



*PLEASE
READ THIS
FIRST!*

AVOID TROUBLE!
**PLEASE REVIEW
THIS
DOCUMENT CAREFULLY.**
**AVOID 90%+ OF PROBLEMS
BY READING FIRST!**

Model airplane motors, model airplanes, speed controls, batteries, propellers and related accessories, tools and equipment can be hazardous if improperly used. Be cautious and follow all safety recommendations when using your VMAX product. Keep hands, tools, clothing and all foreign objects well clear of equipment prior to and during operations. Take particular care to safeguard and protect your eyes and fingers and the eyes and fingers of other persons who may be nearby. Use only a good quality propeller that has no cracks or flaws. **Stay clear of the propeller and stay clear of the plane of rotation defined by the propeller prior to connecting your battery to any motor or power system.**

ALWAYS disconnect the battery from any motor, device or charger when transporting, storing or not using.

Liability Disclaimer

It is important that the following liability disclaimer be
READ BEFORE CHARGING OR USING THIS PRODUCT

Proceeding with use of this product indicates Agreement With and Acceptance of the Liability Disclaimer & Warranty Conditions.

The Manufacturer, Distributor, Retailer and/or other suppliers of this product expressly disclaim any warranties or representations, either expressed or implied, including but not limited to implied warranties of fitness for the purposes of achieving and sustaining remotely controlled flight.

In no event will the Manufacturer, Distributor, Retailer and/or other suppliers of this product have any obligation arising from contract or tort, or for loss of revenue or profit, or for indirect, special, incidental, consequential or other damages arising from the use of this product.

In purchasing and/or using this product, the user accepts all responsibility for its use and accepts all liability associated with such use. The motor and speed control are warranted against manufacturing defect for 30 days following proof of purchase date. **ALL WARRANTY CLAIMS WILL REQUIRE PROOF OF PURCHASE & RETURN OF THE PRODUCT** per the **RETURN PROCEDURES** as described at www.richmondrc.com/support.htm

WARNING

Keep hands, tools, clothing and all foreign objects well clear of equipment prior to and during operations. Take particular care to safeguard and protect your eyes and fingers and the eyes and fingers of other persons who may be nearby

STAY CLEAR OF PROPELLER. PROTECT YOURSELF & OTHERS AT ALL TIMES

Use only a good quality propeller that has no cracks or flaws. **Ensure propellers are securely attached. Stay clear of the propeller and stay clear of the plane of rotation defined by the propeller prior to connecting your battery to any motor or power system.**



Please Review the NO NO's & MUST DO's on Page 4.

1) INSTALLATION.

VMAR Power Packs contain a Power Module (Motor, ESC, Firewall) for the VMAR model that they were designed for. Please carefully review Figure 1 on Page 3 and review the Assembly & Operations Manual that was provided with your model. **It is very important to also follow the instructions that came with the Power Module included here as part of the Power Pack.**

This Power Pack is intended for the model specified on the packaging and contains a Power Module consisting of a Brushless Motor and Electronic Speed Control (ESC) pre-installed on the firewall for the specified model. The Power Pack also includes a POLYPRO battery, Propeller, wiring and connectors that we used to test and proof out the flying abilities of your model. We developed this Power Pack as a "system" for your model and **we strongly recommend that you do not change any component within this system. Changing one thing can lead to unexpected results. If a component requires replacement, ensure you replace it with a new but identical component as listed on Page 3.**

This Power Pack contains an adapter to assist with quick easy installation and reliable low loss wiring. Please see Figure 1 on Page 3. Details may vary slightly from model to model.

PAY ATTENTION TO ELECTRICAL CONNECTORS AND RATINGS. WRONG CONNECTIONS &/OR EXCEEDING RATINGS WILL DESTROY COMPONENTS.

CONFIRM ALL FASTENERS, SCREWS AND NUTS ARE SNUGLY TIGHT. LOOSE FASTENERS CAUSE VIBRATION. EXCESSIVE VIBRATION WILL DESTROY YOUR MOTOR.

2) INSTALLING THE PROPELLER

VMAR Power Packs contain the appropriate propeller for your model and motor. We cannot say strongly enough **USE ONLY THE PROPELLOR PROVIDED.** If you break it or need another prop like it, see the listing of Power Pack Replacement Parts on Page 3.

SEE THE WARNING LABEL ON THE MOTOR SHAFT &/OR FIREWALL. DO NOT EXCEED THE MAXIMUM PROP SIZE NOTED. EXCEEDING THE PROP SIZE LIMITS WILL OVERHEAT & DESTROY THE MOTOR.

See the illustration below.



In some systems Nut A has been replaced with two 3mm hex nuts. Use the two hex nuts together as a substitute for Nut A.

To install your propeller please consult the illustration & do the following:

- 2.1 Install Nut A with the tapered end towards the motor. It may be helpful to first thread the nut onto the shaft with the tapered end pointing away from the motor and then remove the nut and re-thread it back onto the shaft with the tapered end towards the motor.
- 2.2 Install the prop. Push the hexagonal end of Nut A into the recess hole in the back of the prop provided.
- 2.3 Install Washer B on the forward face of the prop.
- 2.4 Install Nut C. Tighten Nut C securely.
- 2.5 Make sure that all the nuts are securely tightened. Do not overtighten but ensure they are snugly tight.

ENSURE PROP TURNS TRUE (NO WOBBLE) & IS BALANCED. RE-INSTALL PROP & PROP NUTS IF WOBBLE EVIDENT. IF PROP WOBBLER OR VIBRATES IT WILL DESTROY THE MOTOR

2.6 Ensure the bolts holding the motor to the firewall are tight. Ensure the grub screws visible between the motor & backing plate are tight.

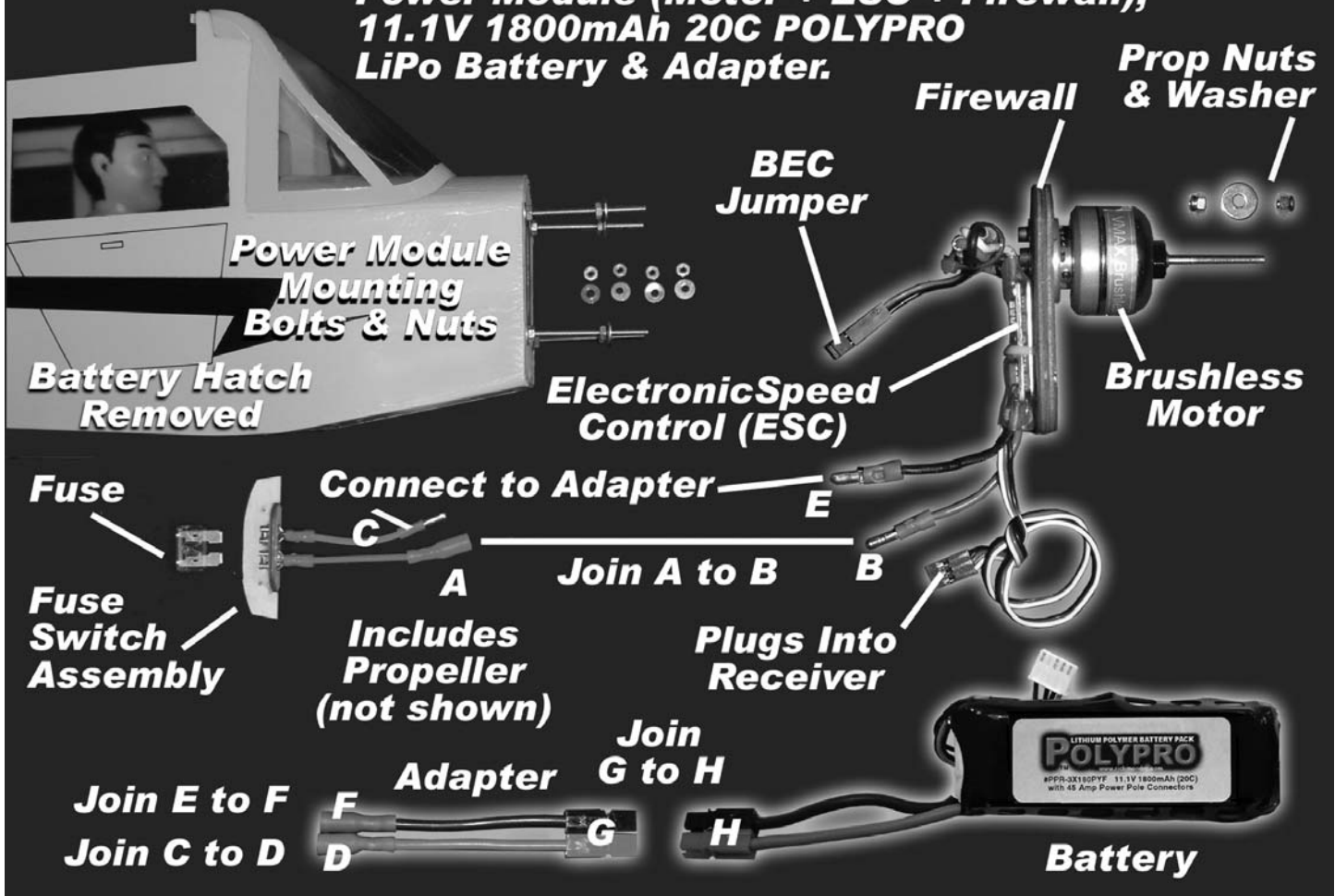
3) OPERATING

Please see Page 4

#VMM-C210XPP1 POWER PACK FOR CUB AND L4

FIGURE 1

Includes Propeller, Factory Pre-assembled Power Module (Motor + ESC + Firewall), 11.1V 1800mAh 20C POLYPRO LiPo Battery & Adapter.



VMAR POWER PACKS CONSIST OF:

- Propeller, Lithium Polymer Battery, Adapter & Power Module** including
- Brushless Motor with Prop Nuts & Washer or Prop adapter,
 - Electronic Speed Control (ESC) with adjustable cutoff Battery Eliminator Circuit (BEC) for powering your RC receiver.
 - Firewall that has been pre-drilled for easy mounting into your model,
 - Power Wiring with Connectors, and a
 - Signal/Power Cable that plugs into the throttle control output of your receiver so that you can tell the ESC how fast to run the motor and to provide power from the power battery back to your RC receiver.

FOR EXTENDED FLIGHT TIMES:

POLYPRO Batteries with Power Pole Connectors
 11.1V 2500mAh 20C LiPo Pack #PPR-3X250PYF
 11.1V 3300mAh 20C LiPo Pack #PPR-3X330PYF

POWER PACK REPLACEMENT PARTS:

- Complete Power Pack #VMM-C210XPP1
- Complete Power Module #VMM-C210XPM1
- Brushless Motor Assembly #VMM-111B18VM
- Electronic Speed Control assembly with power wiring, male connectors, BEC, Jumper and Signal/Power Cable #VMC-120B15VC
- Firewall (pre-drilled) #VMA-S210XPMF
- Bullet Connector Set (Red M/F & Blue M/F) #VMW-154VP1XX
- Power Pole 30 Amp Connector Set (1 Red, 1 Black) #VMW-302PY1XX
- Propeller suitable for J3 Cub & L4 Grasshopper Power Module. #MAS-0850NE
- POLYPRO 11.1V 1800mAh 20C LiPo Pack with Power Pole Connectors #PPR-3X180PYF
- Adapter (no crimping required) to connect POLYPRO battery #VMW-302PY1VF

OTHER "POWER" RELATED PARTS:

- Fuse (20A) #VMW-FUS20AS
- Fuse Switch Assembly #VMA-C210XFSA



3) OPERATING

3.1) With power disconnected, always double check the propeller to make sure it is not damaged or nicked in any way and that it is securely and safely mounted. **Check before & after each flight.**

3.2) Stay well clear of the propeller and reduce your power to zero. Now slowly advance the throttle and the prop will begin to rotate. Ensure rotation is pushing air from the front of the motor to the back of the model.

ENSURE ADEQUATE COOLING.
AVOID OPERATING AT HIGH THROTTLE ON THE GROUND FOR LONGER THAN 10 SECONDS.

NO NO'S & MUST DO's!

- 1) Read Everything First!** Every instruction! Every Warning Label! Browse our Knowledge Base while you are at it. About 90% of problems can be avoided by Reading First.
- 2) Do NOT screw up the electrical connections!** Polarity is important. If you are not sure, figure it out first... trial and error testing can get expensive!
- 3) Do NOT exceed the maximum electrical specifications!** Pay attention to the maximum allowable Voltage, Current and Wattage (Volts x Amps).
- 4) Do NOT use a propeller that is bigger in diameter and/or bigger in pitch than the specifications provided!** Use the recommended propeller.
- 5) Do NOT operate the motor if the prop appears to wobble when you turn it by hand!** Look at the back of the hub as you rotate the propeller over by hand. The back of the hub should remain in one plane throughout the rotation, not wobble.
- 6) Do NOT operate if the motor appears to vibrate!** Look at the prop shaft when it first gets going. If it look blurry to the eyes or sounds strange it is vibrating. Excessive vibration will destroy your motor and possibly hurt your servos as well. Stop and check all bolts for tightness and make sure the prop is turning true (no wobble) and that the prop is balanced.
- 7) Do NOT operate with loose fasteners!** Check bolts, nuts, screws etc for snug tightness. Do not over tighten but keep them snug. Check periodically, particularly after the first few times you use the motor.

3.3) Follow the operating instructions that came with your Power Module (Motor & ESC)

BE CAUTIOUS & FOLLOW ALL SAFETY RECOMMENDATIONS WHEN USING YOUR VMAX PRODUCT.

ALWAYS DISCONNECT THE BATTERY FROM ANY MOTOR, DEVICE OR CHARGER WHEN TRANSPORTING, MAINTAINING, STORING OR NOT USING.

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For more VMAR Electric ARF's, POLYPRO batteries, VMAX Electric Power systems, accessories, connectors & chargers
Visit us on the web at
www.richmondrc.com

Our Support Services Knowledge Base is a good source of technical information.

Use blue thread locker such as Pacer Z42 to help keep fasteners from loosening up. If you find that fasteners are continuously loosening up even after the motor has been used many times, you have a vibration issue. Check for sources of vibration. Excessive vibration will destroy your motor.

8) Do NOT operate at High Throttle on the ground or test bench for longer than 10 seconds! High Throttle static operation such as this where the airplane is not moving, induces maximum load on the motor while not providing proper air flow to help cool it. Heat will build up quickly, particularly if the motor is cowed. Heat is bad news. Heat can melt the windings down and destroy the motor.

9) Do NOT operate without a safety fuse system!

10) Do NOT assume an electric motor is the same as a glow or gas engine! An electric motor is very different. Electric motors will attempt to overcome any load they encounter, even to the point of destroying themselves.

11) Do NOT use your plumbing tools or hammer! A brushless motor is not a farm tractor. Small hand tools only. Snugly tight does not mean you tighten things to the point they strip.

12) Do NOT get dirt, water or metal objects into the motor! If you drop a small screw or nut when working on your model, find it first before turning on your motor. Electric motors have strong magnets. Chances are that if you drop something small and metal into your model and can't find it... that it will be inside the motor. Turn the motor over by hand and pay attention to any unusual resistance, grinding or other odd sounds or feel. Find the missing metal item before operating your motor!