



Installation Instructions

S-5!® Warning! Please use these products responsibly! Visit our website or contact your S-5! distributor for detailed installation instructions and available load test results. The user and/or the installer of these parts is responsible for all necessary engineering and design for the intended use of these parts in an assembly or application.

Install clamp. See clamp installation instructions.

1) Place 3" mounting disc on the S-5! Clamp. Secure Universal PV stud through the aluminum mounting disc (Flat stainless steel mounting discs are also available for use with brass systems) into the S-5! Clamp. Using an electric gun and 13 mm deep well socket, tighten universal PV stud to specified tension.

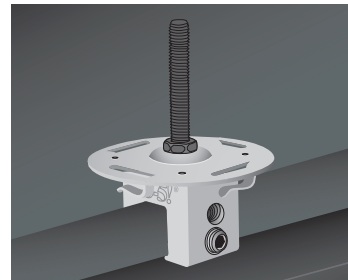
2-3) Install PV frames on top of the mounting disc utilizing the beveled guide to ensure proper placement. Install the universal PV anchor grab to the universal PV stud, with the flanged nut to secure the two PV frames, (See diagram B).

4) Using an electric gun, tighten flange nut to specified tension.

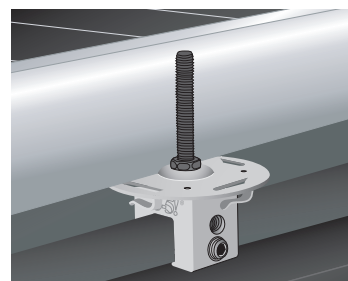
5) For end/edge condition install a second hex flange nut (sold separately), flange side up beneath PV anchor grab. Ensure the arm of the PV grab fully engages module frame before tensioning the top flange nut. Using an electric gun, tighten top flange nut to 100 to 120 inch pounds and verify proper torque is achieved. Using VICE-GRIP locking pliers break off extra PV anchor grab arm by bending toward module frame and then back (See diagram B).

Use the PV Kit for frames depths from 1.3" (33mm) to 2.5" (64mm).

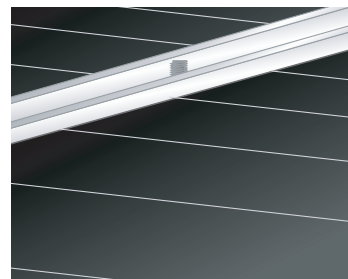
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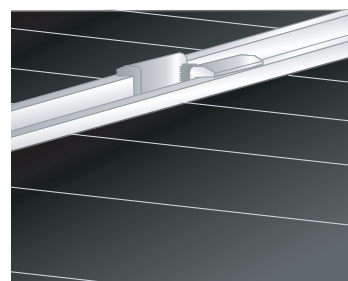
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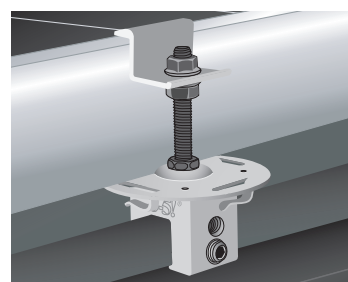
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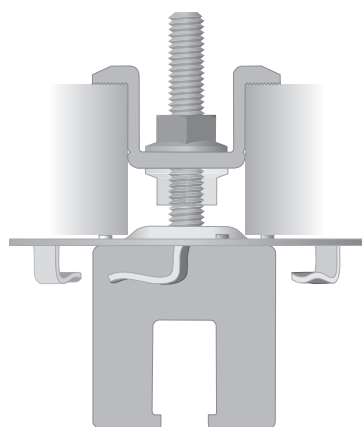
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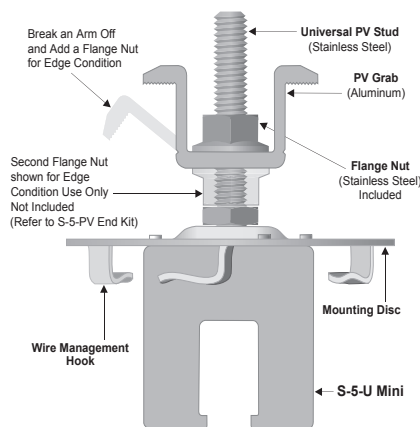
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Field Condition [diagram A]



End/Edge Condition [diagram B]



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S-5!® suggestions for spacing of S-5! clamps for PV assemblies

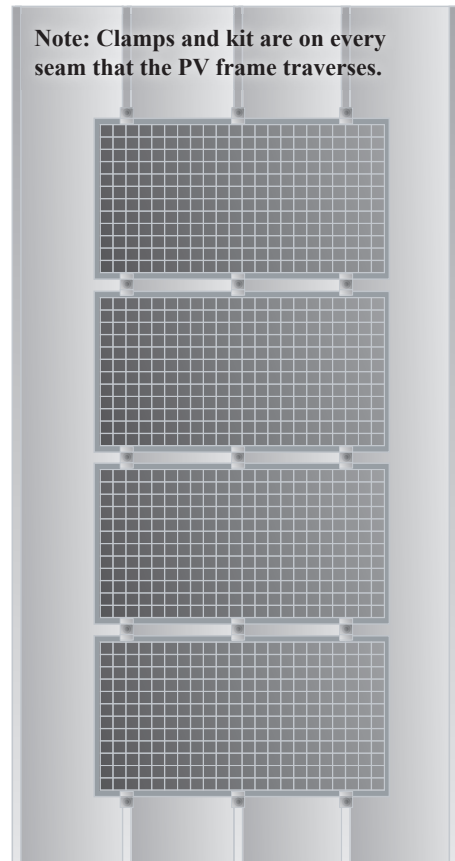
The following suggestions assume that determination has been made that the roof to which the S-5! clamps will be attached is structurally adequate. Any loads imposed on the S-5! clamps will be transferred to the panels. Panel seams must have sufficient flexural strength to carry these loads. Panels must also be adequately attached to the building structure, and the structure must be sufficient to carry these loads. The makers of S-5! clamps make no representations with respect to these variables. It is the responsibility of the user to verify this information, or seek assistance from a qualified design professional if necessary.

The key to frequency and spacing of attachment points for PV frames is to distribute loads to the metal standing seam panels in a manner that is consistent with the intended distribution of loads from the roof panels into the building structure. With very few exceptions, the attachment of a single S-5! clamp to the seam will be stronger than a single point of attachment of the seam to the building structure. Hence the “weak link” is not the S-5! clamp but the attachment clips that hold the metal panels to the building structure, or the beam strength of the roof panel seam itself.

The most conservative approach to the spacing/frequency of PV frame attachment to the roof is to determine the spacing/frequency of the roof’s attachment to the building structure, then duplicate it at minimum. Determining panel attachment spacing in one axis is very simple. Standing seam panels’ attachment will be made using concealed hold-down clips within the seam area of the panel. So, in that axis, the clip spacing is the same as the seam spacing. The location of the clips along the seam (in the other axis) can be determined by a) consultation with the roof system manufacturer or installer, b) checking from the underside or, c) close examination from the topside along the seam. There will usually be a slight, but detectable, deformation of the seam at the clip location visible from the roof’s topside. Many standing seam roofing systems are installed on "pre-engineered" steel buildings. The attachment spacing in that industry is typically 5'-0" and is readily apparent by inspecting the structural purlins to which the panel clips are attached from the roof underside (interior of the building).

If, for instance, the panel clips are spaced 5'-0" on center along the seam, then use the 5'-0" dimension as a maximum spacing for the S-5! clamps. (S-5! clamps may also be spaced at closer centers, but not wider.) When modules are direct attached without racking in the landscape orientation, this spacing dimension is dictated by the smallest dimension of the PV frame. Using the roof panel clip spacing as a maximum spacing template for S-5! clamps is a sound practice, whether the PV modules are attached direct to S-5! clamp or to a racking system and then to the S-5! clamp (and panel seams). To evenly distribute loads, it is also necessary that each seam be involved in the finished assembly. Thus, every time a seam is traversed, it should be attached. Such an attachment scheme should evenly distribute wind loads into the building structure through the panels and their attachment, as was intended in the original roof construction assembly.

Please note these are only suggestions. Wind dynamics are complex, and S-5! advises review of the planned PV frame attachment design by a qualified professional who understands wind effects and metal roof design and construction. Although it is not advised, in certain solar installations a professional may determine that seams may be skipped as points of attachment. This determination must be made by a professional in each specific case.



**Attach almost anything to standing seam metal roofs
without piercing the panel!**