space left.

Yo mamma is so fat that when she sat on a laptop, the hardware turned into software!

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