



## 2018 Hi-Power Cycles Electric Bike Owner's Guide

**Congratulations! You have purchased a state of the art Electric Bicycle with the highest quality components available! Your choice puts you among the elite group that demands the most advanced technology and the highest quality craftsmanship available for electric bikes. Hi Power Cycles has put together high-performing electric bikes that are designed and built from the ground up here in the USA to be economical, non-polluting, quiet, and efficient. This allows you to be a part of the electric vehicle generation and to be environmentally conscientious, while at the same time providing you with a FUN new way to get around and exercise!**

**With your new HPC bike or kit you are at the forefront of electric propulsion technology. You now own the most capable and powerful electric bike systems which gives you the power and confidence you need to conquer any hill! More importantly, your new system gives you the chance to exercise and experience the serenity of the outdoors without harming or polluting our environment!**

**Below you will find the instructions on how to quickly and easily get started with your brand new Electric Mountain Bike!**

### **WARNING: Models above 750W or 20MPH are designated for OFF-ROAD use only**

*(Mandated by federal law due to the 750W/20 MPH limit in the US. Please check with your government to ensure you follow all local laws and ordinances). HPC is not liable for those who chose not to follow their local laws. All bikes are shipped at Federal Legal limits. It is up to the end user to un-limit their computer settings to get full power for use on private property or off road where legal.*

***Hi-Power Cycles will not be held responsible for  
people who choose to disregard the law!***

**IMPORTANT-** Hi Power Cycles will not be liable for any damage or injury that may occur due to operation of our kits or bicycles. By using our products, you are agreeing to our [Terms and Conditions](#) which are set forth on our website.

# Glossary

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# Packing List (Kits)

- Motor/Wheel.....
- Controller.....
- Battery System.....
- Charger.....
- Throttle.....
- Battery Bag.....
- Freewheel.....

## Optional Components:

- E-bike Computer.....
- Lighting System.....
- Torque Arm.....

# 1.0 Quick Start Instructions (Hub Kits)

**(If you have a complete bike, skip to “Complete Bike Instructions”)**

1. Remove rear wheel from your existing bicycle. We recommend using a proper tire tool.
2. Remove tire, tube, and liner from your existing bicycle.



3. Next, use the correct star bit to unscrew your rear disc brake (if your bike is equipped)



4. Screw disc brakes (if applicable) onto the motor wheel. Use included disc spacer washers if necessary. You can move the disc outwards by placing the washers on the inside (underneath) the disc. For geared motors systems, use 2 washers per screw to allow the bolts to seat flush inside the disc motor mounts.



5. **SKIP TO STEP 7 IF YOU PURCHASED KIT WITH FREEWHEEL.** If transferring freewheel from your rear wheel to the kit, remove freewheel. Make sure to twist counter clockwise.



6. Spin Freewheel onto the hub motor. For our GEARLESS motors, you may be required to add a spacer washer between the hub and freewheel if you did not purchase the freewheel installed from HPC



7. Carefully put your liner, tube, and tire from your existing bike onto the motor wheel.

8. Carefully lift the rear derailleur and place hub motor wheel **SECURELY and FULLY** into the rear dropouts. All freewheel above 7 speed will require a provided spacer. Make sure this is seated on the inside of the dropout. On geared motor systems, make sure the wires come out of the axle towards the front of the bike.



9. Ensure that your disc brake fits properly into the caliper. You can space the brake if necessary.

10. Tighten the nut on disc side of the motor making sure washer is on the outside of the dropout. Tighten in the same fashion on the drive side. On geared motors, ensure the lip of torque washer is pointed under the dropouts.



11. Torque Plate Installation (optional). Simply slide the torque plate over the motor axle and line up the plate to your current disc brake mount or rear rack hole. You can use your current disc mount screw and simply screw the torque plate into the frame. If you have a universal torque arm, find a secure location to clamp on to (either the chainstay or seatstay is normally fine). The goal here is to transfer the rotation force of the motor on the dropout and spread it out the loads evenly into the frame itself.



12. Install throttle as pictured. You will need an Allen wrench to adjust the throttle and also the brake assembly of your existing bike. You can cut your existing hand grip as needed to match your left hand grip.



## 1.1 Kits with Frame Mounted Battery System

1. Using supplied water bottle mount on bike, attach one end of the controller with screw. For a much cleaner installation, you can mount the controller onto the bottom side of the bag with 2 nuts/screws.



2. Use supplied zip ties to secure other end of controller (if another screw hole is not available)  
**BEFORE PLUGGING IN ANY WIRES, MAKE SURE ON/OFF SWITCH IS “OFF” on the controller**

## 1.2 Kits with Rack/Bag System

1. Place the rack on the seat post of your bike and make sure it is securely tightened. It is recommended to mount the controller to your bike using your supplied water bottle mounts as this is the safest and easiest means to do it. Optionally, for a cleaner look, you can mount it under the rack. For full suspension bikes, please be aware that you will need sufficient clearance so that your controller will not hit the wheel upon rear shock compression. **WE ARE NOT RESPONSIBLE FOR DAMAGED CONTROLLERS DUE TO IMPACT WITH THE WHEEL!**

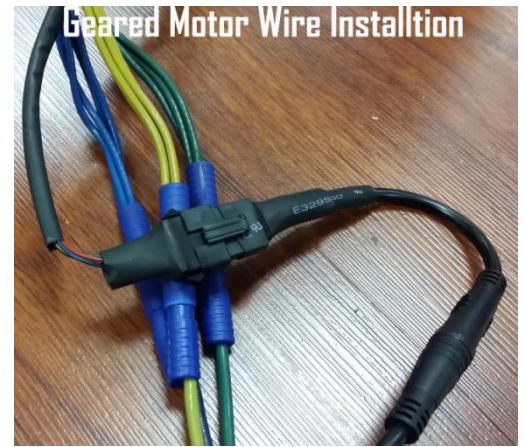


**BEFORE PLUGGING IN ANY WIRES, MAKE SURE ON/OFF SWITCH IS “OFF” on the controller**

## 1.3 Plugging in:

2) Once you have finished the steps above (whether you have a frame bag or rear rack/bag), plug your phase wire from controller to motor and make sure they are **SNUGGLY** connected. If necessary, wrap this connection with electrical tape to make sure it does not come apart during riding. **Make sure you plug in the phase wires color to color (yellow to yellow, green to green, blue to blue).**





2a) Geared motor systems will have **3 phase wires and a 5 pin hall sensor connector** coming from the motor. After matching the phase wires color to color, make sure you plug in the 5 pin hall sensor connector. Some of our higher power 5000W and 6000W gearless systems (Crystalyte type motors) have a **round 5 pin hall sensor** as well. Make sure to plug the mating connector from motor to controller.

3.) Next, plug in the 4 pin throttle cable to the controller's 4 pin throttle port. →



4. **Bike Computer**- You can install the bike computer by securing the clamps around the handlebar with the supplied hardware. There is an optional stem-cap mount available if required and is secured using your stem cap and stem cap screw.

Installation of the computer with our Gearless motor systems is a breeze! Simply plug in the 6 pin connector from the bike computer to the BLUE 6 pin port on the controller (our older style "APM" computers use the black 6 pin port). Your computer is setup for street legal operation already so you are ready to hit the road!

On all geared motor kits (BMC type motors), setup is also simple. Plug the 6 pin wire into the 6 pin port on the controller. Using supplied zip ties, attach the speed sensor cable to towards the bottom of your front fork. Screw on the supplied magnet onto your front wheel making sure it passes closely to the speed sensor cable to get a correct speed reading.

Our top of the line kits come with two different styles of bicycle computers: [E-bike Computer Setup](#) or newer models will come with the [Cycle Analyst Bike Computer](#)



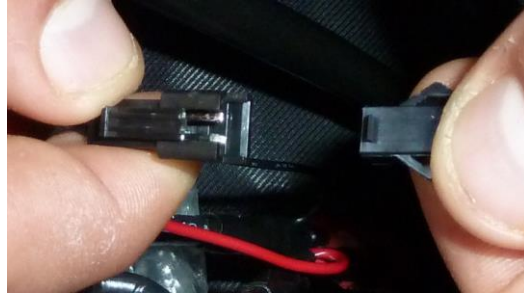
5. Now that you have all the components installed, use the supplied zip ties to route the wiring as neatly as possible. Be sure not to allow enough slack for throttle and computer wire when turning the handlebars

6. Slide battery bag onto the rack. Make sure to take off electrical tape that is protecting both the charging



port and discharge port during shipment.

7) Below is a picture of your pre-charge resistor which protects your connectors and reduces sparking issues when plugging and unplugging your battery system. Before plugging in your battery system to the controller, you **MUST** plug in the pre-charge resistor **FIRST**. It is a two pin connector as shown in the picture below. After it is plugged in, you may move on to the next step. **Please watch this video on how to properly install/remove your battery system: [Pre Charge Resistor Proper Use](#)**



8.) Plug in the female power plug (from battery) coming out of the bag into the power plug from the controller. You may either have a deans type XT plug or a yellow XT90 plug. **THIS IS ALWAYS THE FINAL STEP. CONTINUE TO SECTION 3.0**



### **Finished kit with Rack/Bag battery system**



(Geared System Shown)

## COMPLETED FRAME BAG Conversion



# Packing List (Bikes)

- Complete Electric Bicycle.....
- Charger.....
- Front Quick Release.....
- L + R Pedals .....
- Front Wheel.....
- Disc Screws.....

## Optional Components:

- E-bike Computer.....
- Lighting System.....





## **2.0 COMPLTE BIKE INSTRUCTIONS**

### **2.1 Models with HPC Frame Bag**

1) Carefully take the bicycle out of the box and remove all bubble wrap and other protective elements. **If the box is badly damaged, please take pictures and contact us immediately as we will use this to file a claim with the shipping company IMMEDIATELY.**

The bike will typically ship in two packages with your complete bike in the large package and your front wheel, pedals, quick release, and charger in the second package.

2) Look carefully inside the box for your pedals (L=left, R=right) and front wheel quick release.

**“L” goes on the left side and “R” goes on the right side.** MAKE SURE YOU PUT THE THREAD IN CORRECTLY. It is always advised to use a proper pedal wrench to tighten the pedals properly. **HPC will NOT be responsible for stripped pedals.** Typically left pedals have a LH thread.

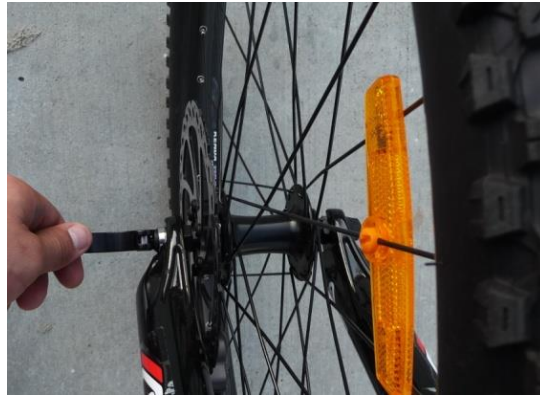


3) Next, secure the front wheel into the front suspension dropouts with the quick release tool. Make sure it is tight, but not so tight that the front wheel does not spin freely.

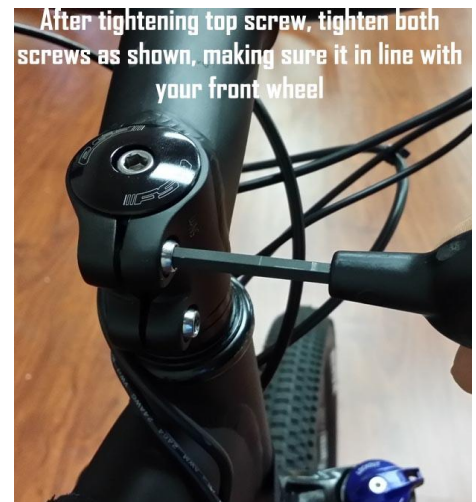
***On models fitted with front hubs, it is extremely important that when installing the front hub, you must securely install the included torque arm on both sides. Failure to do so will result in damage to the***



*bike and motor and potentially injure the rider as well. Hi-Power Cycles will not be held responsible for improper installation of front motor torque arms.*



4) Next, install the handlebars. The first step is to rotate the stem 180 degrees so it is facing forward. Usually you will need a #4-6 allen wrench to do this. Most bikes have 3 screws on the steering column you must loosen to twist the stem around 180 degrees into the correct direction (One screw up top and two screws on the side of the stem)



Now you can unscrew the 4 screws on the front of the stem which will hold the front handlebars in place. Secure the handlebars using the 4 screws and make sure it is lined up in the middle. After this, it is **VERY IMPORTANT** to go back and screw the 3 screws on the other end of the stem and make sure the handlebars are aiming straight in line with the front tire. Tighten the top screw first, followed by tightening the 2 on the side.



5) Attach seat into seat post and tighten to desired position via quick release on the bottom of the seat tube. →

6) For models with our exclusive frame mounted bag, your batteries are already installed, plugged in, and ready to go! It is always recommended to charge your battery for the first ride! **Skip to section 3.0**

7) **OPTIONAL:** Bike computer installation  
Unscrew stem cap (over steerer tube) and install bike computer as show. Tighten to make sure it is fastened correctly the steerer tube.



## **2.2 Models with Rack/Bag System**

- 1) Follow steps 2.1.1-5 from above
- 2) Attach the rack system to the seat post and make sure it is securely tightened to the seat post. Adjust both the rack and seat height to your own desired levels.



3) For models with batteries sent separately, Look inside the smaller box sent alongside the bike box. This contains your batteries and charger. Remove batteries and charger. **PLEASE READ THE MANUAL FOR THE CHARGER BEFORE CHARGING!**

4) **BEFORE PLUGGING IN ANY WIRES, MAKE SURE ON/OFF SWITCH IS IN THE “OFF” POSITION ON THE CONTROLLER**

5) Below is a picture of your pre-charge resistor which protects your connectors and reduces sparking issues when plugging and unplugging your battery system. Before plugging in your battery system to the controller, you **MUST** plug in the pre-charge resistor **FIRST**. It is a two pin connector as shown in the picture below. After it is plugged in, you may move on to the next step. **Please watch this video on how to properly install/remove your battery system: [Pre Charge Resistor Proper Use](#)**



6. After plugging in the pre-charge plug, plug in your yellow XT-90 power connector from your battery to your controller. **Congratulations! Now you are DONE! Please continue to section 3.0**



**\*Note: Some models with front forks will be shipped with minimal air in the front and or rear fork. YOU MUST PUT PROPER AMOUNT OF AIR IN FRONT and REAR Suspension PRIOR TO RIDING!**

# 3.0 Battery Safety (Brief Overview)

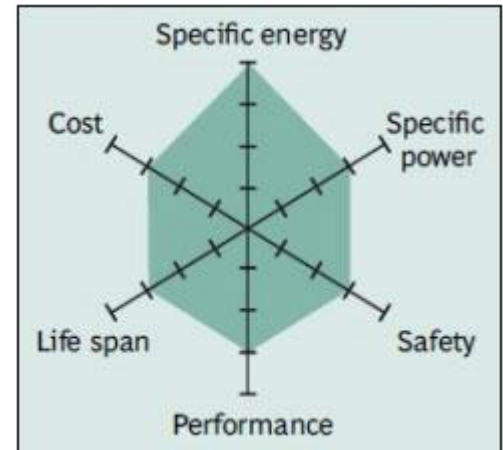
**If you ever suspect a battery problem, please contact us immediately by email or phone so we can go through the appropriate steps/procedures to make sure everything is okay with battery system.**

At Hi Power Cycles, safety is our number one concern. We want our customers to enjoy a great product that will give those customers' years of trouble free operation. As much effort as we do to minimize the risk of these state of the art batteries, there is always safety concerns when it comes to Lithium batteries that we want our customers to be aware of. All of the new portable electronics, including cell phones and laptops, contain lithium batteries which have the same chemical properties, although bike batteries are just on a much bigger scale. We make every effort to have the highest quality battery cells and best battery protection (called a BMS or Battery Management System) to minimize any risk associated with these high power batteries.

We have gone through extensive research and testing to get the best electric bike batteries in the world. The battery chemistry we use is the same that large car manufactures (such as Nissan) use in their vehicles. This state of the art battery chemistry is called Lithium Nickel Manganese Cobalt ( $\text{LiNiMnCoO}_2$ ) or NMC for short. We felt that this is the best overall combination of power, safety, performance, and life span compared to the other options available.

Due to the nature of lithium cells, which have a lot of energy stored in a small package, there is always a possibility this energy can be suddenly released and can cause fire and/or serious injury if not taken care of immediately. With a state of the art Battery Management System that is found on all of our battery packs, the cells and pack are protected from failure. The only time a pack will fail will be a result of a BMS failure and attempting to charge, short circuit, over discharge, or somehow puncture the battery pack.

**The main cause of failure in lithium batteries occurs during the charging portion, when cells can be overcharged.** This is the number one failure and can lead to batteries which vent and eventually release all of their energy at once (or can even cause the battery pack to ignite on fire). Due to a BMS failure, cells can get out of balance and certain cells may become overcharged as a result. This is why we always recommend monitoring the charging process in the extremely rare event something should happen. Charging on a concrete floor, such as in a garage, away from debris and material is always recommended as a safety precaution.



## Safety Checklist

- Every 5 charge cycles you MUST check the condition of your battery pack. If any part of your pack are puffed or soft, stop using the battery immediately and contact us right away. The battery pack should be solid with all flat sides (no curving). A puffed cell signifies a cell fell below a critical low voltage and is damaged as a result of improper care. NEVER use or charge a battery in this state.
- If you notice your bike performing strangely, cutting power, turning off while riding, or lack of range, please inspect your battery for damage or puffing. The earlier you catch a problem, the more likely we are able to fix the problem.
- Regularly checking you battery for damage and making sure to store your battery properly when not in use will limit problems and ensure your battery will last for years to come!

## **How to Prevent and Deal with LOW VOLTAGE CUT OFF**

What it is:



A Low Voltage Cutoff is when your Battery Management System (BMS) built into your battery goes into emergency protection mode to prevent the cells from dying completely and rendering the pack useless. When you neglect to use your bike or kit for more than 2-3 weeks at a time, the residual drain from your controller's capacitors will slowly drain your battery. If left for too long, the lithium cells in your battery will meet a critical threshold in which the entire pack must shut itself off before the cells get below 2.8-3.0V/cell. When a battery has gone into protection mode, sometimes you will need to "wake up" the pack in the manner described below.

### Solving the Problem:

1. Disconnect the battery from the bike and try to charge it while it's off the bike.
2. If that doesn't work then reconnect the battery to the bike and try charging it then.
3. If all else fails you can usually "jump" the battery BMS by charging it through the discharge side (which usually goes from the controller to the battery). A male XT-90 to Anderson adaptor will be what you need to connect your charger to the yellow XT-90 female plug of the battery. Disconnect the battery from the bike and use this adaptor to charge the battery through the yellow connection for about 10 seconds. Unplug this adapter. Then, proceed to charge it as normal through the red and black Anderson charge lead.
4. In rare cases, when your battery is almost completely dead, none of the steps above will turn it on. In that case, you will have to send the battery back to us to see if we can revive it being very careful to slowly bring up the voltage of the pack.
5. If you want to have the best charger possible and limit the risk of a low voltage cutoff ever happening during long term storage, we sell a "Cycle Satiator" electronic charger in which we can custom program storage modes for your battery to keep it at the perfect charge level during extended periods of non-use.

### Prevention:

1. If you're going to leave your bike for more than two weeks without use, charge your battery up to around 70% and disconnect it from the bike. If you want your battery to last as long as possible, try to store it and keep it around the 50% charge level. Our "Cycle Satiator" electronic charger can do this automatically if we custom program it for you. We feel this is a very worthwhile investment to prolong the life of your battery and minimize the hassle of having a battery go completely dead on you.
2. If you notice your bike start to cut power while riding this means you're reaching the low voltage cutoff and should turn the bike off rather than run it down too low. Get back home and charge the battery immediately.
3. Remember, never store your battery at 100% charge level, as you will quickly degrade your battery and it will have a much shorter shelf life. Only charge to 100% before you are certain to ride your bike!

### Your Battery's Specs:

| Battery Voltage | Low Volt Limit | Full charge | 70% charge | 50% charge |
|-----------------|----------------|-------------|------------|------------|
| 37v             | 30v            | 42.0v       | 39v        | 37v        |
| 45v             | 36v            | 50.4v       | 46.8v      | 44.4v      |
| 48v             | 39v            | 54.6v       | 50.7v      | 48.1v      |
| 52v             | 42v            | 58.8v       | 54.6v      | 51.8v      |
| 63v             | 51v            | 71.4v       | 66.3v      | 62.9v      |
| 74v             | 60v            | 84v         | 78v        | 74v        |

|     |     |       |       |       |
|-----|-----|-------|-------|-------|
| 78v | 63v | 88.8v | 81.9v | 77.7v |
| 86v | 69v | 96.6v | 89.7v | 85.1v |

### Tips:

1. Your charger is charging if and only if both lights are red and the fan is spinning.
2. If this isn't the case then disconnect the charger from the battery and wall. Wait for both lights to dim off (about 1 min). Then plug the charger into the wall, wait for one green and one red light, then plug into the battery/bike. You should now have two red lights and a fan for our standard charger.
3. If it still doesn't work then disconnect the charger from everything. Wait for both lights to dim off (about 1 min) And check the fuses. Most of our standard chargers have one fuse in the front, and one in a pull out tray in the back.

If all else fails give us a call at (818) 734-1600. We are open M-F 9:30A – 5:30P.

Thank you for choosing Hi-Power Cycles.

### 3.1 Safety Precautions:

We recommend keeping the following immediately accessible where you charge your bike

- Class D Fire Extinguisher: can be used in the event of a lithium fire
- ABC Fire Extinguisher: If you cannot get a Class D, this will do the job by preventing other materials around the ruptured battery from catching on fire.

If your charger typically takes 4 hours to charge your battery, but it seems to be taking longer, unplug the battery and investigate. If you suspect a bad BMS, smell the top of the battery. If there is a burnt smell, it is a failed BMS and stop charging immediately. If nothing is wrong, it is okay to continue charging as the battery is simply balancing while it is charging and it may take longer than normal.

If, for whatever reason, your bike suddenly has a loss of power and you are not getting the same performance, STOP IMMEDIATELY. Turn the bike off and inspect your battery system. Smell for a burnt smell and inspect there are no melted or shorted wires. This would be indicative of a shorted or failed BMS which you will need to contact us directly to take care of.

If you notice that your battery system has a puffed, damaged, or leaking cell, contact us immediately and we will walk you through the appropriate steps to take in this instance.

### 3.2 Catastrophic Failure

Although extremely rare, all lithium batteries are capable of catastrophic failure if mishandled or treated. The following are guidelines for a battery pack failure. Great caution needs to be exercised during a catastrophic battery failure. **As soon as a problem is detected (battery is hissing, you smell a burning smell, it is billowing smoke etc), take battery system or bike outside immediately, away from all structures and people, preferably on concrete (like a driveway).** Observe the battery pack from a safe distance to see if it is a pertinent problem that needs to be addressed immediately. Monitor the battery pack until the cells drop below critical temperature and start to cool off. **Contact local authorities if necessary!**

### 3.2 Battery Safety (In Depth)

**Main reasons a battery pack will fail:**

- Short-circuit
- Charging
- Forced over-discharge
- Excessive heat or incineration
- Crush, puncture, or disassembly

While we have designed our cells and batteries to be tolerant of adverse conditions, these very active chemical systems have limitations. Certain hazards are associated with exposure to heat and its subsequent effects on sealed cells. These hazards include the potential for cell venting, explosion, and/or fires. The initial source of heat can be external (welding, soldering, etc.) or internal such as heating caused by short circuiting, excessive running currents for prolonged periods of time, forced over-discharge, charging, or excessive mechanical abuse. Specifically, mechanical abuse in the form of excessive shock or vibration can result in case deformation, crushing, and damage to the electrode materials.

Not guarding against these conditions may result in a hot cell or a battery pack that could vent or explode.

The intent of this section is to provide a general knowledge of how to handle cells and batteries that have been subject to these adverse conditions. This document will focus on the following:

- Hot cells
- Leaking or venting cells
- Cells that have exploded
- Fires involving lithium batteries

The guidelines in this document are minimum recommendations.

Only trained and equipped emergency responders shall be allowed to respond to a vented cell incident. Consult federal, state, and local regulations for emergency response regulations.

### **Hot Cells**

A hot cell is a condition that arises due to a short circuit of the cell or battery, either internal or external. The cell/battery temperature rises as the event continues which can lead to the cell reaching critical temperature and the potential to vent or explode.

### **Vented Cells**

It is unlikely that any lithium battery would explode. These events are rare and are usually the result of an abusive condition or misuse that raises the cell temperature above its critical point. In the event of a lithium battery explosion, a room can quickly fill with a dense white smoke that can cause severe irritation to the respiratory tract, eyes, and skin. Precaution must be taken to limit exposure to these fumes.

### **Response Procedure**

- Monitor the temperature from a safe distance using a non-contact thermometer or thermal imager
- If temperature monitoring equipment is not available, keep the area evacuated and secure and do not handle the cell/battery for at least 24-hours
- If the battery cools, continue to monitor until it reaches ambient temperature
- Remove the battery from the area once it is cool
- Dispose of the cell in accordance with waste or recycling protocols

For more information on Lithium batteries, please visit [Battery University](#) as a source of knowledge!

# 4.0 How to Use Your New Bike/Kit

**\* All kits and bicycles are shipped at USA Street Legal Power Level (750 Watts). It is up to the end user to program the bike to unlock maximum power\***

## 4.1 How to Charge Your Battery

1. Make sure your charger is the correct voltage for your country's power requirement. **USA buyers make sure the charger is in 110v operation mode by setting the switch on the back of the charger.** European owners make sure to select 220v mode.

2. Plug the battery charger into the wall. You will see one green and one red light.

**DO NOT LEAVE CHARGER PLUGGED INTO WALL AFTER CHARGING. YOU MUST UNPLUG CHARGER WHEN IT IS NOT IN USE.**

Failure to do so will void your warranty.

3 . Plug in the charger plug into the matching charge port on your battery system (black to black and red to red Anderson connector). **THIS IS EXTREMELY IMPORTANT. ONLY USE THIS RECEPTICLE TO CHARGE.**

**Even though these are state of the art batteries with built in Battery Management System, safety is always our number one priority. It is always good to monitor these batteries when charging and never leave these fully charged for more than a couple days.**

If you EVER notice a battery puffing, stop charging the battery, place it outside on concrete a safe distance away and monitor it closely from a safe distance to make sure all is O.K. Give us a call/email us immediately if a battery begins to puff, and we will decide what the next move should be. NEVER attempt to use a battery after it has swelled and expanded or “puffed” significantly. Make sure to only charge with “clean” pure sine wave power.



4. You are done! You will see two red lights right after you plug in the battery and the fan will also turn on. Wait until the light on the charger turns green for a full charge. If it fails to charge, please look at our troubleshooting section for further information.

\*You do not always need to wait for a full charge, you can use your batteries whenever, since they have no memory. With that being said, for extended use, it will always be better to get a full charge so that you do not deplete your batteries down too far when you ride. It is better in the long run to use less than 80% capacity of the battery when riding if possible. Also, do not store the batteries fully charged. Only charge before you know you will be going on a ride. It is best to leave the batteries at around 50% capacity for any period of time more than a few days. This will ensure that you get the best possible life out of your battery.



## 4.2 Before Riding your Bike

# 1) TAKE THE BIKE TO YOUR LOCAL BIKE SHOP FOR FINAL TUNING AND ADJUSTMENT.

### HPC requires the bicycle to be tuned professionally once you receive it

Note: We do get each and every one of our complete bikes professionally tuned up prior to shipping. You should pay around \$25-\$40 or so to adjust everything and make sure everything is in top notch working order. During shipping, shifters, brakes and other mechanical parts WILL come out of alignment.

- 2) Make sure the phase wires, hall sensors (if applicable) and the controller are properly and securely connected
- 3) Turn the on/off switch to the “On” position
- 4) Lift up the wheel with the hub motor and give it 1/3 throttle to verify it spins correctly
- 5) Check both front and rear brakes for integrity
- 6) Learn the power delivery characteristics of the motor by gently easing into the throttle and pedaling as you wish... It is extremely important to assist the motor with your pedal power under demanding situations such as hills or off-road trails. **\*VERY IMPORTANT ON OUR X-TREME SYSTEMS\***
- 7) Once you have taken it for a spin, you should now have what is called “EV grin!” pass it on!!!
- 8) ENJOY your bike! A lot of time and hard work is spent on getting these bikes just right, so enjoy it!
- 9) When you are done riding, simply park it in safe, preferably cool place, and turn the on/off switch to off. It is always best to store your batteries in an uncharged state, preferably 40-60%.

***\*\* Although wheels are professionally trued and dished prior to shipment, you will need to have your wheel re-trued after your first couple of rides\*\****

## 4.3 Battery Care:

You have state of the art Lithium Batteries that have different characteristics than SLA batteries. **MAKE SURE TO CHARGE IN A COOL, DRY AREA!** If the batteries or charger get too hot while charging (you can't hold your finger on either the BMS, battery, charger for more than 5 seconds), immediately stop charging and check for connection problems.

Standard charge time for our 10ah batteries is approximately 5 hours with the 2A charger. When you are through riding your bike for a while, always store your batteries in an UNCHARGED STATE (40-60% of full charge capacity), you will greatly prolong the life of your batteries. Only fully charge the batteries when you will be using them soon after. Store batteries in a cool, dry place, and where temperature does not ever exceed 85 degrees F. That is pretty much all there is to it! **IT IS IMPORTANT THAT THE BATTERY CHARGER GETS AIR FLOWING OVER THE HEATSINK AND IS OUT OF DIRECT SUN TO AVOID OVERHEATING OR BATTERY FAILURE**

### Long Term Storage:

We have designed these batteries and our bike system to be as maintenance free as possible. In the event you will need to store these batteries (more than a few days without use) it is advised you store them with ~50% charge. If you are storing them long term (for the winter) it is best to store in a cool place and completely unhooked from your bicycle. Every few weeks it is advised to hook the battery up to the charger for 5-10 minutes as the battery will lose charge over time and this will allow you to put some extra charge in the battery and balance the cells.

If your batteries have been neglected (without proper charging or storage maintenance as outlined above) for 1 month or longer, please remove the batteries from the bike and charge them in an outside area under supervision. **DO NOT** attempt to charge them inside a building structure of any kind so to minimize the risk

of fire or other safety hazards. If the battery sits for a long time unused, it is possible the voltage of the pack becomes so low that it cannot even activate the logic of the Battery Management System responsible for charging and balancing. In this case, trying to charge a completely dead or damaged battery can be a potential safety risk. PLEASE exercise caution when charging a battery that has been sitting with little to no use for the first time as the cells inside the pack may have become out of balance.

#### **Long Term storage voltages for different systems:**

1000W system: 36-37V

2000W system: 50-52V

3000W system: 61-63V

4000W system: 73-74V

5000W system: 84-85V

6000W system: 84-85V

#### **4.4 Prolonging the Life of your Battery:**

Your HPC bicycle/kit features a state of the art Lithium based battery systems. Our kits feature the most powerful, lightest weight and best performing batteries on the market. NMC based systems should expect around 3-4 years of use depending on how you take care of your battery and up to 1000 charge cycles. Remember that these batteries do have a shelf life so even if you are not using the pack, the battery will only be good for so long.

To prolong the life and performance of the pack, it is best to not drain the pack to zero capacity (like when the battery management system shuts it off). Going from 100% to zero capacity will adversely affect your life cycles. It is much better, for instance, to go from 100% to 50%. If you only rode your bike 3 miles every day, you are better off charging the battery after each ride instead of waiting until the battery is dead. Keeping the depth of discharge less than 80% (so from 100% to 20%) will make sure you get the full life from the battery.

Heat and discharge rate also will adversely affect the life and performance of the battery. If you want more life from your battery and system, it is best to use lower amps. The lower the amps that the system drains from the battery, the less stress (and heat) it puts on the battery cells and battery management system. This equates to a longer cycle life and higher performing battery. If you, for instance, use your system at full throttle and high amps continually (like climbing long, steep hills), you will notice a degradation of your performance and range a lot sooner than someone who is not pushing the system as hard.

#### **4.5 Bike Operation:**

1. DO NOT use FULL throttle for prolonged periods of time. This will result in excessive heat buildup in the motor, throttle and batteries. Think about what would happen to your car if you redlined it for prolonged periods of time... It will not last very long. Do not abuse your system, and it will last you a long time!
2. DO NOT cruise long distances over 80% of the stated top speed due to heat buildup in the components. For instance, if you bikes top speed is 30mph, do not cruise over 24 mph. This is a rule of thumb to prolong the life of your system.
3. NEVER fully rely on the motor for power when climbing. Pedal along to assist the motor. This will increase range and prolong the life of the components
4. DO NOT operate in excessive heat (over 100 degrees Fahrenheit) for a prolonged period of time. Doing so may result in excessive heat buildup and some components may shut down due to thermal protection.
5. If you notice a decrease in performance or abnormal operation, cease electrical operation immediately. Failure to do so may result in damage to electrical components.
6. DO NOT apply the brakes abruptly when going downhill as this may result in loss of control. Use consistent, gradual braking.
8. NEVER use the throttle and brake at the same time. Doing so will potentially damage the controller and the bike itself due to the immense rotational forces of the motor.
9. ALWAYS help your system out by pedaling up steep inclines. If you hear your motor struggling or your

system is going less than 5 mph at full throttle, either help out by pedaling more, or simply get off your bike and walk it up the hill. ***We will not be responsible for burnt motors due to willful neglect or misuse. If your terrain is very steep or technical, you must lower your amps on your computer to 50% (or less) of the maximum limit as outlined in section 5.0 below.***

10. Ride the bike at a level and speed you are comfortable with. Do not push the boundaries of your skill level or the bike!

11. NEVER jump the bicycle. These bikes are designed for moderate bumps but jumping your bicycle can lead to serious injury and/or damage!

12. ALWAYS follow local laws regarding your electric bike. If your bike is over legal power limits, bikes equipped with bicycle computer must make sure to program your system to federal legal limits when riding on public roads or property.

**13. When starting the bike, ALWAYS pedal the bike initially to about 2 mph before you engage the power system. NEVER start the bike with throttle without pedaling or you may severely damage your system.**

#### **4.6 Storage and Charging:**

1. ALWAYS store and charge your batteries in a cool, dry place. Failure to do so will decrease performance and the life of the batteries.

2. DO NOT store lithium batteries at a fully charged state (40%-60% is ideal)

3. **ALWAYS check motor nuts and bolts BEFORE AND AFTER riding to make sure nothing is loose. Riding at high speeds induces vibrations which may loosen components on the bike. This includes wheels, the battery rack, brake system, etc. If the nuts are not tight on the electric wheel, the axle can spin in the dropouts leaving broken wires and damaged forks. These nuts must be very tight to assure the proper performance.**

**\*HI POWER CYLCES IN NOT RESPONSIBLE FOR SPUN OUT DROP OUTS OR BROKEN WIRES!\***

4. ALWAYS check that the motor is securely fastened to the frame

5. ALWAYS check the integrity of the rack and battery system (or frame mounted battery). Make sure it is securely fastened to the bike

6. **Check spokes on both wheels.** The electric wheel often requires more attention due to the torque of the motor. **Spoke and wheel maintenance are part of a normal bicycle maintenance procedure and will be accelerated with an electric motor.** Do not take chances with the spokes and if you think they are loose, chances are you are correct. The spokes should all have the same tension. If they are loose, tighten them yourself, or take it to your local bike shop to get fixed.

7. **Check the pressure in your tires.** The required pressure can be found on the sidewall of the tire. Normal pressure for most tires is 50-55 PSI. Tires lose an average of 2-3 PSI per week. Low pressure will cause sidewalls to collapse, and that is how most blowouts occur. **HPC IS NOT RESPONSIBLE FOR FLAT TIRES! Check your sidewalls as individual tires may vary with recommended tire pressure.**

8. Check all electrical connections making sure that they are all tight. Bad contact means energy is wasted as heat, which can cause a breakdown of wire insulation. Any wire with melted insulation indicates a poor connection nearby. Disconnect the batteries and do not operate if insulation is melted or wire is exposed.

#### **Important Information About 2000+ Watt Systems**

All systems > 2000w are equipped with drilled side covers to prevent overheating and allow your bike to perform at full performance for much longer. The vented side covers also allow the bike to be ridden in wetter conditions since they give the motor the ability to shed the water through the holes and dry completely. It is important to note that this does require minimal maintenance. Since water can corrode metal over time, it is recommended to spray [Boeshield T-9](#) after every 10 rides or so to prevent corrosion from occurring. The motor will come pre-treated from our factory. Also, if you live in a dusty environment, it is also important to prevent debris and dust from entering in the holes. Prior to spraying the motor with Boeshield, attempt to clean the motor with an air compressor or a can of compressed air. Doing these things will greatly prolong the life of your motor and keep it running at its peak level!

## **4.7 Safety:**

1. ALWAYS wear proper safety equipment
2. NEVER operate at speeds that exceed your ability to operate the bike safely
3. ALWAYS know your surrounding and actively scan the terrain for obstacles
4. DO NOT wear loose fitting clothes or articles
5. NEVER ride with more than 1 rider
6. Suitable for riders 16 and older. NO EXCEPTIONS!
7. Know your bike and personal limits

**IF ANY INJURIES OR HARM OCCUR WHEN YOU USE THE PRODUCT, THE MANUFACTURER OR DISTRIBUTOR WILL NOT BEAR ANY RESPONSIBILITY**

## **4.8 Getting the Stated Range out of Your System**

In the electric bike world, most manufactures quote maximum range at 20 watt hours per mile for an electric system. This is in the BEST CASE SCENARIO in the real world, with little to no pedaling. When giving our range estimates, we are talking about a 170lb rider, totally flat ground, smooth surface, no wind and cruising in the most efficient range of the system. For instance, on our 2000w system with 12.5ah battery, using this calculation we would get 32.3 miles maximum range ( $51.8v \times 12.5ah = 647.5$ .  $647.5$  watt hours divided by 20 watt hours/mile = 32.3 miles range). Our range estimates are slightly more conservative although many of our customers frequently beat these range estimations.

If you are not getting the range, there are many factors at play. If you are a heavier rider, it will adversely affect your range. If you do a lot of starting/stopping on your ride, your range numbers will plummet since accelerating takes the most juice out of the battery. If you are riding on hills or rough terrain, you will decrease your range number as the system will draw much more battery juice under these circumstances. To test your maximum range, see if you can plan out a flat (or mostly flat) route, fully charge you battery, and set your bike computer to 4 amps to determine how far you can go! Riding with maximum amps on your power system will decrease range since the motors will always want to use that available extra power!

## **4.9 Using your E-Bike Computer**

All bikes and kits will come programmed at street legal limits to abide by local and federal laws. The operation of the computer is very simple and you can easily scroll through the different screens by using the left and right buttons. Holding the right button down will reset your Amp Hour and mileage counter so you know how much battery you have used and how long you have ridden. Please refer to the manual for more information: [Cycle Analyst User Manual](#)

Our older systems came with our Diagnostic Display. You can watch this video to learn how to use your new e-bike computer display! [HPC Ebike Diagnostic Comptuer Demo](#)



# **5.0 Bicycle Computer System Settings**

**All bicycles and kits sold by Hi-Power Cycles are sold to be USA legal limits (750w and 20mph speed limit). It is up to the end user to alter these settings at their own discretion! We will not be held responsible for those who elect to ride on public roads and break local or federal laws!**

Using your Ebike computer, you do NOT need to set maximum current if you do not need it. The lower the current, the more range and efficiency you will get out of your system. Maximum current will be useful for steep hills you need more assistance up or just maximum acceleration!

Our new bike computers feature an Ah counter which will keep track of how many amp-hours you have used on your ride. After each ride, reset this counter by holding down the right arrow. If you have a 10ah battery, you know that you will be able use up to 10ah of battery juice. Always err on the side of caution and charge your battery system at or before 80% of your battery capacity for longevity of your battery pack. (10ah pack- 8ah, 12.5ah pack-10ah, 13ah- 10.4ah)

## **1000w**

Max Current: 25a

Street Legal Current USA (750W): 20a

Street Legal Current Europe (250W): 6a

Full Charge Voltage: 37.0V

Low Voltage: 30V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: ~41V (100% charge) – 32V (10% charge)

## **2000w**

Max Current: 38a

Street Legal Current USA (750W): 14a

Street Legal Current Europe (250W): 4a

Full Charge Voltage: 58.8V

Low Voltage: 42V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: ~57V (100% charge) – 44.8V (10% charge)

## **3000w**

Max Current: 44a

Street Legal Current USA (750W): 11a

Street Legal Current Europe (250W): 4a

Full Charge Voltage: 71.4V

Low Voltage: 51V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: ~70V (100% charge) – 54.4V (10% charge)

## **4000w**

Max Current: 50a

Street Legal Current USA (750w): 10a

Street Legal Current Europe (250w): 3a

Full Charge Voltage: 84.0V

Low Voltage: 60V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: ~83v (100% charge) – 64v (10% charge)

### **5000w**

Max Current: 55a

Street Legal Current USA (750w): 8a

Street Legal Current Europe (250w): 3a

Full Charge Voltage: 96.6V

Low Voltage: 69V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: 95V (100% charge) – 73.6V (5% charge)

### **6000w**

Max Current: 65a

Street Legal Current USA (750w): 8a

Street Legal Current Europe (250w): 3a

Full Charge Voltage: 96.6V

Low Voltage: 69V

Wheel Size: 26-27 (for 26" wheel bicycle), 2095mm

Relative Battery Level Using Resting Voltage: 95V (100% charge) – 73.6V (5% charge)

# **6.0 Troubleshooting**

## **Problem: Why won't my bike turn on?**

This is the most common problem we encounter and the solution is typically very simple.

### **Solution:**

1. Check that the battery is fully charged. Use a voltmeter and test the output on the charging terminals if you do not have an ebike computer. The voltage should be within 10% of your nominal voltage. For instance, if you have a 52v battery, you should get ~52v output +/- 5v.
  - a. If you are having trouble charging the battery, please look below about charging your battery.
2. Make sure the main connector from the battery output lead is plugged in and secure.
3. There is a problem with the controller → Check to see if controller light is red on actual controller
  - a. If no light is on, you most likely have a bad controller. Most typical problem is the on/off switch going bad. Send in controller for testing.
  - b. If there is a light, please look at your E-bike computer to see what it is indicating. If the computer says "Pass" and the bike does not work, check the connectors. Make sure the throttle 4 pin connector, the 3 plug phase wires (motor to controller connection), and the hall sensor plug (geared motors only) are securely connected. Unplug and re plug in each connector. Once you do this and if all connectors are intact, you have a bad controller. Please send in for testing.

## **Problem: I drove my bike until it went completely dead and now it will not charge.**

This is a problem that occurs when you fully deplete the battery. The BMS on the battery protects the battery from discharging any further and force shuts itself off. First step would be to unplug the battery from the controller and try to charge. If that does not work, to "wake up" the battery, you must "jump" the BMS.

### **Solution:**

1. [How to Jump Your Battery](#)

## **Problem: I cannot get my battery to charge or my charger is not working**

Many users do not realize the importance of properly charging your battery. Please look at the section in the manual about charging your battery. Most common solution is blown fuse in the charger

### **Solution:**

1. You have a fuse(s) blown in the charger. Remember all chargers have 2 fuses, one located in the front screw cap and the other located in the rear where the power plug wire goes into.
  - a. [How to Properly Charge Your Battery](#)

## **Problem: I am not getting the advertised range**

In the electric bike world, most manufactures quote maximum range at 20 watt hours per mile for an electric system. This is in the BEST CASE SCENARIO in the real world, with little to no pedaling. When giving our range estimates, we are talking about a 170lb rider, totally flat ground, smooth surface, no wind and cruising in the most efficient range of the system. For instance, on our 2000w system with 12.5ah battery, using this calculation we would get 32.3 miles maximum range ( $51.8v \times 12.5ah = 647.5$ .  $647.5$  watt hours divided by 20 watt hours/mile = 32.3 miles range). Our range estimates are slightly more conservative although many of our customers frequently beat these range estimations.

If you are not getting the range, there are many factors at play. If you are a heavier rider, it will adversely affect your range. If you do a lot of starting/stopping on your ride, your range numbers will plummet since accelerating takes the most juice out of the battery. If you are riding on hills or rough terrain, you will decrease your range number as the system will draw much more battery juice under these circumstances.

**Solution:**

To test your maximum range, see if you can plan out a flat (or mostly flat) route, fully charge your battery, and set your bike computer to 4 amps to determine how far you can go! Riding with maximum amps on your power system will decrease range since the motors will always want to use that available extra power!

If you are still not getting within 20% of the estimated range, please send battery back for inspection so we can test to see exactly what your battery is outputting.

The situations described above are the most common problems people ask about. Most of the time, 90% of the problems can be fixed by watching both videos from the first paragraph (section 1) of Troubleshooting. If you have tried the remedies offered by these videos, and have followed the instructions of section 2 above, and still cannot get your bike to function properly, give us a call and we can get help get you going. Our service phone number is (323) 325 3390 or you can always email us at **[support@hpcbikes.com](mailto:support@hpcbikes.com)**.



# **7.0 Warranty Information**

## **7.1 Basic Warranty**

1. Motor- 24 months (limited)
2. Controller -24 months (limited)
3. Throttle- 24 months (limited)
4. Battery- 24 months (limited)
5. Charger- 24 months (limited)
6. Bike Computer- 24 months (limited)

### **The following items are excluded from this warranty:**

1. Chains
2. Tires and tubes- except for manufacturing defects
3. Bike frame- except manufacturing defects
4. Accessory and electrical parts added onto the bicycle system
5. Brake pads
6. Spokes
7. Rims
8. Stripped Pedals/Crank Arms
9. Damaged Freewheel/Cassette/Sprocket
10. Water Damage

Notice: The user assumes the risk of personal injuries, damage to or failure of the bicycle system and any other losses if the bicycle system is used in any competitive event or above the limitations of bike and rider. The warranty does not cover the following: normal wear and tear, any damage, failure or loss caused by accident, misuse, neglect, abuse, and failure to follow instructions or warning in owner's manual; bending of frames, forks, handlebars, seat posts or wheel rims can be a sign of misuse or abuse. The original owner shall pay all labor charges connected with the repair or replacement of all parts. Under no circumstances does this limited warranty include the cost of shipment or transportation to or from Hi-Power Cycles. Hi Power Cycles shall in no event be liable for incidental or consequential losses, damages or expenses in connection with its bicycle products.

Even after warranty period, we are always available for questions or help and will be able to solve most problems via email or phone. We will always work hard to deliver an outstanding product, service and support. Drive responsibly and follow these instructions to ensure reliable operation for years to come!

\* If you have any questions please do not hesitate to email us at:  
[support@hpcbikes.com](mailto:support@hpcbikes.com) or call us at (323) 325-3390 . Also, be sure to visit our new and improved website at  
[www.hi-powercycles.com](http://www.hi-powercycles.com)!

## 7.2 Electronic Components Warranty Information

Any product returned for repair or replacement must be accompanied by a contact name, email address, shipping address and daytime phone number. If this information is not provided, HPC will be unable to return your product to you and reserves the right to dispose of your product two months after the receipt of the warranty item.

Please note that HPC will endeavor to ensure the safety of your product whilst in their possession. Please only send back the item needed to be inspected/repared under warranty. You should retain any object or accessories not required for repair as HPC will not accept responsibility, nor pay any compensation for the loss of any item not associated with the repair. For motors, please take off your disc brake (if applicable), freewheel (if applicable), tire/inner tube or any other accessory attached to the rim/motor. For battery systems, send back the charger and battery. For all controller problems, send back the controller. **ALL PRODUCTS MUST BE AT OEM SPECIFICATIONS**, meaning HPC will not warrant the product if any connectors or wires have been altered with.

As of 5/27/2014, Standard Warranty Period for controller and throttle is **24 months** (limited) from date of shipment. Standard Warranty period for all motors is **24 months** (limited) from date of shipment.

Battery warranty is **24 months** (limited) from date of shipment for Li-NMC and Li-NMC Elite packs.

1. HPC warrants their products to be in good working order during the period of warranty. The period of warranty is stated on the warranty card and commences during the date the product is shipped. In the event the product is not in good working order **within 1 month of original purchase**, HPC will provide, during the said warranty period, a free warranty service within the United States. In the event there is a problem within the first month of ownership, HPC will repair/replace the defective product free of charge, will pay shipping both ways, and will not charge any associated labor costs. The service will be entirely FREE of charge. **From months 2-12, all required parts to fix/repair/replace remain free of charge**, however, buyer must pay shipping to and from HPC. **However, if a battery** is sent back for warranty service and cannot be repaired in house and needs to be replaced- A new replacement battery pack will be sold at a discounted rate of 50% off retail price from months 12-24 if we are unable to fix it.
2. The services consist of (at HPC's discretion) either repair or replacement. Products that will be provided on an exchange basis will either be new, equivalent to new, or re-conditioned.
3. Unless agreed in writing, the Warranty does not apply:
  - a. Because you have not used, stored or handled the product properly; or you are in breach of the terms of this warranty or the contract terms ; or have not followed the written instructions of the product or of the manufacturer; or damage or defect due to willful neglect or negligence by anyone other than HPC.
  - b. Where spare parts or other replaceable items neither made nor recommended by HPC have been used a loss of quality or performance has been experienced. (This is because all HPC products are designed to work their best using products made or recommended by HPC). In such an instance, HPC will not be held liable for any complaint concerning failure, loss of quality, or poor performance. Furthermore, there can be instances where use of non-recommended products may cause actual damage to the Product(s) and in such instance HPC refuses the right to carry out repairs or to charge for such repairs and all associated costs.
  - c. Because of installation, damage to, or modification to the product by someone else or because of changes required to you or a Third party. Under no circumstances will we

consider stripped motor threads a warranty issue. **If any connectors or wires have been altered or taken off, the warranty on that item will be void. WE WILL NOT WARRANT CONTROLLERS OR MOTORS WITH BROKEN OR MISSING WIRES**

- d. Because of external causes outside our control which shall include fire, accident, disaster, and burglary
- e. Because of faults caused by shock or fall, sand, dust, damp or corrosion, repair or cleaning by unauthorized personnel
- f. Because the product was not properly packaged and sufficiently padded when sent in for warranty inspection.

# 7.4 HPC Warranty Card

In order to warrant your product, please have this card COMPLETELY filled out ALONG WITH PROOF OF PURCHASE (printed invoice or receipt) , and send to the following address:

Hi-Power Cycles  
ATTN: Warranty and Repair Department  
21122 Nordhoff St.  
Suite F  
Chatsworth, CA. 91311

## Contact Information

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Daytime Phone: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

## Product Information

Motor: \_\_\_\_\_

Battery/Charger: \_\_\_\_\_

Controller: \_\_\_\_\_

Throttle: \_\_\_\_\_

Detailed Description of the Problem: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## What items will you be sending back for warranty?

Motor: \_\_\_\_ Battery/Charger: \_\_\_\_ Controller: \_\_\_\_ Throttle: \_\_\_\_

By signing, you hereby acknowledge and understand all the terms set forth in the warranty information pamphlet and accept full responsibility for the validity of this card

Signature: \_\_\_\_\_ Date: \_\_\_\_\_