



Installation Instructions

What is included in The RAQ Solar Mounting Kits?

SR-3000 Includes

Self squaring 3 Panel Rails with adjustable panel clamps, adjustable anchor bases, flashing and all hardware to assemble

SR-1000 Includes

Self squaring 1 Panel Rail, with adjustable panel clamps, adjustable anchor bases, flashing and all hardware to assemble

SR-0700 Start Bracket Kit

For a stand alone unit or to start a row, and grounding for stand alone or row of rails (up to 18 max.)

SR-0400 Additional Wind Zone Kit

4 additional flashing, 4 adjustable anchor bases, end clips and all hardware to assemble.

SR-0900 Micro Inverter Bracket Kit

3 Micro inverter brackets and all hardware to assemble

What will I need to Install The RAQ Solar Mounting Kits?

Safety Equipment:

Ladders, eye protection , hard hats and all fall protection

Tools:

- 1/2" Socket and Driver (with extra charged batteries on hand)
- 3/8" Cold Rolled Drill Bit (incase of odd anchor feet placement, or misaligned rafter spacing)
- 4 1/2" Long Wood Drill Bit (for predrilling lag bolt penetrations)



SR-3000: 126" X 9" X 8.5" 50 LBS
SR-1000: 43.5" X 9" X 8.5" 21.5 LBS



Open by removing strap that is securing box with box cutter



Unpack Contents and verify order is accurate
Familiarize yourself with the various components and
prepare kit for installation



Take all equipment on roof and set up for installation

Cut zip tie on assembly



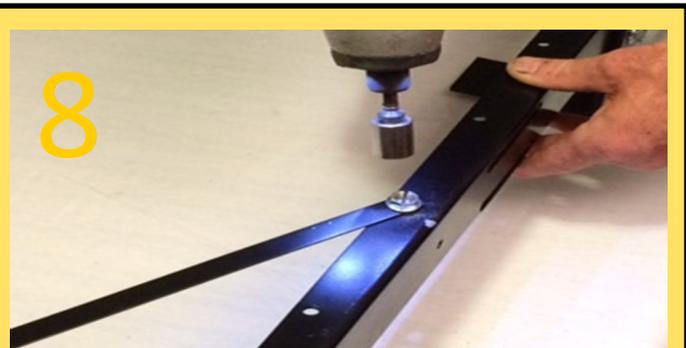
Open the assembly until bi-fold center brace (s) is straight, ensure holes are lined up for securing



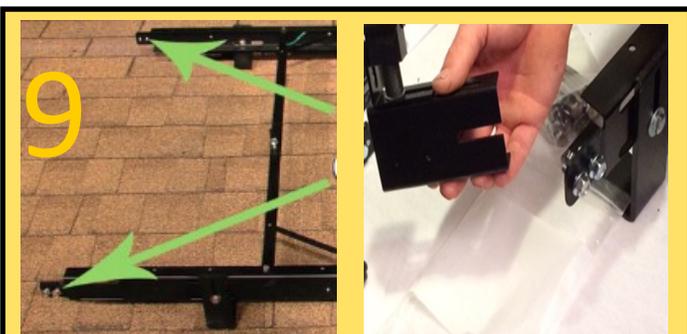
Place T23 Bolt into predrilled hole by bi-fold hinge ensuring it is lined up with the predrilled hole below and tighten.



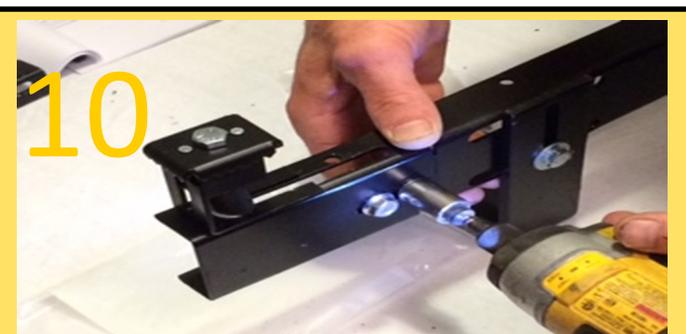
Locate all squaring arms; connected to the underside of cross brace, rotate them out to the point where they naturally land on the top of rail.



Secure all of the squaring arms individually with pre-installed T23, tighten fully by drilling with 1/2" socket it into prepositioned hole.



Locate Start Brackets and attach onto left end
**Remember Start brackets are only used at the beginning of a row (on the farthest left side of the row)or to complete a stand alone unit.*



Using drill with 1/2" socket, secure by tighten bolt fully.
**Remember Start brackets are only used at the beginning of a row (on the farthest left side of the row)or to complete a stand alone unit.*

11

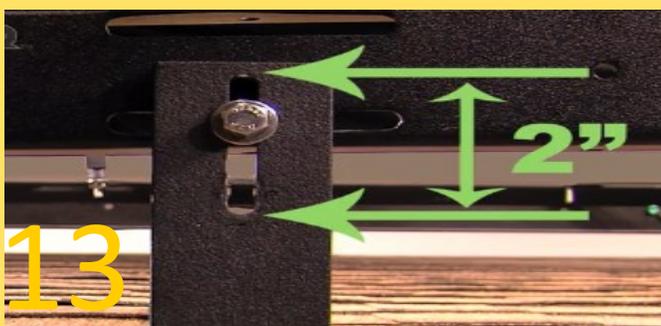


Before we secure rail (s) into roof we must be aware of a few things. First, anchor bases will always point up to the peak of the roof. Secondly, placement of pre-installed anchor bases may need to be relocated (depending on rafter spacing on roof being installed onto and wind and snow load capacities) . Preassembled anchor base spacing is set for 24" on center.

12



Now is the time to configure rafter spacing for proper installation of anchor bases onto rail to be lined up with the rafter spacing. *Predrilled holes are placed along the rail based upon, 16", 24", 32", 48', even 72" & 96" spans are available.* If rafter spacing does not line up with the preassembled holes available feel free to drill a hole (s) using cold rolled drill bit . Keep in mind this reduces self-leveling abilities so please ensure placement before hole is drilled.

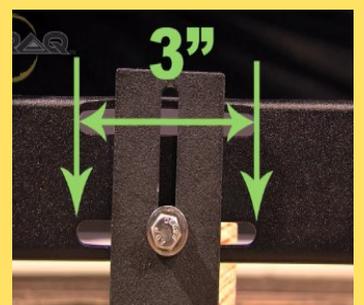


13

Keep in mind: The anchor bases also allow for vertical adjusts to compensate for variances in roof levels, while maintaining minimum height distance from roof to the bottom of the solar panel



14



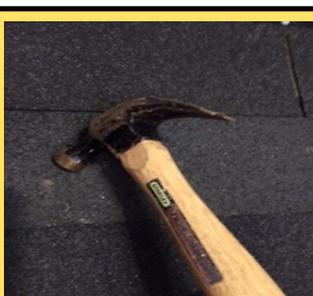
Keep in mind: The prepositioned slot available on the rail allows for up to 3" of adjustment of the anchor foot left or right, to compensate for most of all adjustments due to roof rafter spacing. Placement of the bolt for securing onto rail always goes in lower slot.



15

If combining RAQ's into a row now is the time to interconnect the rails. *(If you are only building a stand-alone unit you may move on to next step)* Connect together by sliding male end into female end of rails. Tighten attached bolts completely with a driver and 1/2" socket. As many as 18 PV's can be assembled in a row before you must start a new row. *(Only 1 start bracket kit needed per row).*

A second row requires there is proper spacing between rows, (generally 27" when using the standard 60 cell panel)



16

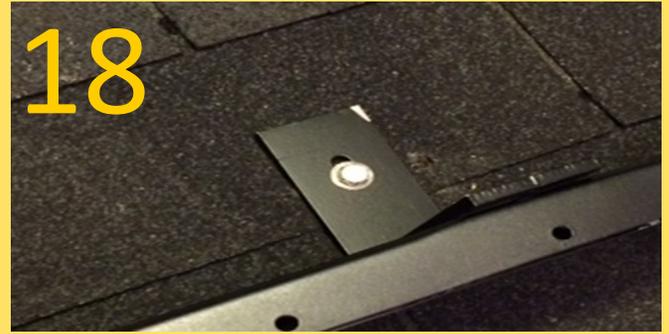
Next we must locate the roof rafters. An industry standard way to locate roof rafters is to utilize a hammer and strike the roof while listening for sound differences.

If the rafter is missed when predrilling minor adjustments can be made to properly locate the rafter, these small adjustments will be protected by the anchor foot flashing to be installed later or you can use roofing caulk to seal the unused hole.



17

Once the rafter location is determined based on your installation layout configuration predrilled holes should be made with the 4 1/2" drill bit in the location where anchor bases will be installed into roof rafters. *Note: Anchor bases may need additional adjustments off the rail before they line up with rafters.* Start from the top work your way to the right, then below. *If you have a second row below be sure there is proper spacing between rows, (generally 27" when using the standard 60 cell panel)*



18

Once the anchor foot has been properly bolted to the roof rafters water protection or roof flashing can be placed. Unlike the majority of other racking systems, The RAQ, uses a Mechanical method of water proofing, not a chemical protection.



19

Begin by inserting the flashing under the shingle line above the anchor foot location. Continue to rotate the flashing under the shingle line until it is fully seated over the anchor foot. Once flashing is seated over the anchor base bend the tabs to secure the flashing around the anchor foot. *If you have a second row below be sure there is proper spacing between rows, (generally 27" when using the standard 60 cell panel)*



20

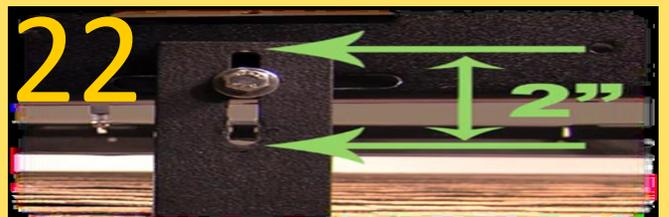
Each RAQ comes with pre drilled locations for the inverters which allows for a multitude of spacing adjustments for cord management. Simply install inverter with the T23 bolt provided. This bolt can be moved to any predrilled location in the main rail. Once placement is established set bolt but do not tighten. Slide the inverter under the bolt, then tighten the bolt to hold the inverter in place, the inverter may be positioned on either side of the rail . *Connect inverter cables to inverters according to manufacture suggestions.*

A zip tie is also included for cable management to be run down inside of C Channel.



21

Leveling the racking for multiple units in a row usually requires the installer to view the array from the ground to determine if it is level based on aesthetics. Please use a tape measure, string line, and a discerning pair of eyes to make certain the array looks good from every angle.



22

To adjust leveling simply locate the anchor base that need adjusting and modify anchor base till it is flush with the roof surface.

Note: Occasionally, one side of the installation may be more visible

Next prepare PV 's to be installed on leveled racking



Starting from the top row, from left to right, place the #1 PV module in the portrait position and place the module onto the 1st RAQ unit (under panel clamps on start brackets) and hold up on right side to attach PV to inverter cables.



Once attached, set PV down and center. Keep in mind: The start bracket panel clamps must be adjusted uniformly; they allow for 3" of variance, determined by installation configuration. Secure upper and lower panel clamps on the left side ONLY. To secure the # 1 PV module, use the ½" socket on the top panel clamp, start by securing the panel clamp on the start bracket side(left). Then slide the panel clamps from the right side to the left thus aligning the panel clamp over the frame of the module. Only secure the panel clamps on the frame of PV module.



Before securing the next set of panel clamps onto 1st PV bring in PV module # 2 onto the next RAQ unit to the right. Install just like #1; by setting and tilting left side of PV in portrait position under panel clamps, attach PV to inverter and set down. Before securing # 2 PV to RAQ be sure it is flush and level with #1 PV. Then secure the 1 & 2 PV module by securing the next set of panel clamps upper first, then lower clamp on panel. Repeat for up to 18 panels before needing to

Leveling the solar array for multiple units in a row requires the installer to view the array from the ground to determine if it is level; based on aesthetics. Visual examination after PV's installed adjustments made based on installers eye to judge what anchors need to be adjusted.

Occasionally, one side of the array may be more visible from the ground or even from a second-story window. Continue using tape measure, string line, and a discerning pair of eyes to make certain the array looks good from every angle.

26

