



“THE FLIGHTLINE”

NEWSLETTER – December 2012

WWW.SKY-KNIGHTS.ORG

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Vice President: Mike McKay 503-630-7112

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Safety Officers: Russ Redmond 541-948-1092 & Corey Parson 503-558-1884

Club Meetings

October 2012 thru April 2013, club meetings will be held the second Monday of each month at 7:00pm at the Mountainview Christian Church - 1890 N.E. Cleveland Avenue, Gresham, OR. 97030 - **Everyone is welcome!**

Congratulations 2013 Executive Board Officers!

Please Welcome the New Sky Knights Executive Board Officers



President:
Gene Kelly
Vice President:
Mike McKay
Secretary:
Dale McDonald
Treasurer:
Greg Marshall



**Club Breakfast: 7:00am Saturdays - Tollgate Inn,
38100 Highway 26, Sandy OR. 97055**

(Get your morning started and enjoy good fellowship)

*****BIG THANKS!!*****

A BIG THANKS goes to Bryan Watts for speaking at Chuck Adams men's group. Bryan went through the history of RC flying and how we came to the RC flying of today. Bryan did a show and tell, and some indoor demonstrations with a few of his planes. It was a great talk, with interest expressed to come and visit the Sky Knights field in the spring.

Brushed vs. Brushless RC Motors

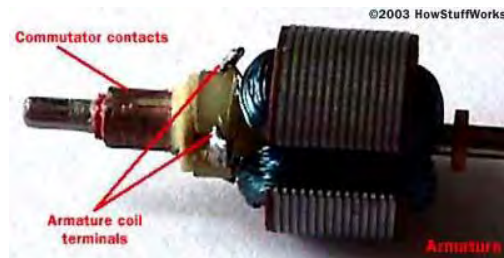
To fully appreciate the advantages of a brushless RC motor, you need to have a basic understand of how motors work.

["How Stuff Works"](#) has an in depth explanation of how motors work, and the graphics in the section were taken from that article. Below is a quick summary of how a **canned** motor works.

Standard "canned" or "brushed" Motor

A standard brushed motor is often referred as a **canned** motor. Every canned motor consists of the following parts:

Armature- The rotating portion of the motor. It consists of the poles, terminals, and the commutator.

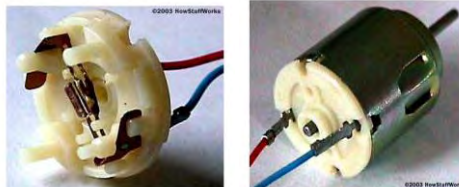


Poles- Copper wires wound around a piece of metal forming an electromagnet. The poles are attached to the armature. Most motors have 3 or more poles

Terminal- Point at which the copper wire of a poll attaches.

Commutator-A switch on the armature that reverses the current to the poles every 1/2 rotation so that the magnetic fields of each will always maintain rotation.

Brushes- Tabs in the motor cap that are wired to the battery and make contact with the plates on the commutator as the armature rotates.



Magnets-The outer shell (or can) of the motor is lined with two permanent magnets, of opposite polarity. This non-rotating portion of the motor is also referred as the motor stator.



The battery is wired directly to the brushes. The brushes make contact with the plates of the commutator as the motor turns. There is the same number of plates on the commutator as there are poles on the armature.

When the brushes come in contact with the appropriate plates of the commutator, a particular pole (electromagnet) is charged. When a pole is charged, it is attracted to one of the magnets in the can and repelled by the other.

The commutator acts as a switch by switching the polarity of each pole every time the pole passes a magnet. When the polarity is switched, the pole is attracted to the next magnet in the **can** while being repelled by the one it just passed. This process repeats as long as power is supplied to the motor.

Disadvantages of Brushed Motors

- The brushes and commutator wear out
- The brushes and commutator must be cleaned periodically
- Friction from the brushes slow the motor down
- Friction from the brushes lead to shorter flight times and battery life.
- Friction from the brushes cause lower power to weight ratio

How brushless motors work

Brushless RC Motors work on the same principle as brushed motors, except the electromagnets (poles) are stationary and the permanent magnets are on the spinning portion of the motor.



Since the electromagnets are stationary, there is no need for brushes! The electronic speed controller (ESC) takes care of switching the voltage of the electromagnets.

It's important to know that a brushless speed controller and a brushed speed controller can **not** be used interchangeably. They perform completely different tasks.

The quickest way to tell the difference between a **canned motor** and a **brushless motor** is to count the number of wire leads. All Brushless RC Motors have 3 wires. Canned motors have 2 wires. The third wire is used for feedback. Switching any two of these wires will change the rotation of the motor.

Advantages of Brushless Motors

- No brushes or commutator wear out
- Don't have to worry about cleaning the brushes or commutator.
- There's no Friction from brushes to slow the motor down.
- Longer flight times and extended battery life due to the absence of friction from brushes.
- Much higher power to weight ratio!

Inrunner vs Outrunner

There are two types of Brushless RC Motors for RC airplanes. The permanent magnets of **inrunner** brushless motors are positioned on the **inside** of the electromagnets.

Inrunner brushless motors are set up very similar to the canned motor explained above, except the permanent magnets and electromagnets are in opposite positions.

An **outrunner** brushless motor has the permanent magnets on the **outside** of the electromagnets. You can see in the picture to the right that the outer hub holding the permanent magnets has the output shaft attached in the center.



Inrunner Brushless Model Aircraft Motors



The faster a motor spins, the more efficient it is. Inrunner motors turn very fast and are much more efficient than outrunner motors. Inrunner Brushless RC Motors require a reducing gearbox between the motor and propeller of your RC airplane. For this reason, the output speed and torque of the propeller can easily be "**tweaked**" to facilitate different flying characteristics by using different size gears.

The downside is added parts that can and do fail. The gears get stripped, and the gearbox shafts are easily bent. It can also be an obstacle when mounting the gearbox motor combination for your RC airplane neatly, especially under a cowling.

Outrunners



Low RPM's, high torque
Less efficient than inrunners
No gearbox required
Narrow prop selection
Silent

Inrunners



High RPM's, low torque
More efficient than outrunners
Require a gearbox
Wide prop selection
Noisy



Sky Knights Annual Banquet 1/19/2013

Location: Old Spaghetti Factory in Clackamas

Start time: 7:00pm ~~OPEN MENU~~

~~SEATING IS LIMITED~~

Please let the club know if you are planning on attending this event by either emailing Ken Manske at ken@nwartmall.com or signing the sign-up sheet that will be at the December 10th General Club Meeting.

Our Club Trainers

Glen Thornton: 503-668-9704(Lead)
Gregg Marshall: 503-789-5488
Mike McKay: 503-630-7112

Dale McDonald: 503-475-3319
Bryan Watts: 971-563-4728
Jim Leissler 541-490-3239

We deeply regret to inform the membership of the Sky Knight's club, the passing of a dear member: *Fred Pellum*. He will be missed.

Flying Notices:

Thursdays from November thru March, we will have indoor flying from 6pm-9pm at Mountainview Christian Church - 1890 N.E. Cleveland Avenue, Gresham, OR. 97030
Cost: \$5.00 per night of flying.

Treasurer's Report - 12/4/2012

Savings: \$4000.00
Checking: \$371.95



Upcoming Events -

December 9th: Pearl Harbor Days – Sky Knights field

January 19th: Club Banquet – Old Spaghetti Factory in Clackamas

July 12, 13 & 14: Northwest R/C Seaplane Championships – Pine Hollow in Wamic, Oregon

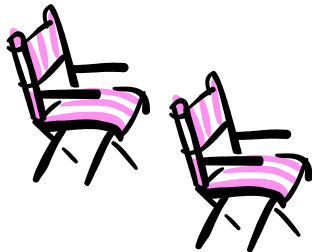
Executive Board Meetings -

January 7th: TBA

February 4th: TBA

March 4th: TBA

Bring your Chairs!!

A colorful poster for the Pearl Harbor Days event. At the top, it says "PEARL HARBOR DAYS" in large, stylized letters. Below that, it says "FUN FLY!" and "OPEN TO ALL PILOTS!". The main event is "SUNDAY DECEMBER 9, 2012" from 9 am until 1 pm at the Orient Field. The poster includes details about the event, such as "Join us for one of the most exciting experiences you will see in RC planes!" and "Each 30 minute round will consist of: Limbo flying! Bomb drop! Spot Landings!". There is also a logo for "SKY KNIGHTS RADIO CONTROL FLYING CLUB" and contact information for Dale McDonald at (503) 761-3109.

FUN FLY! **OPEN TO ALL PILOTS!**

PEARL HARBOR DAYS

SUNDAY DECEMBER 9, 2012
(A day that will live in your memory!)

9 am until 1pm at the Orient Field

Join us for one of the most exciting experiences you will see in RC planes! Entrants will be part of a team and each team will have a 30 minute round to "show their stuff." There is a \$5 entry fee per pilot per team (each pilot is allowed to be on more than one team).

Each 30 minute round will consist of:

- Limbo flying!
- Bomb drop!
- Spot Landings!

Food and beverages available at the event!

SKY KNIGHTS
RADIO CONTROL FLYING CLUB


For more information contact Contest Director Dale McDonald at (503) 761-3109

Bring your Canopies!!



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