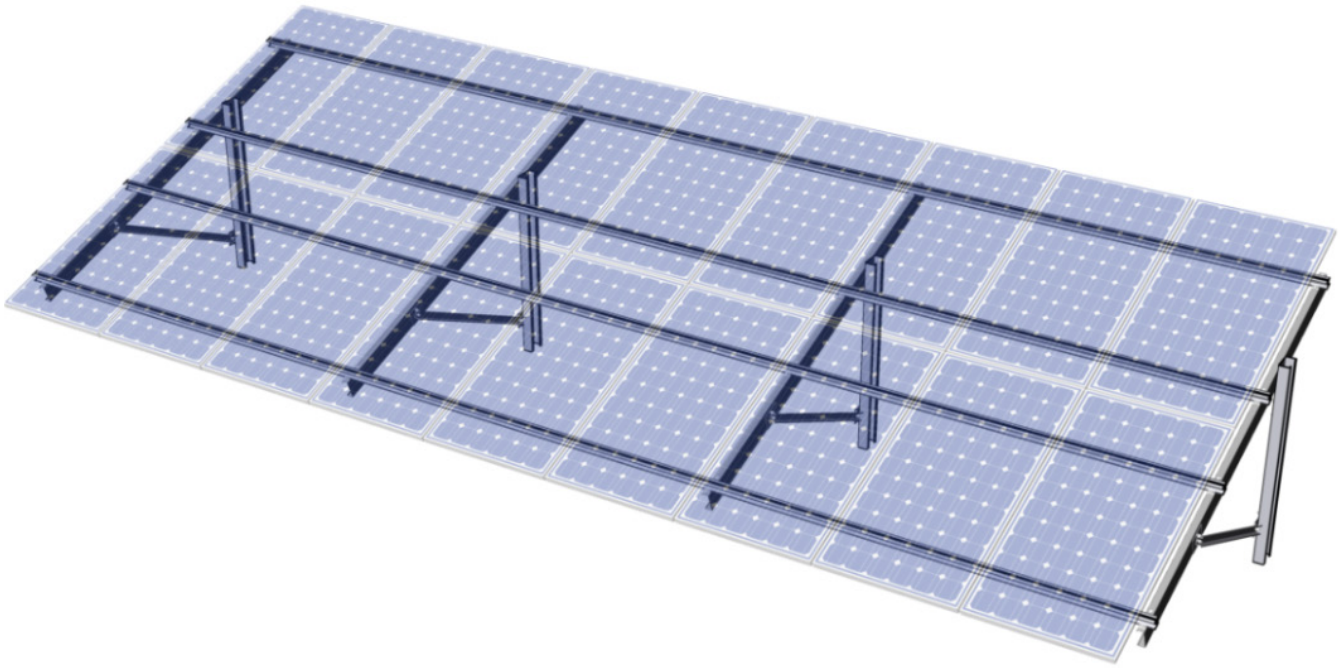
PREFORMED LINE PRODUCTS



POWER PEAK™ GSHC

ASSEMBLY INSTRUCTIONS

step-by-step
assembly and installation

Version 2, Rev A
SP3421 PCN 030717-4

Power Peak™ GSHC Ratings

The Power Peak™ GSHC conforms to ANSI/ UL UL2703 (2015) Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.

Electrical

Note: Electrical installations must be in accordance with the National Electric Code ANSI / NFPA 70. Contact your local Authorities Having Jurisdiction (AHJ) for additional details.

Max Overcurrent Protective Device (OCPD) Rating: 25A

Equipment Grounding Conductor Sizing

Module Fuse Rating	Copper Wire Size
<15 AMPS	#14 AWG 90°C
<20 AMPS	#12 AWG 90°C
20-60 AMPS	#10 AWG 90°C

Splice Plates

Splice Plates have been tested per UL2703 Bonding & Grounding requirements without the use of Bonding Jumpers.

See assembly procedures for proper assembly.

Module Clamps

Module clamps have integrated grounding and have been tested to UL 2703.

See Module Compatibility List for list of approved modules.

Module Orientation: Portrait

Structural Certification

Mechanical Load Rating: Designed and Certified for Compliance with IBC & ASCE/SEI-7 through separate PE reviews.

Marking

Product markings identified per UL2703 are to be located in a location that is readily accessible for inspection.

Periodic Inspection

Periodic re-inspection is a recommended system maintenance procedure to check for loose components or corrosion. If any loose components and/or corrosion is found, the affected components are required to be replaced immediately, with the original mounting system manufacturer's component parts.

Power Peak GSHC

WARNING

Follow the procedures and precautions in these instructions carefully.

About the product

The Power Peak GSHC is designed to mount on a roll formed C-Channel and pile driven directly into the soil to reduce foundation work and associated labor cost. Additionally, each Power Peak GSHC is designed to site-specific conditions, and arrives on the project site ready to assemble. PV modules are mounted in a two-row portrait configuration where the number of modules in each row equals the specified string size for easier wiring and reduction in materials. In addition, the Power Peak GS may be designed for continuous row applications where multiple strings may be combined running east/west.

The Power Peak GSHC mounting system features bottom access PV module clamping which eliminates the need for ladders during module installations. The module clamps are preassembled with no loose parts for faster installation and provide code-compliant integrated electrical bonding.

The Power Peak GSHC system features multiple slots and adjustments, allowing the table tops to be squared easily thus resulting in a professional finish.

Important Installation Considerations

C-Channel size and foundation requirements are based on several factors including the array surface area, maximum design wind speed, exposure category, snow loading, tilt angle, soil type and front edge clearance.

Consulting with a local building department and/or professional engineer is recommended.

For foundation and C-Channel recommendations on a specific installation, please:

Contact us by Phone: 800-260-3792

Send an Email request: info@plpsolar.com

Grounding Considerations

The Power Peak GSHC utilizes integrated module grounding clamps designed to meet UL 2703 grounding standards.

About these instructions:

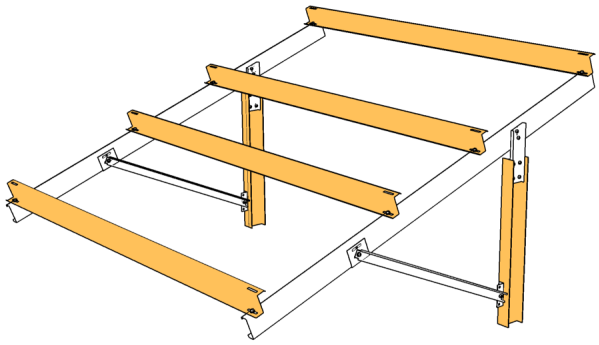
- They include information on assembling the product and are intended to be used by individuals with sufficient technical skills for the task. Knowledge and use of hand tools, measuring devices and torque values is also required.
- They included various Notes, Cautions, and Warnings that are intended to draw your attention and assist in the assembly process and/or to draw attention to the fact that certain assembly steps may be dangerous and could cause serious physical injury and/or damage to components. Follow the procedures and precautions in these instructions carefully.

Required Tools

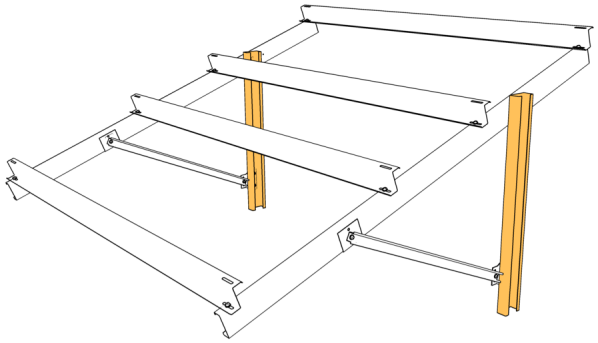
- ☐ 7/8 inch wrench or socket for 1/2 inch module clamp hardware
- ☐ 1/2 inch wrench or socket for 5/16 inch hardware
- ☐ Torque wrench
- ☐ Ratchet wrench
- ☐ Ratchet extension bar
- ☐ String
- ☐ Framing Square
- ☐ Tape Measure
- ☐ Inclinometer

Power Peak is Available in 4 Configurations

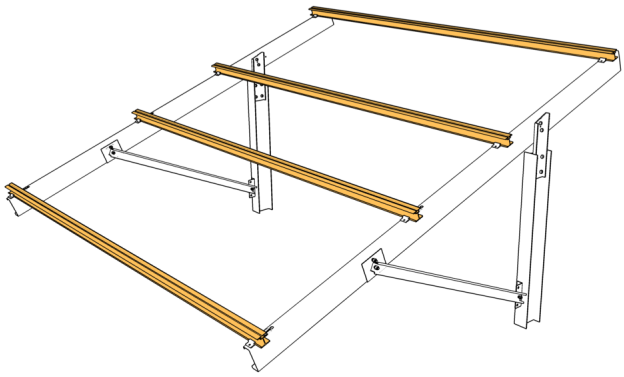
POWER PEAK GS
Standard product offering incorporating galvanized steel components and I-Beam pile.



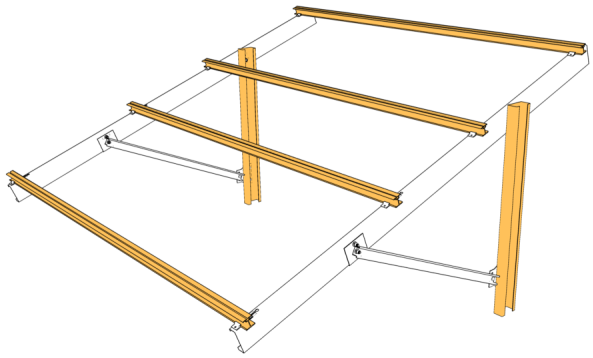
POWER PEAK GSC
Standard “I-Beam” pile replaced with equivalent strength roll formed C-Channel pile.



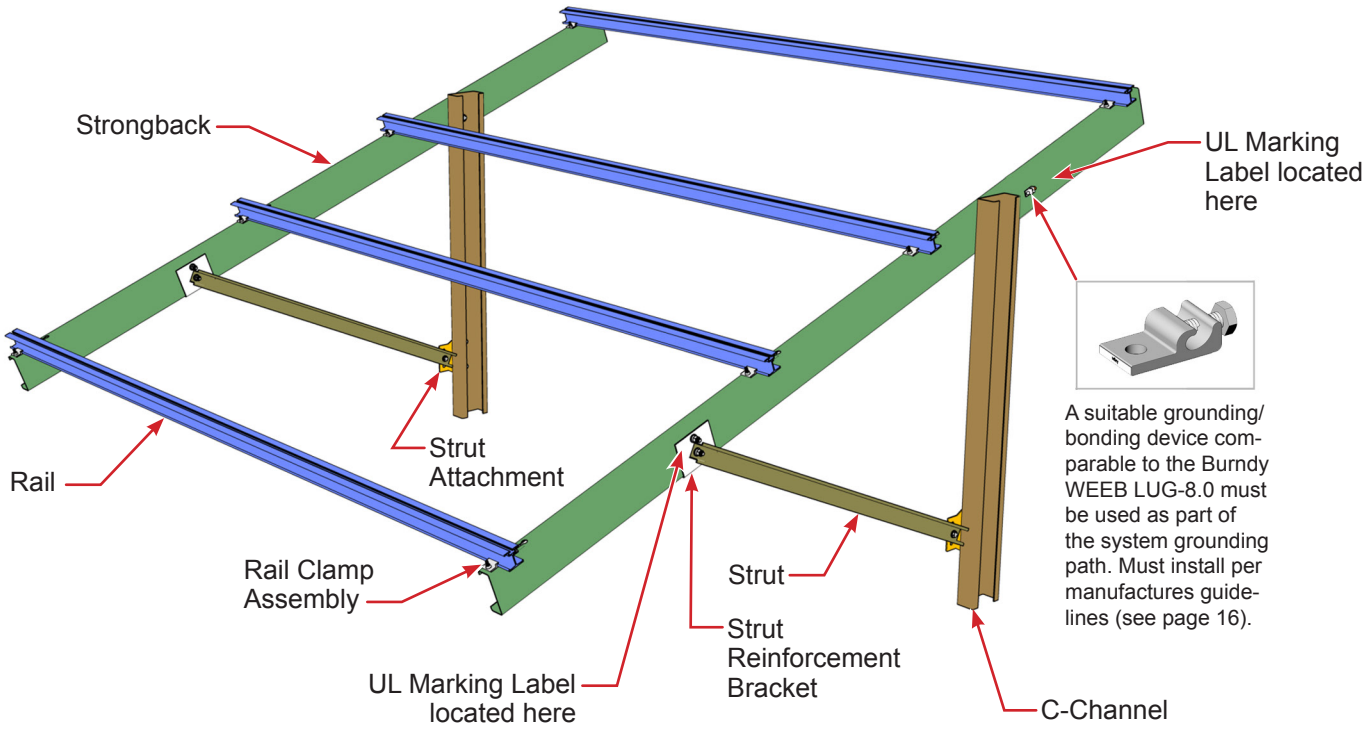
POWER PEAK GSH
Standard roll formed horizontal Z purlins replaced with aluminium rails to adapt to more severe rolling terrain changes.



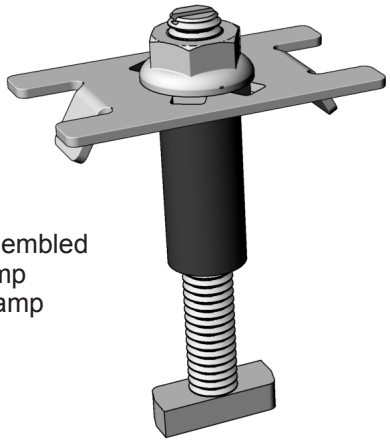
POWER PEAK GSHC
Standard “I-Beam” pile replaced with equivalent strength roll formed C-Channel pile. Standard roll formed horizontal Z purlins replaced with aluminium rails to adapt to more severe rolling terrain changes.



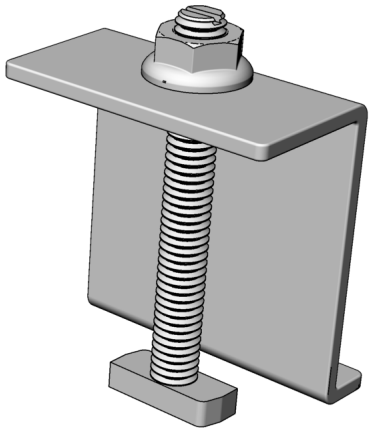
Power Peak GSHC Main Components



There are seven main components and attaching hardware.



Factory Assembled AMP™ Clamp Bonding Clamp

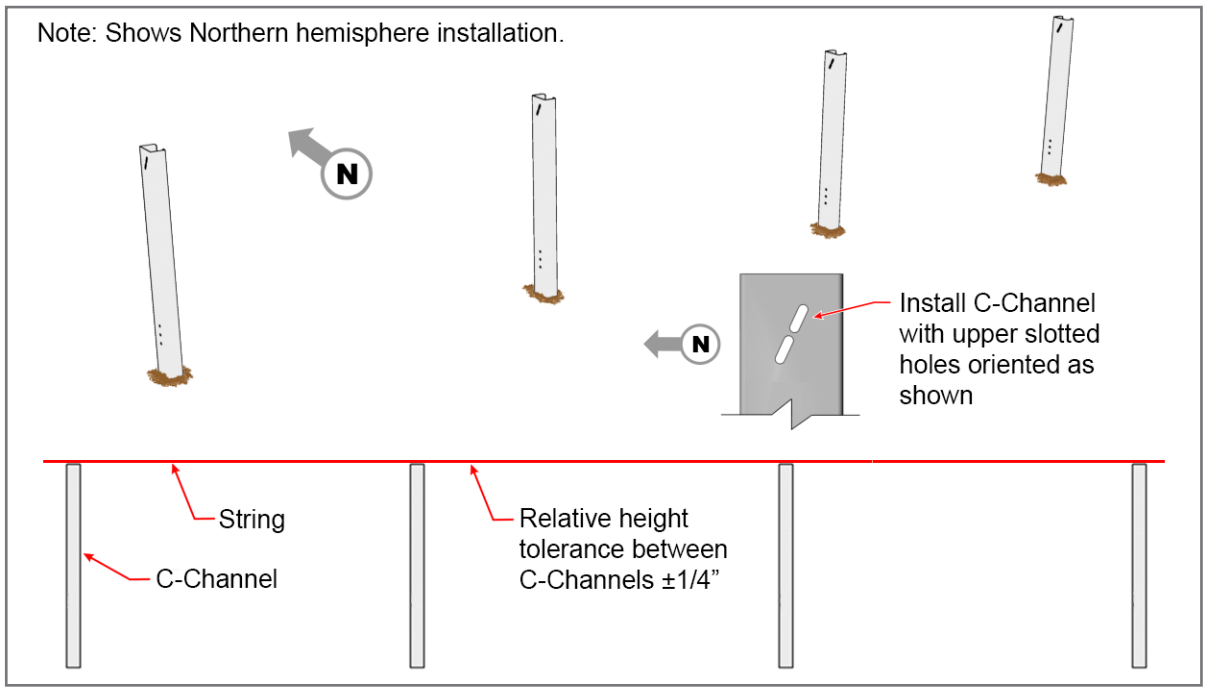


Factory Assembled (patented) RAD™ End Clamp

1 Set C-Channel Posts

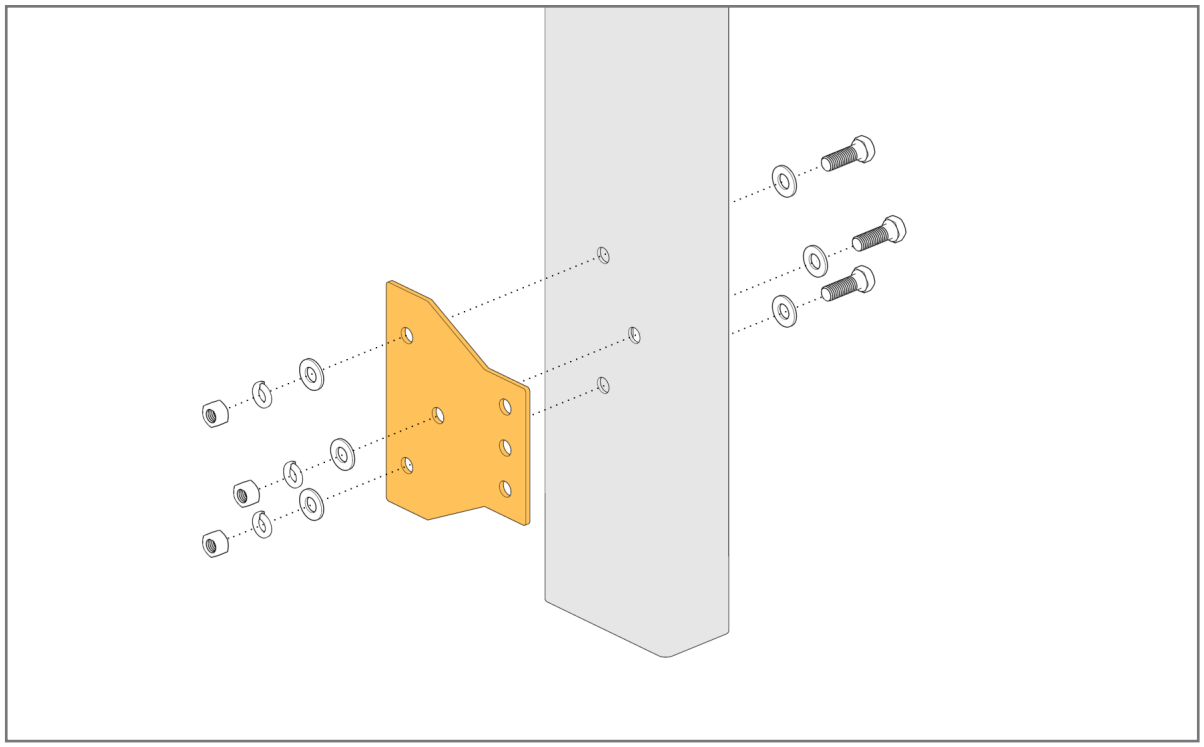
CAUTION

Failure to meet the site specific embedment depths and C-Channel height variance tolerance can lead to structural failure and/or serious injury or death. Additionally, it would void the system warranty.



Set C-Channel into the ground with spacing and embedment depth to match the push-pull test and the site specific drawings.

2 Install the Strut Attachment Plate

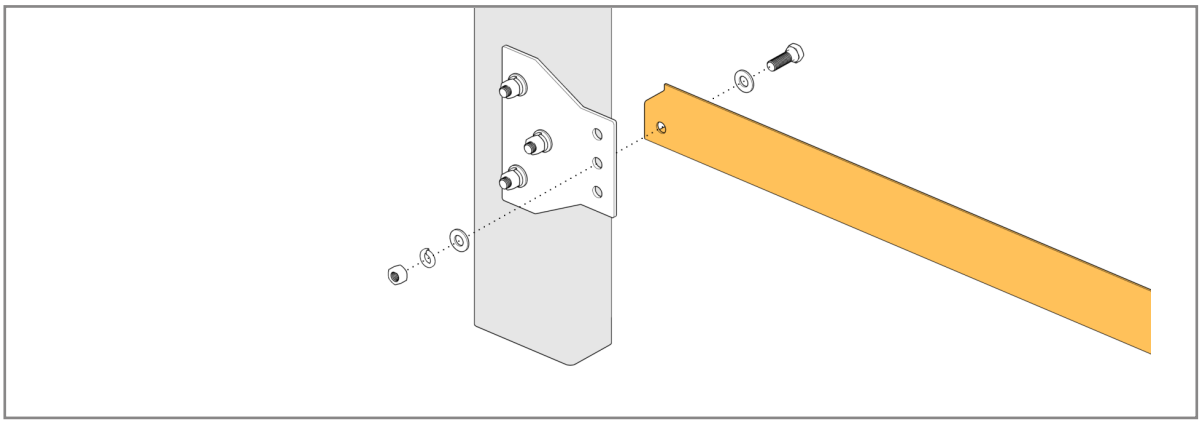


Install the Strut Attachment Plate with three sets of hardware: 1/2”-13 x 1-1/2” Hex Bolt, Flat Washers, Lock Washer and Hex Nut. **Torque to 65-70 ft.-lbs.**

3 Attach the Strut to the Strut Bracket

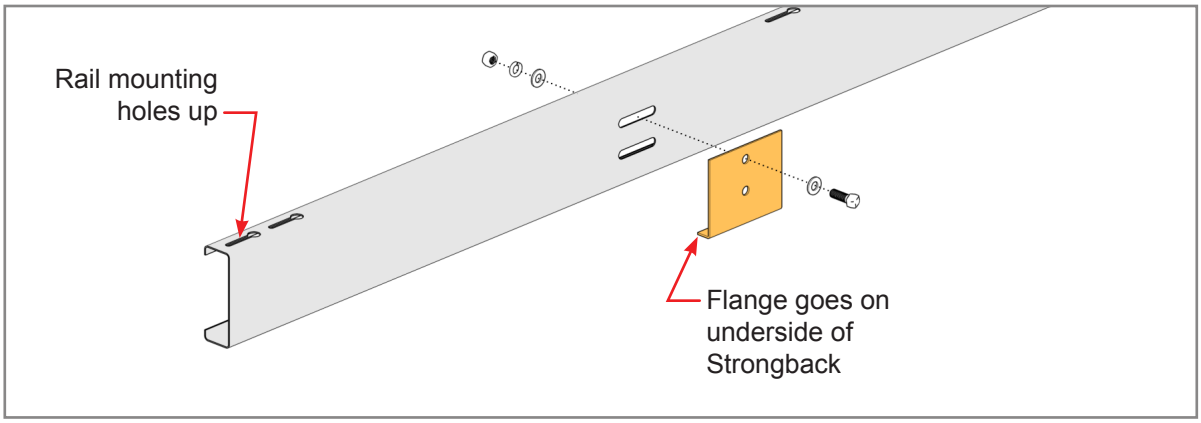
NOTE

Although the Strut Bracket includes three holes for attaching the Strut, it is recommended that the middle hole be used initially. The outer two holes provide an additional ± 2 degrees of tilt adjustment if needed.



Install the Strut with 1/2”-13 x 1-1/2” Hex Bolt, Flat Washers, Lock Washer and Hex Nut. **Hand tighten for now.**

4 Attach the Strut Reinforcement Bracket to the Strongback



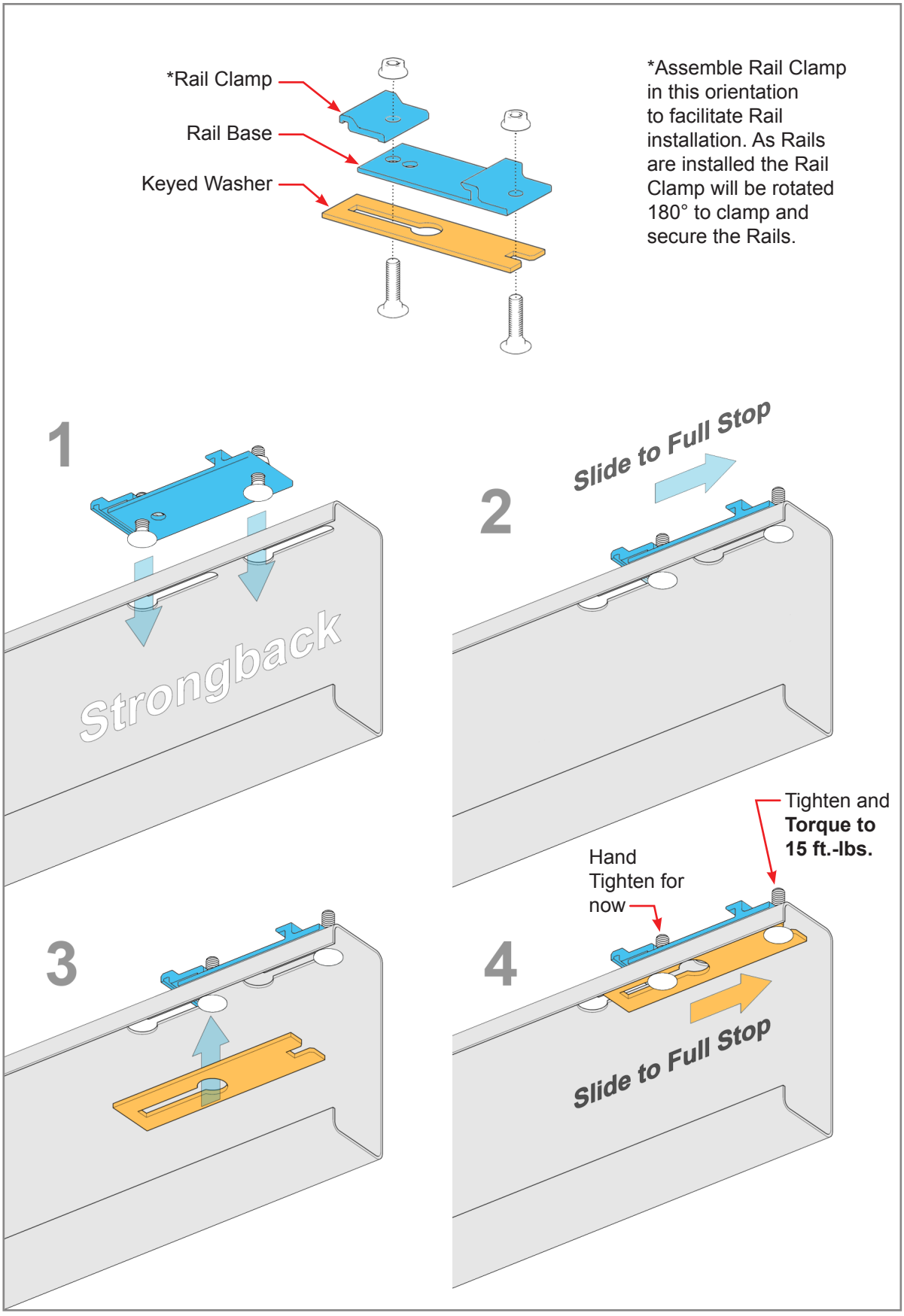
Install the Strut Reinforcement Bracket with one sets of 1/2”-13 x 1-1/2” Hex Bolt, Flat Washers, Lock Washer and Hex Nut installed in the upper slot only.

The lower slot/hole is reserved for attaching the Strut. **Torque to 65-70 ft.-lbs.**

5 Install Rail Clamp Assemblies

TIP!

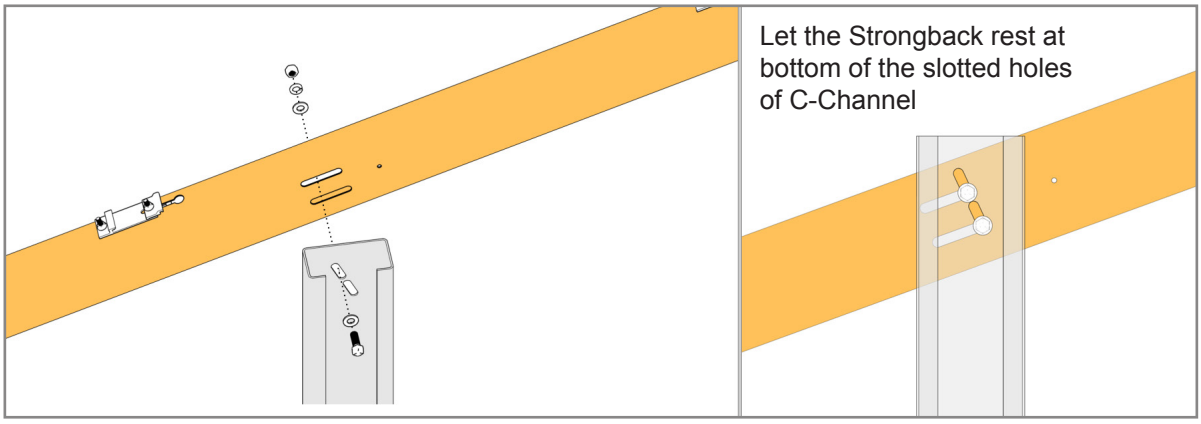
To save time, install the Rail Clamps Assemblies before attaching the Strongbacks to the C-Channels. Use an assembly line method to process and assemble each Strongback.



6 Install and Align the Strongback

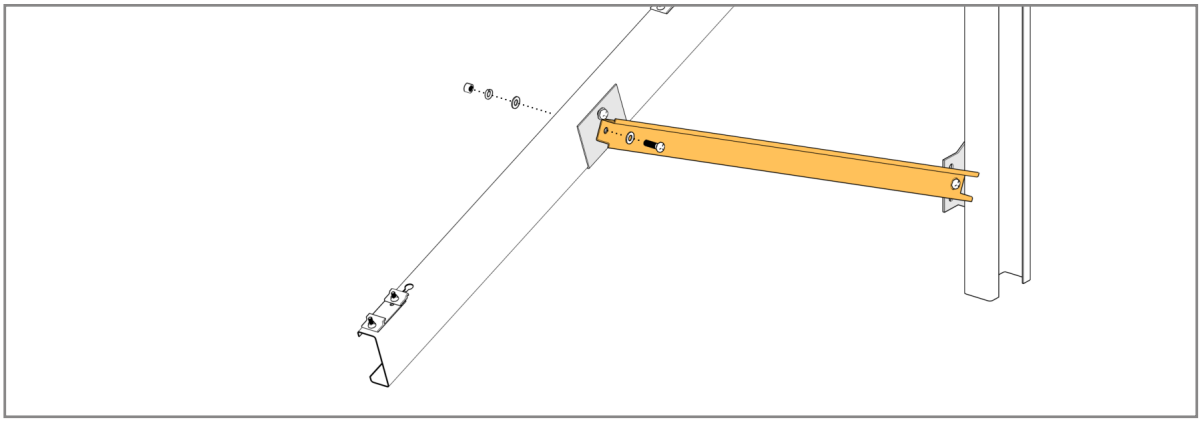
NOTE

At this stage the Strongback positioning is considered a temporary position - the intent is to establish a starting position for each Strongback. Further adjustments to align the Strongbacks will take place later.



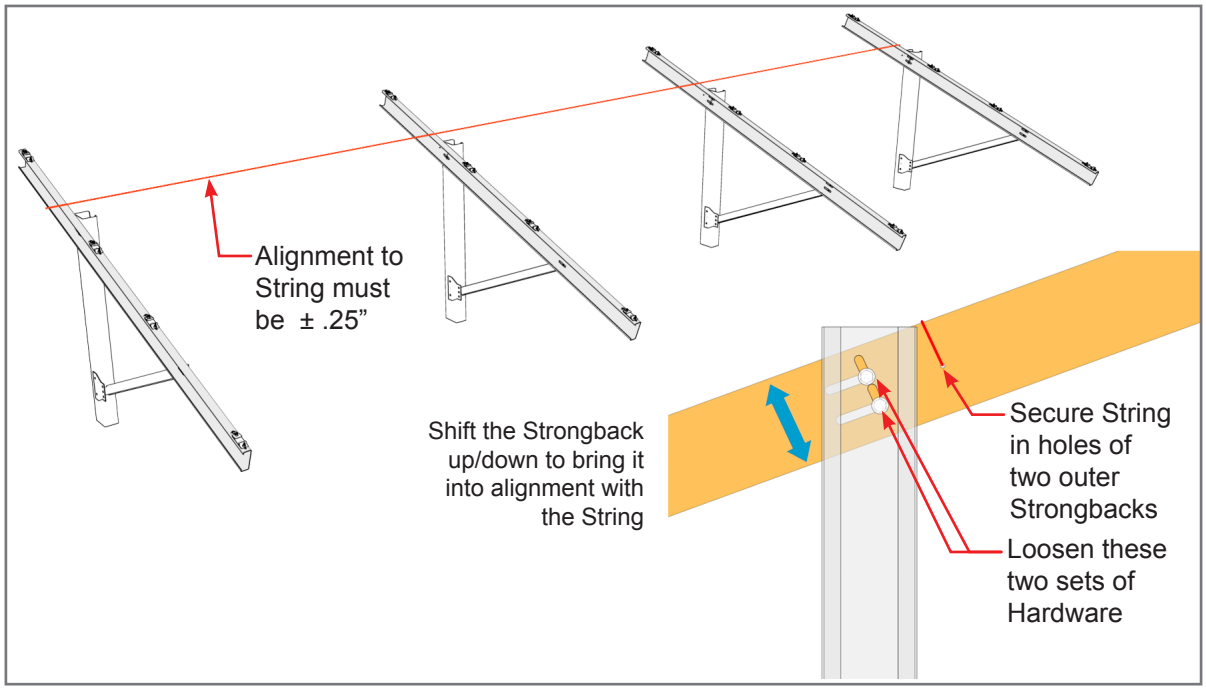
Install the Strongback with two sets of 1/2”-13 x 1-1/2” Hex Bolt, Flat Washers, Lock Washer and Hex Nut. Adjust position of Strongback so its alignment mark is visible within the small hole of the Strongback Attachment. **Tool tighten hardware for now to hold in place.**

7 Secure the Strut to the Strongback



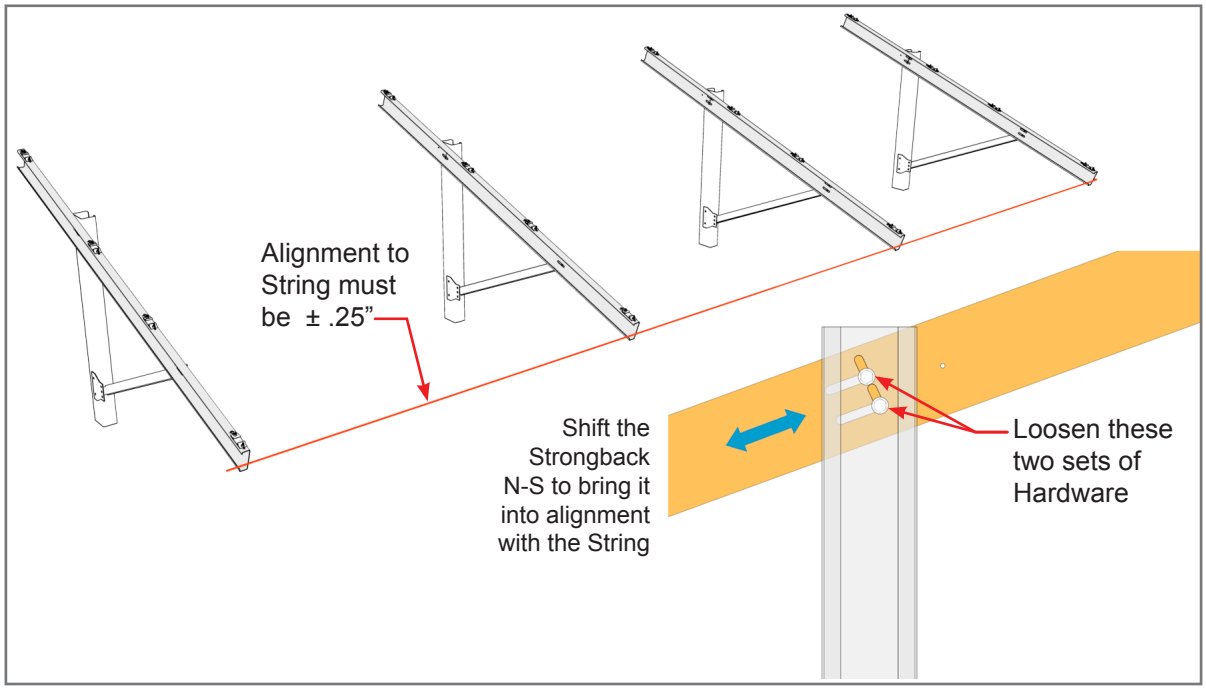
Secure the Strut with 1/2”-13 x 1-1/2” Hex Bolt, Flat Washers, Lock Washer and Hex Nut. Hand tighten for now, allowing movement between the Strut and the Strongback in order to align the Strongbacks and also set the tilt angle.

8 Vertically adjust and align the Strongbacks to one another



Alignment may be needed to compensate for C-Channel misalignment. Use a string between a minimum of three spans. The slotted holes of the Strongback provide for its up/down movement. Tool tighten the two sets hardware leaving them loose enough to adjust the N-S alignment in the next step.

9 Adjust the Strongback N-S alignment to one another

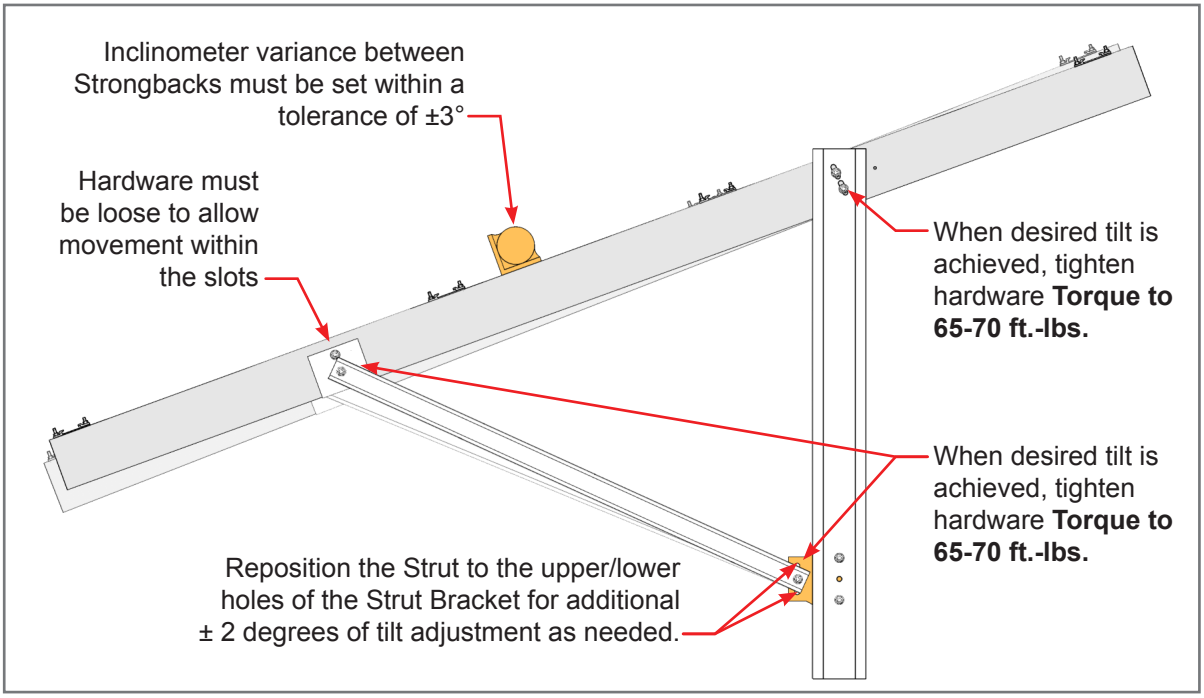


Alignment may be needed to compensate for C-Channel misalignment. Use a string between a minimum of three spans. The slotted holes of the Strongback provide for its up/down movement. Tool tighten the two sets hardware leaving them loose enough to adjust the tilt angle in the next step.

10 Verify/Set the Final Tilt Angle

CAUTION

This is a two person activity. During the tilt adjustment, one person must hold the southern end of the Strongback while a second loosens the hardware and then re-tightens the hardware after the desired tilt has been achieved.



There will likely be deviations from one Strongback to another due to variances in C-Channel alignment. To remedy this, it is recommended that the tilt angle of each Strongback be evaluated and set to a consistent angle. Make sure that the Strut attachment hardware is sufficiently loose to allow movement of the Strongback.

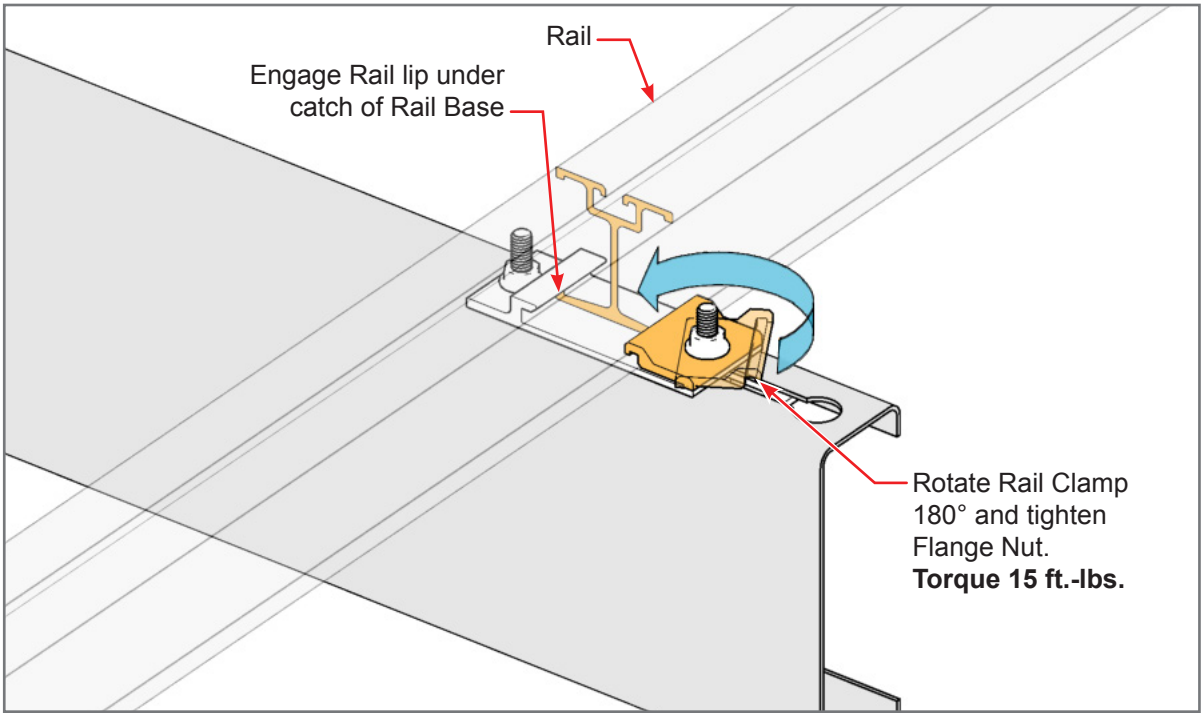
11 Install the Rails

CAUTION

This is a two person activity. Each person must hold an end of the Rail while placing it onto each Rail Base of the Strongback. One person should continue to hold the Rail in place while the second person secures it with the Rail Clamp.

NOTE

The location of the Rail Bases are preset at the factory. If alignment with the Rails is a problem, simply slide the Rail Bases along the Strongback's to align with the Rails.

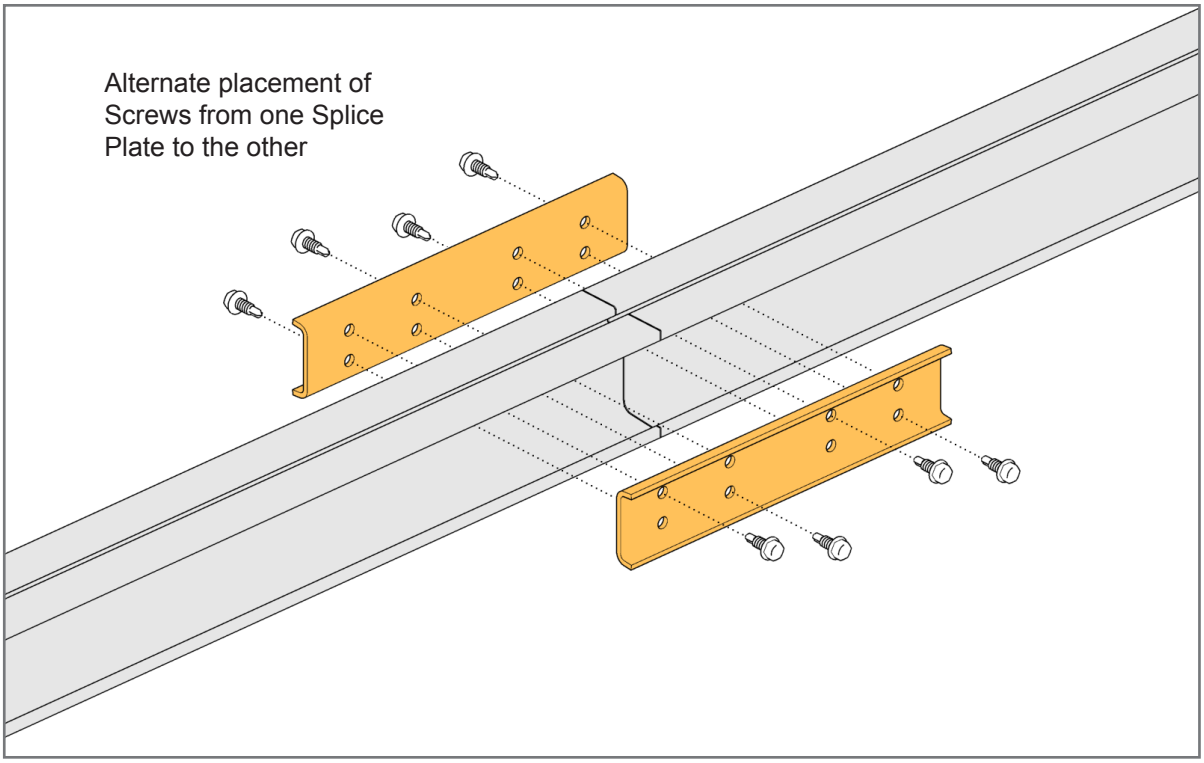


The Rails are secured via the pre-assembled clamping system (Rail Base & Rail Clamp) which are attached to the Strongbacks. Cantilever distance between the outermost Strongback and the Rail end must be set per specifications.

11 Install the Rails (continued)

NOTE

If Splice Plates are installed prior to Rail installation, the installation must be a three person activity, taking care not to damage Splice Plates during Rail installation.

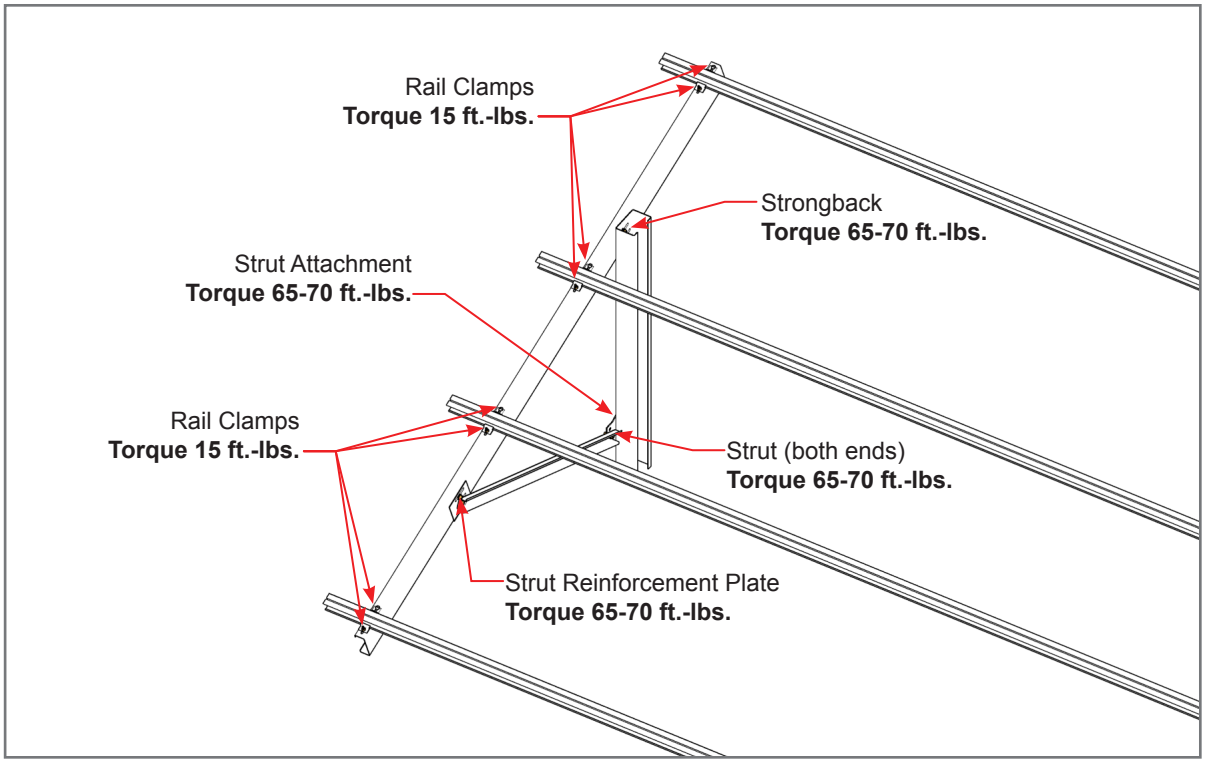


If necessary, Rails are spliced using a Splice Plate and self tapping hardware. Splicing can be done either before or after the Rails are installed on the Strongbacks. Install the Splice Plates with 1/4" x 3/4" self drilling screws. **Torque to 8 ft.-lbs.**

12 Tighten and Torque the Hardware

CAUTION

Exceeding torque values can result in damage to components and/or Hardware.

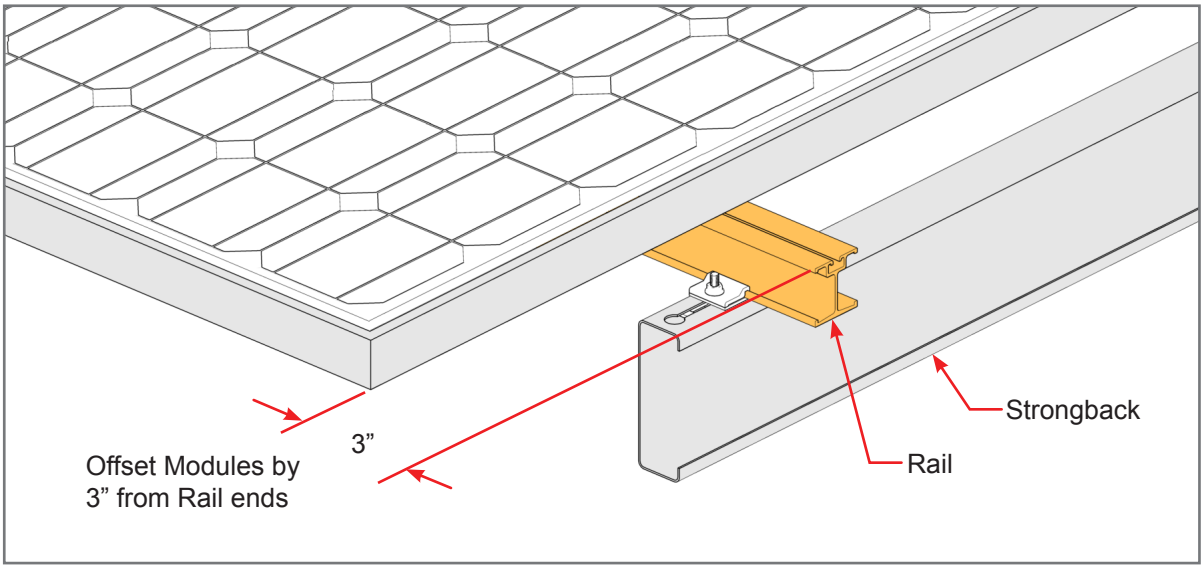


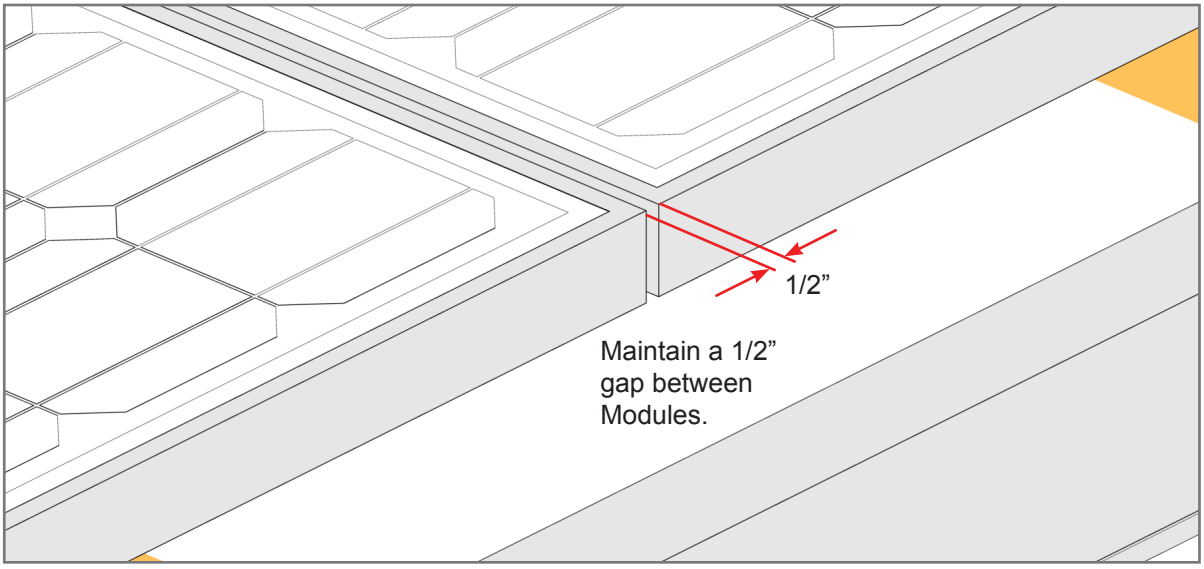
It's extremely important to tighten and torque all hardware as specified above.

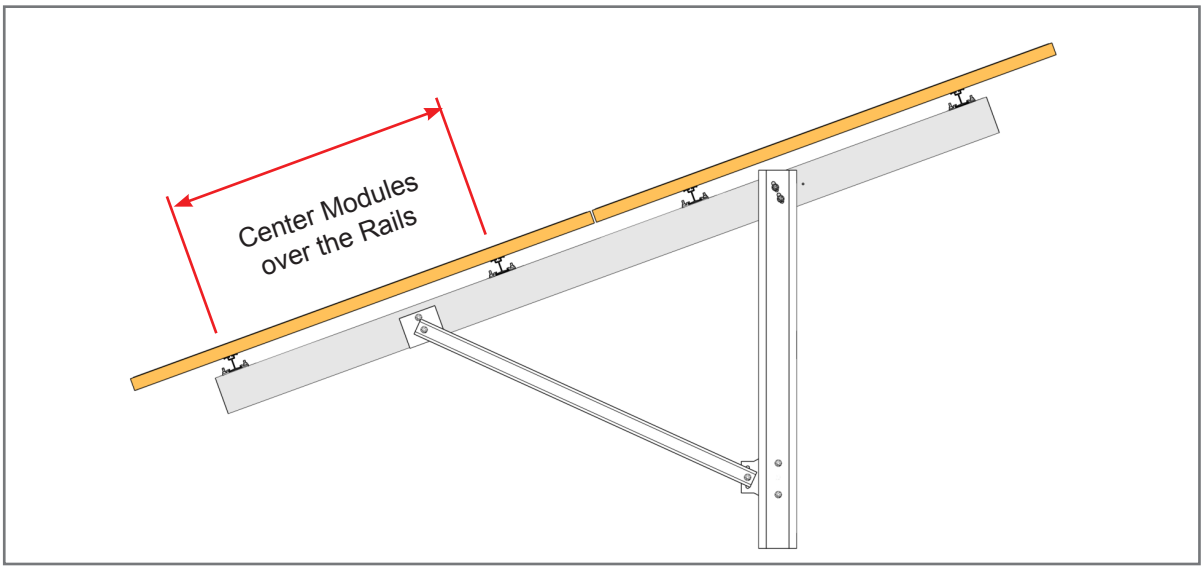
13 Installing the Modules

TIP!

1. Work sequentially, installing the Modules by columns.
2. Periodically check to ensure that the Modules are square to the Rails.
3. Make a simple Module positioning jig to quickly and accurately center the Modules over the Rails.
4. Always tighten each Module's Clamps before installing the next-in-line Module.







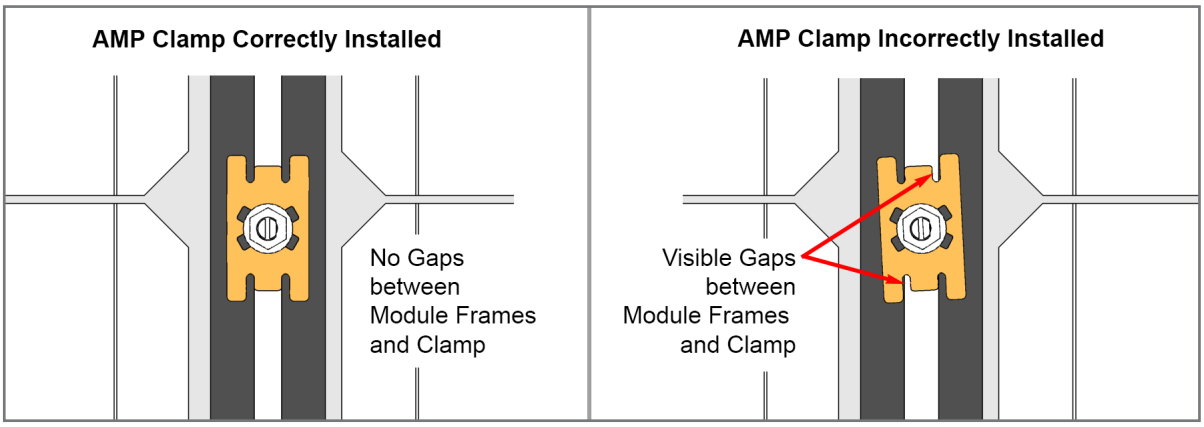
13 Installing the Modules (continued)

CAUTION

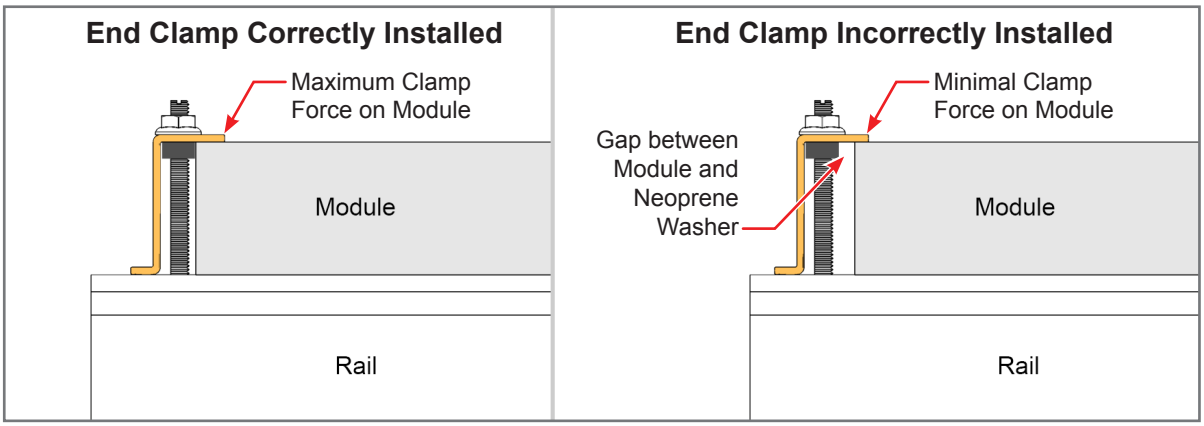
This is a two person activity. In addition to the difficulties associated with working on a sloped rack, PV Modules are heavy. One person should hold and align the modules while a second person secures modules with clamping hardware. Failure to do so could lead to serious personal injury and/or damaged components.

CAUTION

Module Clamps must be correctly installed. Failure to follow the correct method could lead to personal injury, structural failure, and/or damaged components.



AMP Clamp bonding Mid Clamps must be installed as shown at above left and not as shown to the right. There cannot be any visible gaps between the bonding Mid Clamps and Module Frames.



Install End Clamps by pushing the End Clamp assembly tightly against the module frame. There should not be any visible gap between the Neoprene Washer and the Module Frame.

13 Installing the Modules (continued)

NOTE

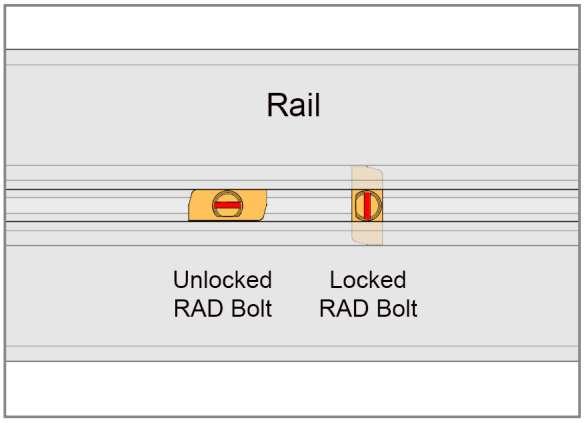
The RAD bolts used in the AMP Clamps and End Clamps must be locked into the channel by rotating clockwise 90-degrees. Use the indicator slot on the threaded end to identify whether or not the bolt has been locked.

CAUTION

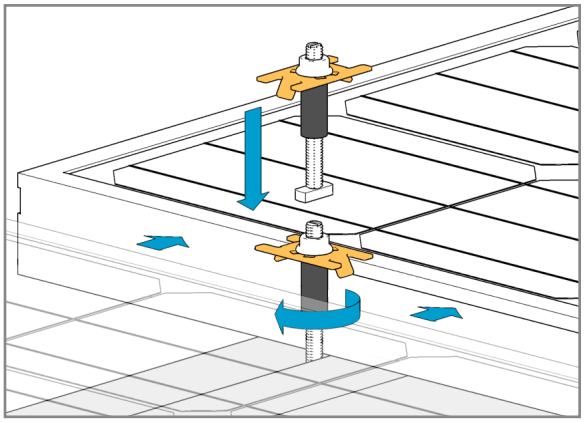
If the Flange Nut has been removed from the assembly, add Pentrox-A on threads of RAD Bolt before re-installing Flange Nut.

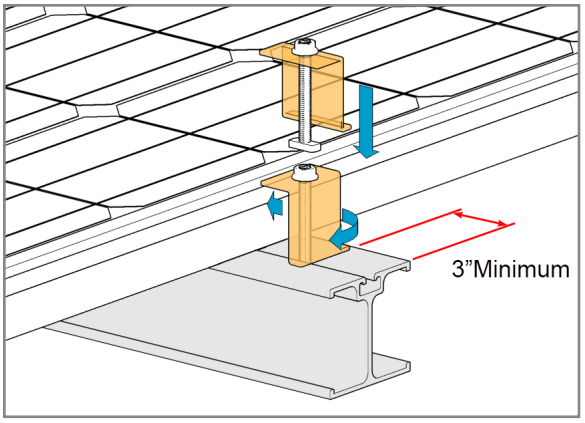
CAUTION

Exceeding torque values can result in damage to Rail and/or Hardware.



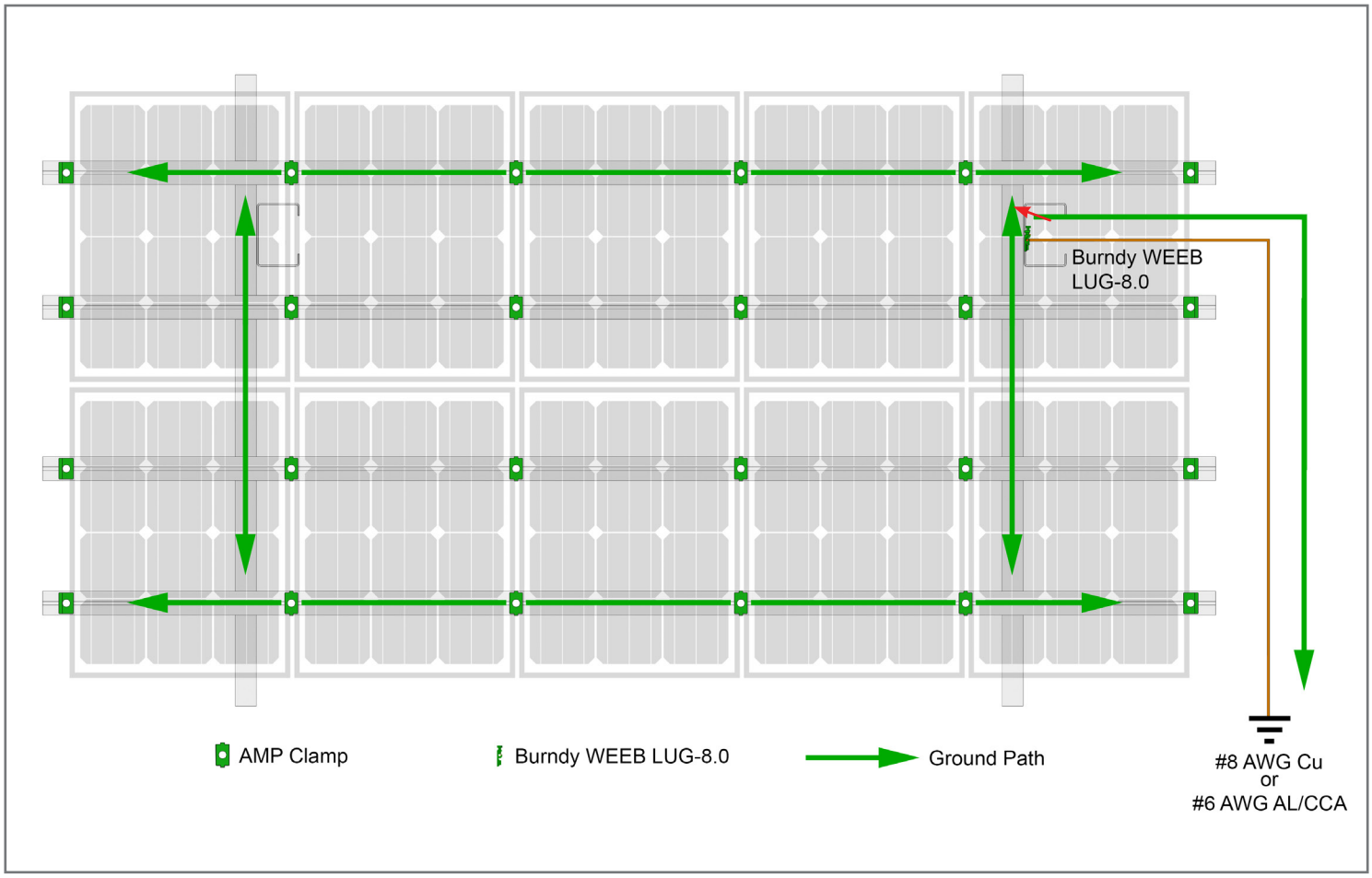
AMP Clamp bonding Mid Clamps are inserted into the Rail and positioned between adjacent Modules. Insert the 5/16” RAD Bolt into Rail and rotate 90-degrees clockwise to lock the RAD Bolt within the Rail. Push Modules against AMP Clamp. Tighten 5/16” Flange Nut. **Torque to 15 ft.-lbs.**





RAD End Clamps are used on the outer Modules. Insert the 5/16” RAD Bolt into Rail and rotate 90-degrees clockwise to lock the RAD Bolt within the Rail. Secure with 5/16” Flange Nut.
Torque to 15 ft.-lbs.

Grounding/Bonding Path



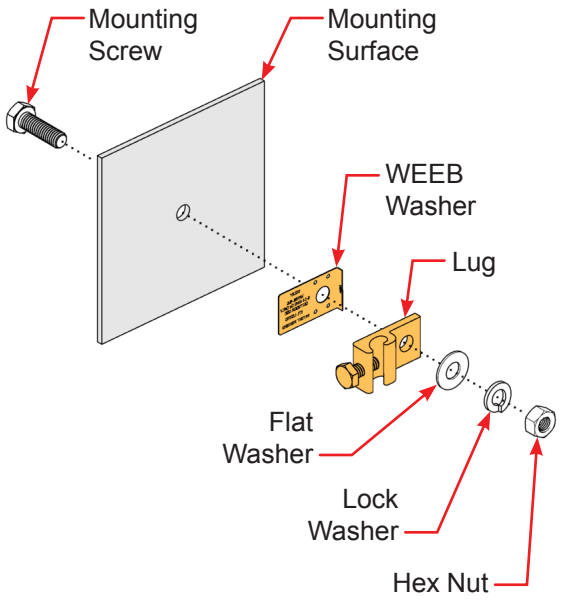
Installing a WEEB-LUG 8.0

IMPORTANT

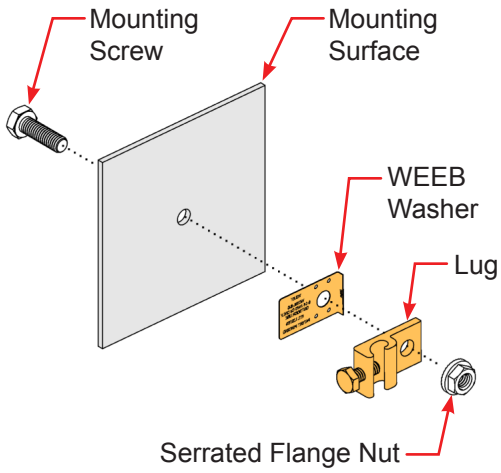
Before installing verify with the lug manufacturer for any updates or revisions to these lug installation instructions.

One of two mounting methods may be used defined here as Methods A and B.

Lug is suitable for use with 14-6AWG solid or stranded copper conductor when tightened to 5ft-lbs.



Mounting Method A



Mounting Method B

Cat No.	Max OCPD (A)	Mounting Surface					Mounting Screw		Mounting Hole Range	
		Min Profile (w x l)	Min Thick (in)	Max Thick (in)	Mtl	Surface Prep	Size	Tightening torque (lbs.-in)	Min (mm)	Max (mm)
WEEB-LUG-8.0	200	22mm x 20mm	.06”	.25”	AL	Anodized	5/16” M8	120	7.85mm	10mm
			.06”	.25”	Steel	Galvanized				

Table 1: Mounting Surface Requirements

IMPORTANT NOTES

1. Before installing verify with the lug manufacturer for any updates or revisions to these lug installation instructions. The instructions on this page only address the WEEB-LUG-8.0 as found within the manufacturers (Burndy) document number 50016572 Rev E.
2. The NEC section 690.43 states, “Exposed non-current carrying metal parts of module frames, equipment, and conductor enclosures shall be grounded in accordance with 250.134 or 250.136 (A) regardless of voltage.”
3. For Proper Equipment Grounding Conductor (EGC) and Overcurrent Protection Device (OCPD) sizing, refer to NEC sections 250.66, 250.122 and 250.166.

Compatible Modules - these modules meet the UL2703 standard

This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

Manufacturer	Frame Thickness	Model
Canadian Solar	40 mm	CS6P-250P, CS6P-255P, CS6P-260P, CS6P-260P-SD, CS6P-265P, CS6P-265P-SD, CS6P-270P
Heliene	40 mm	60P-MIM
Kyocera	46 mm	KU250-6BCA,KU255-6BCA, KU260-6BCA, KU265-6BCA
LG	35 mm	LG300N1C-G3, LG305N1C-G3, LG310N1C-G3
	36 mm	LG365N2W-B3, LG375N2W-B3
	40 mm	LG320N1C-G4, LG325N1C-G4, LG 335N1C-G4, LG340N1C-G4
	46 mm	LG375N2W-G4
REC Solar	35 mm	REC265TP, REC270TP, REC275TP, REC280TP, REC285
	38 mm	REC240PE, REC245PE, REC250PE, REC255PE, REC260PE, REC265PE, REC270PE
Silfab	38 mm	SLA260M, SLA265M, SLA270M, SLA275M, SLA280M, SLA285M, SLA290M, SLA295M, SLA300M
Solar World	31 mm	SW280 31mm
	33 mm	SW280, 285, 290, 295, 300 33 mm, SW 320 XL 33mm FR, SW 325 XL 33mm FR, SW 330 XL 33mm FR, SW 335 XL 33mm FR, SW 340 XL 33mm FR, SW 345 XL 33mm FR, SW 350 XL 33mm FR
Suniva	38 mm	OPT-275-60-4-100, OPT-280-60-4-100, OPT-285-60-4-100, OPT-290-60-4-100, OPT-295-60-4-100, OPT-300-60-4-100
Sunpower	46 mm	SPR-327NE-WHT-D, SPR-333NE-WHT-D, X21-335-BLK, X21-345-BLK
Suntech	50 mm	STP270-24/Vd, STP275-24/Vd, STP280-24/Vd, STP285-24/Vd, STP290-24/Vd, STP295-24/Vd, STP300-24/Vd, STP305-24/Vd
Topoint Solar	35 mm	JTM185-72M, JTM190-72M, JTM195-72M, JTM200-72M
Trina	40 mm	TSM-290PD14, TSM-295PD14, TSM-300PD14, TSM-305PD14, TSM-310PD14, TSM-315PD14, TSM-320PD14, TSM-325PD14

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