Installation Manual

Sunlock Solar Mounting Solutions
Installation Manual
Version 3

About SUNLOCK

Sunlock are industry leaders in commercial solar mounting solutions. Our products are designed and engineered in Australia by specialists with first-hand knowledge of installation requirements.

Sunlock Commercial Mounting Systems are Australian owned and operated, with stock available across the country. Made from custom-designed aluminium extrusions and components, Sunlock's innovative design, streamlines the installation process. The unique versatile design makes it suitable for a wide variety of commercial applications, building types and zones.

Sunlock's Commercial products are backed by a 25-year warranty and are compliant with the AS/NZS 1170.2:2021 on wind actions, AS/NZS1170.1:2002(R2016)(CHANGE) on permanent, imposed and other actions, AS/NZS1170.0:2002 on general principles.

25 Year Exclusive Warranty

AUSTRALIAN OWNED AUSTRALIAN OPERATED

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Responsibility & Safety

All safety practices are implemented when installing Sunlock Commercial Solar Mounting Systems.

It is important that all safety practices are observed when installing Sunlock mounting systems, including:

- Do not throw or roughly handle any Sunlock components.
- Do not modify SunLock components in any way. The exchange of bolts, drilling of holes, bending or any other physical changes not described in the standard installation procedure will void the warranty.
- Do not bring Sunlock into contact with sharp or heavy objects.
- It is the installer's responsibility to verify the integrity of the structure to which Sunlock is fixed.
- Roofs or structures with rotten/rusted purlins, undersized purlins, excessively spaced purlins, or any other unsuitable substructure cannot be used with Sunlock. Installation on such structures will void the warranty, and could result in serious injury or death.

Wind & Climate Design

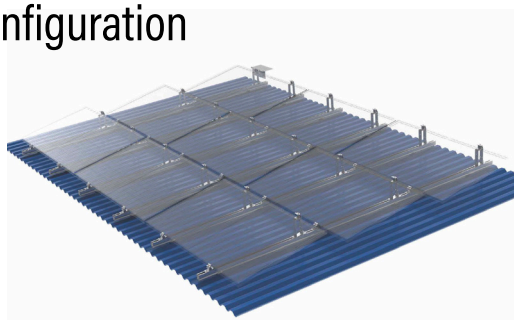
A Sunlock system installed in accordance with this installation manual is compliant with AS/NZS 1170.2:2021. This manual cannot cover all types of buildings and circumstances. For buildings outside the limits stated on the drawings, contact a structural engineer for a custom design.

AS/NZS 1170.2:2021 provides guidance on determining the wind pressures applicable to your Sunlock install site, taking into account roof shape and geographic location. Sufficient guidance is given in this document, but you may wish to procure a copy of these standards if your company installs Australia/ New Zealand wide.

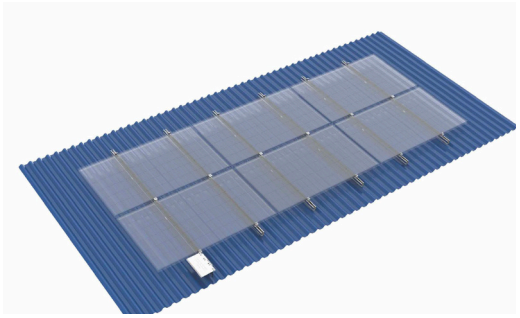
- Keep in mind average wind speeds are higher for structures mounted closer to the roof perimeter zone (edge)
- Make sure your installation complies with local and national building codes. Take into account relevant design parameters (wind speed, exposure and topographic factor) when determining the loading for the installation.
- If alternative fasteners are used to fix the framing to the roof (assuming supplied fasteners are unsuitable for any reason). All screw fasteners must conform to corrosion resistance Class 4 Australian Standard AS 3566 and be of equal or greater strength to those supplied with your Sunlock order.

SUNLOCK Systems

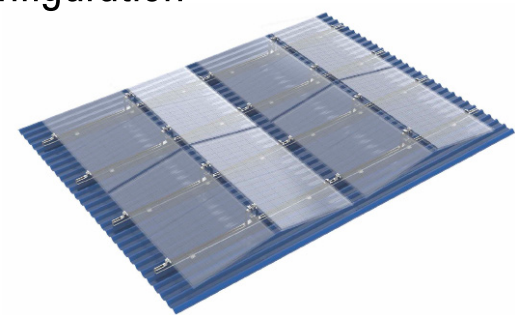
North Fixed Landscape Tilt Configuration



Flush Configuration



East West Landscape Tilt Configuration



North Portrait A-Frame Configuration

Technical Specifications

Applications

- Commercial and residential buildings
- Marine applications and remote areas

Features

- Australian designed, owned and operated
- 25 Year Warrant
- 6106t6 aluminium extrusion
- Suitable for roof slopes in the range from 0° to 10° (for tilted arrays)
- Suitable for roof slopes in the range from 5° to 30° (for flush arrays)
- Inherent corrosion resistance resulting in low ongoing maintenance and an extended product life
- Complies with Australian / New Zealand Standards on Wind Actions (AS/NZS 1170.2:2021)

Custom Design

For a custom design, please contact either Sunlock or an Australian registered structural engineer.

Before Installing

Reciept of Goods

Check that the Sunlock equipment is undamaged and the order is complete. Check for correct quantities of the following items:

1. Channel Joiner: Consideration needs to be made for the number of channel lengths in the array.

2. Earthing Components: Consideration needs to be made for the earthing of each Channel to the ground.

3. Commercial Roof Bracket Kits: For tilted arrays, consideration needs to be made for the required angle of inclination and the number and height of the panels in the array.

4. Isolator Bracket Cover: Consideration needs to be made for the position needed to be installed on the bracket.

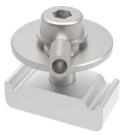
5. Channel feet: consideration needs to be made for the number of panels in the array, the number of channel lengths per panel and purlin spacing.

6. Channel Lid: If protection or waterproofing of electrical cables is required, consideration needs to be made for the number of panels in the array, the number of channel lengths per panel, and the spacing between each panel.

7. Channel: Consideration needs to be made for the number of panels in the array and the spacing between panels in each row.

1.

2.



3.

4.

5.

6.

7.

Before Installing

Tools Required

T- bar hex or 6mm hexagon driver bit

If using a 6mm driver bit, made sure that the cordless power tool used for driving has a hand-tight clutch setting and a fine (soft) impact driver to prevent damage to the fragile glass panels and threads on the framing.

Driver or impact driver

For driving roof material fixing

Gloves

For handeling Sunlock framing (aluminium can incur sharp corner)

SUNLOCK Components

SLSCC3 Channel: A minimum of at least two per panel is required to hold each row and are custom designed and Australian made from 6005-TS extruded aluminium.
Custom channel lengths are available on request. Minimum order quantity, deposit and lead time apply.

SLCF2 Channel Foot: Secures the channel to the roof. Each channel foot is supplied with a potable grade EPDM washer to prevent water ingress of galvanic corrosion with the roof material.
SLCF3: Slots with 2 roof screws available for challenging rooftop situations.

SLCJ2 Joiner: Extend Sunlock channel to any length as required with the addition of the Joiner.

SLCL Channel Lid: Snaps into the channel and mechanically protects cabling from damage and water ingress. Note: Custom lengths are available on request. Minimum order quantity, deposit and lead time apply.
SLCL3 - SunLock channel lid (4400mm length)

SLCTL2 Commercial Tilt Leg: Comprise of one front leg and one rear legs.
SLCTL2-10 Sunlock 10° tilt leg (clamp)
SLCTL2-15 SunLock 10° tilt leg plus 5° bolt-on bracket (clamp) Suits panel thicknesses of between 30mm to 40mm
SLCTL2-10EW Sunlock 10° East West tilt leg

SUNLOCK Components

SLCEC3 Commercial End Clamps: Available to suit 30-40mm high panels and are simple and fast to install. Note: Custom end clamps are available on request. Minimum order quantity, deposit and lead time apply.
SLCEC-3040 - Clamp application with 30 - 40mm panels

SLCMC Commercial Mid Clamps: Fits between panels to hold the panels to the channel. These are designed to suit 30 - 40 mm panels with built-in self-earthing pins. Note: Custom mid-clamps are available on request. Minimum order quantity, deposit and lead time apply.
SLCMC-3040: Clamp application with 30 - 40 mm panels

SLAFK-1015 A Frame: Specifically made for commercial installations.
Fits panels up to 2.15m long, with 10 -15 Degree adjustment. Channel feet are preinstalled on the A-Frame to save you time.
The slotted bottom rail allows for purlin spacing flexibility.

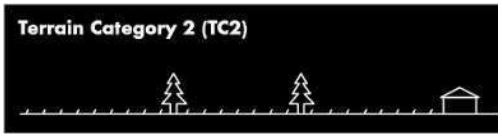
SLCET3 Sunlock CMC Two Wire Earth Bonding:
Provides earth from each panel frame to the channel, allowing quick and effective connetion of the array to an earthing cable where required.

SLCIBC Isolator Mounting Cove: This can be easily attached to the Sunlock channel and provides a secure mounting surface for the rooftop DC isolator.
SLCIB-F Isolator Mounting Bracket: For flush mount connection between cover and channel.
SLCIB-T Isolator Mounting Bracket: For tilt mount connection between cover and tilt leg.

Wind Terrain Categories

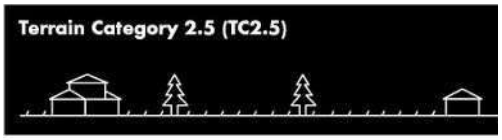
Terrain Category 2

Open terrain, including grassland with well-scattered obstructions with heights from 1.5 metres to 5 metres. Examples include farmland or cleared sub-divisions with isolated trees and uncut grass.



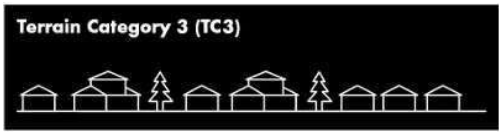
Terrain Category 2.5

Terrain with few trees or isolated obstructions, for example, the terrain in developing outer urban areas with scattered houses.



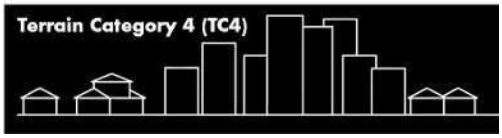
Terrain Category 3

Terrain with numerous closely spaced obstructions with heights from 3 metres to 5 metres. Examples include typical suburban housing or light industrial areas.



Terrain Category 4

Terrain with numerous large, high and closely spaced obstructions. These generally range from 10 metres to 30 metres in height. Examples include large city centres or well-developed industrial complexes.



Selecting Roof Zones

Solar panels can be installed anywhere on the roof, as long as a sufficient number of fixings are used. Higher wind speeds are encountered at the edges of roofs and therefore more fixings are required in these areas.

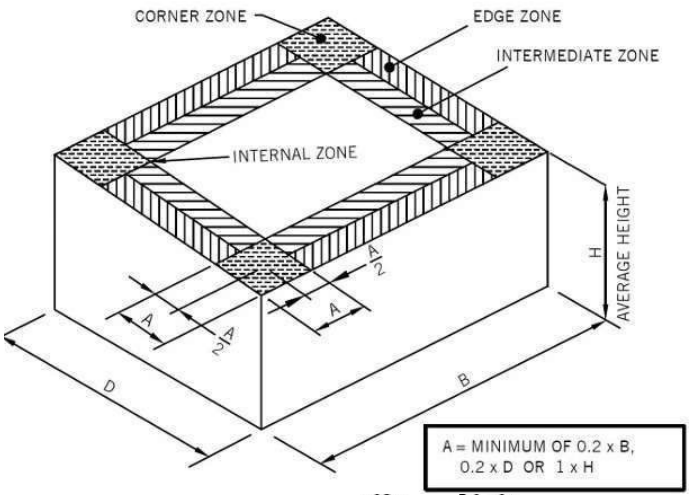
For a tilted array, a roof can be divided into four zones, the internal zone, intermediate zone, edge zone and corner zone.

Selecting Roof Zones

Selecting Purlin Thickness

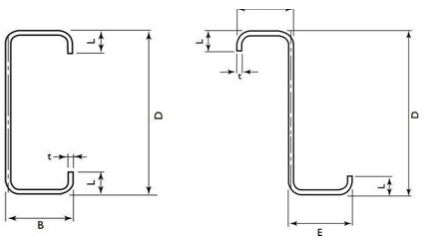
To appropriately design a Sunlock commercial framing system, measure the thickness and spacing of the purlins supporting the roof sheeting. The strength of each fixing holding the solar frame to the roof is increased with thicker purlins. As a result, framing can be optimized for a more efficient layout. Alternatively, if it isn't possible to measure the thickness of the purlins, the thickness can be derived by measuring the height and width of the purlins (see below). If access to the purlins isn't possible, use the value of 0.9 mm.

			Zeds			Cees	
Catalogue number	t mm	D mm	E mm	F mm	L mm	B mm	L mm
Z/C10010	1.0	102	53	49	12.5	51	12.5
Z/C10012	1.2	102	53	49	12.5	51	12.5
Z/C10015	1.5	102	53	49	13.5	51	13.5
Z/C10019	1.9	102	53	49	14.5	51	14.5
Z/C15012	1.2	152	65	61	15.5	64	14.5
Z/C15015	1.5	152	65	61	16.5	64	15.5
Z/C15019	1.9	152	65	61	17.5	64	16.5
Z/C15024	2.4	152	66	60	19.5	64	18.5
Z/C20015	1.5	203	79	74	15.0	76	15.5
Z/C20019	1.9	203	79	74	18.5	76	19.0
Z/C20024	2.4	203	79	73	21.5	76	21.0
Z/C25019	1.9	254	79	74	18.0	76	18.5
Z/C25024	2.4	254	79	73	21.0	76	20.5
Z/C30024	2.4	300	100	93	27.0	96	27.5
Z/C30030	3.0	300	100	93	31.0	96	31.5
Z/C35030	3.0	350	129	121	30.0	125	30.0



Selecting Number of Fasteners

In some circumstances extra fixings will be required. To reduce the need for extra framing, double fixing feet can be used in place of the single fixing feet.



Determining Correct Spacing

Panel Gaps

Measure the vertical difference in height between the lowest part of one row and the highest part of the next row. This takes into account the slope of the roof or surface.

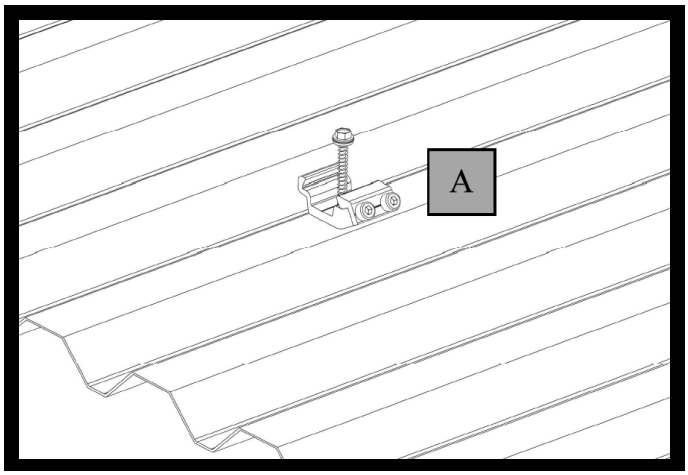
To determine the gap between the panels, multiply the height by a factor. This factor accounts for the location of the sun (altitude and azimuth) on the winter solstice. At minimum (and in accordance with CEC guidelines) the panels should not be shaded between the hours of 10 am to 2 pm.

To further minimize shading and maximize yield, it is recommended to avoid shading from 9 am to 3 pm. If a lot of space is available, it's recommended to avoid shading from sunrise (+ one hour) to sunset (- one hour) for additional yield, as shown in the following table:

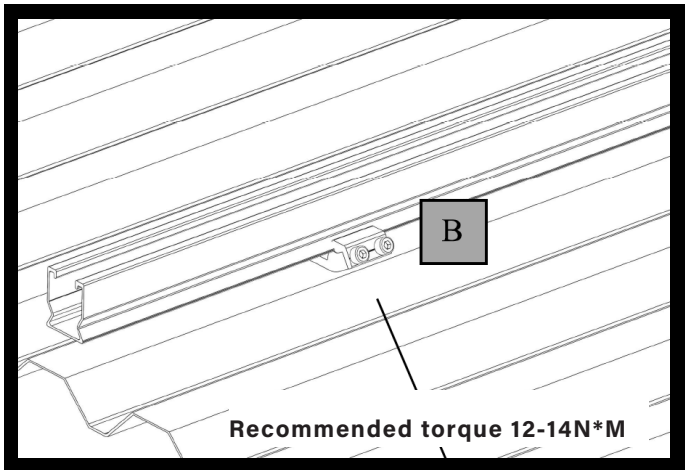
City	Latitude	CEC (10am - 2pm)	Sunlock (9am - 3pm)	Sunrise +1 to Sunset - 1
Darwin	12°	0.9	1.3	2.2
Brisbane	27°	1.4	1.8	3.2
Perth	32°	1.8	2.3	3.3
Sydney	34°	1.8	2.3	3.8
Canberra	35°	1.9	2.6	3.9
Adelaide	35°	2.0	2.6	3.9
Melbourne	37°	2.3	3.3	4.1
Hobart	42°	2.8	4.1	5.6

Product Install Guide

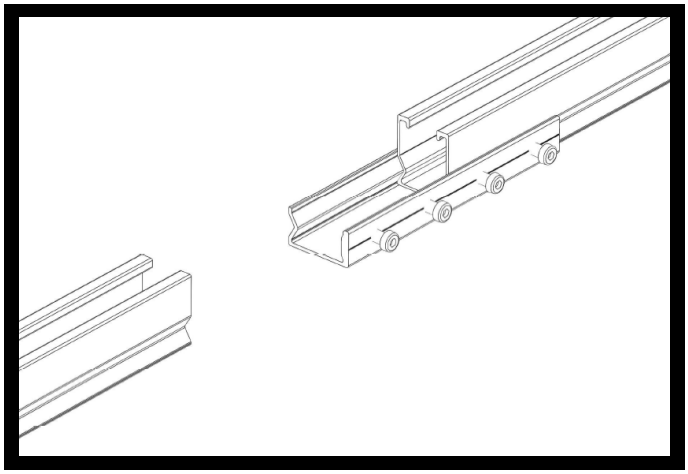
Installing Channel Feet

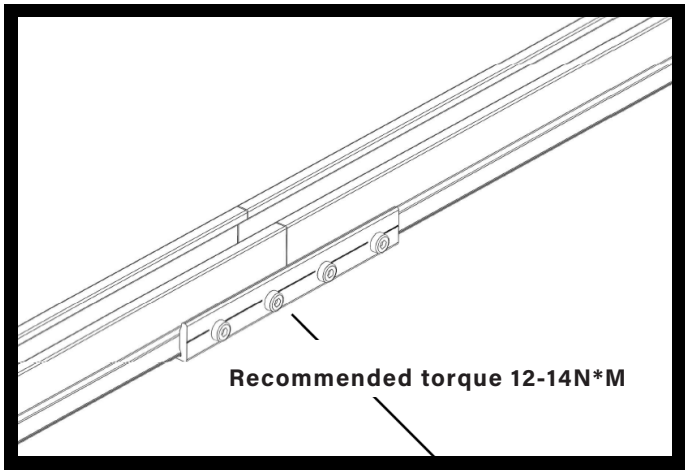


A 6.3*70 class scew



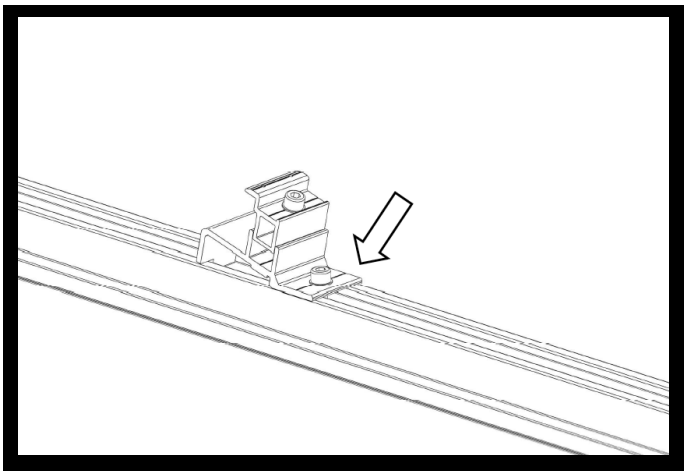
B DIN912 Hexagon socket head cap screws M8*28



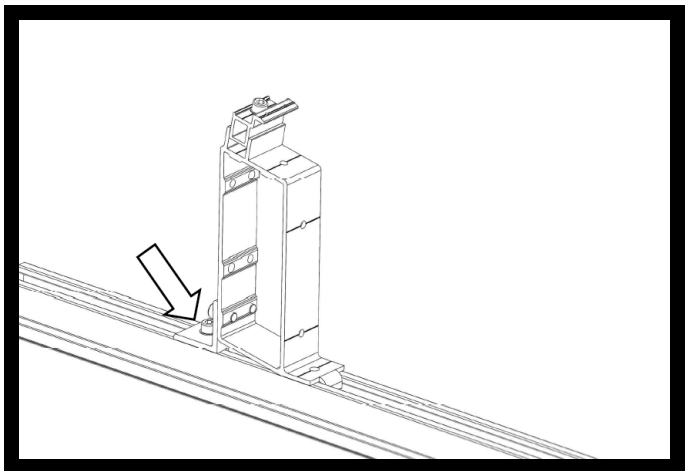


Landscape Tilt System

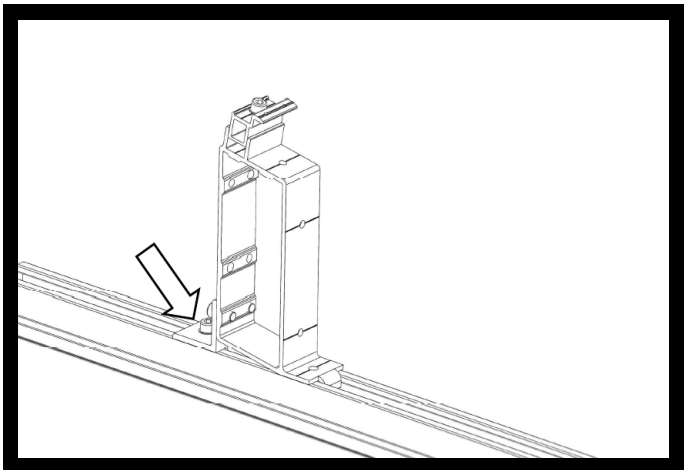
Installing legs (Tilt legs are pre-assembled)



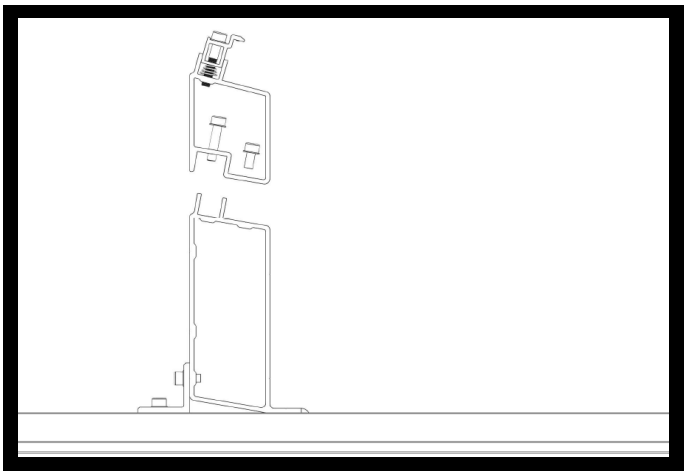
Installing Front Leg

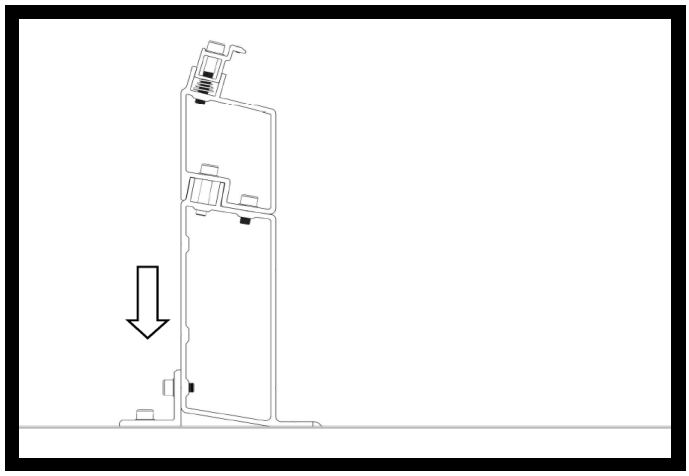


Installing Rear Leg



Installing East West Rear Leg

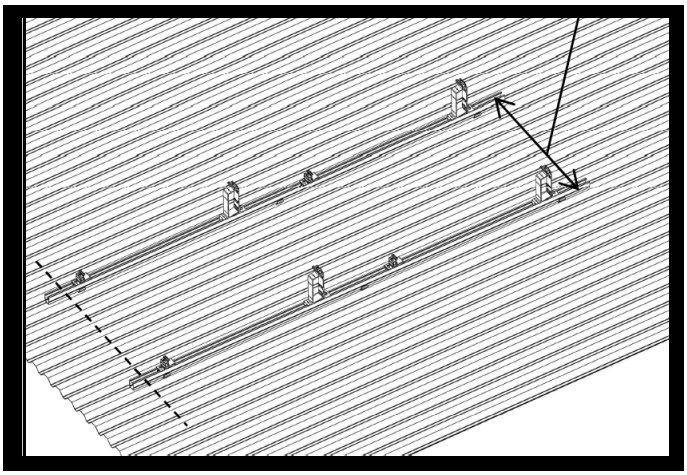




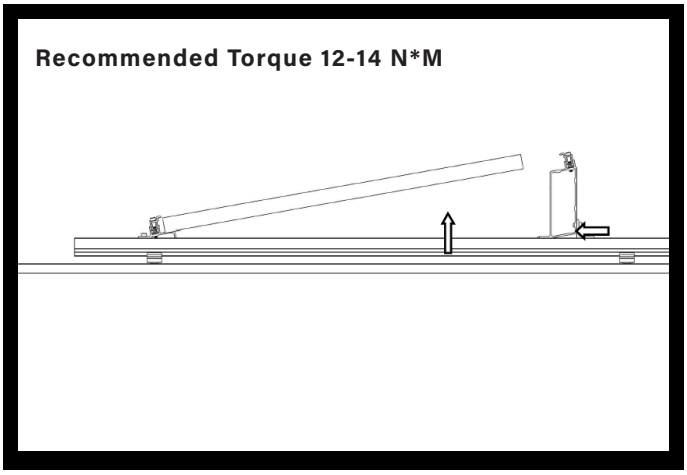
Installing 15° Tilt Leg - Bolt on the 5° bracket onto the 10° bracket (comes pre-assembled).

Installing Panels

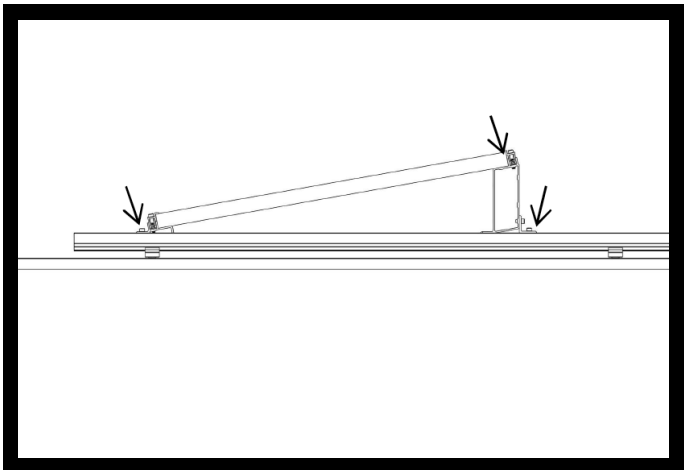
Tilt Array



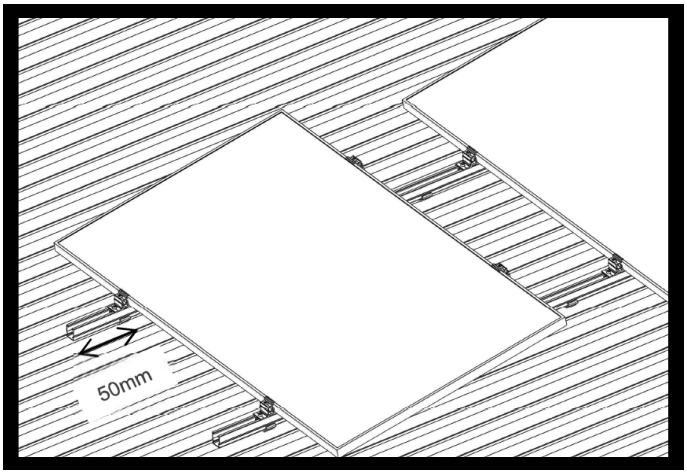
1. Pull a string to align both front legs. Fasten the front leg to the channel.



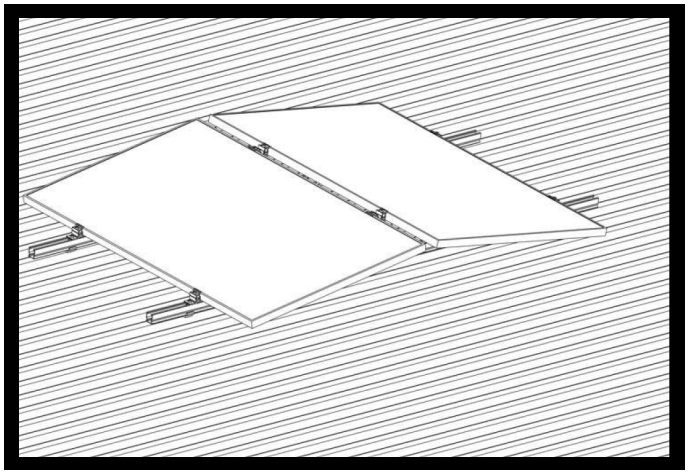
2. Calculate the position of the first front leg and hang the panel on it. Lift the panel at the height of the tilt leg and push the rear leg into position.



3. Tighten all the screws on the system



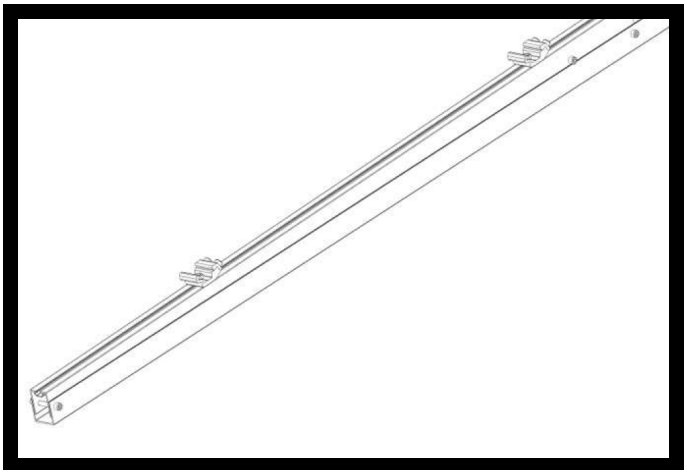
4. Leave out a minimun 50mm clearance at the end of the channel



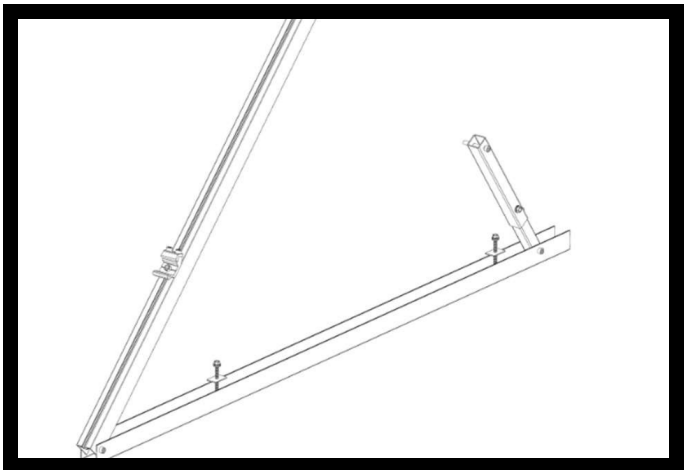
5. Repeat same steps with the East West System

Portrait Tilt System

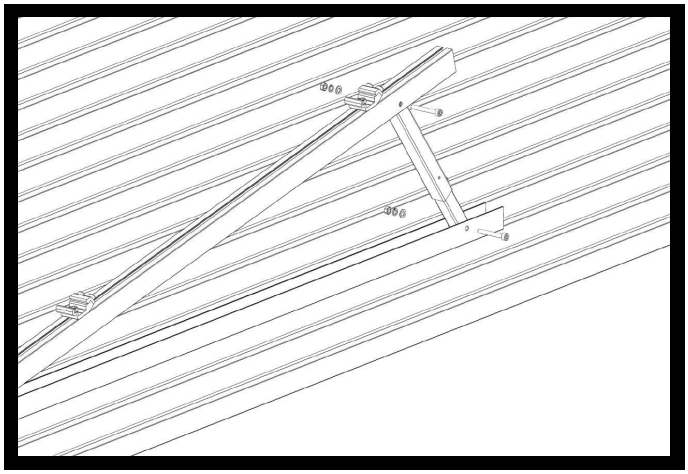
Installing A-Frame (10 - 15 adjustable)



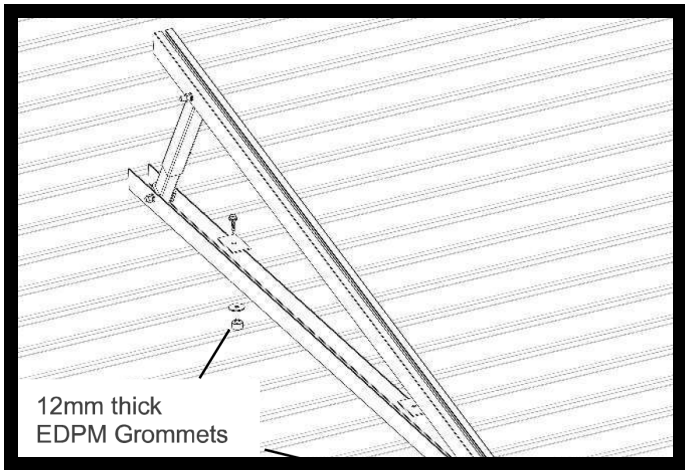
1. Open the A-Frame package, channel feet are pre-assembled on to the frame. Adjust the position of the clamp to suit the optimal clamping zone.



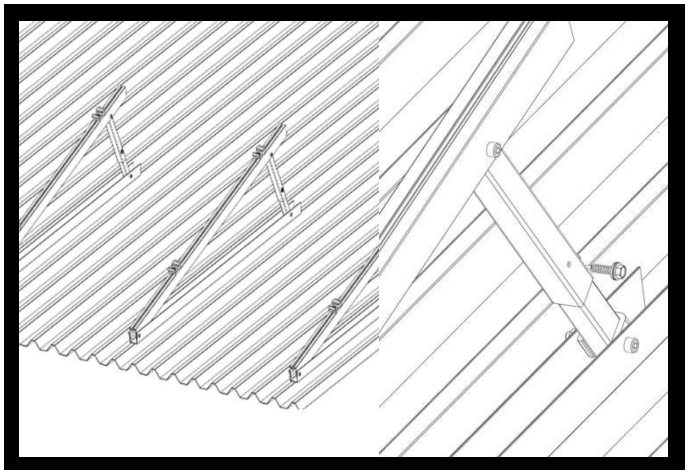
2. Pull up the top beam. Lift up the leaver leg and install roof screws with a rectangular washer.



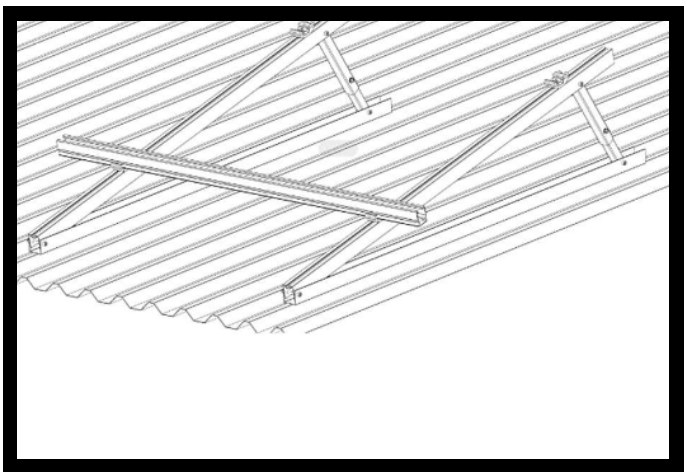
3. Adjust the frame to desirable tilt and tighen all the M8 bolts securely.



4. For A-Frame parallel to purlins, 12mm thick EDPM Grommets have to be installed under the A-Frame.



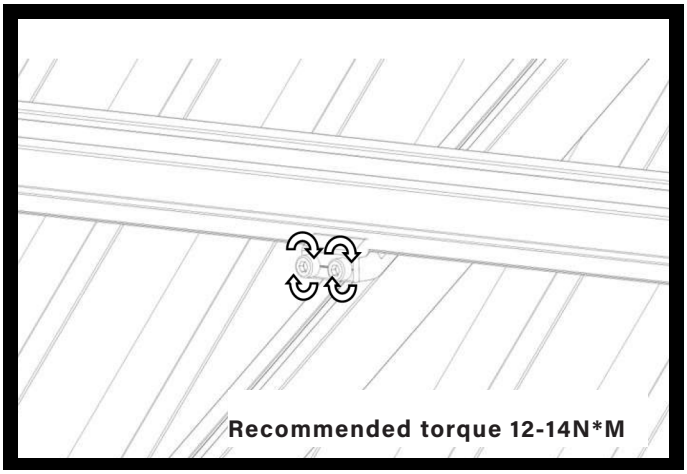
5. Line up all the A-frame at the same angle, and install the given ST6.3*25 self tapping crew to fixate the lever leg.



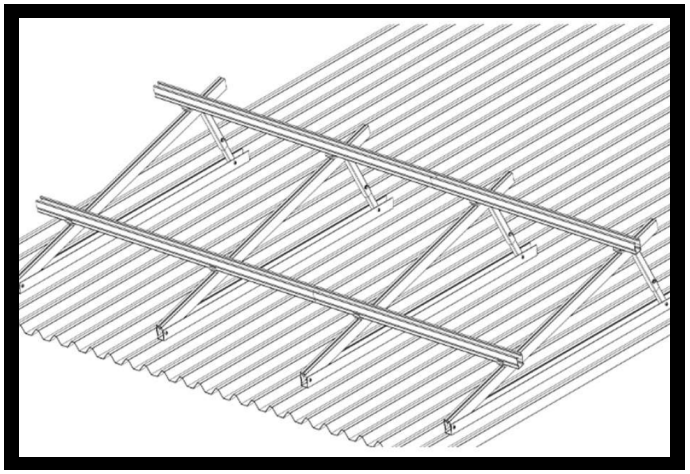
6. Start installing the channels on channel feet

Portrait Tilt System

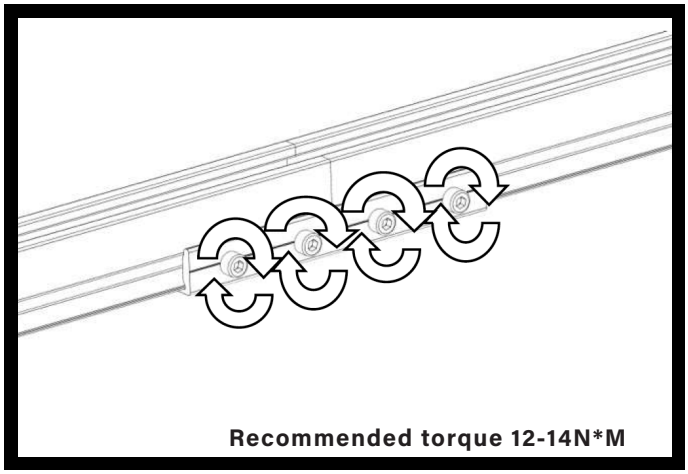
Installing A-Frame (10 - 15 adjustable)



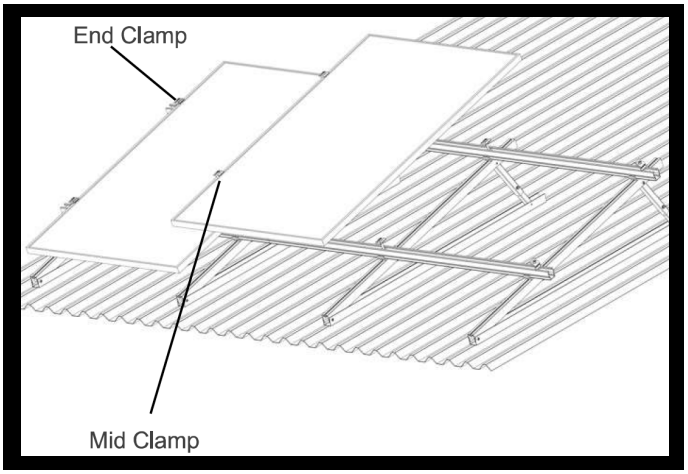
7. Tighten channel feet.



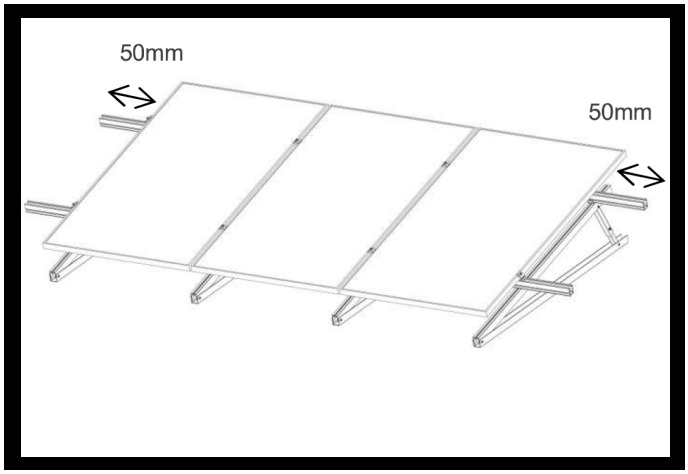
8. Line up all channels on top of the A-Frame.



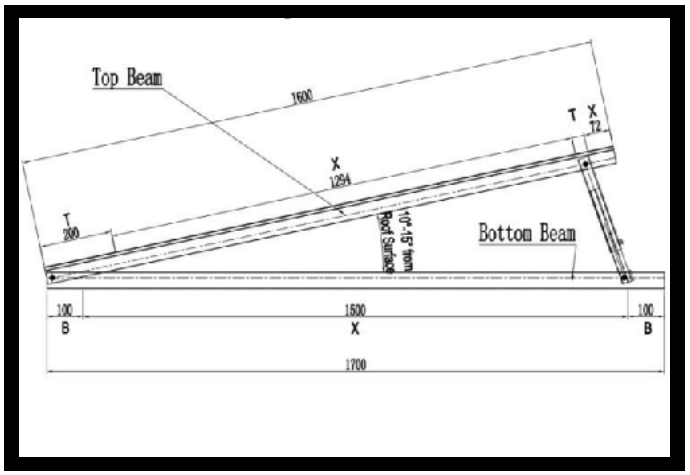
9. Join all the channels together with channel joiners.



10. Start laying panels from one end to the other. Secure one side of the panel and start laying the next panel.



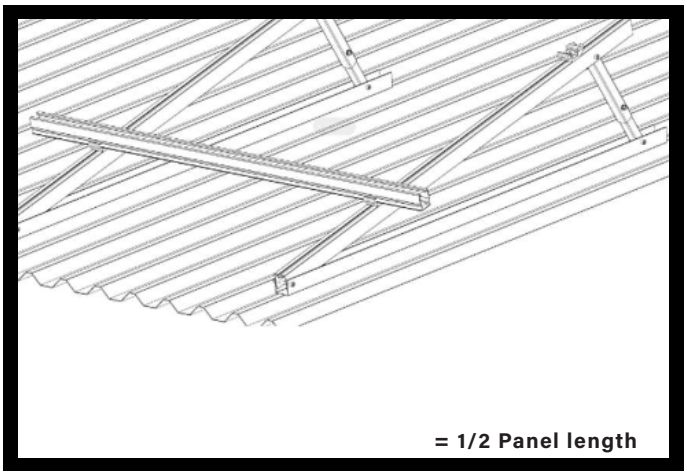
11. Secure all mid and end clamps. Complete the row and leave at least 50mm clearance at the end of the channel.



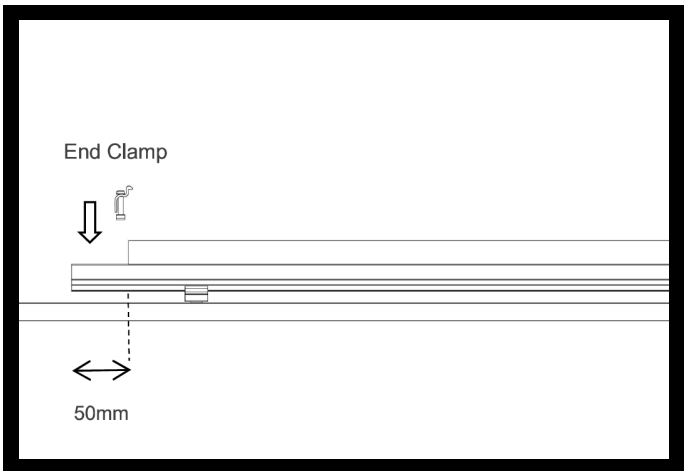
Correct Rail Spacing - Channel must be fixed on the A-Frame in the sections labeled "T" in figure below.

Flush Systems

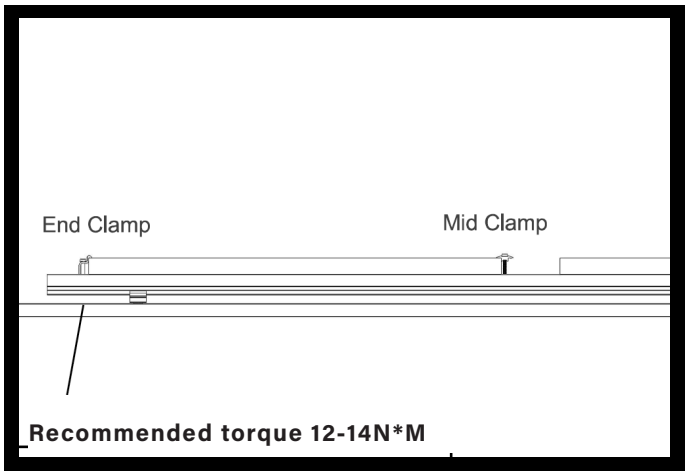
Installing Flush Array **Framed** Panels



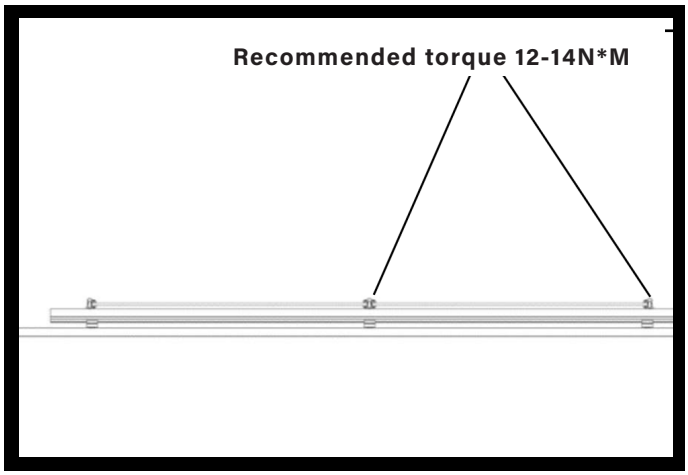
1. Array channels. The direct distance between the two channels at the bottom of the same panel is about 1/2 of the panel length.



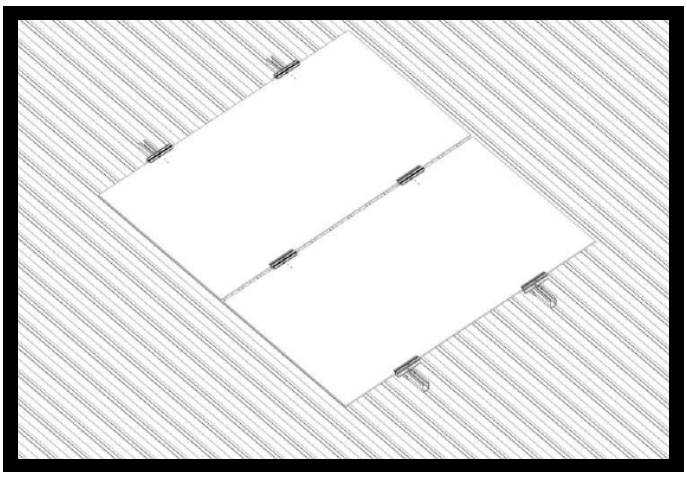
2. Arrange the panel on the channel in the desired position, leave a min 50 mm clearance at the end of the channel. If no mid clamps are present in same row an earthing plate is required.



3. Secure the panel to the channel as close to the end as possible with the end clamp. Tighten the screws, and insert the midclamp. Slide the second panel firmly against the mid clamp.



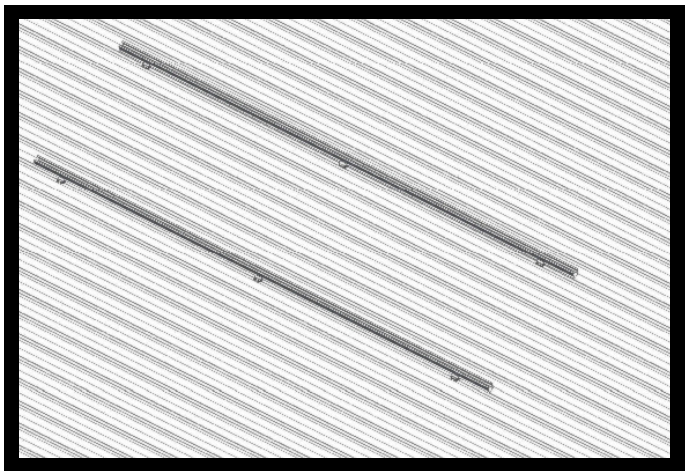
4. Fasten the bolts. Repeat as required.



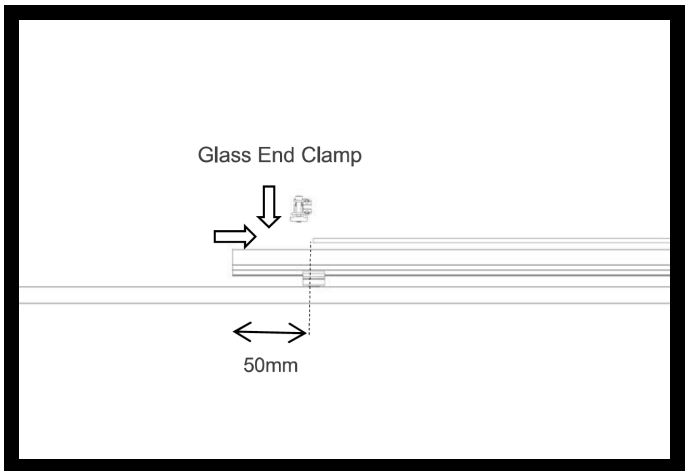
5. Fasten the bolts. Repeat as required.

Flush Systems

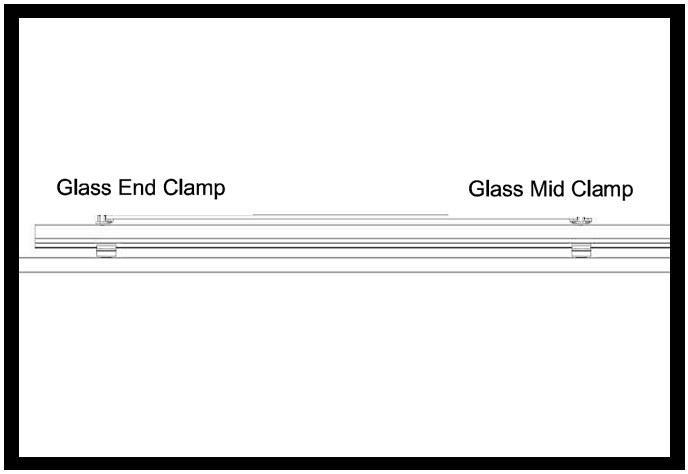
Installing Flush Array **Frameless** Panels



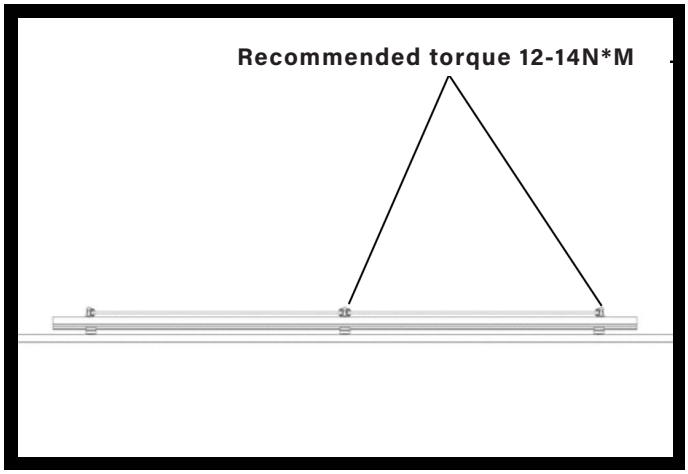
1. Array channels. The direct distance between the two channels at the bottom of the same panel is about 1/2 of the panel length.



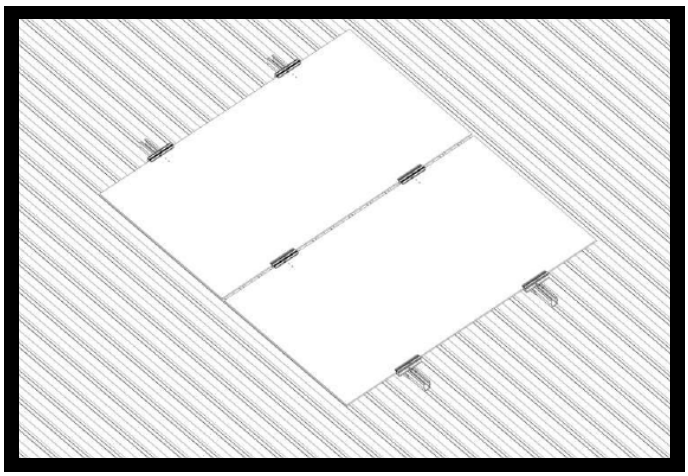
2. Lay the panel on the channel in the desired position, leave a min 50 mm clearance at the end of the channel. Place your clamp in desired position and push it in.



3. Secure the panel to the channel as close to the end as possible with the end clamp. Tighten the screws, and insert the midclamp and slide the second panel firmly against the mid clamp.



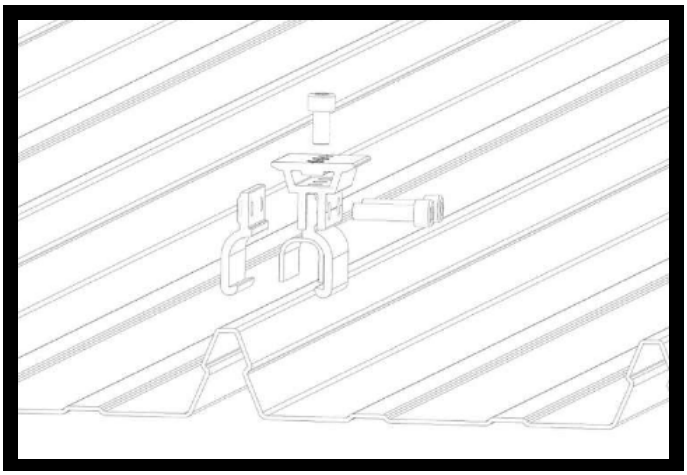
5. Fasten the bolts. Repeat as required



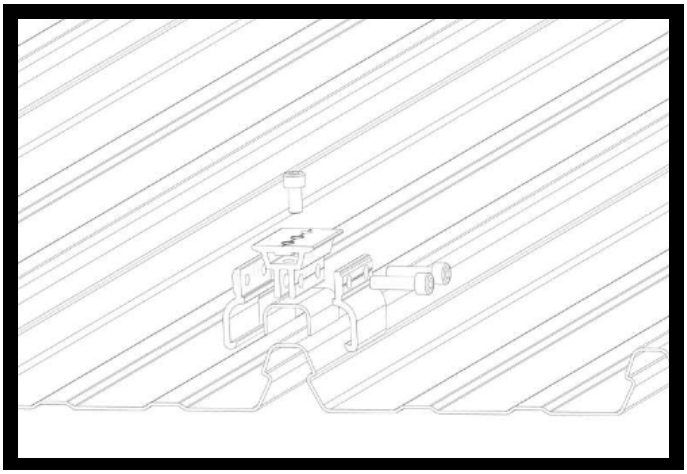
5. Fasten the bolts. Repeat as required

Accessories

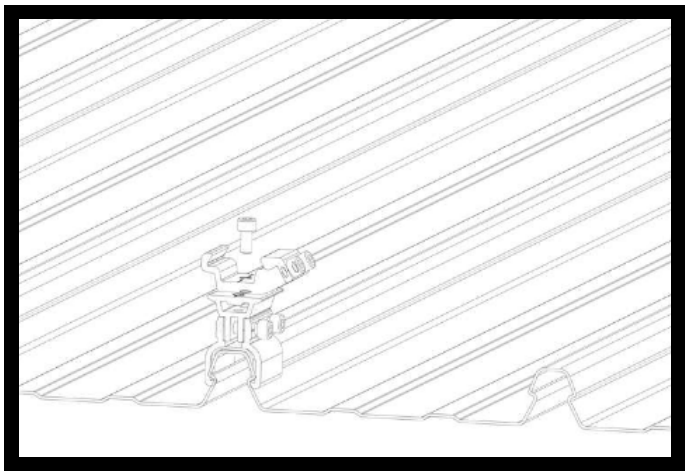
Installing Kliplok / Trap Bracket



1. Kliplok have 2 configurations. Assembled as above for kliplok 406.

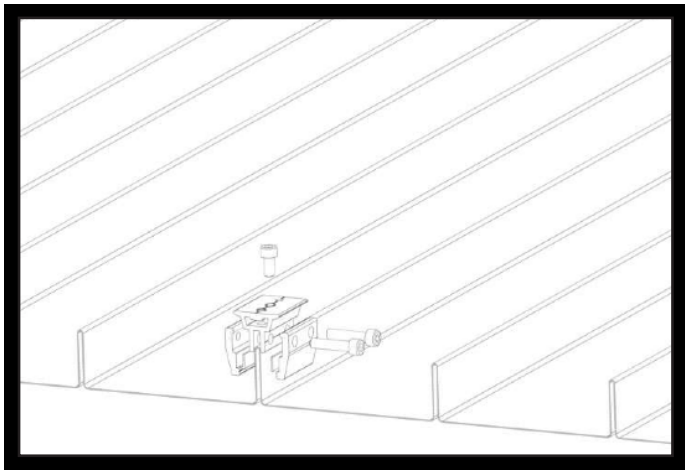


2. Kliplok have 2 configurations. Assembled as above for kliplok 700.

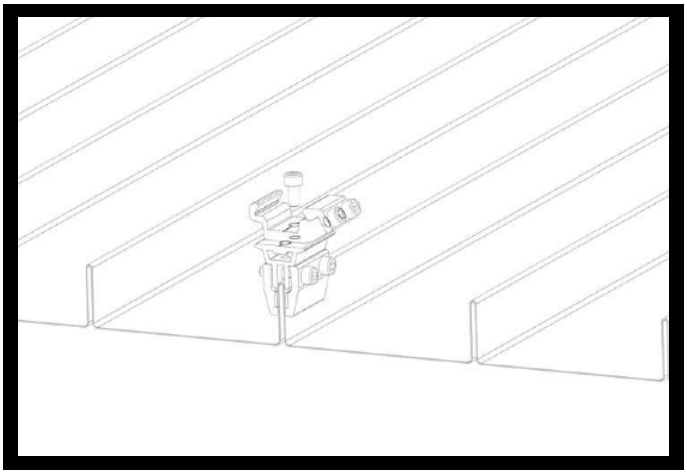


3. For flush and fixed tilts, once the Kliplok is secured on the roof sheet, mount the channel feet on top with a bolt.

Installing Longline



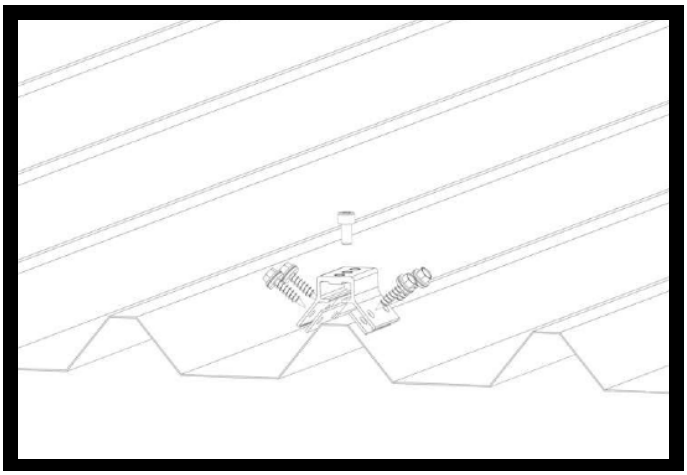
1. Longline is slighly adjustable. Mount longline onto roof sheet and tighten the 2 side bolts.



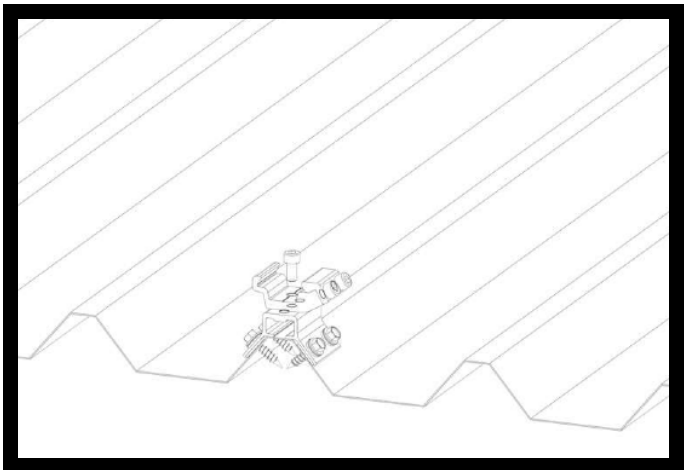
2. Once the lonline is secured on the roof sheet, mount the channel feet on top with a bolt.

Accessories

Installing Trap Bracket

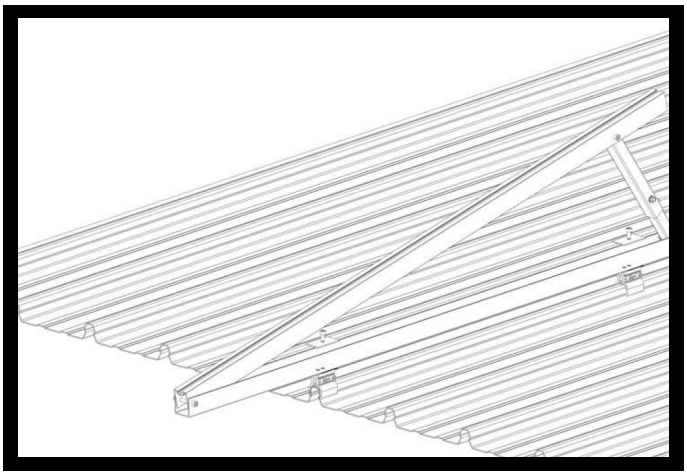


1. Place the Trap Bracket on the foam roof and use the 4 tek screw to secure to the roof.

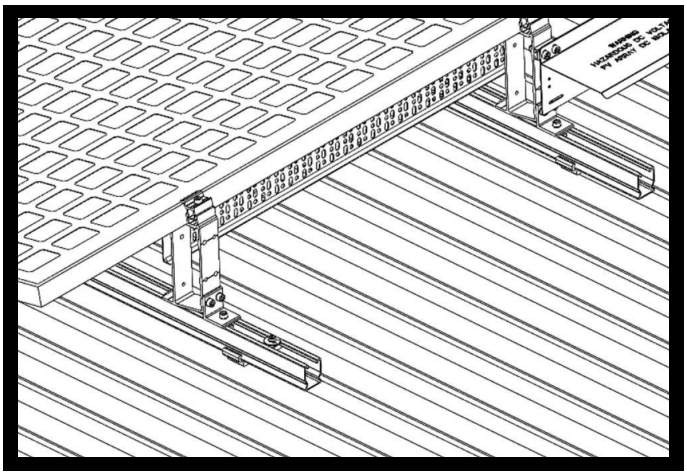


2. Once the Trap bracket is secured on the roof sheet, mount the channel feet on top with a bolt.

Install A-frame into clamps

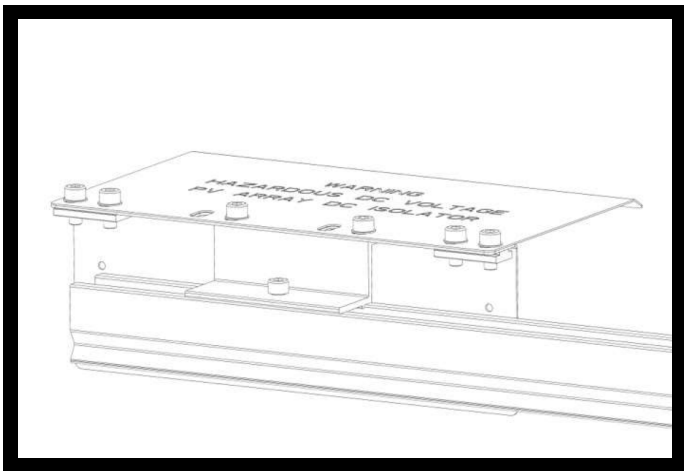


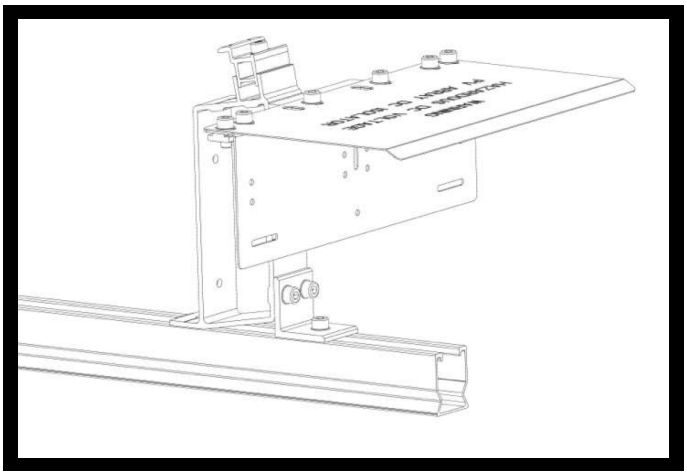
For Tripod systems, mount your A-frame directly onto any of the above clamps.



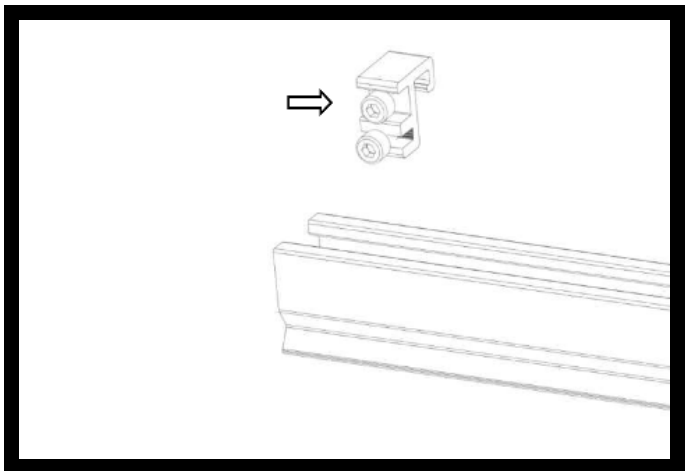
Allowance has been made for mounting cable tray on the tilt legs with M8 Screws as an optional feature.

Installing Isolator Bracket Cover

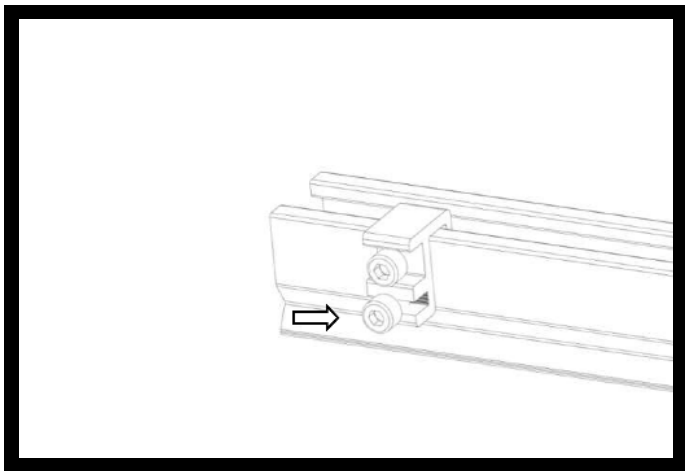




Accessories

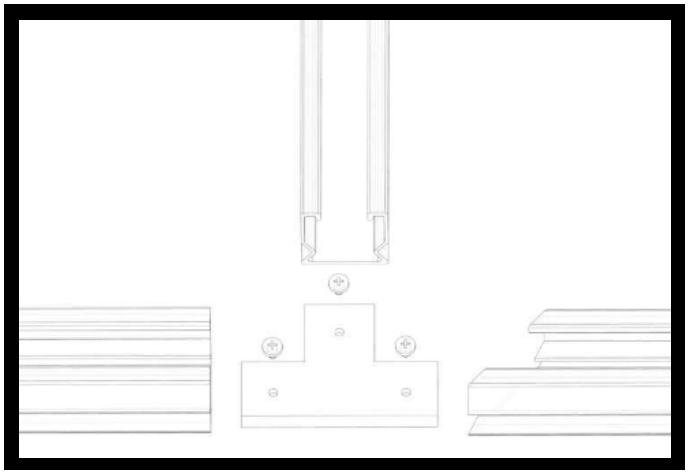


Click in the earth lug to the channel and tighten the first bolt to secure the earth lug.

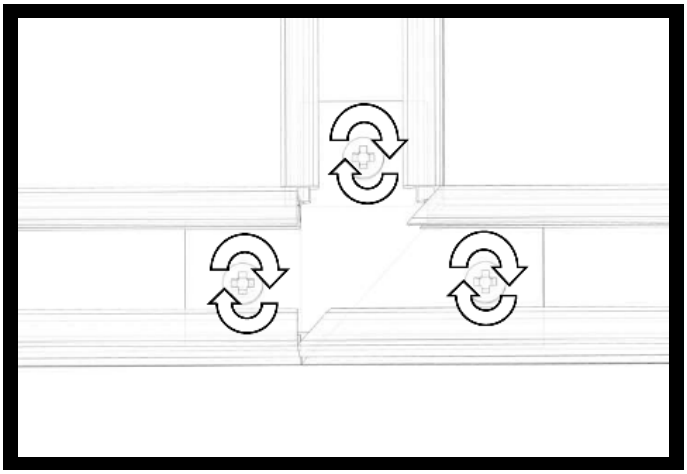


Slide your earthing wire to the grove at the bottom and tighten the bottom bolt to connect the wiring.

Installing Channel T-Joiners

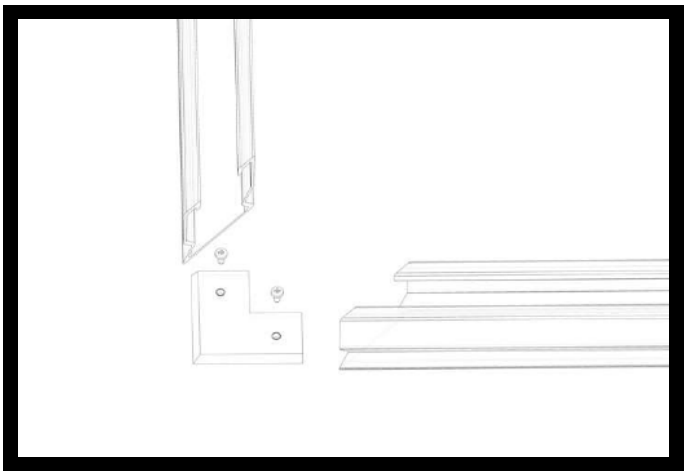


Slot the T-Joiner into the bottom of each channel

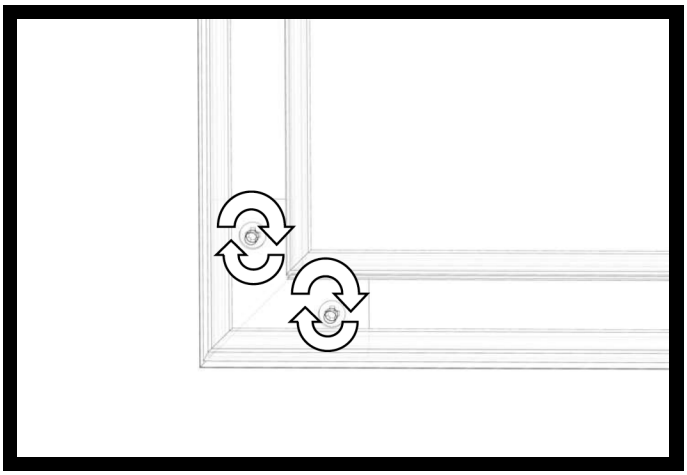


Tighten the screws to lock in the joiners

Installing Channel L-Joiners



Slot the L-Joiner into the bottom of each channel



Tighten the screws to lock in the joiners

Warranty Against Defects

Sunlock is the manufacturer of the Sunlock Solar Module Mounting System (Frame) and components. Sunlock Mounting Systems have been designed for a 35 year design life (35 Years) in normal environmental conditions.

Sunlock warrants, on the terms set out below, that the frame will be free from defects in materials and workmanship for a period of 10 years from the date on which the frame is purchased from Sunlock and a 25-year warranty on Sunlock commercial products from the date in which the Frame is purchased from Sunlock (Warranty against Defects).

		Product Warranty		
Product	**Material**	**Corrosivity Category 1,2,3**	**Corrosive Category 4**	**Corrosive Category 5***
1. Aluminium Components	6000-T6 Aluminium Extrusions	25 Years	25 Years	25 Years
2. Stainless Steel Components	Stainless Steel 304	25 Years	25 Years	25 Years
3. Fasteners (bolts/nuts/washers)	Stainless Steel 304	25 Years	25 Years	25 Years
4. Buildex Tek Screws	Stainless Steel 304	25 Years	25 Years	25 Years
5. Vartex Hex B8 Screws	B8 coated steel	25 Years	20 Years	15 Years

**In severe marine environments the frame should be inspected as part of the regular roof maintenance (e.g. every two years) and washed down with fresh water to minimize salt deposition in crevices and at contact interfaces.*

Corrosion on Solar Racking

Sunlock racking system comprises a variety of components fabricated from aluminium, stainless steel or galvanized steel. The suitability of mill finish 6000 series aluminium Sunlock components for use in coastal environments has been analysed by corrosion consultants CMET Pty Ltd and concluded that SUNLOCK has a 25-year service life.

Transferability

Our Warranty against Defects is only provided to the original purchaser of the Frame from Sunlock (Purchaser) or, where the purchaser is an installer or builder who on-supplies the frame to another party, to that other party (End-User). Our Warranty against Defects is not otherwise transferable.

Additional

In addition to our warranty against defects, the frame also comes with guarantees that cannot be excluded under the Australian Consumer Law (Consumer Guarantees).
In the event that the frame fails to satisfy a Consumer Guarantee, you are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the frame repaired or replaced if the frame fails to be of acceptable quality. Please note that in addition to the rights and remedies set out in this document, you may also have other rights and remedies.

Jurisdiction

Our Warranty against Defects is to be construed in accordance with the laws of Victoria and any disputes will be determined by the exclusive jurisdiction of the courts of Victoria.

Warranty Against Defects

Making a claim

If you believe that the Frame is defective and you are an End-User, you may either make a claim against the installer or builder from whom you purchased the Frame or you may make a claim against us directly.

In order to make a claim against us, you must post, fax or email us a notice, using the contact details set out below. In your notice, you must provide:

- Details of why you believe the Frame is defective. Photos from the site showing the building and roof containing the frame;
- A copy of your invoice, receipt or any other document which provides proof of purchase;
- Details of any expenses you have incurred in making your claim; and
- Details of how we should contact you.

Within a reasonable time after receipt of your claim, we will contact you to arrange a time to attend the premises at which the frame is located.

Your Obligations

In order to have the benefit of our Warranty against Defects:

- If you are a purchaser, you must have paid all amounts owed by you to SUNLOCK in relation to the purchase of the frame.
- You must have complied with all reasonable instructions of SUNLOCK (whether written or verbal) in relation to the transport, installation, care, repair and use of the Frame.
- You must not have misused, neglected, damaged or modified the Frame.

Remedies

If we determine that the frame is defective and the defect is not a major failure, if possible, we will try to repair the defective frame at the premises. If this is not possible, we will remove the defective frame and provide a replacement frame at our expense. If we determine that the frame is defective and the defect is a is major failure then you have the option of rejecting the frame and obtaining a refund from us, obtaining a replacement frame from us at our expense or keeping the frame and receiving compensation from us for the difference between the actual value of the frame and the amount you paid for the frame. If we determine that the frame is defective we will also pay the substantiated reasonable expenses incurred by you in making your claim.

Exclusions

Our Warranty against Defects does not include:

- Damage caused to the Frame during shipment or storage of the Frame by a party other than Sunlock;
- Damage caused to the Frame during installation by a party other than Sunlock;
- Damage caused by 'Acts of God', vermin, animals or pests or by other causes or acts outside Sunlock reasonable control; or normal wear and tear.

SUNLOCK

Our Sunlock team are available between office hours to answer any additional questions surrounding the Sunlock range of mounting systems, or any information required throughout the installation phase.

Office Hours

Monday - Friday

9am - 5pm

Phone

1300 655 554

Email

orders@sunlock.com.au

Address

7 Audsley Street, Clayton South, VIC 3169

Visit our website to learn more about Sunlock Commercial Solar Mounting Solutions

SUNLOCK

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7 Audsley St, Clayton
3169 Victoria.

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