



Horizontal Pole Mount

# Installation Manual

UNI-PGRM 2020 Edition V4

For models:

UNI-PGRM/01

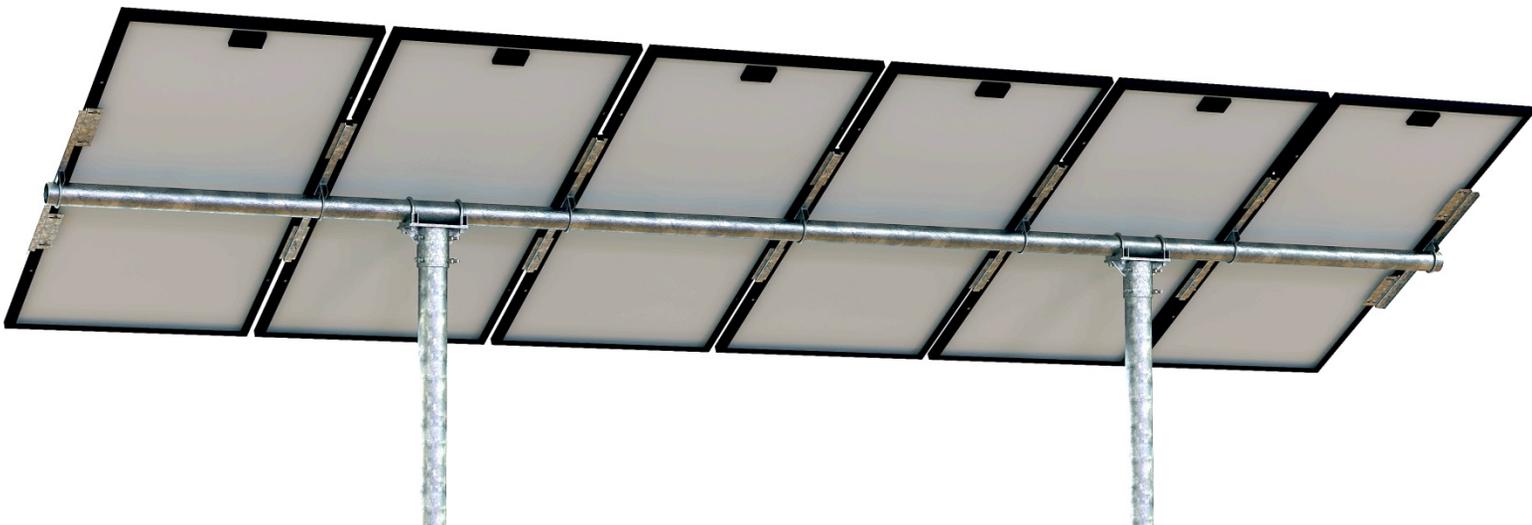
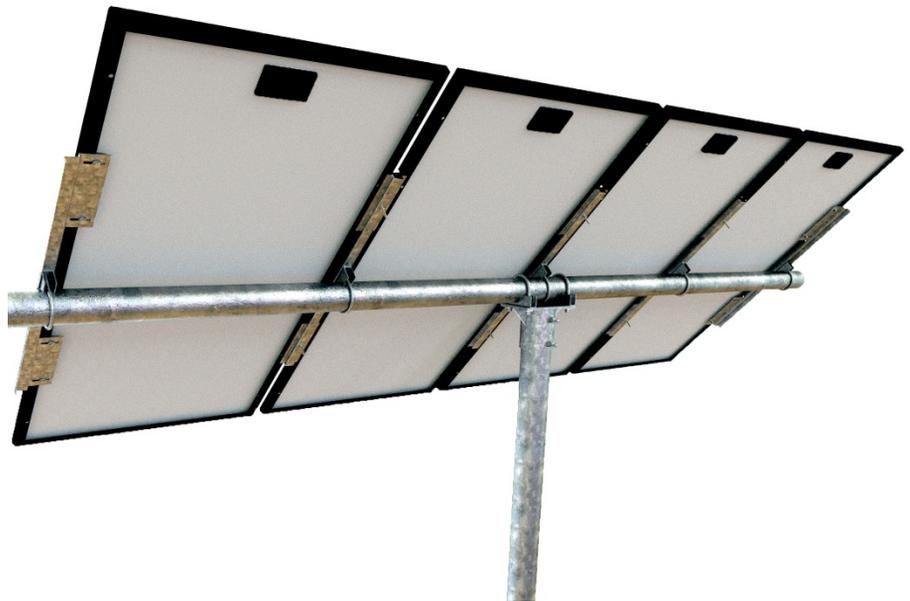
UNI-PGRM/02

UNI-PGRM/03

UNI-PGRM/04

UNI-PGRM/05

UNI-PGRM/06





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**Introduction**

The Horizontal Pole Mount is an extremely sturdy, universal pole mounting solution. With its user adjustable angle settings (0° to 90°, the Horizontal Pole Mount can support installations in a wide range of locations.

**Customer Support**

Tamarack Solar makes every effort to ensure your mounting kit is easy to install. If you need assistance at any point in your installation or have suggestions on how we can improve your experience, call customer support at **1-800-819-7236** or email us at [sales@tamaracksolar.com](mailto:sales@tamaracksolar.com)

**Anti-seize compound should be used on all stainless steel hardware to prevent galling when tightening.**

**Tools Required**

Tools that support the following size Hex heads: **Torque values are “dry”, add 15% if using anti-seize lubricant on Stainless hardware (Recommended).**

- 1. 1/2" = 480\40 In\Ft Lbs **(8 or 12 point socket for square head set screws)**
- 2. 3/8" = 240\20 In\Ft Lbs
- 3. 5/16" = 144\12 In\Ft Lbs
- 4. 1/4 " = 84\7 In\Ft Lb

**Components List** The following parts are used in **PGRM** mount models:

*Galvanized coated sheet steel components will show rust on cut edges. This is normal and will not affect the structure and function of the mount.*

**UNI-PGRM-END (2per)**

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	51-0835-ECB REV B	END CLAMP BASE	1
2	51-0835-UPC REV A	UNDER PANEL FRAME CLAMP	2
3	51-0835-UBC rev B	U-BOLT CLAMP	1
4	23-3118-875	Bolt, Hex 5/16-18 x .875 SST	4
5	25-3102-000	Washer, flat 5/16" SS	4
6	25-2501-015	Nut, flange 5/16 SST	4
7	23-0100-033	GALV STEEL U-BOLT 3/8-16 x 1.25" THRD LENGTH, FOR 3" PIPE, 5" OD. LENGTH	1
8	25-3702-GLV	Washer, Flat .HDG	2
9	25-3701-GLV	WASHER, LOCK 3/8 SPRING HDG	2
10	24-3716-GLV	Nut, Hex 3/8-16 HDG	2

**UNI-PGRM-MID (1 per 2 modules), add 1 per module added to array.**

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	51-0835-UBC rev B	U-BOLT CLAMP	1
2	51-0835-MCT REV B	MID CLAMP TOP	1
3	51-0835-MCB REV B	MID CLAMP BOTTOM	1
4	23-2520-250	Bolt, Hex 1/4-20 x 2.5 all thread SST	2
5	25-2502-000	Washer, flat 1/4 SST	2
6	25-2501-000	Washer, lock 1/4" SST	2
7	23-0100-033	GALV STEEL U-BOLT 3/8-16 x 1.25" THRD LENGTH, FOR 3" PIPE, 5" OD. LENGTH	1
8	25-3702-GLV	Washer, Flat .HDG	2
9	25-3701-GLV	WASHER, LOCK 3/8 SPRING HDG	2
10	24-3716-GLV	Nut, Hex 3/8-16 HDG	2
11	27-6350-020	Pem CLS-0420-2	2

**70-0300-PGM CAP, TOP 1 per (1-4 modules), 2 per (5-6 modules)**

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	70-0400-000 rev C	Cap, 4" Pipe	1
2	23-0350-GLV	GALV STEEL U-BOLT 1/2-13 3" PIPE	2
3	51-0812-UBC rev A	U-BOLT CLAMP, 3" Pipe 1/2" U-Bolt	2
4	25-5002-GLV	Washer, Flat 1/2 Galv	4
5	25-5001-GLV	Washer, Lock 1/2 Galv	4
6	24-5013-GLV	Nut, 1/2-13 HDG	4
7	23-5013-150	Steel Square Head Cup Point Set Screw 1/2"-13 Thread, 1.5" Length MECH GALV	4
8	24-513J-GLV	NUT, JAM 1_2-13 GALV	4

## Main Beam length, Post Placement Calculations

### Step 1: Measure Modules

- A. Compute Main Beam Length per the following formula

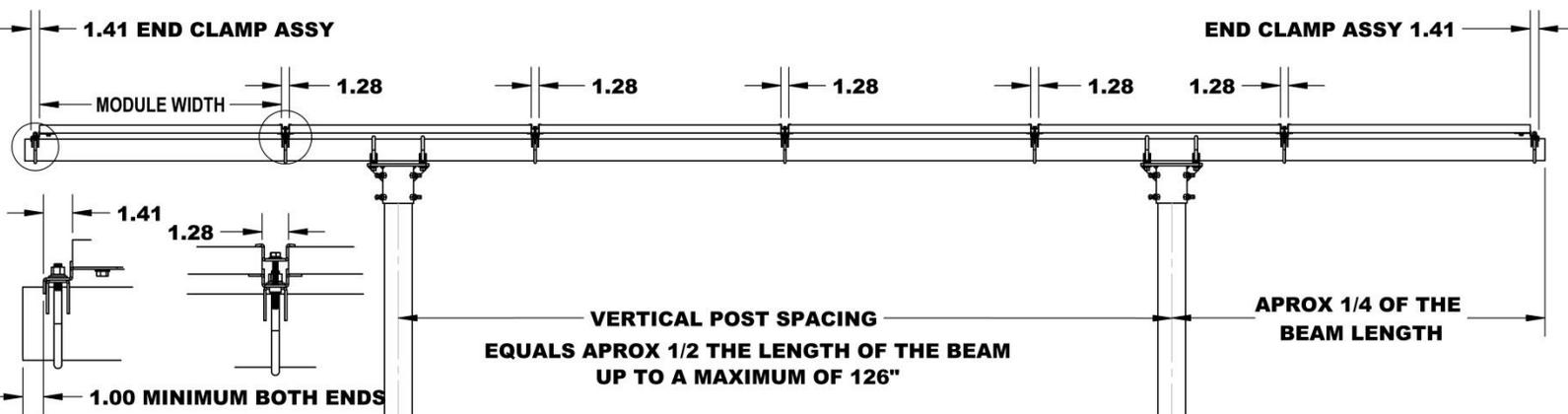
W= Module Width Q= Quantity of Modules

Beam Length formula  $4.82 + (Q \times W) + ((Q - 1) \times 1.28)$

6 Module Example at 39.5" wide:

$$4.82'' + (6 \times 39.5'') + (5 \times 1.28'') = 248.22 \text{ inches (or } 20' - 8 \frac{1}{4}'')$$

Pipe generally comes in 21' lengths



- B. When using a single vertical pole (1-4 modules) center the beam over the vertical post.  
 C. When using 2 vertical posts, determine post center to center spacing.  
 (2 posts required for 5 to 6 modules)

## Assembly

### Step 2: Install Top caps\main beam to posts

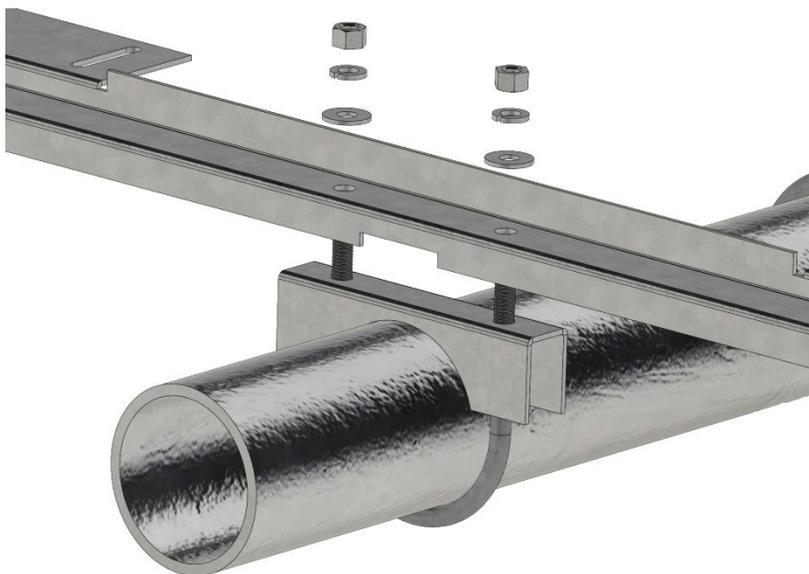
- Place Top Caps onto the posts (**don't tighten screws at this time**)
- Place U-Bolt clamps over the mounting holes on the top caps. (**see next page**)
- Place the main beam pipe onto the U-Bolt clamps centered over the slots on each end of the top caps.
- Place 1/2" U-bolts over the main beam pipe through the U-Bolt clamps and top caps, loosely attach with 1/2" flats, locks and nuts .
- Align top caps to be parallel to the main beam pipe and torque the 1/2" set screws to 40 ft Lbs, and tighten the jam nuts to prevent the screws from backing off over time, then torque the 1/2" nuts on the U-bolts, be sure U-bolts are straight and aligned, tighten evenly so the U-bolt extends equally into the

nuts on both sides. **torque to 40 ft Lbs**



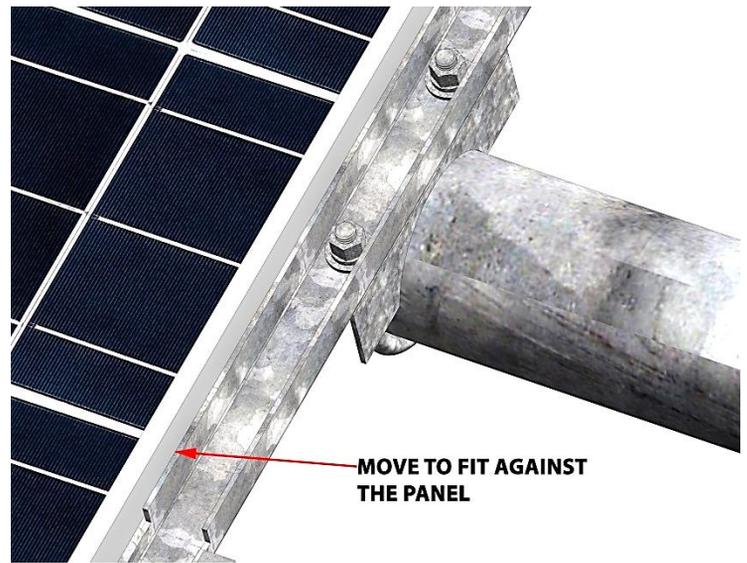
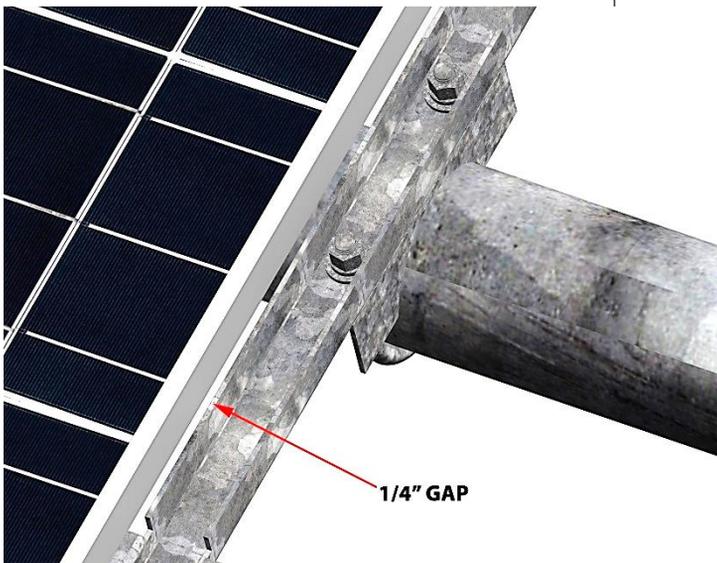
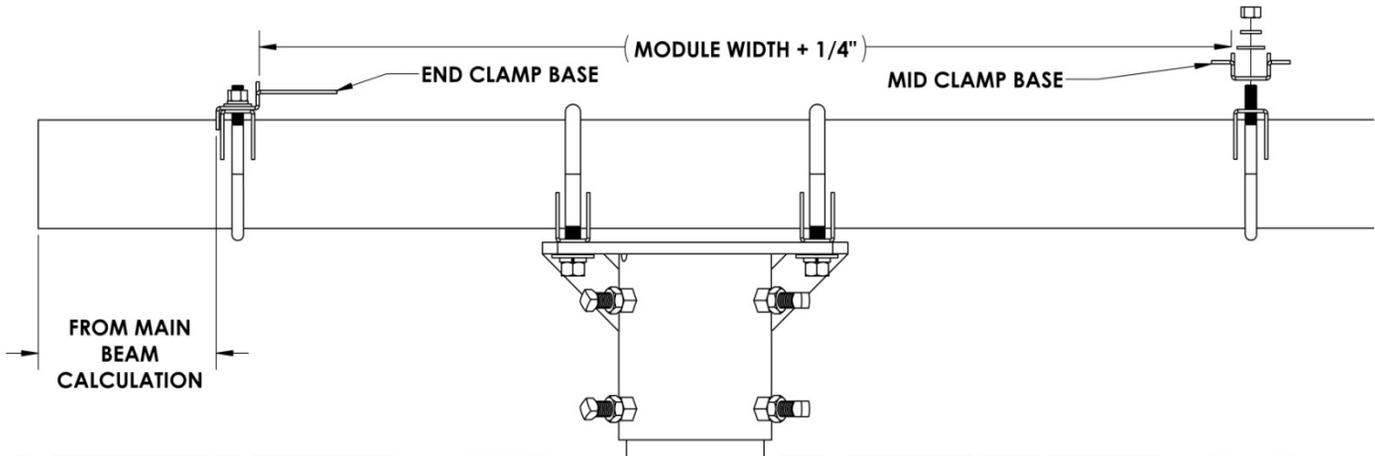
### Step 3: Install Modules

- A. Based on the main beam calculations, position and place an end clamp base onto the main beam pipe as shown below at one end.

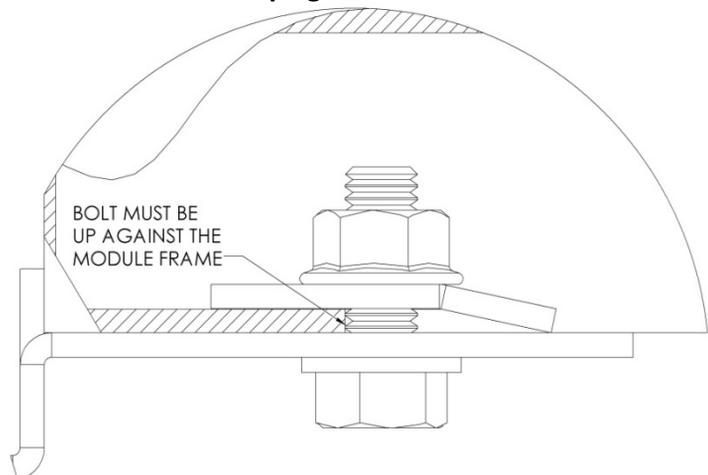


- B. Place a level on the clamp to hold a horizontal position at this time.  
(Final angle adjustment will be done later)
- C. Tighten the nuts enough to hold the horizontal position as you will be placing modules onto them in next steps.

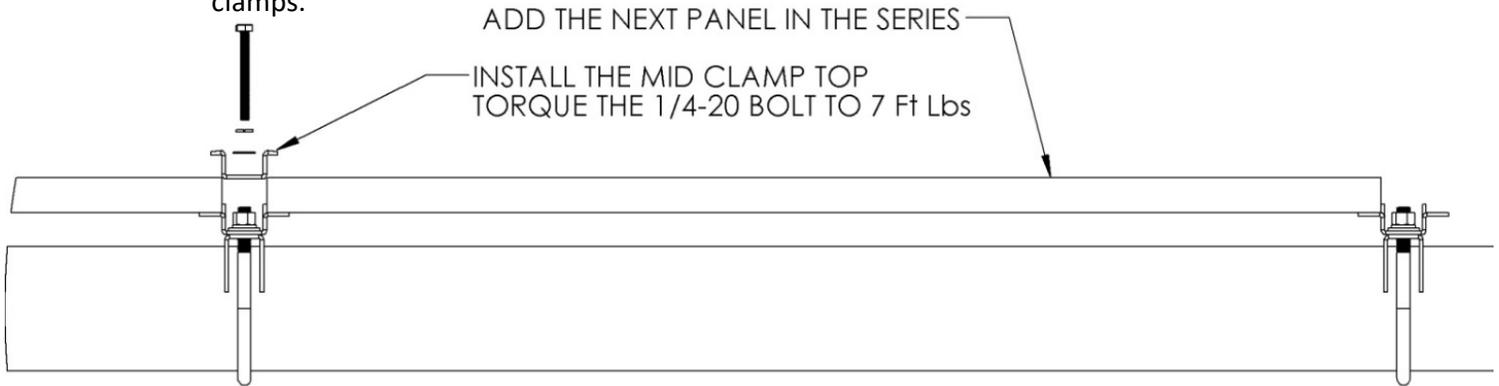
- D. Install the first mid clamp base  $\frac{1}{4}$ " farther apart than the module width; tighten to hold level to install the first module.



- E. Lay the first module onto the flat flanges of the end and mid clamp bases.  
 F. Center the module to overhang equally past the clamps.  
 G. Loosen the mid clamp, move to fit against the module and re tighten to hold position.  
 H. Attach under module clamps to the module and end clamp base with the 5/16-18 x 7/8 bolt flange nut and washer as shown, torque to 12ft Lbs. **NOTE: The bolt must be up against the module frame.**



- I. Install the next mid clamp base 1/4" wider than the module width, tighten to hold position.
- J. Place next module onto the mid clamp base and center the module to overhang equally past the clamps.



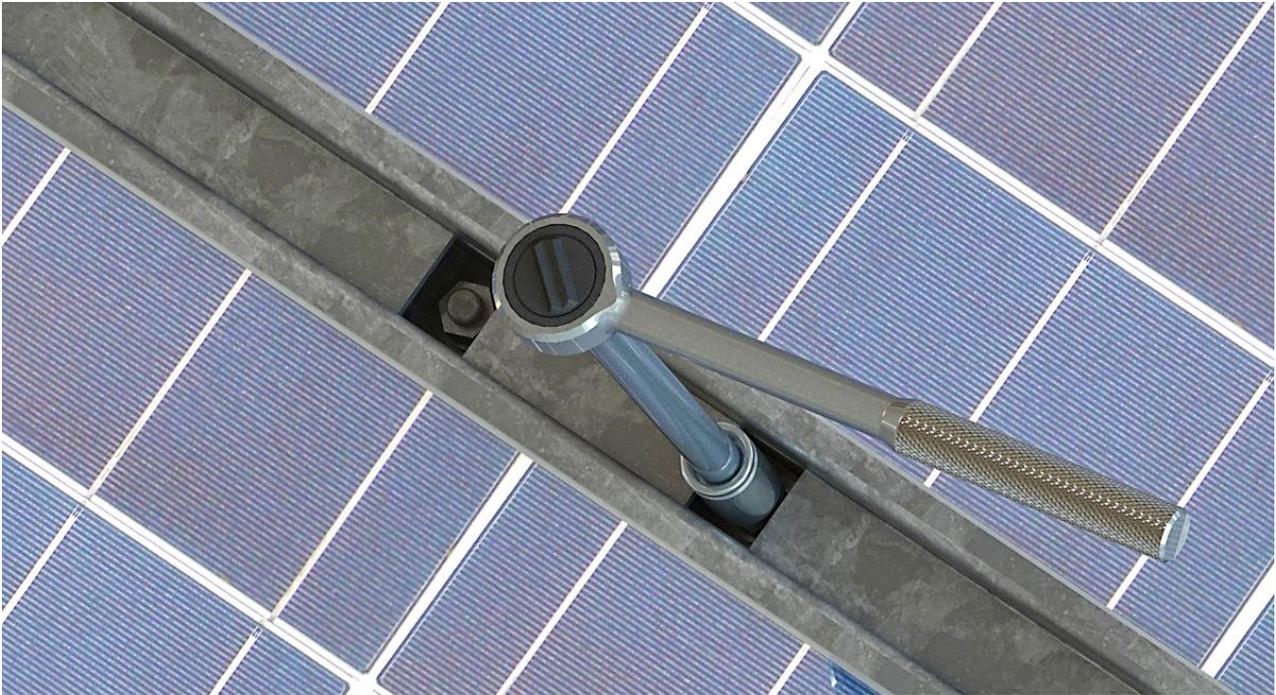
- K. Loosen the mid clamp, move to fit against the module and re tighten to hold position.
- L. Install mid clamp top with the 1/4 x 2.5 hex bolts, flat & lock washers and **torque to 7ft Lbs. TO AVOID DAMAGE TO THE BOLT AND FASTENER, DO NOT OVERTIGHTEN.**



- M. Repeat until last module is ready, then add the last end clamp base 1/4" wider than the module width, place the module onto the clamps, center the module, move end clamp base up against the module, attach last mid clamp top and under module clamps as done in previous steps.

#### Step 4: Set final angle

- A. Loosen all the U-Bolt nuts on the end and mid clamps just enough to allow the entire array to be rotated to the desired angle to the sun, torque all the 3/8 U-Bolt nuts to 20ft Lbs.



## Installer Responsibility

The installer is solely responsible for:

- i. Complying with all applicable local or national building codes, including any that may supersede this manual;
- ii. Ensuring that Tamarack Solar and other products are appropriate for the particular installation and the installation environment;
- iii. Using only Tamarack Solar parts and installer-supplied parts as specified by Tamarack Solar. Substitution parts may void the warranty;
- iv. Ensuring safe installation of all electrical aspects of the PV array; and
- v. Ensuring correct and appropriate design parameters are used in determining the design loading used for the specific installation. Parameters, such as snow loading, wind speed, exposure and topographic factor should be confirmed with the local building official or a licensed professional engineer.

## Warranty Information

Tamarack Solar warrants each Mounting Structure to be free from defects in materials and workmanship for ten (10) years from the date of first purchase (“Warranty Period”), when installed properly and used for the purpose for which it is designed, except for the finish, which shall be free from visible peeling, or cracking or chalking under normal atmospheric conditions for a period of three (3) years, from the earlier of 1) the date the installation of the Product is completed, or 2) 30 days after the purchase of the Product by the original Purchaser (“Finish Warranty”). The Finish Warranty does not apply to any foreign residue deposited on the finish.

**Galvanized coated sheet steel components will show rust on cut edges and is normal and will not affect the structure and function of the mount.**

**All installations in corrosive atmospheric conditions are excluded.** The Finish Warranty is VOID if the practices specified by AAMA 609 & 610-02 – “Cleaning and Maintenance for Architecturally Finished Aluminum” ([www.aamanet.org](http://www.aamanet.org)) are not followed by Purchaser for Tamarack Solar’s aluminum based products.

The warranty covers the replacement cost of parts to repair the product to proper working condition. Transportation and incidental costs associated with warranty items are not reimbursable. The warranty does not cover normal wear, or damage resulting from misuse, abuse, improper installation, negligence, or accident, or **typographical errors in instruction manuals**. The Warranty does not cover any defect that has not been reported in writing to Tamarack Solar within ten (10) days after discovery of such defect. Furthermore, it does not cover units that have been altered, modified or repaired without written authorization from the manufacturer or its authorized representative, or units used in a manner or for a purpose other than that specified by the manufacturer. Tamarack Solar’s entire liability and Purchaser exclusive remedy, whether in contract, tort or otherwise, for any claim related to or arising out of breach of the warranty covering the Mounting Structures shall be correction of defects by repair, replacement, or credit, at Tamarack Solar’s discretion. Refurbished Mounting Structures may be used to repair or replace the Mounting Structures

Tamarack Solar shall have no liability for any injuries or damages to persons or property resulting from any cause, whatsoever, or any claims or demands brought against Tamarack Solar by Purchaser, any employee of Purchaser, client of Purchaser, end-user of the Product or other party, even if Tamarack Solar has been advised of the possibility of such claims or demands (collectively, “Third Party Claims”). This limitation applies to all materials provided by Tamarack Solar during and after the Warranty Period.

### Foundation Hole Guidelines

The suggestions below are recommendations only. It is the installer's responsibility to validate foundation parameters prior to installation, as local geotechnical report may be required to assess ground conditions. We recommend consulting with a local engineer familiar with local regulations and build site requirements, including soil conditions, terrain and load criteria (wind, snow, seismic). All of these parameters may impact foundation requirements.

PGRM Foundation hole guidelines - Exposure Category C				
Module Area Square Feet	One Vertical 4-inch Schedule 40 Pole		Two Vertical 4-inch Schedule 40 Poles	
	Min. Hole Diameter	Min Hole Depth	Min. Hole Diameter	Min Hole Depth
40	20 inches	45 inches		
50	24 inches	40 inches		
60	24 inches	45 inches		
70	24 inches	60 inches		
80	24 inches	66 inches	20 inches	45 inches
92	24 inches	74 inches	24 inches	40 inches
120			24 inches	45 inches

#### Installation Recommendations:

1. Auger hole to minimum depth shown in foundation guidelines.
2. The bottom 6" of hole should be filled with crushed rock or a blocking; this will prevent the pipe(s) from touching the base of the hole, insuring complete encapsulation of the pipe when concrete is poured, as well as allowing for water drainage.
3. The pipe(s) should be installed vertically no matter the slope of the install site.
4. Make arrangements to prevent the pipe(s) from twisting or moving prior to and during pouring of the concrete.
5. The pipe(s) should be braced to remain plumb and in position until concrete has cured at least 24hrs

