SOL ATTACH, LLC

COMPOSITION MOUNT WITH

LEADING EDGE T-CLAMP AND

INTEGRATED GROUNDING

INSTALLATION MANUAL

SOL ATTACH

Patented

*Your **sol**e supplier for residential solar mounting solutions*

We are grateful you have chosen our Sol Attach product for your tilted roof solar needs. We believe you will not only find that our product is the most economical and aesthetically pleasing solution for your company, but also that with these simple instructions will prove our product is the easiest mounting solution on the market.

INSTALLER RESPONSIBILITIES:

To be assured that the Sol Attach mount is used correctly, it is necessary that installers follow these guidelines. To disregard them will void the limited manufacturer's warranty and may prove hazardous.

1. Have the system designed by a qualified professional who takes into consideration snow load, wind speed, necessary pull out strengths of fasteners, types of substrates, and structural integrity of the building to which the array is being mounted.
2. It is incumbent upon the installer to perform a pre-installation inspection of the building roof structure and to insure that it is sound and adequate to support the weight of the array and that the Sol Attach mount chosen is the correct product for the job. It is also the installer's responsibility to insure that the roof substrate and rafters are in good condition and that the mounting feet are adequately secured to the substrate or rafters according to local and national building codes.
3. The installer is responsible to obtain all necessary building permits and comply with all local and national building codes.
4. Chose and use appropriate sealants and or flashings in accordance with the respective manufacturers' particular instructions and guidelines.
5. Only use parts included with the Sol Attach mount purchased and insure that the Sol Attach mounts have not been damaged in shipping or storage or transit to the jobsite.
6. Insure the mounting feet set flat on the roofing surface. In the event that it is necessary to trim part of the top layer of a shingle so the foot does not rock or set unevenly, it is the installer's responsibility to insure it is trimmed and sealed in accordance with approved roofing techniques and guidelines.
7. Insure that the Sol Attach mounts chosen and installed do not compromise or hinder the proper installation of the photovoltaic electrical system.
8. These instructions do not address wire management. It is the installer's responsibility to secure wiring in accordance with the module manufacturers' instructions as well as local building codes.
9. It is incumbent upon the installation company who installs these components to periodically re-inspect them for loose or corroded components and fasteners, and in the case that such are found to replace affected components or fasteners immediately.

COMPOSITION ROOF MOUNT

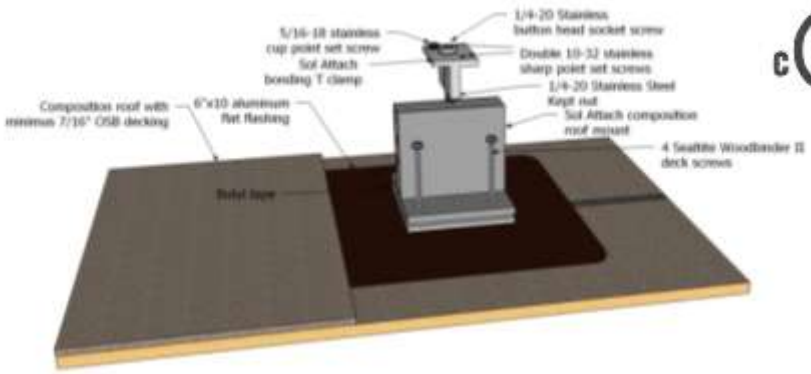


Fig 1

LEADING EDGE T-CLAMP

The Sol Attach Leading Edge T-clamps are designed to attach PV modules to Sol Attach mounts independent to the installation of subsequent mounts. This means that each module is tightened and secured before the next adjacent module is installed, allowing the installer to install each module exactly where they want it to be secured. This eliminates the movement or shifting of modules which often occurs as installers are positioning the next module of a series of modules in a row and therefore insures straighter cleaner installs.

The Sol Attach Leading Edge T-clamp also has integrated bonding to meet the bonding requirements of UL 2703 so as to eliminate running mechanical grounding leads from module to module.

Note: This mounting system was evaluated only for equipotential electrical bonding to the frames of the Suniva PV module model OPT335-72-4-100 silver mono and is intended for roof mount installations only. This racking system may be used to ground a PV module complying with UL 1703 only when the specific module has been evaluated for ground and/or mounting in the compliance with the included instructions.

Preparation of mounts

- Sol Attach mounts can be sealed using either butyl tape, normally provided with each mount, or a quality sealant chosen by the installation company. When using a quality sealant, the installer adds a liberal amount to the bottom of each mount just prior to attaching them to the roof. When using butyl tape, the assistant on the ground prepares the mounts ahead of time following the steps below.
    - The assistant rolls out butyl tape on a cutting surface such as scrap board.
    - A mount is placed onto the tape beginning at the lose end.
      Note: the Sol Attach mounts are 3” long and 3 3/8” wide, therefore it is important to place the line of holes on the mounts parallel with the edge of the tape so that the amount of butyl tape shipped with the order is sufficient for the number of mounts shipped. Press the mount into the butyl tape and cut with a knife (Fig 2).
    - The assistant repeats this process for each mount.

Fig 2

PERIMETER FEET

Mounting hole assembly

A key difference between the Sola Attach system and "traditional" systems that uses end-clamps is that the modules on the perimeter of the array have their mounting feet attached directly to the outer edge of the module frames through the manufacturer supplied mounting holes using ¼-20 x ¾" stainless steel hex head bolts, stainless steel star washers, and stainless steel Kept nuts (figs 3,4, and 5). This negates the necessity of purchasing and stocking various size end-clamps and allows for an installer's assistant to install these feet from the safety of the ground.

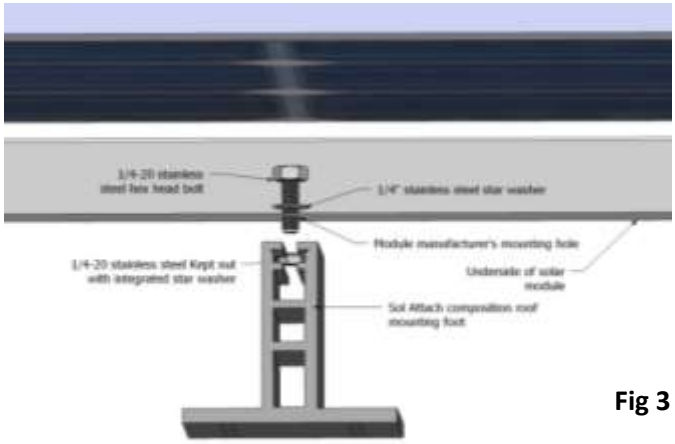
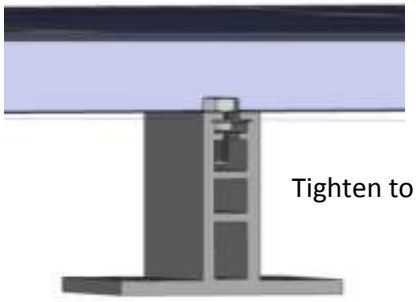


Fig 3



Tighten to 8 ft. lbs.

Fig 4

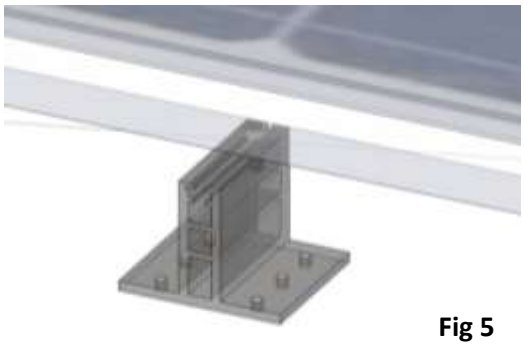


Fig 5

<u>Composition Roof Installation Description</u> (For flashing instructions see last page of this document)

1. Mark the location of the first module on the roof and measure over from the edge of the first module the width of the module plus 3/8" (i.e. 39 ½"). Make a mark opposite the location of the first mounting feet (fig 6). Note: mounting feet need to be at or within 25% of the top and bottom of the module frame ends unless specified otherwise by module manufacturer guidelines.

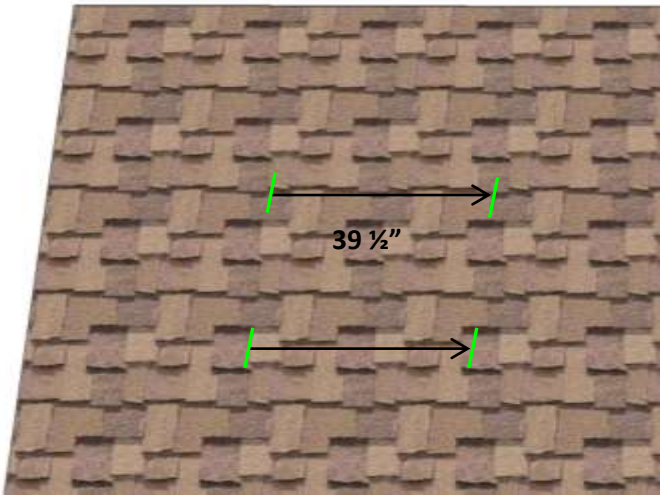


Fig 6

2. Secure first panel with perimeter edge mounting feet to the outside marks from step one with four #10 deck screws provided.

Fig 7

3. Slide a Leading Edge T-clamp assembly with bolts and kept nuts through the top groove of each of the mounting feet opposite the outside edge of the module. Insure that these are snug to the side of the first module and secure them with the leading side (the thicker flange with 2 set screws) of the T-clamp against the module (fig 8). Tighten each T-clamp to 8ft.lbs. so that the two sharp-point set screws bight into the frame, piercing the anodized coating and securing the module tight against the mounting feet (figs 9 & 10).
   Note: The Sol Attach T-clamp two sharp point set screws are set by the manufacturer at .030 from the T-clamp surface and are sealed with Loctite and are not meant to be adjusted by the installer.

SOL ATTACH
LEADING EDGE T-CLAMP

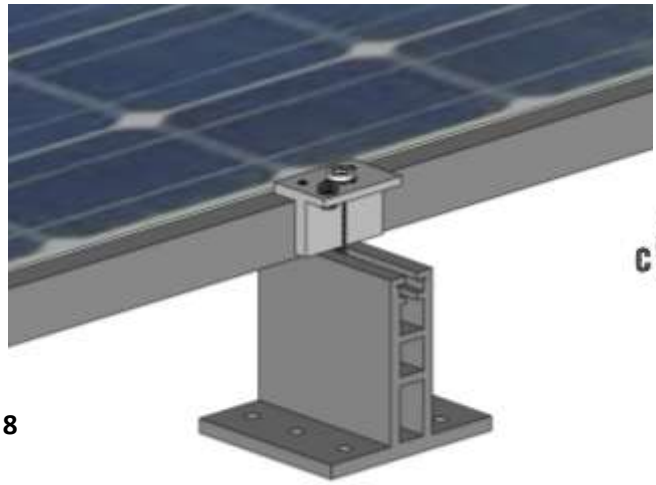


Fig 8

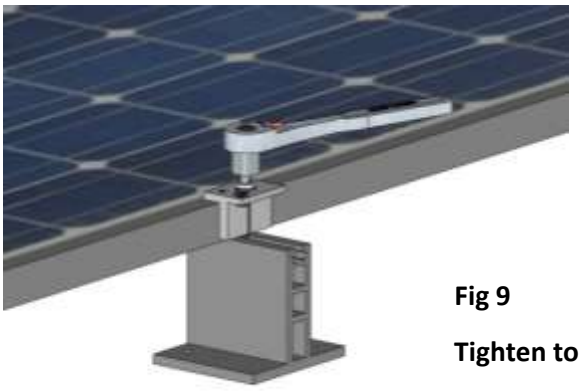


Fig 9

Tighten to 8 ft.-lbs.

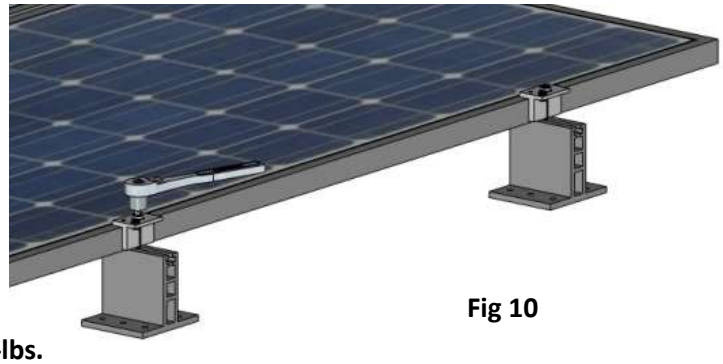


Fig 10

4. Measure over from the frame of the first module the width of the module plus 3/8” (i.e. 39 ½”) and make another mark for each of the next feet making sure to stay at or within 25% of the top and bottom edges of the module frame unless specified otherwise by module manufacturer (fig 11).

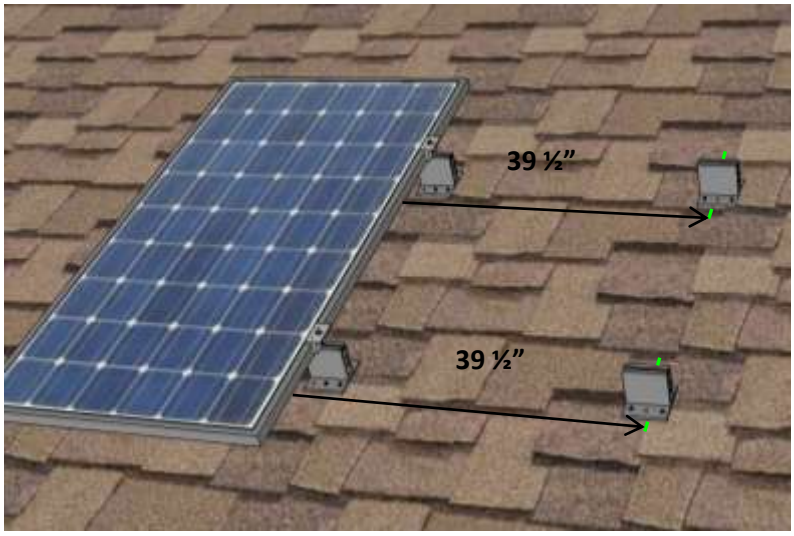


Fig 11

5. Center this set of mounting feet over your marks and seal them with sealant or butyl tape and secure them with four #10 screws for each mount (fig 11).
6. Set the next module on the four mounting feet, sliding it under the thinner flanges of the first set of T-clamps and secure the second module with the T-clamps along the outside leading edge according to directions from point three above (fig 12).

Fig 12

BONDING MODULE TO MODULE

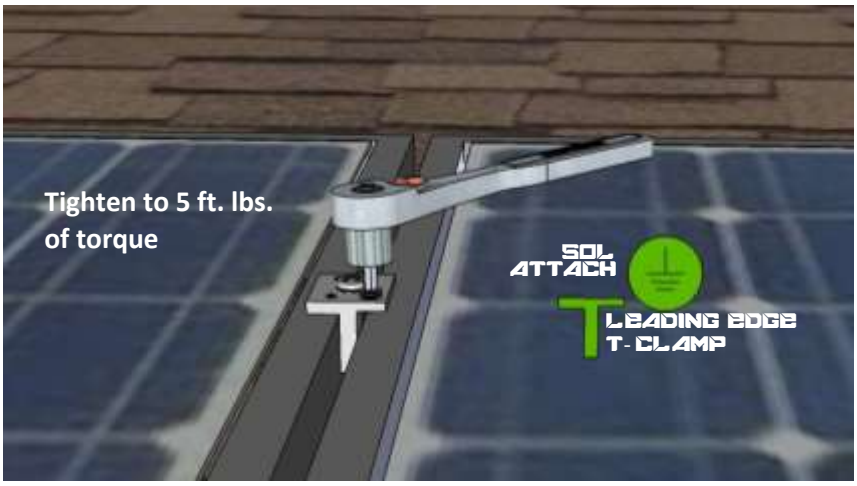


Fig 13

7. Next, tighten each single 5/16-18 cup point screw from the T clamps of the leading edge of the first module into the trailing edge of the second module to 5 ft. lbs. so that it bites through the anodized coating of the leading module (fig 13). This action helps secure the second module as well as bonds it electrically to the first.
8. Continue with each subsequent module following steps 3-7 until you are ready for the final module.
9. For the final module, follow steps 1-7 after securing the final two mounts to the outer frame edge (fig 3) to secure the outside edge of the final module (fig 14).

Fig 14

BONDING ROW TO ROW

10. Row to row bonding is accomplished by running solid #10 copper wire from one row to the next by use of Ilsco SGB-4 lay in grounding lugs, or equivalent UL rated lugs, attached to one mounting foot connected to each end panel per row (Figs 15 & 16). Series over-current protection (fuse) rating for the mounting system is 15A.

Note: In order to maintain equipotential bonding in accordance with the Canadian Electrical Code 64-222(4) and the U.S. National Electrical Code Article 690.43 it is necessary and essential for row to row bonding to be made on both ends of each row between each row.

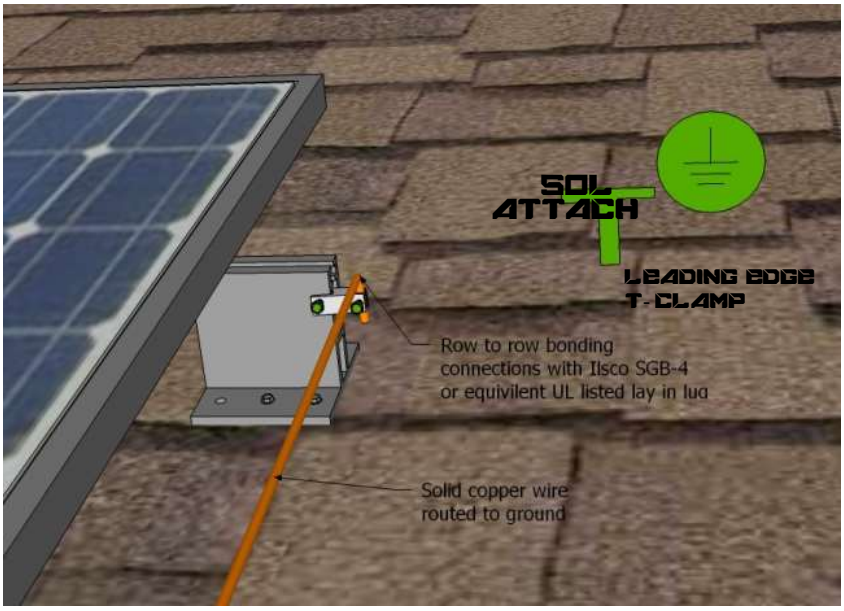


Fig 15

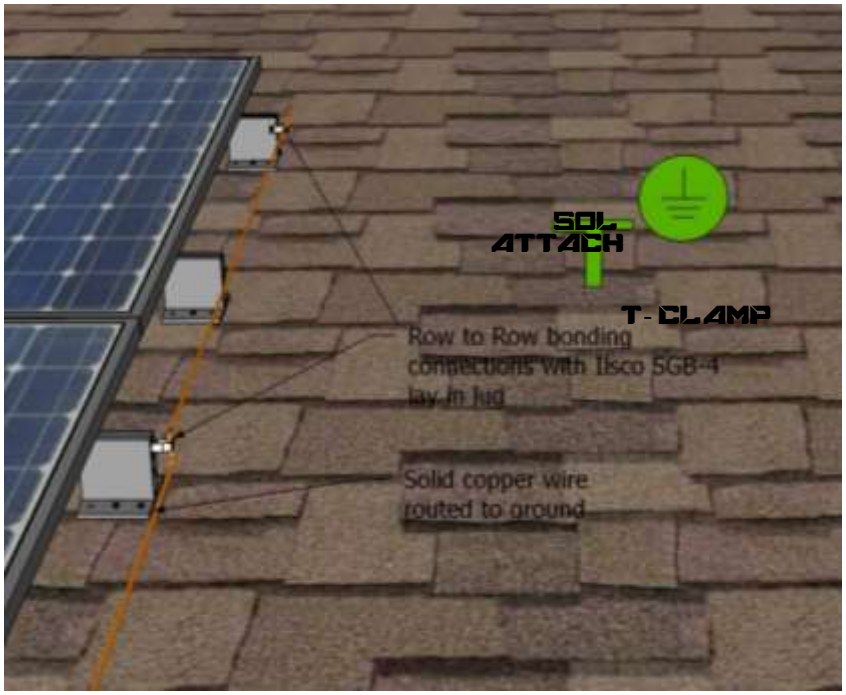


Fig 16

TEMPORARY BONDING CONNECTION FOR ARRAY MAINTENANCE

In the event that a module must be removed from the array, it is necessary to install a temporary bonding connection for array maintenance prior to removing a module.

1. First, before removing a module, reach up under the module and secure a solid copper wire between one set of Sol Attach mounting feet per module using Ilsco SGB-4 grounding lugs (torque to 35 in-lbs), or UL listed equivilent lugs (fig 17).

Fig 17

2. Second, disconnect electrical leads from the module to be removed and the adjacent modules in compliance with the applicabale solar module manufacturer's guidelines.
3. Thirdly, losen and remove the T-clamps from the leading edge of the module. This is the edge which has the two smaller set screws of each T-clamp secured to it (figs. 18 &19).

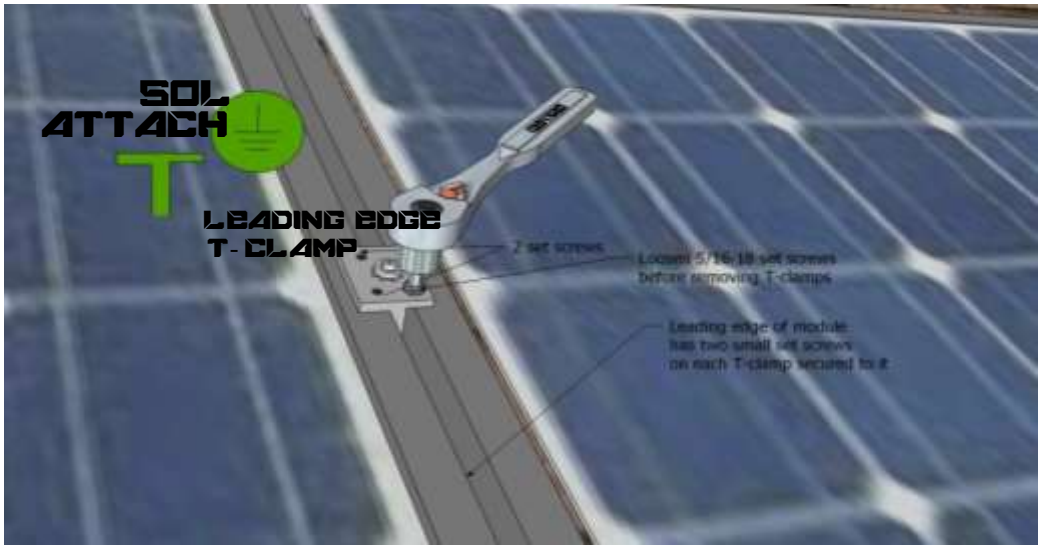


Fig 18

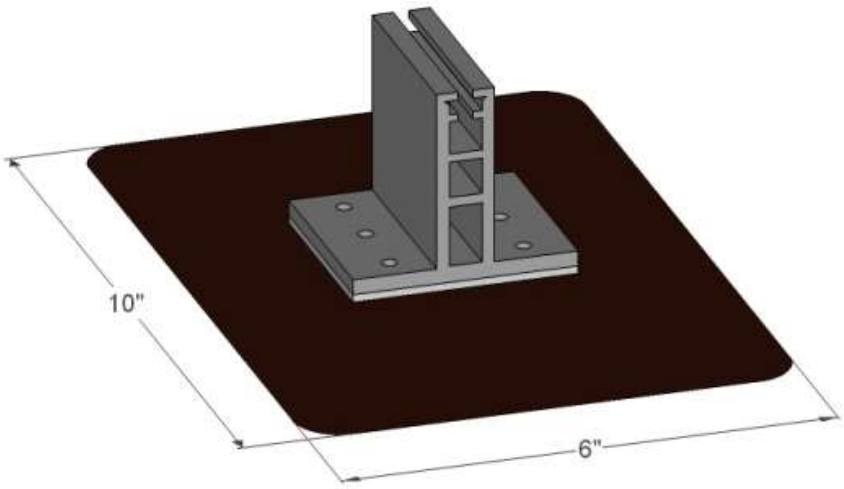
Fig 19

4. Finally, turn the T-clamps removed in previous step 180 degrese and reinstall, insuring the 2 small set screws on each clamp are facing toward the opposite module being secured. Tighten these T-clamps to 8 ft.-lbs. of torque (fig 20).
5. Series over-current protection (fuse) rating for the mounting system is 15A.

Fig 20

Aluminum slip sheet flashing Installation Instructions

When flashing is desired, follow the following simple guidelines for flashing each Sol Attach mounting foot.



1. Locate the placement of each feet on the roof according to solar module mounting instructions (i.e. fig 4).
2. Without damaging the shingle uphill of the position of each mounting foot, carefully peal the above shingle up with a putty knife.
3. Apply a bead of quality sealant to the underside of the flashing on the top and left and right undersides of the flashing. Do not put sealant on the downhill side of the flashing so that any moisture buildup under the flashing will have a means of escape.
4. Carefully slide the sheet of flashing under the shingle uphill of the shingle where the mounting foot is to be installed and press the flashing down against the shingle where the mounting foot is to be installed.
5. Seal the uphill shingle down over the uphill portion of the shingle with sealant.
6. Seal the mounting foot to the flashing with sealant or butyl tape and secure with mounting screws as instructed in the Sol Attach mounting instructions.