GOODWE
Engineered by UMAX

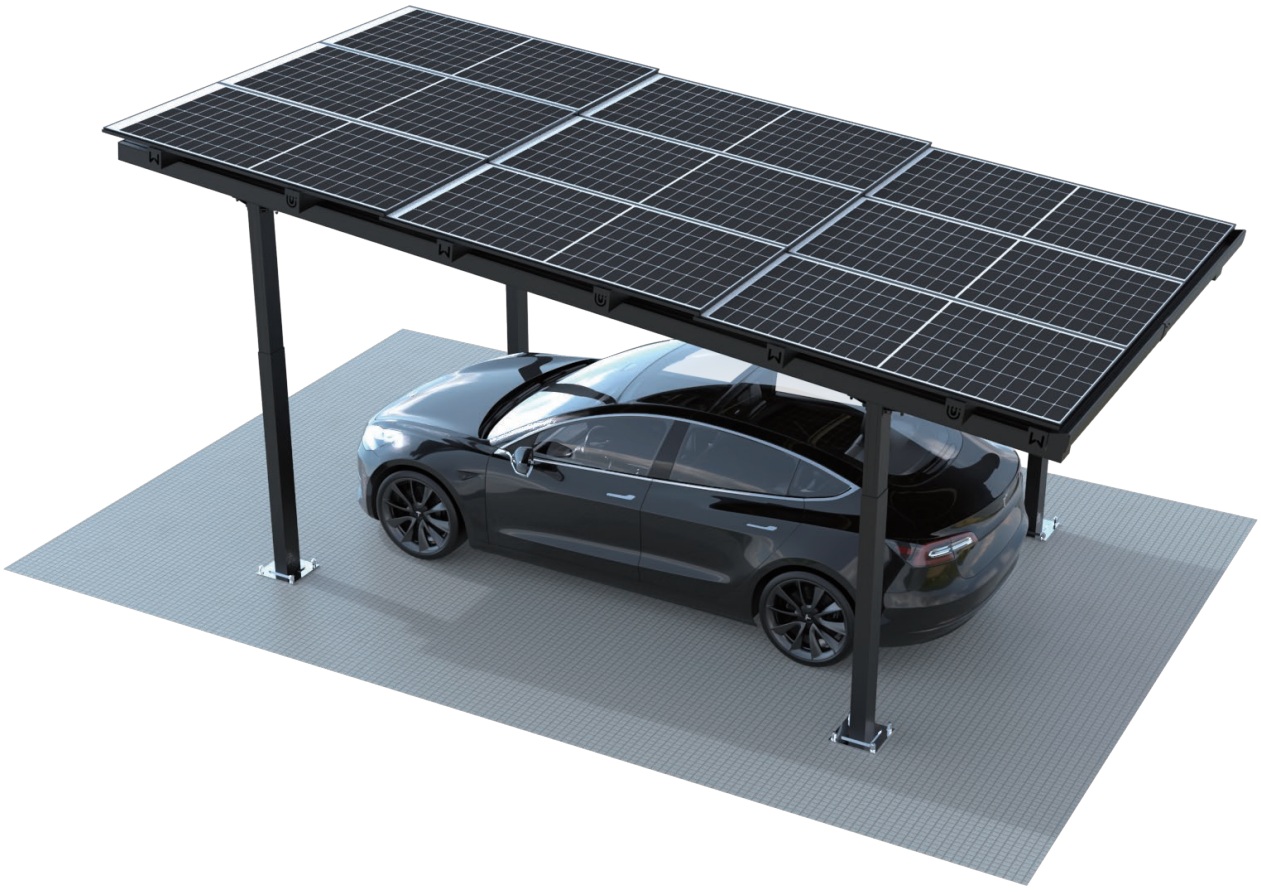
GOODWE & UMAX RESIDENTIAL SOLAR SINGLE CARPORT INSTALLATION MANUAL

GOODWE BIPV SOLUTIONS
SOLARISE EVERY BUILDING

1.Introduction

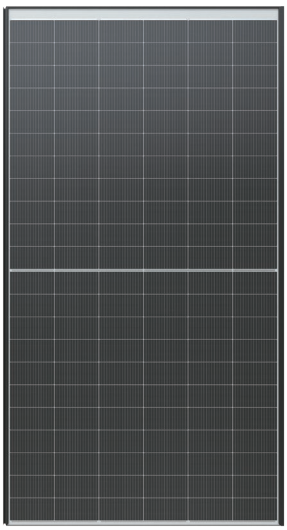
This installation manual is intended for use by qualified and trained technicians who are installing the GoodWe & Umax Residential Single Solar Carport. All personnel are strongly advised to thoroughly review and fully understand the contents of this manual prior to commencing any installation activities. All tasks described in this manual must be performed by a competent person [1] . While this document has been prepared with due care, GoodWe and Umax make no representations or warranties regarding the completeness or suitability of the information for all site conditions. If any information appears to be unclear or unsuitable for your specific application, please consult our technical support team for clarification. GoodWe and Umax accept no liability for any infringement of patent rights or third-party rights resulting from the use of the installation methods described herein. This manual does not constitute any form of warranty, whether express or implied, nor does it form part of any compensation arrangement relating to loss, damage to modules, or associated costs arising from installation, operation, or maintenance. All content in this manual is the intellectual property of GoodWe and Umax. We reserve the right to amend or update this manual without prior notice.

[1] A “Competent Person” refers to a technician who has received formal training, holds relevant qualifications, and is capable of identifying and managing installation-related risks in accordance with local building codes and industry safety standards. This person must be authorised to carry out the installation and to take immediate corrective actions if non-compliance or hazards are identified.

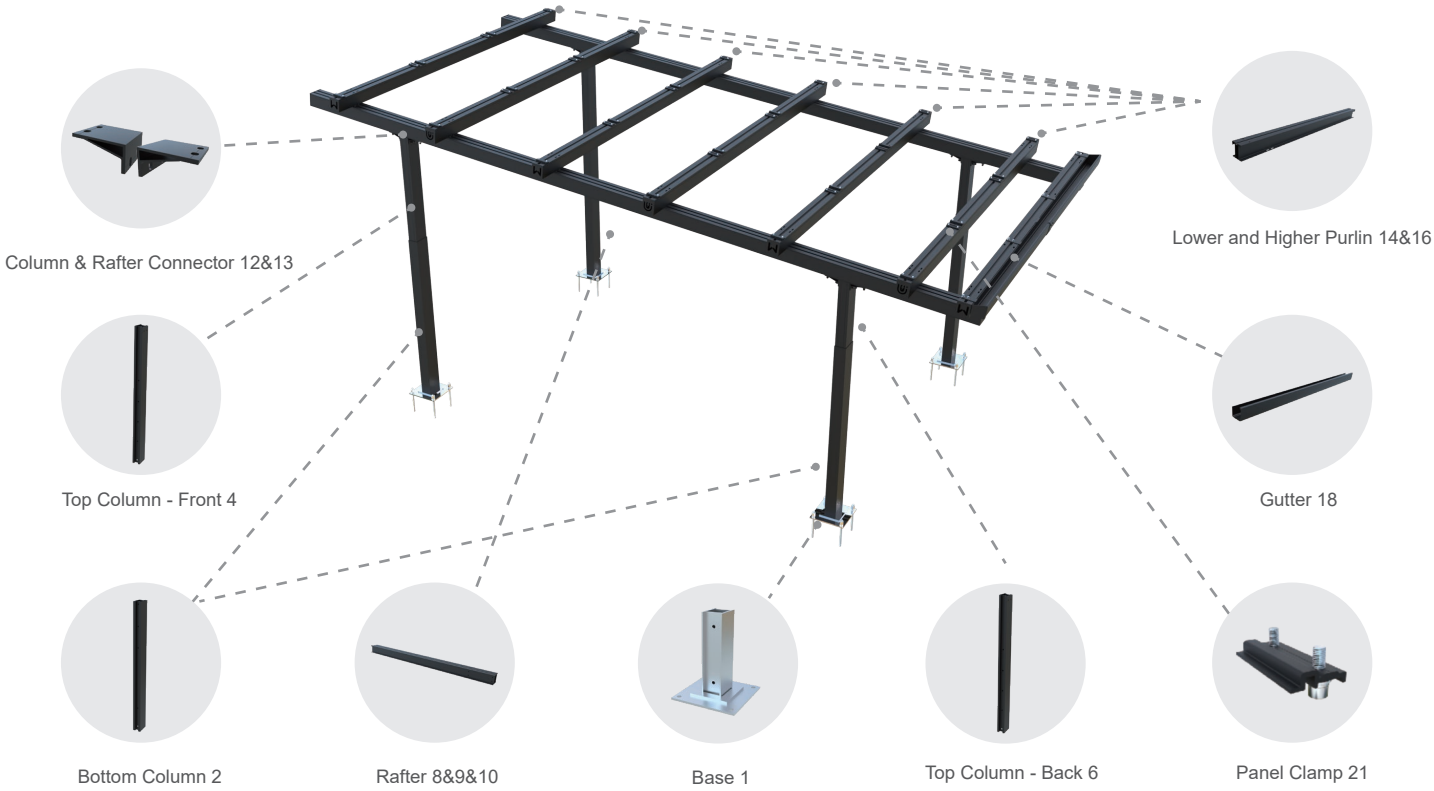


2.Components and tool list

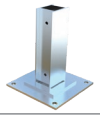
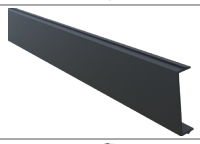
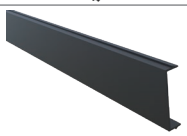
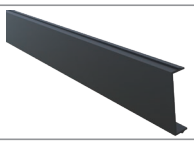
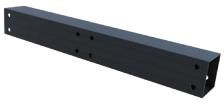
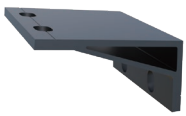
2.1 Polaris Product(BMT-P2/132A)



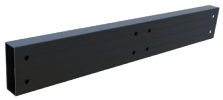
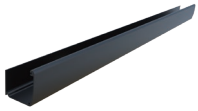
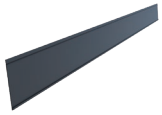
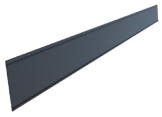
Dimension	2142 mm (L) × 1160 mm (W) × 29.6 mm (T)
Weight	30.1kg
Rated Power Output	535W
Warranty	Refer to the GoodWe Polaris series product's local warranty statement.



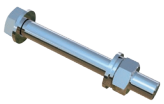
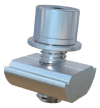
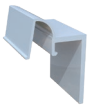
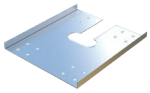
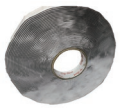
2.2 Component List

Part Label	Part Number	Description	Qty	Photos
1	B1	Base	4	
2	CB1	Bottom Column	4	
3	CBC1	Bottom Column Cover	8	
4	CTF1	Top Column - Front	2	
5	CTFC1	Top Column Cover - Front [2]	4	
6	CTB1	Top Column - Back	2	
7	CTBC1	Top Column Cover - Back	4	
8	RF1	Front Rafter	2	
9	RM1	Middle Rafter	2	
10	RB1	Back Rafter	2	
11	RC1	Rafter Connector	4	
12	CRC96	96˚Column & Rafter Connector	4	
13	CRC84	84˚Column & Rafter Connector	4	
14	PLS1	Single Carport Lower Purlin	8	

2.2 Component List

Part Label	Part Number	Description	Qty	Photos
15	PLC1	Lower Purlin Connector	4	
16	PHS1	Single Carport Higher Purlin	6	
17	PHC1	Higher Purlin Connector	3	
18	G1	Single Carport Gutter	2	
19	GH1	Gutter Hanger	4	
20	GC1	Gutter Connector	1	
21	PC1	Panel Clamp	36	
22	RC2	Rafter Cover	12	
23	PLCS1	Single Carport Lower Purlin Cover	16	
24	PHCS1	Single Carport Higher Purlin Cover	12	
25	REC1	Rafter End Cap	4	
26	PLEC1	Lower Purlin End Cap	8	
27	PHEC1	Higher Purlin End Cap	6	
28	GEC1	Gutter End Cap	2	

2.2 Component List

Part Label	Part Number	Description	Qty	Photos
31	FF1	Foundation Fastener Set	17	
32	CF1	Column Fastener Set	21	
33	RCF1	Rafter Connector Fastener Set	33	
34	RF2	Rafter Fastener Set 1	17	
35	RF3	Rafter Fastener Set 2	17	
36	PCF1	Purlin Connector Fastener Set	57	
37	PF1	Purlin Fastener Set	61	
38	CF2	Clamp Fastener Set	77	
39	PH1	Position Hook	13	
40	WST1	Weather Seal	1	
41	EC1	Earth Clip	19	
42	GO1	Gutter Outlet	1	
43	STS2	Self Tapping Screws (with rubber seal)	9	
48	BT1	Butyl Tape	1	

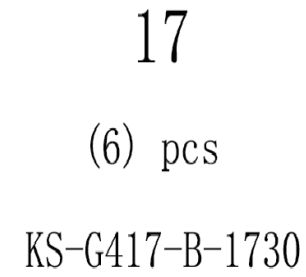
2.2 Component List

Part Label	Part Number	Description	Qty	Photos
49	STS1	Self Tapping Screws	5	

[2] Two types of top column covers are included in the kit. Select the appropriate type according to actual site conditions.

Label Identification Guide:

During installation, carefully check the label attached to each component. Each label includes:



① Part Code (Installation Label): Matches the Part Label in this manual.
② Quantity per kit: Verify all quantities before installation begins.
③ Factory Code: For manufacturing reference only. This is not used during installation.

If you have any questions or notice any discrepancies, please contact GoodWe & Umax technical support.

2.3 Tool List

			
Impact Driver	Impact Ratchet	Torque drives for M18 M12, M8 bolts and nuts	Torque Spanner
			
Measuring Tape	Wrecking Bar	Knife or Cutter	Allen Key

The recommended tools for standard installation are shown in the diagram above. Ensure all necessary tools are prepared and checked before installation begins. All structural connections must be tightened using a calibrated torque wrench. The spring washer must be fully compressed. This is the key indicator that the joint has been properly secured. Over-tightening may deform components or damage surface coatings, while insufficient tightening can result in loosening over time.

Tools used for structural fastening must support torque control. Tools used for unpacking and site preparation must be handled carefully to prevent damage to solar panels or coated surfaces.

All structural installation must be performed by trained personnel. GoodWe & Umax does not accept responsibility for installation issues resulting from incorrect tool use or unqualified labour.

3.Precautions

3.1 Structural Compliance

The GoodWe & Umax Residential Solar Carport has been structurally certified by Gamcorp in accordance with applicable Australian Standards, including AS/NZS 1170.2:2021.

Installation must strictly follow the procedures outlined in this manual and the structural certification documents to ensure system integrity. Any deviation may compromise the structural performance and invalidate the certification. It may also void the product warranty.

The installer is solely responsible for the following:

① Complying with all applicable local and national building codes.

② Ensuring full alignment with the certified structural assessment.

③ Following all procedures in this installation manual.

④ Using only mounting components supplied by Umax Energy or those explicitly approved by GoodWe & Umax Energy.

3.2 Construction Works

The installation of the GoodWe & Umax Residential Solar Carport involves both civil and mechanical construction. Operation of plant equipment may be required during the process, and such equipment must only be operated by licensed and trained personnel.

The installer is solely responsible for ensuring the following:

① A minimum of two qualified workers are present during structural assembly.

② All plant equipment is operated by licensed personnel.

③ Appropriate fall protection systems are used at all times.

④ All installers wear suitable personal protective equipment (PPE) appropriate to site conditions.

3.3 Unpacking and Stacking

The installer is responsible for ensuring that all products are unpacked, stored and handled in a safe and controlled manner to avoid damage during the preparation stage.

Storage requirements:

① Do not stack carport pallets after unpacking.

② If modules are not installed immediately, store them flat on a level surface. The first piece must face glass side up, and subsequent modules stacked glass side down. Do not exceed 15 pieces per stack.

③ The storage area must be dry and stable, with a ground slope of no more than 10 degrees.

④ Do not place any objects on top of modules or packaging.

Handling requirements:

⑤ Do not carry modules outdoors in strong winds. Disassembled items must be secured to prevent movement or damage.

⑥ Use scissors or a cutter to open packaging carefully. Avoid scratching the glass surface.

⑦ Wear protective gloves when unpacking and handling modules to avoid scratches or fingerprints.

⑧ Each module must be carried by two people, holding the frame only. Do not lift by the junction box under any circumstances.

3.4 Safety Warning

Polaris modules generate electricity under sunlight. The installer must follow all necessary precautions to prevent electrical hazards and damage during installation. The following safety measures must be observed:

Electrical and environmental safety:

① Never short-circuit the output cables.

② Suspend installation during rain or wet weather.

③ Protect exposed connectors from water ingress during interruptions.

④ Do not install near open flames or combustible materials.

Module handling:

⑤ Do not twist, drop, strike, or apply excessive force to the panels.

⑥ Avoid direct contact between the glass and hard surfaces.

⑦ Do not disassemble or modify any part of the module.

⑧ Keep unauthorised personnel and children away from the installation site.

4.Installation guideline

4.1 Foundation

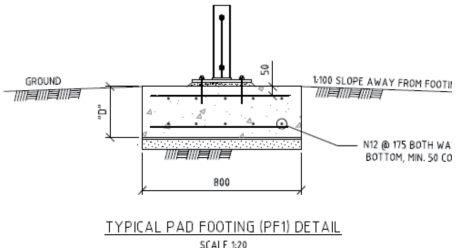
Three types of foundation may be used for the Umax Residential Solar Carport, as illustrated below. For specific structural requirements, refer to the general structural certificate issued by Gamcorp. This manual uses pad footings as the reference for installation.

If the ground is uneven, adjustments must be made during foundation preparation. For minor height differences, use adjustment nuts below the base plate. The lower nut sets the height and the upper nut locks it in place. A laser level should be used to ensure accuracy.

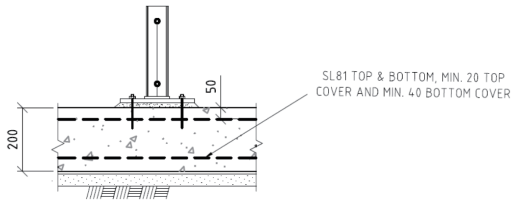
Conduits and cables must be installed inside the column before proceeding with column and rafter installation. Failure to do so may require disassembly and rework of installed components.

Important Notice:

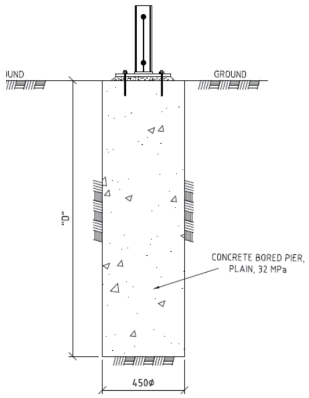
Due to the variability of soil conditions, exposure levels, and site-specific constraints, GoodWe & Umax strongly recommends conducting a site-specific structural assessment prior to foundation works. The general structural certificate provided is for standard reference only. GoodWe & Umax does not accept responsibility for any issues resulting from the use of the general certificate without proper site-specific evaluation.



TYPICAL PAD FOOTING (PF1) DETAIL
SCALE 1:20



TYPICAL SLAB DETAIL
SCALE 1:20

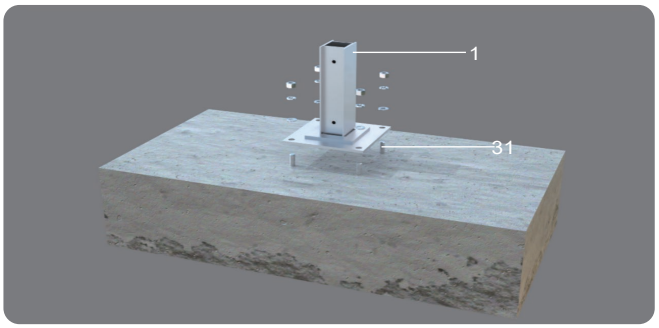


TYPICAL BORED PIER (PF1) DETAIL
SCALE 1:20

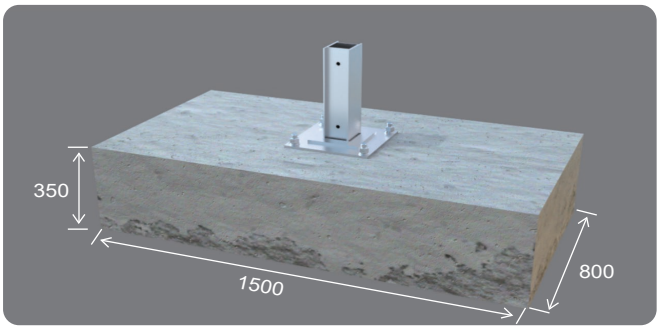
4.2 Base & Foundation Connection

- Requires Parts: 1, 31 (Refer to Part Label)

Align the base plate with the anchor bolts pre-installed in the foundation. Only rag bolts or chemset anchor bolts are recommended. Tighten all bolts as shown in the diagram below using a calibrated torque wrench.

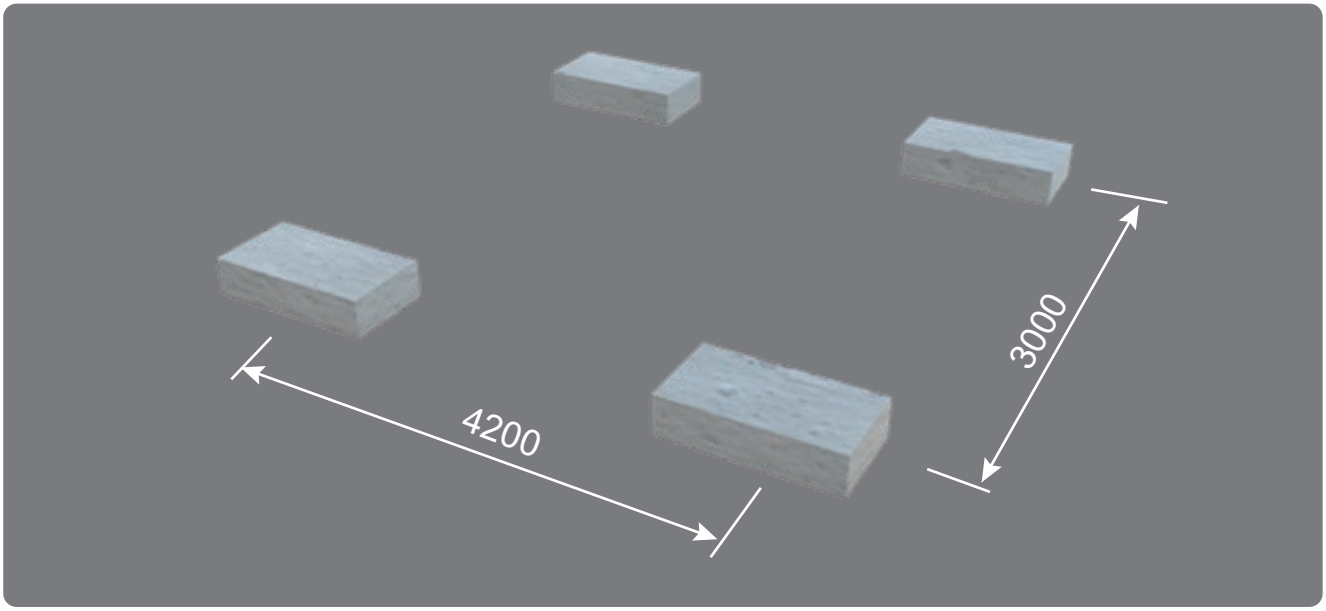


Before Installation



After Installation

The centre-to-centre spacing between foundation points is shown in the diagram below. For a single carport layout, the front-to-back spacing is 4200 mm, and the left-to-right spacing is 3000 mm.

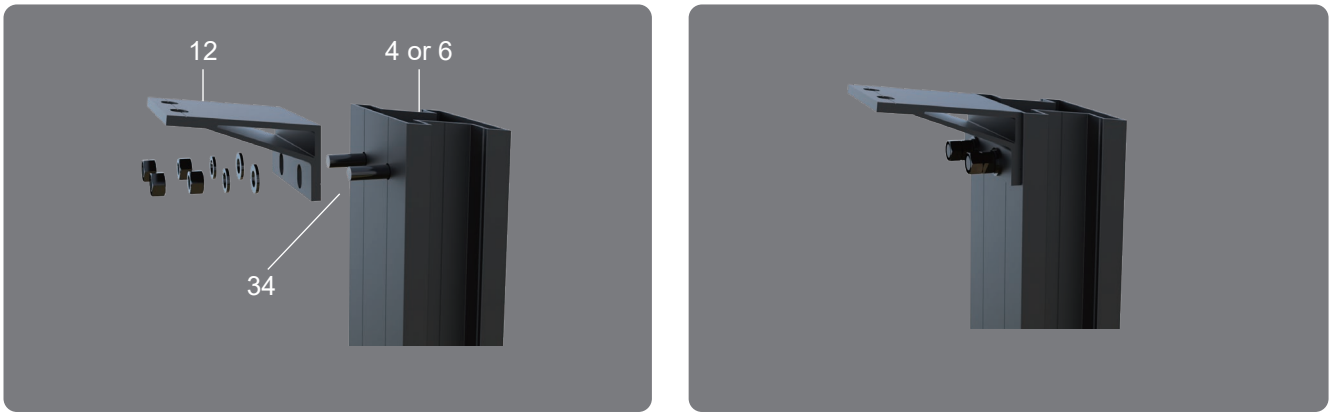


Foundation Layout Diagram

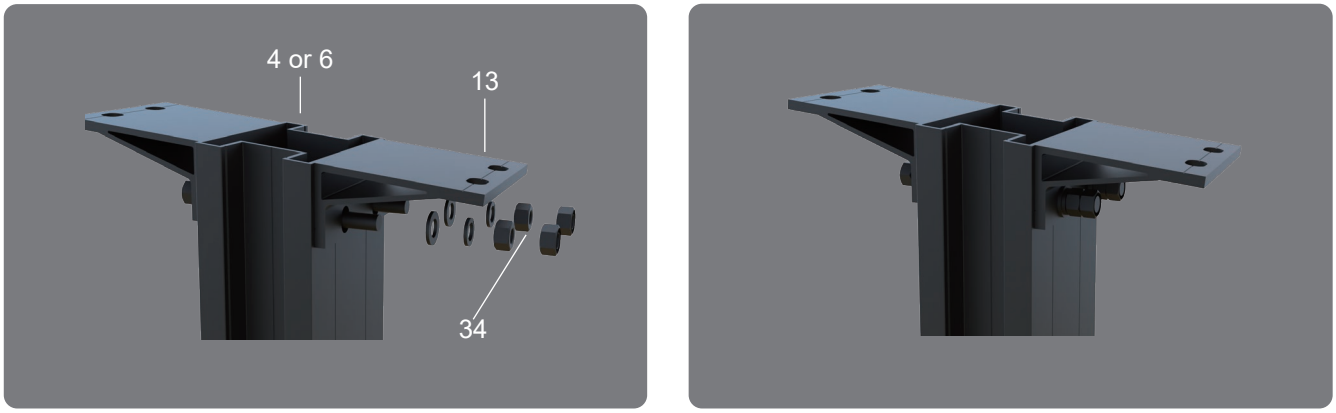
4.3 Column & Rafter Connector

- Requires Parts: 4, 6, 12, 13, 34

Install the 96˚ and 84˚ column-to-rafter connectors onto the top columns (front and back) according to the installation diagrams. Ensure the correct orientation by referencing the component list for differences between front and back columns.



96˚Column & Rafter Connector Installation



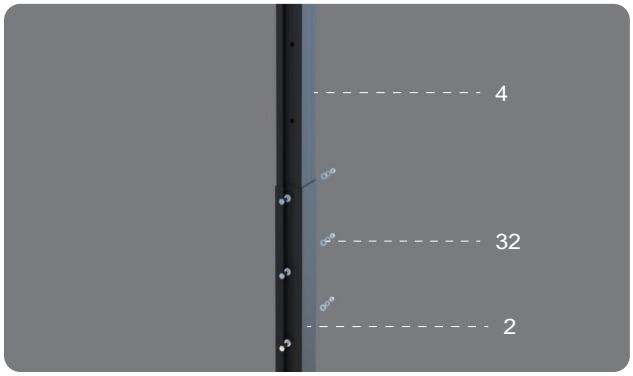
84˚Column & Rafter Connector Installation

4.4 Top & Bottom Column Connection

- Requires Parts: 2, 4, 6, 32

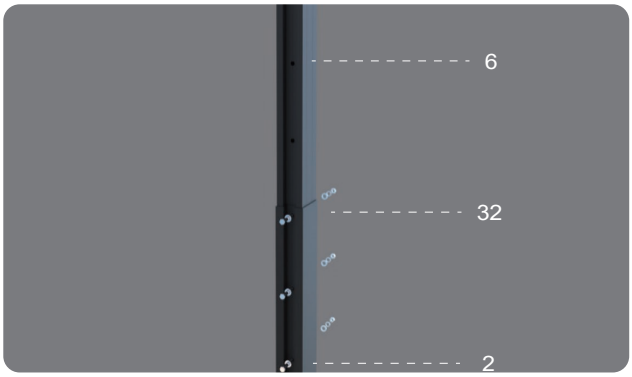
Insert the top column into the bottom column. Align the bolt holes and tighten the bolts as shown in the diagram below.

Refer to the component list to distinguish between front and back columns. Do not interchange, as this may affect alignment.



Before Installation

After Installation



Before Installation

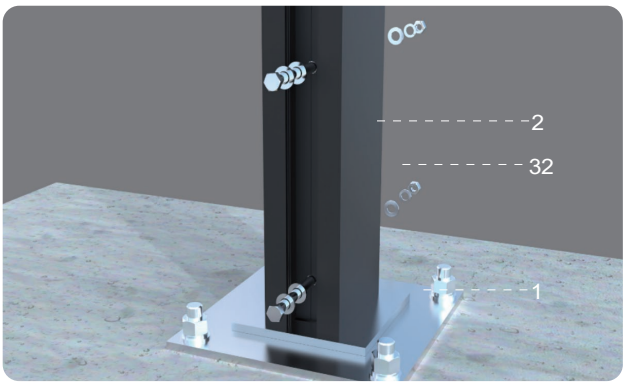
After Installation

4.5 Bottom Column & Base Connection

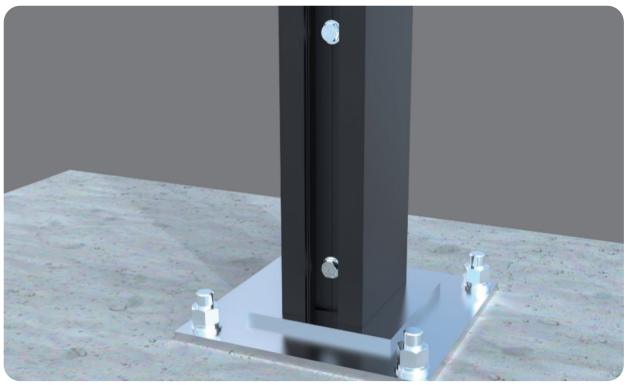
- Requires Parts: 2, 32

Insert the assembled column into the base and tighten the bolts as shown in the diagram.

Each column has two distinct sides. The side with bolt holes must face the adjacent column of the same height (i.e., front-to-front or back-to-back). The flat side must face the opposite column. Confirm correct orientation before tightening. Incorrect placement may result in structural misalignment.



Before Installation

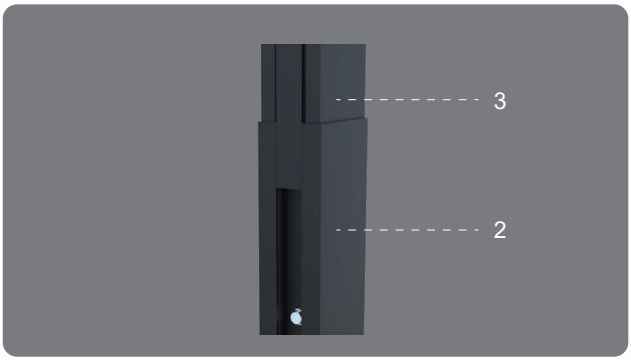


After Installation

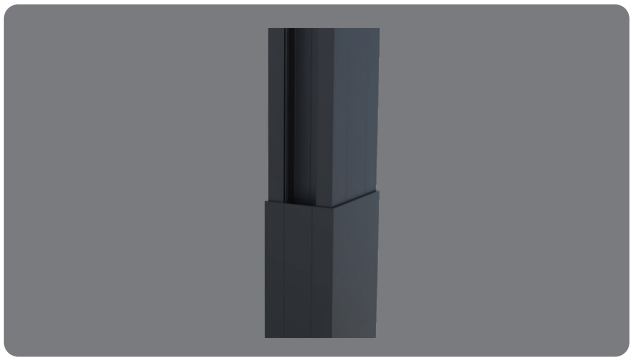
4.6 Column Cover

- Requires Parts: 2, 3, 4, 5, 6, 7

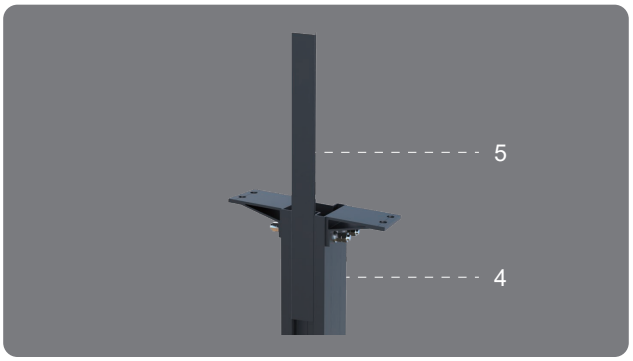
Install the covers for both top and bottom columns. Install bottom covers first. All covers must be secured before rafter installation, as the rafters will obstruct column cover installation access. Two types of top column covers are available. Choose according to site conditions. Incorrect sequence may affect subsequent steps.



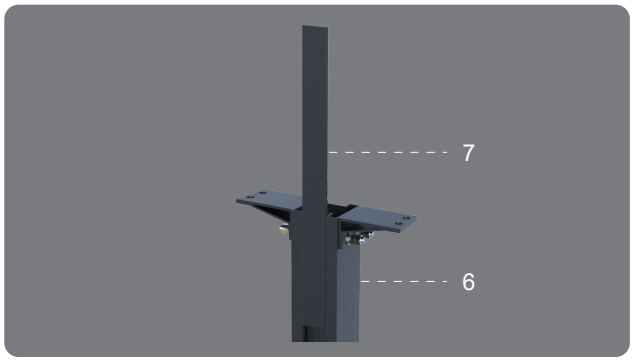
Before Installation



After Installation

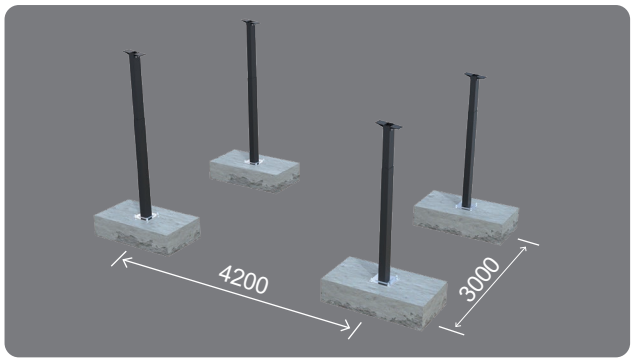


Before Installation



After Installation

Completed

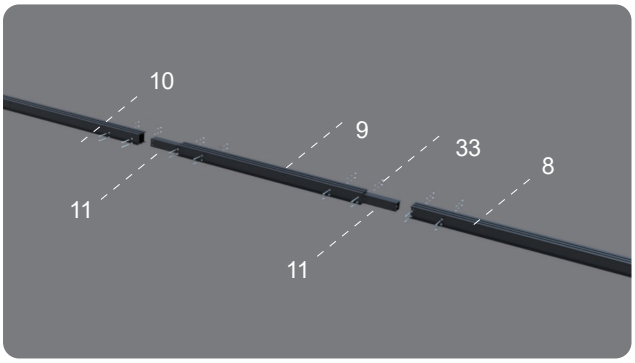


Completed

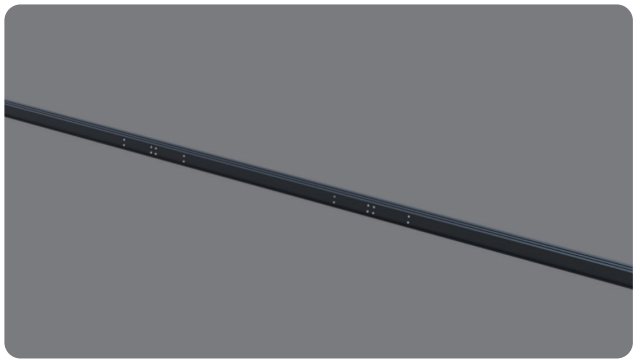
4.7 Rafter Assembly

Requires Parts: 8, 9, 10, 11, 33

Connect the front, middle, and back rafters using rafter connectors. Insert the rafter connector into the front and middle rafters and tighten the bolts as shown.

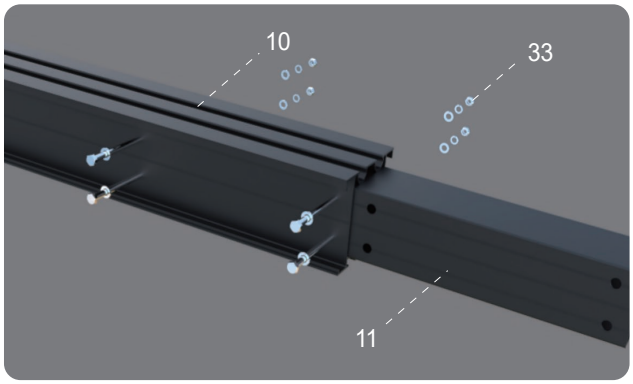


Before Installation

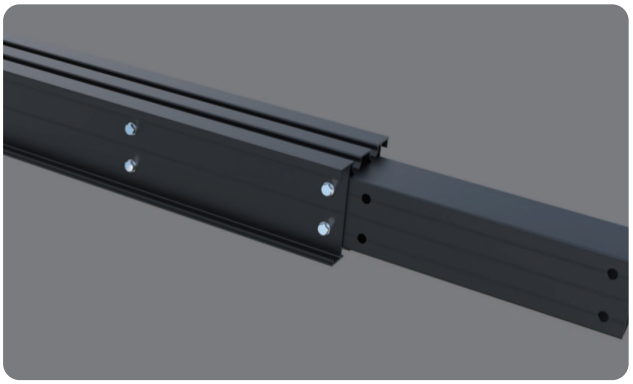


After Installation

Repeat the above installation steps for the Middle Rafter and Back Rafter.



Before Installation



After Installation

4.8 Rafter & Column Connection

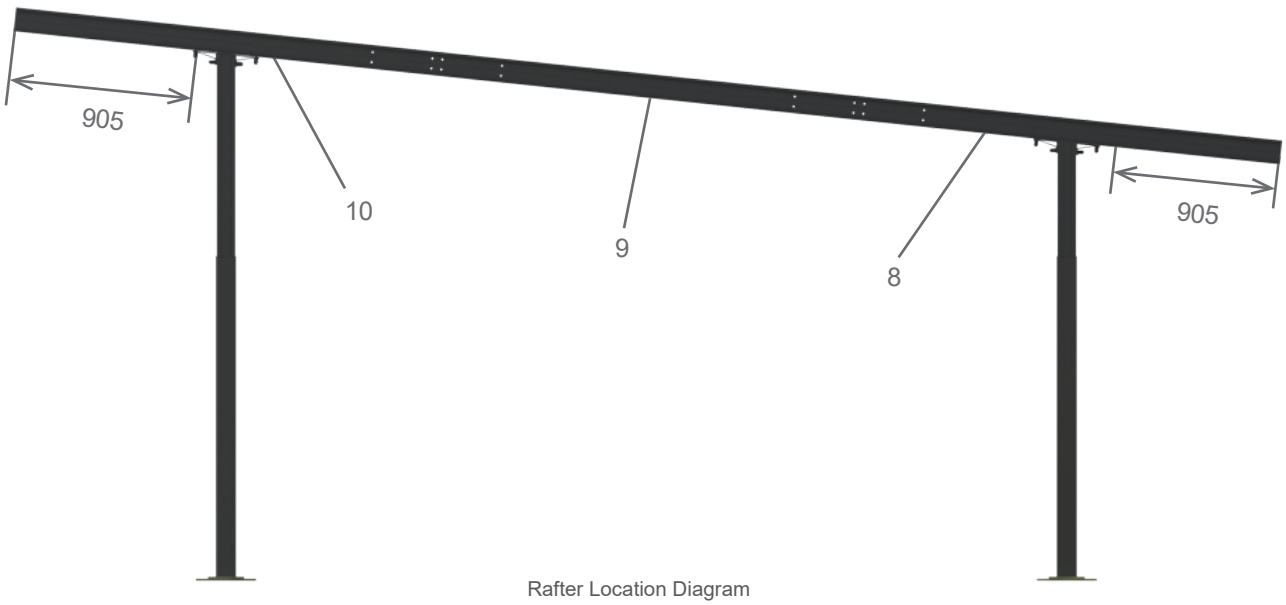
- Requires Parts: 12, 13, 35

Lay the complete rafter onto the columns. The rafters should overhang the columns by 905 mm.

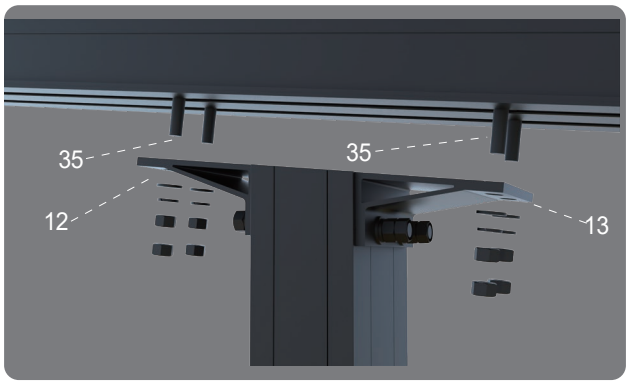
Insert the bolt into the slot according to the specified orientation. During tightening, ensure the bolt remains properly engaged with the slot as per the design. Always refer to the latest component specifications for correct installation method.

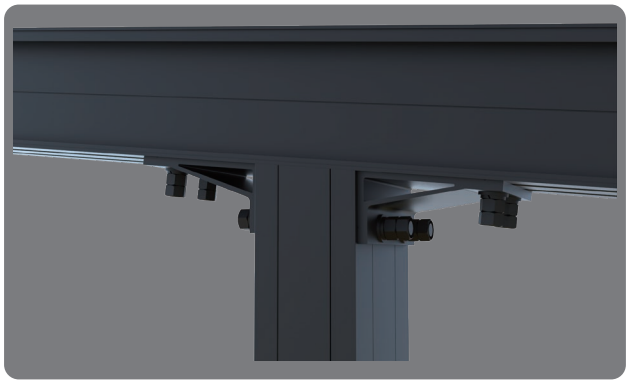
Installers must refer to the rafter location diagram below and measure accurately on-site to ensure correct positioning. Rafter alignment is critical to the overall structural integrity and accurate panel installation.

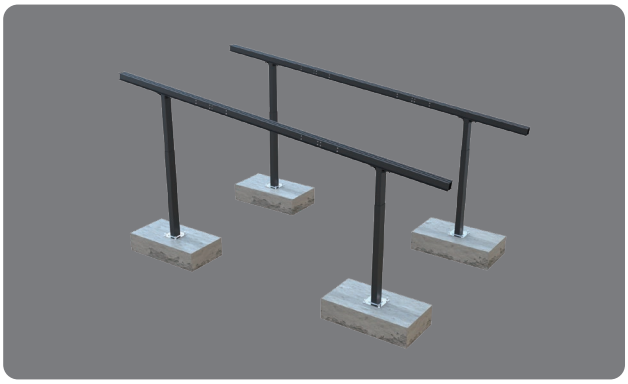
Note: The bolt design may vary by batch. Ensure the correct orientation and engagement method based on the bolt type provided.



Rafter Location Diagram





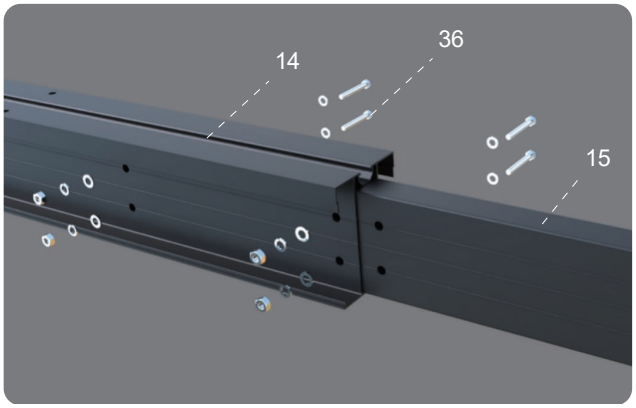


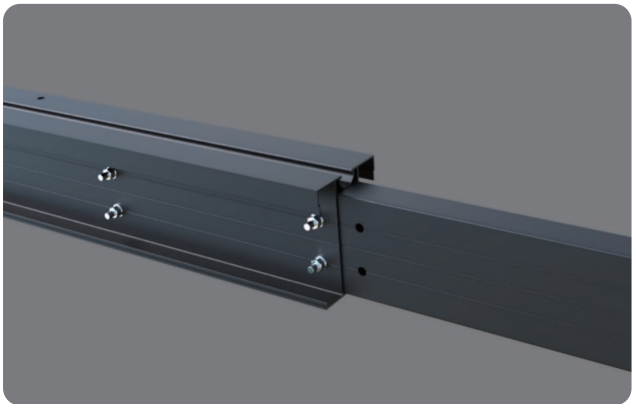
Rafter Completion

4.9 Purlin Assembly

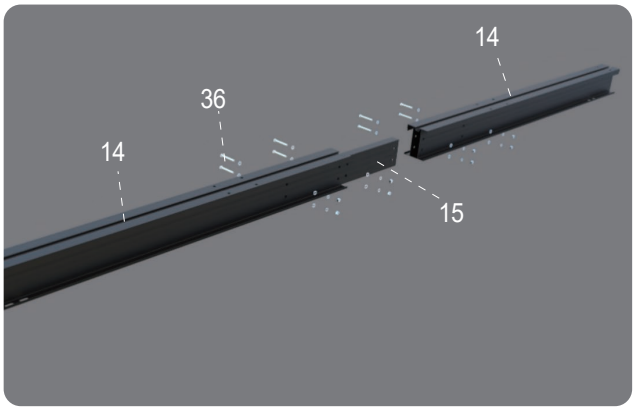
- Requires Parts: 14, 15, 16, 17, 36

Insert the purlin connector into the lower purlins and tighten the bolts as shown.





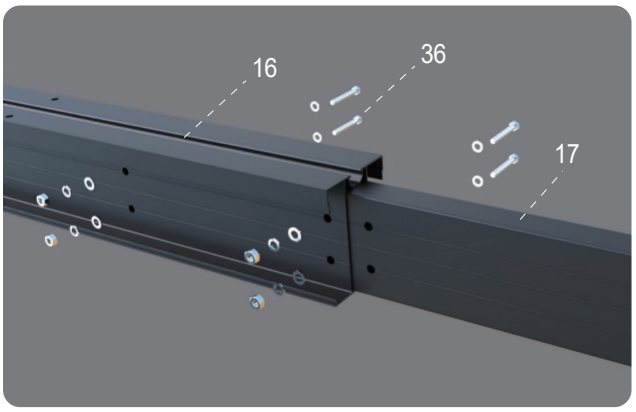
Repeat the above installation steps for the Second and Third purlins.



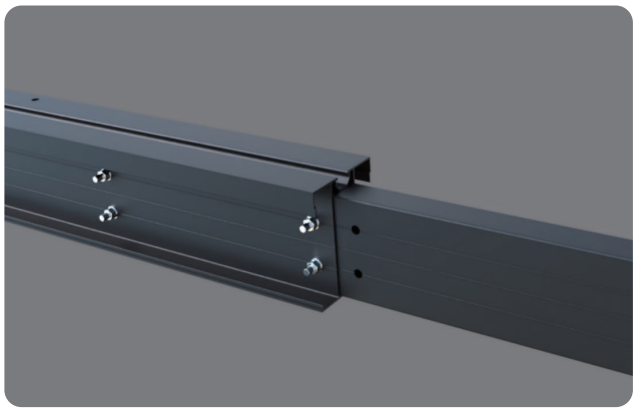
Before Installation

After Installation

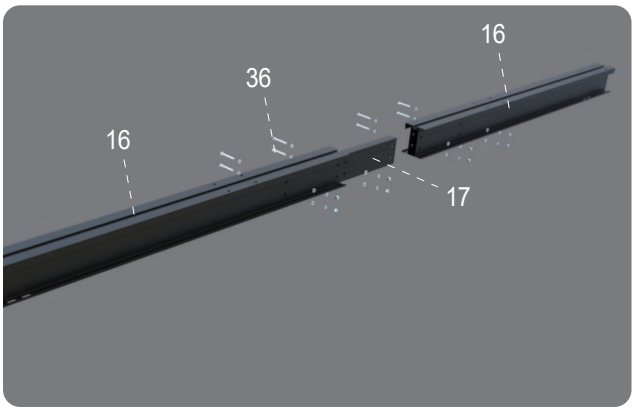
Repeat the above installation steps for the higher purlins.



Before Installation



After Installation



Before Installation

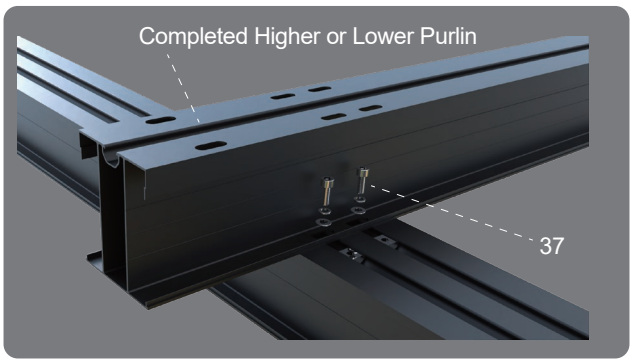
After Installation

4.10 Purlin & Rafter Connection

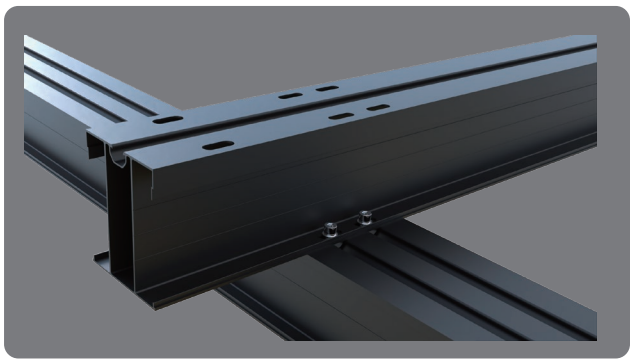
- Requires Parts: 14, 16, 37

Lay the completed higher and lower purlins onto the rafters. Refer to the diagram below for purlin types and suggested locations. Measure on-site according to the purlin spacing diagram below to ensure correct purlin positioning.

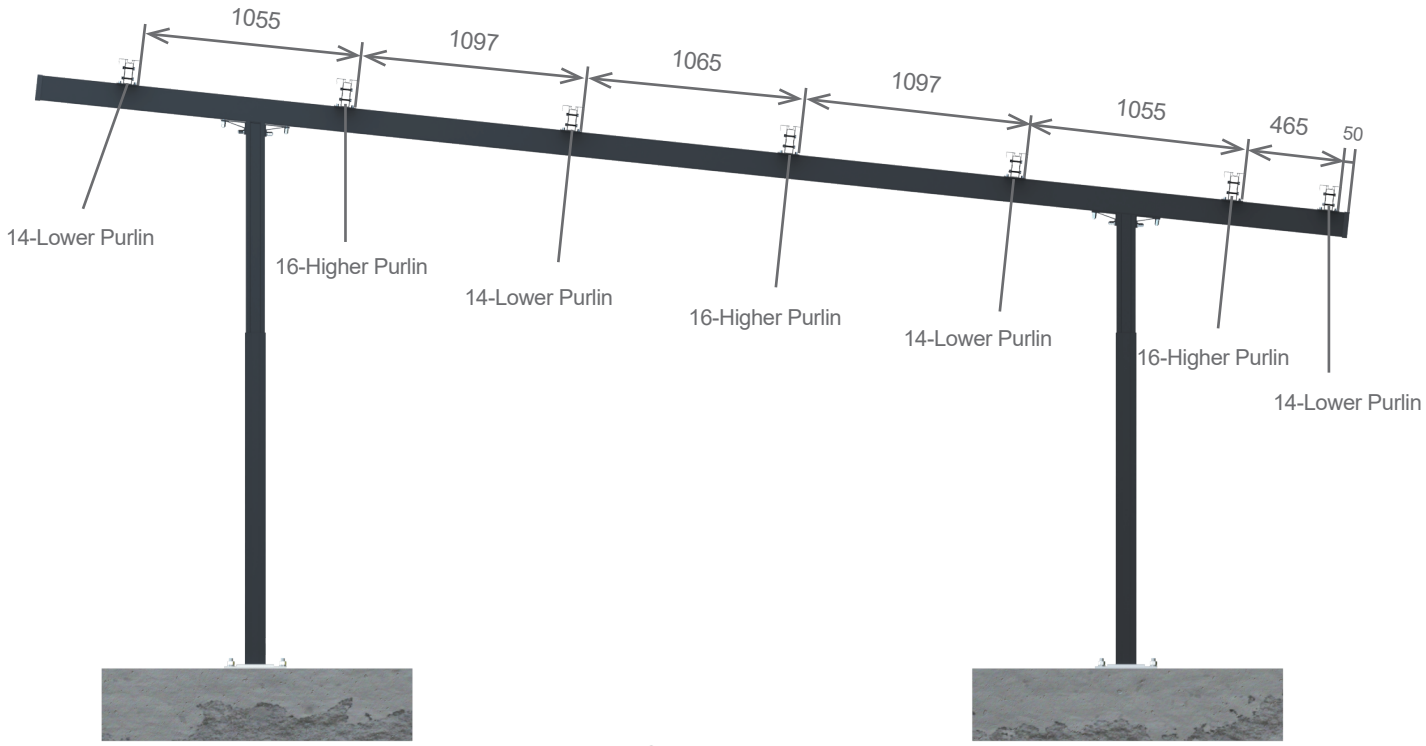
Purlin nuts can be slotted in from the side of the preformed through-slot in the rafters. Tighten all bolts as shown below.



Before Installation



After Installation



Purlin Spacing Diagram

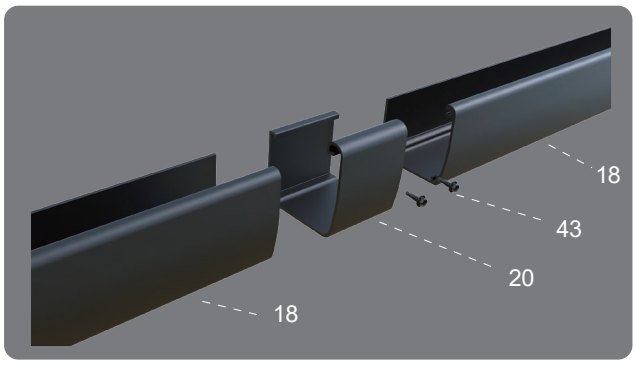
4.11 Gutter Assembly

- Requires Parts: 18,19, 20, 28, 43, 49

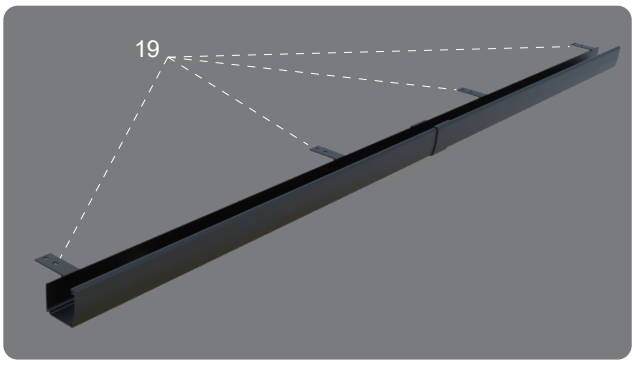
Insert the Gutter Connector into the Gutters. Slide the Gutter Hanger into the Gutter Rail.

Note: Water sealant must be applied around the Gutter Connector once carport installation is fully completed.

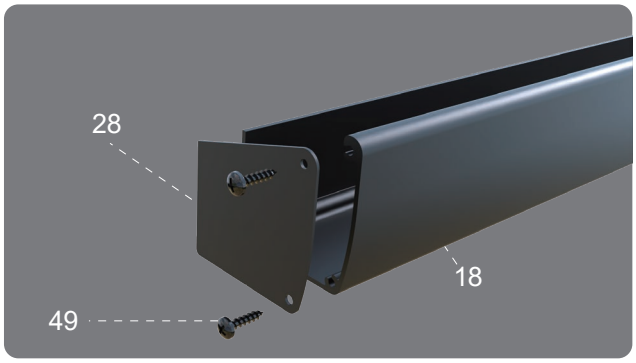
Self-tapping screws may be used to join the Gutters. Screws must include rubber washers to ensure watertight sealing.



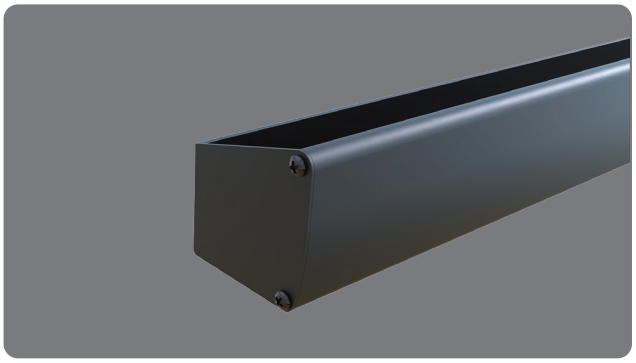
Before Installation



After Installation



Before Installation

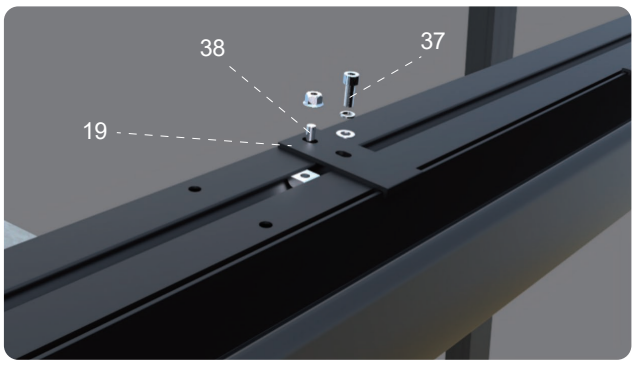


After Installation

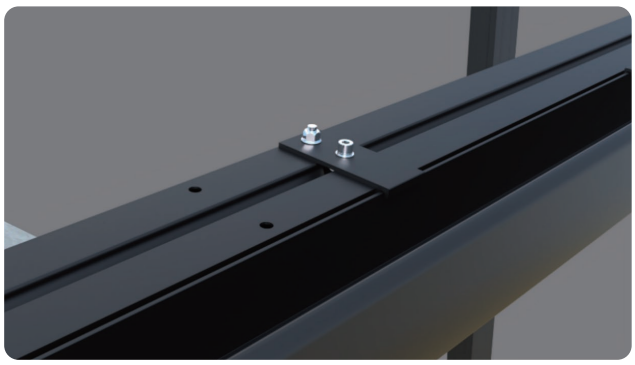
4.12 Gutter Installation

- Requires Parts: 19, 28, 37, 38

Lay the complete Gutter onto the Gutter Purlin, then tighten the bolts as shown in the diagram below.



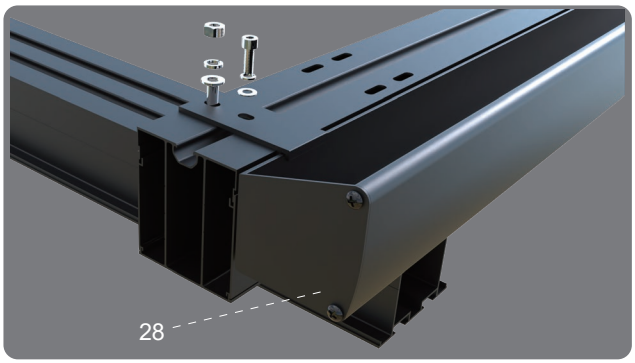
Before Installation

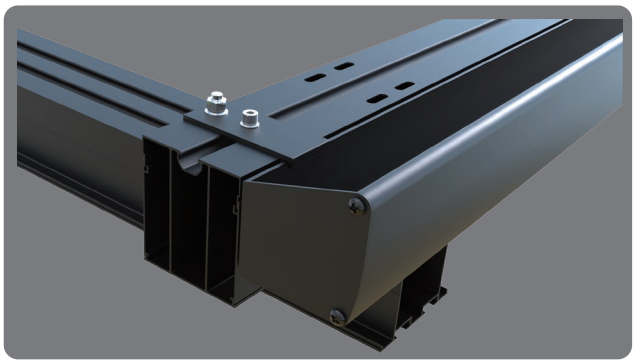


After Installation

Install the Gutter End Cap and tighten the bolts as shown.

Note: Water sealant must be applied around the Gutter End Cap once carport installation is fully completed.





Gutter Completion

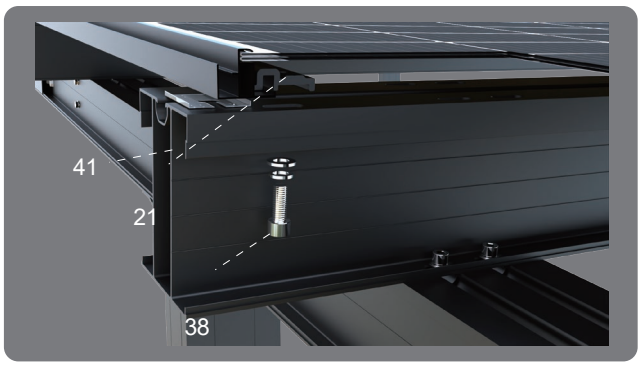
4.13 First Row Panel Installation

- Requires Parts: 21, 38, 41

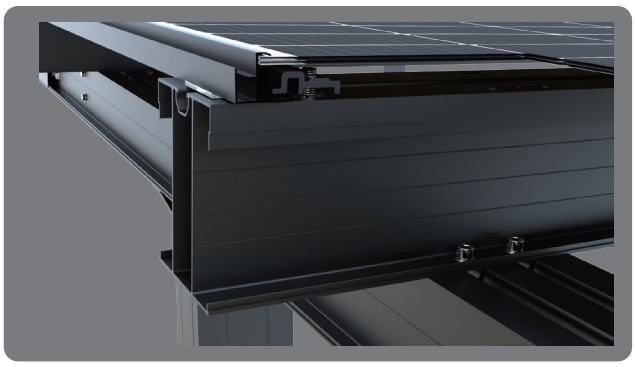
Lay the first Polaris solar panel onto the purlins, starting at the lower end of the carport structure.

Insert the panel clamp into the panel side frame, then tighten the bolts as shown.

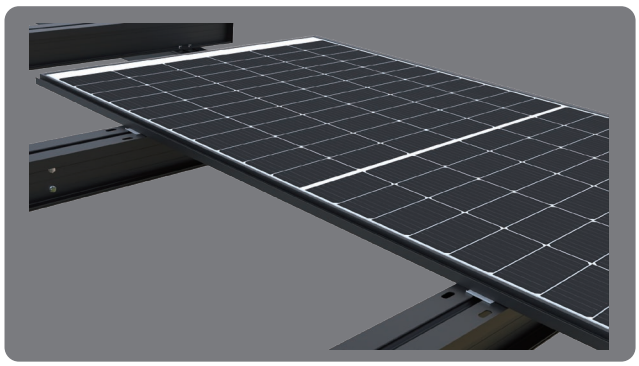
Earth clips must be installed between every Polaris solar panel and the corresponding purlin. As shown in the adjacent diagram, place the Earth Clip on the right-hand side (longer frame side) of each panel.

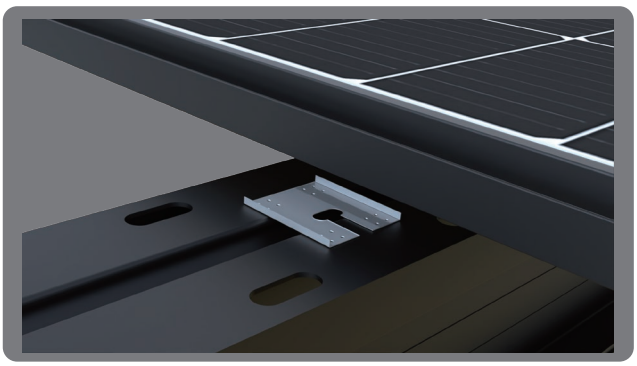


Before Installation



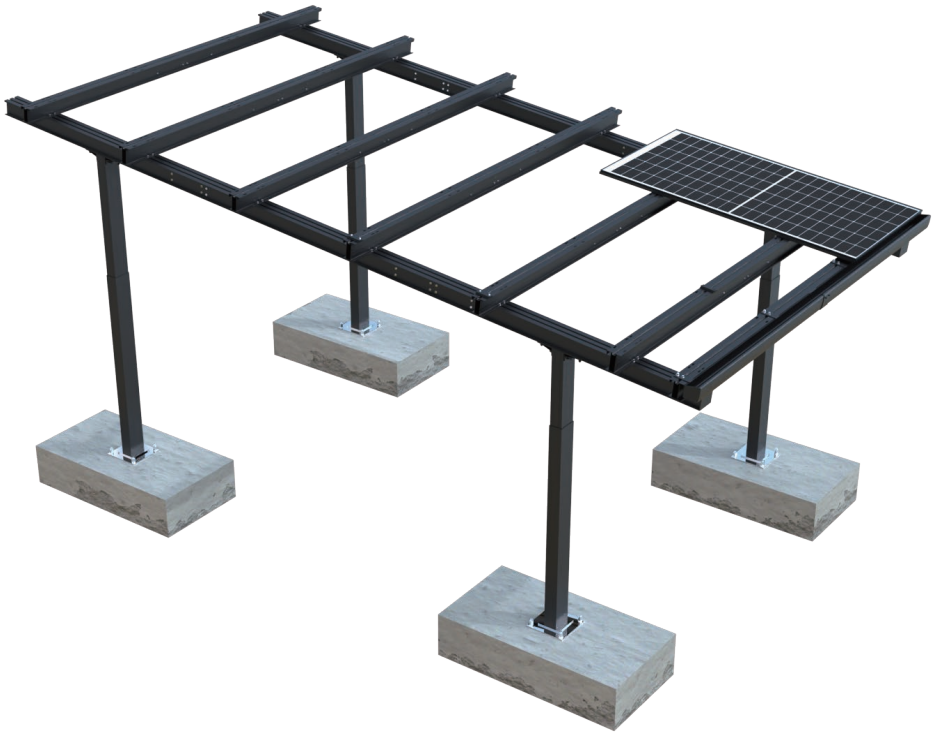
After Installation



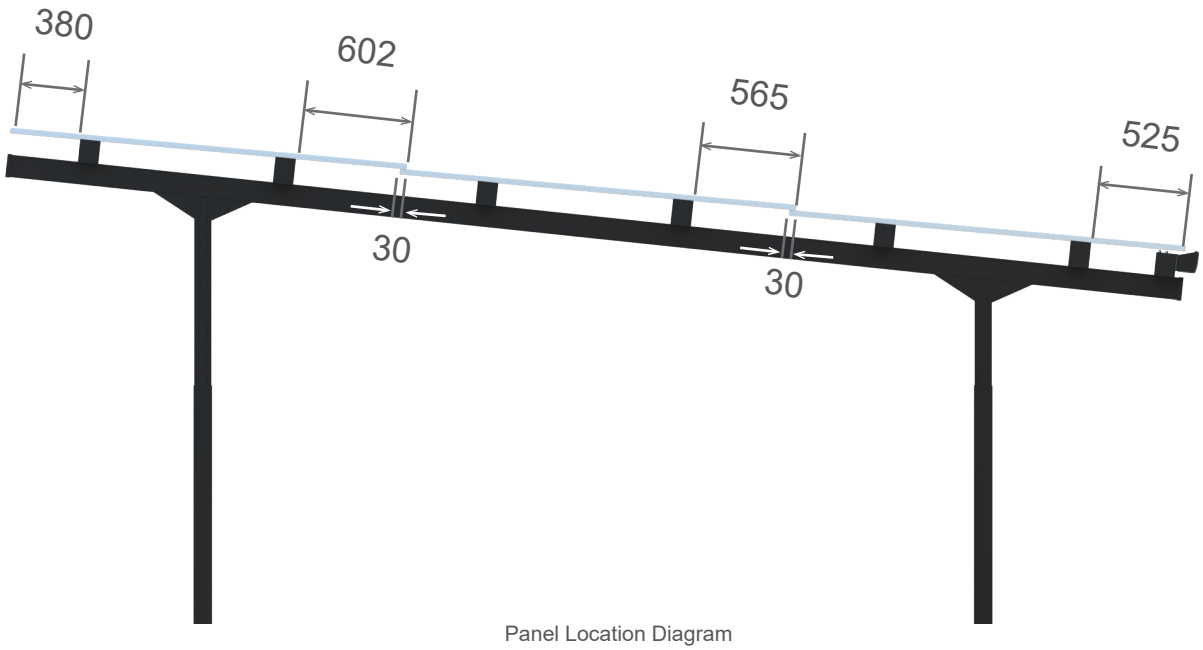


Earth Clip Location Diagram

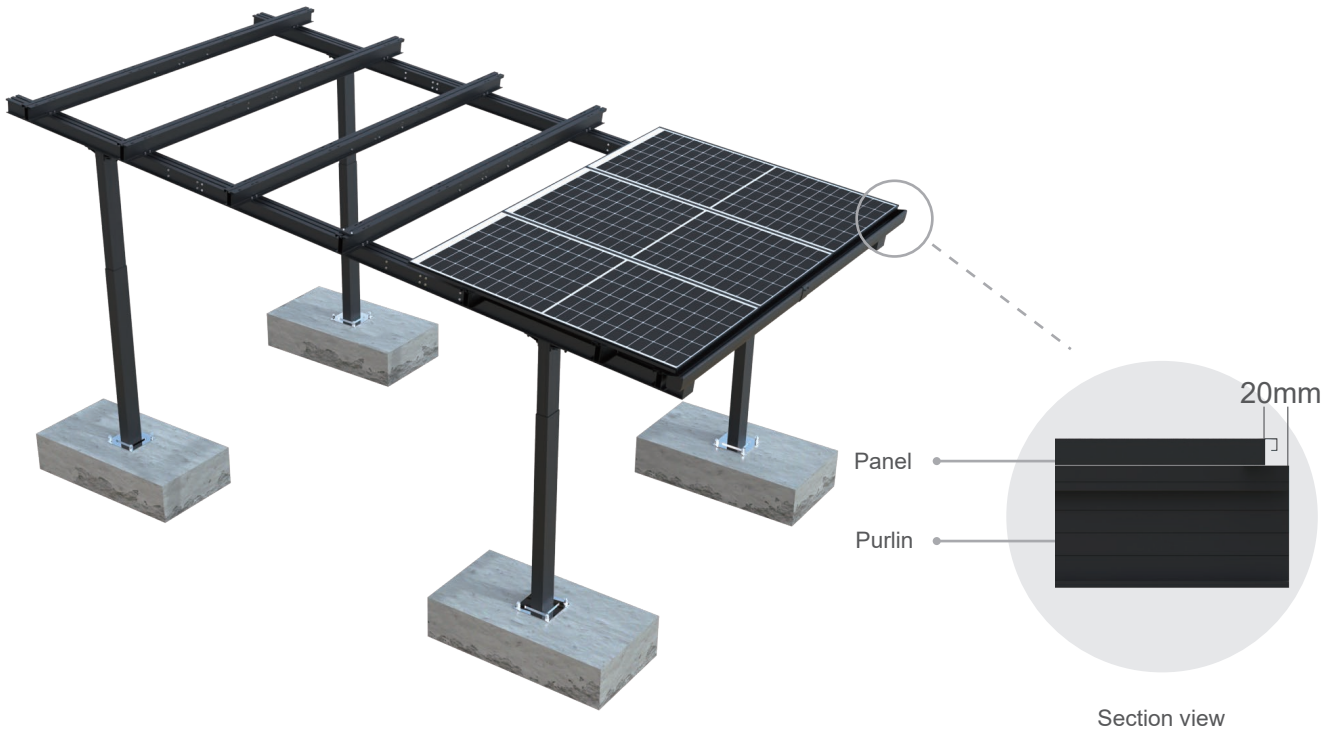
Mount the first solar panel starting from right to left.



First Solar Panel Completion



Panel Location Diagram



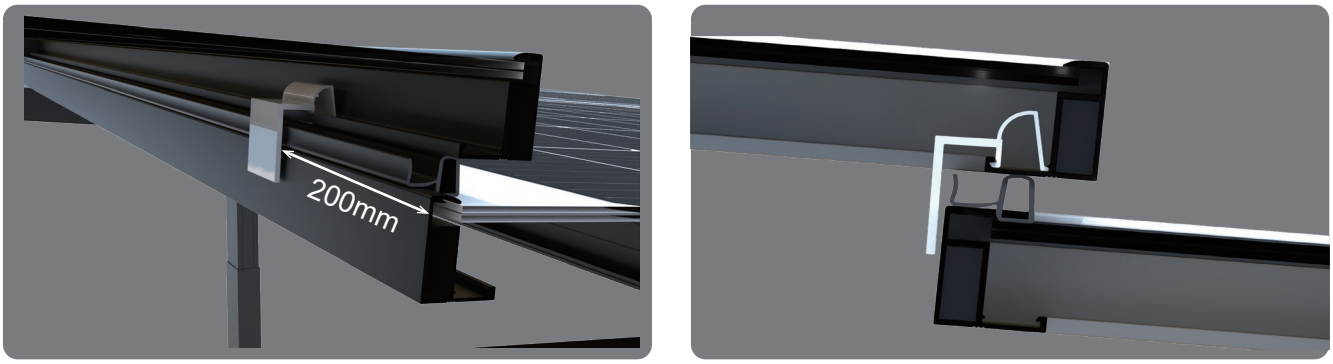
First Row Solar Panel Completion

4.14 Second and Third Row Panel Installation

- Requires Parts: 21,38,39,40,48

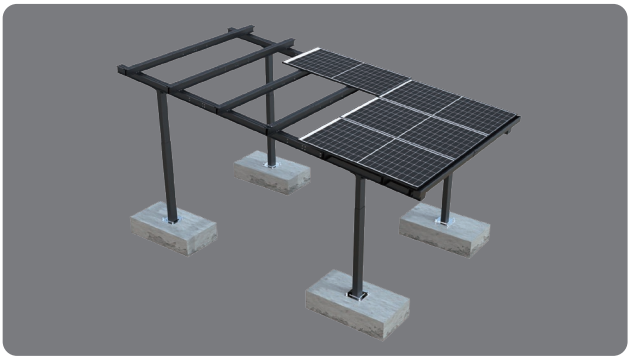
Install the Weather Seal onto top blank area of first row panel.

Then Install two Position Hooks on lower frame of second row solar panel, with each positioned 200mm from panel edge.

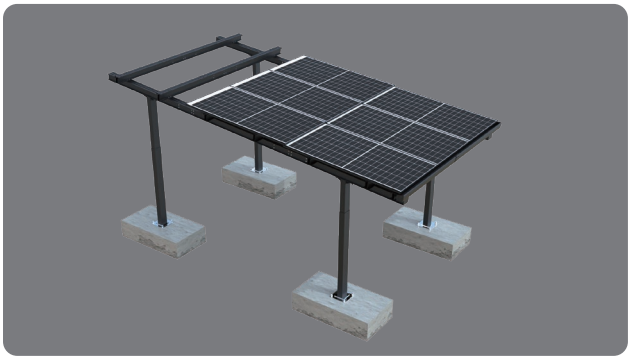


Position Hook and Weather Seal Location Diagram

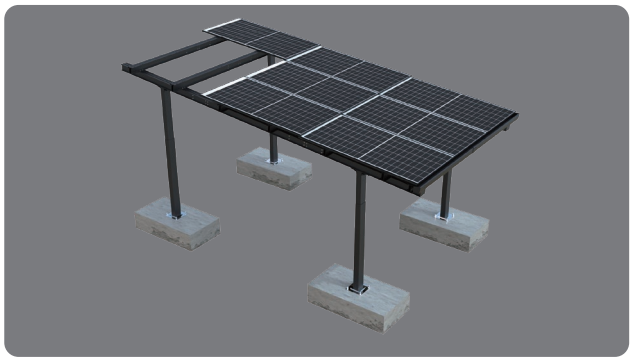
Repeat the above installation steps for the second and third row panels, starting from right to left.

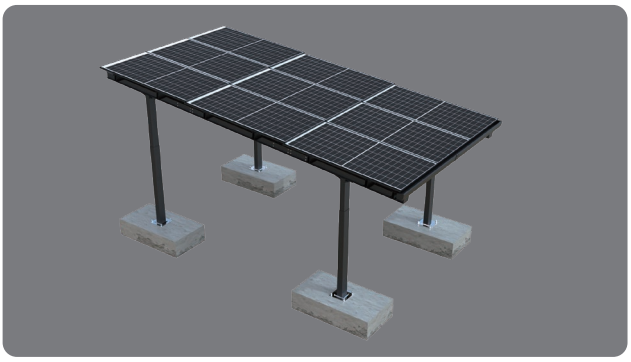


Before Installation



After Installation



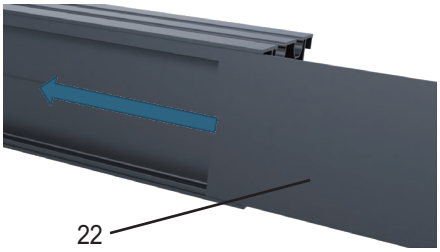


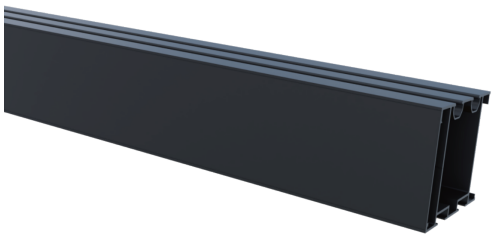
Second and Third Row Solar Panel Completion

4.15 Rafter & Purlin Cover

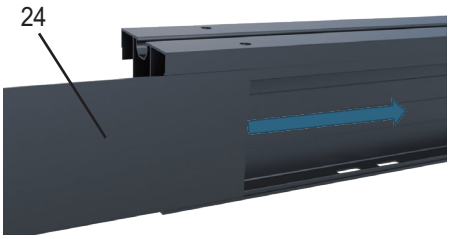
- Requires Parts: 14, 16, 22, 23, 24, 25, 26, 27

Install the Rafter Cover

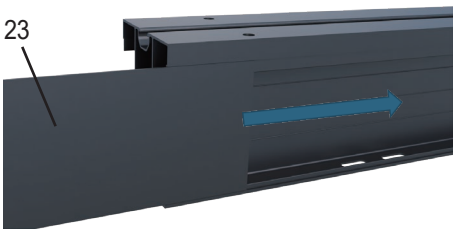




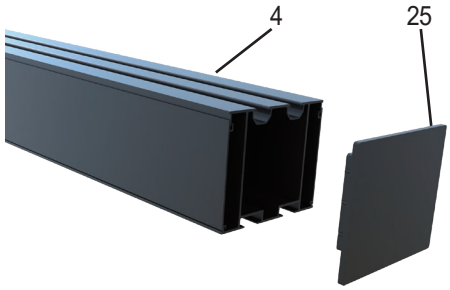
Install the Higher Purlin Cover

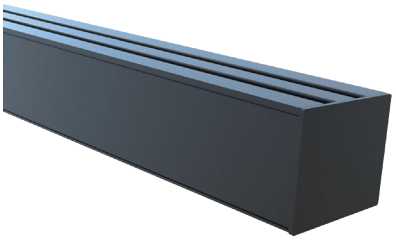


Install the Lower Purlin Cover

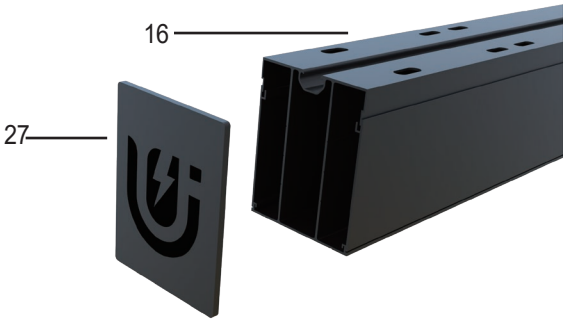


Install the Rafter End Cap

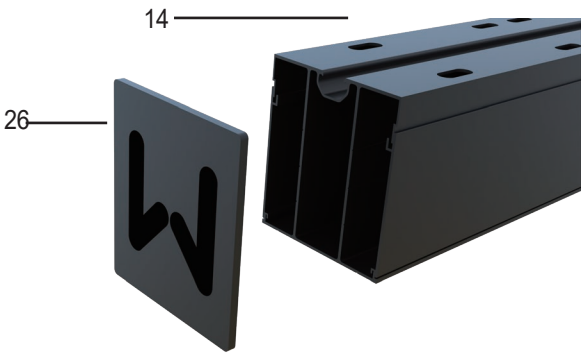




Install the Higher Purlin End Cap



Install the Lower Purlin End Cap



5. DC Electrical Wiring & Cable Management

5.1 Panel Interconnection Logic

For a single carport system comprising 9 Polaris solar panels, the entire array can be configured as one string. Panels are installed in three rows, with three panels per row, following the structural layout of the carport.

• Within each row:

Connect adjacent panels directly using the integrated DC leads provided with the Polaris panels.

• Between rows:

Use DC extension leads (jumper cables) to connect the last panel of the lower row to the first panel of the upper row.

For example, connect:

Panel 3 to Panel 4, Panel 6 to Panel 7.

These jumpers should follow a U-shaped routing path, carefully concealed and secured to avoid exposure or strain.

5.2 Cable Routing and Concealment

To maintain both system safety and visual neatness, implement the following cable management strategy:

1.Within Row:

① Cables should be routed along the inside edge of the solar panel frame.

② Use UV-resistant cable clips to fix cables inside the side frame channels of the panel where possible.

2.Between Rows:

① For jumper cables, use the natural gap between rows and secure the cable along the edge of the panel using clips.

② In critical points, route the cable into the side compartments of the purlin or rafter, which act as built-in protected conduits.

3.Concealment:

① These side compartments are the designated cable entry points and should be closed after wiring using dedicated aluminium covers.

② Ensure all entry points are smooth, rounded, or fitted with rubber grommets to prevent cable damage.

4. Additional Notes on Routing:

Where necessary, it is permissible to create openings on structural components for cable routing. Any such openings must be properly deburred, and cables passing through them must be protected using grommets or protective conduits.

If the penetration point poses a water ingress risk, appropriate sealant must be applied to restore weather protection.

5.3 Polarity and Installation Orientation

Do not invert Polaris panels during installation.

The Polaris module includes a white exclusion zone at the top edge, which must always face upward for both aesthetic consistency and compliance with product requirements. Reversing the panel orientation may lead to:

① Mismatch in visual layout;

② Cable polarity errors;

③ Water ingress risk or improper mechanical fit with clamps and seals.

5.4 Safety and Responsibility

① All DC cabling must be mechanically secured, concealed, and protected from sunlight, water, and physical stress.

② Avoid cable loops, tight bends, or unsupported spans.

③ Maintain proper polarity and ensure the string is configured correctly prior to inverter connection.

④ Ensure all DC cables are installed to allow for strain relief, especially near connectors or entry points into side compartments.

⑤ For routing through metal parts, always use protective sleeves or conduits to prevent insulation abrasion.

⑥ Check the continuity of grounding throughout the structure and modules. If required, installers must attach dedicated grounding cables or remove internal surface coating to ensure grounding continuity.

5.5 Installer Responsibility

① The installation team is responsible for finalising the cable layout according to site-specific conditions and ensuring full compliance with AS/NZS 3000 and AS/NZS 5033.

② GoodWe & Umax accepts no liability for wiring faults, electrical hazards, or performance issues resulting from incorrect or unsafe cable routing. All work must be carried out by a licensed installer.