

SUNRAIL™ INVERTER RACK

FLAT ROOF RACKING SYSTEM

Installation Manual

RELEASE 2026.09.01



TABLE OF CONTENTS

INTRODUCTION.....	3
SAFETY MEASURE.....	4
PREPARATION.....	5
SYSTEM COMPONENTS.....	5
SYSTEM DETAILS.....	7
INSTALLATION.....	8
Anchor Installation.....	8
Anchor Adaptor Installation.....	8
Ground Beam Installation.....	9
Secure Ground Beam.....	9
Rail Installation.....	10
Rail Distribution Installation.....	10
Linker Installation.....	11
Rail Secured.....	11
Side Clamp Installation.....	12
Support Rail Installation.....	12
Inverter Bracket Installation.....	13
Inverter Installation.....	13
OPTIONAL INVERTER COVER.....	14
INVERTER COVER COMPONENTS.....	14
INVERTER COVER INSTALLATION.....	15
Support Assembly Preparation.....	15
Front Support Assembly Installation.....	15
Back Support Assembly Installation.....	16
Unwrap the Cover.....	16
Top Cover Assembly.....	17
Complete cover assembly installation on the Inverter Rack.....	17
Complete Row.....	18

INTRODUCTION

About this manual

This manual covers the installation of the Opsun SunRail Inverter Rack system. Sections follow the assembly sequence, from anchor placement to inverter mounting, with sub-assembly steps where required.

General Notes

The SunRail Inverter Rack is a mechanical support structure. It is not a grounding or bonding device and must not be used as an equipment grounding conductor (EGC) or as a current-carrying path. Each inverter shall be grounded in accordance with its own manufacturer's instructions and with NEC Article 250 and 690 (CSA C22.1 Section 10 in Canada). Bonding of the support structure, where required by the authority having jurisdiction, is the responsibility of the installer. Any connector installed on the rack shall be rated for use with aluminum.

Opsun requires installers to fully adhere to local safety regulations, including those set by OSHA, CCOHS, or other relevant local safety standards. Installers must use fully qualified personnel equipped with the appropriate personal protective equipment and tools.

Disclaimer

All rights reserved. Any information contained in this document remains the property of Opsun. This document may not be copied, photographed, or reproduced, in whole or in part, by any means, including electronic means, without prior written permission from Opsun. The installer and/or general contractor must promptly inform Opsun in writing if any changes are made to the presented information or if any missing information is detected. Any modification or alteration made to the approved configuration and/or specifications voids any warranty and responsibility provided by Opsun. Any proposed changes must be submitted to and approved in writing by Opsun. Do not scale. By accepting this document and by proceeding with the product installation, the client understands and agrees to the above terms.

Product overview

Opsun's SunRail Inverter Rack system is a versatile and highly efficient mounting solution designed to fit the majority of inverter models.

Faster installation

SunRail Inverter Rack is designed for quick installation, featuring preassembled parts and standardized bolts and nuts. This streamlined approach makes the installation process 25% faster than traditional racking systems.

Durability

With all-aluminum extrusions and stainless steel fasteners, the SunRail Inverter Rack offers a lightweight and robust design.

Warranty

Visit opsun.com for details of the limited materials and workmanship warranty.

SAFETY MEASURE

Warnings

During any solar power installation, the first step is to ensure the personnel are properly trained. It is not enough to know how to carry out their operations safely; they must also be trained to handle emergency situations in a timely and effective manner.

PPE

High-quality and well-maintained Personal Protective Equipment (PPE) is to be used during the solar power installation.

1. Safety shoes
2. Safety helmet
3. Reflecting jackets
4. Gloves
5. Safety Glasses
6. Full body harness with lifeline



Electrical Hazard

The SunRail Inverter Rack is a mechanical support structure, but installation and servicing take place in close proximity to energized equipment. All electrical safety rules apply, even during mechanical work.

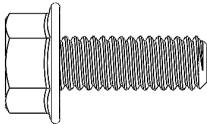
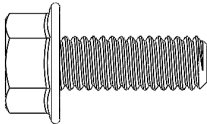
Before performing any work that involves contact with the inverter or its enclosure, the inverter shall be de-energized and locked out in accordance with the manufacturer's instructions and applicable OSHA/CCOHS lockout-tagout requirements. Only a qualified electrician shall perform or supervise the de-energization, lockout, and electrical connections.

After de-energization, allow the time specified by the inverter manufacturer for internal capacitors to discharge before opening any enclosure. Internal surfaces may remain hot after operation – allow the inverter to cool before servicing.

Handling and Lifting

Commercial three-phase inverters are heavy and unevenly balanced. Before installation, verify the inverter's weight and dimensions in the manufacturer's manual and confirm that lifting equipment, rigging, and crew size are adequate. Do not lift or support an inverter using the SunRail rack components – the rack is not rated as a lifting or rigging point.

PREPARATION

Fastener	Tool	Torque
5/16" Fasteners 	  	19.0 N·m (14 lbf·ft)
3/8" Fasteners 	  	27.1 N·m (20 lbf·ft)

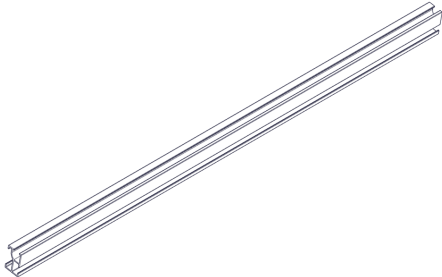
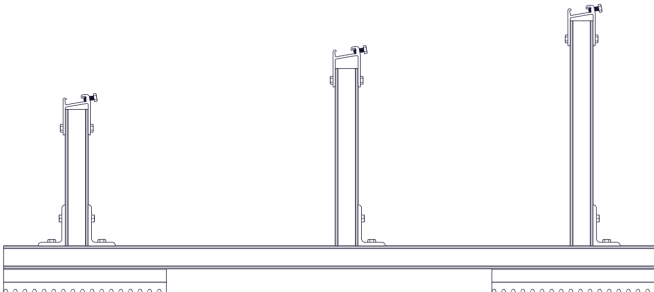
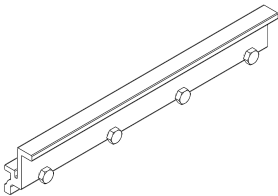
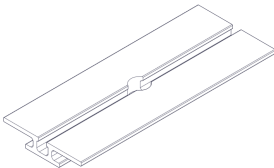
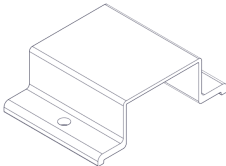
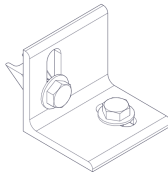
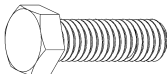
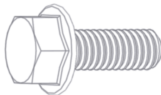
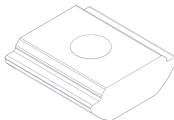
Other tools to simplify the installation:

Impact Driver

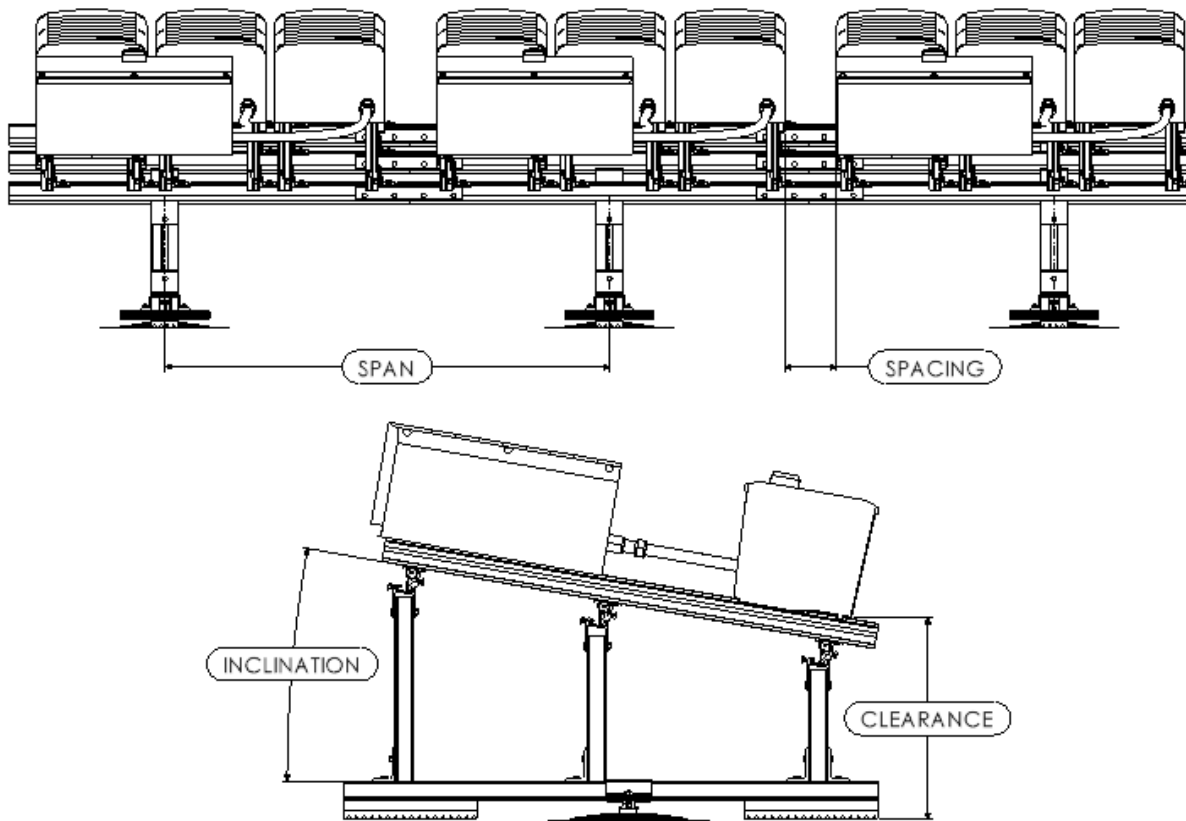
Tape Measure



SYSTEM COMPONENTS

Crossrail 		Ground Beam 	
Crossrail Linker Assembly 	Anchor Adaptor Bottom Hat 	Anchor Adaptor Top Hat 	Side Clamp 
$\frac{3}{8}$"-16 Bolt 	$\frac{5}{16}$"-18 Serrated Flange Bolt 	$\frac{3}{8}$"-16 Hex Nut 	Fit Nut 

SYSTEM DETAILS



Spacing: Space between two inverters

Inclination: Tilt angle of the system

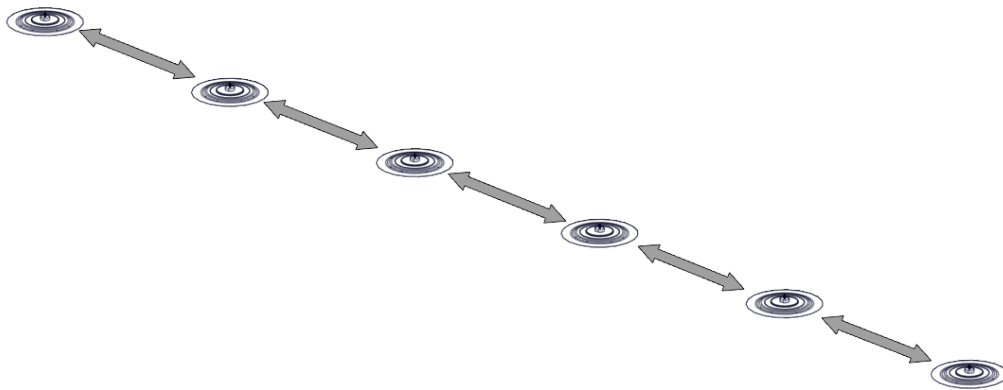
Clearance: Distance from the roof to the lower point of the inverter

Span: Distance between two anchors

INSTALLATION

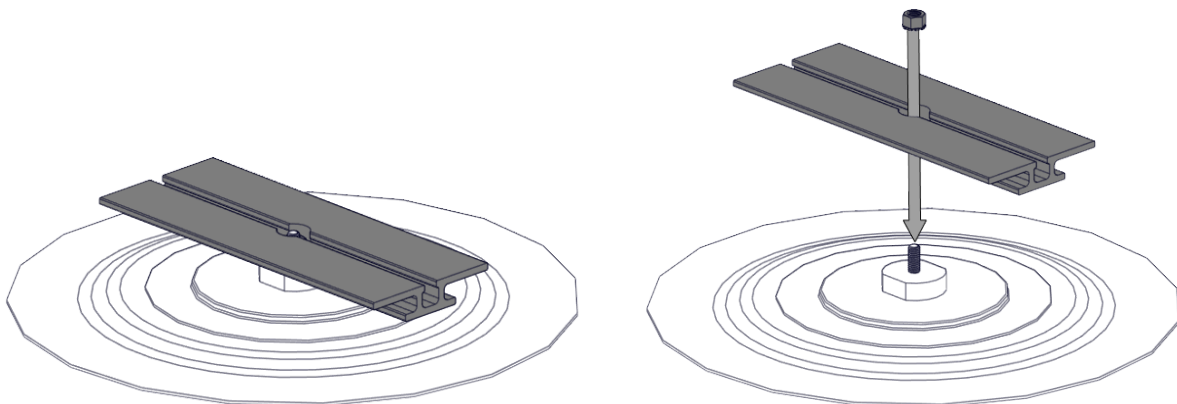
Anchor Installation

Install the anchors following Opsun's recommended anchor span with respect to the number of units to be installed on the rack.



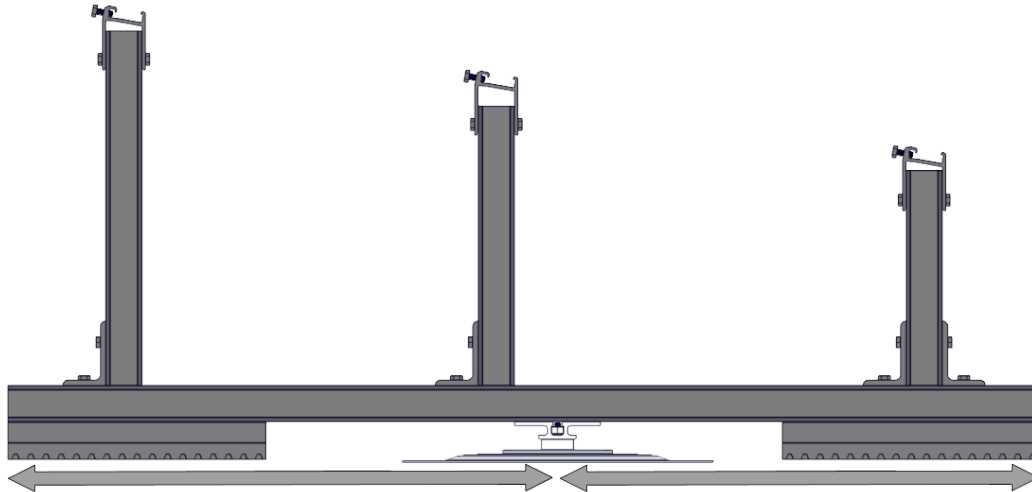
Anchor Adaptor Installation

Place an anchor adaptor bottom hat on the anchor stud and rotate it perpendicular to the planned ground beam orientation. Then, secure it with a nut. Torque to spec – see p. 5.



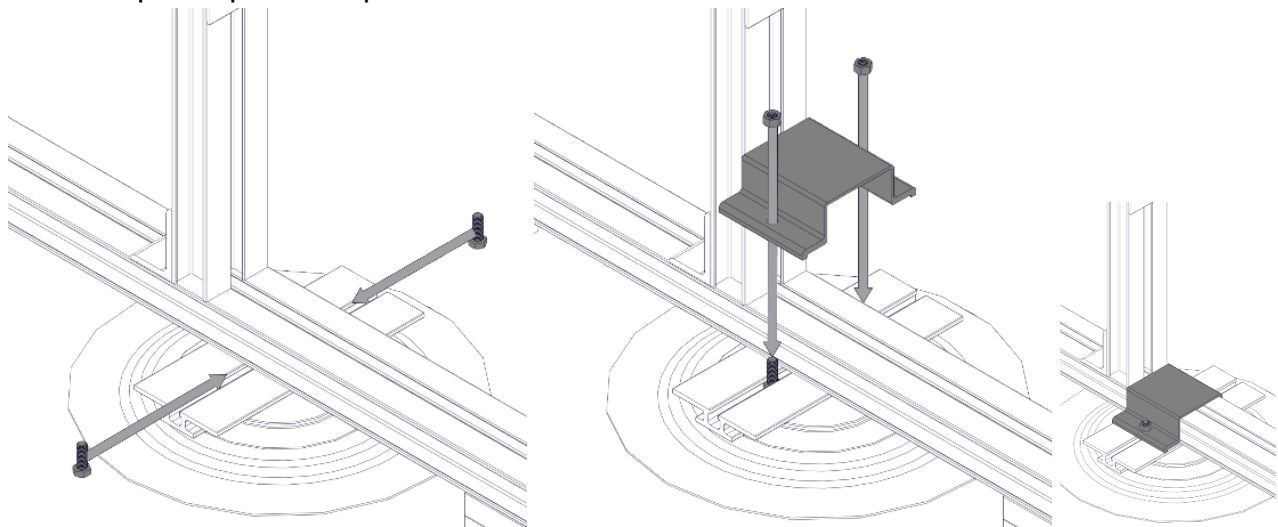
Ground Beam Installation

Place and center the ground beam over the bottom hat.



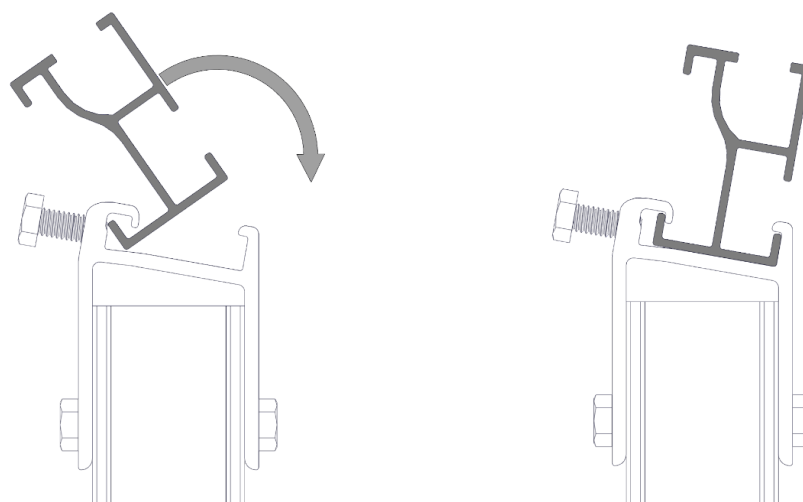
Secure Ground Beam

Slide two bolts in the bottom hat, one on each side of the ground beam. When the ground beam is in place, place an anchor adaptor top hat over it and secure it in place with the provided $\frac{3}{8}$ "-16 hex nuts. Torque to spec – see p. 5.



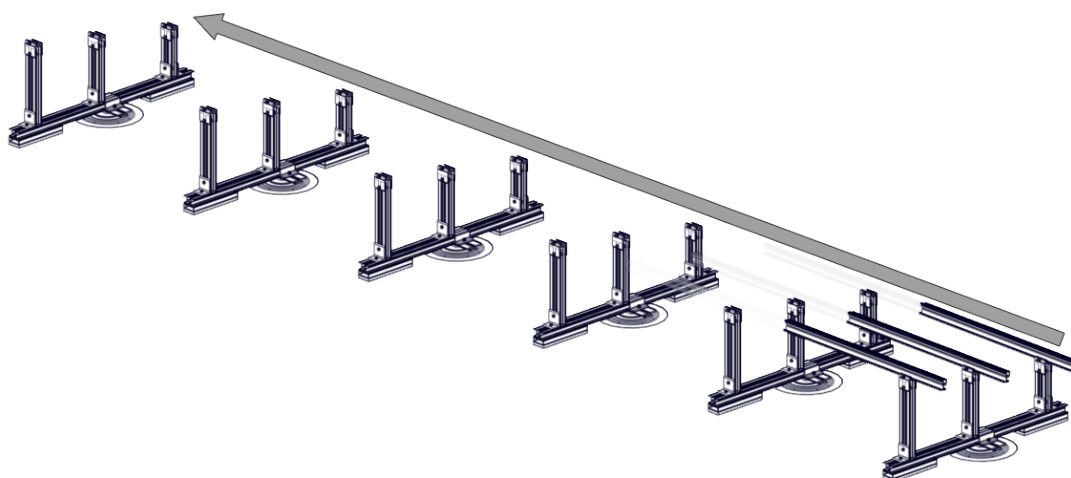
Rail Installation

Flip a crossrail into the inclined rail clamp.



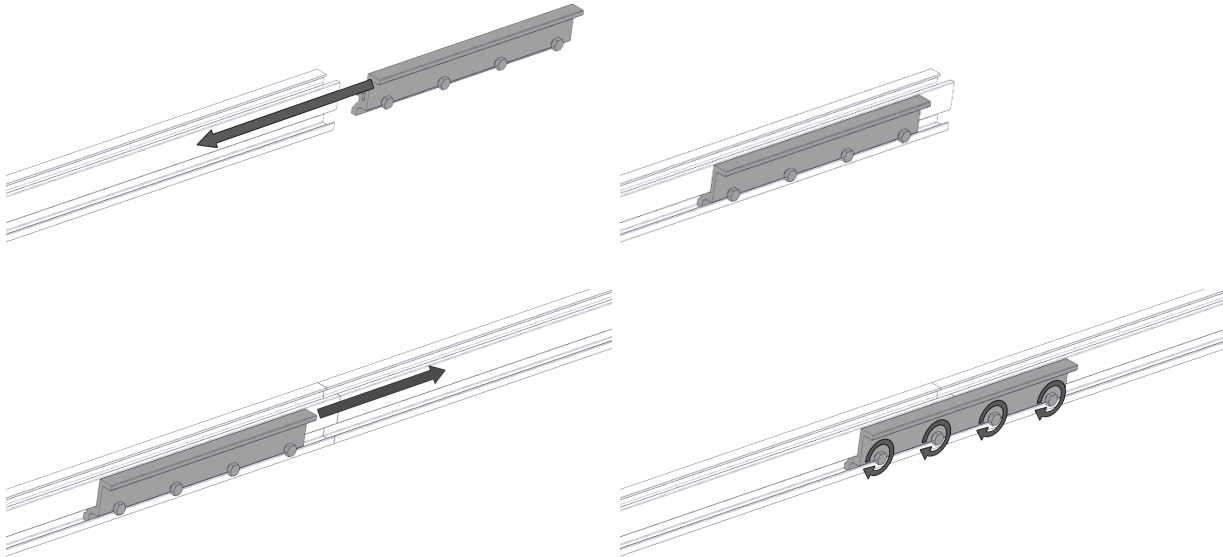
Rail Distribution Installation

Repeat the last step for each inclined rail clamp until the system is complete.



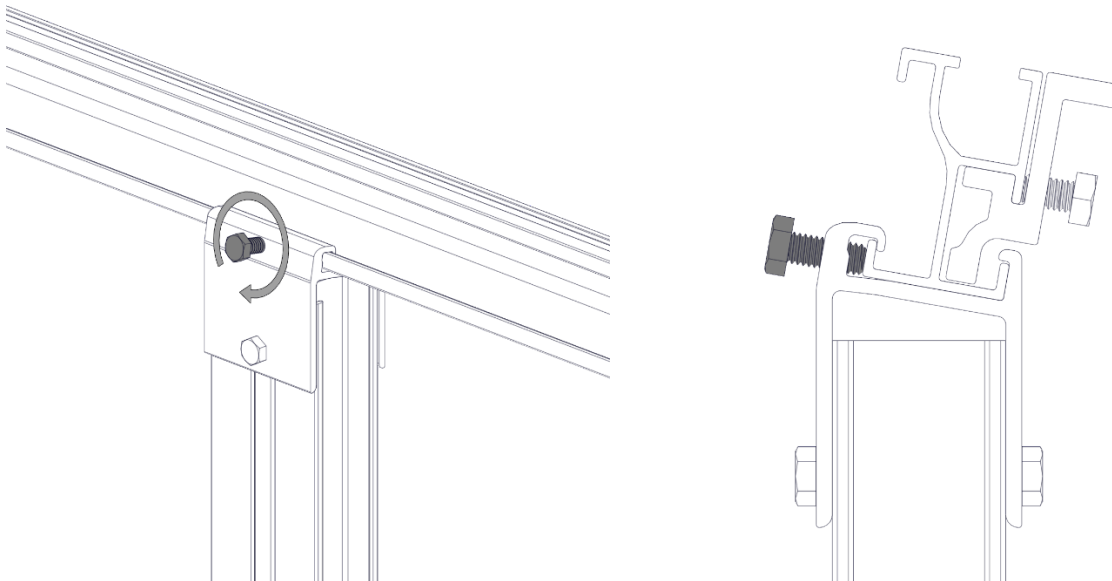
Linker Installation

At each rail joint, link both rails with a linker by tightening all four bolts. Torque to spec – see p. 5.



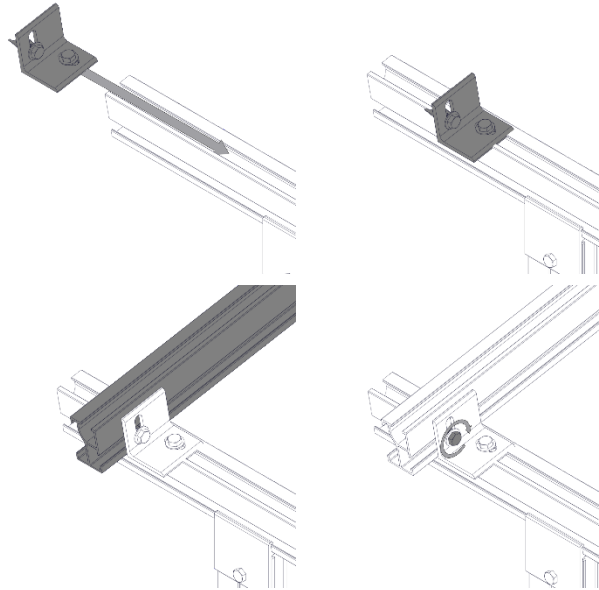
Rail Secured

Secure the crossrails by tightening the rail clamp bolt. Torque to spec—see p. 5.



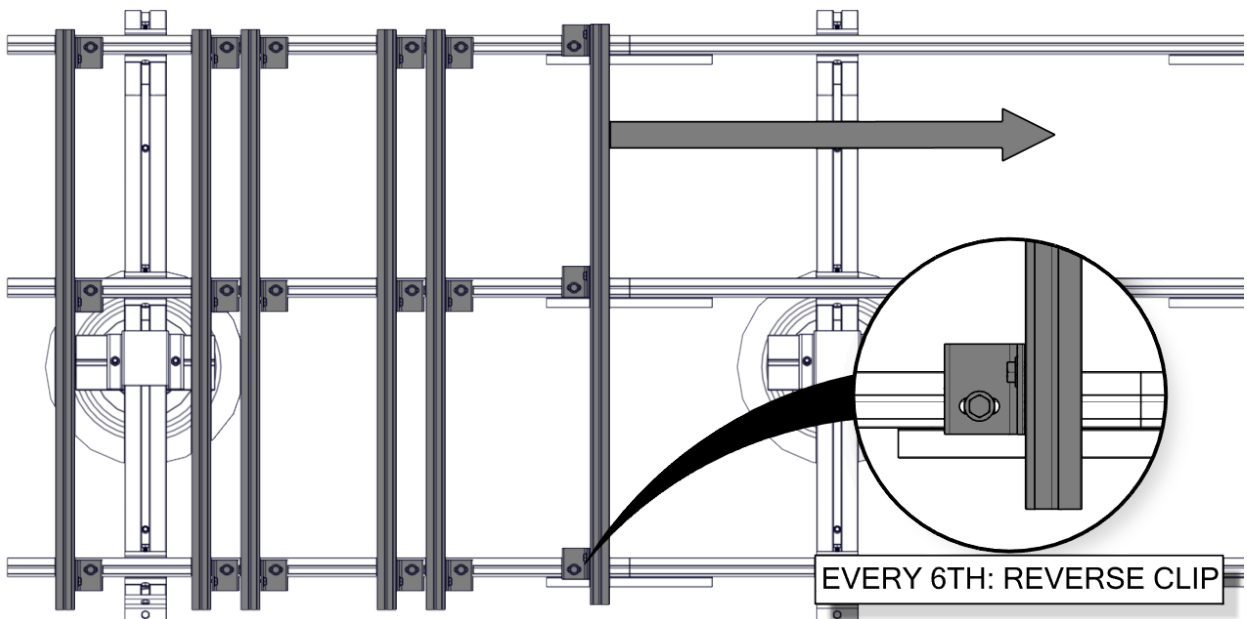
Side Clamp Installation

Install the first support rail with the side clamps, perpendicular to the crossrails. Leave 1.5in between the support rail and the end of the crossrail.



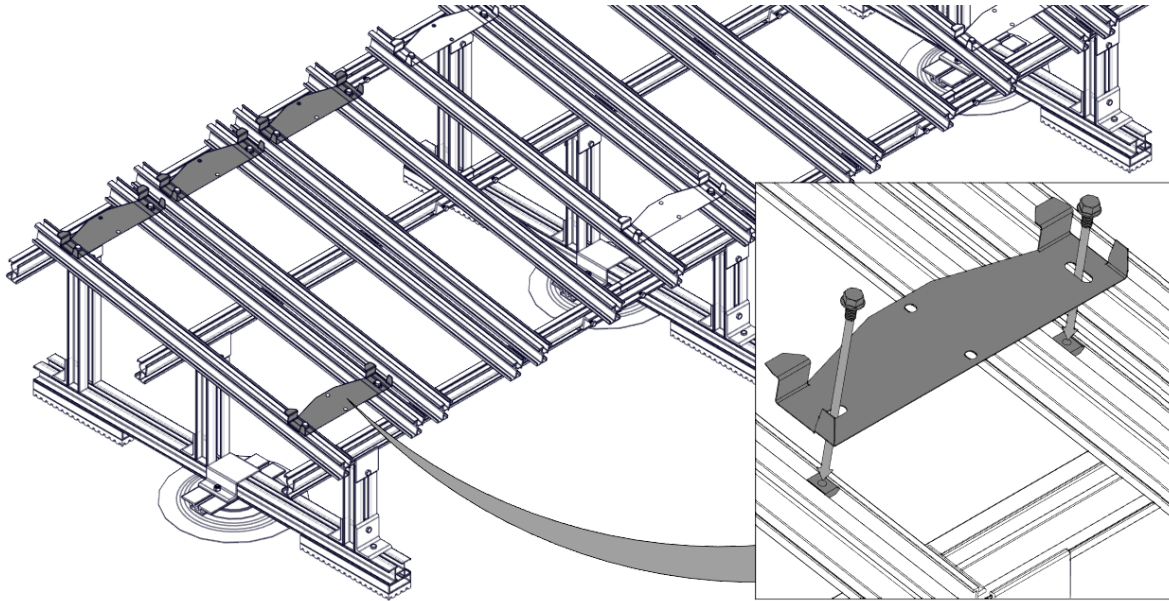
Support Rail Installation

Repeat the last step with the remaining support rails, spacing them according to the inverter manufacturer's instructions for mounting bracket position. On every sixth support rail, install the side clamps in the reversed position (see detail). If additional inverters are installed, leave a 3 in (76 mm) clear gap between each reversed support rail and the next support rail.



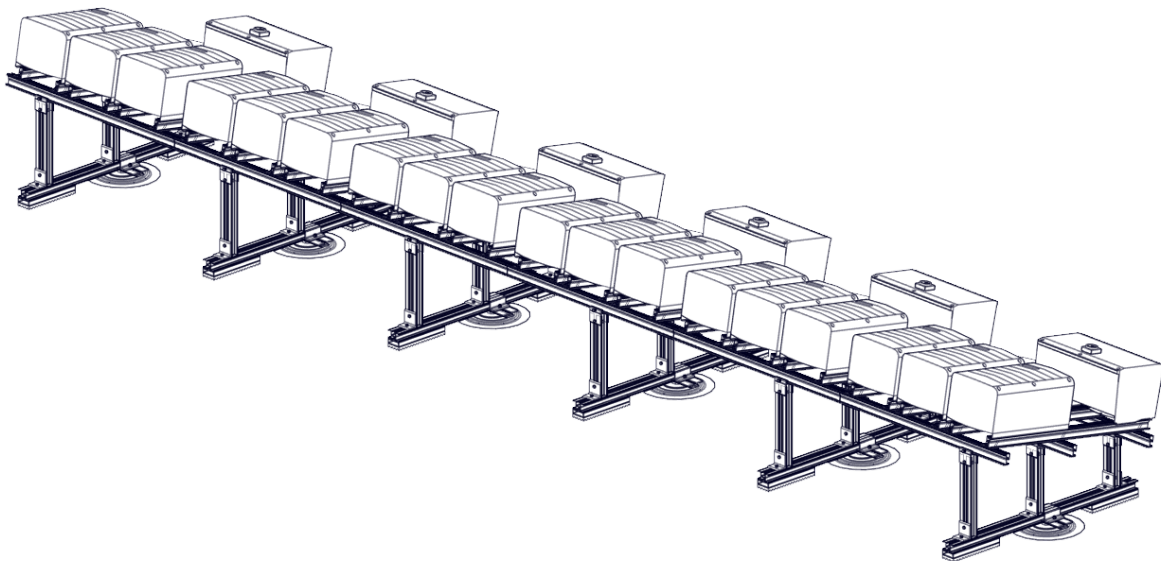
Inverter Bracket Installation

Place the inverter mounting brackets on the support rails and space them out according to the manufacturer's manual. Then, secure them with the provided 5/16"-18 serrated flange bolts and aluminum fit nuts.

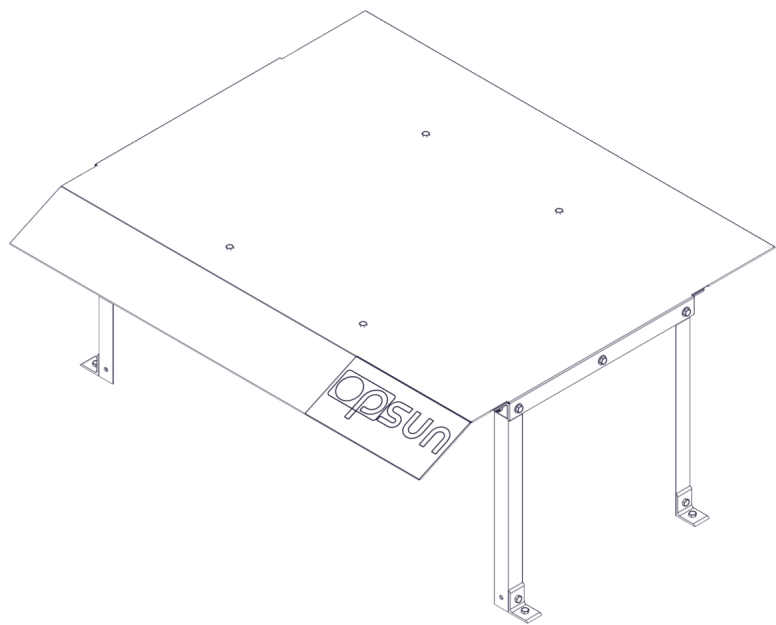


Inverter Installation

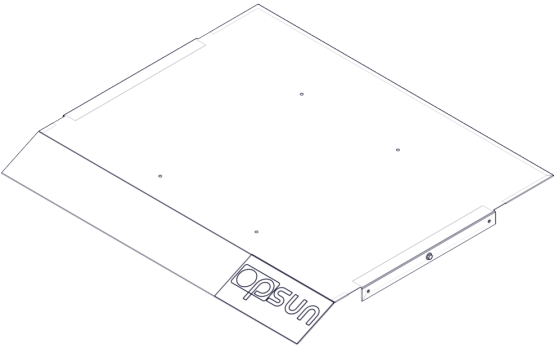
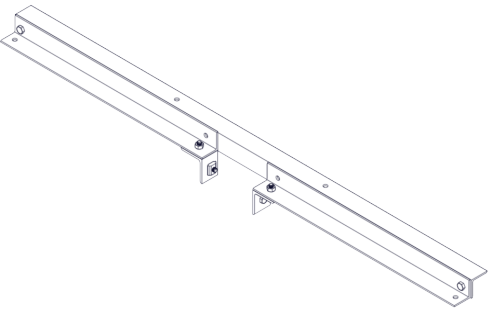
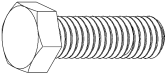
Install the inverter on the mounting brackets following the inverter manufacturer's instructions.



OPTIONAL INVERTER COVER



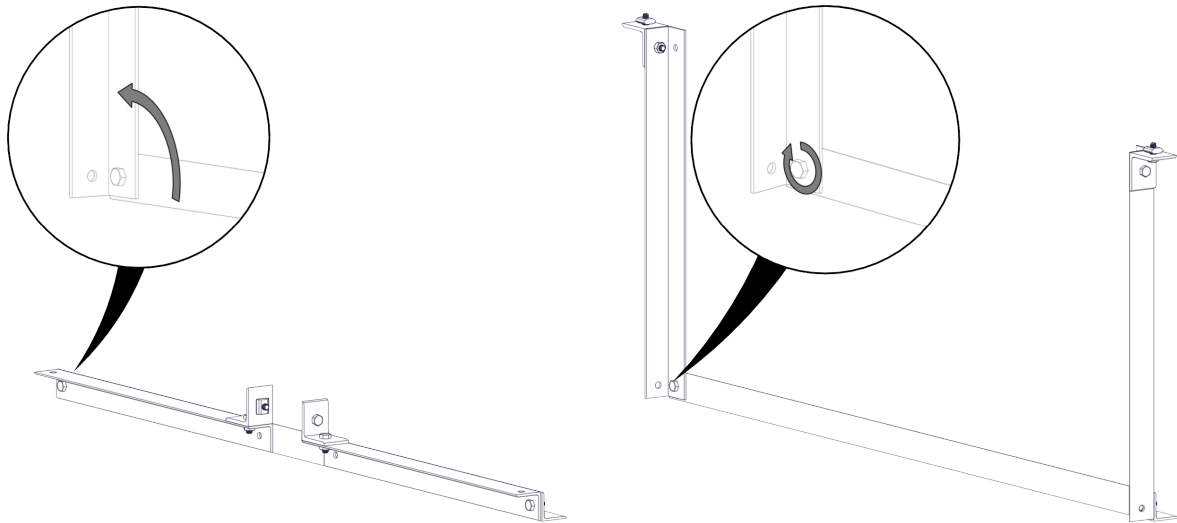
INVERTER COVER COMPONENTS

Top Cover		Support Assembly	
			
5/16"-18 Bolt	5/16" Flat Washer	5/16"-18 Hex Nut	
			

INVERTER COVER INSTALLATION

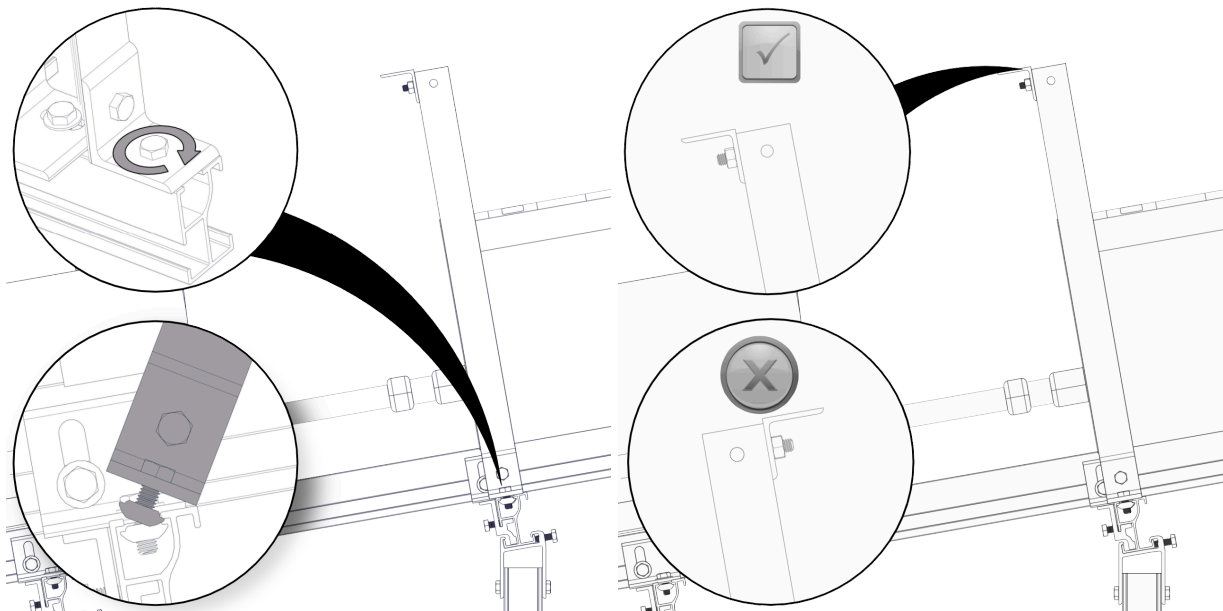
Support Assembly Preparation

Unfold the pre assembled support assembly.



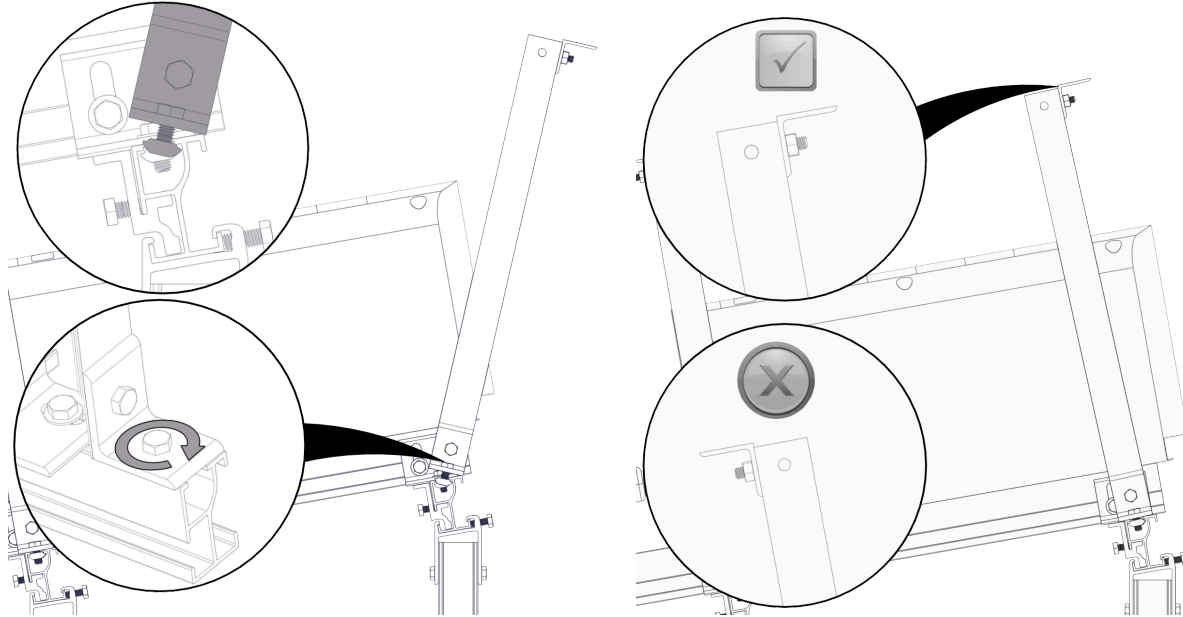
Front Support Assembly Installation

Insert the preassembled fit nut into the channel of the center crossrail. Make sure the L-bar on top is facing the front of the inverter rack (short vertical leg). Torque to spec—see p. 5.



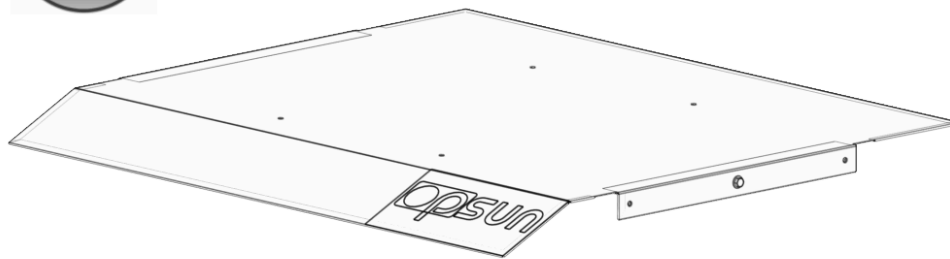
Back Support Assembly Installation

Insert the fit nut into the channel of the rear crossrail. Make sure the L-bar on top is facing the rear of the inverter rack (long vertical leg). Torque to spec—see p. 5.



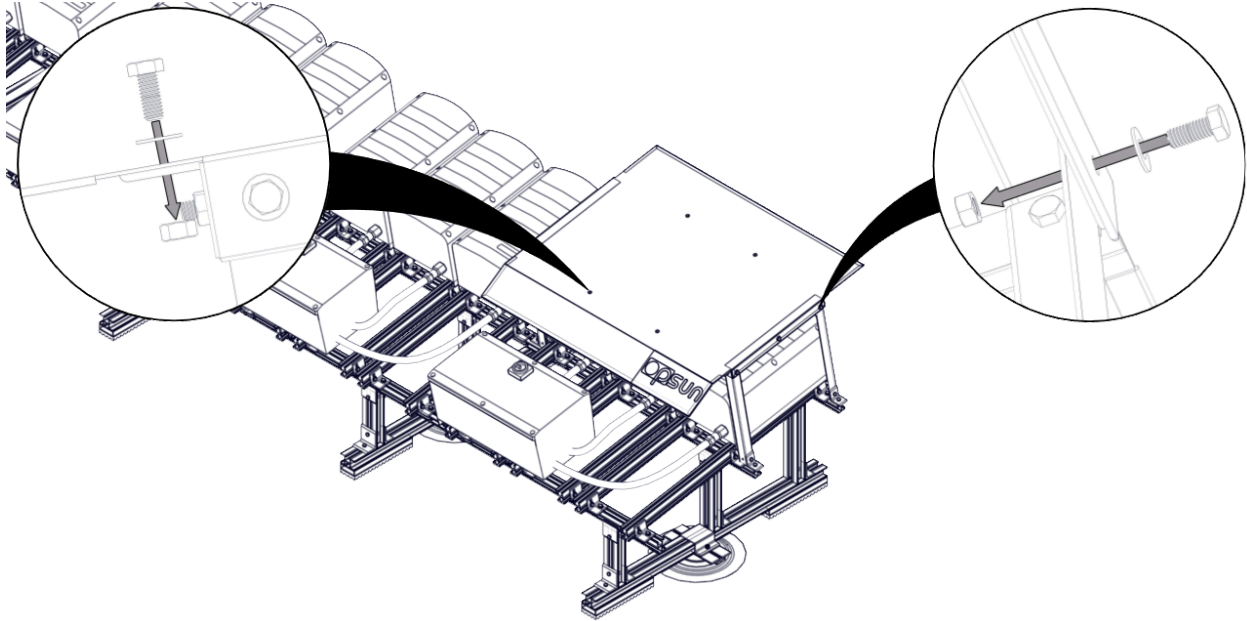
Unwrap the Cover

Remove the protective layer from the cover.



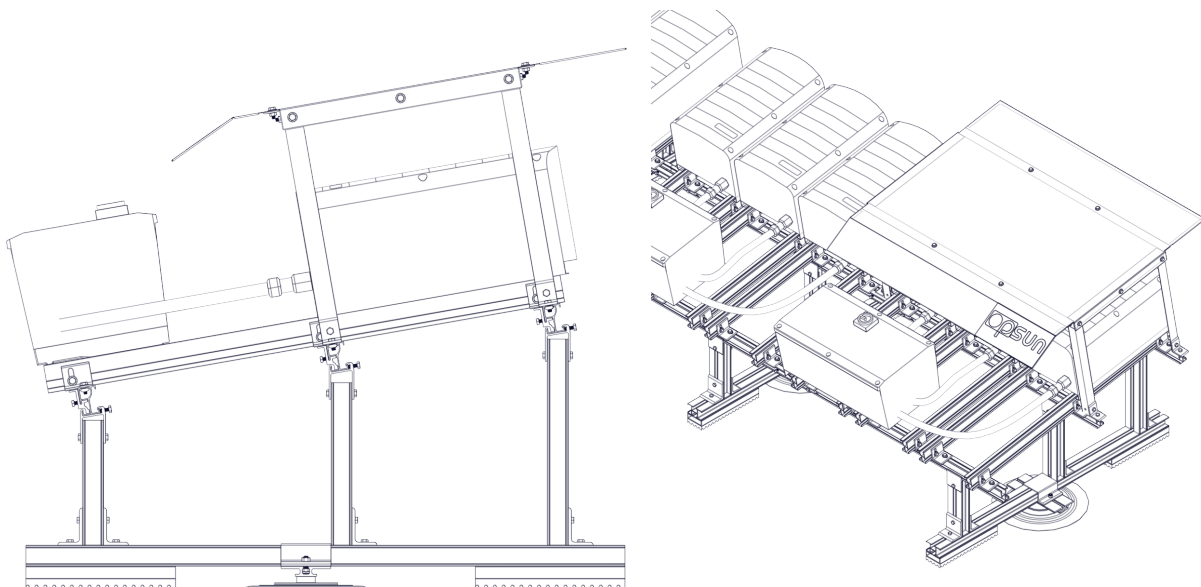
Top Cover Assembly

Secure the top cover to the support assemblies using the provided (8) stainless steel bolts, flat washers and nuts. Torque to spec – see p. 5.



Final Verification

Verify that all fasteners are torqued to specs—see p. 5. The inverter cover installation for this inverter unit is now complete.



Complete the Row

Repeat the last steps to complete the inverter row.

