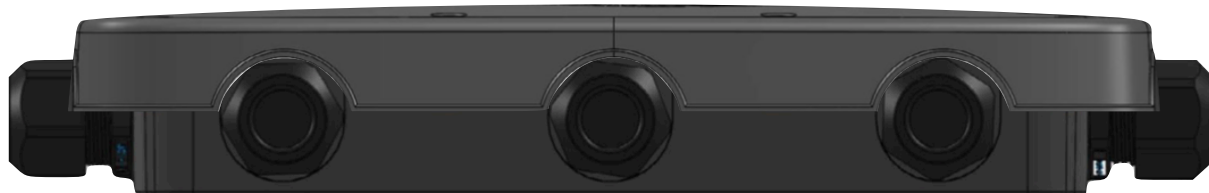
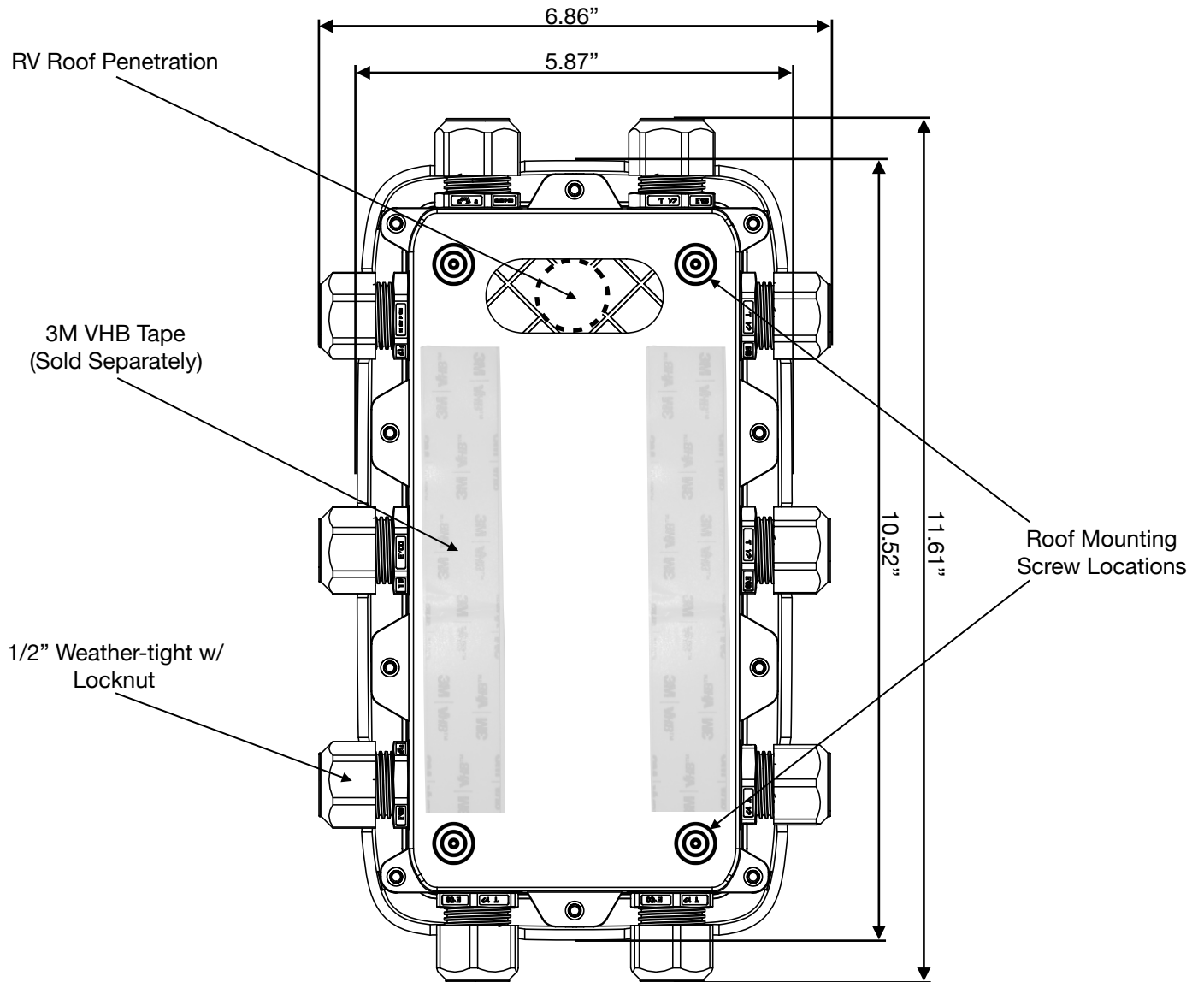
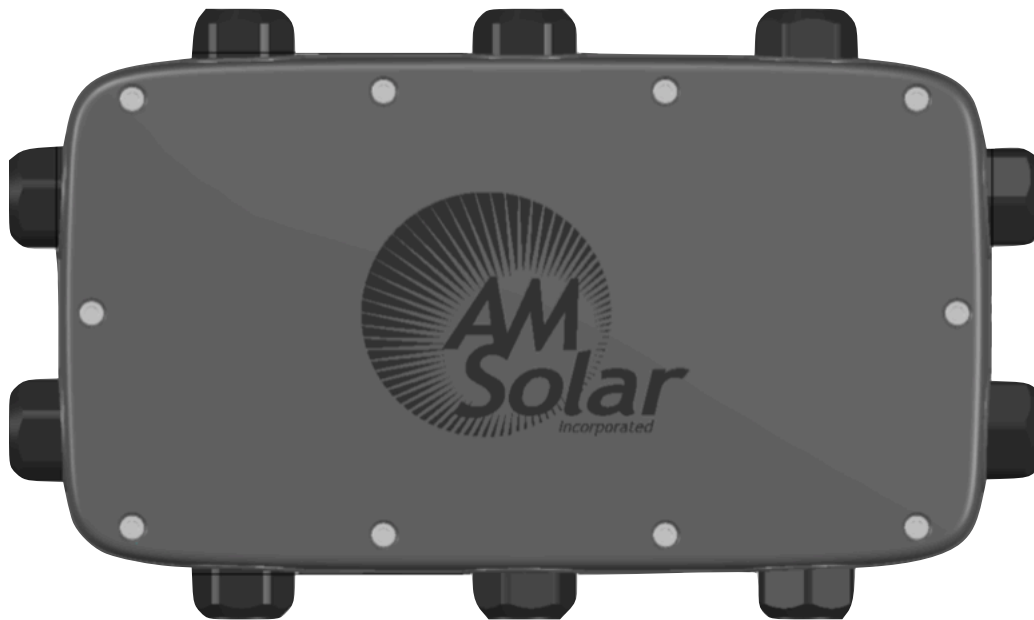


# ROOF C-BOX INSTALLATION INSTRUCTIONS

REV. 200212

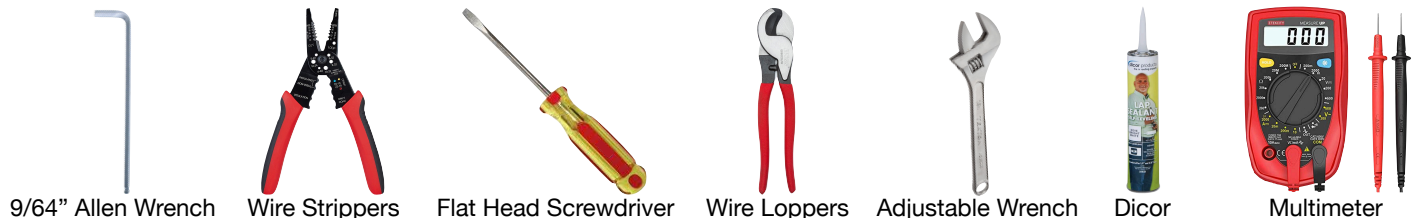


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The Roof Combiner box (C-box) is an AM Solar exclusive design that allows you to provide each solar panel with its own output cable, thereby reducing unnecessary voltage drop associated with parallel panel wiring. It is made of UV resistant plastic, has a rubber gasket inside the lid, and utilizes weather-tight fittings to protect against moisture reaching the electrical connections inside.

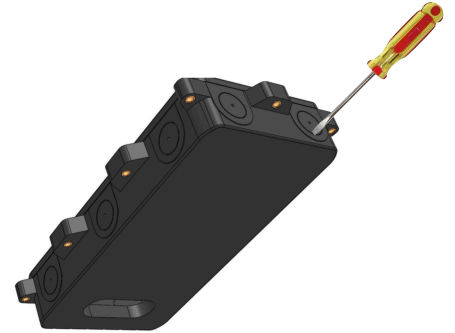
### What you will need:



**Placement:** Once you've determined the layout of your solar panel(s) and identified the path for the wiring through the roof, you're ready to choose the best location for the C-box. Whenever possible, we recommend mounting the C-box on the roof underneath one of the solar panels for a clean and tidy installation, and increased protection from extreme weather conditions. Avoid placing the C-box on top of rivets or screws in the roof.

**Prep & Installation:** Thoroughly clean the roof surface around the area where the C-box is going to be installed. Recommended: Check with the manufacturer of your RV for approved cleaning products. Drill a hole through the roof using the appropriate hole saw for the cable you're running up from the interior of the rig. For 8/2 cable, use a 5/8" hole saw; for 6/2 cable, use a 7/8" hole saw; for 4/2 cable, use a 1" hole saw; for 2/2 cable, use a 1-1/8" hole saw.

Determine how many and which of the 10 knock-outs you'll need for the solar panel cables. Place a standard screwdriver in the groove near the bottom of the knockout perforation and strike the handle firmly, yet gently with a hammer. Remove knockouts. It may be necessary to shave or file the opening to accept the weather-tight fitting(s). Make sure the weather-tights will fit, but do not install the weather-tights until your C-box has been installed and the sealant surrounding the C-box is cured.



**Note: If you are planning to screw your C-box down on your roof, now would be a good time to pre-drill the Roof Mounting Screw Locations (pictured on Pg. 1), and pre-drill pilot holes in your roof. We recommend using a 1/8" drill bit for fiberglass roofs, and a 9/64" drill bit for metal roofs. It is not necessary to pre-drill pilot holes on rubber or TPO roofs. If you purchased a C-box with VHB tape it is not necessary to screw down your C-box. Do not use VHB tape on rubber (EPDM or TPO), textured fiberglass, or PVC coated roofs.**

Place the bottom section of the C-box on the roof, lining up the oval opening of its base with the hole drilled through the roof, and trace the outline of the box with a pencil. Set aside. Pre-drill pilot holes using a 1/8" drill bit for fiberglass roofs, or a 9/64" drill bit for metal roofs. It is not necessary to pre-drill pilot holes on rubber or TPO roofs.

Bring about 10" of the interior cable (8/2, 6/2, 4/2, or 2/2) up through the hole in the roof. Use a knife to gently score the seam (about 4") between the positive and negative leads and carefully pull/separate them for connection to the busbars later. Use the putty tape provided to seal up the hole in the roof by wrapping it around the insulated portion of the remaining wire and placing it into the hole.

#### **For Rubber/TPO & "Textured" Fiberglass Roofs ONLY:**

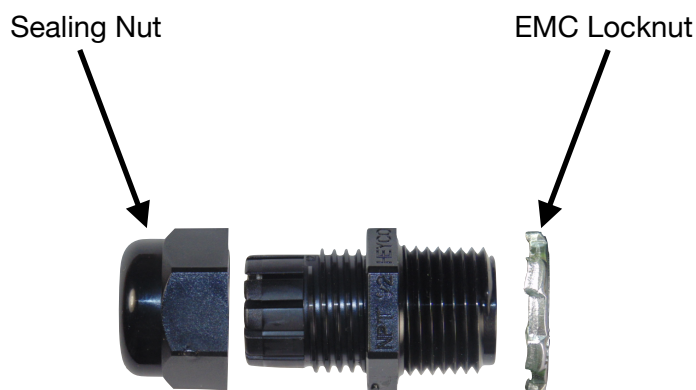
Using the penciled outline of the C-box on the roof, apply Dicor (or other appropriate self-leveling sealant) around the inside edge of the C-box outline you drew on the roof. Also apply Dicor around the oval opening on the back of the C-box. Carefully line up the C-box over the sealant, atop the outline, and press down gently until you see a bit of the sealant beading up around its base on the roof surface. Attach the C-box to the roof with the four #10 screws provided. Apply sealant all the way around the base of the C-box. Fill the reservoir around the solar wire coming up through the C-box from the roof with Dicor (or other appropriate self-leveling sealant). The putty tape will act as a dam, preventing the sealant from leaking into the roof cavity. Install weather-tight fitting(s) into the knock-out hole(s) and secure with locknut(s).

### For “Smooth” Fiberglass & Metal Roofs (Taped option):

If you ordered the taped C-box option, you should see two 5” strips of VHB tape on the back of your C-box. Apply Dicor (or other appropriate self-leveling sealant) around the oval opening on the back of the C-Box. Remove the backing from the tape and set your C-box over your penciled outline of the C-box. Firmly press down with even pressure for 45 seconds to allow the tape to bond between the C-box and the roof. Fill the reservoir around the solar wire coming up through the C-box from the roof with Dicor. The putty tape will act as a dam, preventing the sealant from leaking into the roof cavity. Seal around the base of the C-box with Dicor. Install weather-tight fitting(s) into the knock-out hole(s) and secure with locknut(s).

### Weather-tight Installation:

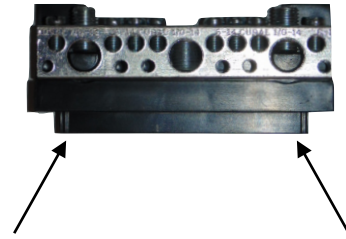
1. Remove the flat metal EMC locknut.
2. Remove the sealing nut.
3. Insert locknut side of threads into prepped knockout of C-box.
4. Thread the EMC locknut back onto the weather-tight.
5. Use the provided wrench (or your own) to tighten the weather-tight. The fitting should be snug. Do not over-tighten as this can strip the threads.
6. Reinstall the sealing nut 2 turns.
7. Strip 10/2 cable back about 10 inches.
8. Insert 10/2 cable through the weather-tight until sheathing comes through.
9. Tighten the sealing nut with a wrench until snug. Do not over tighten as this can distort the rubber seal.



**Connections:** The busbars can be mounted inside the C-box in various configurations. Use whichever configuration that you believe will work best for you and your setup. See the pictures below for a few examples. Strip about 1/2” off of the positive and negative leads coming up through the roof and connect them to the appropriate busbars.



**Note: Cable larger than 6 gauge has a tendency to be stiff, and may cause the busbars to lift out of their slots when the C-box lid is off. When using cable larger than 6 gauge, we recommend supergluing the busbars down in the C-box. Place a small amount of superglue on each end of the busbar, press down in the desired location, and hold for 30 seconds. We have not found it necessary to use superglue when using 6 gauge cable or smaller.**



Next, each solar panel cable (round, grey 10/2) is connected to the C-box through one of the ten knockouts using a weather-tight fitting. Once you have lined out the path of the solar panel cable to the C-box and secured it to the roof, strip back about 6" of the jacketing from the cable, exposing the insulated positive (red) and negative (black) leads. Insert these into one of the weather-tight fittings until approximately 1/2" of the grey jacketing comes through the fitting, then tighten. Strip about 1/2" of the insulation off of the red and black leads\* and connect them to the corresponding positive and negative busbars. After all of the wire connections are complete, attach the C-box lid and screw it to the base using the 10 retaining screws installed in the lid.

***\*We recommend that you confirm the polarity of these conductor leads with a handheld voltmeter prior to making the final connections at the busbar. This will save you a good deal of time and frustration in the event that you inadvertently reversed the polarity when wiring up the solar panels.***



Finished C-box