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1 PLANNING

1. Plan the layout of the solar panels on the RV rooftop, while also accounting for any future expansion of adding additional panels.
- It is recommended that the solar panel is mounted on the awning side of the RV due to more sun exposure.

NOTE

1. Placement of the panels should be as close together as possible to keep wire lengths as short as possible. Each panel has a certain length of cable coming from the junction box. It may be necessary to use solar panel extension cables (can be purchased from Go Power!).
   - Select a location where the surface is at least 1/2" thick and rigid enough to support the solar panel mounting hardware.
   - Solar panels should be located a minimum of 3' from front-facing edge of the RV to reduce the wind load on the panels. Solar panels installed within 3' from front-facing edge will require approval from Go Power!.
   - Avoid internal wiring when selecting the solar panel mounting locations for drilling the mounting holes.
   - Avoid installing solar panels near fixed obstacles, such as air conditioners, to reduce shading.
   - Ensure there is enough room to access the panels and other fixed obstacles for future inspection and maintenance.
2. Plan where the location of the Cable Entry Plate (GP-CEP) will be located on the RV roof. Optimal locations are along the center line of the RV towards the curb or roadside.
   - Ensure the location is accessible to allow the cables from the solar panels to reach the controller location.
   - The distance between the solar panels and battery compartment should be no more than 25-30' - a shorter wire run will lower the voltage drop, which increases the system efficiency.
   - Mounting the CEP underneath a solar panel will make the solar connections on the CEP inaccessible. Consider placing the CEP in an area that will be accessible without removing the solar panel.
3. Plan where the solar controller will be mounted inside the RV.
   - Ensure the location of the solar controller will be accessible inside the RV.
   - Ensure the location will allow access for the cables to run to the battery compartment.

2 INSTALLATION

2.1 CABLE ENTRY PLATE

1. Mark the location of the CEP cable hole to be drilled for feeding the cables through the RV roof – details on install below. (See Figure 2-A)
2. Drill a small pilot hole in the chosen spot. Using the hole saw enlarge the hole to be 1.5" to 2"in diameter.
3. Remove any sharp edges from the hole.
4. Thoroughly clean the RV roof around the hole in the area the CEP will be mounted. A clean surface is critical to ensuring a watertight seal.
   - Contact your roofing material manufacturer for proper cleaning instructions prior to installation of the CEP.
   - Ensure any cleaning, priming, or sealing products used are compatible with CEP material. CEP material may be either polycarbonate (PC) or polypropylene (PP). Incompatible products could result in damage to

     CEP material and water ingress. Contact Go Power! support if assistance is needed in identifying CEP material.
5. Apply butyl tape or equivalent to the mounting surface on the underside of the CEP, covering all mounting holes as well.
6. Feed wires down through the hole while lowering the CEP onto the RV roof.
   - Ensure strain relief feature is centered with the wire hole.
7. Use #12 or #10 stainless steel pan-head screws to secure the CEP to the RV roof, through the butyl tape and into the roof. (See Figure 2-B).
   - **Do not over-tighten screws as this could lead to cracking of the CEP and damage the roofing material.**
8. Once screwed down to the RV roof, apply a generous bead of sealant around the outside of the CEP on the mounting flange and over the screws.
   - Avoid getting sealant on the Solar Connectors as this would impede maintenance and future solar expansion.

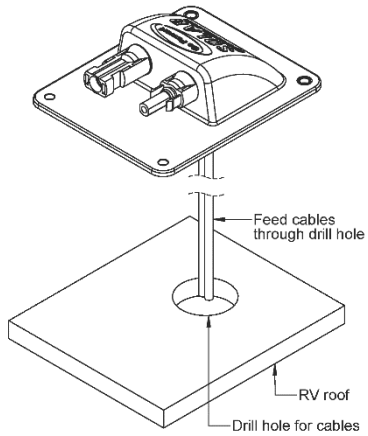


FIGURE 2-A

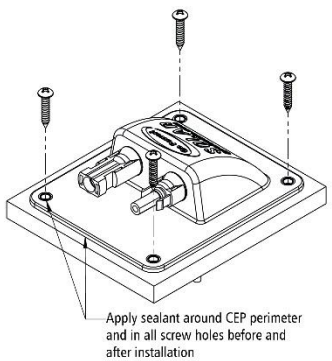


FIGURE 2-B

2.2 SOLAR PANELS

WARNING: Photovoltaic panels generate DC electricity when exposed to sunlight or other light sources. When exposed to light, contact with the electricity active parts can result in burns, whether the panel is connected or disconnected. When panels are connected in parallel currents are additive. Do not touch the terminals while the panel is exposed to light. Cover the panel faces completely with an opaque material to stop the production of electricity when installing panels or wiring.

1. Assemble 4x 'Z-foot' mounting feet onto the solar panel frame using the 1/4" bolts and nuts. This assembly is easily completed on the ground before the panels are brought up to the RV roof. (See Figure 2-C)
2. Tighten the nuts to 64 in-lbs (7.2Nm) using a 7/16" wrench.

WARNING: Any modifications to the mounting hardware and or solar panels need to be approved by our Engineering department or we will not be liable. The mounting feet must be installed on the 4 outer holes in the panel frame. All 4 mounting feet must be used on a solar panel. Failure to do so could cause the panels to be thrown from the RV.

3. Place solar panel(s) on the roof, using layout from planning step.
4. Test that the solar panel cables can reach both connections on the CEP.
    - If installing two solar panels, our solar branch connectors may be connected to the CEP at this time. The branch connectors are used for connecting two or more solar panels in parallel. (See Figure 2-D & 2-F)
5. Apply butyl tape or equivalent to the mounting surface on the underside of the solar panel mounting brackets before laying the panel in its final position.
6. Use the #10-16 x 1" screws provided in the kit or equivalent to secure the 4 solar panel mounting feet to the RV.
7. Apply a generous amount of sealant on top and around each of the 4 'Z-foot' mounting feet to ensure a watertight installation. The 'Z-foot' and all screws should be completely covered with sealant.
    - Use approved sealant for the RV roof type.
8. Connect solar cable positive and negative cables to the CEP. (See Figure 2-E)

NOTE: if more than two 200W solar panels are installed, or there is room on the roof for more than 2x200W solar panels then an MC4 fuse should be connected on the positive wire before it is connected to the CEP

- Secure any loose cables to the RV roof by plant/factory approved method.
- SolarFlex™ panel are installed in the same way, without mounting feet. Use the approved adhesive to attach panel to the roof along with the optional 6 #10-16 x 1" pan-head screws.

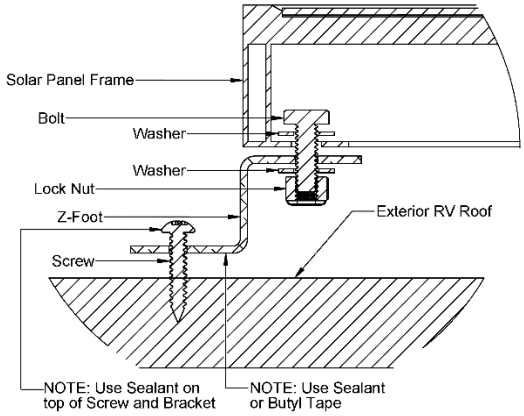


FIGURE 2-C



FIGURE 2-D

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Parallel Connection: Connecting the panels in parallel increases the current of the system, this connection is required for PWM solar controllers. It may also be used for MPPT controllers; however series connection is typically recommended to reduce system voltage drop.

Series Connection: Connecting the panels in a series increases the voltage of the system. This connection method is recommended for MPPT solar controllers.

NOTE If the solar connectors have a locking feature, a tool is required to disconnect them. The recommended disconnect tool (PN 83886) can be purchased from Go Power! | Dometic. Alternatively, needle-nose pliers or two flat-head screwdrivers can be used.

WARNING: The mounting feet must be installed on the 4 outer holes in the panel frame. All 4 mounting feet must be used on a solar panel. Failure to do so could cause the panels to be thrown from the RV.

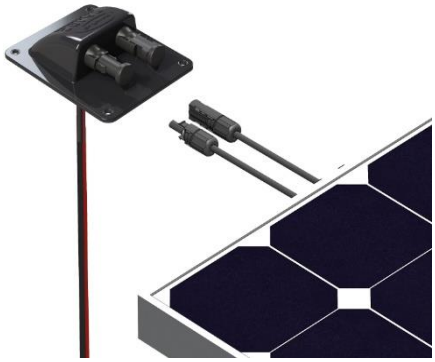


FIGURE 2-E



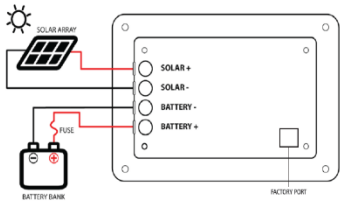
FIGURE 2-F

2.3 SOLAR CHARGE CONTROLLER GP-PWM-SB-30-BT

NOTE

- An inline fuse or breaker with a rating of 30A is recommended in the positive wire. This fuse or breaker should be placed between the solar charge controller and battery and as close as possible to the battery in a positive connection, in an easy to access location (within 18”).
- Wires from the solar controller to the battery should be a minimum of 10 AWG for a 30A Controller.

1. The solar controller is designed to be flush mounted. Make an opening in the mounting location using the template included with the solar charge controller manual and box.
2. Strip the red positive and black negative wires (3/8 of an inch) coming down from the solar panels / CEP.
3. Connect red positive and black negative wires from the solar panel(s) into the center terminals of the solar charge controller and tighten with flat head screwdriver. The top center terminal is positive, and the bottom center terminal is negative. Torque terminals to 16 in lb.
4. Strip the red positive and black negative wires (3/8 of an inch) that will run to the battery compartment.
5. For the battery wires connect the red positive and black negative wires into the bottom terminals of the solar charge controller and tighten with flat head screwdriver. The battery top terminal is negative, and the bottom terminal is the battery positive. Torque terminals to 16 in lb.



NOTE

- Ensure the battery wires are paired, secured together, and run through the same hole as they are routed through to the battery. Both the positive and negative cable should terminate at the battery. This helps to cancel the inductive currents which reduces the amount of electronic noise radiated by the solar charge controller. **Always connect the negative cable to the battery before the positive**.

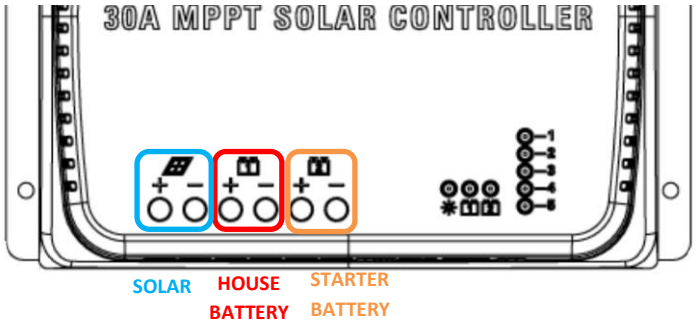
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2.4 SOLAR CHARGE CONTROLLER GP-RVC-MPPT-30

NOTE

- Wires from the solar controller to the battery should be a minimum of 10 AWG for a 30A Controller.

1. The solar controller is designed to mount upright to allow for efficient convection through the cooling fins. Mount the controller on a rigid, non-flammable surface, with no less than 6 inches of clearance between the top and bottom of the controller and any surface. Controller should also be installed in a dry ventilated area.
2. Strip the red positive and black negative wires (3/8 of an inch) coming down from the solar panels / CEP
3. Connect red positive and black negative wires into the left terminals of the solar charge controller and tighten with a phillips head screwdriver. The left terminal is positive, and the right terminal is negative. Torque terminals to 16 in lb.
4. Strip the red positive and black negative wires (3/8 of an inch) that will run to the battery compartment.
5. Connect the red positive and black negative wires into the middle terminals of the solar charge controller and tighten with a phillips head screwdriver. The left terminal is positive, and the right terminal is negative. Torque terminals to 16 in lb.
6. If connecting a separate secondary battery, such as a starting battery, to be charged by solar, repeat step five using the right most two terminals. (If going through engine compartment, 125°C cable will be needed.)



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2.5 SOLAR CHARGE CONTROLLER SC-DB-MPPT

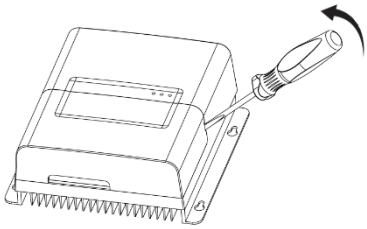
NOTE

- Wires from the solar controller to the battery should be a minimum of 10 AWG for a 30A Controller.

1. The solar controller is designed to mount upright to allow for efficient convection through the cooling fins. Mount the controller on a rigid, non-flammable surface, with no less than 6 inches of clearance between the top and bottom of the controller and any surface. The controller should also be installed in a dry ventilated area.
2. Route the wires from the solar array and the batteries to the location of the SC-DB-MPPT controller. Strip approximately ½ inch of insulation off each of the wires.
3. If a fuse is being used as circuit protection, do not connect to the batteries at this time. If a breaker is being used as circuit protection, batteries may be connected, but ensure breaker is in the off position.
4. Keep the solar array covered with an opaque material until all wiring is completed.

IMPORTANT: All wiring must be in accordance to National Electrical Code, ANSI/NFPA 70. Always use appropriate circuit protection on any conductor attached to a battery.

5. Remove the cover from the solar controller by placing a flathead screwdriver into the slot on the side of the controller. Twist the screwdriver to release the cover.



NOTE

- The wires will be connected with the push-in cage clamps. To do so, lift the orange lever until it is perpendicular with the terminals and insert the wire into the terminal. Push in the wire as far as the terminal will allow. Press down on the orange lever to lock the wire in place. Ensure the wire is securely inserted by pulling back firmly on the wire.

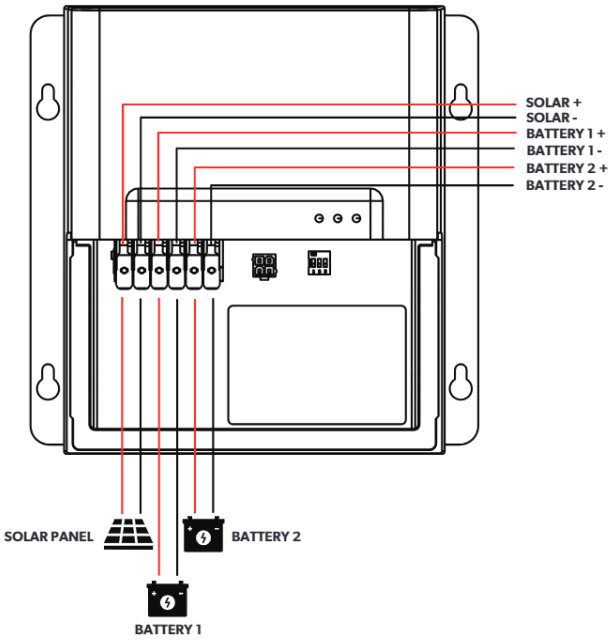
6. Refer to the wiring diagram below or the terminal ID label on the inside of the removable cover for connection details. Connect the main battery to the B1+ and B1- terminals as shown in the terminal diagram. The main battery alone can power on the controller.
7. Connect PV to the PV+ and PV- terminals as shown in the terminal diagram. PV alone can power on the controller.
8. Connect the secondary battery to the B2+ and B2- terminals as shown in the terminal diagram (optional). If going through engine compartment, 125°C cable will be needed. The secondary battery alone will not power on the controller.
9. Place the cover back on the controller.

NOTE

- The controller will not work unless there is a battery connected to the battery terminals with at least 8 V or energized solar panels connected.

CAUTION: Risk of Electric Shock: When the photovoltaic array is exposed to light, it supplies a DC voltage to this equipment.

10. Turn on breakers or connect to batteries in the order of battery 1, battery 2, and PV. The controller will power up and the green LED will start flashing. Remove the opaque material from the solar array.



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INSTALLATION DIAGRAM

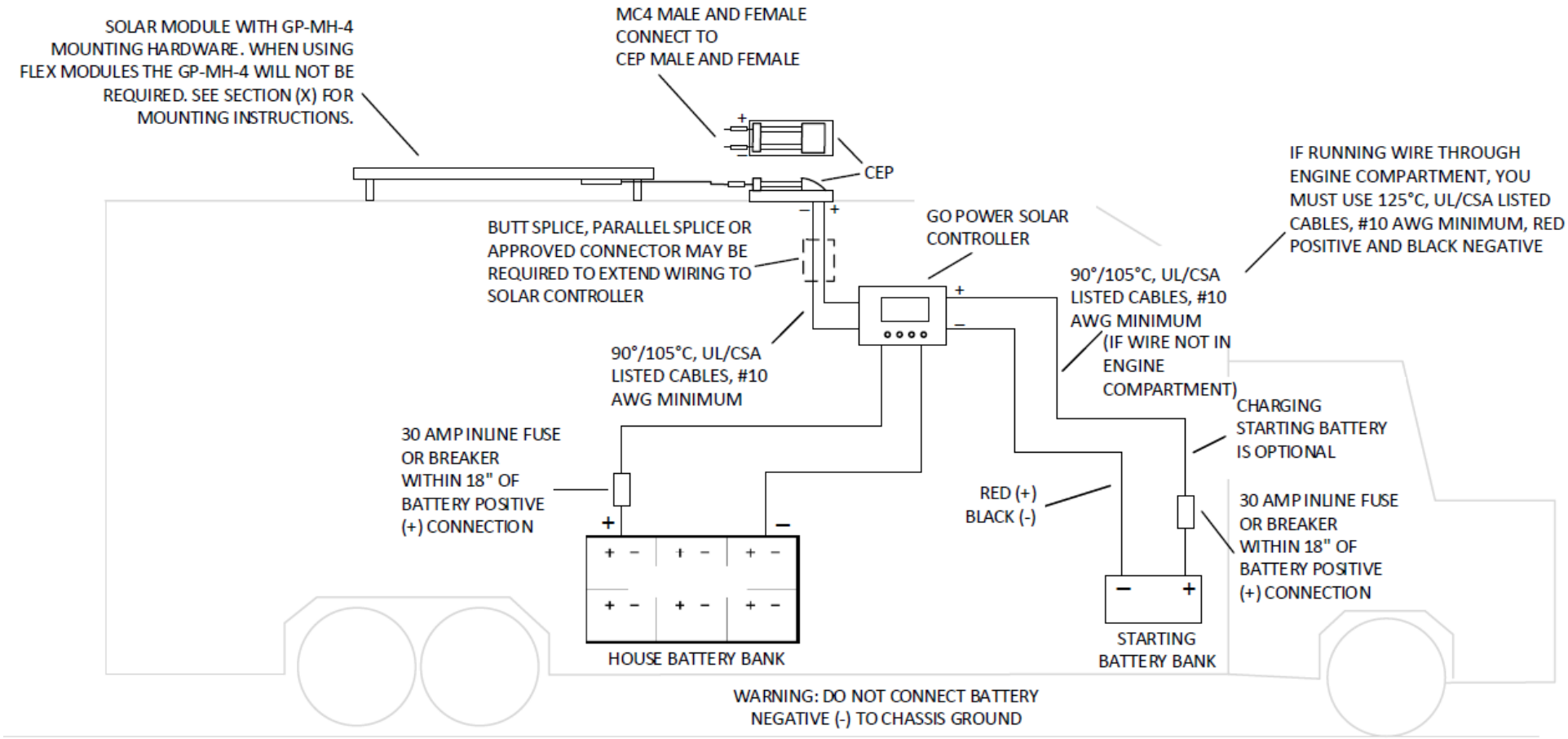


FIGURE 4-A (SOLAR ON BOARD WITH DUAL BANK SOLAR CONTROLLER)

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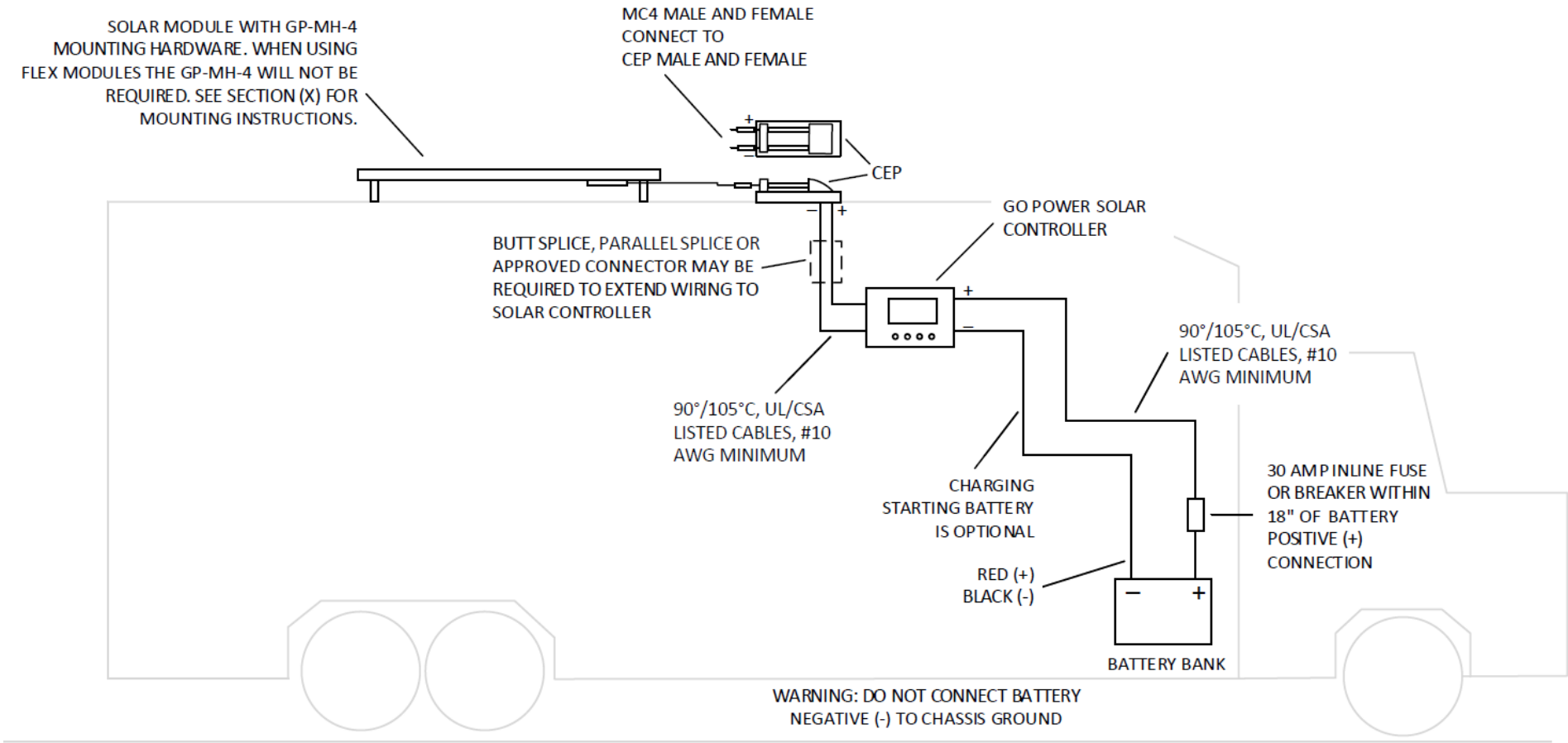


FIGURE 4-B (SOLAR ON BOARD WITH SINGLE BANK SOLAR CONTROLLER)

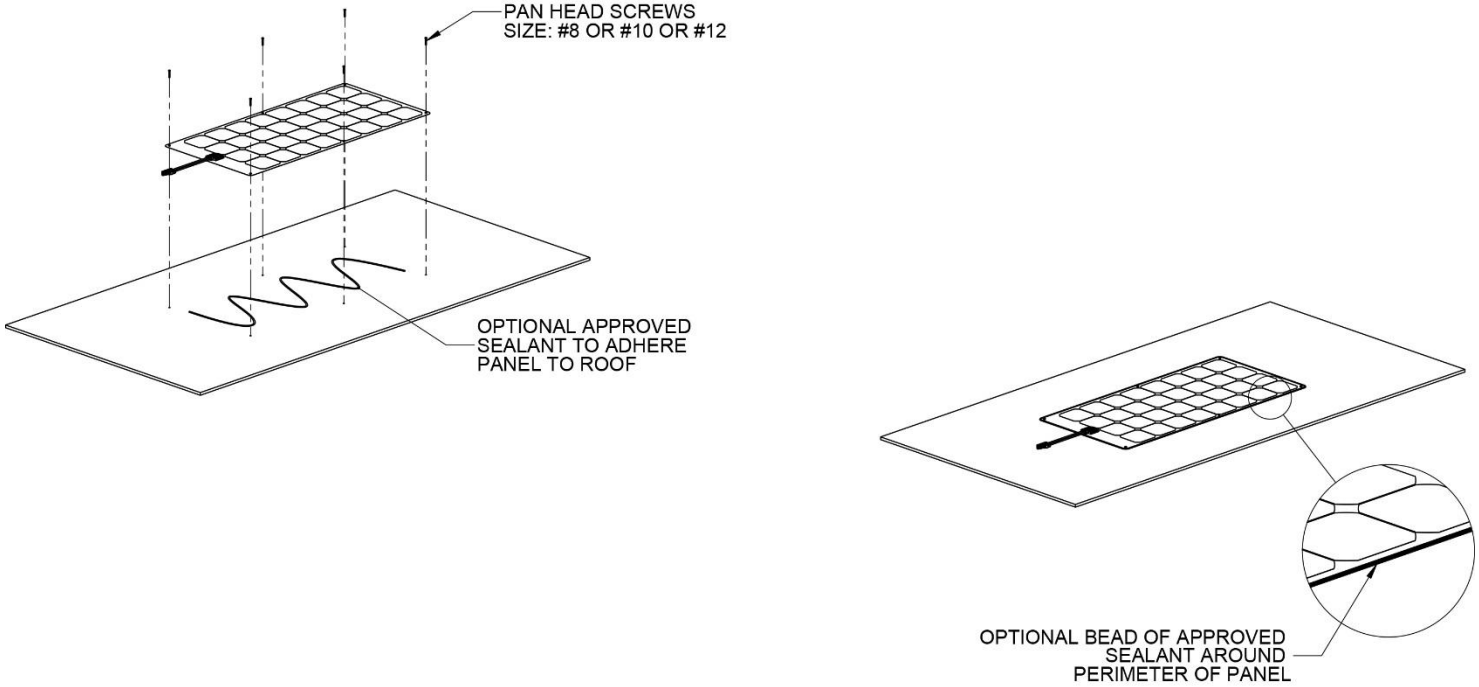


FIGURE 4-C (SOLAR ON BOARD SOLAR FLEX INSTALLATION)

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