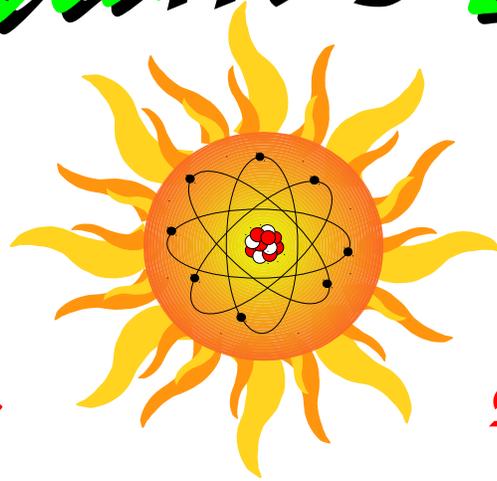


# Quantum Harvest<sup>®</sup>

*Faraday  
Enclosures*



*Portable Solar  
Power Stations*

## Owner's Manual

Quantum Harvest Model 5000-60 TSW





## Introduction

Congratulations on your purchase of a Quantum Harvest EMP protected\* portable solar power station! These units have been carefully designed and hand-crafted to provide many years of trouble-free operation. In the unlikely event of malfunction, we offer a 1 year warranty on the batteries (if provided by us.); 3 years on the inverter and charge controllers; 5 years on everything else. For warranty details, see page 34.

To obtain maximum performance and long life from your new power station, it is important to gain a basic understanding of how such units operate and their limitations. The heart of the unit, and it's main component, is the battery bank. This is where the energy from the solar panels or the included 120 volt AC battery charger is stored for later use. The particular batteries I have selected are state of the art deep-cycle Absorbed Glass Mat (AGM) medical-grade batteries. These batteries are maintenance free and can be stored and used in any position. Since they do not give off gases as they charge, there is no danger of fire and they never need to have water added.

To obtain maximum life from these, or any other batteries, it is important to try to avoid deep cycling, that is, drawing them down flat before allowing them to recharge. Sometimes this cannot be avoided, but if at all possible, strive to avoid doing so.

Another important component is the inverter. This is the device that converts the low voltage DC current from the batteries into the high voltage AC current that we are familiar with. (All Quantum Harvest power stations also have 12 volt DC receptacles and USB charging sockets for the appropriate devices, in addition to standard 120 volt AC house current.) The inverter is protected internally from overheating and low battery voltage, and externally from over-current draw by a 300 ampere ANL type fuse. The Model 5000 will sustain a continuous 5000 watts of current, and will briefly provide up to 18,000 surge watts, to start motors and other inductive loads. The inverter relies on air flow around and through the unit to cool it, therefore it is imperative that the inverter not be used with the enclosure door closed.

## *\*A quick note on EMP*

*An EMP, or **E**lectro-**M**agnetic **P**ulse is a devastating phenomenon that, while harmless to living things, absolutely destroys anything electronic. It consists of extremely powerful electromagnetic fields building and collapsing hundreds of thousands of times per second. This induces potentially huge electric currents in anything that conducts electricity, causing components connected to said conductor to burn out. An EMP can be caused by either a deliberate, high-altitude nuclear warhead detonation, or can be caused naturally by a solar event called a Coronal Mass Ejection, or CME.*

*All Quantum Harvest power units are built into a specially designed enclosure, more properly called a Faraday Cage, named after Michael Faraday, an early pioneer in electromagnetic research. The purpose of a Faraday cage is to intercept and divert electromagnetic energy away from the box's interior, thus protecting the contents.*

*The principles involved are fairly simple, but the proper execution is critical. In order for the enclosure to be useful, it must have a door, but any opening larger than a square centimeter or so allows too much energy to penetrate the interior, thus defeating the purpose of the Faraday cage.*

*The solution to this conundrum is to gasket the door with a special type of conductive gasket, mated to a copper or silver strip that is electrically bonded to the main box. The key is to have very low electrical resistance between the door and the enclosure, with no gaps. This is not as easy as it sounds, and requires special materials designed specifically for this application.*

*My experience with Faraday apparatus comes from 8 years experience with very powerful industrial machines called RF welders. These machines use extremely powerful and focused bursts of electromagnetic energy to weld and form plastic parts. These machines basically create a local EMP every time they fire, and it is critical that stray energy be confined and dissipated safely to avoid damage to other sensitive electrical machinery.*

# Table of Contents

<b>Specifications.....</b>	<b>Page 4</b>
<b>Note on Batteries.....</b>	<b>Page 5</b>
<b>Section 1.....Capacities and recommended usages.....</b>	<b>Page 6-7</b>
<b>Section 2.....Controls/Circuit Protection Devices.....</b>	<b>Page 8-10</b>
<b>Section 3.....External Ports and Connectors.....</b>	<b>Page 11-12</b>
<b>Section 4A.....General Operation and Routine Maintenance.....</b>	<b>Page 13</b>
<b>Section 4B.....Connecting and Using the Solar Panels.....</b>	<b>Page 14</b>
<b>Section 4C.....Charger.....</b>	<b>Page 15</b>
<b>Section 5A.....Power Board Removal, Re-installation.....</b>	<b>Page 16-18</b>
<b>Section 5B.....Battery Removal, Re-installation.....</b>	<b>Page 19-25</b>
<b>Section 5C.....Control Panel Removal, Re-installation.....</b>	<b>Page 26-27</b>
<b>Contact Information.....</b>	<b>Page 28</b>
<b>Warranty Information.....</b>	<b>Page 29</b>
<b>Addendum A.....Solar Panel Diode Replacement.....</b>	<b>Page 30-31</b>

# Base Unit Specifications

<b>Assembled Dimensions:</b>	57.5" Long (includes wagon tongue, base cabinet is 47" Long), 24.75" Wide by 34.75" High
<b>Assembled Weight:</b>	800 lbs.
<b>Inverter:</b>	AIMS PICOGLF60W24V230VS True sine-wave, 24 volt
<b>Battery Bank:</b>	8 AGM Deep-Cycle Batteries, 110 amp/hrs each.
<b>Battery Bank Capacity:</b>	880 Amp/hours; 10,560 Watt/hours
<b>AC Charger:</b>	50 Amp Smart Battery Charger
<b>Solar Charger/Controller:</b>	Instapark 60 amp PWM-Type

## In this manual, the following symbols are used to highlight important facts:



Denotes circumstances where failure to follow the procedures outlined in the manual may result in property damage.



Denotes circumstances where failure to follow the procedures outlined in the manual may result in personal injury or death.

Always remember that electricity is utterly devoid of mercy and never grants second chances!

### Note on Batteries

This Quantum Harvest power station is designed to use AGM batteries that measure 12.91” Long, by 6.77” Wide by 9.29” High. The particular battery model we use is the UB121100 110AH model. Other models of similar dimensions and specifications will also work.



**\*Caution\*** Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and extreme care must be exercised at all times. Anything electrical is unforgiving of mistakes.



**!Warning!** Note that although the voltage at the battery terminals is insufficient to shock a person, the current coming from the inverter receptacles is 120 volt house current, and that is indeed capable of inflicting a severe, potentially fatal shock. Always be sure that extension cords are not frayed or worn, and that all equipment plugged into the inverter is in a safe condition.

## Section 1: Capacities and recommended usages

This 5,000 watt model is the next-to-largest true sine-wave unit we currently produce, and with its premium, marine-grade AIMS inverter with proven soft-start technology, will reliably start and power anything within its capability, even fussy items that will not run with cheaper, modified sine-wave inverters. It will run full-size refrigerators and freezers, table saws and chop saws, as well as any hand-held tools, such as drills, grinders and circular saws, etc. It will also, of course, power smaller items such as TVs, cell phones, laptops, tablets, etc.

This Model is available with a proprietary soft-start mechanism to augment the built-in system in the inverter, which allows it to reliably start and power up to to a 5 hp air compressor, or a 2 hp submersible well pump. It is NOT recommended to power large resistive loads like central air-conditioners, water heaters and electric space heaters.

Used within its limits, this unit will provide many years of trouble-free service, and be a joy to own and use. But like most things, if you push it beyond its limits, you will be plagued by expensive repairs and poor performance.

This machine contains a battery bank of eight, 110 amp/hour batteries, for a total capacity of 880 amp/hrs. How much real power is that? If we multiply the 880 amp/hours by the nominal voltage (12 volts), we get a capacity of 10,560 watt/hours (watts = volts times amps). This machine will run a full-sized refrigerator or freezer for several days, even without the solar panels hooked up.

On the next page is a partial list of common electrical appliances and their approximate loads, provided in part by the good folks at: <http://www.energy.gov>

Appliance	Watts used	Load type R= Resistive I= Inductive	Notes	Quantum Harvest Model			
				1500	2500/2505	3000	
Aquarium	50-1210	R	1	X	X	X	X
Clock radio	10	R	2	X	X	X	X
Coffee maker	900-1200	R	2	X	X	X	X
Clothes washer	350-500	I		X	X	X	
Clothes dryer	1800-5000	R					
Dishwasher	1200-2400	R					X
Dehumidifier	785	I		X	X	X	X
Electric blanket (Single/Double)	60-100	R		X	X	X	X
<b>Fans:</b>							
Ceiling	65-175	R		X	X	X	X
Window	55-250	R		X	X	X	X
Furnace	750	R		X	X	X	X
Hair dryer	1200-1875	R	3		X	X	X
Heater (portable)	750-1500	R	3		X	X	X
Clothes iron	1000-1800	R	3		X	X	X
Microwave oven	750-1100	R	2	X	X	X	X
Personal computer (desktop w/LCD monitor)	150	R		X	X	X	X
Radio (stereo)	70-400	R		X	X	X	X
Refrigerator (frost-free, 16 cubic feet)	725	I		X	X	X	X
<b>Televisions-CRT (color)</b>							
19"	65-110	R		X	X	X	X
27"	113	R		X	X	X	X
36"	133	R		X	X	X	X
53" - 61" Projection	170	R		X	X	X	X
Flat screen	120	R		X	X	X	X
Toaster	800-1400	R		X	X	X	X
Toaster oven	1225	R	3	X	X	X	X
VCR/DVD	17-21 / 20-25	R		X	X	X	X
Vacuum cleaner	1000-1440	R	3	X	X	X	X
Water heater (40 gallon)	4500-5500	R		NR	NR	NR	NR
Water pump, 1/3 to 1/2 hp (120 volt)	500-1100	I	4		X		X
Water pump 1/2 to 1 hp (220 volt)	1000-3000	I	4		X		X
Water bed (with heater, no cover)	120-380	R		X	X	X	X

Notes: 1=Higher wattage indicates use of an aquarium heater. 2= May have difficulty with Modified sine-wave inverters  
3= High power usage, but usually short duration. 4= High surge requirement for starting.

## Section 2: Controls/Circuit Protection Devices

There is one main fuse, a 300 ampere ANL type fuse, shown to the right, located beside the inverter. There is one spare fuse included in the spare parts kit. To replace the fuse, first, be sure the main switch is turned off, then, using a 9/16" wrench, remove the two nuts. Lift the fuse out and place the new one over the studs; reapply the nuts, being careful to not over-tighten.



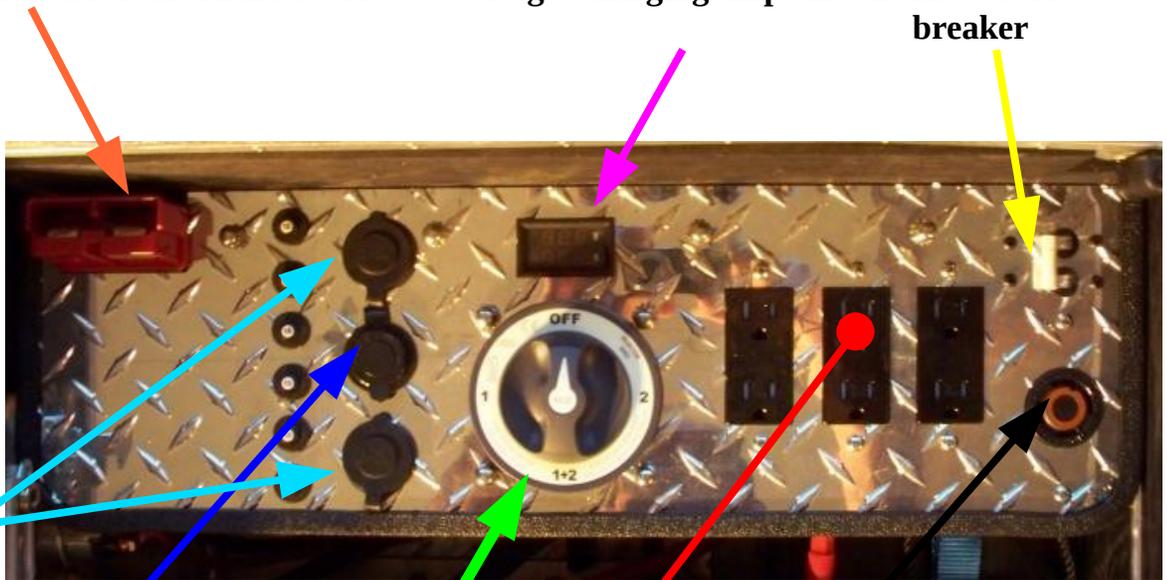
### Detail of Main Control Panel

Anderson connector for external batteries

Voltage/Charging amps meter

220 volt AC breaker

12 Volt DC cigarette lighter-style outlets



USB charger ports (2)

120 volt AC outlets

220 volt AC outlet

### Main Switch; 4 positions available.

**Off position** isolates the inverter and control panel from the batteries.

**Position #1** is the normal use position in which the unit draws from the internal battery bank.

**Position #1&2** is the position used when using an external battery(s), and allows the unit to run from both the internal battery bank and the external source .

**Position #2** is not normally used, and allows the load to be run directly from an external source, bypassing the internal battery bank.

## Detail of Main Panel Circuit Breakers

15 amp breakers (3)  
for 120 volt outlets.

10 amp (2) for 12 volt  
DC outlets

5 amp for USB  
charger,



220 volt AC breaker

## Detail of AC Charger



40 amp automotive-style fuses

There are no adjustments or maintenance required for the AC charger; all its functions are fully automatic.

## Detail of Solar Charger/Controller and related circuit-breakers



There are no adjustments or maintenance required for the solar charger; all its functions are fully automatic.

**Right;** The solar charge controller is protected by 2, 70-amp circuit-breakers.

**To avoid damage to the solar controller, it is important that it be used in accordance with the instructions on page 14.**



## Section 3: External Ports and Connectors

The external ports/connectors for attaching the power cord for the AC charger and the solar panels are located on the latch side of the unit.

### External Connector Location



*(Model 3000 shown, but Model 5000 ports and location are the same.)*

### AC Charger port



Insert the plug into the socket with the silver tab on top, and turned slightly to the left. Push it in fully and gently twist it clockwise until it latches. To remove, use your thumb to pull the silver tab toward you, then twist the plug counter-clockwise and pull it out of the socket.

## Solar Panel Connector Port

To connect, lift the cover, and oriented as shown with the boss on top, slide the connector into the socket. Please note that the cover has a latch-pawl to prevent the jack from creeping out. To remove, lift the cover slightly to disengage the latch, and remove the jack.



*(Although both connectors are shown connected in the upper photo for illustration purposes, it is not recommended that both the AC charger and the solar charger operate at the same time.)*



## Section 4A: General Operation and Maintenance

 **WARNING! The base unit is NOT water-proof, and must be stored and used in a dry location. Wind-driven rain will ruin the inverter, and worse, set up conditions where people or pets may be electrocuted.** 

 **Also, please take note that in addition to the above very real danger, the warranty does not cover water or other weather-related damage to any of the components!**

To use the unit, unplug the AC charger cord if it is connected, then wheel the unit to a convenient location. Open the cabinet door and turn the main switch clockwise to position #1 and then press the inverter start button to initialize the inverter. Connect any loads to the appropriate receptacles. Be sure to keep the door open so as to allow adequate airflow for inverter cooling.

*Inverter start switch*



Note that it is not necessary to have the solar panels connected in order to use the power station, but if they are not connected (and in direct sunlight), you will only have what power is in the batteries. There is no easy way to tell exactly how much charge remains in the batteries, so the best measure we have is to watch the battery bank voltage, which is shown on the control panel's digital display.

Battery voltage gradients change over time as the batteries age, but a good rule of thumb is that 27 to 25.6 volts is a reading for a battery bank pretty much fully charged. When the voltage drops to 25.2 to 24.8 volts, the batteries are usually about one half to two-thirds discharged. Voltage of 24.5 to 24.1 mean that the battery is pretty much exhausted, and voltages below 24 will cause the inverter to shut off. These numbers are only approximate, experience is still the best teacher!

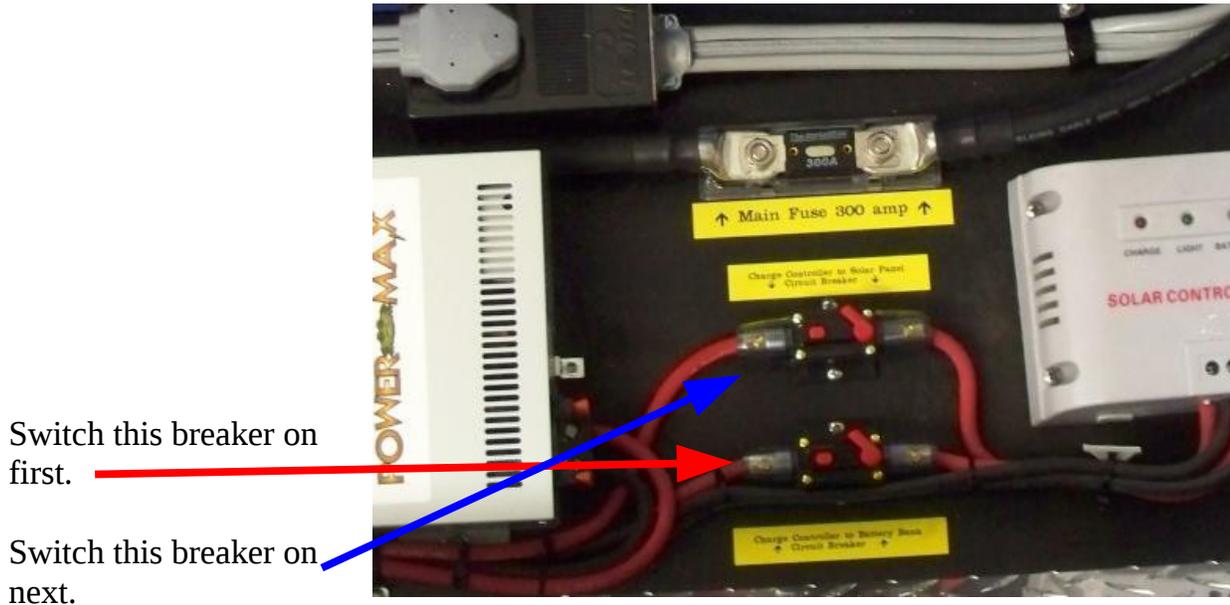
**Please note that the voltage readings, to be accurate, must be read under a no-load condition. The voltage will be lower when the batteries are under load.**

## Section 4B: Connecting and using solar panels.

**Step 1:** Be sure both circuit-breakers to the solar charge controller are switched off.

**Step 2:** Connect the jack from the panels into the port on the generator base unit.

**Step 3:** It is very important to switch the charge controller to battery bank circuit-breaker (bottom one) on first, then the charge controller to solar panel circuit-breaker (upper one) on next.



*(Breakers shown in off (open) position. To switch on, rotate the red levers down until they latch. To switch off, press red button to left of red lever.)*

## Section 4C: AC Charger

When you are finished with the unit, unplug the solar panel assembly, coil the cable on the brackets and stow the assembly in a safe place. Switch off the inverter, then turn the main switch to the off position. Wheel the unit to a safe, indoor location, and plug the AC charger cord into a wall socket and plug the other end into the appropriate socket on the side of the base unit. Close and latch the cabinet door. Note that the main switch should be OFF. The AC charger will automatically maintain the batteries at the optimum voltage as long as it is plugged in. There is no need for further intervention.

**Please note that the AC charger will charge the batteries even if the main switch is off, but in order to use the inverter or other power outlets, the main switch MUST be switched to position #1!**

The only other maintenance needed besides keeping the batteries charged is to keep the faces of the solar panels clean to improve their efficiency.

# Maintenance and Repair Section

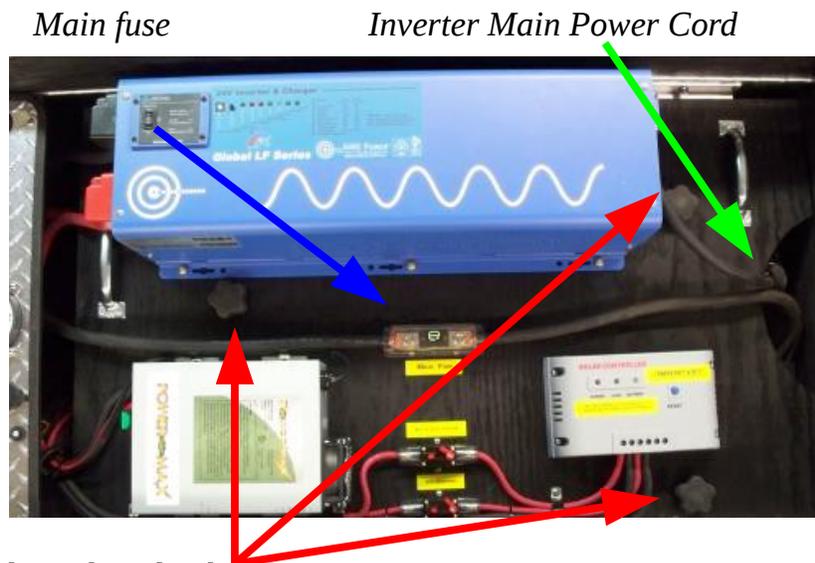
## Section 5A: Power Board Assembly Removal and Re-installation

All Quantum Harvest power stations feature a modular construction that allows faulty components to be easily removed and returned to us for repair, without the necessity of having to crate up the entire heavy unit and paying the costly shipping charges for an 800+ lb. machine.

This model power station consists of, in addition to the casing and batteries, two such removable modules; the power assembly, which contains the the inverter, chargers and related components, and the control panel.

### Removal of the power assembly.

**Tools Required: 9/16" and 1/2" socket or wrench, #2 Phillips Screwdriver**



**Step 1:** Remove these three knobs.

**Step 2:** Remove the main fuse, then pull up the inverter main power cord to expose the twist-lock connector; twist the two halves counter-clockwise and pull it apart, then lay the inverter end beside the inverter. Lay the heavy black cable from the fuse block up and over the back of the unit to get it out of the way.



**It is absolutely imperative that the main fuse be removed BEFORE unplugging any other cables to preclude any possibility of creating a short circuit!**



**Step 3:** *Below;* Remove the screws securing the plastic cable guards on the end of the inverter closest to the control panel, and remove the guards. Using a 1/2” wrench or socket, remove the nuts and cables from the DC side of the inverter.



**Step 4:** *Right;* Disconnect the 4 connectors detailed below, and place all the cables up and out of the way. Tuck the inverter and fuse block cables down under the control panel to avoid having them catch on the power board during removal.



**Step 5:** *Below;*



**(The power board assembly weighs over 120 lbs, so to avoid injury, or unit damage, it is highly recommended that this step be accomplished by 2 people.)**

Using the handles provided, tilt the inverter side up and rotate the entire assembly up and out of the case, being careful to avoid damaging the RF gasket around the case opening.





**Reverse the above steps to re-install.**



**IT IS VERY IMPORTANT THAT THE INVERTER CABLES NOT BE CROSSED. BE ABSOLUTELY SURE THAT THE RED CABLE CONNECTS TO THE RED TERMINAL AND THE BLACK CABLE TO THE BLACK TERMINAL. THE INVERTER IS NOT PROTECTED FROM CROSS-POLARITY OF THE DC INPUTS, AND SEVERE EQUIPMENT DAMAGE WILL RESULT IF THEY ARE CROSSED!**

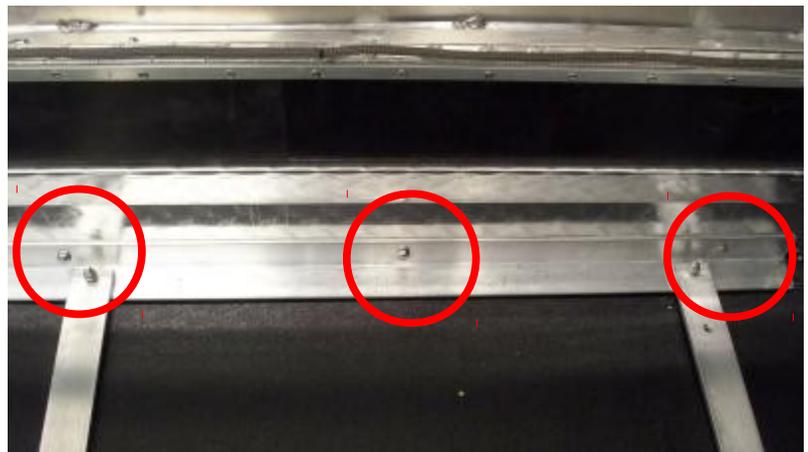
## Section 6B: Battery Removal/Re-installation

**Tools Required:** 9/16" socket or wrench, 7/16" socket or wrench, #2 Phillips screwdriver, pair of pliers or 2<sup>nd</sup> 9/16" wrench.



**\*Caution\*** Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and extreme care must be exercised at all times. Anything electrical is unforgiving of mistakes.

**Step 1:** Remove power board assembly. (Pages 16-18)



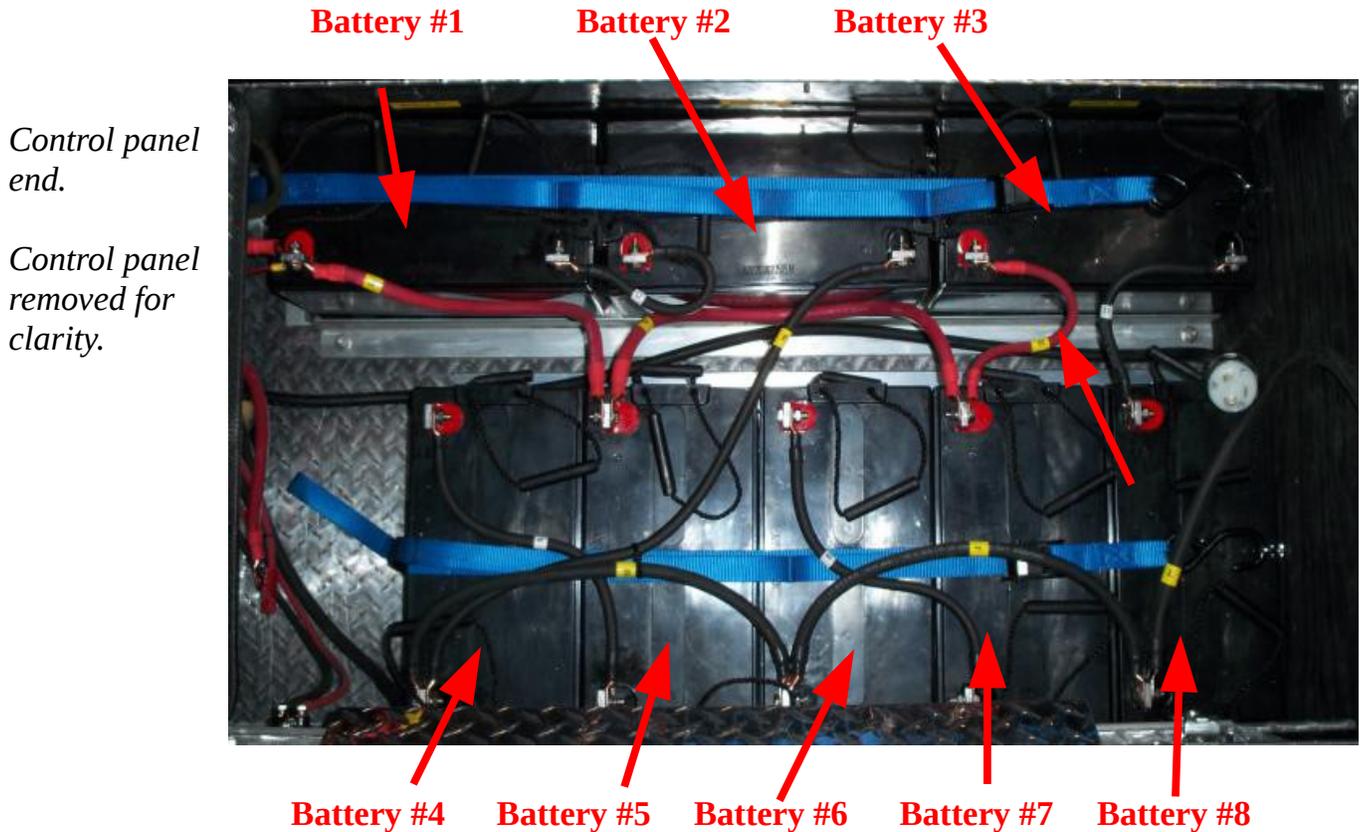
**Step 2:** *Right;* Remove the 6 bolts (3 to a side) from the shelf support assembly.

**Step 3:** *Right;* Fold the shelf support as shown and remove. Then remove the ABS battery shield cover beneath the support, exposing the batteries. Loosen and remove the 2 blue battery retaining straps.

**(NOTE: When reinstalling the shelf support, the slat with the single hole goes toward the control panel)**



# Battery numbering schematic



**NOTE:** The battery cables are all labeled with either white or yellow labels. Please note that the 4 white-labeled cables, A, B, C, D are black, and are the only ones that go to both red (positive), and black (negative) battery terminals. The yellow-labeled cables are either red, which connect only to red (positive) terminals, or black, which connect only to black (negative) battery terminals.

**Step 4:** *Above*; Remove the nut, flat washer and lock washer from only one battery terminal at a time, and it is recommended to place a piece of clear plastic hose or other insulator over each cable end as it is freed. This prevents the possibility of a freed end touching an adjacent terminal, causing a very dramatic short circuit, likely damaging both the terminal and the cable end! Remove the cables in reverse letter order, ie: start with the large red cable marked “L”, then the large black cable marked “K” and so forth until all the cables are removed. The batteries may now be removed from the case. Each battery weighs 70 lbs, so some help may be appreciated!



**Be very careful that freed ends as well as any tools do not short across adjacent terminals!**



# Battery Installation Instructions



**\*Caution\*** Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and **EXTREME CARE** must be exercised at all times. Anything electrical is unforgiving of mistakes.

## Things to note before starting:

Be careful with any metal tools that you do not inadvertently short between terminals. Remove any metal jewelry from your hands and avoid loose metal necklaces or such that may droop down and short between adjacent terminals. Work slowly and carefully, and wear eye protection at all times.



**Be very careful that freed ends as well as any tools do not short across adjacent terminals!**



**Step 1:** Place the batteries in the case, oriented as shown in the photo at the top of page 20.

**Step 2:** Starting with the cable labeled “A”, and going in alphabetical sequence, place the cables and bolts in their appropriate places. The chart below as well as the following photos show the orientations of the cables in respect to their corresponding battery terminals.

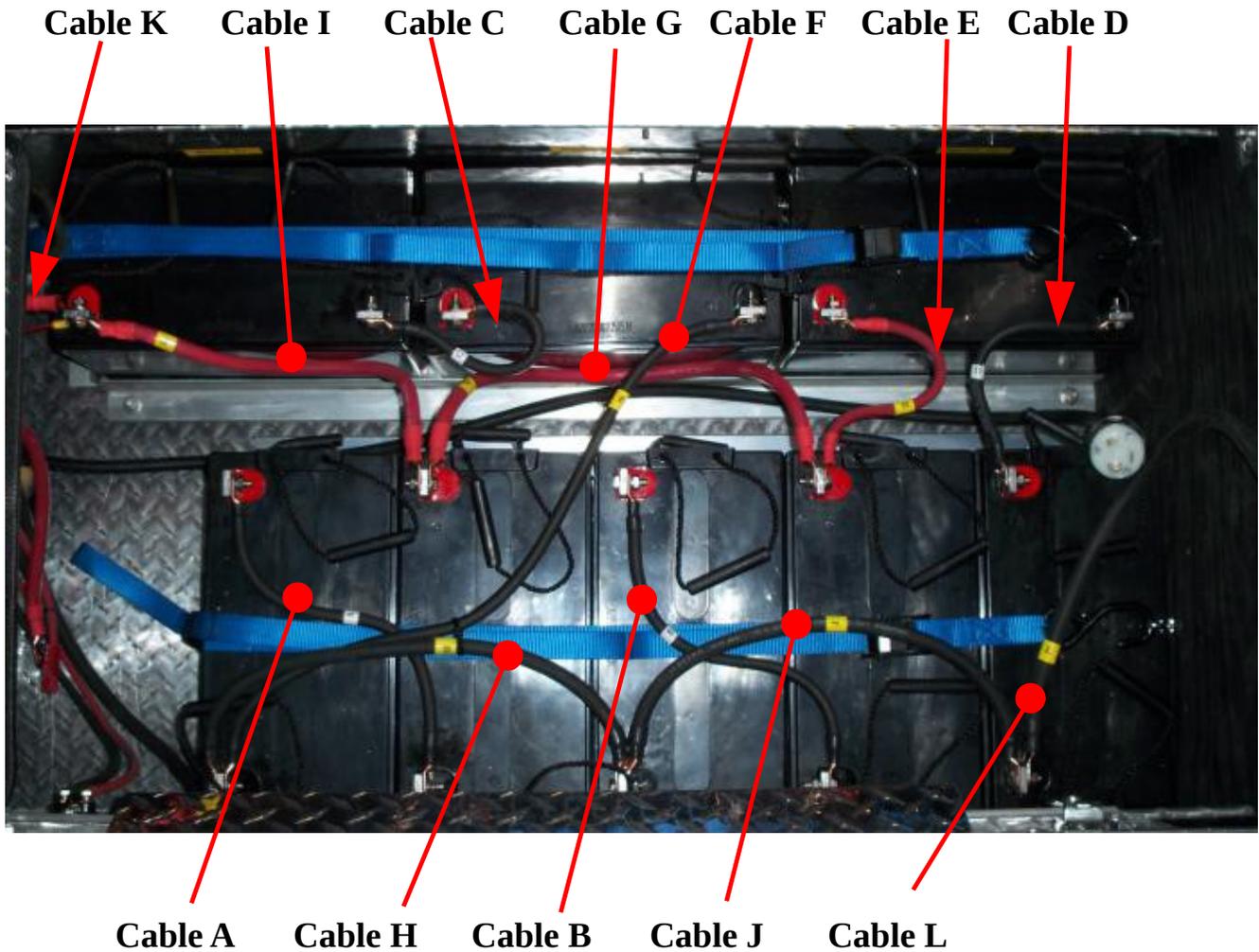


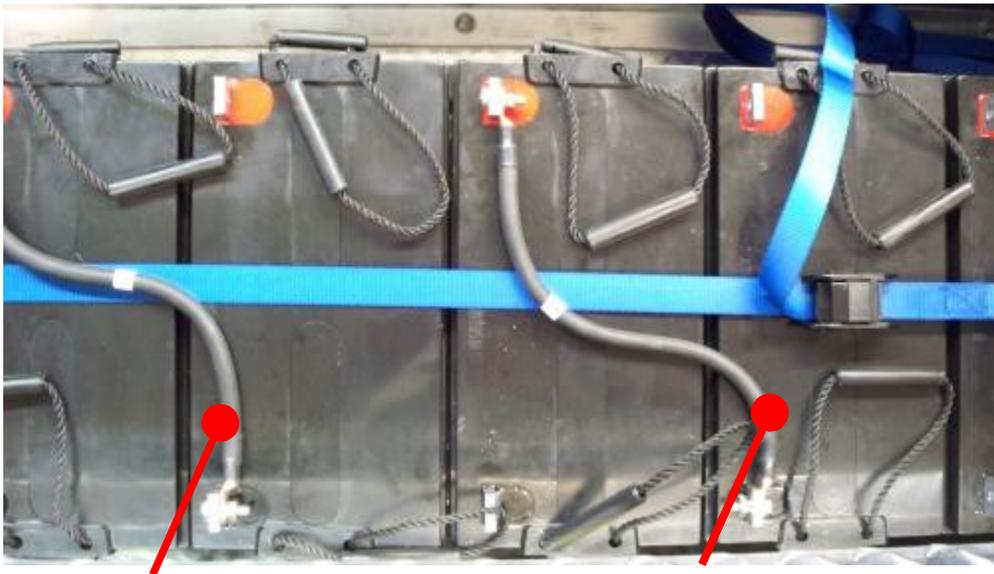
**IT IS VITAL THAT THE CABLES BE HOOKED UP EXACTLY AS SHOWN FOR PROPER UNIT OPERATION. MISPLACED CABLES WILL, AT BEST, PREVENT THE FROM PERFORMING AT IT'S BEST, AND AT WORST MAY SHORT OUT AND CAUSE A FIRE. IF IN DOUBT AS TO YOUR ABILITY, GET SOME KNOWLEDGEABLE ASSISTANCE. BATTERIES CONTAIN ALMOST UNLIMITED AMPERAGE, AND CAN CAUSE FIRES WHICH CAN LEAD TO PERSONAL INJURY, EVEN DEATH!**



# Battery cable placement chart

Cable letter	cable color	goes between battery terminals
A	Black/white label	Battery #4 (+) to Battery #5 (-)
B	Black/white label	Battery #6 (+) to Battery #7 (-)
C	Black/white label	Battery #2 (+) to Battery #1 (-)
D	Black/white label	Battery #8 (+) to Battery #3 (-)
E	Red/yellow label	Battery #3 (+) to Battery #7 (+)
F	Black/yellow label	Battery #2 (-) to Battery #4 (-)
G	Red/yellow label	Battery #5 (+) to Battery #7 (+)
H	Black/yellow label	Battery #4 (-) to Battery #6 (-)
I	Red/yellow label	Battery #5 (-) to Battery #1 (-)
J	Black/yellow label	Battery #5 (+) to Battery #7 (+)
K	Red/yellow label	Battery #1 (+) to Main Switch #1
L	Black/yellow label	Battery #8 (-) to Main Fuse



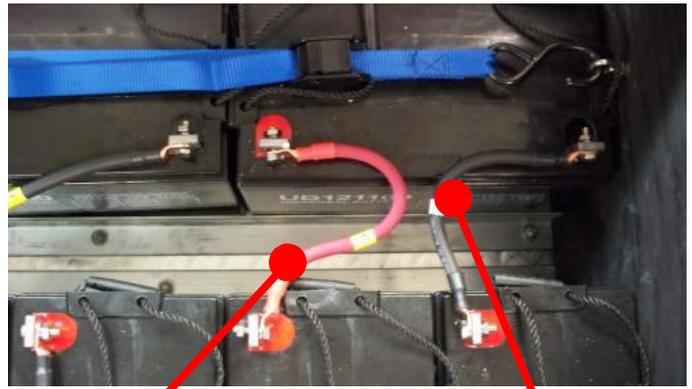


**Cable A**

**Cable B**

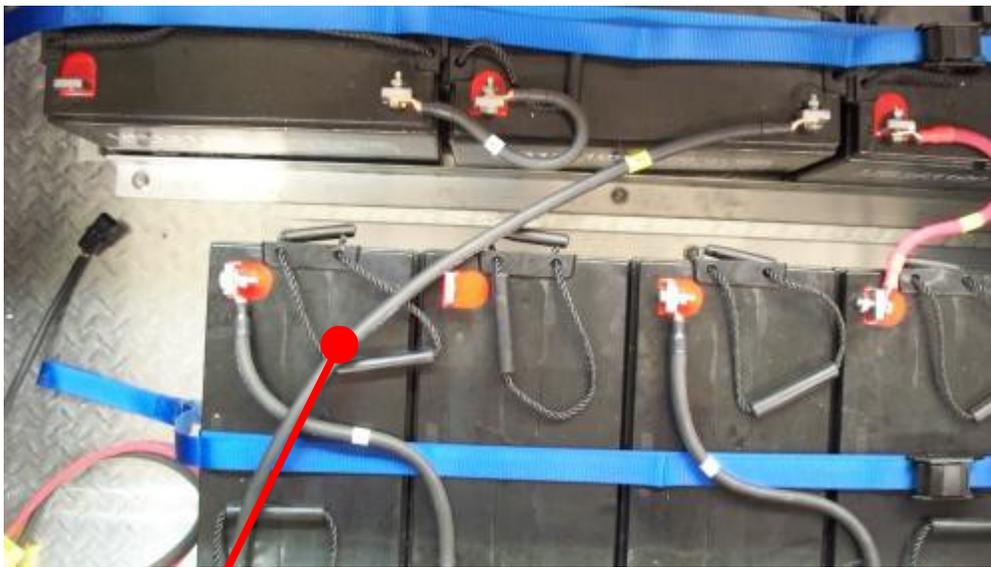


**Cable C**



**Cable E**

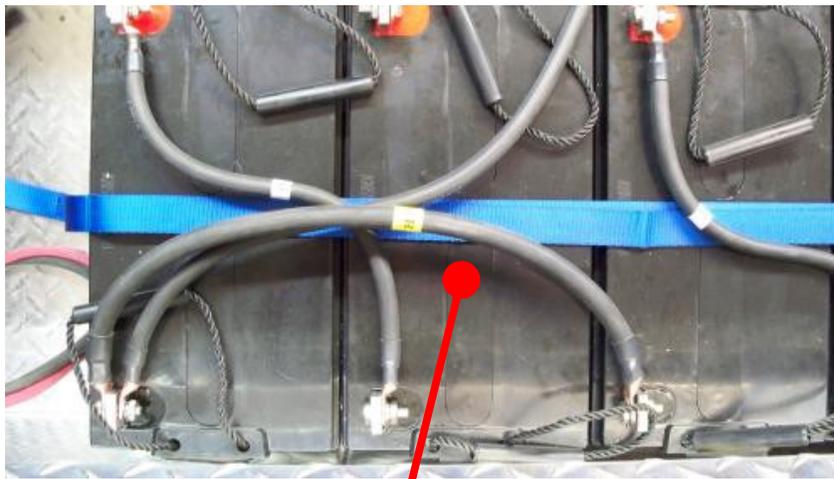
**Cable D**



**Cable F**



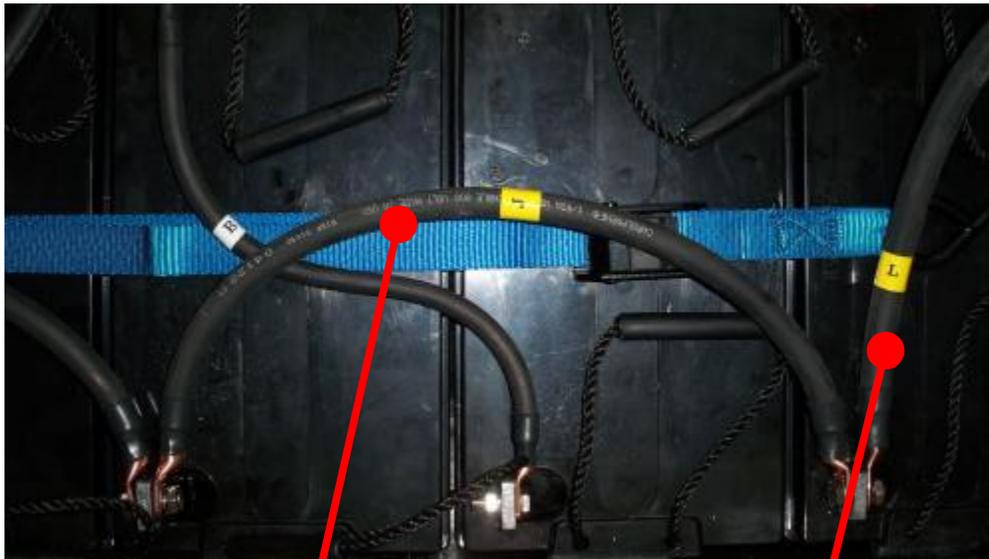
**Cable G**



**Cable H**

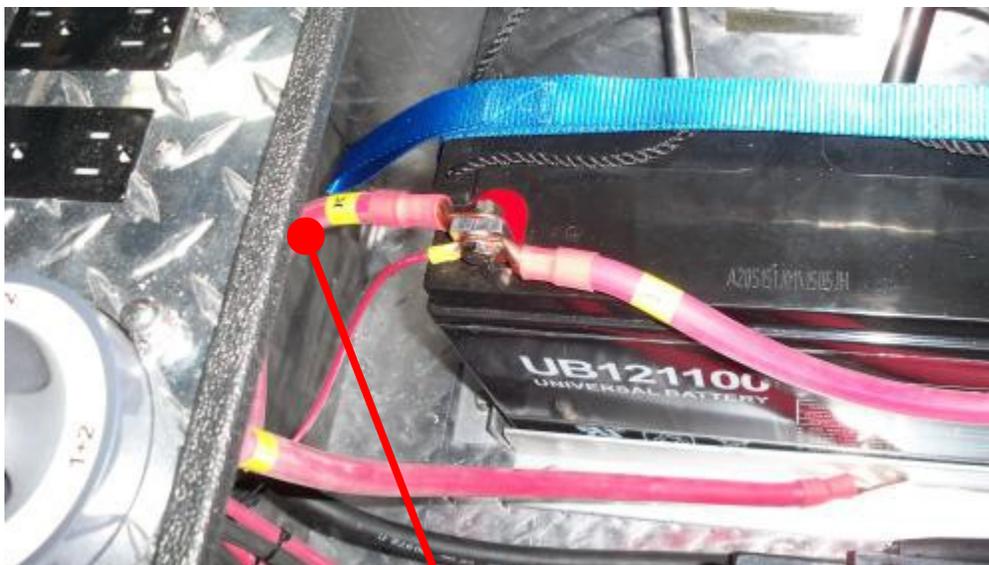


**Cable I**



**Cable J**

**Cable L**



**Cable K**

**Step 3:** Install the flat washers, lock washers, and nuts onto the bolts, and tighten securely. Double check that the cables are routed and connected properly, and all 16 nuts are tight.

**Step 4:** Reinstall the plastic battery shield, and power board support; tighten the support nuts securely, and reinstall the power board.

## Section 6C: Control Panel Removal/Replacement

*The only reason this assembly would have to be removed is for repair.*

**Tools needed:** 9/16" socket or wrench; 3/8" wrench; #2 Phillips screwdriver

**Step 1:** Remove the power board. (Pages 16-18)

**Step 2:** Remove the batteries. (Pages 19-25)

**Step 3: Right:** Remove the nut securing the black cables to the control panel negative post, remove and set aside the 2 large black cables. Note that the cables are labeled, as the ends are not the same, and must be replaced correctly.



**Step 4: Above;** Remove the 2 screws indicated.



**Step 5:** *Right;* There is a single, smaller red wire connected to the battery #1 positive terminal that supplies 12 volts to the USB ports and the 2, 12VDC outlets. It may be disconnected without removing the battery wires by pulling apart the single black connector.



*12 volt positive supply wire*

*12 volt positive supply wire connector  
(obscured by the large red cable in the foreground.)*

**Step 6:** *Below;* Remove the 2 flat-top screws indicated. They are secured with nuts under the panel.



**Step 7:** *Right;* Pull up on the side shown, free the opposite side from the stud, and slide the control panel out until it clears the latch mechanism, and remove the control panel from the case.



**Reverse the above steps to re-install.**

## **Contact Information**

**Quantum Harvest, LLC  
89 Chapman Ridge Rd.  
Athens, ME 04912**

**Email: [support@quantumharvest.net](mailto:support@quantumharvest.net)**

# Warranty Information

All Quantum Harvest power station base units and mobile solar panel units are warranted to be free of defects in materials and workmanship for:

- Batteries, if provided by us.....1 year**
- Inverters, AC chargers and solar charger/controllers.....3 years**
- Everything else, including solar panels.....5 years**

To obtain warranty service, contact us at: [support@quantumharvest.net](mailto:support@quantumharvest.net) for instructions. We will assist in diagnosing the affected component(s), and furnish an RMA. Shipping both ways is on us. You won't pay a cent for warranty service.

**In addition to the above warranty, we are so confident of our products, we will never, as long as you own it, charge you labor for repairs. Even after the warranty period, if a component fails or gets damaged, just contact us at the above email address, and we will assist in diagnosing the problem and either arrange to send you the part at cost, or have you ship us the affected module, where we will diagnose the problem and contact you with the cost of the replacement part(s). You will pay what we pay, no more.**

## **What is NOT COVERED under the warranty:**

Physical damage to the solar panels, including, but not limited to; broken glass or broken or bent parts.

Physical damage to the power station itself.

Water damage to the internal components of the power station.

# Addendum A

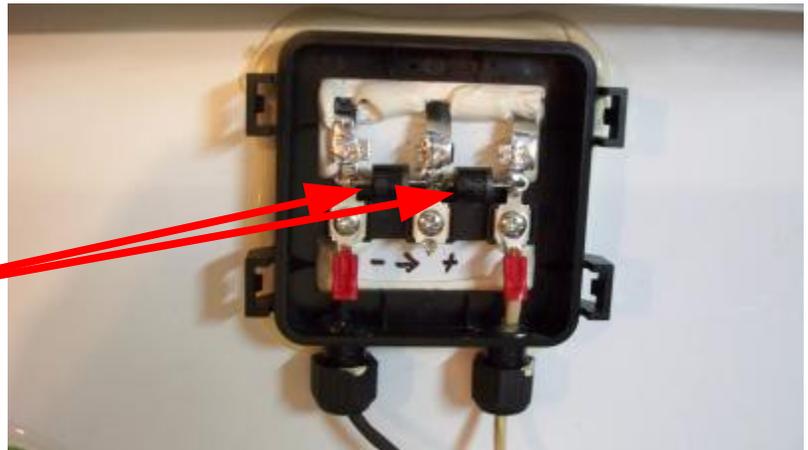
## Solar Panel Diode Replacement

*Note that each panel has a diode junction box, thus, the 300 watt triple panel assembly has 3 boxes and 6 diodes in total.*

To gain access to the blocking diodes, remove the cover by inserting a thin-bladed screwdriver into the slot and gently prying inward to release the catch. Repeat for all 4 latches.



*Diodes (2 per panel)*



Using a pair of wire-cutters, carefully clip the diode leads to free the old diodes, and discard.



Loosen the 3 screws, and slip the replacement diodes in as shown. It is VERY IMPORTANT to orient the diodes properly. The silver stripe goes in the direction of the arrow. Snug the screws back up, being very careful not to strip the threads. Replace the cover and snap it into place

*Silver stripe*

*Screws*

