the current in check. If a higher voltage battery is replaced by a lower volt-
age battery, the size of the propeller can be increased to keep the motor at its rated current.

Another possibility to fine tune the power system’s performance is to use another motor with higher kV to increase the current or a lower kV to lower the current.

A 3D Aircraft Weight:

RimFire 50cc (80-75-230) (GPMG4800)
Motor Output Shaft Size: 10mm
Motor Diameter: 80mm [3.14"]
Motor Can Length: 75mm [3.0”]
Mounting Space Length: 87.3mm [3.44”]
Weight: 1250g [44.1oz]
Input Voltage: 3.3-5.5V (9-15S LiPo)
Max Continuous Current: 110A (at 125)
Max Continuous Power: 5000W
Max Surge Current: 135A (at 125)
Max Surge Power: 6500W
Prop Range: 22x8 to 26x10 glow/gas prop
Sport Aircraft Weight: Under no load. Likewise a 3500kV motor will try to spin at 42,000rpm under no load.

Because of the high torque of this motor and its ability to spin at high rpm, its rated kV.

The number you get is the minimum wattage you will need for your motor and battery, and the performance you want from it. Answer the questions below to determine the correct power system for your plane. You may need to make more than one calculation using different motors and battery combinations. See the battery section for some of the battery weights for the suggested batteries.

1. Perform the following calculation to determine the wattage required:
   a. If you expect trainer-like performance, then multiply 75 x Airplane Weight (lbs)
   b. If you expect aerobatic or high speed performance then multiply 100 x Airplane Weight (lbs)
2. Select a LiPo battery voltage within the recommended range of the motor. Keep in mind that voltage affects prop size (lower volts require bigger props). 12S is a good reference point to start at. See “Sample Power Systems” in this manual.
3. Divide the minimum wattage that you came up with by the voltage you selected. This will give you the current you should expect.
4. Determine the battery capacity needed based on the current draw of your system and your desired flight time. Be sure to select batteries with the proper C-rating that can deliver the current you need.
5. Determine the ESC you need based on the system current draw. See the ESC section for recommended ESCs.

In addition to this procedure, you can also visit the Great Planes ElectriFly web site for descriptions of the power systems recommended for our line of electric and glow airplanes as well as more detailed explanation on the subject.
1) If you will mount your motor directly to the firewall or if you will use the Great Planes 80mm Motor Standoff Motor Mount set, cut out the mounting template in this manual and mount it to your firewall using tape or a spray adhesive. Align the template crosshairs with the centering marks provided on the firewall. Drill four 9/32" (7.1mm) mounting holes.

2) Remove the four countersunk screws holding the X-mount to the motor and reinstall them using thread locking compound. Remove the set screws from the wheel collar, the rear case, and the front case and reinstall them using thread locking compound.

3) Determine the mounting space required by your model — this is usually found during the engine/motor installation steps in your model's instruction manual. Subtract the mounting space of the motor from the total required mounting space. For example, if the mounting space is 184mm (7-1/4") and you want to mount the 50cc RimFire which itself has a mounting space of 87.3mm (3.44"):

\[
184\text{mm} - 87.3\text{mm} = 96.7\text{mm}
\]

4) Using a Great Planes XX-Large Standoff Brushless Motor Mount set (sold separately, GPMG1275), combine standoffs to achieve the dimension you came up with. You may not get the exact dimension with the standoffs, so check to see if your cowl or balance condition will allow you to increase or decrease this dimension. The standoffs shown in the photo above combine to make a 100mm standoff dimension.

5) Select good quality 1/4-20 bolts that are long enough to fully engage all of the threads of your blind nuts, or use the bolts included with the standoff kit. We used 5" (127mm) long bolts for this example. Attach your motor to the firewall using flat washers, lock washers, and thread locking compound.

80mm

RIMFIRE 50cc & 65cc MOUNTING PATTERN

67mm

Note: This mounting pattern matches the DLE-55 engine. An optional mount that matches the DA-50 engine is GPMG1214.

1) Make sure that the ESC you have selected has the proper 6mm female bullet connectors attached to the three motor leads. If it does not, this motor is supplied with 6mm female bullet connectors. These are fitted to the male bullet connectors on the motor leads. Slide them off and solder them to your ESC motor leads. Insulate the bare connector body with some heat-shrink tubing. The heat shrink on the motor wires and the ESC wires must completely cover the gold connectors. If the bare connectors touch each other while power is supplied to the motor, permanent damage to the ESC/motor may result. Note: DO NOT try to remotely mount your ESC by extending the motor lead wires. This will adversely affect motor timing.

2) Attach the ESC you have selected to your model in the location suggested by the manufacturer. If your model does not come with mounting equipment for an ESC, fit your ESC to a place where it will receive adequate airflow. Make sure that airflow is directed over the cooling fins of the ESC and that air has a path to exit from the model.

3) Attach a suitable battery lead connector from your ESC to your battery. For safety reasons, you may want to build an arming switch which will allow you to quickly and safely arm and disarm your motor without opening or removing any hatch. Keep all leads as short as possible to reduce resistance, and well insulated to eliminate short-circuits.

4) Connect the three motor leads from the ESC to the motor. Check to see that the motor rotates in the correct direction. Swap the position of any two motor leads to reverse the rotation of the motor.

RimFire brushless motors require virtually no maintenance. There are no brushes to wear out and replace. The precision bearings have a very long service life and should last a very long time. The internal parts of the motor should not require any cleaning. The only thing that needs to be checked is to make sure all the screws and set screws remain tight.

1) IMPORTANT RECOMMENDATIONS

- Once the battery is connected to the ESC, stay clear of the motor and prop.
- DO NOT apply an input voltage that exceeds the maximum specification of each motor.
- DO NOT apply currents to the motor that exceed the maximum specifications of each motor.
- DO NOT allow the input connectors to accidentally touch each other while power is applied to the motor. Make sure all input connections are insulated electrically.
- DO NOT allow water or moisture to enter the motor, as it can cause permanent damage to the motor and possibly short out the attached ESC.
- DO NOT cut the wires from the motor. The wires are part of the windings and are coated with an insulated material and cannot be soldered without removing the coating, which is very difficult. If you must remove the bullet connectors, unsolder them.

- Allow the motor to cool after each flight.
- The motor shaft of the motor will rotate at very high rpm. DO NOT attempt to touch the shaft while it is rotating. If setting up the motor/ESC on the workbench, make sure the motor is securely attached and that nothing is attached to the motor shaft BEFORE applying power.
- NEVER attempt to use a damaged motor (having mechanical or electrical defects).
- Great Planes carries a complete line of Ammo™ (runner/style) and RimFire (outrunner style) brushless motors, gear drives, motor mounts, prop adapters and speed controls. For a complete list of these products, check out our web sites at:

www.greatplanes.com
www.electricfly.com

or visit your nearest hobby shop that carries the full line of Great Planes and ElectricFly products.

There are two ways to connect multiple battery packs: In Series and in Parallel.

1) Connecting batteries in “Series” means to connect the +’s to the –’s and the –’s to the +’s. This combines the batteries’ voltages, but the capacity remains the same.

These two 3350mAh batteries (both 11.1V) are being joined in PARALLEL. The result will be one 11.1V, 6700mAh battery.

2) Connecting batteries in “Parallel” means to connect the +’s to the +’s and the –’s to the –’s. This combines the batteries’ capacities, but the voltage remains the same.

NEVER connect battery packs with different voltages in Parallel—or combine in Series. Otherwise, the batteries will try to “equalize” with the larger one trying to “charge” the smaller one, thus causing heat and likely a fire.

Also NEVER connect battery packs with different capacities in Series or in Parallel.

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GPMG4800/05WN

RimFire 50cc Accessory and Spare Parts

GPMM3116 6mm Gold Plated Bullet Connectors - Male (3)
GPMM3117 6mm Gold Plated Bullet Connectors - Female (3)
GPMMG4914 RimFire 50cc and 65cc Replacement Prop Drive
GPMMG1212 RimFire Backplate Motor Mount for 50cc and 65cc Motors
GPMMG1214 Optional DASO RimFire Backplate Motor Mount for 50cc & 65cc Motors
GPMMG1428 C-clip (10) for 10mm RimFire Motor Shafts
Bearings (3) for RimFire 50cc and 65cc Motors
GPMMG1424 Replacement Shaft Kit for RimFire 50cc
GPMMG1275 Stand Off Brushless Motor Mount XX Large

RimFire 65cc Accessory and Spare Parts

GPMMG3116 6mm Gold Plated Bullet Connectors - Male (3)
GPMMG3117 6mm Gold Plated Bullet Connectors - Female (3)
GPMMG4914 RimFire 50cc and 65cc Replacement Prop Drive
GPMMG1212 RimFire Backplate Motor Mount for 50cc and 65cc Motors
GPMMG1214 Optional DASO RimFire Backplate Motor Mount for 50cc & 65cc Motors
GPMMG1428 C-clip (10) for 10mm RimFire Motor Shafts
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RimFire 50cc & 65cc MOUNTING PATTERN