



RE-SLRSYS SAFETY, STORAGE, INSTALLATION, OPERATION & MAINTENANCE MANUAL

NANO-CARBON ENHANCED VRLA BATTERY



LB022-V000-0000-06

JUNE 11, 2018

GS BATTERY
www.gsbattery.com

THIS MANUAL PROVIDES MANUFACTURER RECOMMENDED INSTRUCTIONS REGARDING SAFETY, STORAGE, INSTALLATION AND MAINTENANCE. FAILURE TO ADHERE TO THE PRECAUTIONS PRESENTED MAY RESULT IN INJURY OR LOSS OF LIFE.

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SAFETY PRECAUTIONS

Batteries are different from general consumer electronics. Energy is not only stored as potential energy inside the battery, but is also converted during charging/discharging operations. Due to these reasons, if the batteries are handled or used improperly, dangerous conditions may arise. To ensure the safety, proper handling and maintenance of the batteries is necessary. In this instruction manual, warning symbols are used to indicate that the failure to follow the instructions may result in bodily injury. As shown below, there are three different symbols that indicate the degree of danger- Danger, Warning, and Caution. Please fully understand the warning symbols and their meanings before reading the rest of the instruction manual.

 DANGER	The danger symbol indicates imminently hazardous conditions in which serious injury or death may occur if this warning is ignored.
 WARNING	The warning symbol indicates that serious injury or death could possibly occur, and slight injury or damage to the products often occurs if this warning is ignored.
 CAUTION	The caution symbol indicates that injury may occur or damage to the products may occur.
<p>“Serious injury” described above may include but not limited to: the loss of eyesight, injury, burn, electric shock, bone fracture and/or poisoning that leaves after effects, or other injury that requires hospitalization or long-term outpatient care for treatment.</p> <p>“Injury” includes such conditions as injury, burn and electric shock that don’t require the long-term outpatient medical treatment.</p> <p>“Damage to the Product” is defined as the extensive damage to the building and/or equipment.</p>	

In this instruction manual, the symbols below indicate caution and prohibition.

GENERAL SAFETY INSTRUCTIONS



KEEP AWAY FROM FLAMMABLES



CAUTION: ELECTROLYTE



DO NOT USE IN WET LOCATIONS



CAUTION: ELECTRIC SHOCK



DO NOT DISASSEMBLE



CAUTION: IGNITION



CAUTION: RISK OF EXPLOSION



USE PERSONAL PROTECTION EQUIPMENT



READ MANUALLY CAREFULLY

BEFORE YOU BEGIN:

Read related instruction included in the packet.

The following should be observed when working with or handling batteries:

1. Verify the charging power supply to the battery is off and that all power is disconnected from the power source.
2. Remember batteries cells/mono-blocks are always energized by the chemical reaction occurring within the battery.
3. Remove watches, rings or other worn metal objects.
4. Use tools with insulated handles to prevent inadvertent shorts.

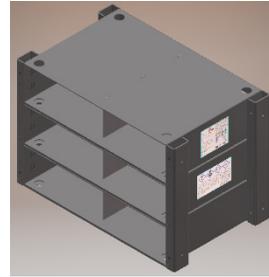
Parts List:

48VSYS Rack -----HW015-V602-STPP-01-----TOP-----



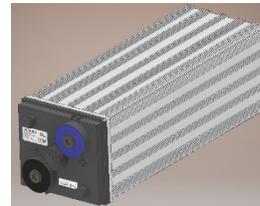
QTY 1

48VSYS Rack -----HW015-V602-STPP-01-----BOTTOM-----



QTY1

SLR500 2V Battery Cell-----SLR500-2-----



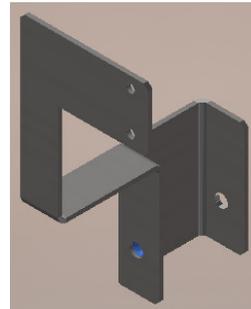
QTY 24

48VSYS Breaker Assembly---RE-SLR250ABRKR-01-----



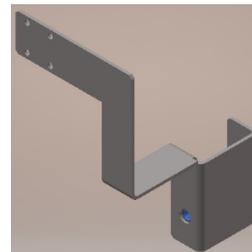
QTY 1

48VSYS Breaker Assembly Mount Ear Left-----HW015-V002-STPP-02



QTY 1

48VSYS Breaker Assembly Mount Ear Right--HW015-V0002-STPP-02



QTY 1

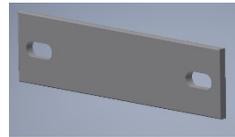


48VSYS Long Bus Bar-----CD001-V001-0500-01-----



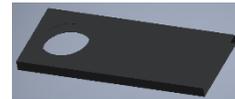
QTY 3

48VSYS Short Bus Bar-----CD001-V001-0500-01-----



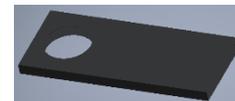
QTY 20

48VSYS Long Bus Bar Insulator-----HW024-V002-RBBK-01-----



QTY 6

48VSYS Short Bus Bar Insulator----HW024-V002-RBBK-02-----



QTY 40

48VSYS Insulated Terminal Bolt---RE-SLR1000TERM-01-----



QTY 48

48VSYS POS Cable-----RE-CAS060260-02-----



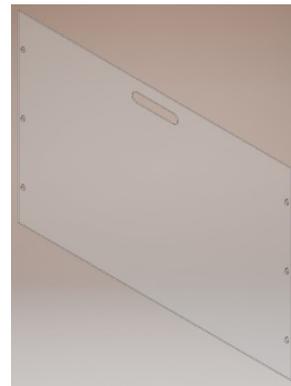
QTY 1

48VSYS NEG Cable-----RE-CAS070260-04-----



QTY 1

48VSYS Lexan Shields-----HW024-V002-PCCL-01-----



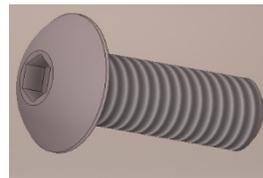
QTY 2

48VSYS Battery Cell keeper bar----- HW015-V002-STPP-03-----



QTY 6

48VSYS Lexan Stand-off Bolt-----



QTY 12

48VSYS Lexan Stand-off -----



QTY 12

48VSYS Rack Coupling Kit-----HW015-V002-STPP-04-----



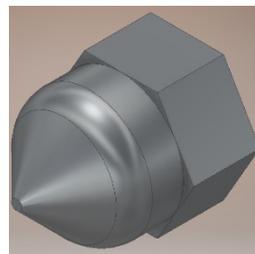
QTY 4

48VSYS No-Ox Grease-----RE-SLR1000TERM-04-----



QTY 1

48VSYS Union Kit-----



QTY 12

48VSYS Manual Kit-----RE-SLRZ00000-02-----



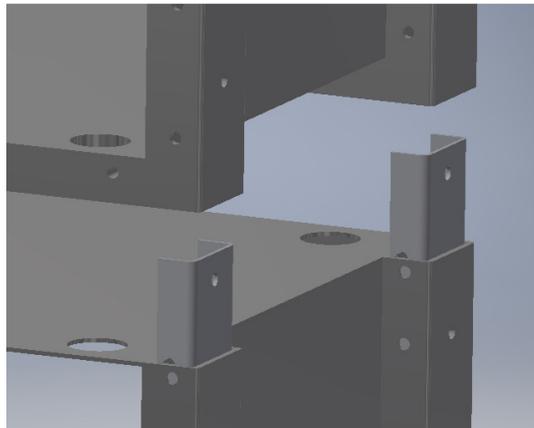
QTY 1

SLR-500 Battery Rack Assembly Instructions

Battery rack is a modular rack with 3 shelves per module. Assembly of two modules creates a 48V battery string.



To assemble the battery rack, joints are used to align and connect the two modules, see below.



It may prove beneficial to affix the breaker assembly with breaker assembly ears to the module to be placed on top prior to stacking rack halves. Breaker assembly ears are provided and require (2) M10 bolts to affix the ears to the module and then (4) M6 Machine screws are used to fasten the breaker panel assembly to the ears. It is important to orientate the circuit breaker so that the assembly is mounted with the circuit breaker on the left side of the rack, see below.



LEFT

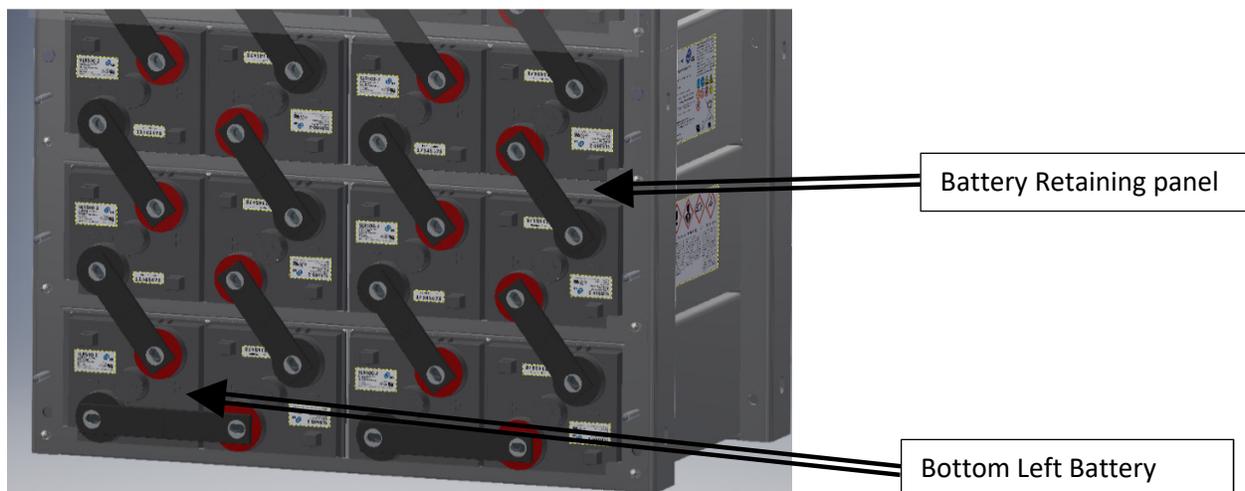
RIGHT

Once the union bars are inserted and the modules are stacked (2) M10 bolts with nuts and washer and also (1) M10 bolt are used to fasten the modules to the alignment joint and to each other per support beam. Please torque the M10 bolts to 12 N · m. This is for a 6 cell high, 4 cell wide configuration. It is also possible to assemble for a 3 cell high, 8 cell wide (see page 8).

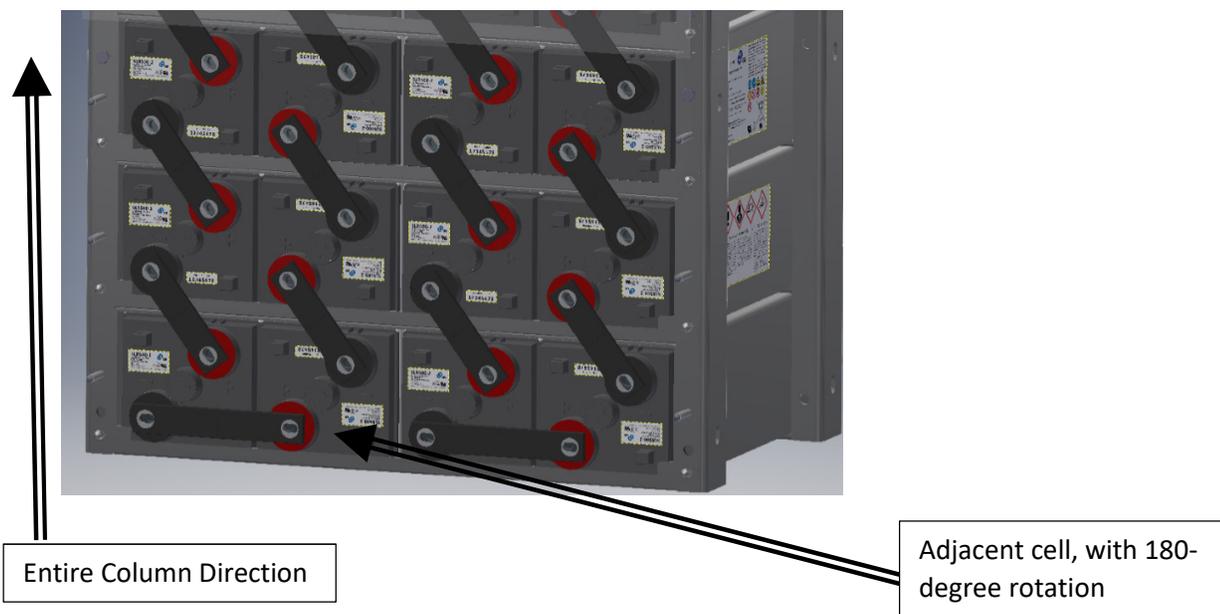


QTY 2 9/16" Bolts

With the battery retaining panels removed, the battery cell may be placed on the rack. It is required to place each cell in the appropriate orientation. Starting in the bottom left, place the battery cell, with terminals facing you long side vertical. The negative terminal closest to the bottom of the rack, see below.



The entire column of battery cells above the bottom left battery cell should be placed in the same orientation as the bottom left cell. The adjacent cell, to the right of the initial cell should be rotated 180 degrees so that the positive terminal is closest to the bottom of the rack. The entire column above the second battery cell should have the same orientation as the second battery cell.

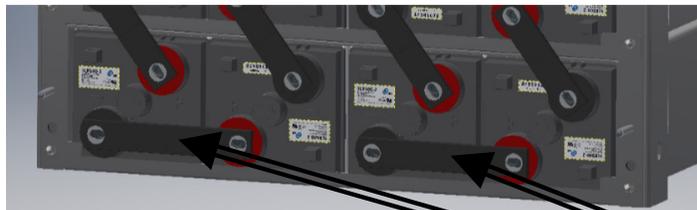


Continue this alternating sequence until the rack is completely populated.

Install every battery retaining panel to each row of batteries. Before beginning the next part of the assembly, please ensure that you are protected with gloves and insulated tools.

Each battery cell comes with QTY 2 M10 bolts, nylon head M10(22mm socket) bolts are also supplied and recommended. The bolts are for fastening the bus bar between terminals to create the string. The ideal

process would be to leave the voltage low, therefore, it is suggested to leave the bottom 2 horizontal bus bars off until the end.



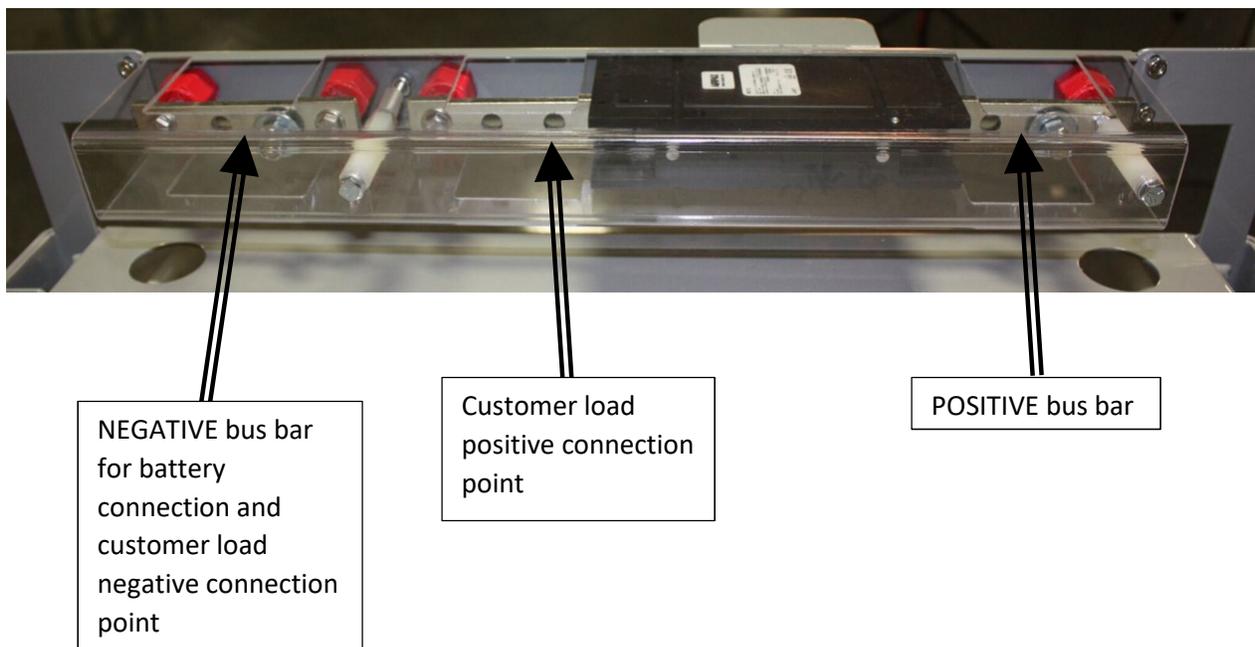
2 Horizontal bus bars

Install the bus bar insulators on all bus bar. Install all diagonal bus bars completing the torque requirement and covering with bus bar cover before installing the next bus bar.

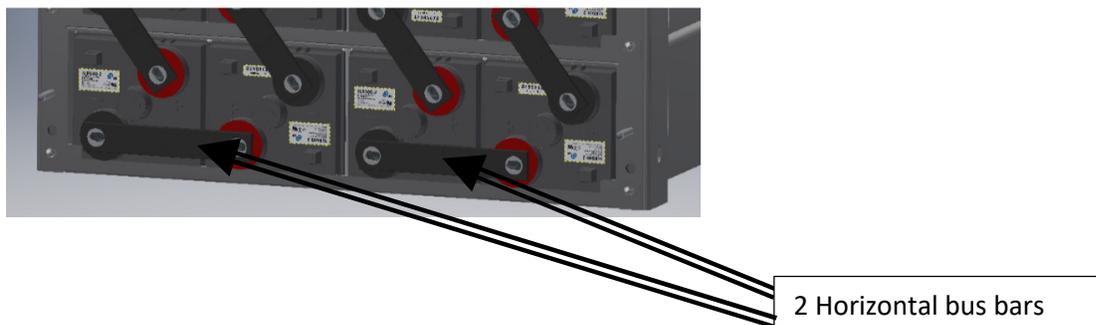


It is easy to identify the diagonal bus bars; they are the longer bus bar. It is very important to pay attention to the installation of bus bars to ensure that a short across battery cell terminals is not created. In an attempt to prevent short circuit, move in a specific pattern starting at the highest terminal connection and working left to right. When possible cover each bus bar before continuing to the next.

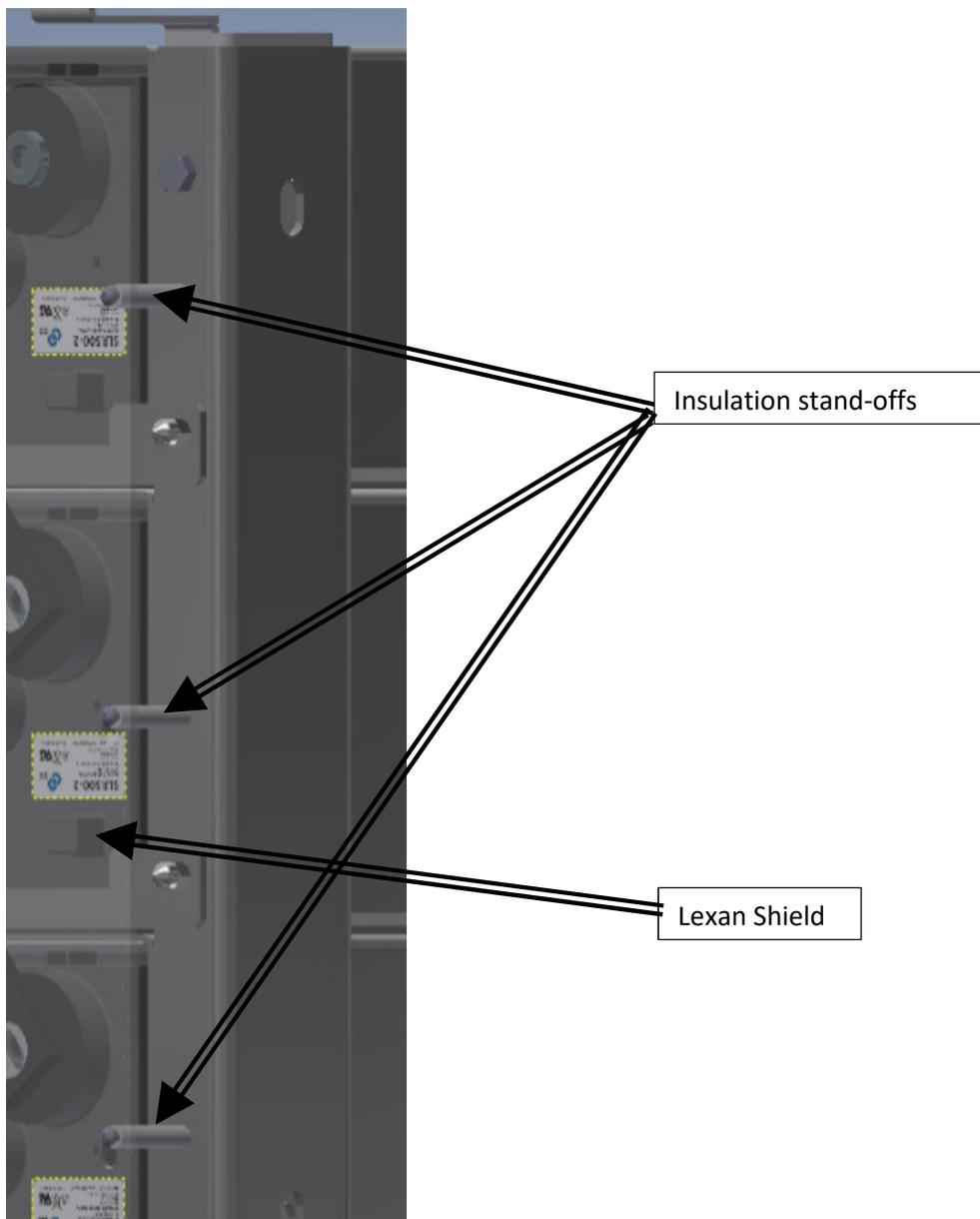
The top row of terminals can be connected before or after the diagonal bus bars are installed. The positive terminal of the top left battery cell will be connected to the bus bar on the circuit breaker and the negative terminal of the top right battery cell will be connected to the negative bus bar on the circuit breaker assembly. The negative bus bar will be separate from the circuit breaker on the assembled panel. See rear view of circuit breaker panel below.



The final step in battery cell installation is to install the bus bars between the battery cells at the bottom of the rack.



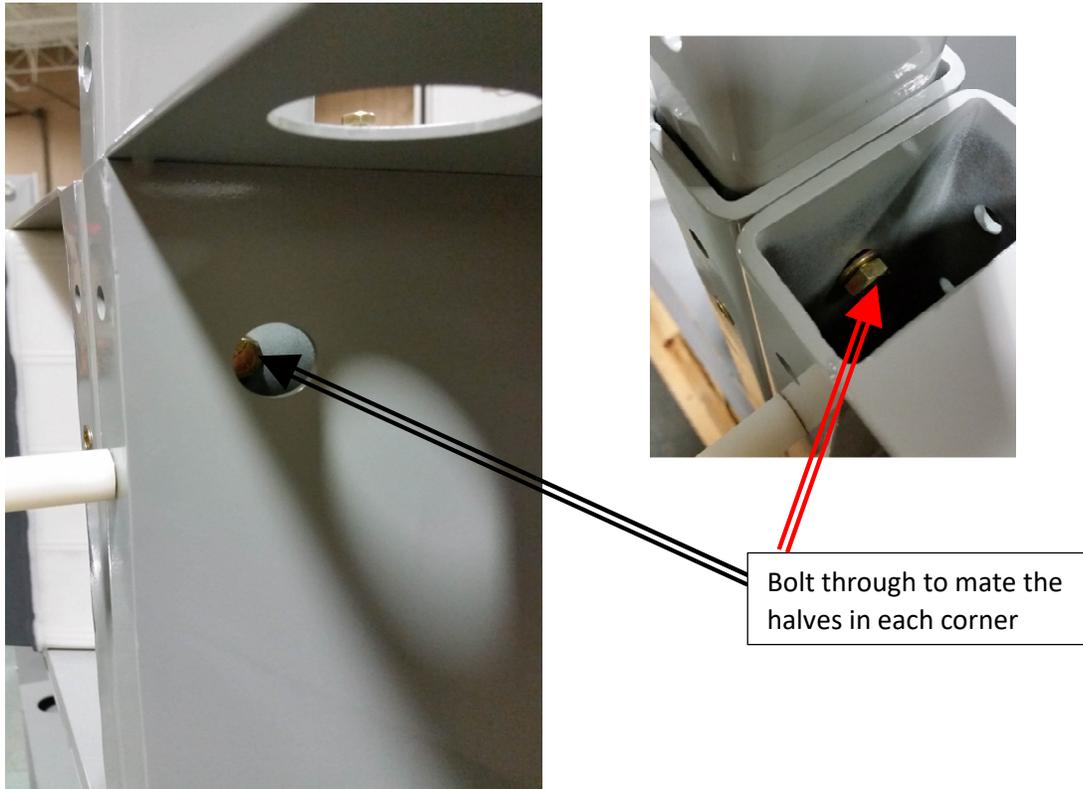
After all bus bars have been installed and torqued to specification, the Lexan shield and stand-off insulators should be installed. The stand-offs and Lexan shield are installed simultaneously.



An exploded view of the rack is at the end of this document.

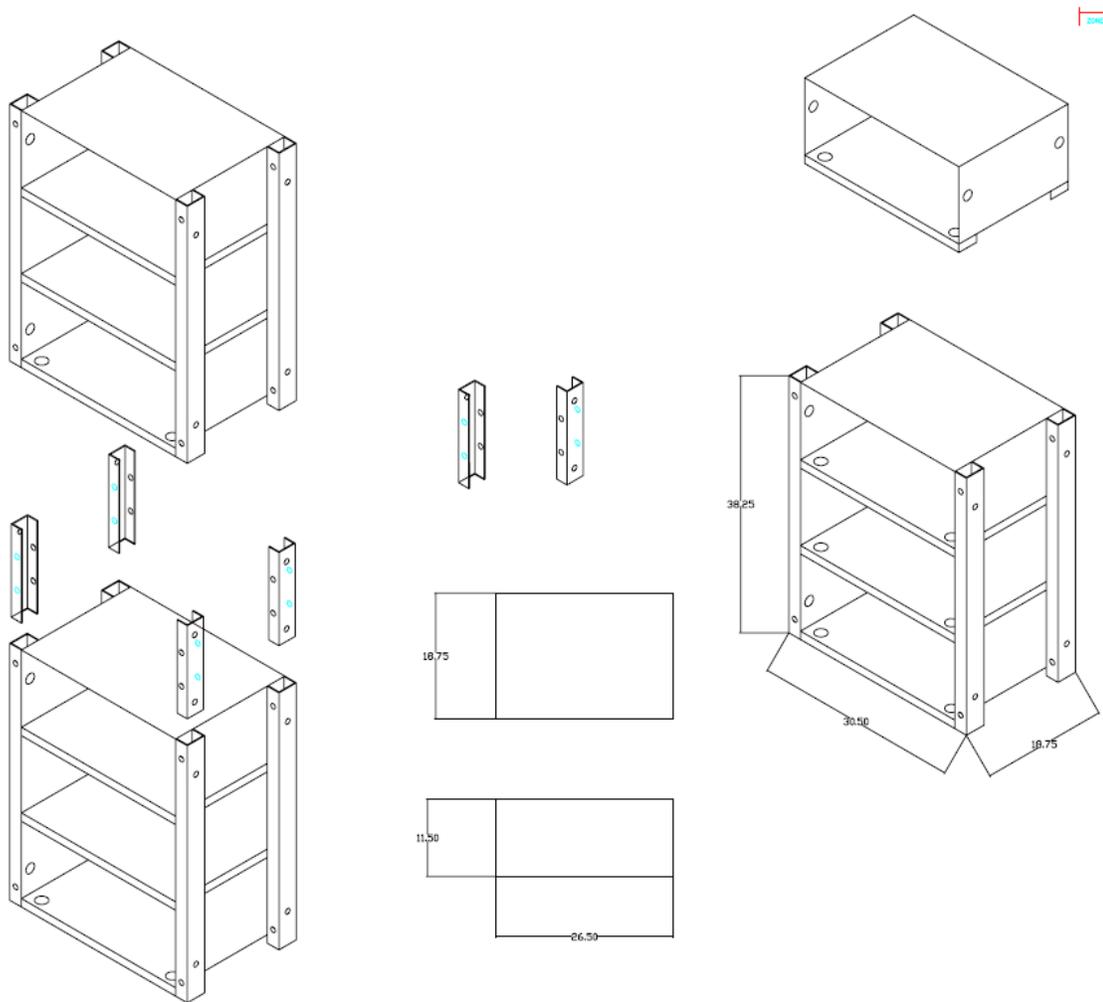
APPENDIX A

The rack may also be assembled side by side creating a 3 cell high and 8 cell wide string. A bolt kit is provided upon notification that the rack shall be assembled side by side. With both halves facing the same direction with regard to the cell cavity, four bolts are used to hold the halves together.



There are two possible ways to affix the top portion of the battery rack side by side.

1. Using the CB assembly mounting ear hardware, at the front, or the alignment union bar, at the rear, the bolt that affixes the part will also tie the racks together. And at the bottom of the rack you can use the provided hardware.
2. Use the provided hardware in all four locations. This will prevent utilizing and CB assembly mounting hardware.



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