

# ESDEC

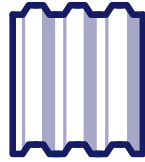
INNOVATIVE MOUNTING SYSTEMS



ARABIC TILES



CORRUGATED  
ROOF



STEEL ROOF



BITUMEN



EPDM



**MANUAL  
CLICKFIT EVO HANG-  
ER BOLT**

**CLICKFIT** EVO

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## INTRODUCTION

### ABOUT THIS DOCUMENT

In this manual you will find the installation instructions for the ClickFit EVO mounting system for solar panels on Arabic tiles, bitumen or EPDM roof material, corrugated iron roofs and sheet metal roofs.

The system is suitable for mounting solar panels in portrait and landscape orientation.

These instructions are addressed at qualified technical personnel.

You can download the latest version of this manual from [www.esdec.com](http://www.esdec.com).

### OTHER RELEVANT DOCUMENTS

When installing the ClickFit EVO mounting system, you will need the following documents:

- The project plan, which you can make in the calculator at [www.esdec.com](http://www.esdec.com).
- The installation manuals for the solar panels, inverters and any other components.

During the installation of the mounting system, it is important to adhere to the installation manual and the accompanying standards to prevent accidents. Pay special attention to (local) standards, regulations and legislation (among others):

- The Building Regulations 2010 (latest version)
- Health and Safety at Work etc Act 1974
- Health and Safety in Roof work - HSE
- Eurocodes 0 (EN 1990 - Structural Design)
- Eurocodes 1 (EN 1991 - Influences on structures)
- HD-IEC 60363 series - Electrical installations for low voltage
- EN-IEC 62305-2 - Protection lightning - Risk Management
- MIS 3002 – The solar PV standard
- MCS012 - Product Certification Scheme Requirements: Pitched Roof Installation Kits




### EARTHING AND BONDING

Our ClickFit EVO systems are VDE certified for corrosion and bonding. According to the electrical standard HD-IEC 60364 – chapter 712, functional bonding for inverter's isolation check is necessary.

In the Esdec ClickFit EVO Series functional bonding is achieved through the EVO universal module clamp for the module frames and EVO rails. The final functional bonding connection is made by proper mounting of a separate bonding cable onto the EVO rail and an adequate bonding connection with the inverter or earthing contact.

For detailed instructions on grounding and bonding, consult the electrical standard HD-IEC 60364 and any local regulations. Please, follow the instructions of the inverter's manual. This operation needs to be done by a certified electrician.

### SYMBOLS USED IN THIS MANUAL

	<b>Warning!</b>	Failure to follow this instruction could result in serious injury or major damage to the product.
	<b>Caution!</b>	Failure to follow this instruction could result in personal injury or damage to the product.
	<b>Note</b>	Emphasises an instruction.

## WARRANTY AND LIABILITY

### LIABILITY

The manufacturer accepts no liability for damage or injury caused by the failure to comply (strictly) with the safety guidelines and instructions in this manual, or by negligence during installation of the product and the accessories listed in this document.

Esdec BV reserves the right to change this document without notice.

### WARRANTY

Esdec extends a 20 year product warranty. The warranty is subject to the warranty terms and general terms & conditions of Esdec BV. These can be found on the [www.esdec.com](http://www.esdec.com) website.



## PRODUCT INFORMATION




### INTENDED USE




The ClickFit EVO mounting system for solar panels on standing seam roofs is designed for mounting solar panels on pitched roofs. With this mounting system, solar panels can be positioned on the roof either with the short side at the bottom (portrait) or with the long side at the bottom (landscape).

### IMPROPER USE



The mounting system is not suitable for use on types of roof other than the one specified.

### SPECIFICATIONS

<b>Orientation of solar panels</b>	Portrait and landscape
<b>Frame height of solar panel</b>	29 - 50mm
<b>Maximum area of solar panels</b>	2.6m <sup>2</sup>
<b>Maximum field size</b>	For horizontal and vertical rails: 15 m per segment
<b>Roof material</b>	Bitumen (insulated and non-insulated) EPDM (insulated and non-insulated)  The thermal effect of some types of EPDM and bitumen roofing can have a negative effect on the waterproofing, causing it cannot be guaranteed on every roof. Consult the roofing supplier to determine whether the ClickFit EVO hanger bolts can be used without taking additional steps.
	Corrugated sheets  On a corrugated roof with standard corrugation type 177/51 (NEN EN 494), use the ClickFit EVO corrugated sheet bracket (article number 1008090). At <a href="http://www.esdec.com">www.esdec.com</a> you will find the corresponding manual.
	Arabic tiles
	Sheet steel
<b>Roof structure</b>	Purlins
	Trusses
	Engineered wood boards
<b>Roof pitch</b>	5 - 60°
<b>Maximum roof height</b>	 Subject to Eurocode guidelines and national additions. Use the calculator to calculate the possibilities of your project.
<b>Edge zone</b>	30cm distance to the ridge, 30cm to the side of the roof and 30 cm to the gutter.

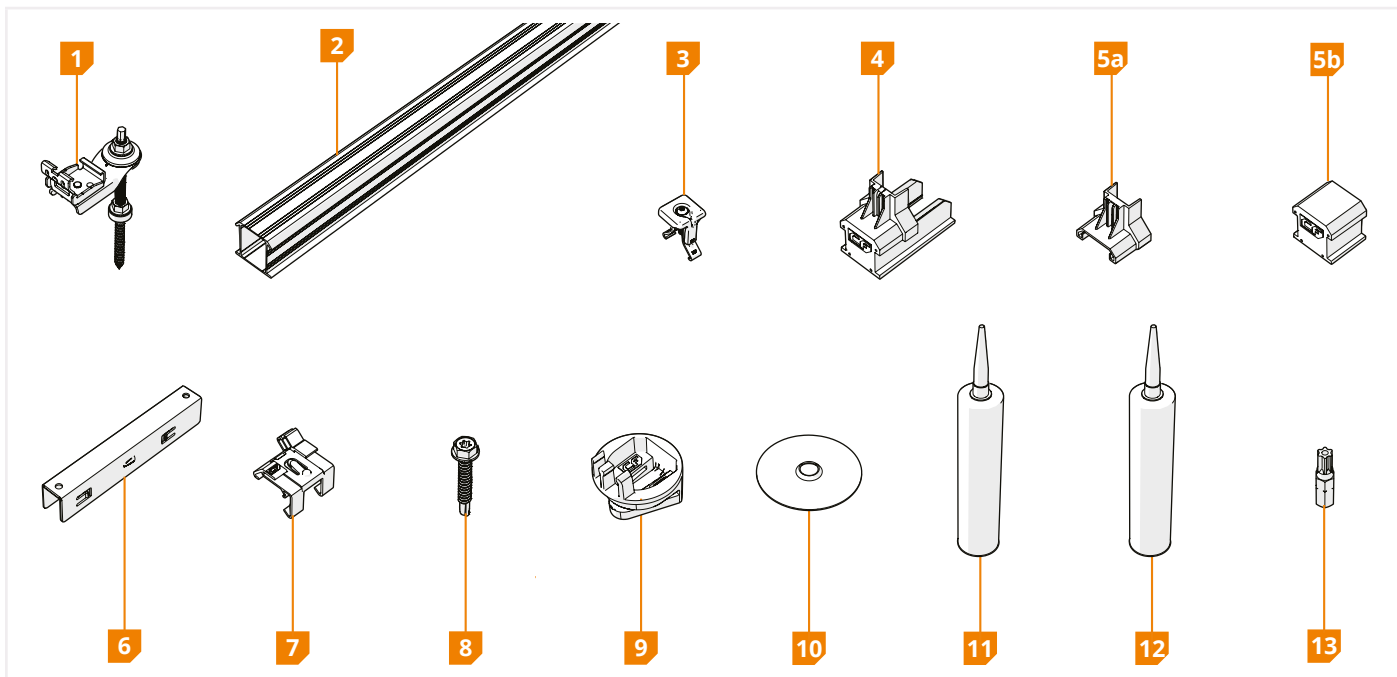
-  Enter the data in the calculator, so you are sure of choosing the right system for the terrain category, snow loads and wind zone that applies to your project.
-  Depending on the roof and the result obtained from the calculator, you can lay several segments with solar panels next to each other. Always leave a minimum of 10mm of space between segments to allow for expansion of the roof.
-  If your project has different specifications than these, please contact Esdec.

### REQUIREMENTS FOR THE WORK ENVIRONMENT

	The roof is in good condition.
	The roof construction has sufficient bearing capacity to support the installation, taking into account wind and snow loads.

# SYSTEM AND APPLICATION

## 1 COMPONENTS



COMPONENT	ARTICLE NUMBER
<b>1 a.</b> ClickFit EVO Hanger bolt - M10 × 200mm	1008011
<b>b.</b> ClickFit EVO Hanger bolt - M10 × 250mm	1008012
<b>c.</b> ClickFit EVO Hanger bolt - M12 × 250mm	1008013
<b>d.</b> ClickFit EVO Hanger bolt - M12 × 300mm	1008014
<b>e.</b> ClickFit EVO Hanger bolt - M12 × 350mm [DTO]	1008015
<b>2</b> ClickFit EVO Mounting Rail	10081_ _
<b>3</b> ClickFit EVO Module Clamp universal	1008020(-B)
<b>4</b> ClickFit EVO Mounting Rail End Cap	1008060(-B)
<b>5 a.</b> ClickFit EVO End Clamp Support	1008065(-B)
<b>b.</b> ClickFit EVO End Cap without end clamp support	1008066(-B)

ACCESSORY	ARTICLE NUMBER
<b>6</b> ClickFit EVO Mounting Rail Coupler	1008061
<b>7</b> ClickFit EVO Cable Clip Optimiser Ready	1008062
<b>8</b> ClickFit EVO Self-drilling screw 6,3x42mm SW10/T30	1003016
<b>9</b> ClickFit EVO mounting set	1008064
<b>10</b> Hanger bolt washer Inox 80 mm	1003070
<b>11</b> Shell Tixophalte kit for bitumen roofing	1003900
<b>12</b> Kit for EPDM Roofing	1008086
<b>13</b> ClickFit EVO Screw Bit Torx 30	1008069


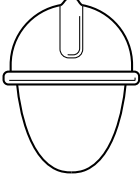


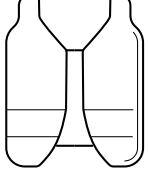
**i** Check that the correct components are present in the required numbers according to the project plan generated by the calculator.

- i** Use the calculator to determine the correct rail orientation for your project. The calculator takes into account, for example, the type of roof covering and the structure supporting the roof.
- 1** Check the roof type and the roof structure type. Is it a roof with purlins or trusses, or with solid engineering wood boards?
  - 2** Look up the type of roof covering of your project in the table.
  - 3** Check the table for the recommended orientation of the solar panels and rails.

ROOF MATERIAL	TRUSSES	PURLINS	ENGINEERED WOOD BOARDS
<b>BITUMEN INSULATED</b>	Portrait panels and horizontal rails	Landscape panels and vertical rails	Portrait panels and horizontal rails Landscape panels and vertical rails
<b>BITUMEN UNINSULATED</b>	<b>X</b>	<b>X</b>	Portrait panels and horizontal rails Landscape panels and vertical rails
<b>EPDM (INSULATED AND NON-INSULATED)</b>	<b>X</b>	<b>X</b>	Portrait panels and horizontal rails Landscape panels and vertical rails
<b>ARABIC TILES</b>	<b>X</b>	<b>X</b>	Portrait panels and horizontal rails Landscape panels and vertical rails
<b>CORRUGATED SHEETS</b>	<b>X</b>	Landscape panels and vertical rails	<b>X</b>
<b>STEEL ROOF TRAPEZOIDAL</b>	<b>X</b>	Landscape panels and vertical rails	<b>X</b>
<b>STEEL ROOF CORRUGATED SHEETS</b>	<b>X</b>	Landscape panels and vertical rails	<b>X</b>
<b>STEEL ROOF TILES SHEETS</b>	Portrait panels and horizontal rails	Landscape panels and vertical rails	Portrait panels and horizontal rails Landscape panels and vertical rails

# SAFETY

## 1 PERSONAL PROTECTIVE EQUIPMENT

						
Hearing protection	Safety helmet	Safety glasses	Face masks	Safety gloves	Safety clothing	Safety shoes

## 2 SAFETY WARNINGS AND REGULATIONS

### Warning!

- ⚠ Installation work should always be carried out by at least two skilled people.
- ⚠ Do not use components from other mounting systems.
- ⚠ Do not leave out parts.
- ⚠ Always work according to the current regulations for working on roofs.
- ⚠ Do not perform the installation in strong winds, or when the roof is slippery or wet.
- ⚠ Always work on the roof with fall protection and, if necessary, with safety nets and edge protection.
- ⚠ Never stand on or in the gutter.
- ⚠ Always use a lifting aid or hoisting device when moving heavy equipment.
- ⚠ Always place ladders on a strong, stable surface.


### Caution!

- ⚠ Walk as little as possible on the roof. Use an aerial platform, ladder or other solution.
- ⚠ Never walk on the system or on the solar panels.

# INSTALLATION

## 1 PREPARATION

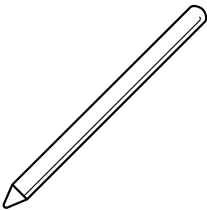
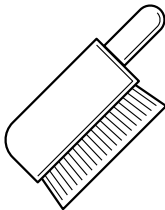
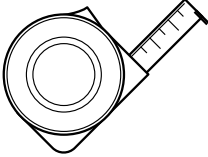
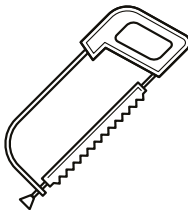
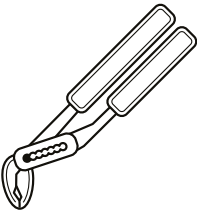
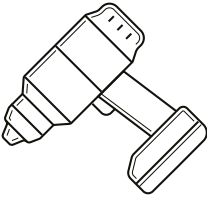
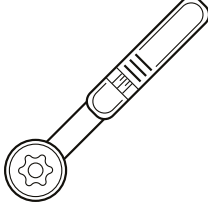
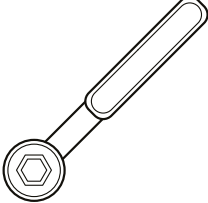
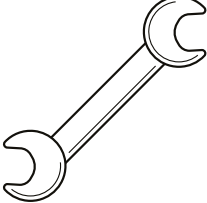
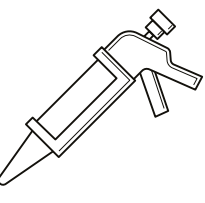
### 1 INSPECT THE ROOF

- The roof is in good condition.
- The roof construction has sufficient bearing capacity to support the installation, taking into account wind and snow loads.
-  The thermal effect of some types of EPDM and bitumen roofing can have a negative effect on the waterproofing, causing it cannot be guaranteed on every roof. Consult the roofing supplier to determine whether the ClickFit EVO hanger bolts can be used without taking additional steps.

### 2 CHECK THE PROJECT PLAN AND COMPONENTS

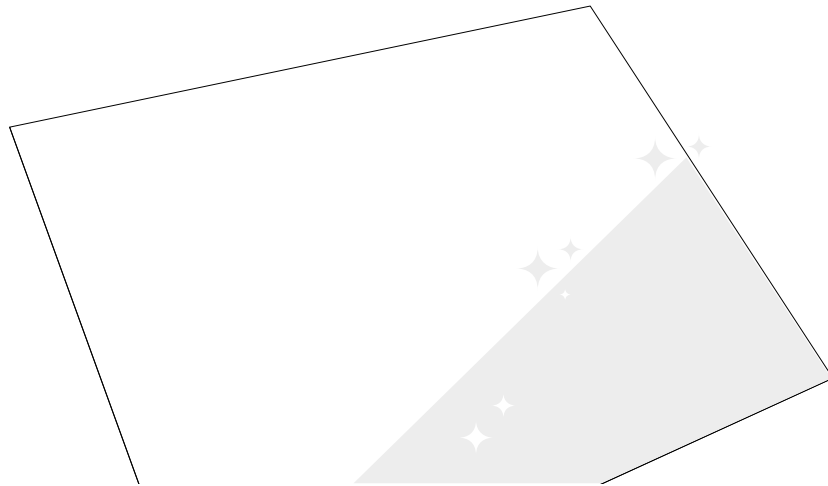
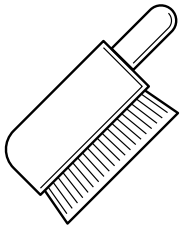
- Check the project plan. Is there no project plan? Then create one in the online calculator before starting installation.
- Check that all components are present (page 5).
- Determine the position of the hanger bolts. Use the purlins or trusses if present.

### 3 MAKE SURE ALL THE REQUIRED TOOLS ARE AT HAND

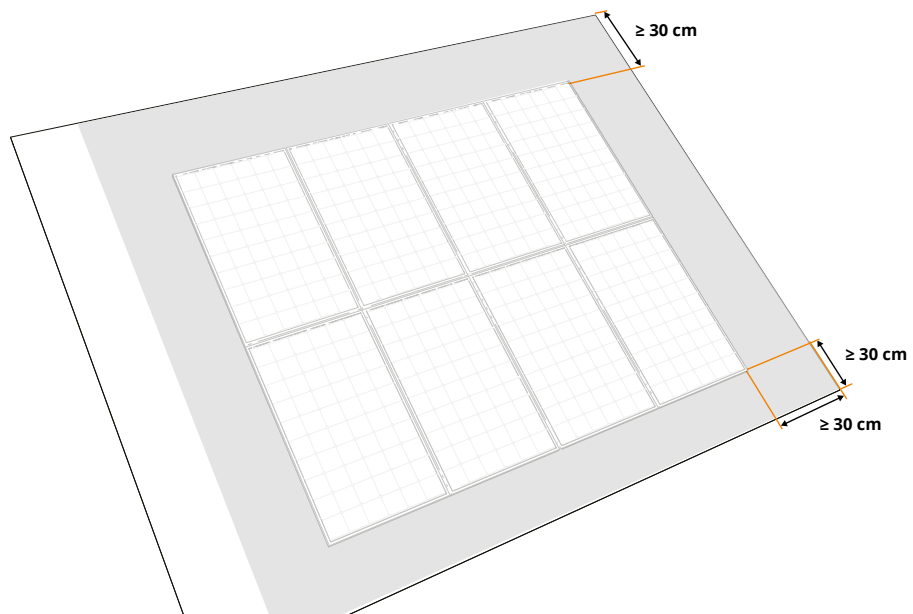
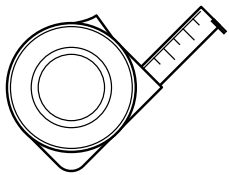
General					
	Marker or chalk	Brush	Tape measure	Hacksaw	Adjustable pliers
					
	Cordless screwdriver	Torque wrench	Ratchet with hexagon socket S13	Open-end wrench (2x)	Mastic gun

	Hanger bolt M10	Hanger bolt M12
<b>Drill through roofing material</b>	12.5 mm	14 mm
<b>Predrill holes in roof structure</b>	5 mm	7 mm
<b>Hexagon socket</b>	S7	S10
<b>Open-end wrench</b>	S15	S19

#### 4 CLEAN AND TIDY THE ROOF



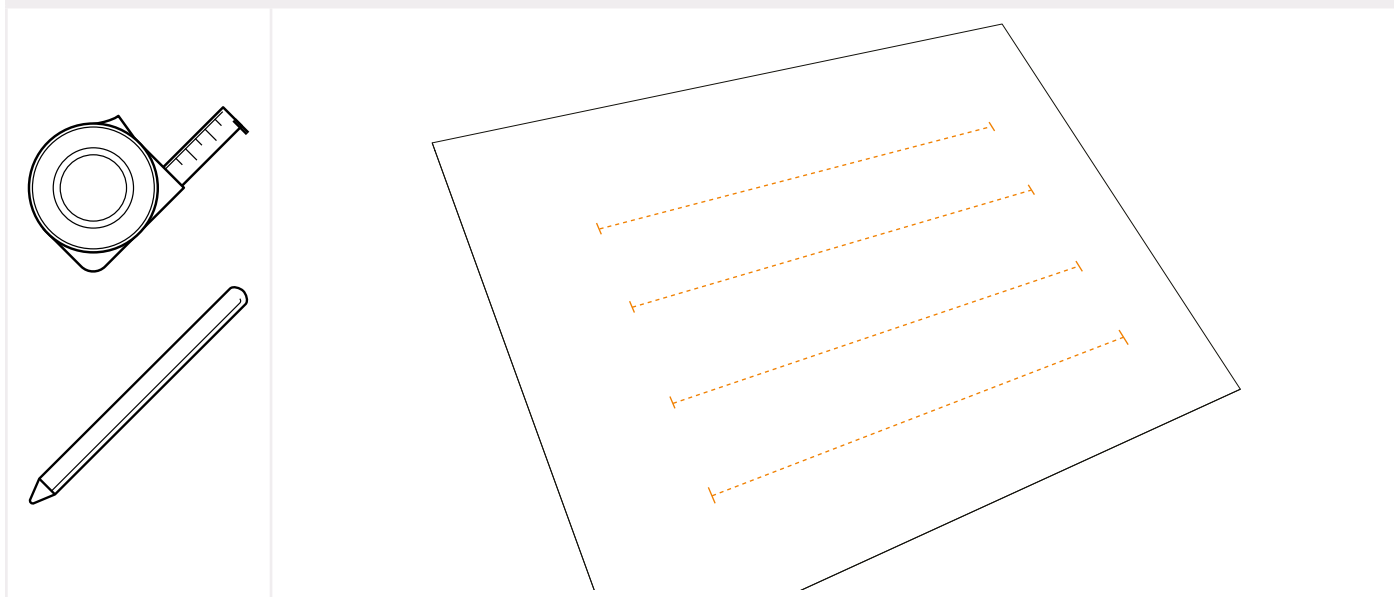
#### 5 DETERMINE THE POSITION OF THE SOLAR PANELS ON THE ROOF



- i** Take into account sunlight and shade over the whole year. If necessary, use a power optimizer or micro inverter to get the most out of your installation.
- !** The distance from the edge of solar panels to both the ridge and the gutter must be at least 30cm.
- !** The distance from the solar panels to the side of the roof must be at least 30cm.

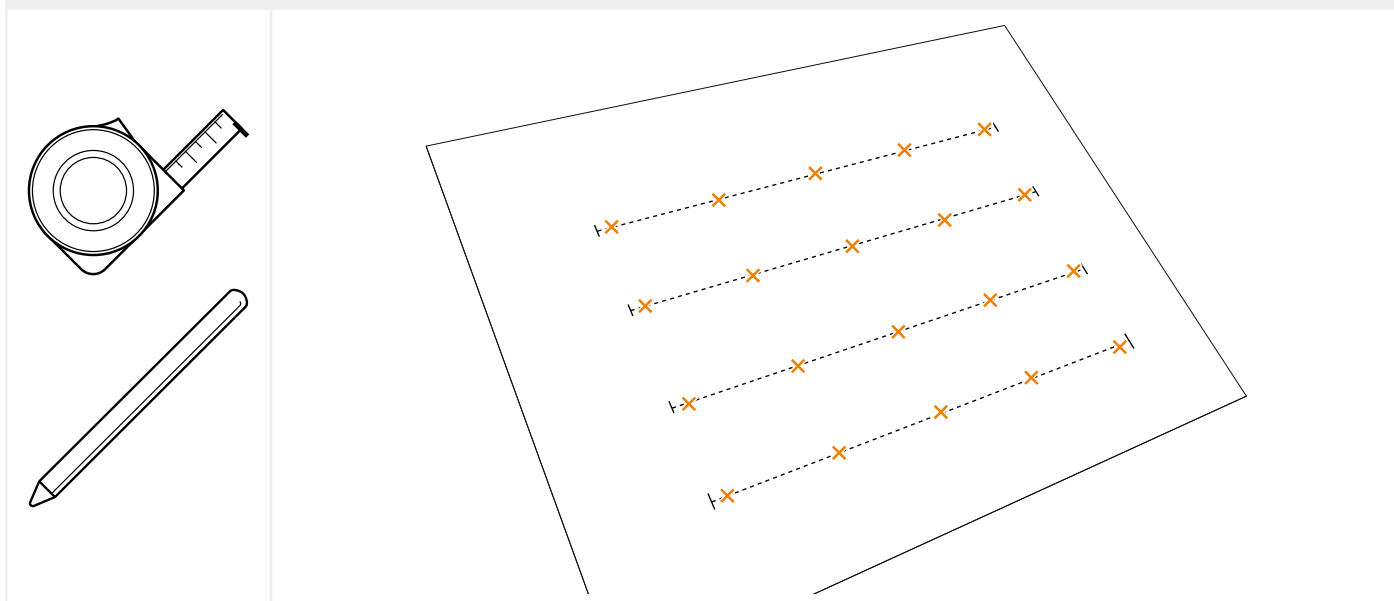


## 6 DRAW THE LINES AND END POINTS FOR THE MOUNTING RAILS



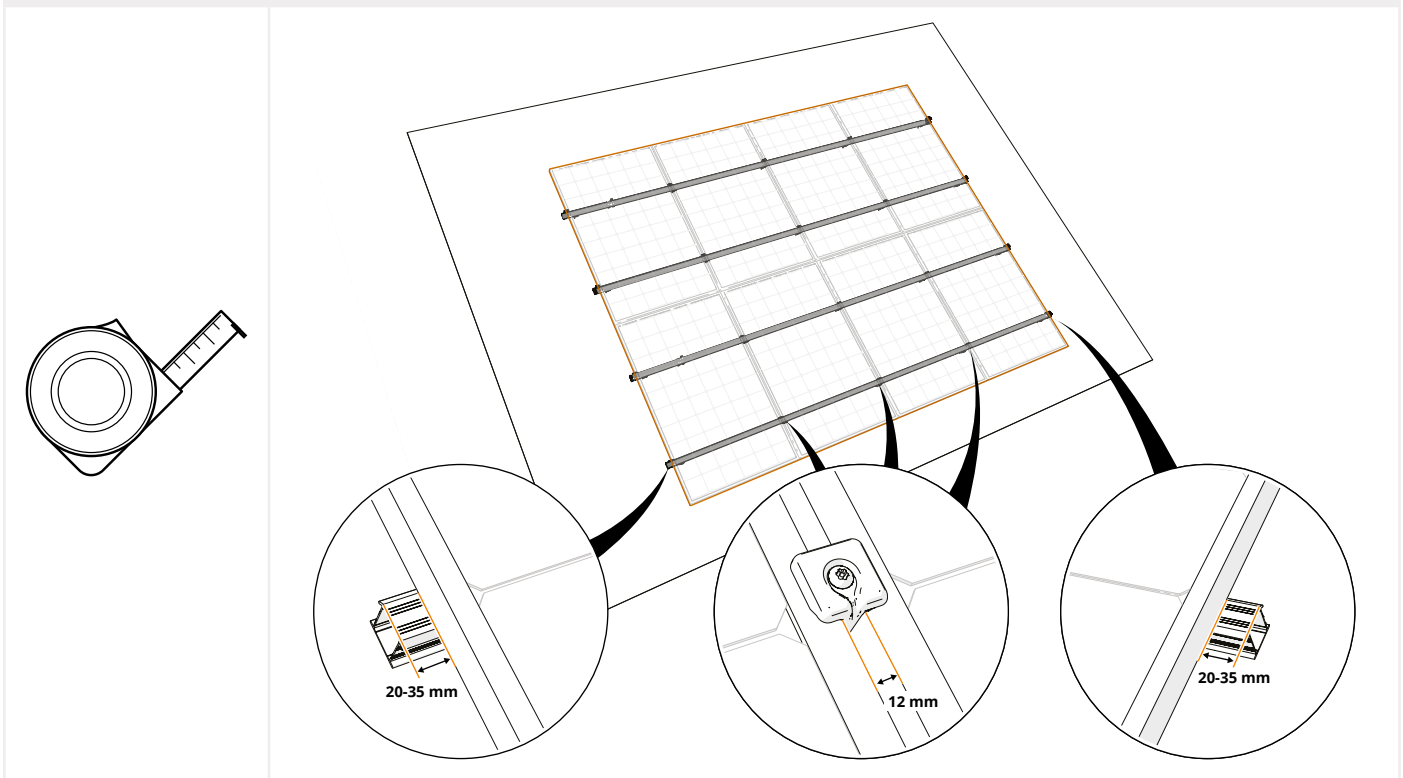
- i** Consult the project plan to determine the position of the mounting rails for your panel.

## 7 MARK THE POSITION OF THE HANGER BOLTS.



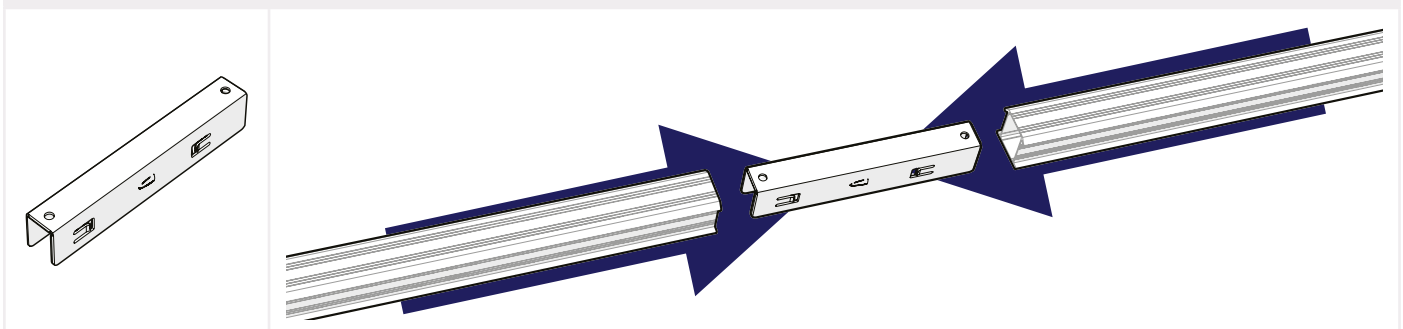
- i** Preferably use existing screw holes for the installation of the hanger bolts, especially on corrugated roofs. If you use too many screws in a corrugated sheet roof, it means that the roof material may have too little space to compensate for thermal expansion/contraction.
- i** When measuring and marking the field, take into account the position of the purlins or trusses.
- i** Consult the project plan to determine the position of the hanger bolts for your project.

## 1 DETERMINE THE LENGTH OF THE MOUNTING RAILS BASED ON THE SOLAR PANELS

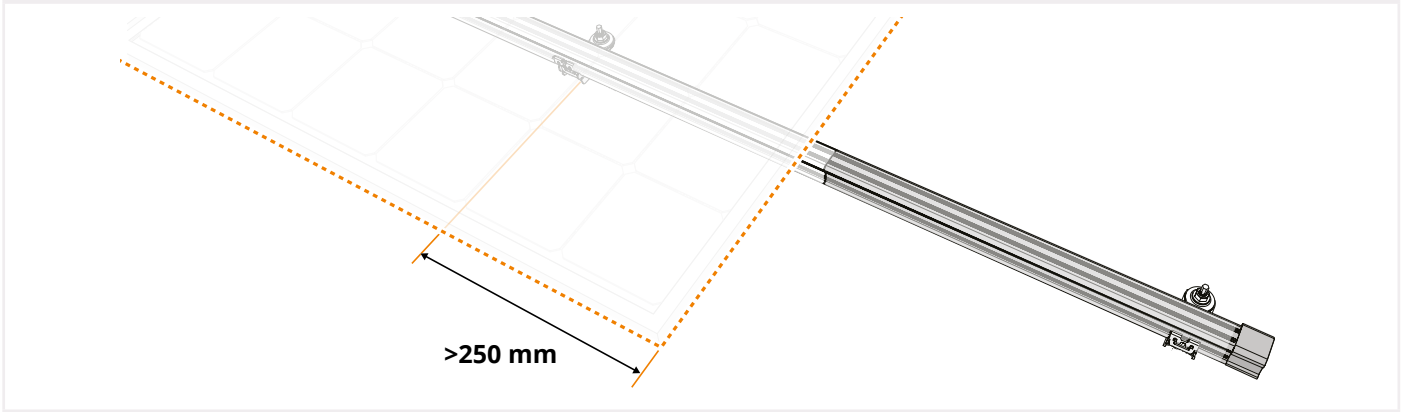


- i** Measure the solar panels and allow an additional 12 mm between each solar panel for the universal module clamp. Allow an additional 30mm on each side for mounting the end clamp and end cap.
- i** Calculate the minimum length of the mounting rails:  $(\text{panel size} + 12 \text{ mm}) \times \text{number of panels} - 12 \text{ mm} + (2 \times 30 \text{ mm})$
- i** If the overhang is smaller than 250 mm, keep a minimum of 20 mm to a maximum of 35 mm rail length overhang for mounting the end cap (art. no.1008060(-B)).

## 2 OPTIONAL: USE COUPLERS TO CONNECT THE MOUNTING RAILS



### 3 EXTEND THE MOUNTING RAIL TO THE NEXT BEAM, TRUSS OR PURLIN.



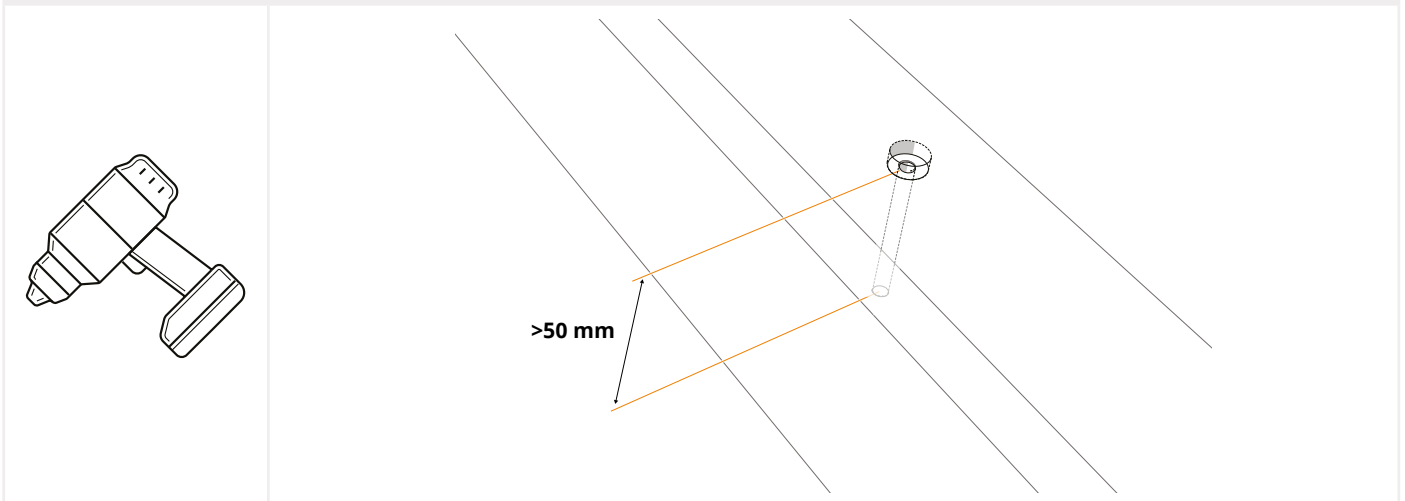
- i** Does the outer panel edge project more than 250mm beyond the last hanger bolt? Then extend the mounting rail so it goes 50 mm beyond the next hanger bolt and attach the mounting rail here. This extra 50 mm provides sufficient length to fit an end cap (article no. 1008066(-B)) to the mounting rails. For the end clamp you must then use the end clamp support (article no. 1008065(-B)).

### 3 INSTALL THE HANGER BOLTS

Are you installing hanger bolts in a wooden roof structure? Then continue to step 3.1.

Are you installing hanger bolts in a concrete roof structure? Then continue to step 3.3.

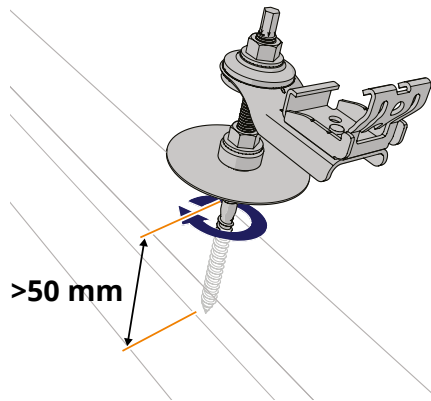
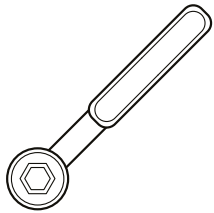
#### 1 PREDRILL THE HOLES IN THE ROOF (WOODEN SUBSTRUCTURE: PURLINS/TRUSSES)



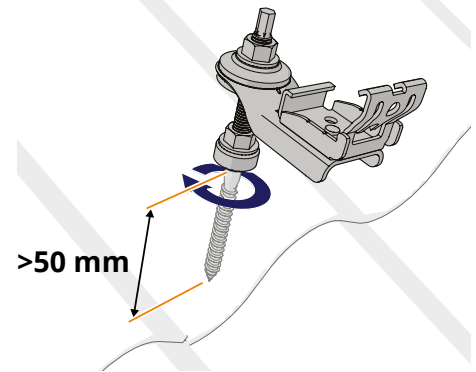
- !** The substructure must be at least 50 mm thick.
- !** Clear the drill hole and surrounding area of drill cuttings.
- !** For corrugated roof: use the existing screw holes as much as possible. Make sure that you do not place too many screws in a corrugated roof, because then the roof material will not have enough space to work thermally.

Diameter of hanger bolt	Drill through roofing material	Predrill holes in roof structure
M10	Ø 12,5 mm	Ø 5 mm
M12	Ø 14 mm	Ø 7 mm

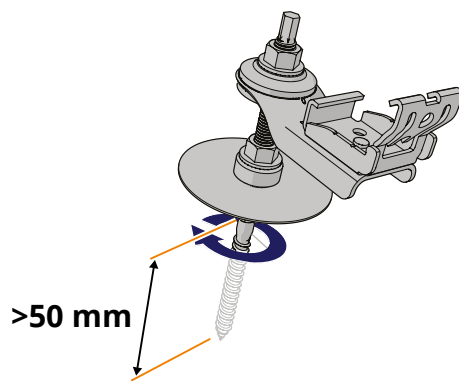
## 2 TIGHTEN THE HANGER BOLT



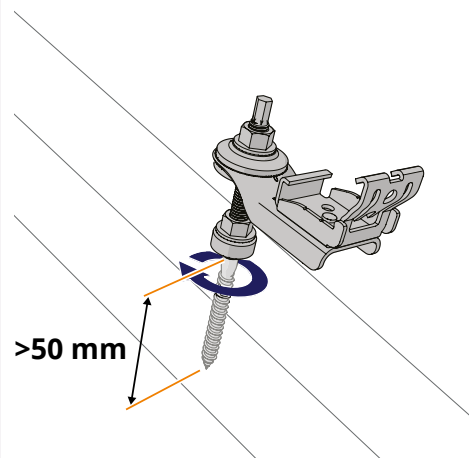
**Bitumen roofing insulated**



**Corrugated roofs**



**Bitumen uninsulated / EPDM (insulated and non-insulated)**



**Sheet steel**

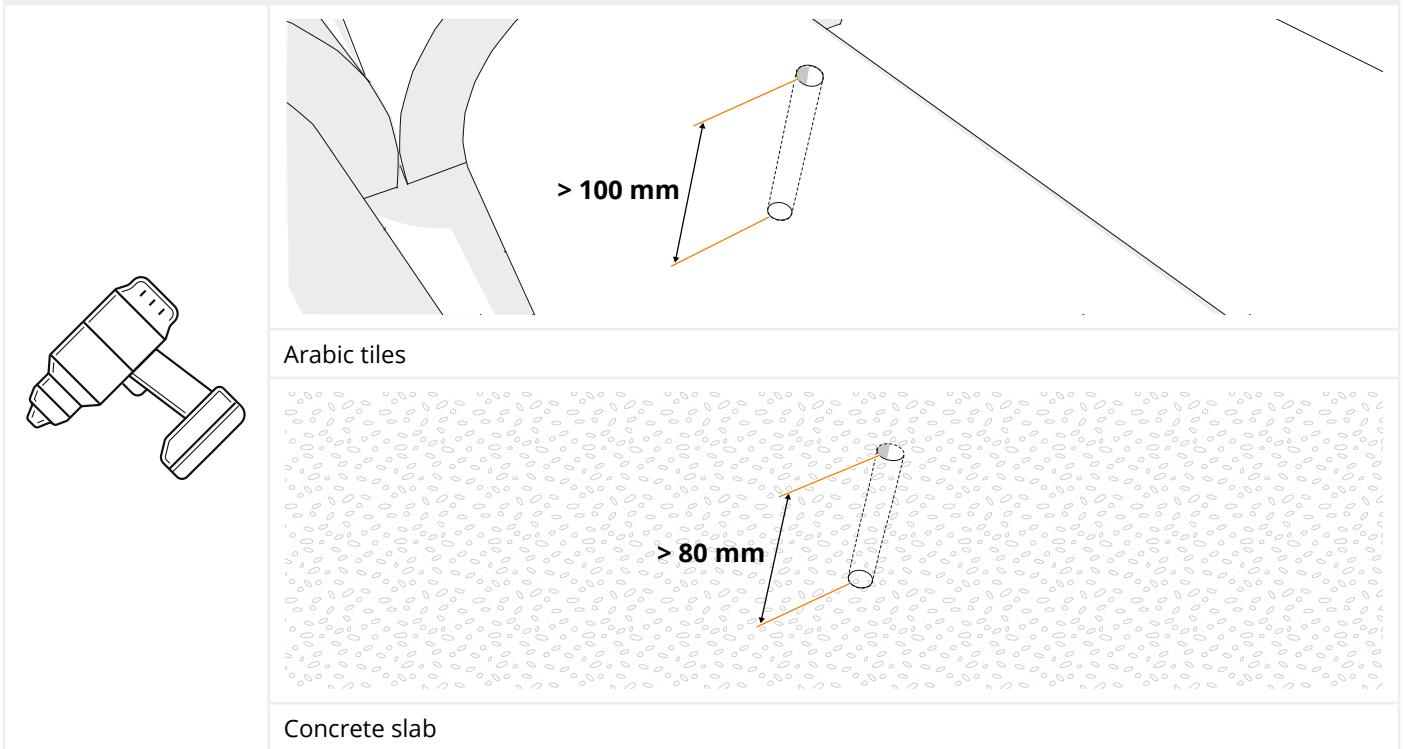
**i** Make sure you that the hanger bolt goes into the structure straight (at the right angle).

**i** Use the hanger bolt washer (article no. 1003070) on a bitumen or EPDM roof.



Continue to step 3.6.

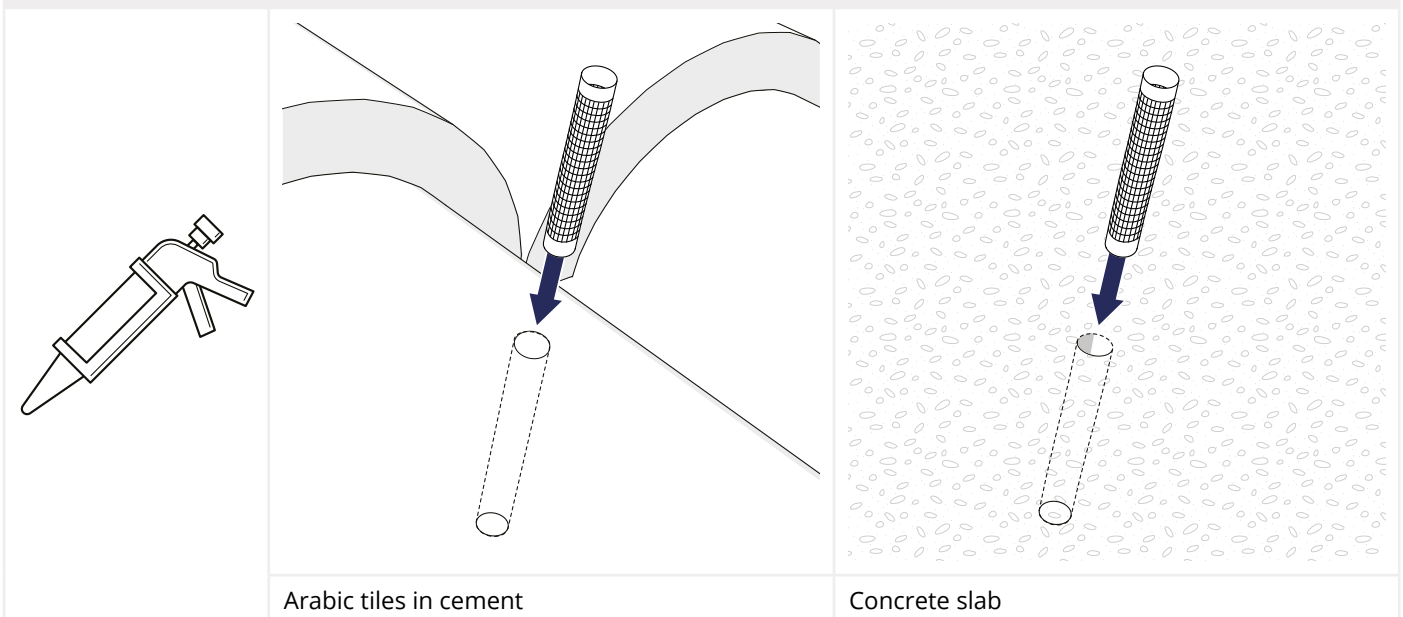
### 3 PREDRILL THE HOLES IN THE ROOF (CONCRETE SUBSTRUCTURE)



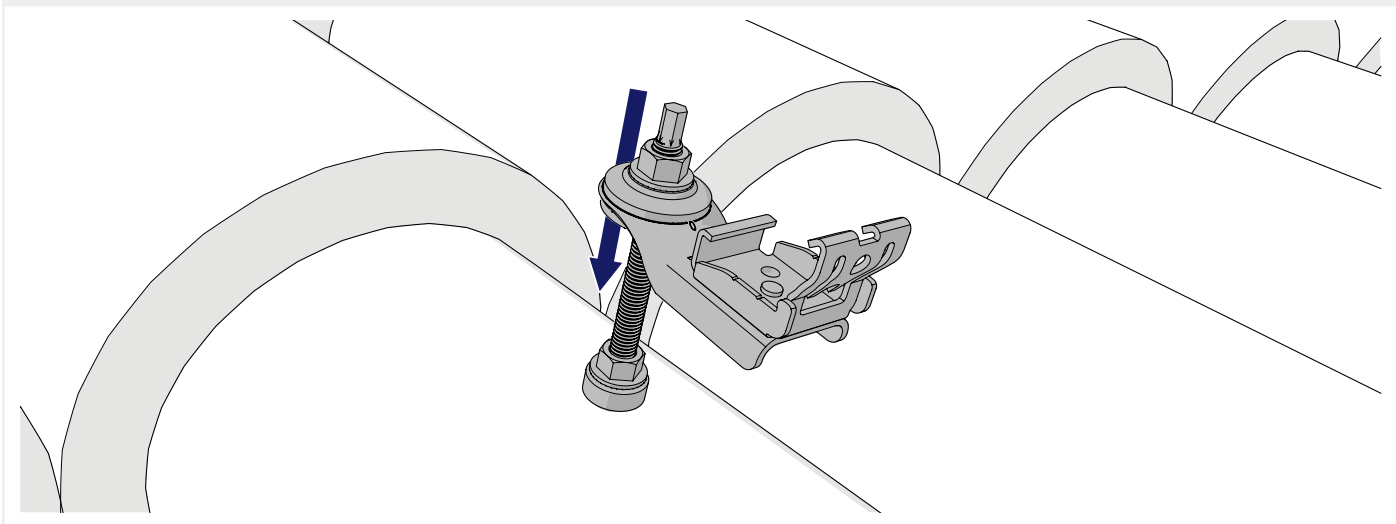
- i** Pre-drill Arabic tiles at the highest point on the roof tile. This ensures good drainage. The drilling depth is at least 100 mm.
- i** For a concrete slab, the drilling depth is at least 80 mm.
- !** Clear the drill hole and surrounding area of drill cuttings.

Diameter of hanger bolt	Predrill holes in roof structure
M10	Ø 14 mm
M12	Ø 16 mm

### 4 YOU USE A CHEMICAL ANCHOR TO FIX THE HANGER BOLT. CONSULT THE INSTRUCTIONS FROM THE SUPPLIER OF THE CHEMICAL ANCHOR BEFORE STARTING.

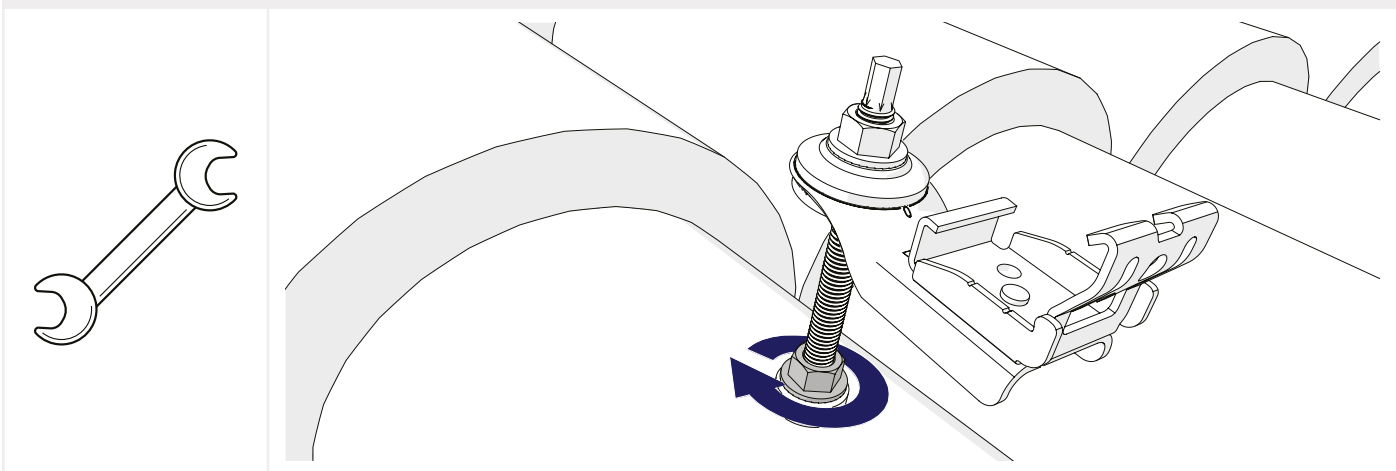


**5 INSERT THE HANGER BOLT AND ALLOW CHEMICAL ANCHOR TO HARDEN.**

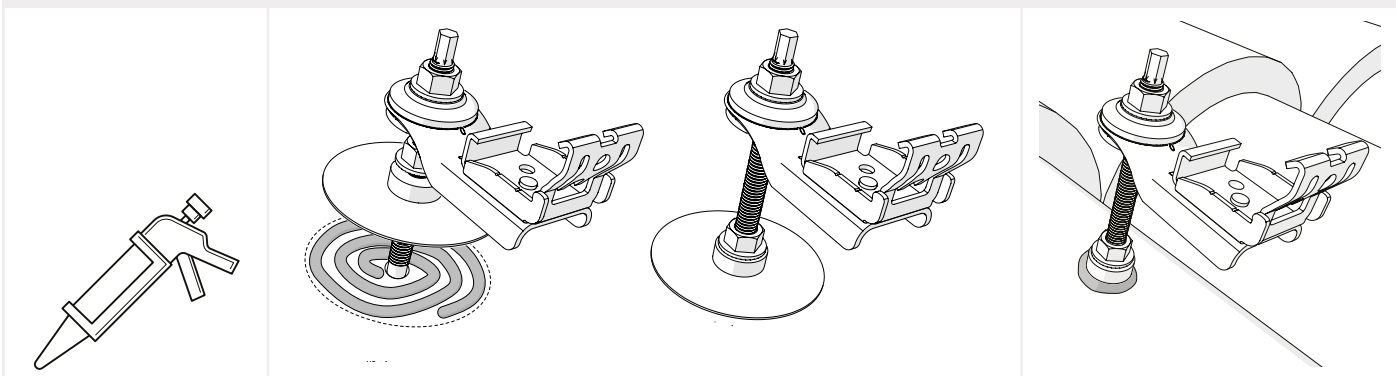


**i** Align the hanger bolts with each other.

**6 TIGHTEN THE NUT SO THAT THE RUBBER SEAL DEFORMS AND THE SCREW HOLE IS SEALED**



**7 SEAL THE HOLE**



**Bitumen roof material:**

- Tixophalte kit (article no. 1003900)
- Hanger bolt washer RVS 80 mm (article no. 1003070)

**EPDM roof material:**

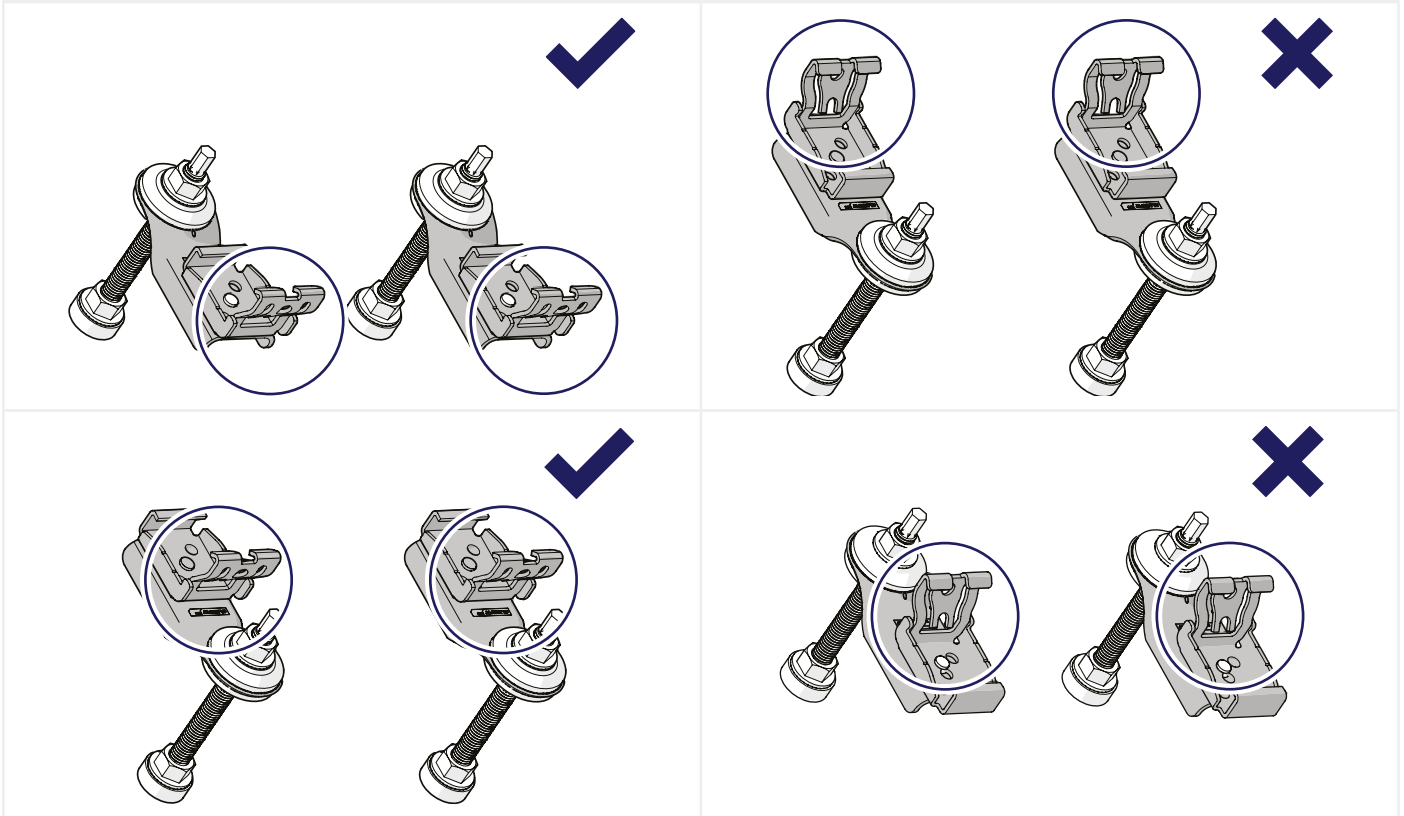
- EPDM kit (article no. 1008086)
- Hanger bolt washer RVS 80 mm (article no. 1003070)

**Arabic tiles:**

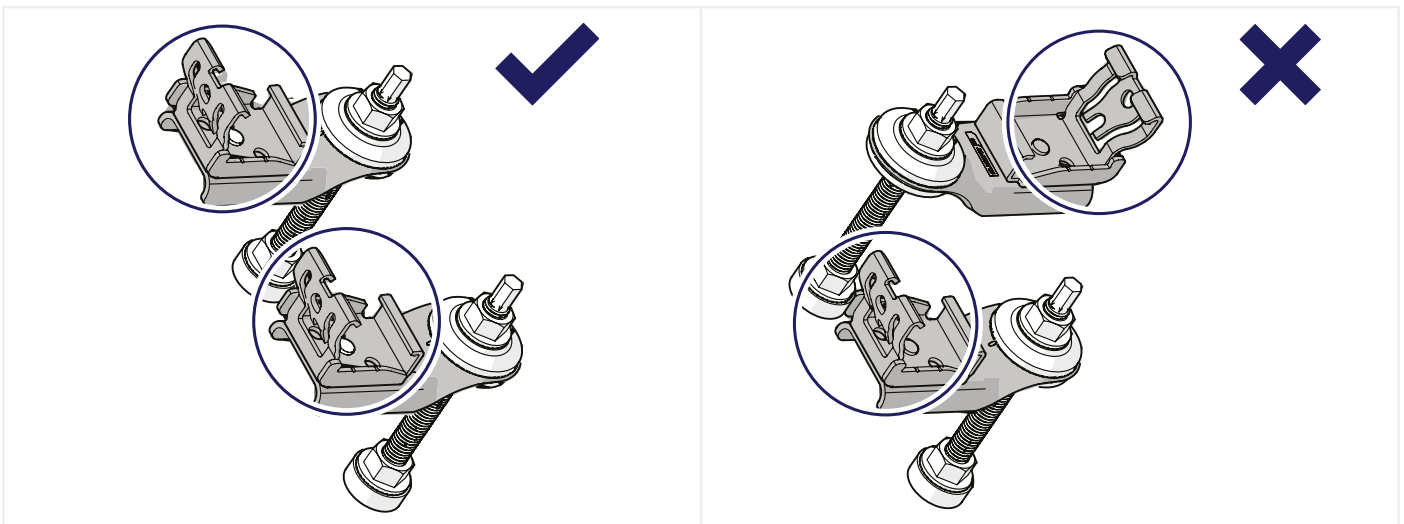
- Waterproofing kit (not included in scope of delivery)



## 8 ROTATE THE CLICK CONNECTION INTO THE CORRECT ORIENTATION

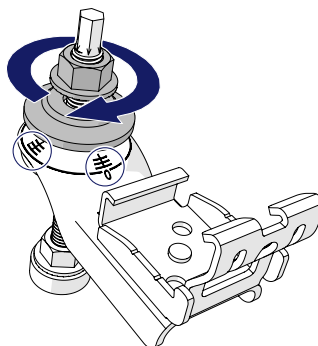
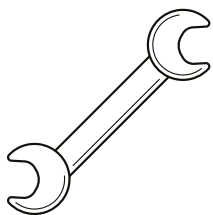


**i** For horizontal rail orientation, make sure that the cable tray of the click connections is always pointing downwards.



**i** For vertical rail orientation, ensure that the adapters are all placed on the same side of the hanger bolt with the click connections pointing in the same direction.

## 9 TIGHTEN THE NUT ON THE TOP OF THE HANGER BOLT

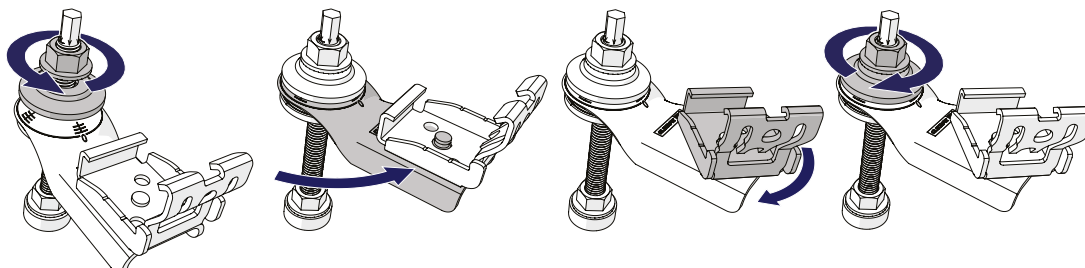
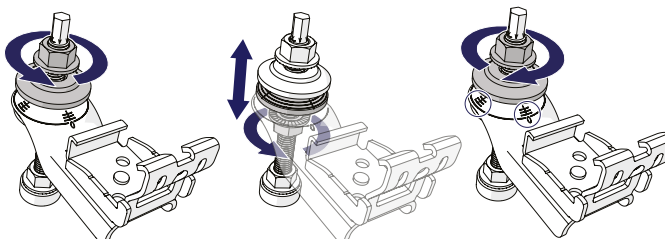
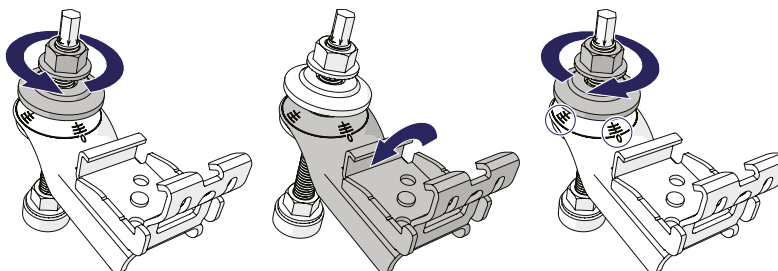
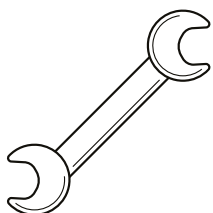


- i** Use the cross hairs on the adapter for a good basic position of the EVO click connection and to compensate for any roof irregularities.

Diameter of hanger bolt	Tightening torque
M10	Minimum of 25 Nm
M12	Minimum of 40 Nm

## 4 ATTACHING THE MOUNTING RAILS

### 1 USE THE NUTS TO ALIGN THE CLICK CONNECTIONS AND ADAPTERS IN THE DIFFERENT AXES.

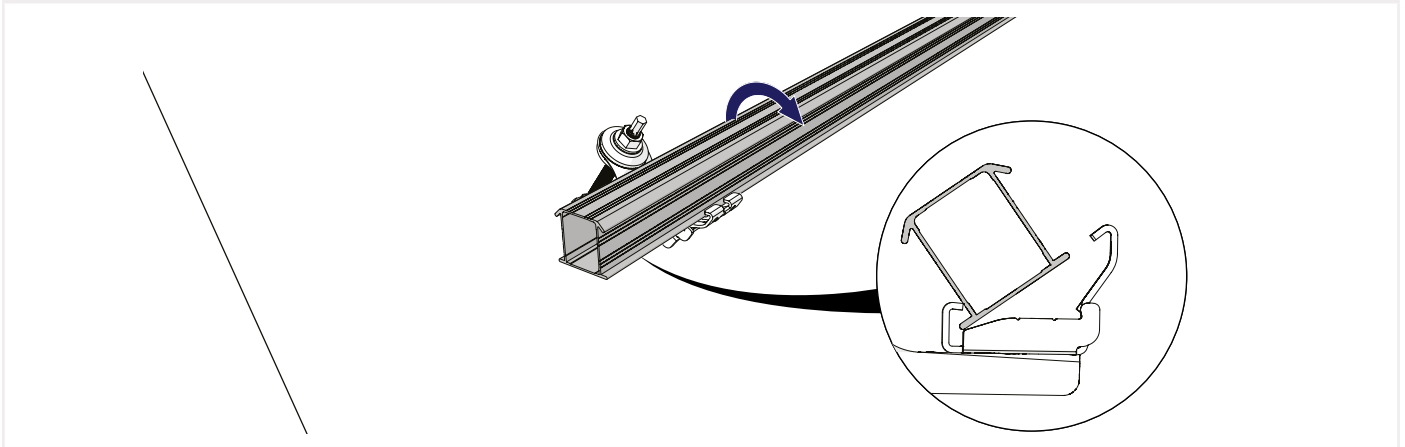


- i** Are the hanger bolts not properly aligned in relation to each other? Use the mounting rail to adjust the hanger bolts. Loosen one or both nuts half a turn and click the mounting rail into the click connections. The rigidity of the rail ensures that the adapters and click connections set themselves into the correct position. Then retighten the nuts.

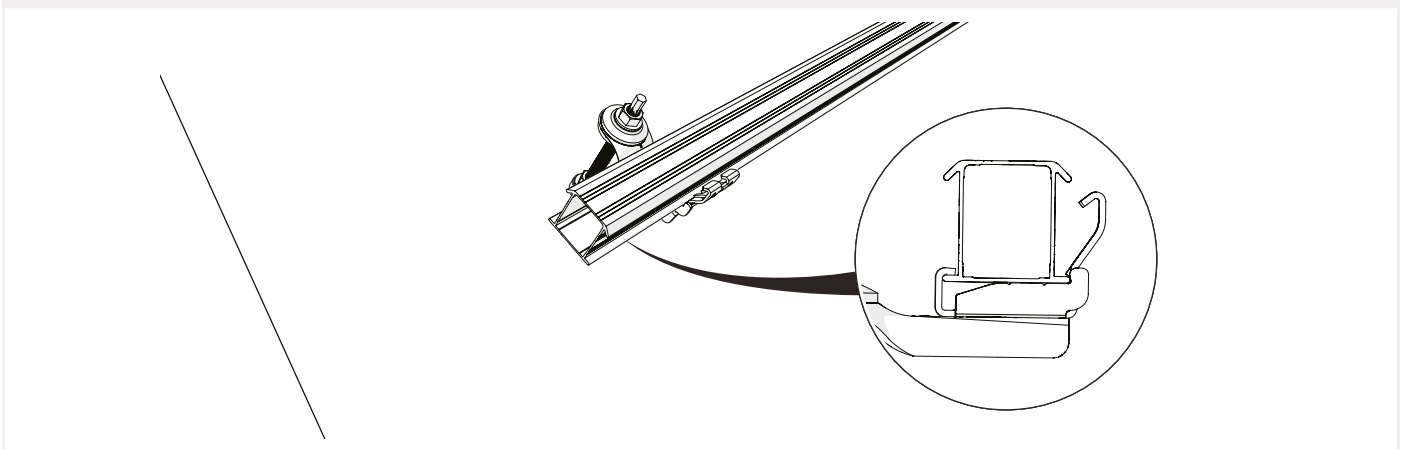
M10: Minimum of 25 Nm

M12: Minimum of 40 Nm

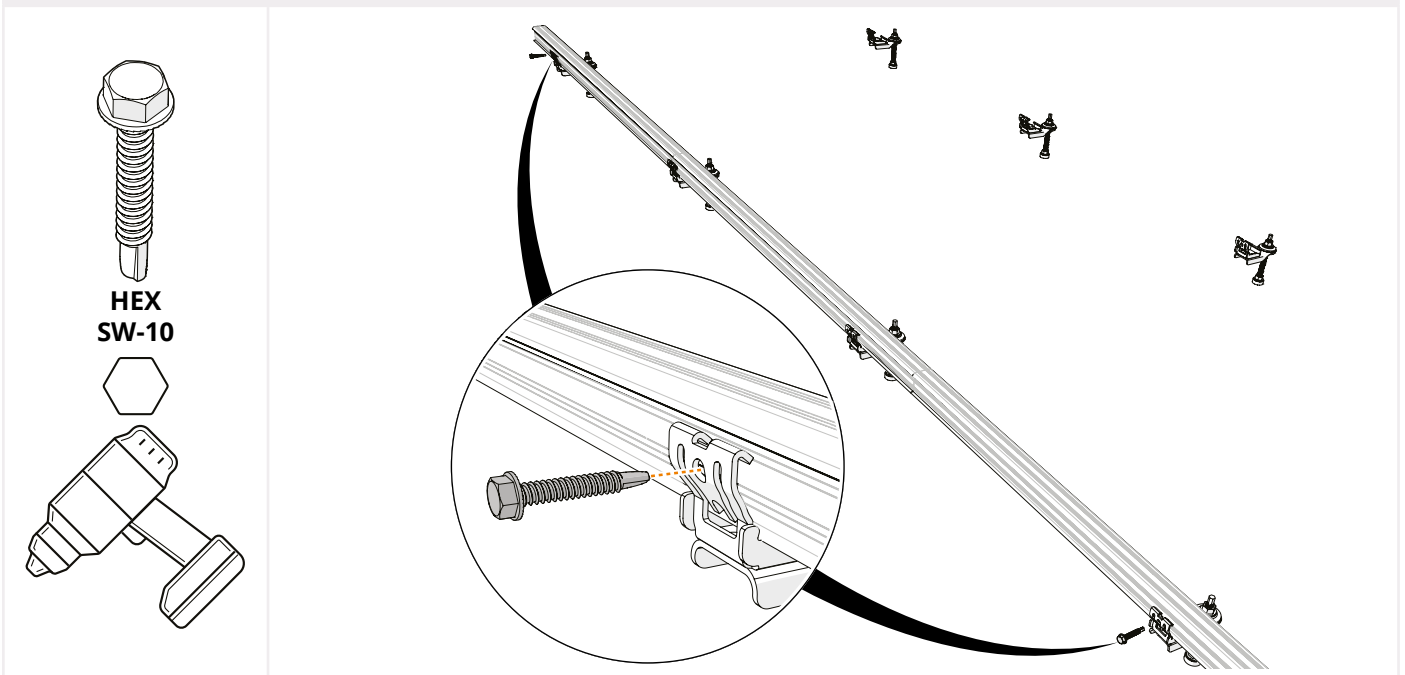
## 2 PLACE THE MOUNTING RAIL IN THE CLICK CONNECTION.



## 3 CLICK IN THE MOUNTING RAILS



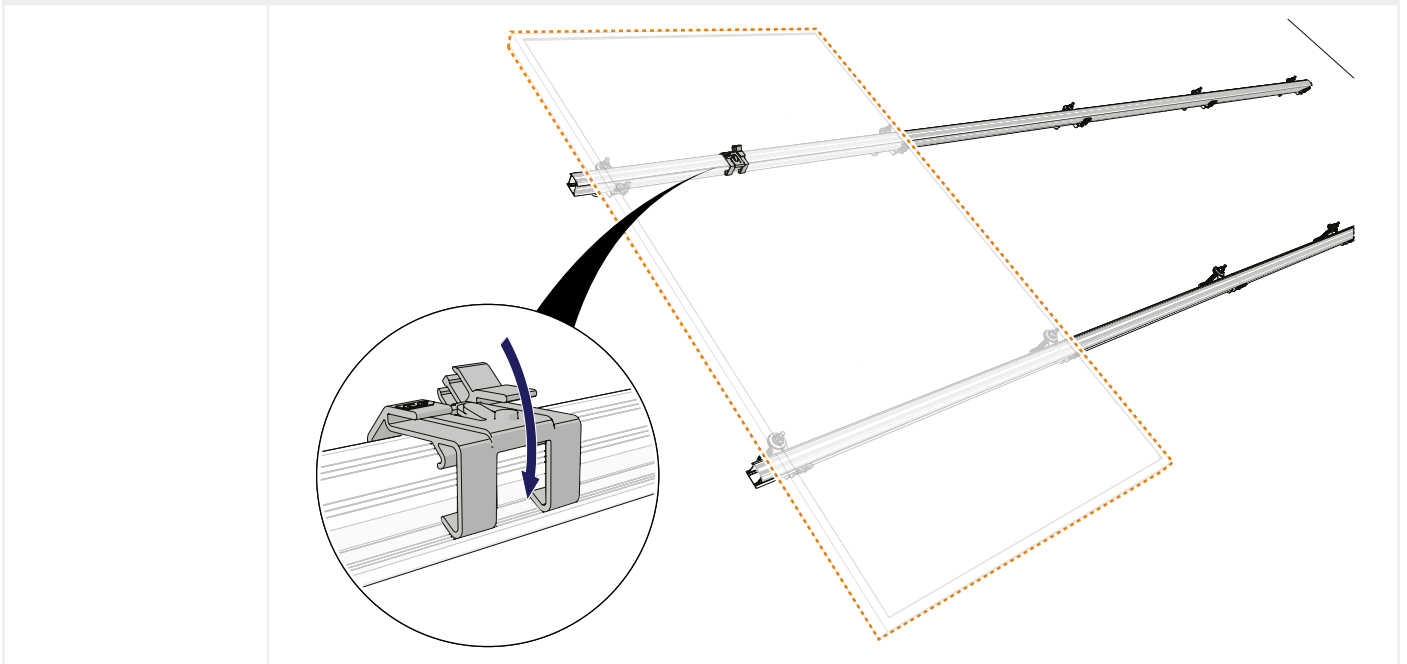
## 4 FOR VERTICAL MOUNTING: SECURE THE MOUNTING RAILS TO THE CLICK CONNECTIONS



- i** Secure the bottom click connection with a self-drilling screw. Skip two click connections and then screw down the fourth click connection. Repeat until the top click connection.

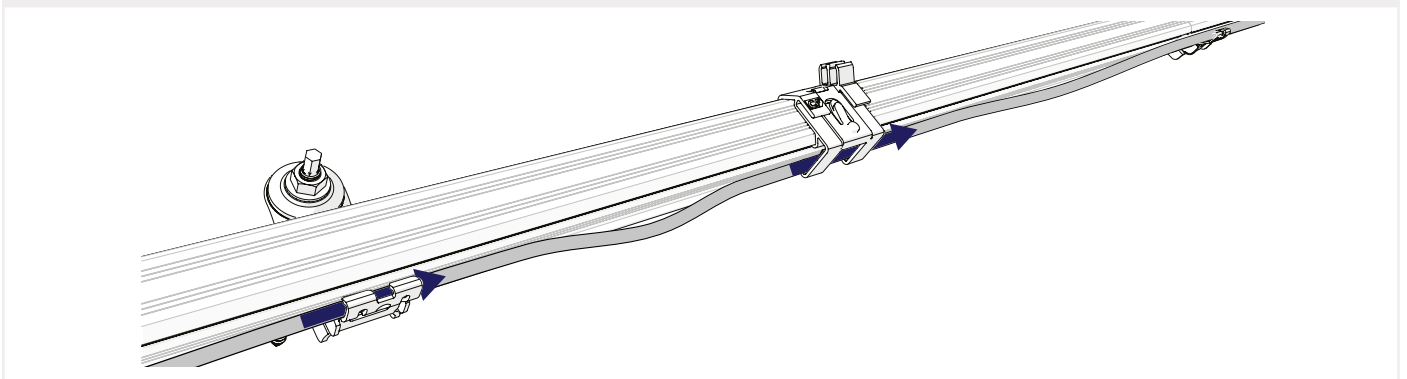
## 5 OPTIONAL: ATTACHING THE CABLE CLIPS

### 1 CLICK THE CABLE CLIP ONTO THE RAIL

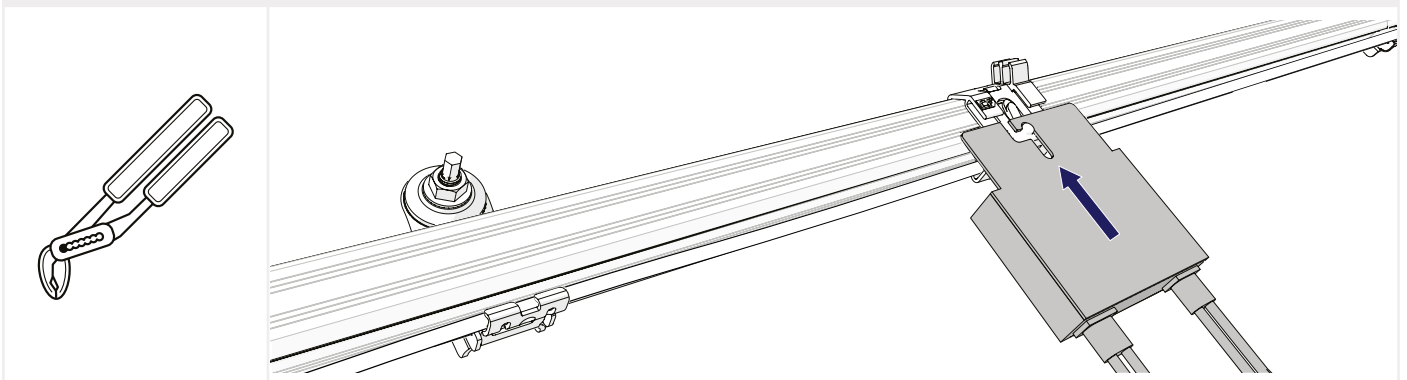


**i** Use one cable clip per solar panel.

### 2 GUIDE THE CABLE THROUGH THE CLICK CONNECTION AND THE CABLE CLIP



### 3 OPTIONAL: CLICK THE OPTIMISER ON THE CABLE CLIP

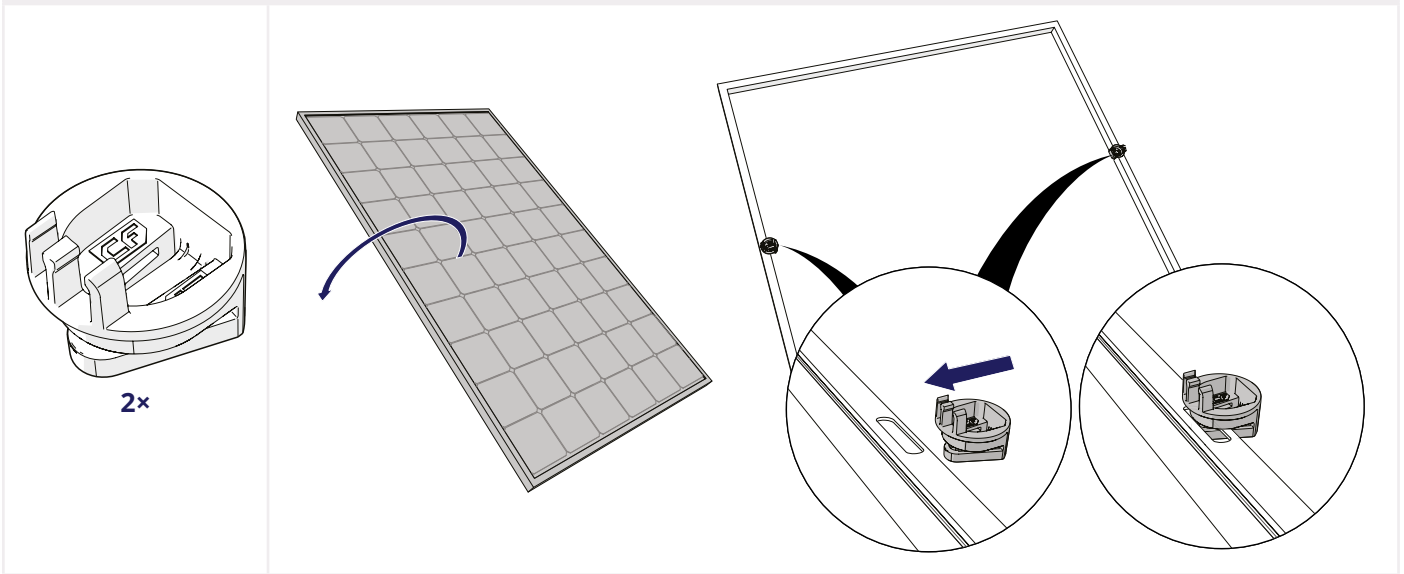


**i** With vertical rail orientation you have to fix the cable clip by bending the edge of the mounting rail with adjustable pliers.

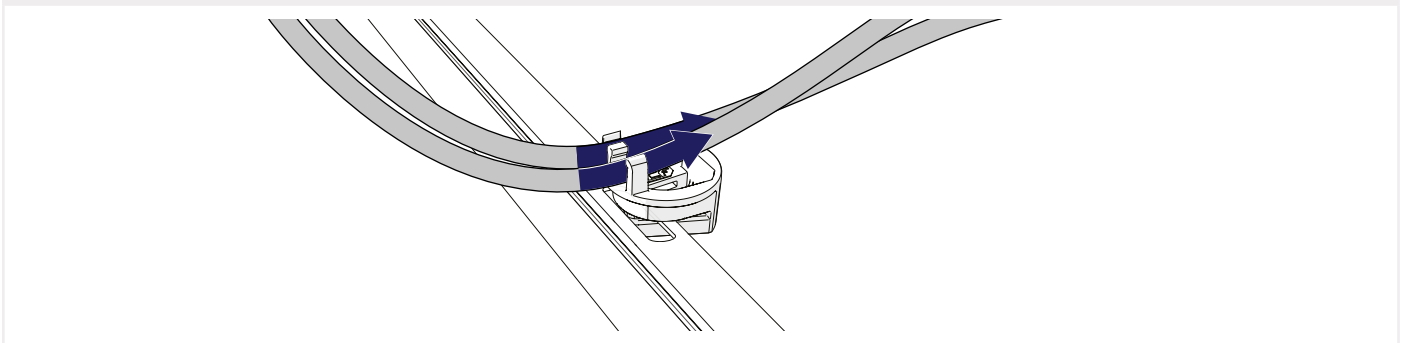
# 6

## MOUNTING THE FIRST PANEL

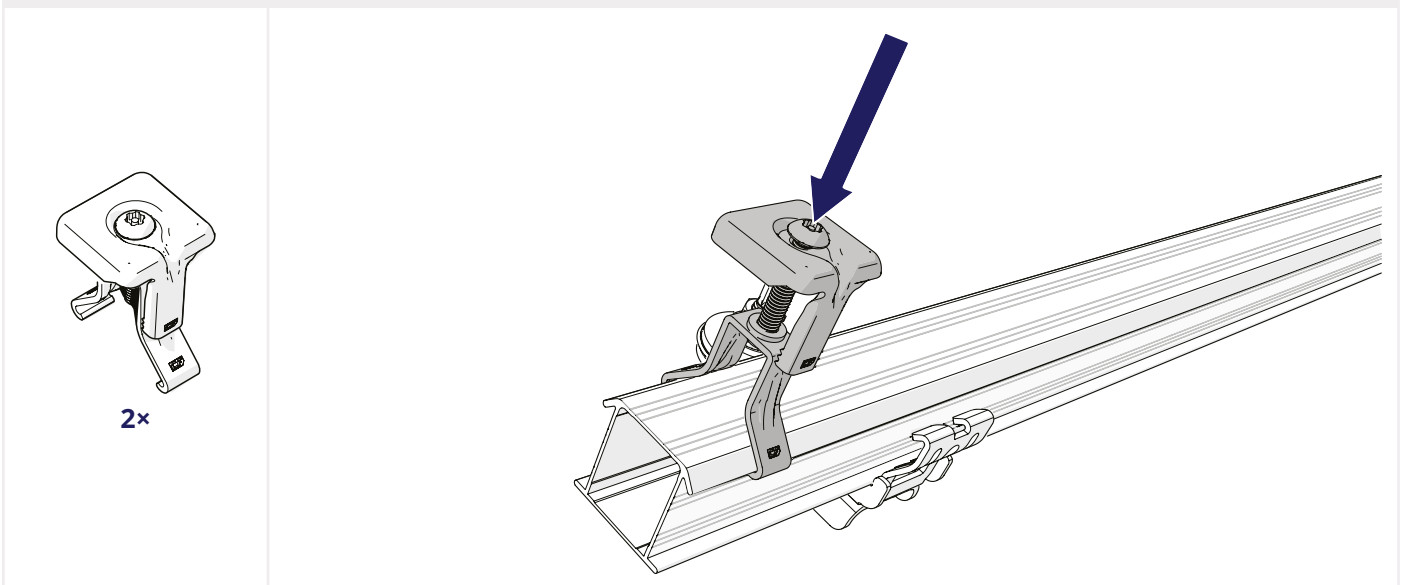
### 1 OPTIONAL: CLICK THE AUXILIARY SETON THE PANEL



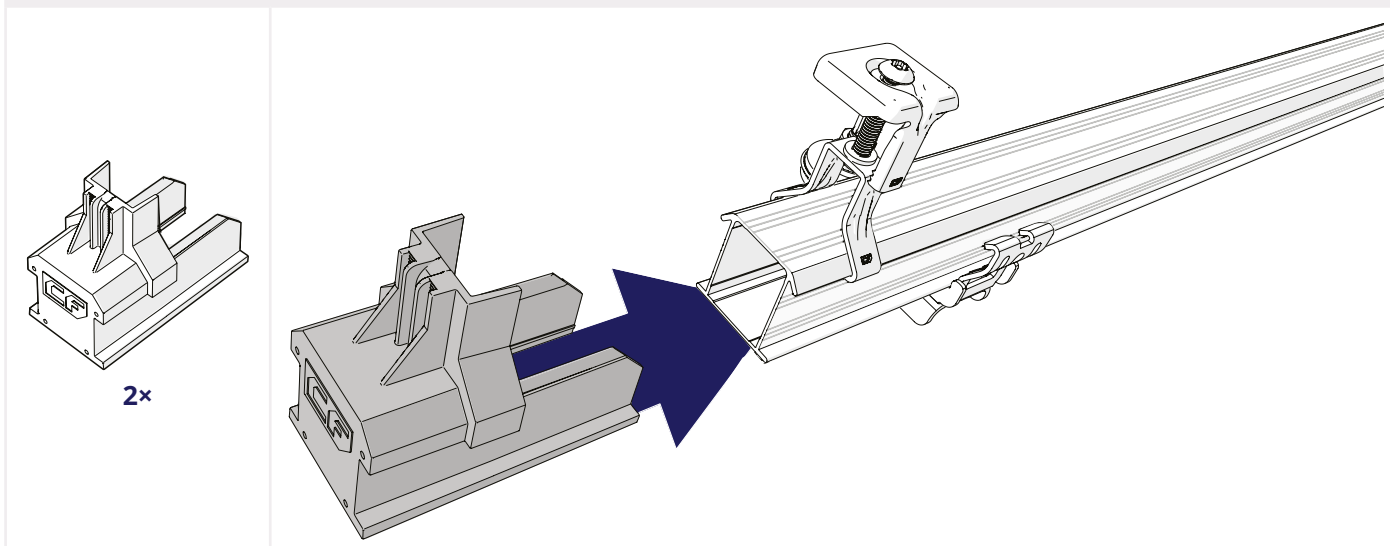
### 2 OPTIONAL: CLICK THE CABLES OF THE PANEL FIRMLY INTO THE CABLE CLAMP



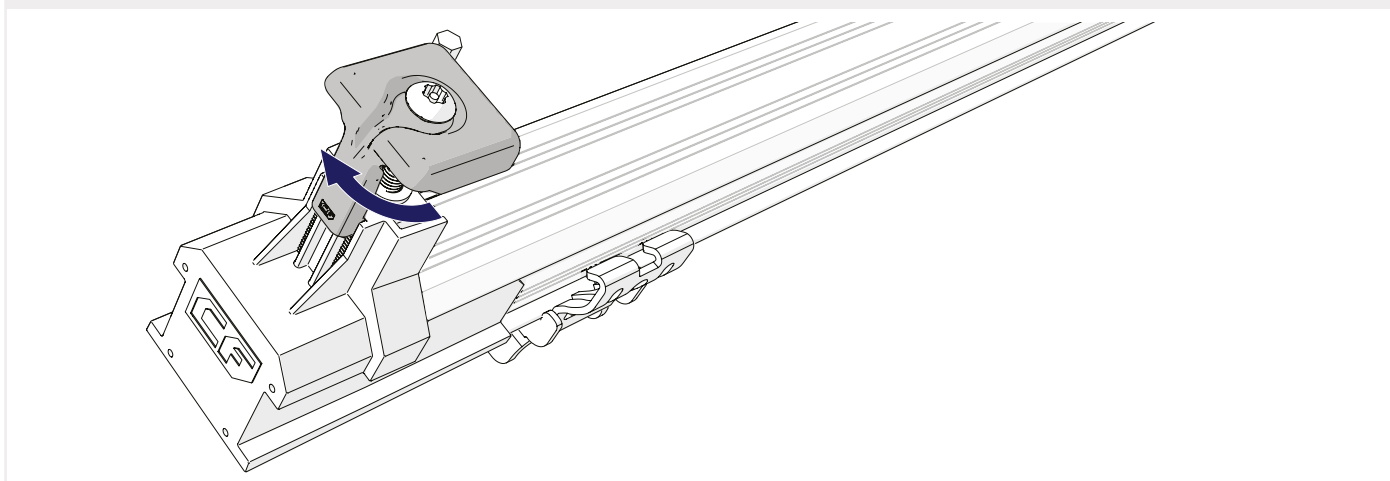
### 3 CLICK THE UNIVERSAL MODULE CLAMP ON THE RAILS



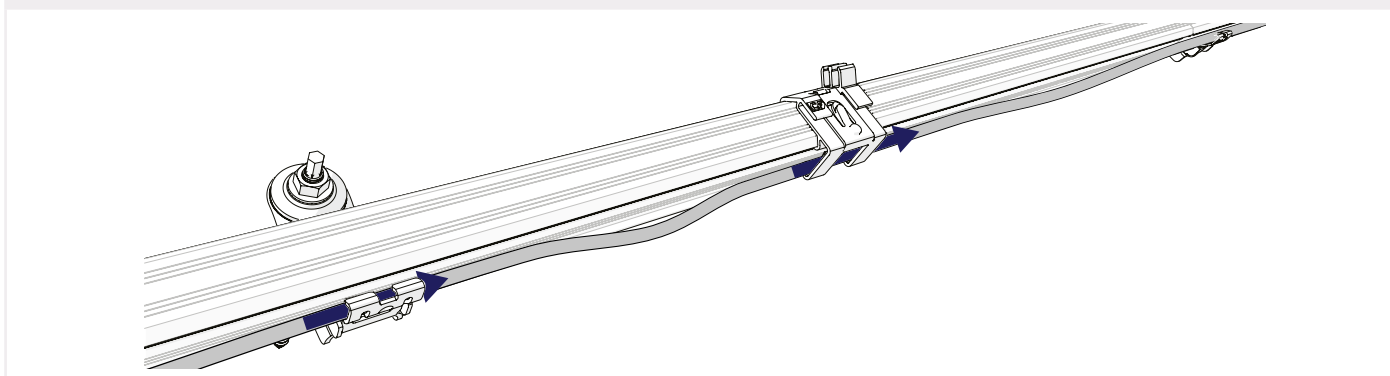
#### 4 SLIDE THE END CAPS ONTO THE RAILS



#### 5 ROTATE THE UPPER PART OF THE MODULE CLAMP OVER THE END CAP

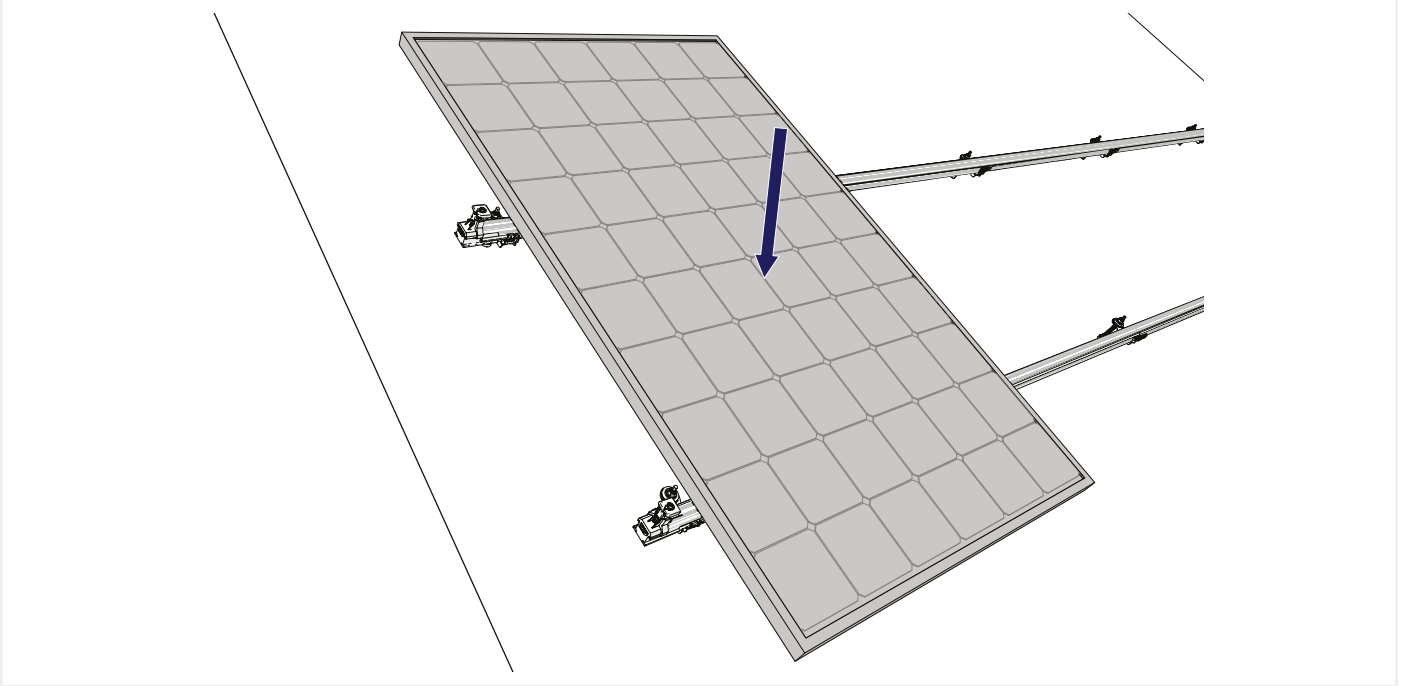


#### 6 OPTIONAL: CLICK THE CABLES OF THE PANEL IN THE CABLE CLIP

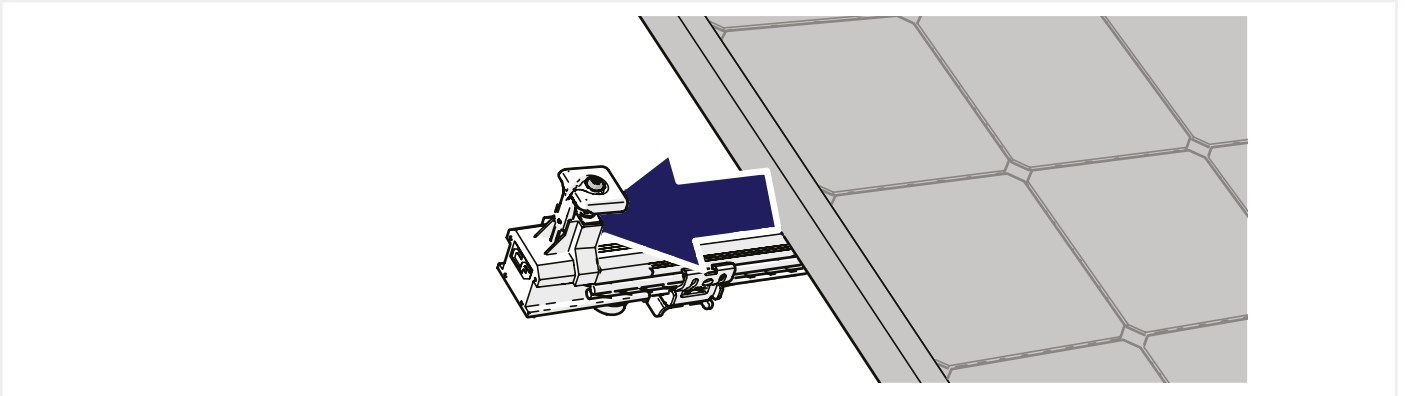




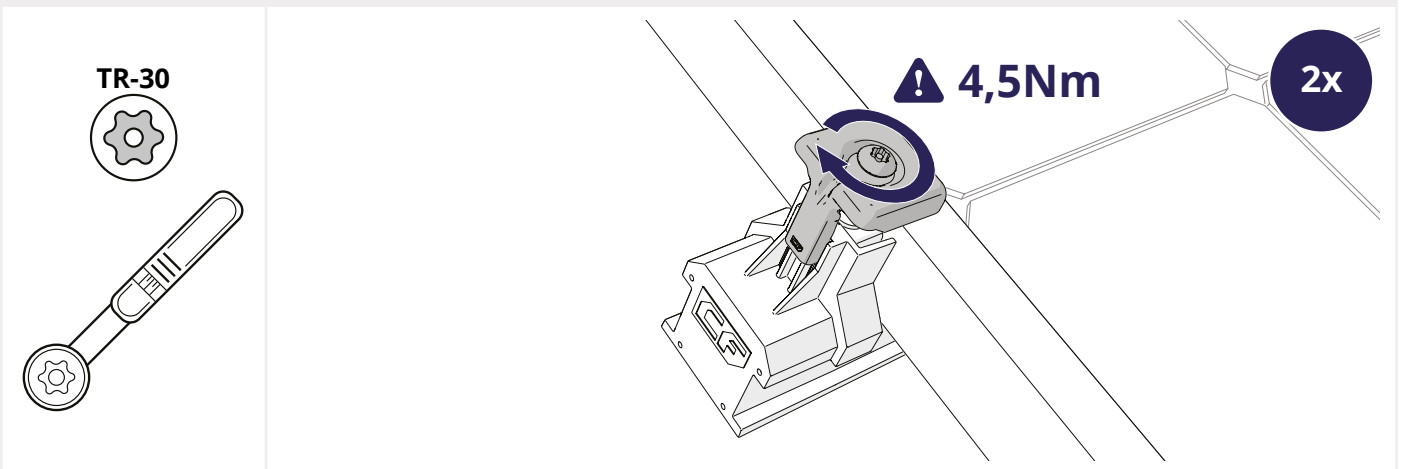
## 7 PLACE THE PANEL ON THE RAILS



## 8 SLIDE THE PANEL AGAINST THE CLAMPS



## 9 SCREW THE CLAMPS ONTO THE PANEL

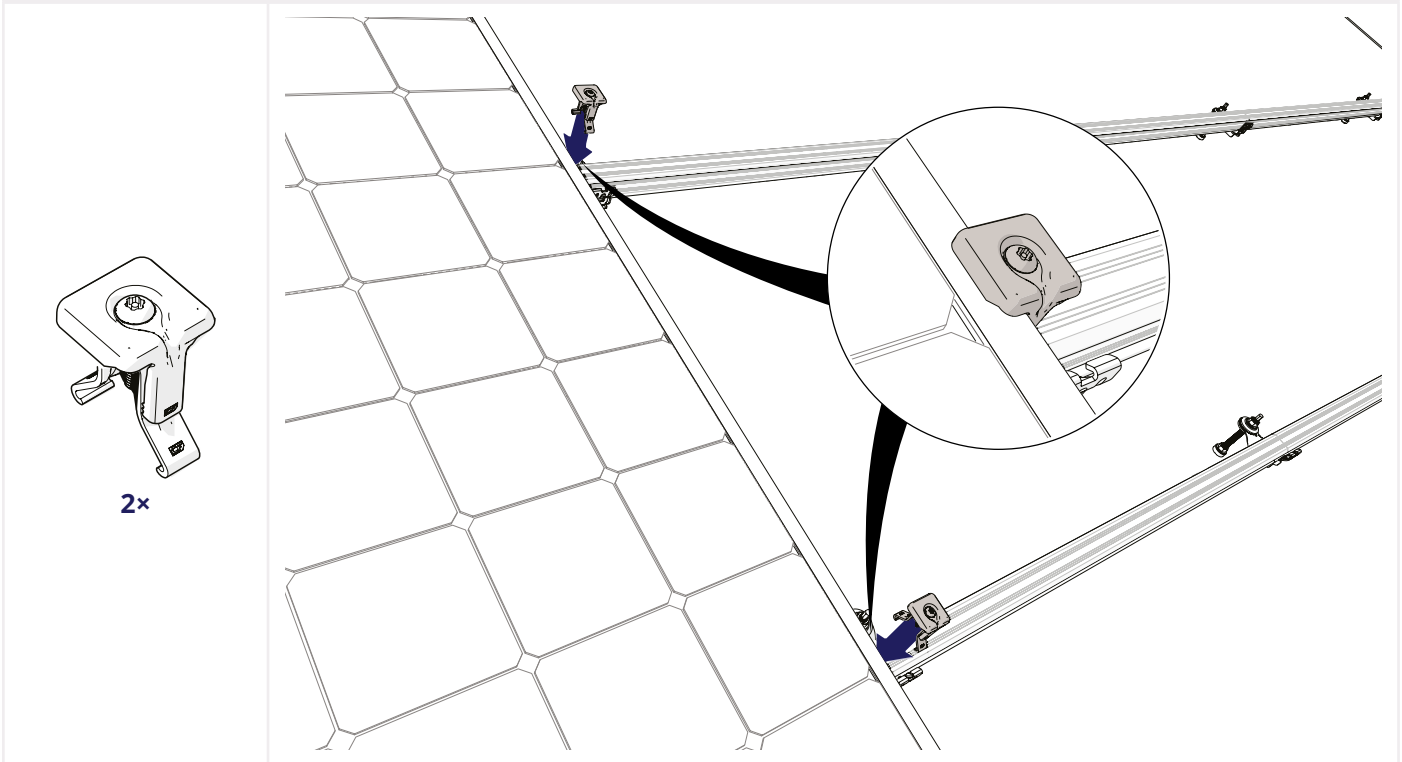


## 7 MOUNTING THE FOLLOWING PANELS



Optional: Repeat steps 6.1. Click the Auxiliary seton the panel and 6.2. Click the cables of the panel firmly into the cable clamp.

### 1 CLICK THE UNIVERSAL MODULE CLAMP ON THE RAILS

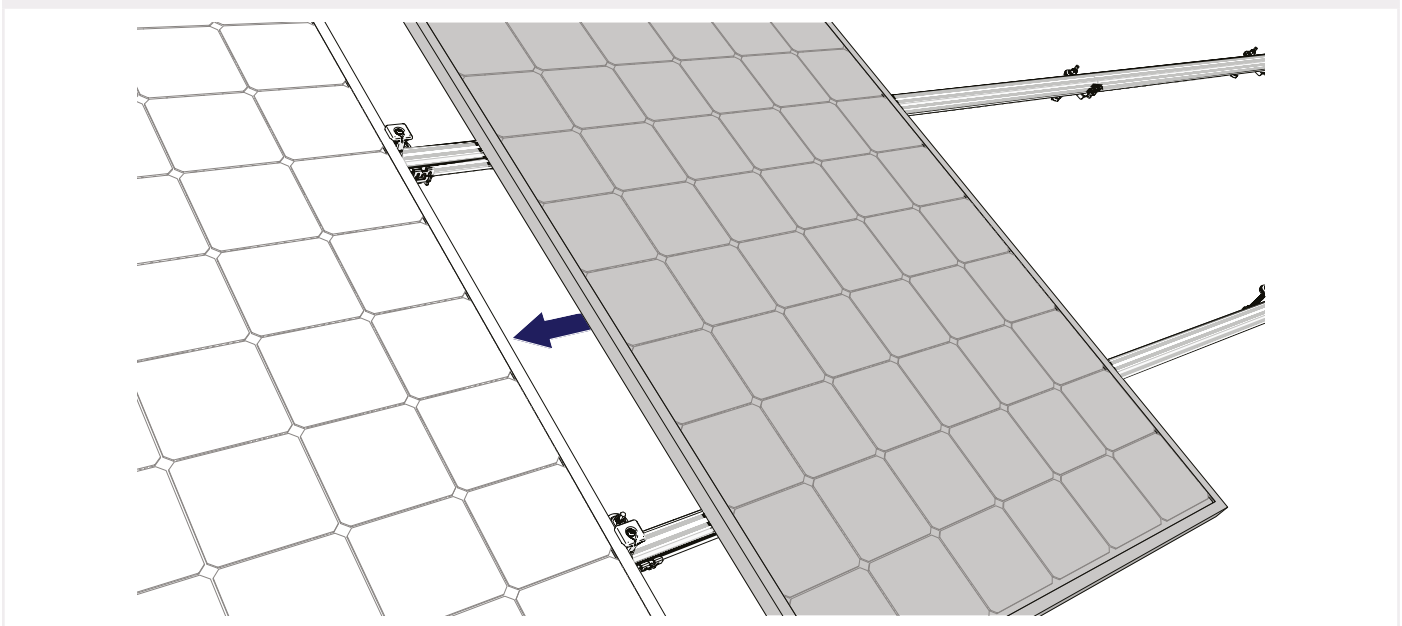


**i** Install the module clamp with the drainage channel of the module clamp pointing downwards.

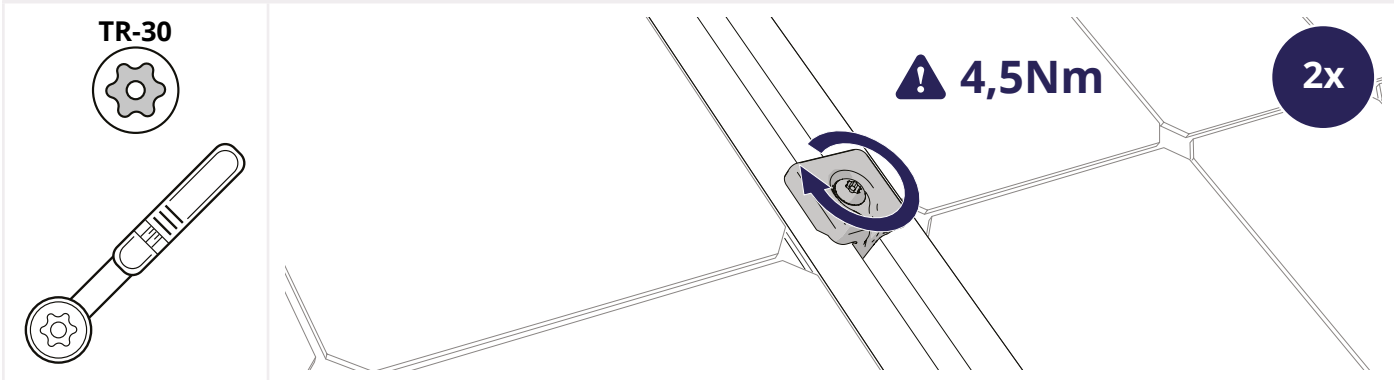


Repeat step 6.7. Place the panel on the rails

### 2 SLIDE THE PANEL AGAINST THE CLAMPS



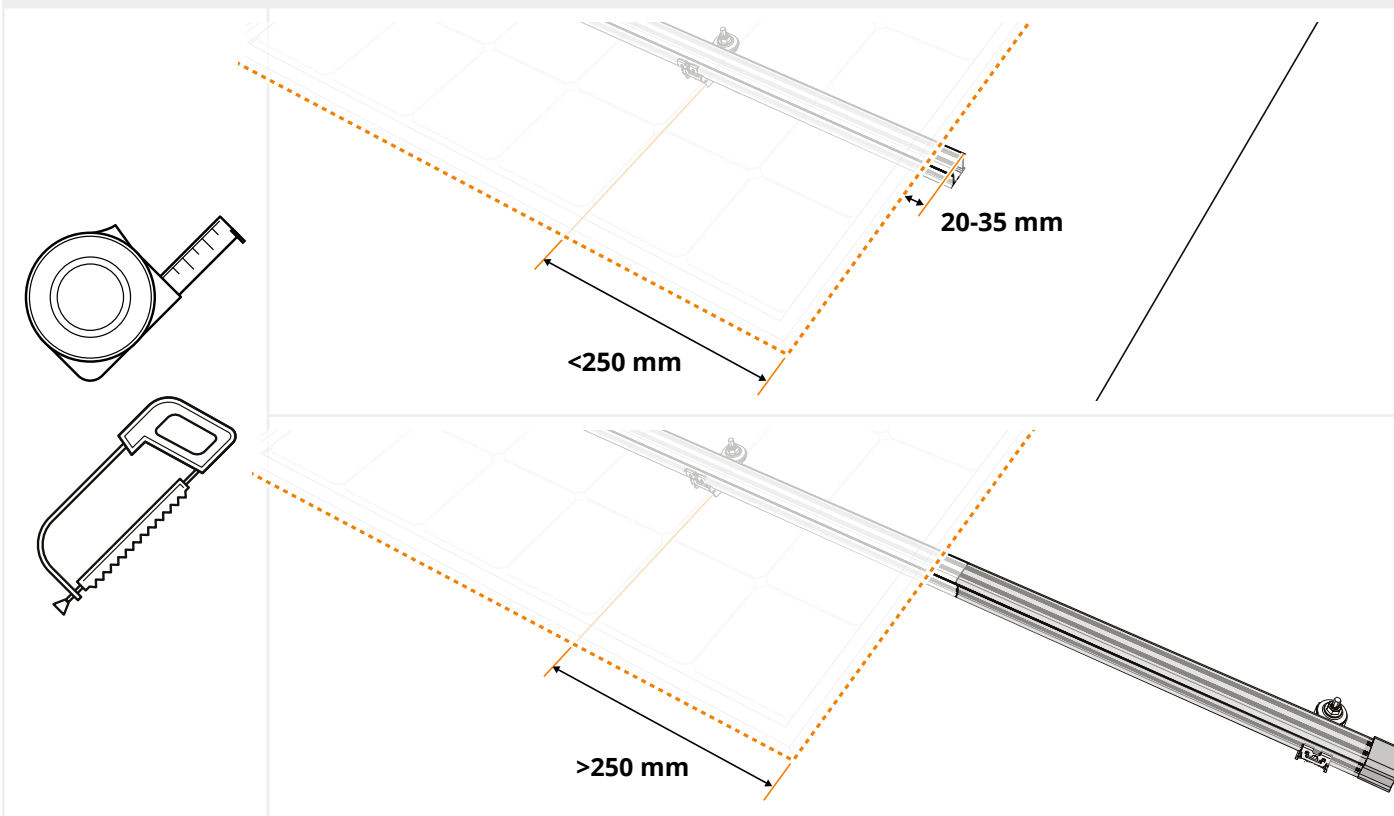
### 3 SCREW THE CLAMPS ONTO THE PANEL



## 8 MOUNTING THE LAST PANEL

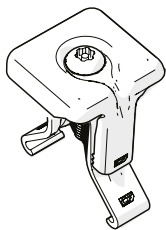
- Optional: Repeat steps 6.1. Click the Auxiliary seton the panel and 6.2. Click the cables of the panel firmly into the cable clamp.
- Repeat step 6.7. Place the panel on the rails
- Repeat step 7.2. Slide the panel against the clamps

### 1 OPTIONAL: SAW THE MOUNTING RAILS TO SIZE

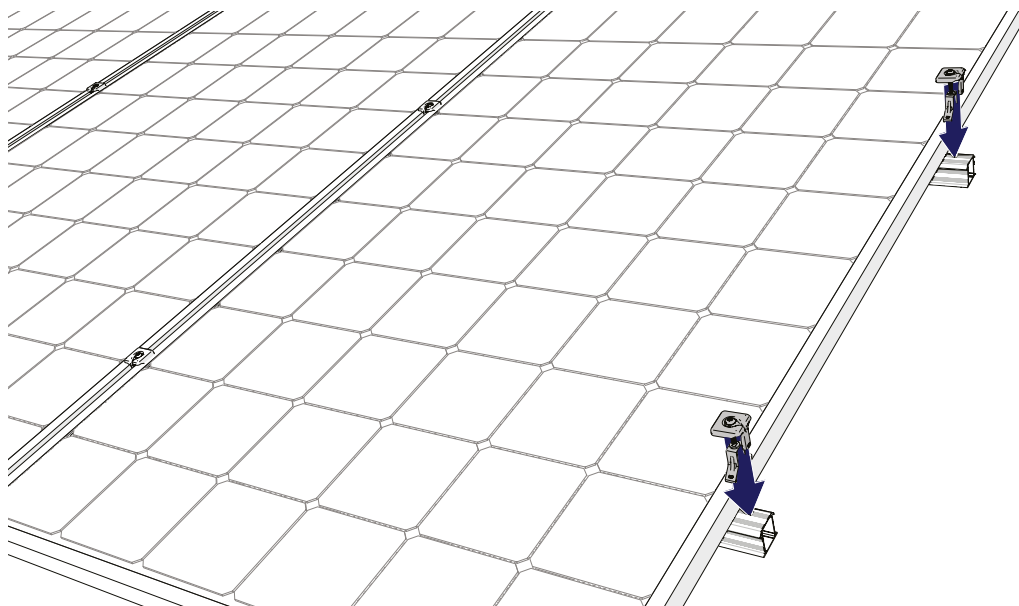


- i** If the overhang is smaller than 250 mm, keep a minimum of 20 mm to a maximum of 35 mm rail length overhang for mounting the end cap (art. no.1008060(-B)).
- i** Does the outer panel edge project more than 250mm beyond the last hanger bolt? Then extend the mounting rail so it goes 50 mm beyond the next hanger bolt and attach the mounting rail here. This extra 50 mm provides sufficient length to fit an end cap (article no. 1008066(-B)) to the mounting rails. For the end clamp you must then use the end clamp support (article no. 1008065(-B)).

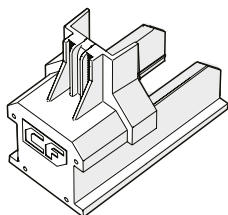
**2 CLICK THE UNIVERSAL MODULE CLAMP ON THE RAILS**



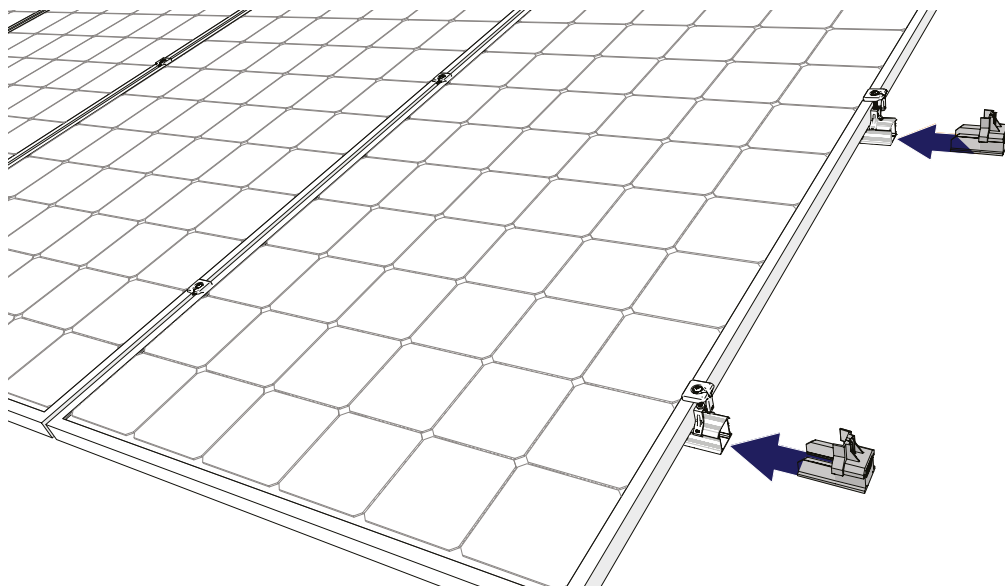
2x



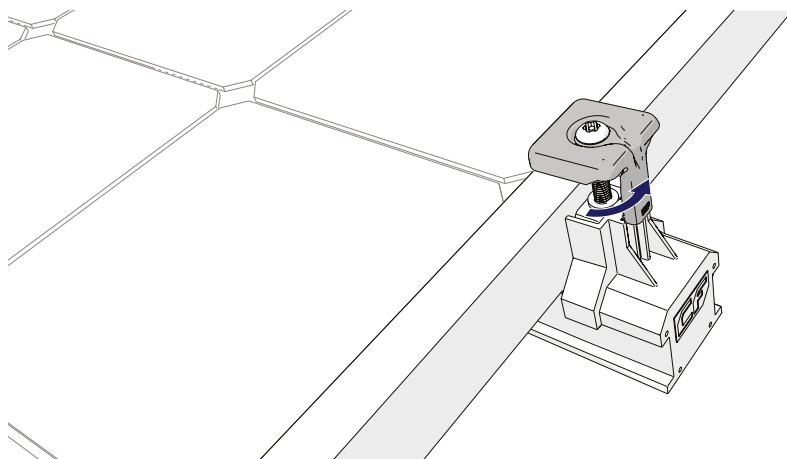
**3 SLIDE THE END CAPS ONTO THE RAILS**



2x

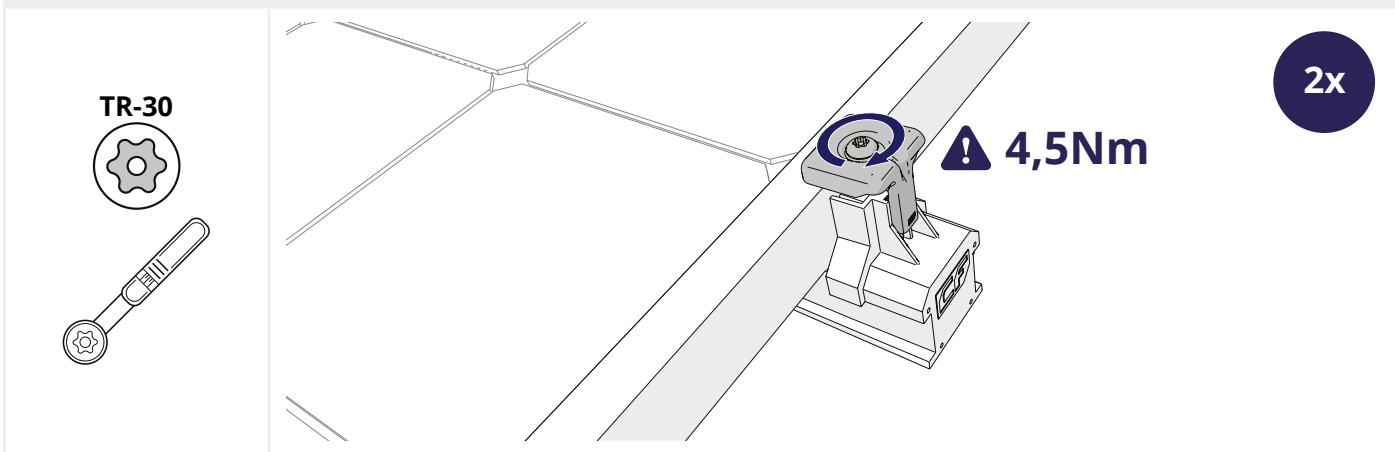


**4 ROTATE THE UPPER PART OF THE MODULE CLAMP OVER THE END CAP**



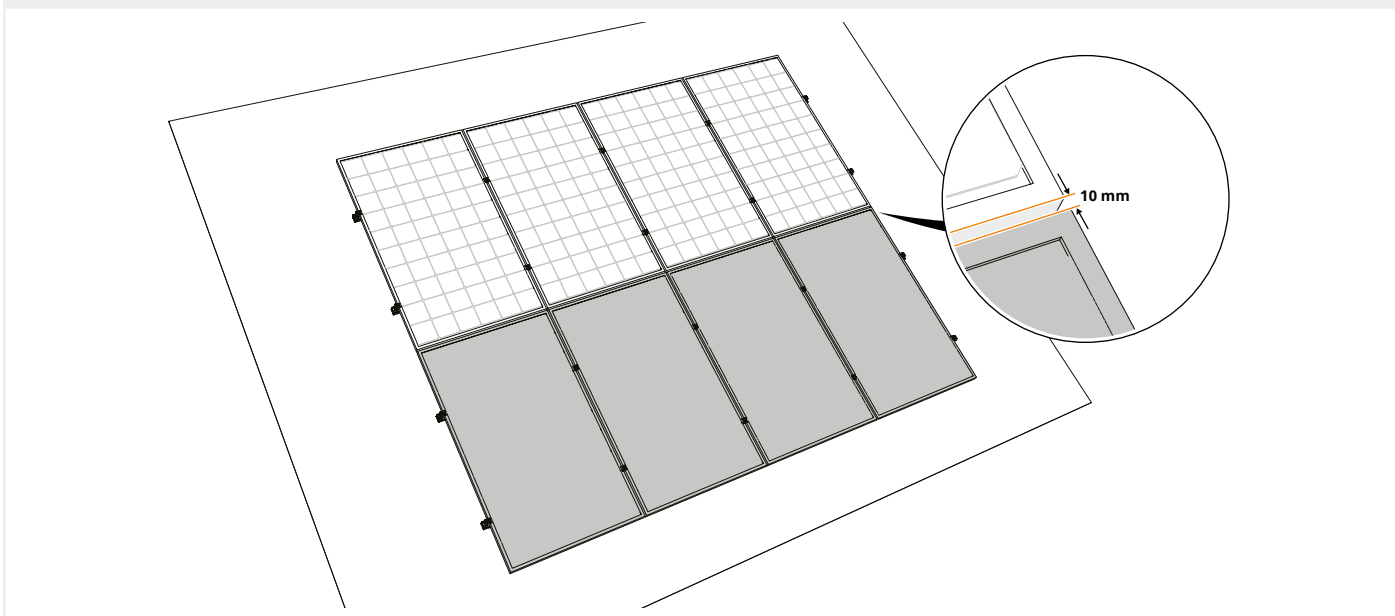
2x

## 5 SCREW THE CLAMPS ONTO THE PANEL



## 9 MOUNTING MULTIPLE ROWS

### 1 MOUNT EACH NEXT ROW AGAINST THE PREVIOUS ROW



- i** Always keep a minimum of 10 mm between each row of panels in the case of horizontally oriented rails, or each panel column in the case of vertically oriented rails.
- i** Always follow the project plan from the calculator.

## REMOVAL AND RECYCLING

### GENERAL

Always follow local laws and regulations when dismantling the mounting system and disposing of it.





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