**Batteries: Chemicals**

The Animo Motor/Silver series ESC combination can use NiMH or LiPo batteries. Typically, NiMH batteries are heavier but much more affordable for the same capacity as LiPo batteries. If you want a very light, high-performance airplane, you might want to use LiPo batteries, but it is not a concern, then NiMH batteries might be for you.

### Cells

Cells can be connected in series or in parallel. Usually batteries are labeled as 8-cell NiMH or 3-cell LiPo. This means the cells are connected in SERIES. Arranging batteries in parallel gives you more power (higher voltage).

- Each NiMH cell has 1.2V, so an 8-cell NiMH battery has 1.2V * 8 = 9.6V
- Each LiPo battery has 3.7V, so a 3-cell LiPo battery has 3.7V * 3 = 11.1V

If you need a higher voltage than what is available in the LiPo battery pack, you will need to connect two battery packs together in series. If you need a battery voltage of 14.8V you can use the series-connector (GPMM1443) for use with the Deans Ultra Plug, to connect two batteries together. Note: The 350mAh and 640mAh LiPo batteries listed below both use Deans Micro Plugs. The 1100mAh, 1250mAh and 1500mAh LiPo batteries listed below use the Deans Ultra Plugs.

If a battery is arranged in PARALLEL (P), it would be labeled as (P). Arranging the batteries in parallel will give you more duration (more capacity).

ElectriFly offers a full line of NiMH and LiPo batteries. Airplanes that use the RimFire 28mm motors will typically use batteries with a capacity of 300 to 1500mAh, with the higher capacities delivering a longer flying time but also being heavier. Most of the batteries have connectors that fit the recommended ESC.

By the constant changing battery technology, check out the ElectriFly web site at www.electrifly.com for the most up-to-date listing of the ElectriFly battery line.

### Propeller Adapters

The RimFire 28mm motor comes with a bolt-on prop adapter and a prop saver with sleeves to fit a variety of prop hub sizes. If the RimFire 28mm motor needs to be mounted behind the firewall, the motor requires a 3mm prop adapter collet type (GPMM4595), or set screw type (GPMM4590).

### Motors

The RimFire motors are labeled to provide the most information at a glance. For example: the 28-30-1450 is a 28mm motor, 30mm diameter, 1450 size motor.

### Proporters

There is a wide selection of proporters available for use. The RimFire 28mm motors have high performance slow by electric propellers. The largest the propeller used the more current your motor will draw. The smaller the proporter, the less current the motor will draw.

Shown are a few of the recommended electric proporters. Due to the large range of proporters and the constant addition of new sizes, visit the Great Planes® ElectriFly web site and www.greatplanes.com for the most up-to-date listing of electric proporters.

### Determine What You Need to Build Your Power System

Now that you have a component for your power system, you need to select the remaining components that make up the rest of the components of your power system. In this last section, we will give you the information and ideas that works best for you, but an easy way to determine what you need is now the following.

### Determine the Battery Voltage You Want to Use and the RPM

1. Find the combination in the motor/prop chart that delivers the performance to what you want.
2. Note the recommended battery voltage.

### Determine the Battery Capacity Needed Based on the Current Draw of Your System

1. Determine if you want to use LiPo or NiMH batteries based on the desired ready-to-fly airplane weight. Select the number of cells based on the recommended voltage shown on the chart.
2. Determine the battery capacity needed based on the current draw of your system and your desired flight time.
3. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

### ELECTRONIC SPEED CONTROL (ESC)

An ESC is basically the device that controls your motor. You will never run any RimFire motors with a brushed ESC. It will not work and may damage both the motor and the ESC. Always use a brushed ESC. ElectriFly offers Brushless ESCs that will work with the RimFire 28mm motors.

ElectriFly Series Super 12 (SS-12) ESC (GPMM1100) for 12A maximum constant current draw.

ElectriFly Series Super 25 (SS-25) ESC (GPMM1120) for 25A maximum constant current draw.
Congratulations, you have just purchased the RimFire 28mm power system components. All the components are sold separately to allow you to customize your power system to your airplane. The components needed to assemble your own RimFire 28mm system are: RimFire motors, propeller, propeller adapters and brushless speed controls. This instruction sheet explains how to determine what you will need and how to assemble each component.

BATTERIES: CHEMISTRY

The Ammo Motor/Skiler Salsa ESC combination can use NiMH or LiPo batteries. Typically, NiMH batteries are heavier but much more affordable for the same capacity as LiPo batteries. If you want a very light, high-performance airplane, you might want to use LiPo batteries, but weight is not a concern, then NiMH batteries might be for you.

Each LiPo battery has 3.7V, so a 3-cell LiPo has a battery voltage of: 3.7V x 3 = 11.1V

Cells can be connected in parallel or in series. Usually batteries are labeled as 8-cell NiMH or 3-cell LiPo. This means the cells are connected in SERIES (S). Arranging batteries in series gives you more power (higher voltage).

• Each NiMH cell has 1.2V so an 8-cell NiMH battery has 1.2V x 8 = 9.6V
• Each LiPo battery has 3.7V, so a 3-cell LiPo battery has 3.7V x 3 = 11.1V

If you need a higher voltage than what is available in the LiPo battery pack, you will need to connect two or more battery packs together in series. If you need a battery voltage of 14.8V you can use the series-parallel combination for use with Deans Micro plug or (GPMM143) for use with the Deans Ultra Plug, to connect two 3.7V batteries together.

Note: The 350mAh and 640mAh LiPo batteries listed below both use Deans Ultra Plugs. The 1250mAh, 1500mAh and 1500mAh LiPo batteries listed below use the Deans Ultra Plugs.

If a battery is arranged in PARALLEL it might be labeled as (P). Arranging the batteries in parallel will give you more duration (more capacity).

ElectriFly offers a full line of NiMH and LiPo batteries. Airplanes that use the RimFire 28mm motors will typically use three LiPo batteries with a capacity of 300 to 1500mAh, with the higher capacity batteries delivering a longer flying time but also being heavier. Most of the batteries have connectors that fit the recommended ESC.

Due to the constantly changing battery technology, check out the ElectriFly web site www.electrifly.com for the most up-to-date listing of the ElectriFly battery line.

BATTERIES: NUMBERS OF CELL

The RimFire 28mm motor comes with a bolt on prop adapter and a prop saver with sleeves to fit a variety of prop hub sizes. If the RimFire 28mm motor needs to be mounted behind the firewall, the motor requires a 3mm prop adapter collet type (GPMM4958), or set screw type (GPMM4950). 3.7V battery weights for the suggested batteries.

GPMM0608 7.4V 1250mAh 2.5oz (70g) LiPo 2 GPMM0613 11.1V 1500mAh 4.4oz (125g) LiPo 3

PROPELLER ADAPTERS

The RimFire 28mm motor comes with a bolt-on prop adapter and a prop saver with sleeves to fit a variety of prop hub sizes. If the RimFire 28mm motor needs to be mounted behind the firewall, the motor requires a 3mm prop adapter collet type (GPMM4958), or set screw type (GPMM4950).

The RimFire motors are labeled to provide the system current draw shown on the motor/prop chart. See the ESC section.

Procedure 2: If you know the approximate weight of your airplane, including the 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 combination to find the best balance of performance and efficiency.

Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

MOTORS

The RimFire motors are labeled to provide the most complete information on their power capability. For example the 28-30-70SVK is 28mm in diameter, 30mm long and has a KV (rpm-per-volt) of 750 rpm.

Weight (22mm): 26.5g
Weight (26mm): 40.3g
Weight (28mm): 52.5g
Weight includes: Motor w/collet.

DETERMINE WHAT YOU NEED TO BUILD YOUR POWER SYSTEM

Now that you have a component for your power system, you may be able to select other components that work best for you, on an easy way to determine what you need now is the following:

Stock # Voltage Weight Battery # of Cells Connector Adapter
GPM0594 7.4V 300mAh 0.82z (24g) LiPo 2
GPM0595 11.1V 300mAh 1.1oz (32g) LiPo 3
GPM0600 7.4V 640mAh 1.4oz (40g) LiPo 2
GPM0601 11.1V 640mAh 2.3oz (65g) LiPo 3
GPM0604 7.4V 910mAh 2.1oz (58g) LiPo 2
GPM0605 11.1V 910mAh 3.1oz (87g) LiPo 3
GPM0608 7.4V 1250mAh 2.5oz (70g) LiPo 2 GPMM0317
GPM0609 11.1V 1250mAh 3.8oz (106g) LiPo 3 GPMM0317
GPM0612 7.4V 1500mAh 3.0oz (85g) LiPo 2 GPMM0317
GPM0613 11.1V 1500mAh 4.0oz (125g) LiPo 3 GPMM0317
GPM0607 9.6V 350mAh 2.3oz (65g) NiMH 8 GPMM0315
GPM0105 8.4V 640mAh 3.5oz (95g) NiMH 7 GPMM0315
GPM0106 11.1V 640mAh 5.0oz (145g) NiMH 8 GPMM0315

J. Determine if you want to use LiPo or NiMH batteries. You can follow the closest ready-to-fly airplane weight. Select the number of cells based on the recommended voltage shown on the chart.

J. Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Procedure 2: If you know the approximate weight of your airplane, including the 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 combination to find the best balance of performance and efficiency.

Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Procedure 2: If you know the approximate weight of your airplane, including the 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 combination to find the best balance of performance and efficiency.

Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Procedure 2: If you know the approximate weight of your airplane, including the 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 combination to find the best balance of performance and efficiency.

Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

7. Determine the battery capacity needed based on the current draw of your system and your desired flight time.

J. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Electronic Speed Control (ESC)

An ESC is basically the device that controls your airplane through your radio system. It will not run any motor with a brushed ESC. It will not work and may damage both the motor and the ESC. Always use a brushless ESC. ElectriFly offers Brushless ESC that will work with the RimFire 28mm motors.

There is a wide selection of propellers available for electric use. The RimFire 28mm motors have high performance slow fly electric props. The larger the propeller, the less current the motor will draw. Shown are a few of the recommended electric props. Due to the large range of propellers and the constant addition of new sizes, visits our web site www.electrifly.com and www.greatplanes.com for the most up-to-date listing of electric props.

1. Perform the following calculation to determine the best combination for your airplane:

   [if you expect train/railway performance multiply 25 x Airplane Weight (lbs)]

2. If you expect aerobatic or high speed-like performance multiply 100 x Airplane Weight (lbs)

3. Divide the result from step 1 by step 2. The combination closest to 1 is the propeller combination you will need for your plane to perform as you wish. Look at the chart and determine what combination gives you the performance you want (i.e. maximum wattage and maximum propeller size that will fit on the plane).

4. Note the recommended battery voltage.

5. If you want to use the Deans Ultra Plug your motor needs to be high performance slow fly type batteries. Based on the desired need to fly aerobatic or high speed, select the number of cells based on the recommended voltage shown in the chart.

6. Determine the battery capacity needed based on the current draw of your system and your desired flight time.

7. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Understand Motors

KV is a reading that is given by the motor that gets thrown around quite a bit when talking electrical and it is important to know what it is the KV is the number of rpm a motor will spin per volt applied (rpm/volt) under no load.

This means that basically a motor has a KV of 1000 when connected to a 12 volt battery you will try to spin at 12000 rpm. You could use a speed control to limit the voltage to 3500v motor you will spin at 42000 rpm (3500x12) under no load.

For 25A maximum constant current draw.

For 12A maximum constant current draw.

For 25A maximum constant current draw.

ElectriFly Silver Series 26 (SS-25) ESC (GPMM1410)

ElectriFly Silver Series 12 (SS-12) ESC (GPMM1411)

ElectriFly Micro Series 12 (SS-12) ESC (GPMM1412) for 12A maximum constant current draw.
Congratulations, you have just purchased the RimFire 28mm power system components. All the components are sold separately to allow you to customize your power system to your airplane. The components needed to assemble your RimFire 28mm power system are: rims, motors, propeller, adapter plug, and battery connectors. This instruction sheet explains how to determine what you will need and how to assemble as component.

BATTERIES: CHEMISTRY

The Ammo Motor/Propeller ESC combination can use NiMH or LiPo batteries. Typically, NiMH batteries are heavier but more affordable for the same capacity as LiPo batteries. If you want a very light, high-performance airplane, you might want to use LiPo batteries, but weight is not a concern, then NiMH batteries might be for you.

BATTERIES: NUMBER OF CELLS

Cells can be connected in series or in parallel. Usually batteries are labeled as 8-cell NiMH or 3-cell LiPo. This means the cells are connected in SERIES (S). Arranging batteries in parallel will give you more capacity.

● Each NiMH cell has 1.2V, so an 8-cell NiMH battery has 1.2V x 8 = 9.6V
● Each LiPo cell has 3.7V, so a 3-cell LiPo battery has 3.7V x 3 = 11.1V

If you need a higher voltage than what is available in the LiPo battery line, you will need to connect two battery packs in series. If you need a battery voltage of 14.8V you can use the series-parallel connector (GPMM1347) for use with Deans Micro plug or (GPMM3143) for use with the Deans Ultra Plug.

The RimFire motors are labeled to provide the most useful information for selecting the correct batteries. For example the 28-30-750kV is 28mm in diameter, 30mm long and has a KV (rpm-per-volts) of 750 rpm.

7.4V batteries together. Note: The 350mAh and 640mAh LiPo batteries listed below both use Deans Ultra Plugs. The 1200mAh, 1500mAh and 1500mAh LiPo batteries listed below use the Deans Ultra Plugs.

If a battery is arranged in PARALLEL it might be labeled as (P). Arranging the batteries in parallel will give you more power (higher voltage).

► ElectriFly offers a full line of NiMH and LiPo batteries. Airplanes that use the RimFire 28mm RS will typically use batteries with a capacity of 800 to 1500mAh, with the higher capacities delivering longer flying time but also being heavier. Most of the batteries have connectors that fit the recommended ESC. Due to the constantly changing battery technology, check out the ElectriFly web site www.electrifly.com for the most up-to-date listing of the ElectriFly battery line.

MOTORS

ElectriFly Silver Series 12 (SS-12) ESC for 12A maximum constant current draw.

ElectriFly Silver Series 25 (SS-25) ESC for 25A maximum constant current draw.

There is a wide selection of propellers available for electric use. The RimFire 28mm motors have high performance slow fly electric propellers. The larger the propeller, the more current your motor will draw. The smaller the propeller, the less current the motor will draw. Shown are a few of the recommended electric props. Due to the large range of props and the constant addition of new sizes, visit the Electric Propellers at www.electrifly.com and www.greatplanes.com for the most up-to-date listing of electric props.

1. Perform the following calculation to determine the wattage required:

   \[ \text{Current Draw (amps)} = \frac{\text{Watts}}{\text{Volts}} \]

2. If you expect trainer-like performance then use a propeller with a diameter less than 7.5 inches.

3. If you expect aerobatic or high speed-like performance then use a propeller with a diameter greater than 7.5 inches.

4. For 25A maximum constant current draw use a propeller with a diameter greater than 7.5 inches.

ElectriFly offers Brushless ESCs that will work with the RimFire 28mm motors.

MOTOR Stock # Voltage Capacity Weight

GPMP0594 7.4V 300mAh 0.82oz (24g) LiPo 2

GPMP0595 11.1V 300mAh 1.1oz (32g) LiPo 3

GPMP0600 7.4V 640mAh 1.4oz (40g) LiPo 2

GPMP0601 11.1V 640mAh 2.0oz (56g) LiPo 3

GPMP0540 7.4V 910mAh 2.0oz (56g) LiPo 2

GPMP0605 11.1V 910mAh 2.1oz (60g) LiPo 3

GPMP0608 7.4V 1250mAh 2.5oz (70g) LiPo 2

GPMP0609 11.1V 1250mAh 3.8oz (106g) LiPo 3

GPMP0612 7.4V 1500mAh 3.0oz (85g) LiPo 2

GPMP0613 11.1V 1500mAh 4.4oz (125g) LiPo 3

GPMP0567 9.6V 350mAh 2.3oz (65g) NiMH 8

GPMP0105 8.4V 640mAh 3.9oz (110g) NiMH 7

GPMP072 9.6V 640mAh 4.6oz (125g) NiMH 8

Determine the battery capacity needed based on the current draw of your system and your desired flight time.

Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

Procedure #2: If you know the approximate weight of your airplane, including the motor and battery, and the performance you want from it, you answer the questions below to determine the correct propeller for your airplane. You may need to make more than one calculation for your propeller and battery combinations. See the battery section for some of the battery weights for the suggested batteries.

Motor/Propeller ESCs

1. If you expect trainer-like performance then use a propeller with a diameter less than 7.5 inches.

2. If you expect aerobatic or high speed-like performance then use a propeller with a diameter greater than 7.5 inches.

3. For 25A maximum constant current draw use a propeller with a diameter greater than 7.5 inches.

4. For 12A maximum constant current draw use a propeller with a diameter greater than 7.5 inches.

ElectriFly offers Brushless ESCs that will work with the RimFire 28mm motors.

ElectriFly Silver Series 12 (SS-12) ESC for 12A maximum constant current draw.

ElectriFly Silver Series 25 (SS-25) ESC for 25A maximum constant current draw.

The SS-12 comes with 2mm female bullet connectors that plug directly into the 2mm-male connectors installed on the RimFire 28mm motors. The SS-25 comes with 3.5mm female bullet connectors and requires an adapter (GPMM3122). The SS-25 is compatible with a Deans® Micro type connector that matches the connectors that are already being used on most of your batteries that it will use. The SS-25 comes with a Deans Ultra Plug® battery connector and may require an adapter for some of the batteries.

Determine what you need to build your power system

Now that you have a component for your power system, you must determine what other components you need to meet the rest of the components of your system. In three, experiences will help determine what works best for you, but an easy way to determine what you need now is the following.

Procedure #1: If you know the size of the propeller you want to use and the rpm, then look at the chart included in the packaging and:

1. Find the combination in the motor/prop chart that delivers the performance to what you want.

2. Note the recommended battery voltage.

3. Select the battery type and voltage based on the recommended voltage shown on the chart.

4. Determine the battery capacity needed based on the current draw of your system and your desired flight time.

5. Determine the ESC you need based on the system current draw shown on the motor/prop chart. See the ESC section.

6. Determine the propeller and ESC combination that gives you the desired ready-to-fly airplane weight. Select the number of cells based on the recommended voltage shown on the chart.

7. Determine the battery capacity needed based on the current draw of your system and your desired flight time.

8. Determine the ESC you need based on the system current draw.

In addition to these two procedures, you can also check the Great Planes Electric 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.

UNDERSTANDING MOTORS

The RimFire 28mm motor that is chosen for your airplane will determine the rpm of the motor. In general, a 28mm motor that is 1000 to 1200 rpm will give you a 40mm motor that will perform well over the 40mm motors. A 3500V motor will give you at 42,000rpm (30502) under no load.

This means that basically a motor has a KV of 1000 when connected to a 12V battery will try to spin at a speed where at 12V the KV number is 1000. For a 3500V motor to give you at 42,000rpm (30502) under no load.
When a propulsion system is attached to the motor, the motor will try to spin the prop at the highest rpm. Depending on the diameter and pitch of the propeller, if the larger the diameter or pitch, the harder it is to spin, the motor’s current draw can be increased or decreased. There are motors available from your hobby dealer that measure current and voltage.

Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used with each motor can be determined. Too large of a propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at the rated rpm.

Ideally the motor should be matched with a propeller that causes the motor to draw 80-100% of its rated maximum constant current. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor draws.

Please note that the kV of a motor does not change with voltage, but if a higher voltage is applied to the motor, it will try to spin the same propeller, at a higher rpm. This will cause the motor to draw more current and possibly burn out if not rated correctly for that current. If a battery with a higher voltage is replaced with one with a higher voltage, it is recommended that a smaller propeller be used to keep the current in check. If a higher voltage battery is replaced with a lower voltage battery, the propeller can be increased to keep the motor at its rated current.

Another possibility is to fine tune the power system’s performance is to use another motor with higher voltage capability that increases the current or a lower KV to lower the current.

The included prop saver adapter can be installed with either end facing forward. One end has a diameter of 5mm and the other end has a diameter of 6mm. For other prop hub sizes, 7mm and 7.85mm adapters are also included and will fit over the 5mm diameter prop saver end. Orient the prop saver adapter in the direction that looks to be the best and slide it onto the front of the motor shaft and tighten the screws against the fl at spots on the shaft.

Although the mounting plate comes preinstalled on the RimFire, the three 3x16mm machine screws should be tightened with all locking compounds. If you plan to install the prop on the front of the RimFire, you must remove the mounting plate from the motor before attempting to remove c-clips. If the c-clips are left on the prop, it will be difficult to remove the clips. Also, be sure to wear safety glasses when removing the clips.

The install kit when the plane comes in, includes a propeller and the necessary bolts, nuts, washers, and sealing compound to mount the prop.

асsemble your power system

Once the required RimFire motor has been determined, it needs to be installed on the plane. It can be mounted directly to the front of the firewall using the RimFire steel mount-plate included with the motor, or on the back of the firewall using a prop adapter to mount the prop.

In the center of the header card, you will find the mounting hole template for mounting the 28mm RimFire motor to the front or the back of the firewall.

configuring the motor

A propeller can be installed onto the RimFire using the included/optional prop adapter, prop saver adapter, or a collectible prop adapter (not included).

If you are installing the motor onto the front of the firewall (common), the prop saver adapter can be installed onto the bolt-on prop adapter or the prop saver adapter. If you choose to use the bolt-on prop adapter, secure it to the front of the firewall using the included three 3x16mm hex head cap screws and thread locking compound. A prop washer and prop nut are included to tighten the propeller onto the bolt-on prop adapter.

5mm plate and mounting screws. A variety of ElectricFly Silver Series Brushless ESC’s are recommended.

Because these motors have a wide range of current draws, a variety of ElectricFly Silver Series Brushless ESC’s are recommended.

- SS-12 (GPMM1618) 12 amp continuous current for motors drawing 12 amps or less.
- SS-25 (GPMM1918) 25 amp continuous current for motors drawing 25 amps or less.

See the chart on the header card for the current draw of some of the motor/prop combinations that have been tested. Always make sure that the ESC is powerful enough so that it gets some cooling air flowing over it.

Use the instructions included with the ESC to correctly connect the ESC.

rimfire motor maintenance

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.

install the brushless esc

- Once the battery is connected to the ESC, select the clear and proper motor of the prop.
- DO NOT apply an input voltage that exceeds the maximum specifications 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. DO NOT apply input voltages to the ESC.
- DO NOT apply currents to the motor as it can cause permanent damage to the motor and possibly short out the attached ESC.
- DO NOT allow the battery to become dry cell of the motor. If you must remove the battery connectors, unsolder them.
- Allow the motor to cool after each flight.
- The motor shaft of the motor will be 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).
- ElectricFly carries a complete line of (Amo (in- built style) and Rimfire (out-runner style) brushless motors, gear boxes, motor mount, prop adapters and speed controls. For a complete list of these products, check out our web site at: www.electrifly.com

importent precautions

Using the prop saver kit will lock the motor shaft to the front endbell. Do not remove the prop saver kit when the prop is mounted on the motor or the prop saver kit will be damaged. When the prop is removed from the motor, the prop saver adapter must be removed. Propeller and prop saver kits are available at your local hobby shop or at www.greatplanes.com or visit your nearest hobby shop that carries the full line of GreatPlanes and ElectricFly products.

Front of firewall mounting method

Use the template from the header card to locate and drill the holes for the mounting screws. Attach the RimFire mounting plate to the firewall using three 3x16mm machine screws (not included).

Bear in mind when mounting the motor, that causes the motor to draw 80-100% of its rated maximum constant current. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor draws.

Front of firewall mounting method

Use the template from the header card to locate and drill the holes for the mounting screws. Attach the RimFire mounting plate to the firewall using three 3x16mm machine screws (not included).

 reinstall firewall mounting method

Install the prop on the prop saver and secure it with a rubber O- ring. Make sure the o-ring clear of the motor and prop.

Prop saver prop adapter installation

Use the template from the header card to locate and drill the holes for the mounting screws. Attach the RimFire mounting plate to the firewall using three 3x16mm machine screws (not included).

The included bolt-on prop adapter, prop saver end. Orient the prop saver adapter in the direction that looks to be the best and slide it onto the front of the motor shaft and tighten the screws against the fl at spots on the shaft.

Although the mounting plate comes preinstalled on the RimFire, the three 3x16mm machine screws should be tightened with all locking compounds. If you plan to install the prop on the front of the RimFire, you must remove the mounting plate from the motor before attempting to remove c-clips. If the c-clips are left on the prop, it will be difficult to remove the clips. Also, be sure to wear safety glasses when removing the clips.

altitudes. There are meters available from your hobby dealer that measure current and voltage.

Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used with each motor can be determined. Too large of a propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at the rated rpm.

Another possibility is to fine tune the power system’s performance is to use another motor with higher voltage capability that increases the current or a lower KV to lower the current.

The included prop saver adapter can be installed with either end facing forward. One end has a diameter of 5mm and the other end has a diameter of 6mm. For other prop hub sizes, 7mm and 7.85mm adapters are also included and will fit over the 5mm diameter prop saver end. Orient the prop saver adapter in the direction that looks to be the best and slide it onto the front of the motor shaft and tighten the screws against the fl at spots on the shaft.

Although the mounting plate comes preinstalled on the RimFire, the three 3x16mm machine screws should be tightened with all locking compounds. If you plan to install the prop on the front of the RimFire, you must remove the mounting plate from the motor before attempting to remove c-clips. If the c-clips are left on the prop, it will be difficult to remove the clips. Also, be sure to wear safety glasses when removing the clips.

Propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at the rated rpm.

Another possibility is to fine tune the power system’s performance is to use another motor with higher voltage capability that increases the current or a lower KV to lower the current.

CONSTRUCT THE MOTOR

Using the prop saver kit will lock the motor shaft to the front endbell. Do not remove the prop saver kit when the prop is mounted on the motor or the prop saver kit will be damaged. When the prop is removed from the motor, the prop saver adapter must be removed. Propeller and prop saver kits are available at your local hobby shop or at www.greatplanes.com or visit your nearest hobby shop that carries the full line of GreatPlanes and ElectricFly products.

Rimfire maintains the motor's current draw while it is rotating. If setting up the motor/ESC on the workbench, it can be mounted directly to the front of the firewall using the RimFire steel mount-plate included with the motor, or on the back of the firewall using a prop adapter to mount the prop.

The included bolt-on prop adapter, prop saver end. Orient the prop saver adapter in the direction that looks to be the best and slide it onto the front of the motor shaft and tighten the screws against the fl at spots on the shaft.

Although the mounting plate comes preinstalled on the RimFire, the three 3x16mm machine screws should be tightened with all locking compounds. If you plan to install the prop on the front of the RimFire, you must remove the mounting plate from the motor before attempting to remove c-clips. If the c-clips are left on the prop, it will be difficult to remove the clips. Also, be sure to wear safety glasses when removing the clips.
When a propeller is attached to the motor, the motor will try to spin the prop at the rated kV. Depending on the diameter and pitch of the propeller (the larger the diameter or higher the pitch, the harder it is to spin), the motor's current draw can be increased or decreased. There are motors available from your hobby dealer that measure current and voltage. Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used is determined. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor is drawing.

Please note that the kV of a motor does not change with voltage, but if a higher voltage is applied to the motor, it will try to spin the same propeller at a higher rpm. This will cause the motor to draw more current and possibly overheat the commutated current of the motor. So if a battery with a higher voltage is replaced with one with a higher voltage, it is recommended that a smaller propeller be used to keep the current in check. If a higher voltage battery is replaced with a lower voltage battery, the size of the propeller can be increased to keep the motor at its rated current.

Another possibility is to tune the power system's performance to use a smaller motor with higher rpm that increases the current or a lower kV to lower the current. No matter what you set up, be sure to check the current after connecting the ESC and the propeller and install the prop saver adapter to protect the prop from the propeller's high speed. It is recommended that the prop be attached to the motor shaft with thread locking compound and not be allowed to rotate freely. A propeller can be installed onto the RimFire using screws against the flat spots on the shaft. Orient the prop saver adapter in the direction that best suits your propeller and install the screws over it. If you plan to spin the prop at the rated kV, the prop saver end should be retightened with threadlocking compound. A prop washer and prop nut are included to tighten the propeller onto the bolt-on prop adapter or a collet-type prop adapter (not included).

ASSEMBLE YOUR POWER SYSTEM

Once the required RimFire motor has been determined, it needs to be installed on the plane. It can be mounted directly to the front of the firewall using the RimFire steel-mounting plate included with the motor, or on the back of the firewall using a prop adapter to mount the prop.

In the center of the header card, you will find the mounting hole template for mounting the RimFire 28mm motor to the front or the back of the firewall.

CONFIGURING THE MOTOR

A propeller can be installed onto the RimFire using the included bolt-on prop adapter, prop saver adapter, or a collet-type prop adapter. If you are installing the motor onto the front of the firewall (common installation), the propeller can be installed onto the bolt-on prop adapter or the prop saver adapter. If you choose to use the bolt-on prop adapter, secure it to the front of the motor using the included three 3x5mm socket head cap screws and thread locking compound. A prop washer and prop nut are included to tighten the propeller onto the bolt-on prop adapter.

Following is an example of the installation of the motor to the firewall.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install the bolt-on prop adapter onto the RimFire, aligning the flat spot on the prop adapter with the flat spot on the rim of the motor. Reinstall the set screw into the O-ring for wear before each flight. If the O-ring shows any cracks, replace immediately.</td>
</tr>
<tr>
<td>2</td>
<td>The motor shaft of RimFire brushless motors requires 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.</td>
</tr>
</tbody>
</table>

IMPORTANT PRECAUTIONS

- Once the battery is connected to the ESC, allow the clear motor and prop.
- DO NOT apply an input voltage that exceeds the maximum voltage rating of each motor.
- DO NOT apply currents to the motor that exceed the maximum specification 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 apply water or moisture to the motor as it can cause permanent damage to the motor and possibly short out the attached ESC.
- DO NOT cut the coiled wires from the motor 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 wedging up the motor/ESC on the world bench, 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 damage, electrical defects).
- ElectriFly carries a complete line of Amino (in-runner style) and RimFire (out-runner style) brushless motors, gear drives, motor mounts, prop adaptors and speed controls. For a complete list of these products, check out our web site at www.electrifly.com.
When a propeller is attached to the motor, the motor will try to spin the prop at the rated K.V. Depending on the diameter and pitch of the propeller (the larger the diameter or higher the pitch, the harder it is to spin), the motor’s current draw can be increased or decreased. There are motors available from your hobby dealer that measure current and voltage. Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used with each motor can be determined. Too large of a propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at its rated K.V.

Ideally the motor should be matched with a propeller that causes the motor to draw 80-100% of its rated maximum constant current. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor is drawing.

Please note that the K.V. of a motor does not change with voltage, but if a higher voltage is applied to the motor, it will try to spin the same propeller at a higher rpm. This will cause the motor to draw more current and possibly overheat. There are two different current ratings for the motor. So if a battery with lower voltage is replaced with one with a higher voltage, it is recommended that a smaller propeller be used to keep the current in check. If a higher voltage battery is replaced by a lower voltage 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 voltage to increase the current or a lower K.V. to lower the current.

INSTALL THE BRUSHLESS ESC

Because these motors have a wide range of current draws, a variety of ElectricFly Silver Series Brushless ESC’s are recommended.

- SLS-12 (GPMM1810) 12 amp continuous current for motors drawing 12 amps or less.
- SLS-25 (GPMM1825) 25 amp continuous current for motors drawing 25 amps or less.

See the chart on the header card for the current draw of some of the motors/prop combinations that have been tested. Always make sure that the ESC is powerful enough so that it gets some cooling airflow over it.

Use the instructions included with the ESC to correctly connect the ESC.

INSTALL THE BRUSHLESS ESC

- 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 screws and set screws remain tight.

IMPORTANT PRECAUTIONS

- Once the battery is connected to the ESC, slay clear of the motor and prop.
- DO NOT apply input voltage that exceeds the maximum ratings of the motor.
- DO NOT allow 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 allow the cooled air from the motor if you must, remove the bullet connectors, unplug 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 spinning. If walking 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).
- ElectricFly carries a complete line of Ammo (in-runner style) and RimFire (out-runner style) brushless motors, gear drives, motor mounts, prop adaptors and speed controls. For a complete list of these products, check out our web site at www.greatplanes.com or your nearest hobby shop that carries the full line of Great Planes and ElectricFly products.

When a propeller is attached to the motor, the motor will try to spin the prop at the rated K.V. Depending on the diameter and pitch of the propeller (the larger the diameter or higher the pitch, the harder it is to spin), the motor’s current draw can be increased or decreased. There are motors available from your hobby dealer that measure current and voltage. Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used with each motor can be determined. Too large of a propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at its rated K.V.

Ideally the motor should be matched with a propeller that causes the motor to draw 80-100% of its rated maximum constant current. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor is drawing.

Please note that the K.V. of a motor does not change with voltage, but if a higher voltage is applied to the motor, it will try to spin the same propeller at a higher rpm. This will cause the motor to draw more current and possibly overheat. There are two different current ratings for the motor. So if a battery with lower voltage is replaced with one with a higher voltage, it is recommended that a smaller propeller be used to keep the current in check. If a higher voltage battery is replaced by a lower voltage 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 voltage to increase the current or a lower K.V. to lower the current.

ADD A SET SCREW TYPE PROP ADAPTER

The included prop saver adapter can be installed with either end facing forward. One has a diameter of 3mm and the other has a diameter of 3.1mm. For other prop hub sizes, 7mm and 7.5mm adapter Savers are also included to fit over the 5.5mm diameter prop saver end. Orient the prop saver adapter in the direction that best suits your propeller and install it onto the front of the motor shaft and tighten the screws against the flat spots on the shaft.

The included prop saver adapter can be installed with either end facing forward. One has a diameter

 mount the prop on the prop saver and secure it with a rubber O- ring. Never attempt to use a damaged motor (having mechanical or electrical defects).
- ElectricFly carries a complete line of Ammo (in-runner style) and RimFire (out-runner style) brushless motors, gear drives, motor mounts, prop adaptors and speed controls. For a complete list of these products, check out our web site at www.greatplanes.com or your nearest hobby shop that carries the full line of Great Planes and ElectricFly products.

When a propeller is attached to the motor, the motor will try to spin the prop at the rated K.V. Depending on the diameter and pitch of the propeller (the larger the diameter or higher the pitch, the harder it is to spin), the motor’s current draw can be increased or decreased. There are motors available from your hobby dealer that measure current and voltage. Because every motor has a maximum current it can take based on its design and cooling ability, the maximum size of propeller that can be used with each motor can be determined. Too large of a propeller and the motor will spin at a much lower rpm than its rated rpm, causing it to draw a lot of current and overheat. If the propeller is too small, it will require little effort (current) to turn the prop at its rated K.V.

Ideally the motor should be matched with a propeller that causes the motor to draw 80-100% of its rated maximum constant current. Once a power system is set up, it can be fine-tuned by adjusting the propeller size and measuring the amount of current the motor is drawing.

Please note that the K.V. of a motor does not change with voltage, but if a higher voltage is applied to the motor, it will try to spin the same propeller at a higher rpm. This will cause the motor to draw more current and possibly overheat. There are two different current ratings for the motor. So if a battery with lower voltage is replaced with one with a higher voltage, it is recommended that a smaller propeller be used to keep the current in check. If a higher voltage battery is replaced by a lower voltage 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 voltage to increase the current or a lower K.V. to lower the current.