

Introduction

Designed to minimize your installation labor, the Conergy SunTop IV is a highly versatile and easy to install pitched roof PV mounting system.

You will find below a list of tips and best practices for the Conergy SunTop IV System. These easy tips will help you quickly learn the SunTop IV system and help you take advantage of its time-saving aspects and advanced features.

Thanks, Your Conergy partners

1. Use Anti-Seize Compound

Stainless steel fasteners are notorious for seizing (galling), especially if power drivers are used to turn the fastener at high speed. Conergy recommends applying appropriate anti-seize compound to all stainless steel components during the assembly and installation process.

2. Quickstones

The patented Quickstone technology is key to the speed and ease of a SunTop IV installation - and luckily it is easy to learn how to use. The Quickstone is a specially designed, proprietary nut that is used throughout the SunTop IV system. Tips 'a' through 'd' will help you use the Quickstone most efficiently. The following tips apply only to those items whose Quickstones are inserted into the rails: Module clamps (mid and end), roof attachments (L-feet and/or all tile roof hooks), rail attachments which may be used to attach items such as microinverters or other system accessories.

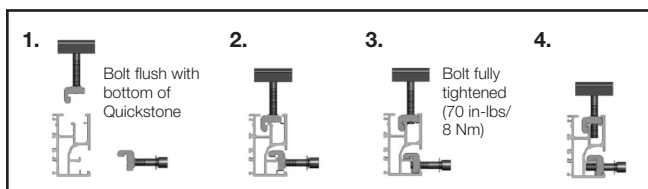
A unique feature of the Quickstone components is that they may be inserted anywhere along the length of the rail. Once inserted, two or three turns of the bolt lock the Quickstone into the rail channel, but the component can still be moved for final positioning before being fully tightened.

a. Flush the Quickstone Bolt

Make sure the bolt is flush with the Quickstone before attempting to insert the Quickstone into the rail as shown in the illustration below. If the bolt protrudes below the Quickstone, it can not be properly inserted into the Quickstone channel in the rail.

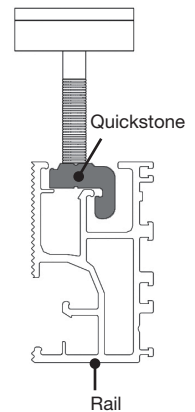
After the Quickstone has been inserted into the rail as shown, turn the bolt 1-2 times to secure the Quickstone in the rail channel. This will allow the Quickstone and component assembly to slide along the rail channel, enabling positioning of the component as desired while preventing the assembly from detaching completely from the rail.

Once the component is positioned as desired, fully tighten the bolt to 70 in-lbs / 8 Nm.



b. Quickstone Orientation

The Quickstone must be inserted into the Quickstone channel in the proper orientation. As you can see in the illustration to the right, the vertical fin in the Quickstone channel has a small "hook". This hook is designed to mate with the matching groove in the Quickstone. And the square side of the Quickstone will then sit in the channel at the top of the SunTop rail.



It will help to note how the Quickstone must be oriented with respect to the rail and be sure each one is properly oriented before inserting it in the channel.

You will easily get a feel for inserting the Quickstone into the channel then moving it to the side of the rail so that the hook on the rail engages the groove in the Quickstone and the flat side of the Quickstone is properly held in the channel at the top of the rail.

c. Quickstone Manipulation

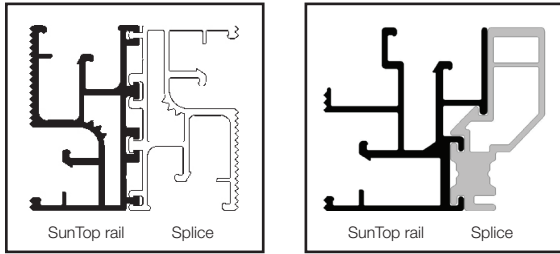
You will quickly discover that when you are installing the rails onto the L-feet or roof hooks, the heavy part of the Quickstone tends to drop into the wrong orientation for insertion into the Quickstone channel. To counteract this, just put the tip of your finger on the side of the Quickstone and roll the heavy part up until it is inserted into the rail channel. It may take a few tries, but you will soon be doing it subconsciously.

d. Stop the Walk

Sometimes, when the Quickstone bolt is tightened, the turning bolt can cause the component to "walk", i.e. move slightly, along the Quickstone channel. This tendency can be significantly reduced by dabbing a bit of the anti-seize compound on the bottom of the bolt shaft. This works even when the bolt has been flushed with the Quickstone. A little dab will do the trick.

3. Things to Do with a Splice

The SunTop IV splices provide full structural integrity across the spliced rail sections. The splice is, in fact, a section of the SunTop rail itself. (Note: the 7/49 rail splice is a different extrusion than the rail but still maintains full structural integrity across the splice.)



Rail and splice assembly for 13/58, 19/63 and 25/65 rails

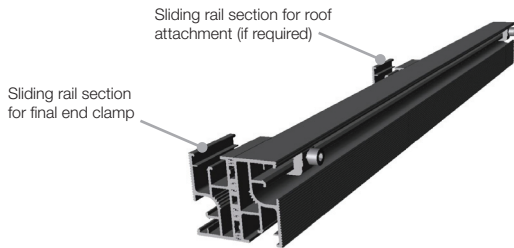
Rail and splice assembly for 7/49 rail

Notice that the splice is installed “upside down” compared to the main rail. The smooth side of the splice faces up.

Because the SunTop splice is structurally the same as the rail itself, it can provide a full-strength thermal expansion joint. To do this, simply install the splice as shown on page 13 of the SunTop IV Installation Manual. As noted in the manual, leave approximately a 1/8” gap between the rail ends for average temperatures. If temperatures are very cold at the time of installation, allow the gap to be a bit larger. Once the gap is where you want it, firmly secure only one of the splice bolts. Leave the other bolt firmly finger tight. This allows the rail end to move as the rails expand and contract with temperature. When there is more than one splice in a rail, be sure to install each splice with the same tight bolt/loose bolt pattern.

4. Telescope Installation

Another unique aspect of the SunTop IV system is the telescoping end piece. The telescope allows you to adjust the rail length to the exact length needed without ever having to cut a rail – or your fingers – or clean up shavings, scrap perfectly good aluminum or replace a rail that your trainee cut an inch and a half too short.



The telescope can be used on either end of the rail. When unpacked, the telescope will have one of the two short sliding pieces of rail secured flush with one end of the telescope. This is the end that will hold the final end clamp on the rail. If it is desired to have the end clamp at the other end of the telescope, simply slide the loose rail section to that end and secure it using the pre-assembled bolt and Quickstone at that end of the rail. Loosen the bolt securing the previously flush end so that it can now slide to accommodate the roof attachment if required.

Note that the sliding rail sections should be lined up with and be oriented the same as the main section of the rail. This will then allow the telescope’s rear ridges and grooves to mesh with the rail and slide to the desired length. Once adjusted to the proper length, the corresponding preassembled bolts can be tightened to secure the telescope and end clamp sections in place.

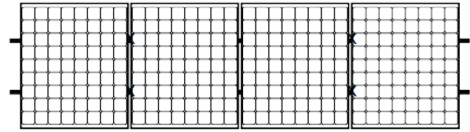
5. Grounding and Bonding

Conergy recommends the use of Wiley Washer, Electrical Equipment Bond (WEEB) clips, SunTop rail lugs and SunTop bonding jumpers for electrically bonding the SunTop array. The Wiley WEEB-CMS is expressly designed to work with the preassembled SunTop module clamps.

WEEBs electrically bond the modules to the rails. The diagram below shows the proper installation of the WEEB clips.

WEEB-CMC LAYOUT

EVEN NUMBER OF MODULES IN ROW

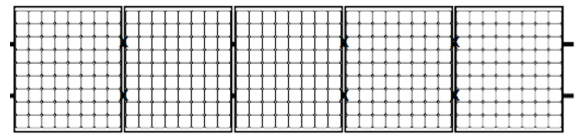


X DENOTED PLACES TO INSTALL WEEB-CMC

$$CXR = 4 \times 1$$

$$WEEB-CMC \text{ NEEDED} = CXR = 4 \times 1 = 4$$

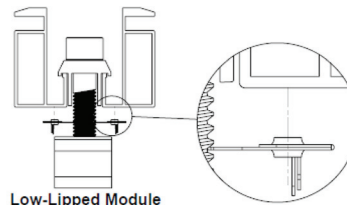
ODD NUMBER OF MODULES IN ROW



X DENOTED PLACES TO INSTALL WEEB-CMC

$$CXR = 5 \times 1$$

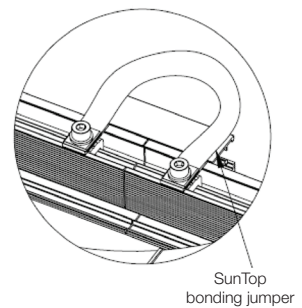
$$WEEB-CMC \text{ NEEDED} = [C+1]XR = [5+1] \times 1 = 6$$



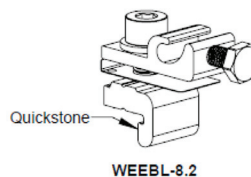
Low-Lipped Module

The WEEB clips snap in place on the SunTop IV module clamp bolts. Be sure that the WEEBs are installed between the bottom of the module and top of the SunTop rail as shown at left.

Many AHJs will not approve a rail splice as a reliable electrical bond. This is certainly the case when the splice is used as an expansion joint. The SunTop bonding jumper is designed to provide electrical continuity across the spliced rail joint. The SunTop bonding jumper is preassembled with a robust conductive strap, Quickstones and WEEBs for fast, easy installation. Proper installation of the bonding jumper is shown at right.



SunTop bonding jumper



WEEBL-8.2

The final step in grounding your SunTop array is connecting the electrically bonded modules and rails to the ground electrode. To do this, use the SunTop rail lug, designated WEEBL-8.2, shown below.

Technically, only one WEEBL-8.2 is required for each pair of rails as the modules serve to provide a robust bond between the rails. Some AHJ’s insist that each rail be connected with #6 copper wire. The WEEBL-8.2 is also preassembled with a lug, Quickstone and WEEB for fast and easy assembly. The bolt that secures the copper wire should be tightened to 7 ft-lbs.