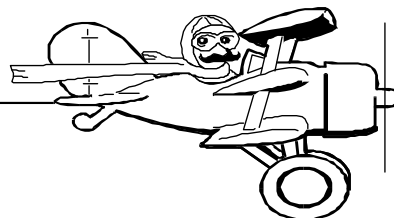


THE AVIATOR



The Official Newsletter of Brauer's Aviators
AMA Club Charter # 1612 - www.brauersaviators.org

Volume XXXVI Issue 418

Next meeting Saturday September 14 at 12 PM
At the Field

September 2024

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NEXT MEETING

Our next meeting will be Saturday, September 14th at 12:00 noon at the field. (Weather and field conditions permitting.) This will most likely be our last picnic for the season. We'll be serving up hot dogs at this meeting. For \$5.00 you'll get two hot dogs, a bag of chips and a drink.



WARREN BATH



We're sad to have learned that Warren Bath has passed away. Warren was a member and past President of Brauers Aviators. He's gone over the rainbow – with a plane.



AUGUST MEETING HIGHLIGHTS



The August meeting was lightly attended but we had a great time. We ate hot dogs, flew and auctioned some donated items for the benefit of the club.



NEW MEMBER WELCOME

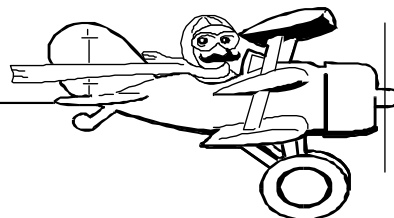
Brauer's Aviators welcomes our newest member – Nolan Brown. Please be sure to introduce yourself and say "Hi" when you see him at a meeting or flying at our field.



Club Email: Brauers_aviators@yahoo.com



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LIPO BATTERIES

A beginners guide to LiPo batteries for R/C -Portions taken from the AMA Flight School Article "LiPo Battery Basics"

Safety First

Rumors abound about safety, or lack thereof, when using LiPo batteries. Much of that is leftover from the early days of LiPo packs and the lack of information available to the user at the time.

Incorrect chargers were used, incorrect voltage cutoffs were used, and they were being discharged at levels that the packs couldn't support. As chemistries, protective circuits, and information improved, LiPo batteries have become a safe and suitable source of power. Here are a few simple rules for increasing your safety:

- Always store batteries in a fire-safe container.
- Always charge with an appropriate charger designed for LiPos.
- Always follow the manufacturer's instructions for charging and discharging rates.
- Always size a pack according to its usage.
- Never overcharge.
- Never overdischarge.
- Never use a puffed pack.
- Never use a pack that has visible damage (dents, cracks, etc).
- Never charge a pack unattended.
- Never disassemble or reconfigure a damaged pack.

Most accidents involving LiPo packs are the result of not following one of these rules. Understand the charger you're using and follow the manufacturer's guidelines and they will serve you well. Charge safely.

Understanding the Labels

Labels contain plenty of information, but understanding them is often confusing. A few simple definitions will help you.

• 3S, 4S, etc.: Battery packs are composed of a number of cells in series and this number represents that. If the pack is listed as a 3S pack, then it has three individual cells connected in series within the pack, each with a nominal voltage of 3.7 volts. The pack's total will then be listed as an 11.1-volt pack. A 4S pack would be 14.8 volts, etc. (four cells x 3.7 volts = 14.8)

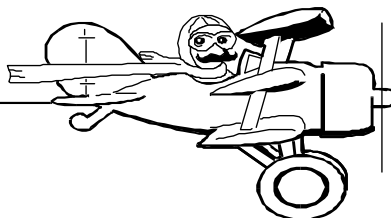
• Capacity: The capacity rating of a LiPo battery tells its output potential, or how long you can take power from the battery at a given rate before it reaches the cutoff voltage, or is discharged. The faster you take power from the battery, the less time it will last.

Many times, our batteries' capacities are listed in milliampere hours (mAh) instead of ampere-hours (Ah). This is merely a metric conversion to a smaller unit—1 ampere hour = 1,000 milliampere hours, so 2.2 Ah is 2,200 mAh.

• Discharge rating: "C" represents a measure of the rate at which a battery can be discharged relative to its maximum capacity. If the battery is discharged at a rate higher than the discharge rating, the battery may be damaged, or worse, could pose a safety hazard, like a fire.

If a battery's discharge rating is 15C, it means that the most power that can be drawn from it at one time is equal to 15 times its capacity. Using the example of a battery which has a capacity of 2,200 mAh, this means that greatest flow of electricity you can safely get from the battery is $15 \times 2,200 = 33,000$ milliamperes (or 33 amperes).

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• Charge rating: The safest way to charge a battery and the one that puts the least amount of strain on your battery is to charge at a rate of 1C or 1 times capacity. Some batteries will specify a higher charge rate such as 3C. For a 500 mAh battery with a 3C maximum charging specification you would be able to set your charger for 3 x 500 mA or 1.5 Amps.

Sizing Your Battery Pack

If you're new to electric-powered models, you will probably follow the manufacturer's recommendation for an appropriate pack for your aircraft. That's what you should be doing.

As you expand your hangar, you may decide to add a bigger battery or need something that isn't specified. You need to do enough research to get a feel for what type of current the setup will pull under full throttle and size your pack accordingly.

If your airplane requires a 3S setup using a typical 2,200 mAh pack and you change to a "hotter" motor—meaning one that is more powerful and will pull more current—you need to see if your current packs can handle it. If your current power system is pulling 20 amps with your 2,200 mAh 15C pack, but your next motor upgrade will pull 35 amps, that pack won't be happy. Let's look at why.

The 15C pack is technically capable of pulling 33 amps ($2,200 \text{ mAh} \times 15 = 33,000 \text{ mAh}$ or 33 amps), so your 20-amp requirement was well within its limits. Now looking at the new setup with the motor requiring 35 amps, you see that the pack is undersized, if only by a couple of amps. That's enough to cause problems that can be costly in the long run.

Charging and Storage

Always balance charge your multi-cell batteries. Balance charging evenly distributes the energy stored in the battery across the multiple cells inside. This will prolong your pack's life and ensure better service from it as well as preventing one or more cells in the pack from overcharging which can be dangerous. Remember to never leave your charging batteries unattended.

Never exceed the maximum charging rate specified for your battery. Charging at 1C is slower but easier on the battery.

There are debates about charging and storage levels, but the safe bet is to store batteries at something other than fully charged or fully discharged. Most good balancing chargers offer a storage mode that takes them to a level of approximately 3.8 volts per cell. The important thing is not to leave them fully charged or fully discharged for long periods of time.

Make sure to read and follow the instructions that come with your charger and batteries. Charge and store them in a fireproof container. Keep them in a reasonable temperature range. (E-Flite recommends: Charge: 32 to 113 degrees F, Discharge: 32 to 140 degrees F.) Leaving them on the dashboard in August is a bad idea for instance. It's a good idea to let them cool down after a flight before charging them again. A battery that is too hot to hold after a flight may not be the correct battery for that plane/motor/prop combination.



CLUB ROSTER

At the August meeting it was requested that a current club roster be provided to the members. This is probably a good opportunity to check your information and let us know of any required changes. It should be sent out in the next couple of days.



FOOD ALLERGIES

There are some club members with food allergies. Please be careful and respectful with any food items that you bring to the field. This includes crumbs, wrappers, napkins leftovers, etc. Please pack out anything you bring.

