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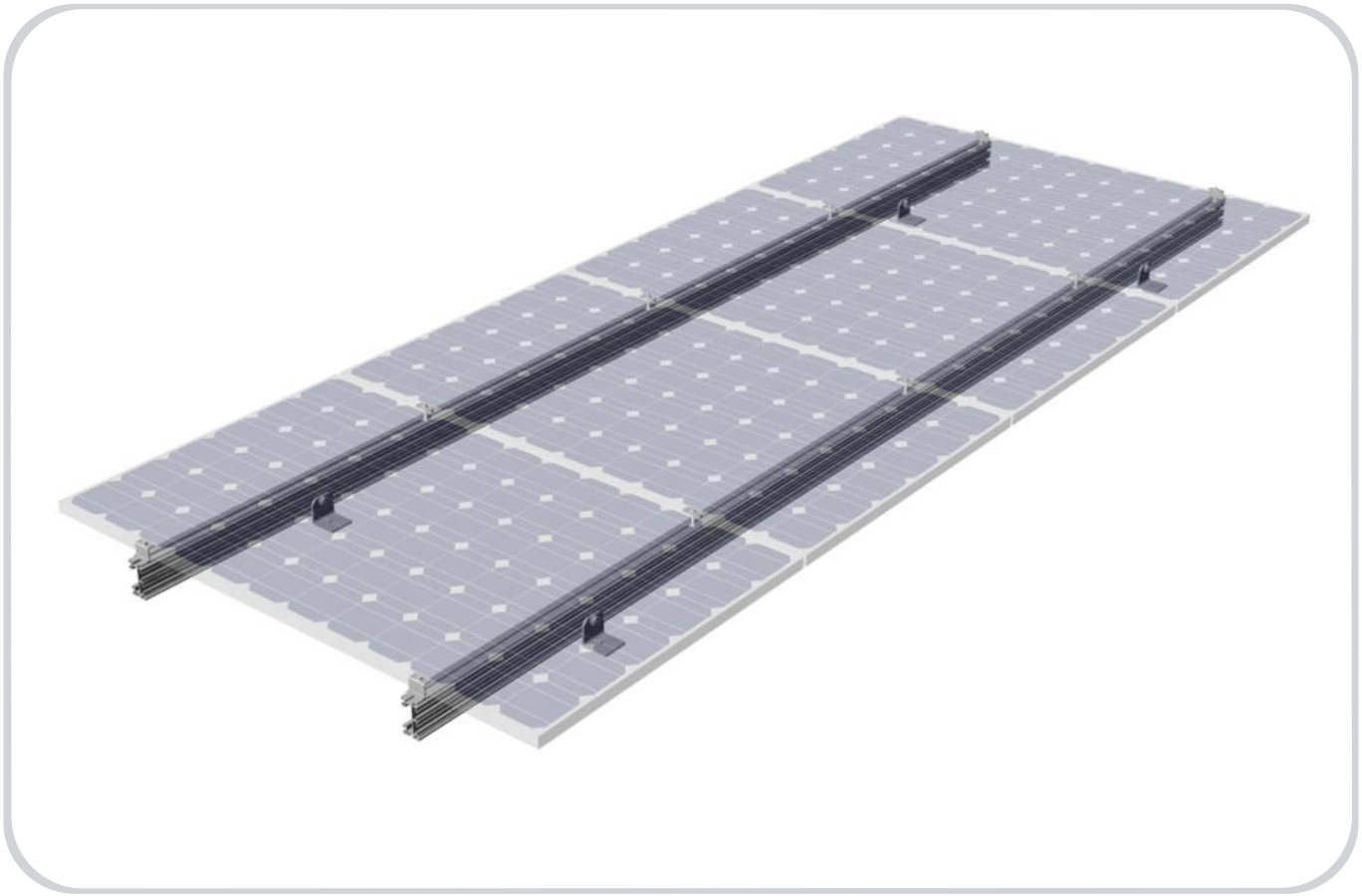
PREFORMED LINE PRODUCTS



POWER RAIL™ P14

ASSEMBLY INSTRUCTIONS

step-by-step
assembly and installation

Version 1, Rev A
PCN 041012-1

Power Rail™ P14

A Few words about these Assembly Instructions

These instructions:

- Do not include any information on the selection or installation of attaching hardware to be mounted to the roof substrate. For information on compatible attaching hardware, see our publication titled “Power Rail Design Guidelines”.
- Begin after all roof mounted attaching hardware has been installed and secured to the roof substrate.
- 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.
- Include various precautions in the forms of Notes, Cautions, and Warnings. These are to assist in the assembly process and/or to draw attention to the fact that certain assembly steps may be dangerous and could cause serious personal injury and/or damage to components. Following the step-by-step procedures and these precautions should minimize the risk of any personal injury or damage to components while making the installation an efficient process.

WARNING: Follow the procedures and precautions in these instructions carefully.

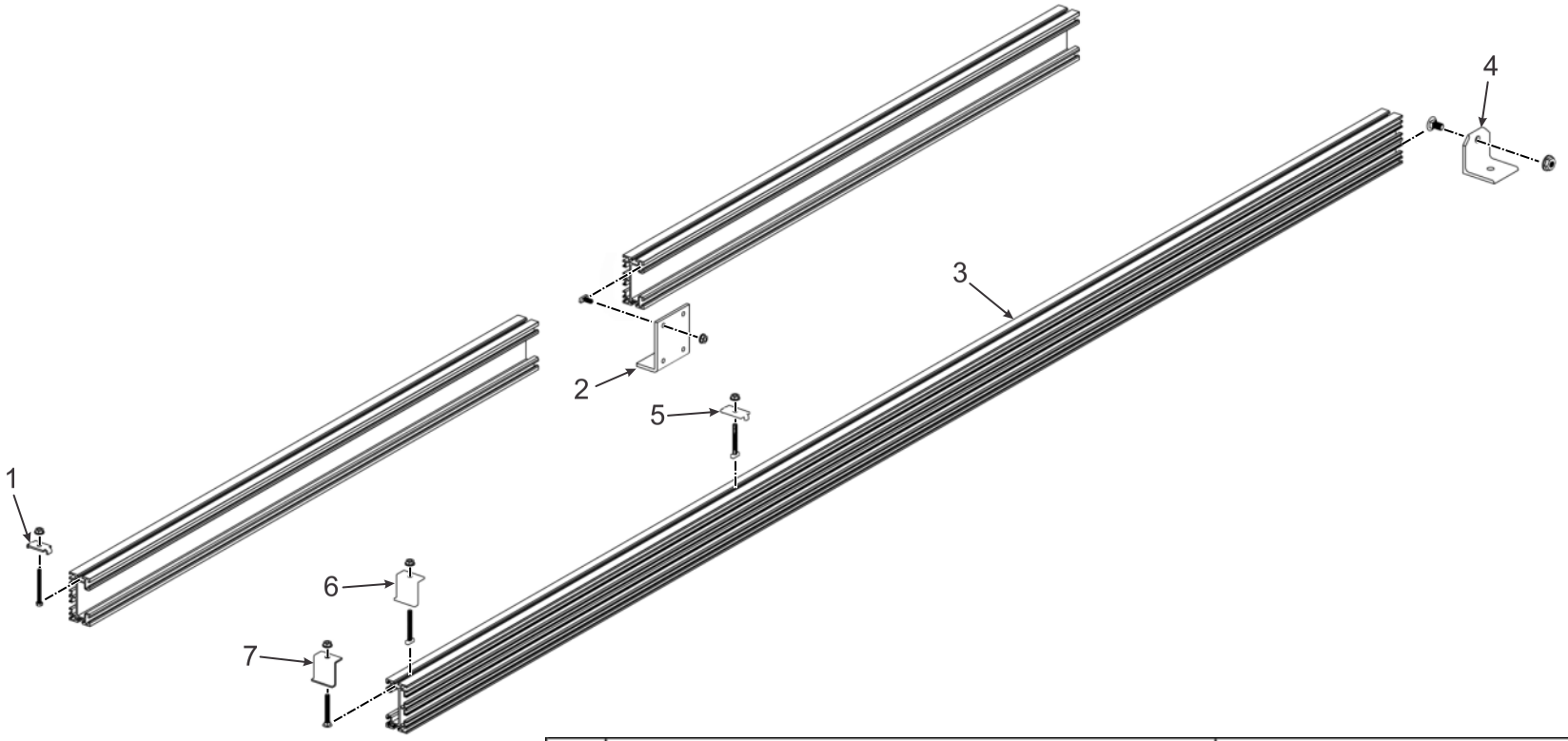
For questions on a specific installation please call us or e-mail us at:

Phone: 800-260-3792

Email: info@power-fab.com

Required Tools ☑

- ☐ 1/2 inch wrench or socket for 5/16 inch hardware
- ☐ 3/4 inch wrench or socket for 1/2 inch hardware
- ☐ Torque wrench
- ☐ Ratchet wrench
- ☐ Ratchet extension bar
- ☐ Framing square
- ☐ Tape Measure



Item	Description	Qty
1	Mid Clamp, (5/16" x *) carriage bolt, flange nut	2 per 3/8" gap between modules
2	Splice Plate, set of four (5/16" x 3/4") turn bolts, flange nuts	1 per rail joint
3	Power Rail P14	2 per Rail Set
4	Mounting Foot, (1/2" x 1") turn bolt, flange nut	Refer to Power Rail Design Guidelines
5	RAD Mid-Clamp, (5/16" x *) RAD bolt, flange nut	2 per 3/8" gap between modules
6	RAD End-Clamp, (5/16" x *) RAD bolt, flange nut	4 per Rail Set
7	End-Clamp, (5/16" x *) carriage bolt, flange nut	4 per Rail Set
* 2", 2-1/4", 2-1/2", or 2-3/4" bolt. Length is dependent on depth of PV Module frame		
Notes: 1. Option to install Mid Clamp with carriage bolt or RAD Mid Clamp. 2. Option to install End Clamp with carriage bolt or RAD End Clamp.		

Power Rail P8 Parts Identification

Step 1: Securing Attaching Hardware

NOTE:
L-feet can be attached directly to the roof substrate with the proper hardware. See Power Rail Design Guidelines for more information.

The selection of attaching hardware is dependent on the roof substrate and site design conditions. Please consult the design manual for specifics. Instructions for attaching anchoring hardware to the roof or structure are available on an individual product basis.

Step 2: Attach Power Rail to Mounting Feet

The Power Rail is secured to the Mounting Feet using a 1/2" x 1" carriage bolt and hardware. Hardware may vary depending on design-specific requirements.

The Power Rail overhangs beyond the outermost Mounting Foot. This overhang is referred to as “cantilever”, or abbreviated as "C'ver". The distance between adjacent Mounting Feet is referred to as "span". The length of both the cantilever and the span are dependent on several factors, unique to each installation and are determined by the system design.

A. Measure and mark the cantilever dimension supplied by the design manual onto the Power Rail. (See Figure 2-1)

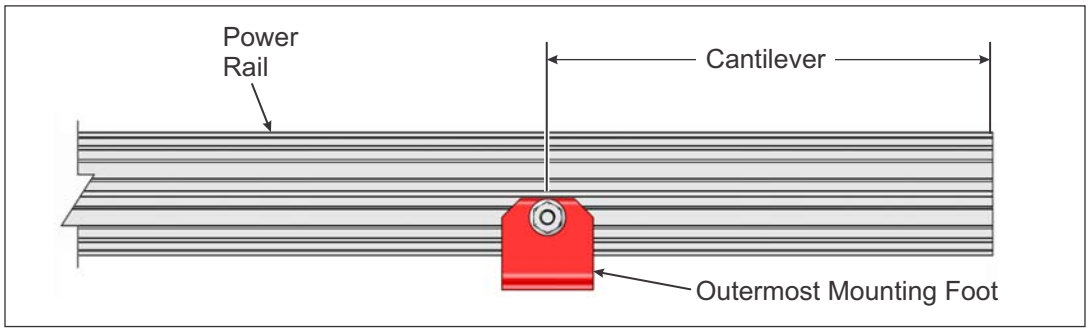


Figure 2-1: Cantilever Measurement and Marking

CAUTION:
Cantilever and span dimensions are design specifications. Consult the design manual to match these dimensions to site conditions. It's important to use the unique cantilever and span dimension specific to the install. Failure to do so could lead to excessive deflection and/or premature system failure.

B. Starting at the outermost Mounting Foot mounting position, insert one 1/2" x 1" carriage bolt into the channel of the Power Rail. (See Figure 2-2)

C. Holding the Power Rail, line-up and insert the 1/2" x 1" carriage bolt into the Mounting Foot and loosely secure with 1/2" flange nut. Do not tighten until all bolts have been positioned in the entire length of the Power Rail, the bolts have been aligned and passed through the Mounting Feet, and the flange nuts loosely started.

D. Align the centers of the outermost Mounting Feet to the cantilever marks previously made on the Power Rail.

E. Tighten all flange nuts and **Torque to 45-50 ft.-lbs.**

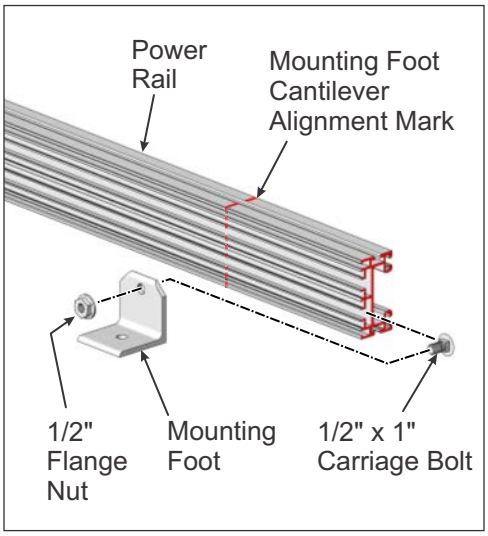
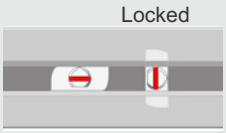


Figure 2-2: Attaching Power Rail to Mounting Foot

Step 3: Splicing Power Rail with Splice Plates

NOTE:
Turn bolts 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.

Turn bolt shown in channel of Power Rail



Indicator Slot shown in **Red**

Splice Plates are used to butt-joint Power Rail sections and extend their length as needed. They are attached to the Power Rail using two 5/16” x 3/4” turn bolts and flange nuts. (See Figure 3-1)

A. Hold the two ends of the Power Rail together.

B. Insert two 5/16” x 3/4” turn bolts into each channel of Power Rail section to be spliced (Four bolts in total, two in each Power Rail).

C. Position the Splice Plate onto the Power Rail and the four turn bolts.

D. Align the Splice Plate so that it's equally divided along the Power Rail butt-joint.

E. Twist each of the turn bolts clockwise 90-degrees to lock in place.

F. Secure the Splice Plate to Power Rails with four 5/16” flange nuts. **Torque to 14-16 ft.-lbs.**

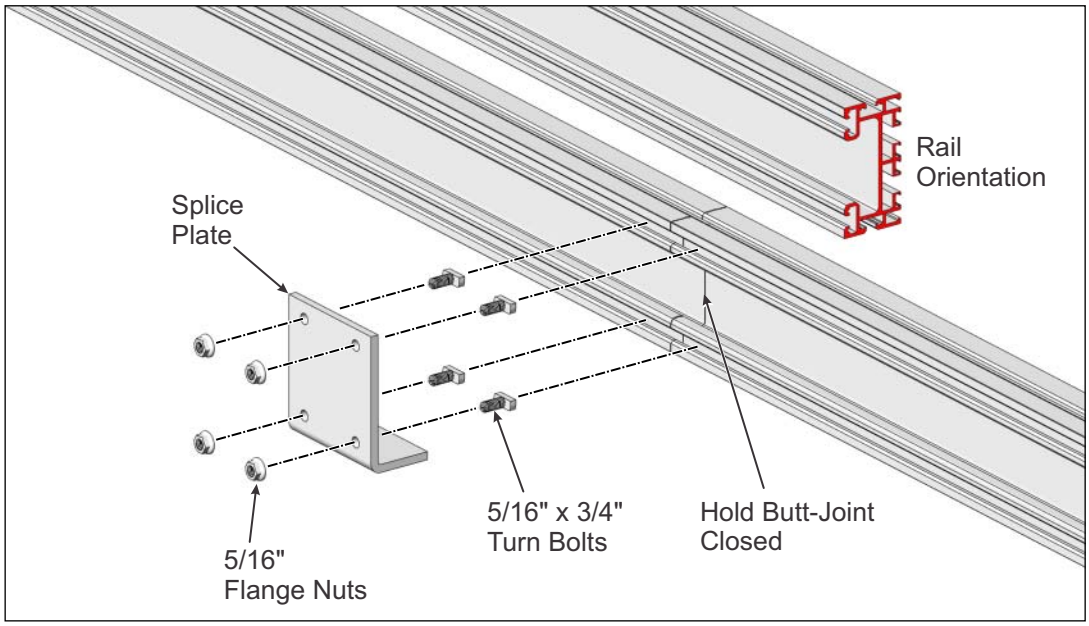


Figure 3-1: Splice Plate Installation

Step 4: Installing PV Modules to Power Rails with Module Clamps

WARNING:
This is a two person activity. In addition to the difficulties associated with working on a sloped rooftop, 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.

NOTE:
Hardware is dependent on particular features and system design. Therefore, it may appear different from these instructions.

PV Modules are secured to the Power Rail using Mid Clamps and End Clamps (Standard or RAD™), along with the appropriate attaching hardware.

Attaching hardware includes Carriage Bolts or RAD Bolts.

The importance of correctly installing End and Mid Clamps:

There is only one correct method of installing End Clamps and Mid Clamps. Failure to follow the correct method could lead to personal injury, structural failure, and/or damaged components. See Figure 4-1 for proper method of installation for an End Clamp and Figure 4-2 for the Mid Clamp. Refer to these figures during the installation of the Modules to prevent any undue problems associated with an improper installation.

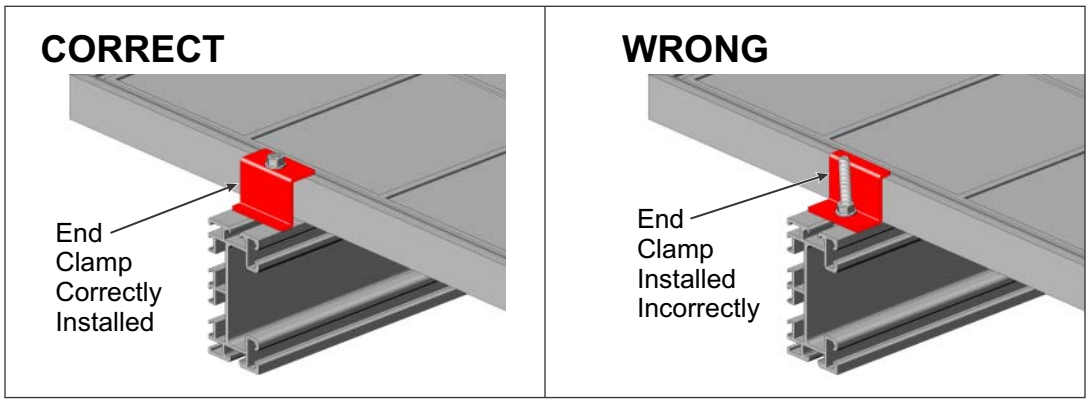


Figure 4-1: Correct and Wrong methods of installing Standard End-Clamp (using Carriage or RAD Bolts)

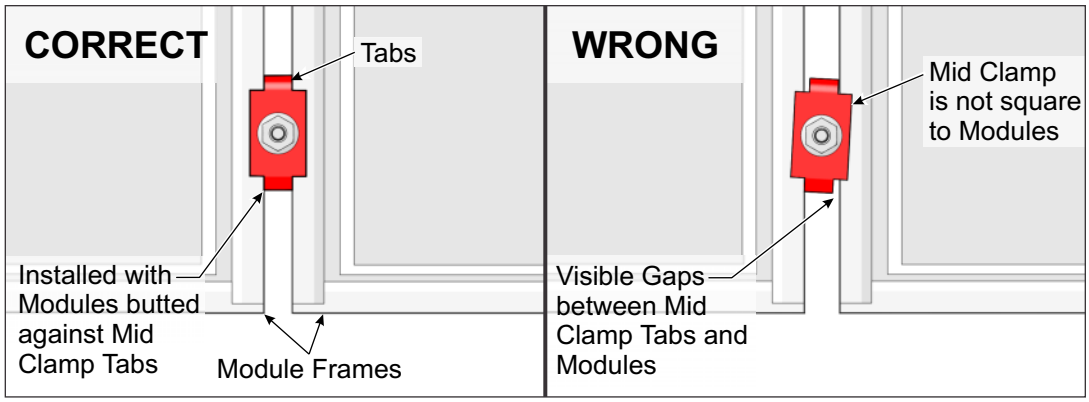


Figure 4-2: Correct and Wrong methods of installing a Mid Clamp (using Carriage or RAD Bolts)

Installing Modules using Standard End and Mid Clamps:

NOTE:
If using standard 5/16” carriage bolts for Mid Clamps, the bolts must be inserted into Power Rail before installing interior PV Modules.

If using RAD hardware, the hardware can be inserted anytime at any position along the Power Rail.

Start with exterior Module and End Clamps.

A. Place Module on two Power Rails, centering it lengthwise. Use a square to square-up the Module to the Power Rails.

B. Insert one 5/16” x 2, 2-1/4, 2-1/2 or 2-3/4” carriage bolt into the top slot of the Power Rail. Push the bolt against the side of the module frame. Install End Clamp onto bolt and secure with 5/16" flange nut. **Torque to 14-16 ft.-lbs.** (See Figures 4-1 and 4-3)

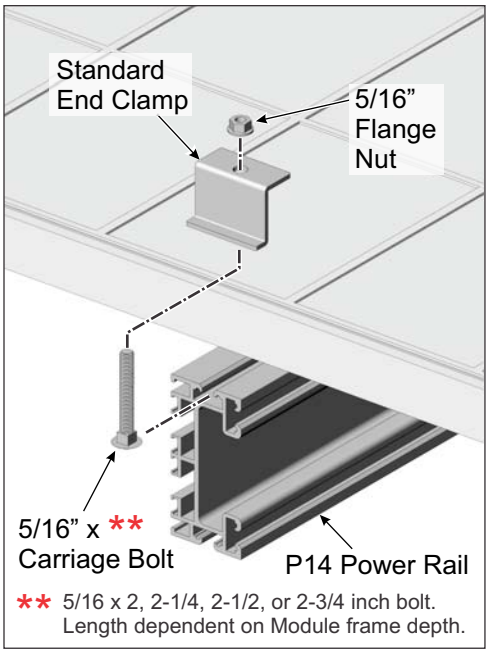


Figure 4-3: Installing Modules using Standard End-Clamp

Now install the next in-line Module using Mid Clamps.

C. Before placing the interior Module onto the Power Rails, first insert 5/16” x 2, 2-1/4, 2-1/2, or 2-3/4” carriage bolts (bolt length is dependent on depth of Module frame) into the Module Rail, sliding the bolts inward next to the previously installed exterior Module. (See Figure 4-4)

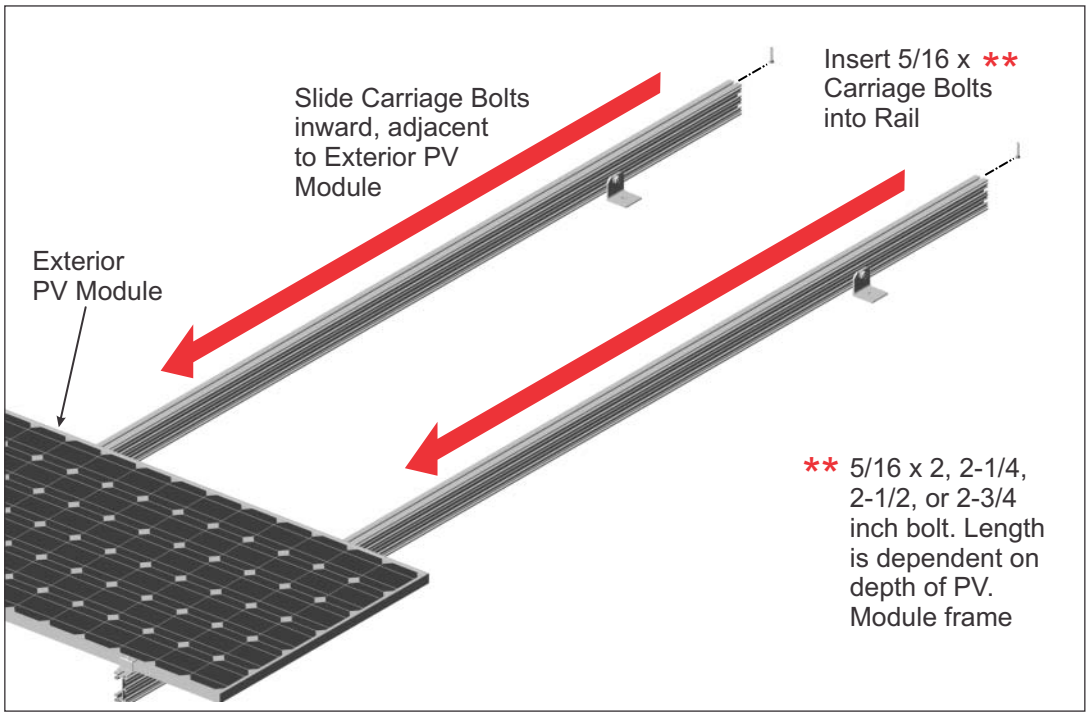


Figure 4-4: Inserting Mid Clamp Hardware into Power Rail

D. Install a Mid Clamp onto each carriage bolt making certain that the Mid Clamp tabs rest between the two modules.

E. Push Modules against Mid Clamp tabs and secure Mid Clamp with 5/16” flange nut. **Torque to 14-16 ft.-lbs.** (See Figures 4-2 and 4-5)

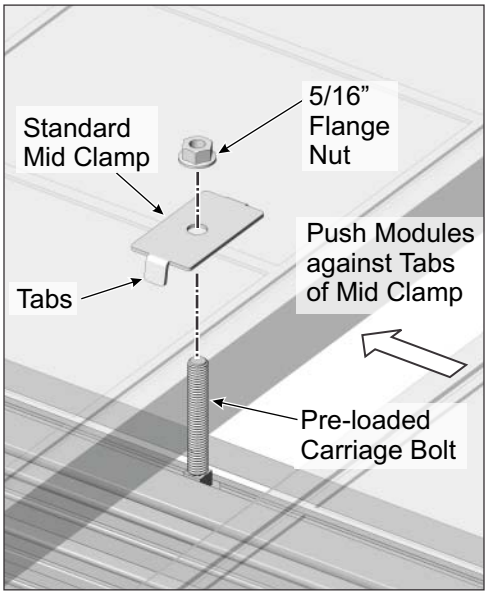


Figure 4-5: Installing Modules using Standard Mid Clamp

Installing Modules using RAD End and Mid Clamps:

Start with exterior Module and End Clamps.

A. Place Module on two Power Rails, centering it lengthwise. Use a square to square-up the Module to the Power Rails.

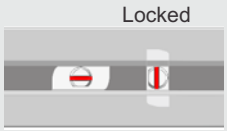
B. Insert one 5/16” x 2, 2-1/4, 2-1/2 or 2-3/4” RAD bolt into the top slot of the Power Rail. Push the bolt against the side of the module frame and twist to lock in place. Install End Clamp onto bolt and secure with 5/16" flange nut. **Torque to 14-16 ft.-lbs.** (See Figures 4-1 and 4-6)

Install next in-line Module using Mid Clamps.

C. Insert one 5/16” x 2, 2-1/4, 2-1/2, or 2-3/4” RAD bolt (bolt length is dependent on depth of Module frame) into each Rail, next to the previously installed exterior Module. Twist RAD bolt to lock in place. (See Figure 4-7)

NOTE:
RAD bolts 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.

RAD bolt shown in channel of Power Rail



Indicator Slot shown in **Red**

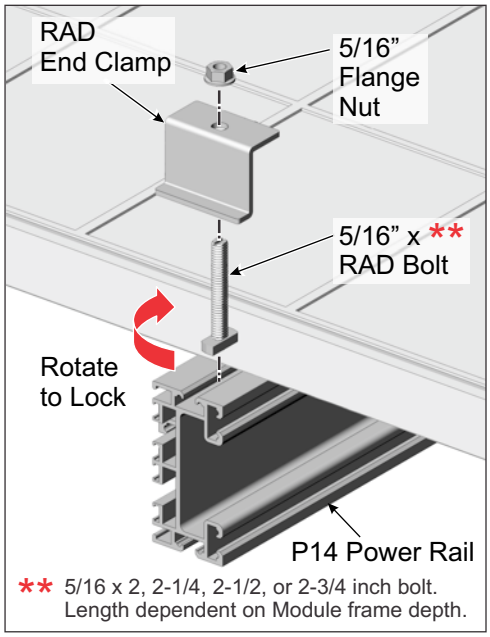


Figure 4-6: Installing Modules using RAD End Clamp

WARNING:
Be certain that all Flange Nuts on the End and Mid Clamps are tightened and torqued to the stated values. Failure to do so could lead to serious personal injury and/or damaged components and property.

D. Place next Module onto Rails.

E. Install a Mid Clamp onto each RAD bolt making certain that the Mid Clamp tabs rest between the two modules.

F. Push Modules against Mid Clamp tabs and secure Mid Clamp with 5/16” flange nut. **Torque to 14-16 ft.-lbs.** (See Figures 4-2 and 4-7)

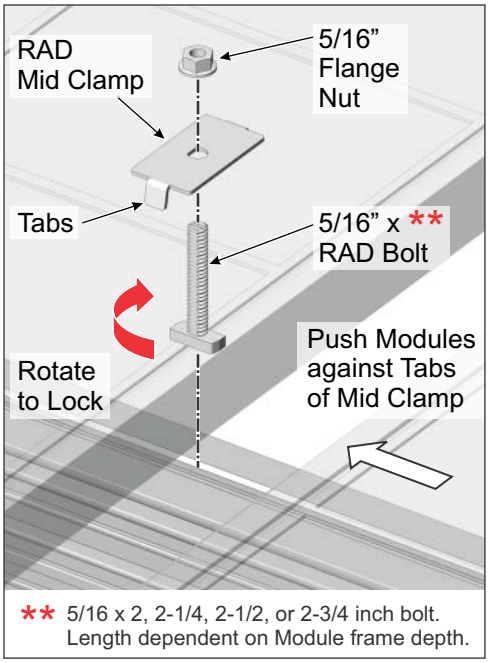


Figure 4-7: Installing Modules using RAD Mid Clamp

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