HCRC Flyer

July 2023

AMA Charter #341

Have a safe July 4th!

‘Fifi’ makes a visit to Western Massachusetts

The Boeing B-29 Superfortress Fifi operated by the Commemorative Air Force was at Barnes Regional Airport offering rides on one of only two B-29’s still flying! Here is a photo as she taxied out for a takeoff for a sightseeing trip on June 11, 2023. If you were flying at the field during that week you couldn’t miss this magnificent aircraft as it passed overhead with its four Wright R-3350-23 Duplex Cyclone, 18 cylinder turbocharged engines moving her along!

HCRC Meeting Notes from June 1st, 2023

Quorum Present – 17 Members including 4 Executive Members present: Mike Shaw, Dan Kapinos, Gus Coelho, Bill Ewers, Mark Wasielewski, Pat Malone, Mike Booth, Shawn Kelsey, Bob Prosciak, Dave Wartel, John Darrow, Tyler West, Alan Crawford Jr., Leland Johnston, Tom Tenerowitz, Jack Dawson and Wayne Dawson

Reading of the minutes from the previous month was waived.

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

The Spring Barbeque was cancelled due to the chef being unavailable. We have decided to go ahead with a burgers and dogs barbeque instead of the usual meal on Saturday, 6/24 with a Sunday, 6/25 raindate.

Pat Malone and the Search committee spoke with the landowner next door and he seems interested in a 2 year lease to buy agreement. He still doesn't have a purchase or lease price.

We are looking for a 1200' x 200' strip with ~15 or 20 acres of open area to one side to allow overflight.

Club News

UPCOMING EVENTS

There's a lot of reasons to go flying in the month ahead!

- **7/6** Business meeting at the field 7pm, Hot dogs and drinks
- **7/8** Scale Fun Fly hosted by CCRCC
- **7/8** Fun Fly Combat hosted by East Coast Swamp Flyers, Northford, CT
- **7/9** Dawn Patrol WWI Combat aircraft fly-in, Hosted by NCRCC, Ellington, CT
- **7/15** Electric Fun Fly and Swap Meet- hosted by RC Propbusters, Salem, CT
- **7/18** Float Fly hosted by NCRCC, Crystal Lake, Ellington, CT
- **7/30** Club & Classic Fly-in hosted by CCRCC
- **7/31** War Birds over CCRCC, hosted by CCRCC, 8am – 3pm, Farmington, CT (see flyer)
- **8//3** Business meeting at the field 7pm Hot dogs and drinks
- **8/12** Club picnic and swap meet hosted by CCRCC 8AM - 3PM Farmington, CT
- **8/13** Float Fly hosted by NCRCC, Crystal Lake, Ellington, CT

ANNUAL – FLYING KNIGHTS'

CUB-O-RAMA

RC FUN FLY

And Tail-Gate Swap Meet

The Flying Knights Model Aircraft Club

New Date!

Visit flyingknights.com for directions and weather announcements.

Saturday, July 8, 2023- 10 AM

Rain Date: Sunday, July 9, 2023

A fun day for Cubs and Cub-like aircraft

"Run what-ya-brung".... ALL aircraft welcome!!!

FREE Admission – Bring your own swap meet tables

GPS coordinates: 42.52550, -73.84794

101 County Route 101, Ravena, NY 12143

Event Info: Eric Williams rcpilot@nycap.rr.com 518-356-2057

FLOAT FLY

Date: 7/18/23, *Rain Date*: None, *Start Time*: 10:00 AM

Location: Crystal Lake, Ellington, CT

Cost: TBD

CD: Dave Arzt, *CD Contact Info*: dparzt@gmail.com

Notes: Hot dog lunch will be provided

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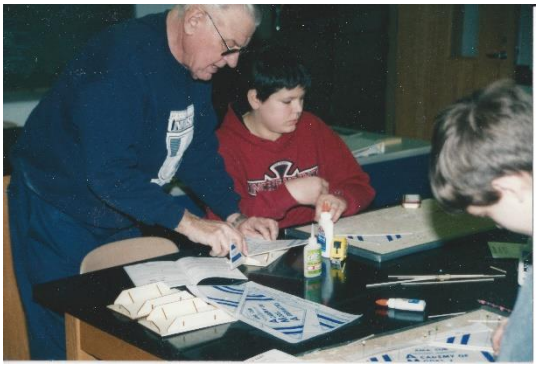
Did You Know?

This stunning, prize winning B-25 Model by our own Gordon Lauder sits under the wings of a full-size B-25 at the New England Air Museum?

Quiz for this month...

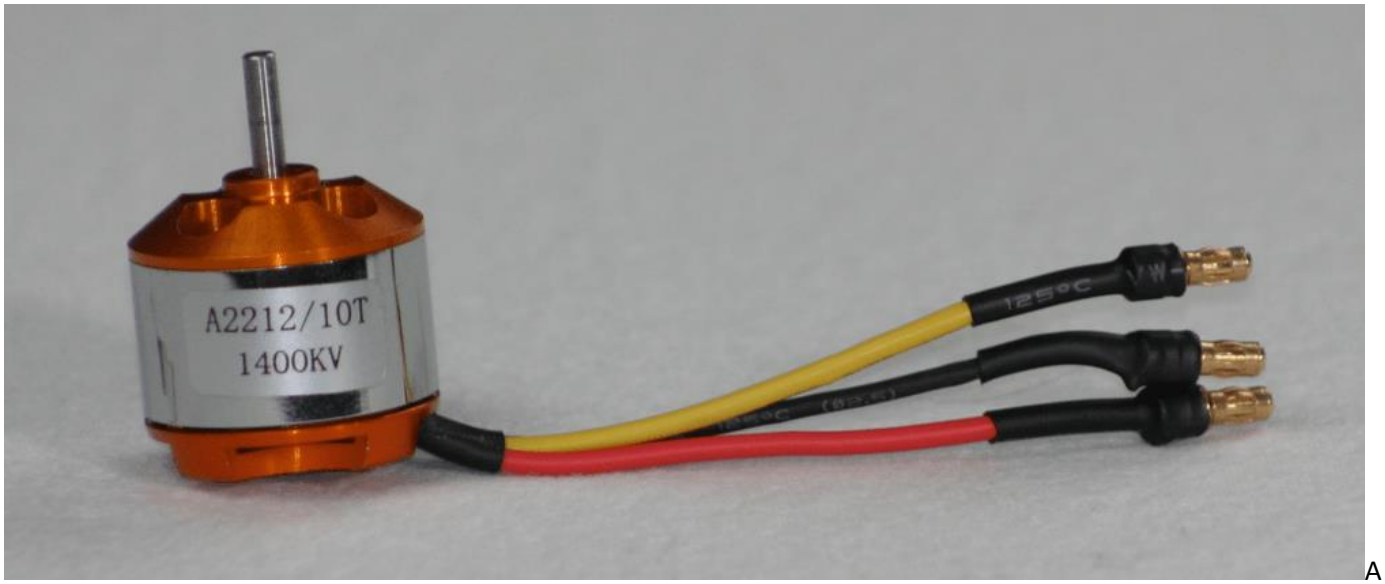


which club member is teaching how to build in this picture? - Email me you answer @ richardarabe@gmail.com extra points if you know the name of this now-famous AMA rubber powered kit!

Going electric

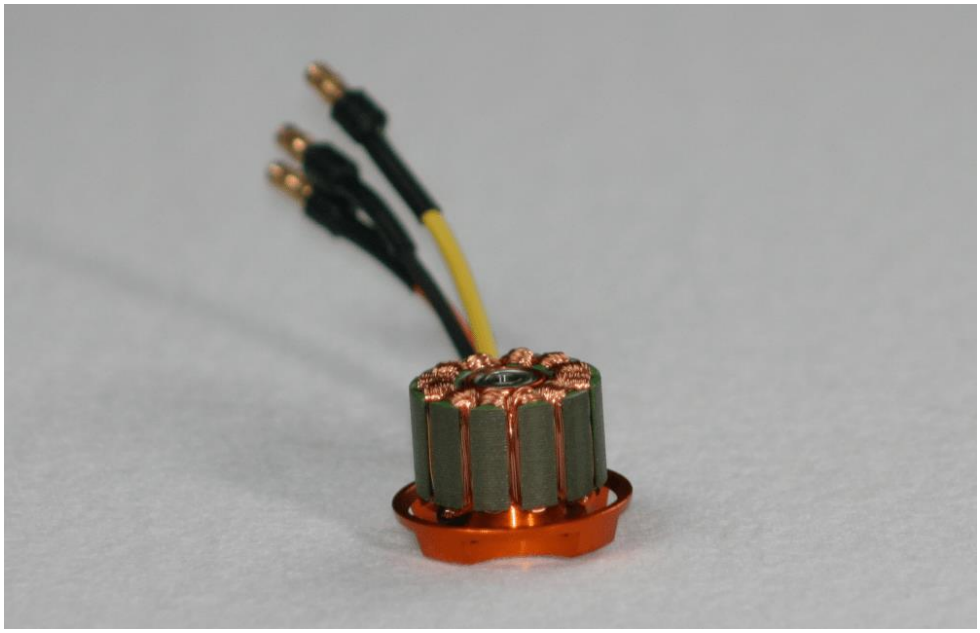
Editor's note: When I get back into the hobby a few years ago, I knew almost nothing about electric motors. Some days I think I still know too little. This month's column is mostly from one of my new favorite websites www.rcplanelab.com.

Brushless motors



A small brushless outrunner rc airplane motor

Brushless motors are different from brushed motors, both in the way they are constructed and the way they work. Brushless outrunners will be the most common type of motor we see in the hobby so let's talk about them. So the reason brushless motors run without the use of a brush is because the armature is no longer the spinning part of the motor, and because of that there's no need to electrify a piece that is moving.



The stator from inside the above brushless outrunner motor

We'll talk about ESCs later, but the reason these motors are able to operate is because the electronics advanced to where they became in a loose sense a computerized brush. Let me explain and let's see if that makes any sense. In a brushed motor, the armature had to be the part that was electrified because there was no other way to reverse the

polarity of the electromagnetic field to keep the motor spinning. If you were unable to switch the polarity then the motor would just move to the position that the magnets were attracted to and not continue on with it's rotation. Since the armature and the commutator spun, the electricity delivered to it by the brushes was able to reverse polarity and continue to spin the motor.

Brushless motors don't have that issue because the electromagnetic field is controlled by the ESC, and since the electromagnets are on the stator and the permanent magnets are on the rotor, there's no need to transfer any electricity to a moving part.

The rotor from the above brushless outrunner motor

Therefore, the biggest limitation to brushed motors was eliminated. So no more brushes, no more commutator, no more friction between the brushes and commutator to slow the motor down. No more sparks to foul up the connection between the brushes and commutator. So, a brushless motor is really a simplified brushed motor, almost an inside out brushed motor. Or at least flipped, I guess not quite inside out. Brushless motors last longer since really the only wear item is the bearings on the front and rear of the motor. Brushless motors come in many different sizes, and they each have some specs that are good to know about. So, what do all the numbers mean in the specs?

This is where it can get confusing, so let's go through it step at a time. We'll read the numbers from the motor that's pictured above.

The numbers on the above motor are A2212 1400kv

- **A** = the letters don't really denote anything specific about the motor setup. They usually are a manufacturer's brand number, or series number of the motor. Sometimes they'll be labeled with an S for a short can or an L for a long can, but on the whole, nothing really to be concerned with.
- **2212** = This gets a little tricky since there's not a standard for these motors. This 4 digit number is really a set of numbers that get broken down to 2 separate sets of 2 numbers. The first two numbers, the 22, tells either the exterior motor diameter or the rotor diameter, and the second two numbers, the 12, tells either the motor height or the rotor height. Since there's no standard in these motors, the only real way to know what the numbers refer to are by looking at the spec sheet or the description of the motor. The spec sheet for this motor tells me that it is a 28mm can, or the outside diameter is 28mm, so that means the numbers written on the outside of the motor are talking about the rotor diameter since the first two numbers are 22, not the motor measurements itself. If it was talking about the motor, it would start with 28 instead of 22.
- **1400kv** = The kv of a motor tells us, under no load, how many times the motor will spin in one minute with 1 volt applied, so it's the rpm rating of a motor. Our motor here will rotate 1400 times in one minute with one volt applied. The specs for this motor say it's designed to be ran with a 2s or 3s lipo, so doing the math, since a 2s lipo is 7.4 volts, this motor will spin at 10,360 rpm on a 2s battery, and at 15,540 rpm on a 3s 11.1 volt battery.

Remember, those numbers are all no load numbers, so you won't get that rpm, but it should be close enough for our purposes.

The spec sheet for this one also tells us some other important information.

- **Max efficiency** = 80%. The higher the efficiency, the more efficient the motor is at spinning a propeller, which means less wasted energy. The lower efficiency a motor is the more heat it produces since heat is the by-product of an inefficient electrical system.
- **Max efficiency current** – 4-10A (>75% throughout that range)
- **Current capacity** -12A/60S, so it can handle 12 amp bursts for one minute.
- **No Load current at 10V** – .5A So when it's just sitting idle, it uses half an amp at 10V.
- **Number of cells** – 2-3 Lipo.
- **Motor dimensions** – 28mm x 30mm
- **Shaft diameter** – 3.17mm
- **Weight** – 47g.

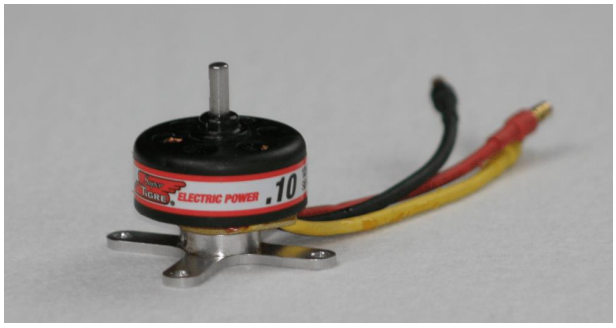
Let's look at the numbers from a different motor. It's labeled CF-2822/14 1200kv. There's a little difference between it and the last motor we talked about. There's an extra number in there. So, let's take it piece by piece.

- **CF** – doesn't really tell us much of anything
- **2822** – tells us the motor or rotor diameter is 28mm, and the 22 tells us either the height of the motor or the rotor. Since we don't have the motor spec sheet in front of us, we can measure the can to find out what the numbers are referring to. It measures 28.54mm, so these numbers are talking about the can size, or the actual measurement of the diameter of the motor.
- **/14** – The next two numbers were not on the first motor we talked about. The /14 refers to the number of turns in the motor. The higher the turn number, the lower the KV of a motor. The turns refer to the number of times the copper wire has physically been wrapped around the stator of the motor.
- **1200kv** – this is the rpm/volt of the motor, so for every 1 volt applied, the motor will spin 1200rpm under no load.

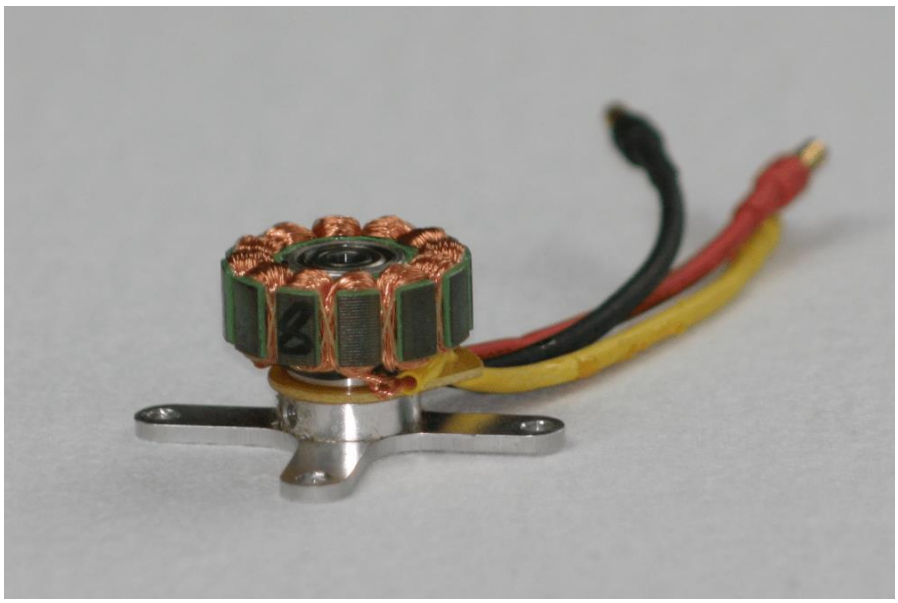
So, like I said, higher turn motors have lower KVs, but they have more torque. Because of that they are able to spin larger props. Also, as the physical motor size increases, most of the time the KV of a motor decreases because of the way it's constructed. But that's okay, because the bigger, lower KV motors run on higher voltage batteries, so even though the KV is lower, the overall performance increases.

Let's look at one last motor.

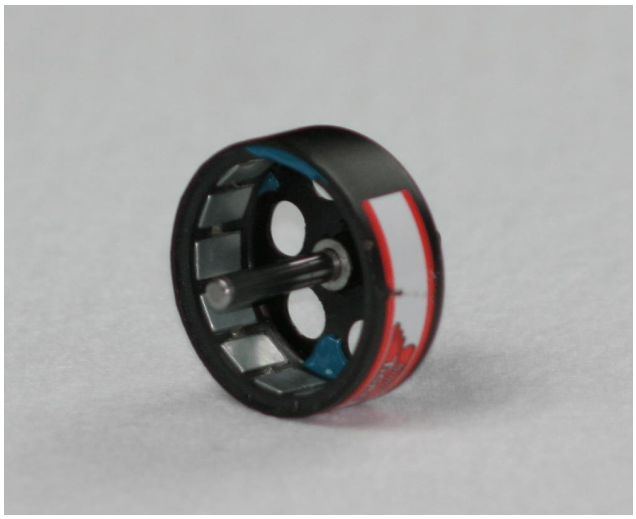
Sometimes a motor will not give you very many specs, but instead it will be labeled with the size nitro motor it is designed to replace, like the below Super Tigre .10, which is designed to replace a .10 sized nitro motor.



A Super Tigre .10



The stator from the Super Tigre .10. Notice how much shorter the magnets are compared to the other brushless motor stator pictured above



The rotor from the Super Tigre .10

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