

8.5mm Motors For Free Flight

Stew Meyers

An article published in the November 2010 issue of Max Fax,

Stew Meyers, Editor

The average free flight modeler is rather intimidated by electric power and really put off by Lipo charging horror stories. The proliferation of small electric R/C park fliers from E-Flite and Horizon Hobbies has lead to systems that provide a simple, almost fool proof solution to small electric free flight.

Specifically, the single lipo cell and its charging system are a big break through. The E-flite EFLC1003 1S 3.7V LiPo Charger, 0.3Amps, goes for \$19.99 and runs on four pencils. You may well be able talk a micro R/C flying buddy out of one. Since they come with every ARF, active Micro RIC flyers tend to have a several and often have invested in a multi battery charger. Since we are dealing with a single cell, balancing is not required and this charger is damn near idiot proof. There are a range of matching cells available from 70 to 150 mahr.

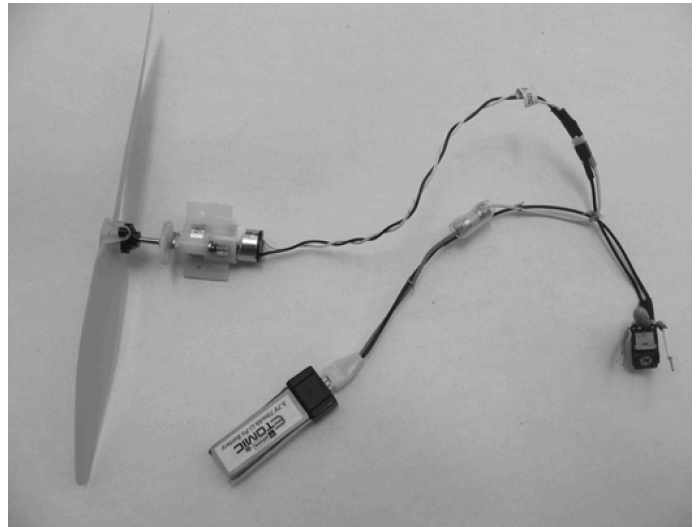
Last time I provided information on ParkZones 3 gram 6mm motors suitable for Dimers. This time we go for larger motors suitable for the Guillows 18 inch WWI models and 24 inch monoplanes. The 5 gram 8.5mm motors also come in two varieties. The white back motor used on the (Aeronca) Champ and original Sukhoi draws 1.21 amps at 3.5 volts for 4.2 watts of input power with a GWS 5-3 prop tuning about 7,000 rpm. With a freshly charged battery this rises to over 5 watts input power. The more powerful black back motor used on the P-51, T- 28, Sukhoi 2, and 4-Site is 10 to 15% more powerful. These motors use a 4: 1 gearbox.

While the Eflight props work fine, they are vulnerable to damage in uncontrolled free flight landings. I prefer to use a prop saver and a GWS 5-3 prop. The Cub (6mm motor) gear box has a 1 mm shaft and the P51 (8.5mm motor) gear box, a 1.5 mm shaft. Bob Selman (www.bsdmicrorc.com) has the GWJ Universal Prop Saver in both 1.0mm and 1.5mm sizes for \$1.50. He also has the Nano Connector Female for \$1.25 which mates with the motors; as well as the prop for \$1 .25.

Since we are using a Lipo, a timer is necessary to complete the system. The Atomic Workshop Zombie Flight Profiler available from Shorty's basement for \$49.95 is the deluxe way to go and weighs only 1.2 grams. www.microflierradio.com has A \$20 Mini timer for brushed motors adjustable from 0 - 2.5 min. Speed is adjustable from 0 - full throttle for 1 lipo cell and up to 2 amp output. It weighs less than half a gram with connectors. However if you don't need the speed control, a simple r-c timer like the Pico timer works fine as the current is below 1.5 amps. This weighs 1.5 grms. You should be able to get one for \$15 or less. I like to add a two amp micro fuse to protect the system. Of course, you will want the \$1.99 [PKZ3052] battery connector to mate with the battery. These timers power the motor directly. Other timers are available, but these have a ppm (pulse position modulation or servo) output to drive an ESC and won't drive a motor directly.

Since these motors draw 1.2 to 1.5 amps a 120mahr \$5.99

battery is suggested. This will be good for 10 minutes total flight time before charging is mandatory. After a couple of flights you may want to charge it up as the voltage will be down a bit an you will notice reduced power.



P-51 (black 8.5mm) with prop saver and GWS 5-3 prop, fuse, Pico timer, and 70 mahr battery. 10 grams all up including wiring.

These power systems are capable of flying an 18 to 20 inch span fully rigged biplane weighing up to 2.5 ounces. I will be happy to answer specific questions from readers. I will even supply complete wired systems including charger. The above system pictured above is \$65 post paid.