



## **2017 HPC REVOLUTION OWNER'S MANUAL**

**Congratulations! You have purchased a state of the art Electric Bicycle built right here in the USA to the highest quality standards. 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 Revolution, you are at the forefront of electric propulsion technology. You now own one of the industry's most capable and most powerful electric bikes ever created!**

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

### **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.*

***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.

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## 1. ASSEMBLY INSTRUCTIONS

1.1 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 smaller e4rpackage inside the large bike box itself.

1.2 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.** Right pedal has a traditional right hand thread, while the Left pedal has a left hand thread.



**1.3** Next, secure the front wheel into the front suspension dropouts with included 20mm through axle.



Step 1: Turn the non-drive side wedge expander counter clockwise until it no longer clicks.



Step 2 and 3: Install the Maxle through the drive side dropout then tighten to 50 in-lb (5.7Nm)



Step 4: Tighten the non-drive side wedge expander to 30 in-lb (3.4Nm).

Installed 20mm Maxle:



**1.4** Next, install the handlebars. Your stem is already installed on the Revolution. Just use the four allen screws to tighten the handlebar in place. Your brakes should be angled downward at around 45 degrees, so they are comfortable to grab while you are in your standard riding position.



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

IMPOTANT: MAKE SURE THE SEATPOST DOES NOT PROTRUDE PAST THE FRAME'S SEATPOST TUBE! Otherwise, your rear shock could come into contact with the seat tube and cause damage to the shock and/or the tube.



**\*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 Air Suspension PRIOR TO RIDING! This applies to Revolution X owners with BoXXer World Cup and Vivid R2C Air suspension, or those who have requested air suspension on the front or rear.**

## **2. 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.**

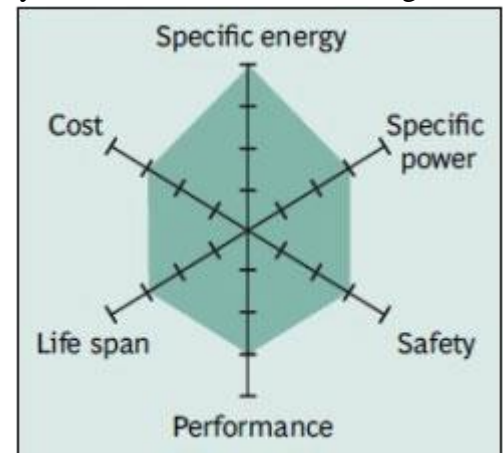


At Hi Power Cycles, safety is our number one concern. We want our customers to enjoy a great product that will give those customers' years of trouble free operation. As much effort as we do to minimize the risk of these state of the art batteries, there is always safety concerns when it comes to Lithium 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.



## **2.1 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.

## **2.2 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!**

## **2.3 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 Univeristy](#) as a source of information!

### **3. How to Use Your New HPC REVOLUTION**



**\* All Revolutions are shipped at Street Legal Power Level (750 Watts or less, depending on where we are shipping the bike). It is up to the end user to program the bike to unlock maximum power\***

### **3.1 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 115v operation mode by setting the switch on the back of the charger.** European owners make sure to select 230v mode. This is very important

3.2 Plug the battery charger into the wall. You will now see one green light and one red light on the charger unit. **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.

1. Plug in the charger plug into Built in XLR connector on the left side of the Revolution towards the front of the bike. It is located underneath the key switch. When you plug it in, you should see the charger light go from one red and one green, to both red, and an audible fan should kick in, indicating charging. Your charger will charge quickly up to about 95% and then slowly charge the last few percent as the battery self-balances each cell. Once charge is complete, the fan will turn off, and one of the red lights will go back to green just like it looked in step 2 above.



**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. NEVER LEAVE THE BATTERIES CHARGING UNATTENDED.**

**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. Do not 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.**

\*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.

### **3.3 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-\$50 or so to adjust everything and make sure everything is in top notch working order. During shipping, shifters, brakes and other mechanical parts may come out of alignment. If you are capable, you are welcome to do it yourself if you are confident in your abilities.*

- 2) Make sure the thicker 3 phase wires and 5 smaller hall sensors (both of these are the wires coming out of the motor) and the controller are properly and securely connected. Your Revolution is pre-wired and ready to ride, so this shouldn't be an issue.
- 3) Turn the on/off key switch to the "On" position. Your computer should turn on. **HPC HIGHLY RECOMMENDS THAT YOU REMOVE YOUR KEY ONCE YOU HAVE IT IN THE ON POSITION, OTHERWISE, YOU RISK BREAKING THE KEY UPON IMPACT.**
- 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. **\*This is vital, especially in steep terrain\***
- 7) Once you have taken it for a spin, you should now have what is called "EV grin!" pass it on!!!
- 8) ENJOY your new HPC REVOLUTION! 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 might need to have your wheel re-trued after your first couple of rides\*\****

### **3.4 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 15Ah batteries is approximately 3-4 hours with the 4A 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 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

month it is advised to hook the battery up to the charger for 5-10 minutes or so 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. We advise you keep the battery as close to the nominal voltage of your system as possible. 3000W-63V, 4000W-74V, 5000W and 6000W- 86V.

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

Your HPC bicycle/kits 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 years of use depending on how you take care of your battery. 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.

### **3.6 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 your bike's 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.***
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. The Revolution is made for fast and aggressive riding if the rider is sufficiently skilled. However, it was not made for very large jumps and/or cliff jumping. It is intended as more of a do-it-all Freeride type bike.

Small to medium jumps are fine as long as you feel it is safe and comfortable to do so.

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.

### **3.7 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 is 45-55 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!**
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 4000+ Watt Systems**

All systems > 4000w 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 comes from the factory with a special corrosion resistant coating on the inside of the motor to help prevent rust build up. 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 10-15 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!

### **3.8 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**

### **3.9 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. However, the Revolution is a big and heavy duty bike with large, sticky tires. In most cases, you will only be able to match our range estimates with the lower rolling resistance Maxxis Hookworm on road oriented tires.

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! Setting your e-bike computer to very low amps such as 4A or so will help you achieve huge range numbers.

### **3.10 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](#)

# **4. 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) in the USA, or 250W-500W for international shipments. 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 E-bike 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 15Ah battery, you know that you will be able use up to around 14-15Ah of battery juice. Always err on the side of caution and charge your battery system at or before the bottom 20% of your battery capacity for longevity of your battery pack (i.e. 15ah pack- don't use more than 12ah).

## **3000W (Revolution Sport 3.0)**

Max Current: 45A Nominal Voltage: 63V

Street Legal Current USA (750W): 13a

Street Legal Current Europe (250W): 4a

Low Voltage: 51V

Wheel Size: 26 (for 26" wheel bicycle), ~2150mm

Relative Battery Level Using Resting Voltage: 71V (100% charge) – 54V (5% charge)

## **4000W (Revolution Sport 4.0)**

Max Current: 48A Nominal Voltage: 74V

Street Legal Current USA (750w): 11a

Street Legal Current Europe (250w): 4a

Low Voltage: 60V

Wheel Size: 26 (for 26" wheel bicycle), ~2150mm

Relative Battery Level Using Resting Voltage: 84V (100% charge) – 64V (5% charge)

## **5000W (Revolution/Revolution X 5.0)**

Max Current: 55A Nominal Voltage: 86V

Street Legal Current USA (750w): 9a

Street Legal Current Europe (250w): 4a

Low Voltage: 69V

Wheel Size: 26 (for 26" wheel bicycle), ~2150mm

Relative Battery Level Using Resting Voltage: 96v (100% charge) – 73V (5% charge)

## **6000W (Revolution X 6.0)**

Max Current: 65A Nominal Voltage: 86V

Street Legal Current USA (750w): 9a

Street Legal Current Europe (250w): 4a

Low Voltage: 69V

Wheel Size: 26 (for 26" wheel bicycle), ~2150mm

Relative Battery Level Using Resting Voltage: 96v (100% charge) – 73V (5% charge)



# **5. 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 5000W system, you should get ~around 86V 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 but the wheel doesn't spin when the throttle is connected- Then unplug every wire you see plugged in. This includes 4 pin throttle wire, 6 pin cycle analyst, main XT-90 yellow battery to controller wire, 3 XT150 phase wires in the swingarm and hall sensors in the swingarm. Check all connections. Ensure all are making contact and plug them all securely back in. Retry the throttle and see if it works.

## **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. Unplug the yellow XT-90 connector and pre-charge resistor assembly (if applicable). The precharge resistor is a small 2 pin red and black wire that serves as a bridge to take in the current from the capacitors inside the controller to absorb any inrush currents and prevent sparks when plugging in the main XT-90 connector. Once both are unplugged, plug the XT-90 connector from the battery back into the controller directly. You might get a pop when you do so. After this, your BMS should awaken and be able to be charged again.

## **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, many manufactures quote a standard maximum range of 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. Heavier bikes with big tires like the Revolution might achieve closer to  $25$  Wh/mile in the real world in perfect conditions.

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 the video 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 (818) 734 1600 or you can always email us at [\*\*support@hpcbikes.com\*\*](mailto:support@hpcbikes.com).

# **6. Warranty Information**

## **6.1 Basic Warranty-**

The HPC Warranty is comprehensive, no questions asked for the first year. After the first year (year 1-2) any replacement components needed to fix a customer's bike will be discounted 50% off the normal retail price, provided we receive the broken component in return.

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

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 (after the first 30 days of ownership) associated with the repair or replacement of all parts. Under no circumstances (after the first 30 days of ownership) 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 (818) 734 1600. Also, be sure to visit our new and improved website at [www.hi-powercycles.com](http://www.hi-powercycles.com)!

## **6.2 Electronic Components Warranty Information**

- **IMPORTANT: Warranty Information** ○ \*All Demo/Pre-Owned Products carry a 3 Month Warranty\*

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/repaired under warranty. You should retain any object or accessory 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. HPC will NEVER send out any replacement items until AFTER the items in question have been inspected and deemed faulty.

As of 05/16/16, All electronics (Motor, Controller, Throttle, Battery, Charger) come with a **3 YEAR Limited Warranty** from date of shipment.

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 to the customer. In the event the product is not in good working order, HPC will provide, during the said warranty period, a free warranty service within the United States.

### First 30 Days:

In the event there is a problem within the first month of ownership, HPC will repair/replace the defective product free of charge, and will not charge any associated labor costs. The service will be entirely FREE of charge, and HPC will cover shipping costs to and from the customer. All required parts to fix/repair/replace remain free of charge.

### Month 2 to Month 12:

HPC will repair/replace the defective product free of charge, and will not charge any associated labor costs. Customer is responsible for paying ALL shipping charges to and from Hi-Power Cycles.

### Months 13-36:

After the first year of ownership is over, HPC will repair defective products if possible. The first hour of labor will be at no cost to the customer and will be a free service. Any consecutive hour(s) of labor will be charged at a discounted rate of 25% off the normal shop rate of \$75/hr. This equates to **\$56.25/hr**. If the item cannot be repaired for any reason, OR if the customer prefers a new replacement, we can offer a brand new replacement at **50% off retail cost**. Customer is responsible for paying ALL shipping charges to and from Hi-Power Cycles.

- Unless agreed to in writing, the Warranty does not apply:
  1. Because you have not used, maintained, 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.
  2. If customer chooses not to pay an outstanding invoice for services rendered or for products previously shipped.
  3. 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.
  4. Because of installation, damage to, or modification to the product by someone else or because of changes required to you or a Third party. **If any connectors or wires have been altered or taken off, the warranty on that item will be void.**
    1. Because of external causes outside our control which shall include fire, accident, disaster, and burglary
    2. Because of faults caused by shock or fail, sand, dust, damp or corrosion, repair or cleaning by unauthorized personnel
    3. Because the product was not properly packaged and sufficiently padded when sent in for warranty inspection.

# 7. 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: \_\_\_\_\_