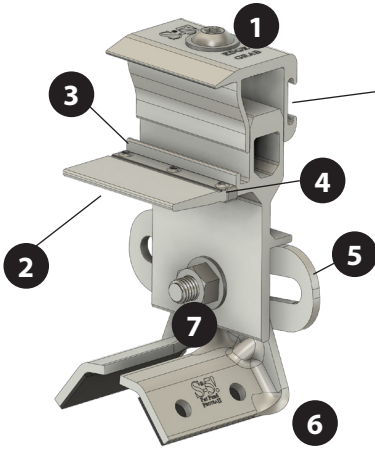
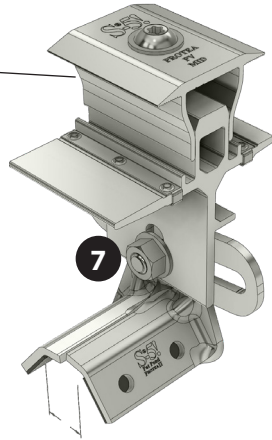


Providing *The Right Way*[™] to attach virtually anything to metal roofs worldwide.

Protea PV EdgeGrab[™]
Single Sided Perimeter Use

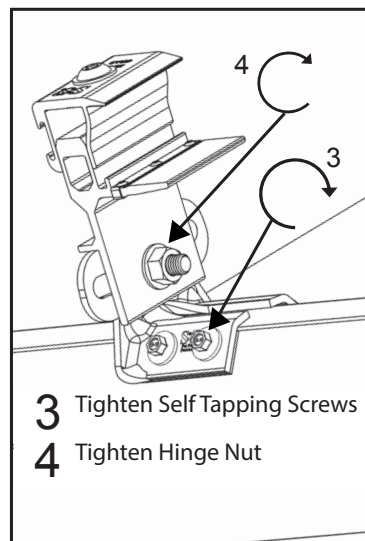
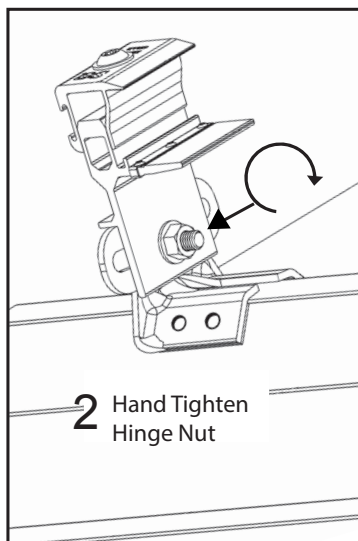
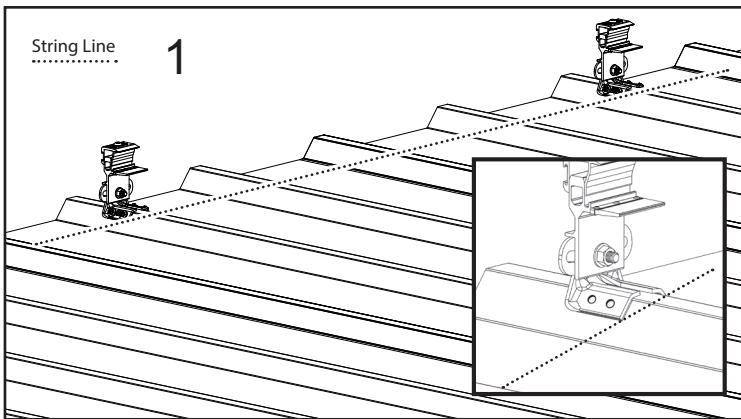


Protea PV MidGrab[™]
Double Sided Between Module



Parts

- | | | |
|--------------------|-------------------------|-------------------|
| 1. T-30 Drive Bolt | 4. Grounding Pad Insert | 6. Bracket Foot |
| 2. Support Flange | 5. Bracket Wing | 7. Hinge Bolt/Nut |
| 3. Backstop | | 8. Grab |



Box Includes

Master Box Qty: 60
1" Self-piercing screws: 250
**Broken-box quantities may vary*

Tools Needed

String Line • Rag • Screw Gun
5/16" (8 mm) Drive Socket
13 mm Open-end (Spanner) or Socket Wrench
T-30 Torx Bit Tip (provided)
Calibrated Dial Gauge Torque Wrench

Preparation Work

The entire working roof surface must be clean and dry. If oil/grease is detected, use soap and water or the roof manufacturer's recommended cleaner; allow to dry.

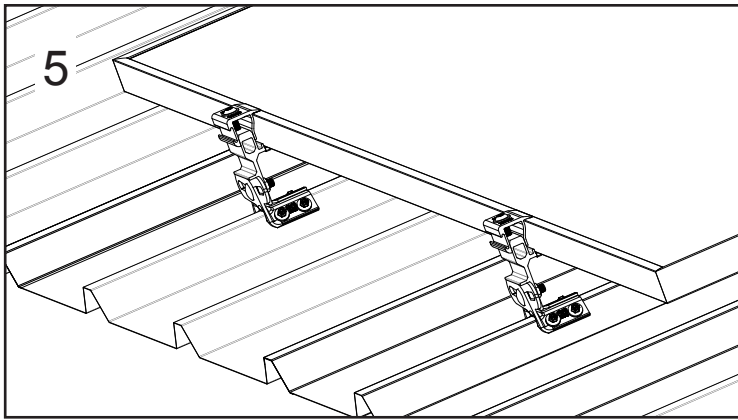
Start by installing all first-row brackets to ensure proper alignment.

Installing Brackets

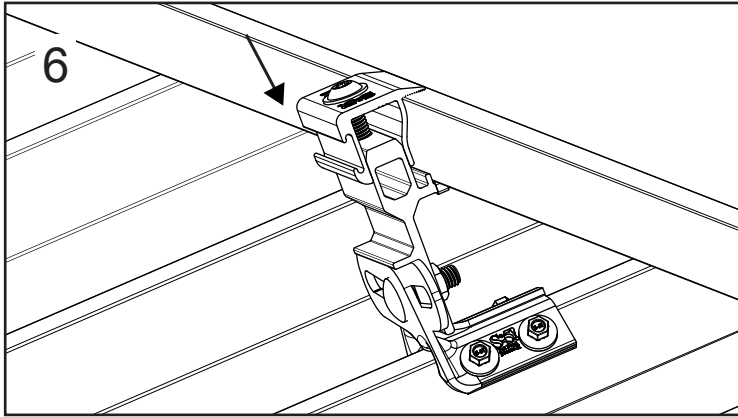
Lower/1st row

- 1.) Important step!** Establish the width of the solar array and mark the first row beginning and ending points on the roof. Use permanent marker (not pencil) to make a 'mark' equal distance up from the roof eave. This will become the lower edge of the solar array's first row. Alignment of the entire system is established by using these two marks **Fig 1**.
- 2.)** Locate the first and last bracket in this row to establish a string line. With the hinge bolt finger tight, remove the release paper protecting the EPDM adhesive strip, and place the Protea PV onto the panel rib with its foot facing upslope **Fig 2**.

While holding the bracket in position, install the 1" Self-piercing screws, being careful not to over tighten. Install the four screws in a criss-cross pattern (R,L,R,L) in the pre-punched hole locations **Fig 3**.



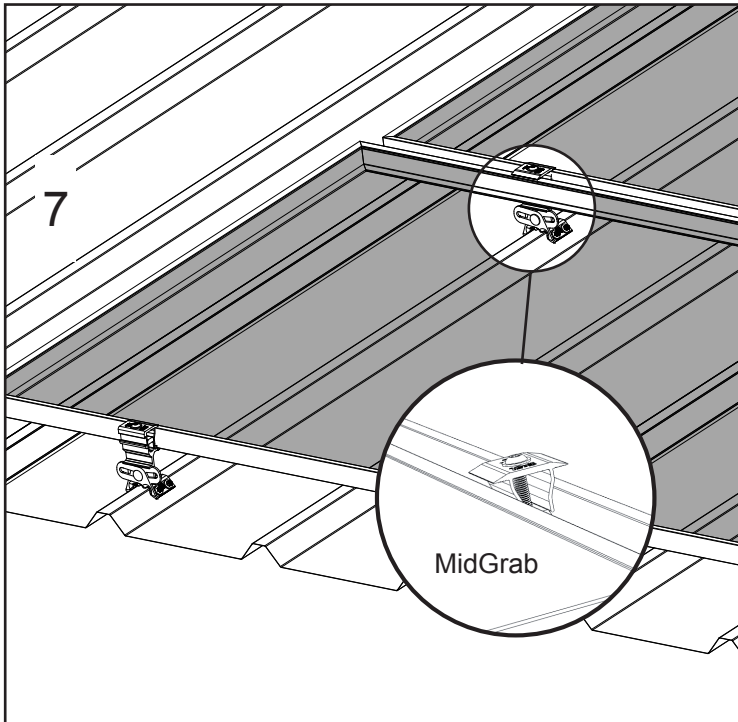
- 3.) Tighten the hinge nut 225 in/lbs, 26 (Nm), ensuring it is seated on the two bracket wings **Fig 4**.
- 4.) Using these two installed brackets, place a tight stringline between them; this will be your guide to align and install the remaining brackets planned for this lower first row. See **Fig 1** for reference. Once brackets are in place, begin installing the PV panels. **NOTE:** the placement of this first panel is critical to alignment of all panels moving forward.



- 5.) Insert the PV module by sliding it into the grab, on top of the support flange and snug against the backstop **Fig 5**.
- 6.) Once the PV panel is aligned, press down firmly on the Grab to ensure proper contact and proceed to torque the T30 drive bolt located on top of the assembly - 120-130 in/lbs, 15-17 (Nm) **Fig 6**.

Installing First Panel

PRO TIP: When installing panels, complete the columns first. Periodically check the torque settings of your tools and drive bolts with a calibration wrench to ensure consistency.



- 7.) Move upslope to complete the first column by continuing the installation using MidGrabs **Fig 7**. to attach the PV panels. Place the MidGrab snug against the solar panel, remove peel-and-stick paper, lower the bracket feet on to the panel rib. Install the four 1" self-tapping screws and tighten the hinge nut 225 in/lbs, 26(Nm).
- 8.) Snug the top T30 Torx bolt, but still allowing side-to-side movement to align panels for all successive columns. Continue steps 7 and 8 until you reach the last panel in that column.
- 9.) To complete the column use EdgeGrabs (MidGrabs may be used as substitute) to secure the upper edge of the PV array.
- 10.) Once the column is completed check the alignment of all panels and adjust as needed. When final alignment is completed, tighten all T30 Torx bolts to a torque of 120-130 in/lbs, 15-17 (Nm).

Final Steps

- Ensure all T30 drive bolts are properly tightened.



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Note: Any S-5! warranty and/or calculation may be void if hardware is used that was not furnished by S-5! directly or through one of its licensed distributors or any assembly that has not been tested by S-5! These instructions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools.

Wire Management and Bonding and Grounding

UL listed PV wire clips should be used to attach excess wire to the underside of module frames. Clip the wires to the frame before installing the module, so that the leads are positioned correctly. Clips should be placed often enough so that the wire cannot sag and touch the roof. Module frames within each column are bonded and have an established ground path through the grounding insert attached to the Protea PV body. Adjacent columns of modules should be bonded together with a jumper or UL listed grounding lug should be attached to a module frame at the edge of the array to attach a ground wire for the array. These products are available on www.S-5.com.