

# WRIGHT FLYERS

## MARCH CLUB MEETING

March 2018

The next Wright Flyers club meeting will be on Tuesday, March 27, 2018 at 7:30PM in the Hernwood Elementary School.

## MINUTES OF FEBRUARY MEETING

- The WF meeting was called to order by President Bob Chase on February 28, 2018 with 5 members in attendance.
- Reading of the minutes from the January WF meeting was waived.
- Bob gave the Treasury Report and it was accepted as read. We have 25 paid members thus far. We ended 2017 in good financial condition and have had a number of generous donations from members.

## Old Business:

- We need events proposals for meetings and field activities.
- We need a volunteer for the club officer position of secretary and a volunteer to help as newsletter editor, putting together two or three of the newsletters.
- Rolling of the field planned for mid March. Volunteers will be needed.
- All WF members must register with the FAA, it's the law.
- Hobbico has filed for bankruptcy protection. They are a major distributor to hobby shops and craft and toy stores.

## New Business:

- The current proposed FAA requirement for remote ID and tracking in FAA bill is for autonomous UAV's, not us.
- We need one or two new picnic tables.
- AMA has a maiden flight check list. If you want a copy email Bob. Bob's check list is attached.
- We need to discuss FPV flying rules at WF field. A spotter is required.
- DC clamp-on ammeters have come down in price. Amazon has the AIMO MS2108A for \$40. Read the Specs. carefully when searching, many of the less expensive clamp meters do not measure DC current using the clamp.

Meeting adjourned at 8:25 pm.

## SHOW & TELL

There was no Show & Tell.

## THOUGHT FOR THE DAY

"All men have their frailties; and whoever looks for a friend without imperfections, will never find what he seeks." (Cyrus the Great)

## MEMBERSHIP RENEWAL

It is that time again; time to renew your club membership and your AMA membership. **The requirement to register with the FAA has been made law and you are required to be registered to fly at WF field.** Dues renewals are due January 1<sup>st</sup> through March 1<sup>st</sup>. Your dues can be paid at the February meeting. If you renew by mail, **you must include a SASE in order to receive a membership card by return mail**, otherwise you will have to pickup your card at a regular club meeting thereafter. Send your completed Application Form to:

Andrew Yurkovich  
109 Taunton Ave.  
Catonsville, MD 21228

**Remember, dues are \$75.00 and if dues are not paid by March 1<sup>st</sup> you will be required to join as a new member and pay the additional \$30.00 field maintenance fee.**



## **HAPPY BIRTHDAYS**

Vernon Holland - April 10  
Ralph Reckling - April 20  
Steve Meekins - April 23

## **TIP OF THE MONTH**

### **Charging Multiple Packs** by Jim Ryan

Lithium-polymer cells have revolutionized electric flight, but as any e-flier knows, LiPo charging and maintenance can be time consuming. For optimum service life, LiPos should be stored around 3.8 volts per cell, which creates a bottleneck for spur-of-the-moment flying, and recharging batteries at the field can be a chore when you'd rather be in the air. Many electric fliers compensate for this by using a whole phalanx of chargers, but all those chargers are an extra expense, extra gear to transport, and they each have to be operated individually. A neater, more compact solution is to parallel charge groups of batteries simultaneously with a single charger equipped for parallel charging.

#### **How it works**

As the name implies, parallel charging works by connecting a group of batteries in parallel, to a single charger, using a wiring harness or a parallel charging board. To the charger, the batteries then look like a single pack with the sum of their capacities. For example, six 1000-3S packs appear to the charger as a single 6000-3S pack and can be charged accordingly. The batteries do need to be the same cell count, but the cool part is that they don't even have to be the same capacity; pack voltage will equalize during the charge cycle so that even packs of different sizes reach full charge at the same time. The only catch is that the batteries need to be at roughly similar voltage levels before connecting them.

It's this last caveat that made me a little slow to embrace parallel charging. Like many of you, I don't always "fly out" my batteries, so I find myself with a pile of packs to charge, all at various levels of discharge. But, a proper parallel charge setup will tolerate a reasonable voltage spread, so it's really not much of a problem.

What happens when a group of batteries are connected in parallel is that current flows from the fuller packs to the emptier ones. As long as the voltage difference isn't too great, the current won't be high enough to be an issue. For example, in bench tests I found that two 5000-6S

packs with a 0.25V differential showed an initial current flow of 12 amps, and this tapered off rapidly to 8 amps after 30 seconds and less than 7 amps after a minute (in other words, well within normal charging limits). By all means, you should keep a pocket battery monitor handy so that you can check the voltage of each pack before you connect it; you don't want to be plugging in a fully charged pack with a group of discharged packs.

#### **Let's get started**

For this demonstration, we'll use the iCharger 306B from Progressive RC ([progressiverc.com](http://progressiverc.com)). While there are other chargers suitable for parallel operation, the 306B has a couple of features that make it particularly adept. First, it can provide up to 30 amps output so that even batteries in the 5000-6S class can be charged at their optimum rate. Second, it can handle higher input voltage than most other charges, further boosting its effective power. Making the most of these features depends of course on your power supply or generator; high-rate charging requires a power source with enough muscle for the job (see "Selecting a Suitable Power Supply"). The methodology described here applies to all suitable chargers, but in combination with Progressive RC's parallel boards, the iCharger 306B makes the process particularly simple. There are only three items required: a suitable charger like the 306B, a parallel board with connectors compatible with your batteries, and a balancing cable to connect the two. Progressive RC supplies parallel boards with the most popular connectors, as well as a "universal" board with plain wire leads so that you can install the connectors of your choice.

With the charger connected to your power source, you can then connect each of the packs to the parallel board. It's wise to check each pack with a voltage monitor to make sure none are fully charged and all are in the same general voltage range. *Always* connect the power leads *before* the balance leads, as the heavier cable can handle the initial surge as the packs begin to equalize.

With several packs connected to the parallel board, all the cell number ones are connected together, all the cell number twos are connected, and so on. Thus, current continually flows from the higher voltage cells to the lower voltage cells, therefore keeping them equalized throughout the charge cycle.

#### **Selecting a Suitable Power Supply**

The iCharger 306B from Progressive RC, for example, is a remarkably capable unit for the price. It can produce up to 30 amps output, but it has an additional performance edge in that it's rated for up to 38 volts input. Why is this important? Because while charge rate is set based on amperage, when the battery being charged is of higher voltage than the power source, the charger has to step up the voltage by trading amps for volts. In the case of modern chargers like the 306B, this is done by a switching circuit called a buck-boost DC to DC converter.

The figure below shows how this works. In the upper section we see a typical hobby-grade 120V switching power supply with a rated output of 30 amps at 13.6 volts. On the effective output side of the table, you can see that this power supply will indeed allow 30 amps output for charging 3S packs, but the effective output gradually tapers off for larger battery packs, with the charger output limited to just 15 amps when charging 6S packs. Note that this table takes into account the fact that charger circuitry is about 90% efficient.

Now look at the lower section, which shows a high-voltage power supply. This can be accomplished either with the high-voltage units available from suppliers like Progressive RC, or by connecting two conventional 12V supplies in series (check with the manufacturer to make sure your unit is suitable for series operation). With input voltage doubled, watts out are also doubled, allowing a high-voltage charger like the 306B to maintain its rated output all the way up to 6S packs. Just as with power systems, where charging is concerned, voltage is your friend.

### Max Capacity for Switching Power Supplies & Generators

Input Power Source			Effective Charger Output		
Volts	Amps	Watts	Battery	Volts	Amps
<i>DC/DC Boost Converter Efficiency: 90%</i>					
13.6	30	408	3S	12.6	30
			4S	16.8	22
			5S	21.0	17
			6S	25.2	15
27.2	30	816	3S	12.6	30
			4S	16.8	30
			5S	21.0	30
			6S	25.2	29

With the batteries connected, it's time to set the charge current. The charger sees the cluster of packs as a single battery with the sum of their capacities.

So, if you wanted to charge six 2200-3S packs at 1C, you'd set the charger for 13.2 amps ( $6 \times 2.2 \times 1 = 13.2$ ). If you wanted to charge these same six packs at 2C, you'd select 26.4 amps. Your power source has to be capable of providing the required power, particularly if you're charging 5S or 6S packs.

With the batteries connected and the charger set to the correct amperage, you can begin the charge cycle, and before you know it, you'll have up to six batteries—all perfectly balanced and ready to fly. That's all there is to it! With a high-output charger like the iCharger 306B and parallel charging capability, you can literally charge packs faster than you can empty them. No more sitting around waiting for the charge cycle to end, just hour after hour of hassle-free flying.



Progressive RC's tidy parallel boards keep clutter to a bare minimum. This shot shows how even packs of different capacities can be parallel charged together. The packs must all have the same cell count and should be at similar charge levels, but the charger can take care of the rest. Here, four 2200-3S packs and two 3300-3S packs are being charged together. The voltage level in the packs equalizes during the charge cycle so that all packs will be completely charged at the same time.

### **BLURB**

A man and his wife were making their first doctor visit, the wife being pregnant with their first child. After everything checked out, the doctor took a small stamp and stamped the wife's stomach with indelible ink.

The couple was curious about what the stamp was for, so when they got home, the husband got out his magnifying glass to try to see what it was.

In very tiny letters, the stamp said, "When you can read this, come back and see me."

## Airplane Test Flight or First Flight of Season Check List

### **General Condition and Overall Appearance**

- Check covering for Tightness & holes
- Correct wheel size & Wheel Collar security
- Wing & Tail Alignment
- CG – fore & aft – Tip to Tip
- All Screws & Nuts Tight
- Wing Bolts snug & Rubber Bands Fresh
- Integrity of Servo Tray or Mounts
- Name, Address and AMA Number in or on Aircraft

### **Structural**

- All hinges secure, Ail, Ele, Flap, Rudder
- All Glue Joints Solid
- All nuts changed to “self-lock “ or nylock type, where possible.

### **Servos and Control Surfaces**

- All clevises secured with keepers
- “Quick Connects “(where used) Secure & Locktited
- Check all Surfaces for correct direction of travel
- Check all surface & Throttle for Binding
- Check Nose or Tail wheel for proper Operation
- Check servos for interference with wires or structure
- Check all servo arms are screwed down and fit properly
- Check All control horns for tightness

### **Engineer & Fuel System**

- Engine mount secure to firewall
- Easy access to Carb. and Needle Valve
- Muffler Secure to Engine
- Prop Secure & Free of Nicks and Cracks
- Spinner secure and NOT in contact with prop
- Engine Broken-in and Running Properly
- Tank Proper Size, Secured and Isolated with foam, and clunk free to move

### **Radio & Batteries**

- Receiver and Transmitter batteries have full charge
- Receiver wrapped in foam & properly secured
- Receiver – Battery properly secure in foam
- Antenna extended and free from nicks and breaks
- Full Range Check (Ant. Collapsed for 72 Mhz; reduced power mode for 2.4 Ghz)
- Transmitter trims centered
- Buddy-Box, if used, check correct direction of travel for each channel used
- Buddy-Box, remove crystal to prevent possible interference.

Ground Crew or Instructor initials: \_\_\_\_\_

Aircraft Owner: \_\_\_\_\_

Aircraft Model & Engine Type & MFG: \_\_\_\_\_



**2018**

## **MEMBERSHIP APPLICATION**

NAME: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY, STATE & ZIP: \_\_\_\_\_

DATE OF BIRTH: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

A.M.A. NUMBER: \_\_\_\_\_

F.A.A. NUMBER: \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

**MEMBERSHIP FEE IS \$75.00**

All new members must pay a one time Field Maintenance fee  
of \$30.00 additional.

**PLEASE MAKE CHECK PAYABLE TO:  
WRIGHT FLYERS**