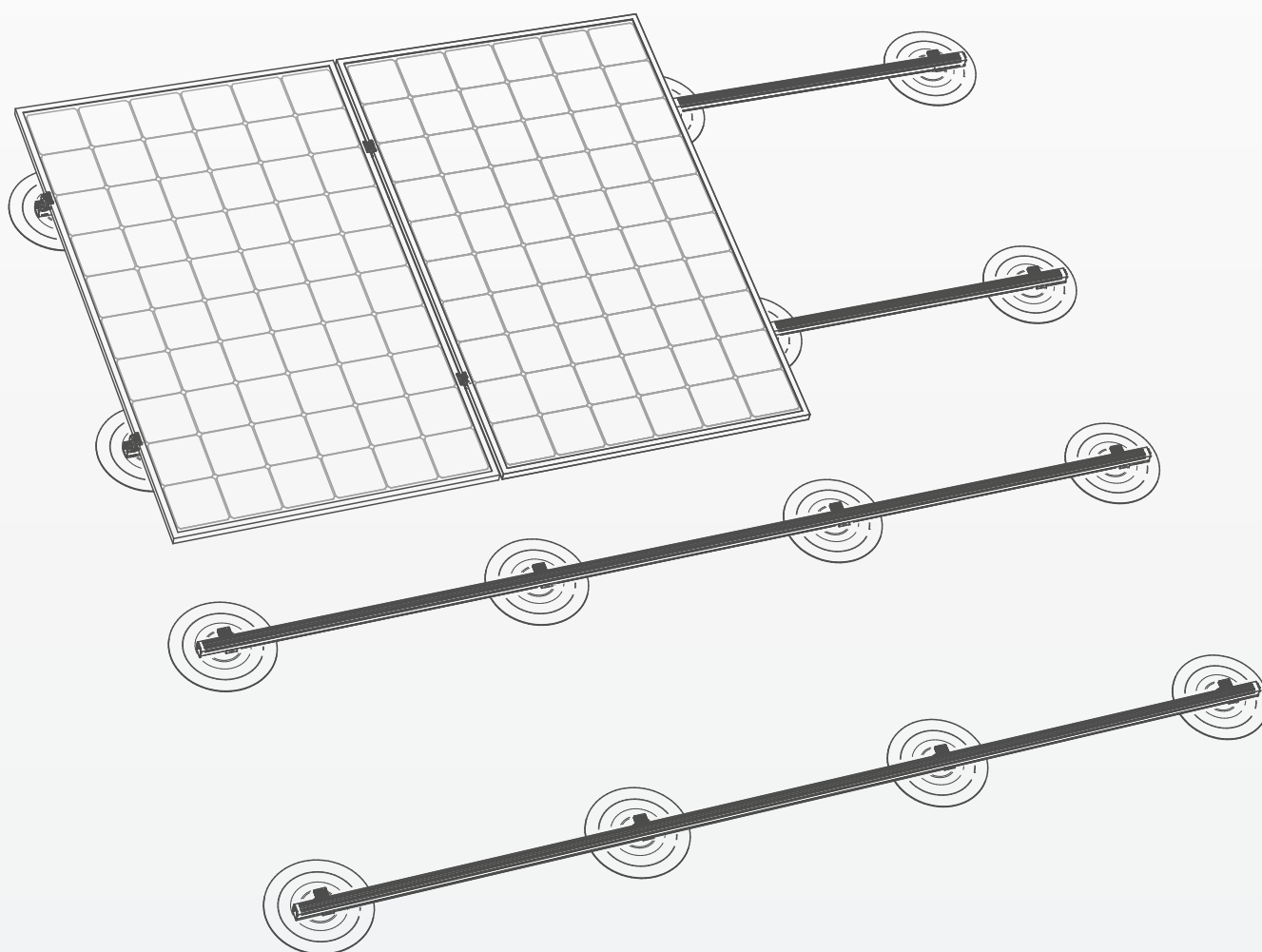


INSTRUCTION MANUAL

PITCHED ROOF ROOF ANCHOR



COBALT MOUNTING SYSTEMS

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Versie: A.1

EN

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Made in Europe

Made in Europe, extensively tested, with increased installation convenience. Manufactured from high-grade aluminium and strong Magnelis® steel.

The application of the products depends on the country, environmental factors, and the type of roof.

More information can be found at www.cobalt.solar.

Our general terms and conditions apply.

/ General

This manual describes the installation of the Cobalt Mounting Systems for pitched roofs. We recommend reading the manual carefully and following the instructions provided.

We are committed to continuous improvement of our products; therefore, details of the products may deviate from this manual. Non-compliance with the regulations and instructions specified in this document may result in the invalidation of all warranty and product liability claims.

/ Safety Instructions

Installation of our products may only be carried out by qualified personnel. Incorrect installation can cause damage to the system, the building, or pose a risk to personal safety.

Risk of falling. Working at heights involves the risk of injury due to falls. It is essential to comply with applicable regulations on safe working at heights, including the use of prescribed safety equipment and protective clothing. The PV mounting system must not be used as climbing equipment or fall protection.

Compliance with health and safety regulations, accident prevention guidelines, and applicable standards is mandatory. Always use appropriate personal protective equipment.

Maintain a safe working environment. We specifically emphasize the risk of injury caused by falling objects. Effective measures must be implemented to prevent accidents.

Avoid installation during strong winds or on slippery surfaces.

/ General Instructions

Ensure that this manual is available on site during installation and after project completion.

Before starting installation, an external structural engineer must verify whether the roof has sufficient load-bearing capacity to permanently support the additional weight of the installation.

Applicable building regulations, construction standards, and environmental requirements must be observed.

Ensure the waterproofing function of the roof is maintained. Follow the installation instructions of the roofing manufacturer and the PV module manufacturer.

All electrical work must be carried out in compliance with applicable standards and regulations, including the prevention of induction loops and potential equalization.

The roof must be in good condition and strong enough to support the weight of the PV modules, including additional materials, ballast, wind, and snow loads. In case of doubt, or if required, always consult a structural engineer.

Wind zones, snow loads, and clearance zones can be determined using the CoBuilder design software.

The system has been developed for anchoring to solid substrates such as steel roofs, wood, and concrete. Auxiliary fastening materials, such as plugs, screws, and toggle anchors, must be selected professionally and appropriately for the respective substrate.

The system is designed for PV modules with frame thicknesses of 30–45 mm.

In certain cases, a thermal break must be installed (see CoBuilder project output).

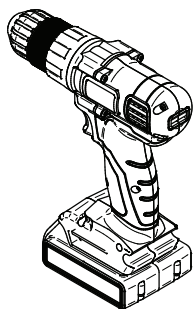
Ensure that the roof surface where the PV modules are to be installed is clean, dry, and level. The presence of gravel, sand, small stones, algae, dust, etc., may cause instability of the system and/or damage to the roof.

The minimum distance to the roof edge is 300 mm. For buildings below 5 m in height, this distance may be reduced (check against applicable regulations). Use the CoBuilder software to calculate the required free edge distance.

Roof penetrations (Cuffs) must always be installed by a certified roofer. (BRL 4702 / VCA).

NECESSARY TOOLS

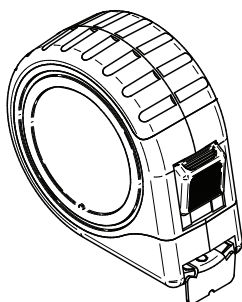
/ Screwdriver Drill



/ Required bits



/ Measuring Equipment



/ Torch or heat gun (choice of the roofing contractor)

/ (Tip) Chalk line

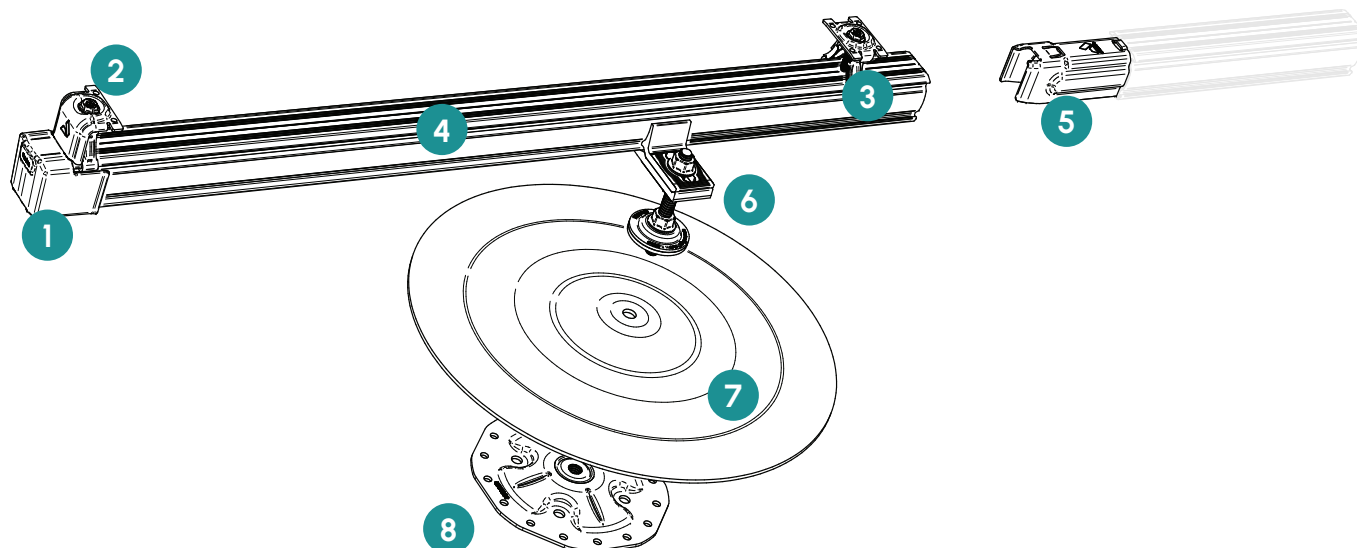
/ (Tip) Broom

Cobalt - Calculator tool

For planning the PV module layout, we recommend using the CoBuilder. With this tool, you can calculate your project in accordance with the applicable national standards. The tool has been verified and certified by independent parties. More information can be found at:

The calculator tool is available at: <https://www.cobalt.solar/en/tools/cobuilder>

REQUIRED MATERIALS



Core Products

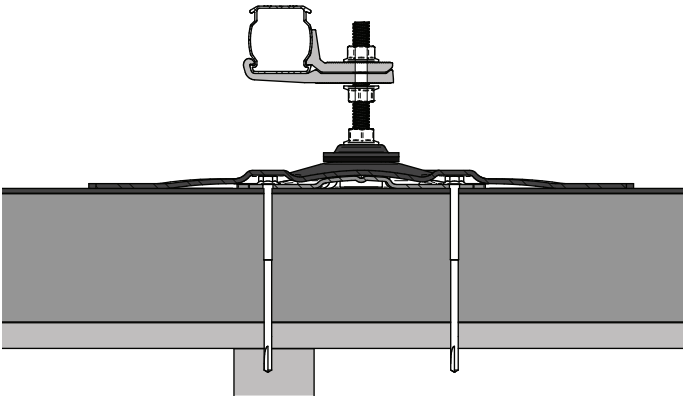
End Cap		1
9002100	Endcap mounting rail, black	
End Clamps		2
7010030	End clamp 30mm, silver	
7000030	End clamp 30mm, black	
7010035	End clamp 35mm, silver	
7000035	End clamp 35mm, black	
7011000	Universal endclamp (30-50mm), silver	
7001000	Universal endclamp (30-50mm), black	
Mounting rails		4
8001280	Mounting rail (L=1208mm)	
8002354	Mounting rail (L=2354mm)	
8003500	Mounting rail (L=3500mm)	
8004646	Mounting rail (L=4646mm)	
8005792	Mounting rail (L=5792mm)	
8006938	Mounting rail (L=6938mm)	
(Use the online calculator for current rail lengths.)		
Middle clamp		3
7110100	Middle clamp (28-50mm), silver	
7100100	Middle clamp (28-50mm), black	
Rail coupler		5
9107100	Rail coupler for mounting rail	
Draadeinde samenstelling		6
9500010	Threaded rod for roof anchor	
Cuff		7
9507000	Cuff - bitumen	
9507100	Cuff - EPDM	
9507200	Cuff - PVC	
(Other materials available on request.)		
Roof Anchor		8
9320300	Roof anchor	

Optional Products

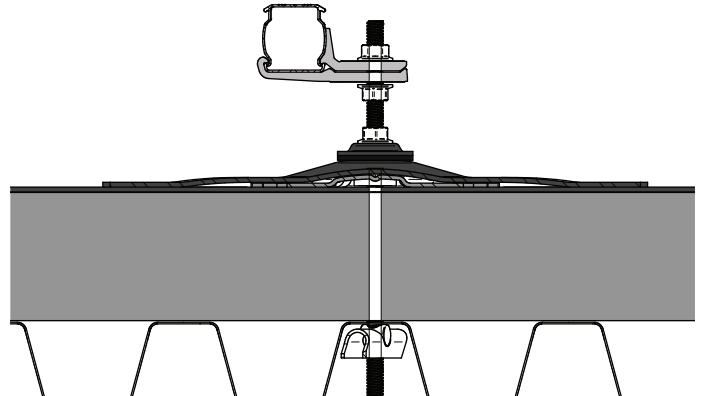
Cable Clip		+
9003000	Cable clip for mounting rail	
Optimizerclip mountingrail		+
9105100	Optimizerclip mountingrail	

DETAILS

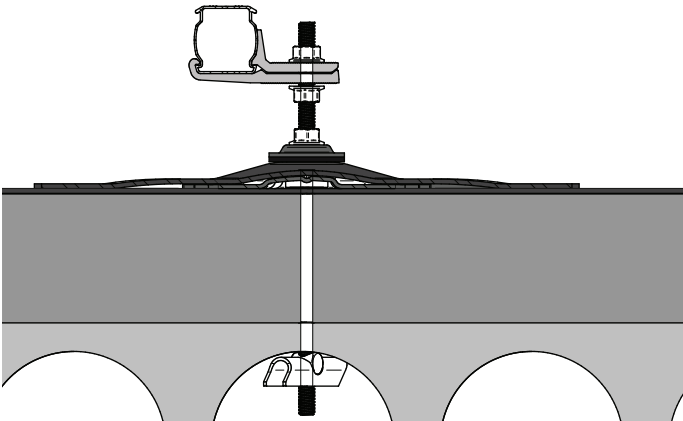
A | Screws – Wood



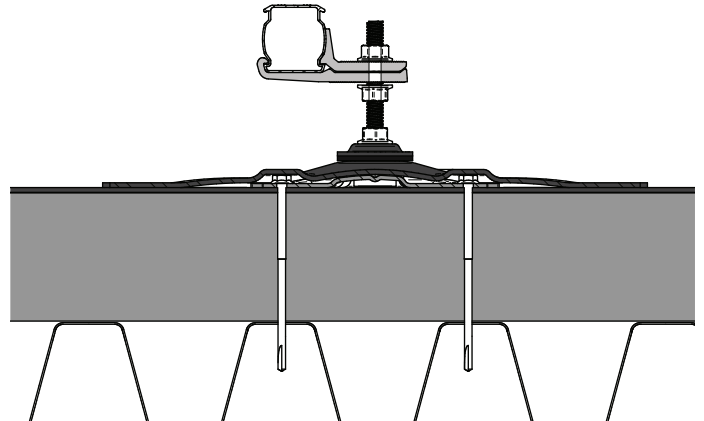
B | Toggle Anchor – Steel



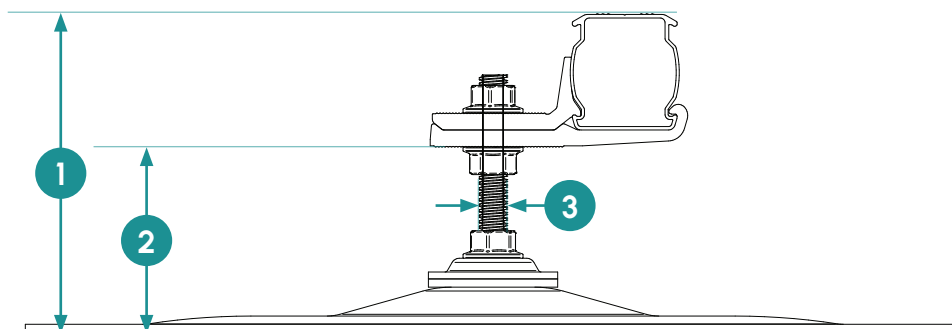
C | Toggle Anchor – Concrete



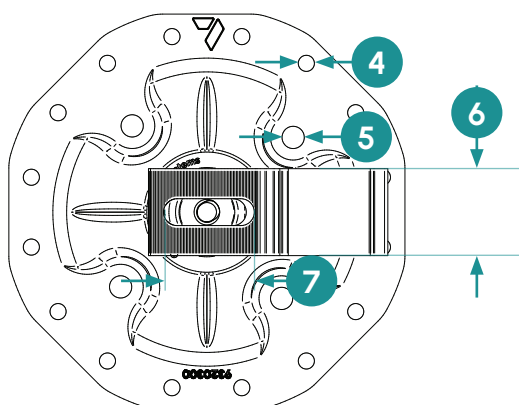
D | Screws – Steel



Side View



Top View

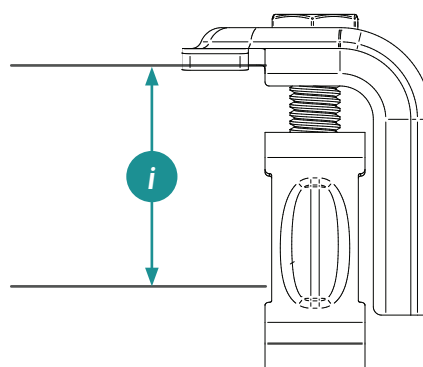


#	Dimensions
1	120 - 90 mm
2	50 - 80 mm
3	M10
4	6 mm
5	8 mm
6	34 mm
7	36 mm

End Clamps

Cobalt offers two end clamp options: Universal & Fixed. With the Universal version, any module can be mounted. With the Fixed version, a specific module thickness is clamped.

Type	Frame Thickness
30 mm	29 - 31 mm
35 mm	34 - 36 mm
Universal	29 - 46 mm



ASSEMBLY INSTRUCTIONS

1 Plan the Layout

Determine the roof structure. It is important to verify that the roof build-up corresponds to the drawings. The following information must at least be determined:

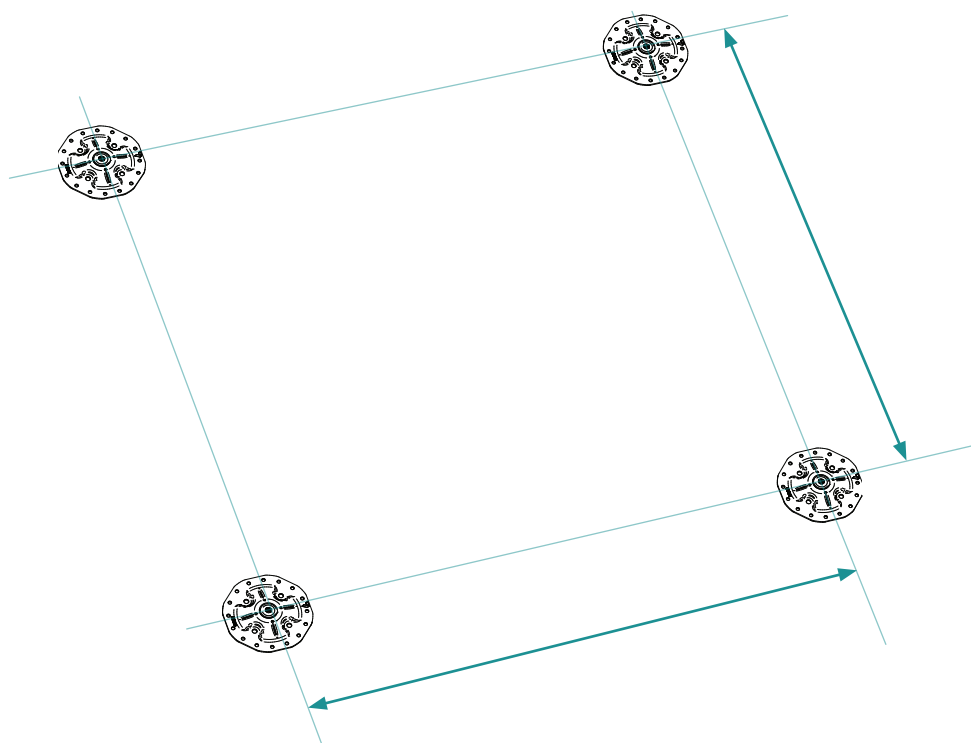
- What is the thickness of the insulation?
- What is the substrate of the roof?
- What is the roof covering?

Based on this information, the appropriate fastening method can be determined.

Check whether the roof covering is still under warranty from the roofing contractor. If this is the case, it is recommended to have the sealing of the Cuffs carried out by the same roofer, in order to avoid voiding the warranty.

Check whether the roof covering is in good condition.

2 Measure and mark the layout



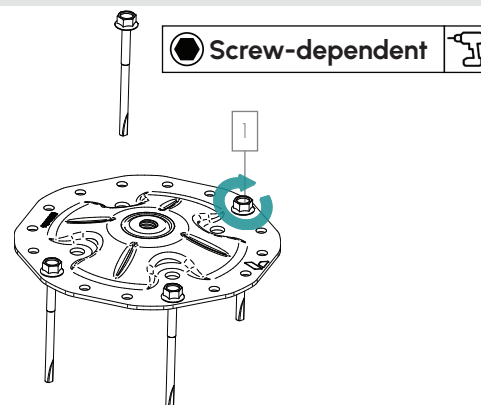
Determine the placement of the roof anchors. The location of the roof anchors depends on the PV modules, wind zone, and other environmental factors. Use the CoBuilder software to generate a placement plan.

Tip: Use a chalk line to mark the grid of the anchors.

3 Fasten the roof anchors with screws

Screw (1) the selected screws in place using the torque specified by the manufacturer. Fasten each anchor with at least 2 screws.

Tip: The length of the screw must be determined according to the screw manufacturer's specifications.



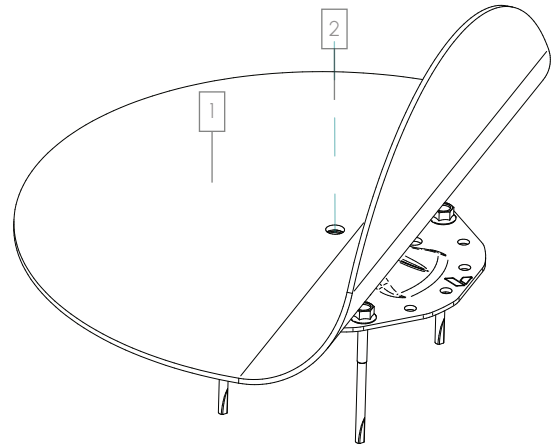
ASSEMBLY INSTRUCTIONS

4 Processing the Cuff

Place the Cuff (1) centered (2) over the roof anchor.
Bond the Cuffs according to applicable instructions and regulations.
The Cuff dimensions must comply with building standards (80 mm+ bonding for bitumen, 90 mm+ for PVC).

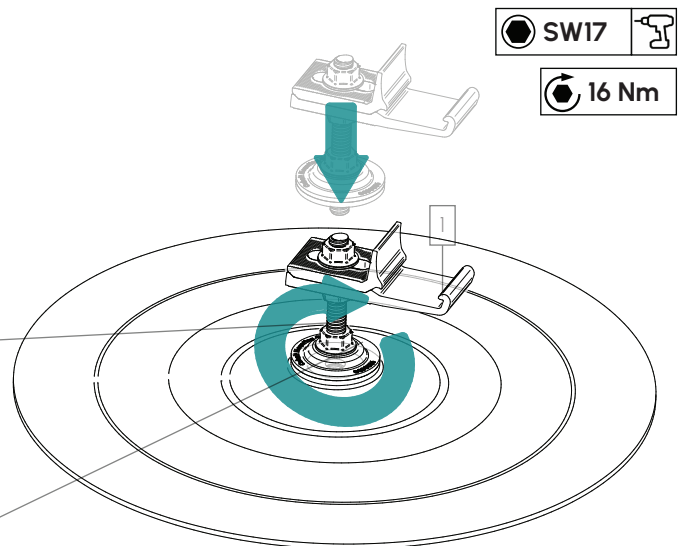
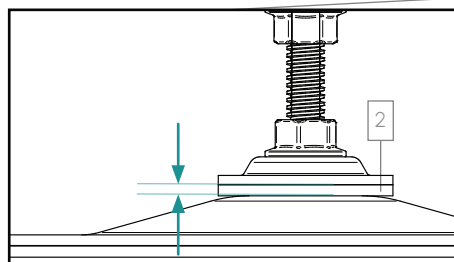
Tip: Order the correct Cuff for each roof covering type (e.g. bitumen Cuff for bitumen roof, etc.). If desired, Cobalt can also cut Cuffs from a roofing material specified by the customer.

Note: When bonding bitumen, fire safety measures must be applied as assessed by the roofing contractor.



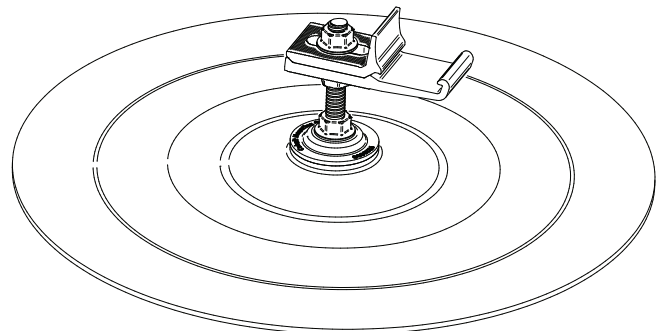
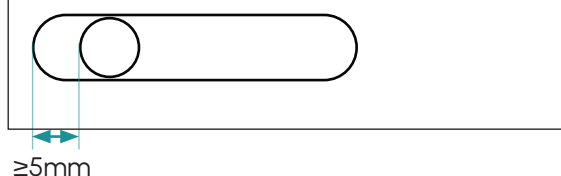
5 Install the threaded rod

Install the threaded rod (Ø8 mm) into the roof anchor (1).
Tighten the M10 nut above the waterproofing seal.
The seal must be compressed by at least 1 mm (2).
The required tightening torque is generally 16 N·m.



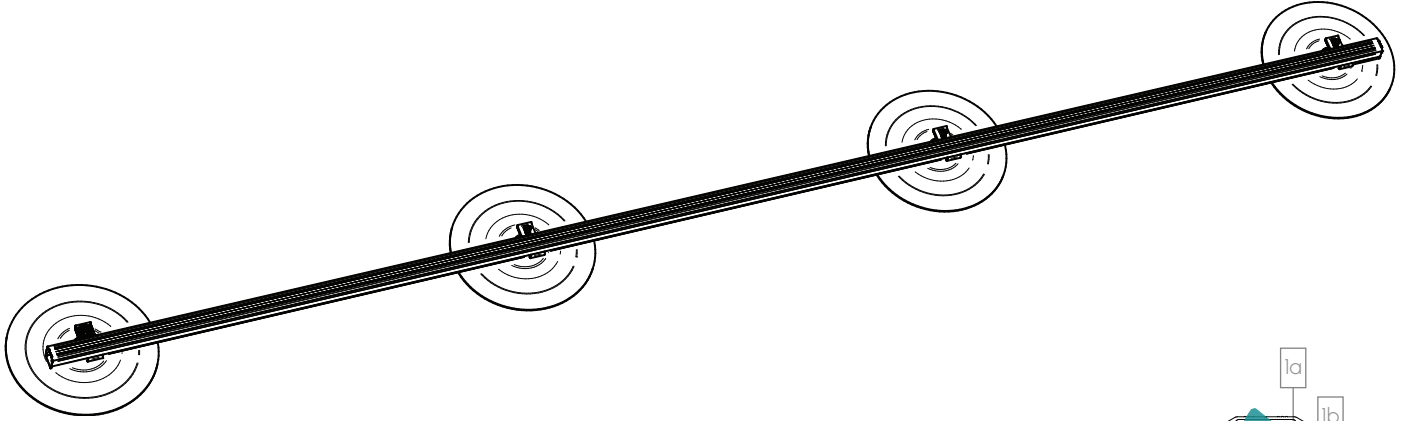
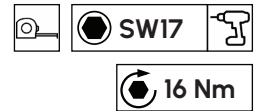
info Adapter Part

The adapter part contains a slot.
There must be a minimum distance of 5 mm between the end of the slot (where no rail is present) and the threaded rod.
This extra distance in the slot is provided to facilitate installation.



ASSEMBLY INSTRUCTIONS

7 Install the mounting rails

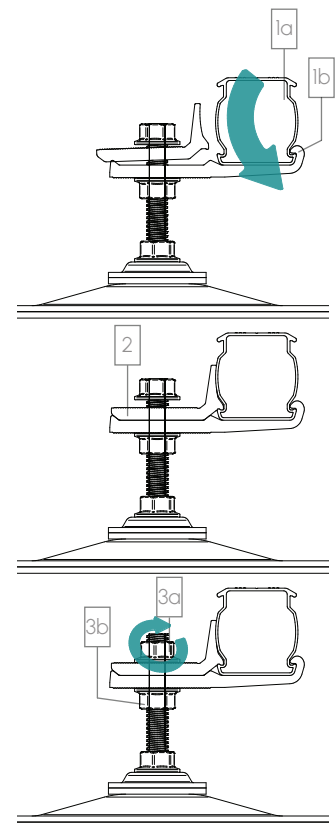


Place the mounting rails (1a) into the adapter. Ensure that the rail is positioned behind the locking hook (1b).

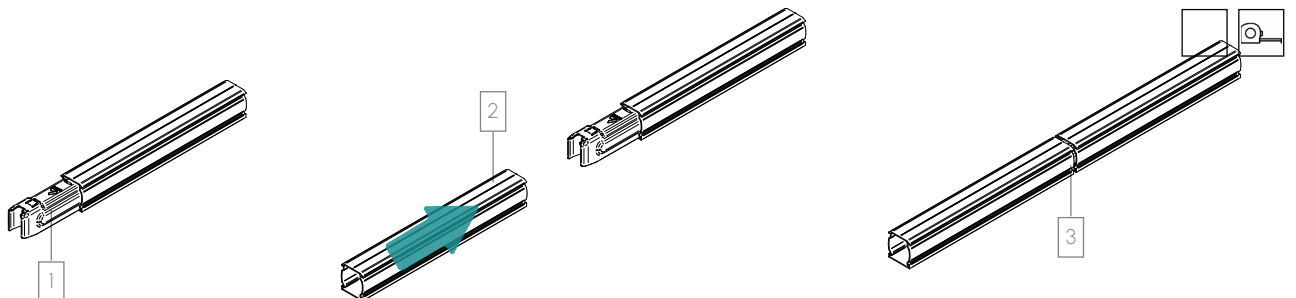
Slide the upper part of the adapter (2) against the mounting rails, making sure the adapter hooks into the rail.

Start by adjusting the rail height using the lower nut (3b). Once the correct height is set, both nuts (3a/3b) can be tightened to a torque of 16 N·m.

Note: The rail must not extend more than 300 mm beyond the last roof anchor.

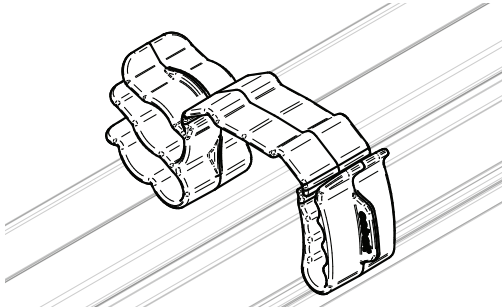


Tip 1 Coupling the rails

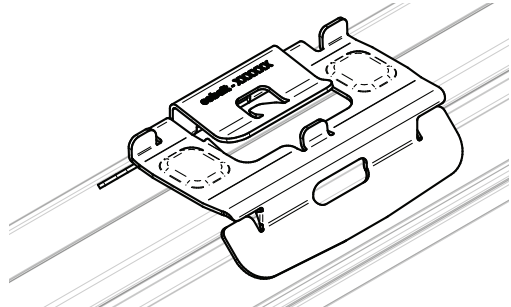


Slide one side of the splice piece into the mounting rail until it reaches the stop pin (1). Repeat this step for the second rail (2). A gap of approximately 1 mm must remain between the connected rails (3).

Tip 3 Options

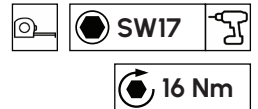
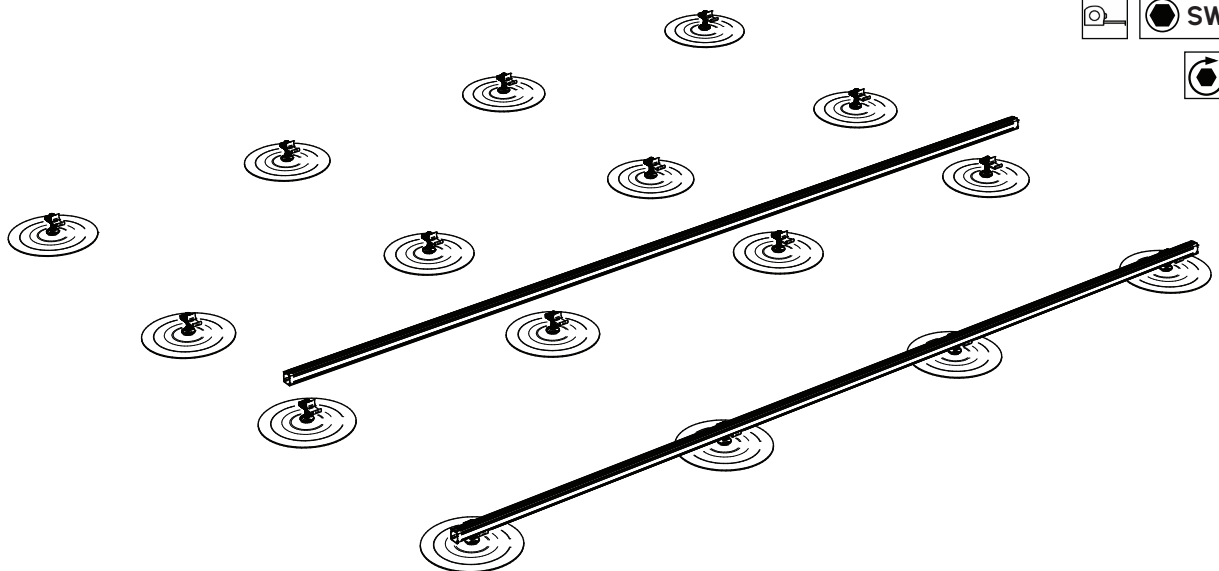


With the cable clip, the string cables and MC connectors can be secured neatly and durably.



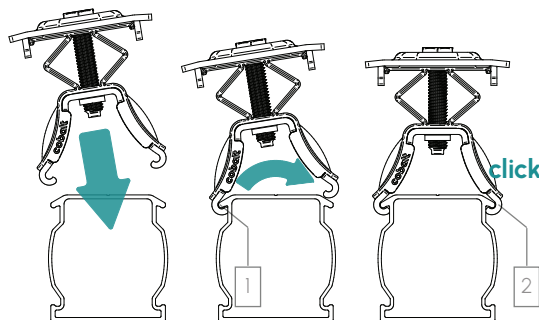
For mounting an optimiser or micro-inverter, the steel clip can be used.

8 Install all mounting rails



Repeat Step 7 until the entire array is fitted with mounting rails.
If the mounting rails need to be connected, splice pieces must be used.

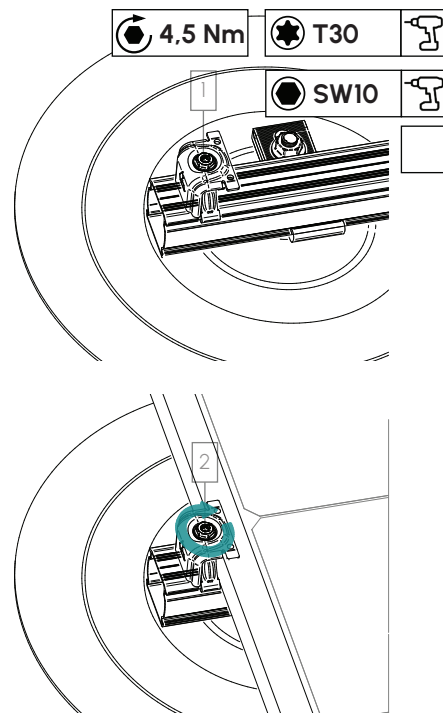
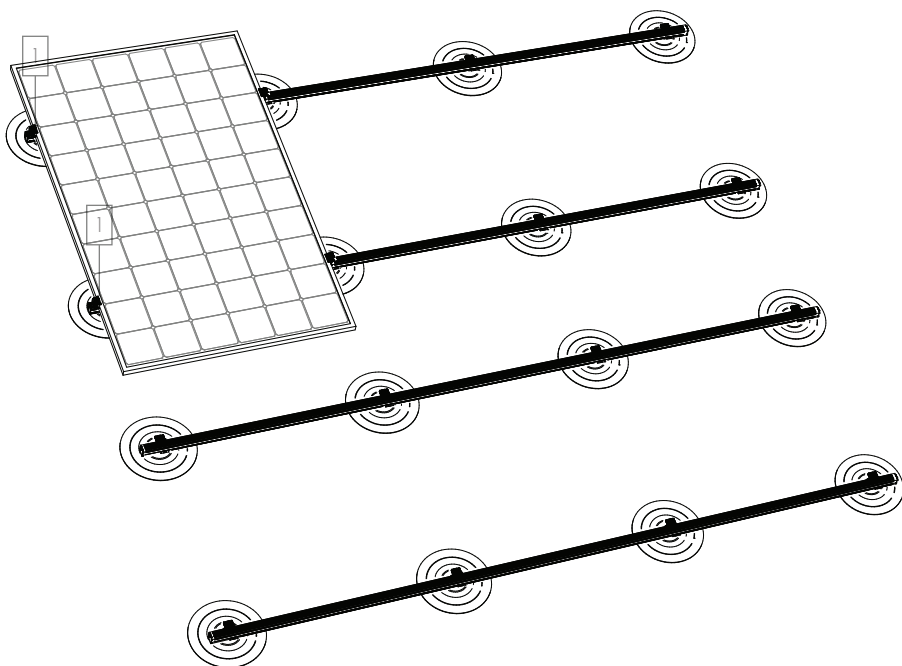
Tip 3 installation of the clamps



The clamps must click around the rail on both sides before being fastened.

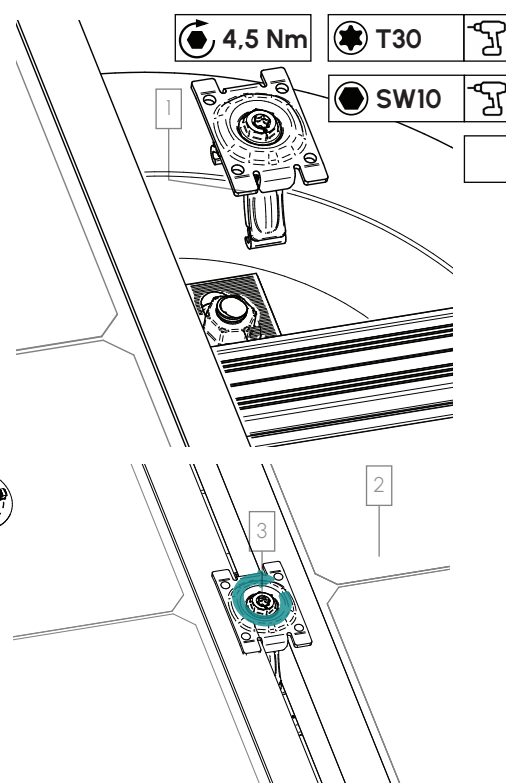
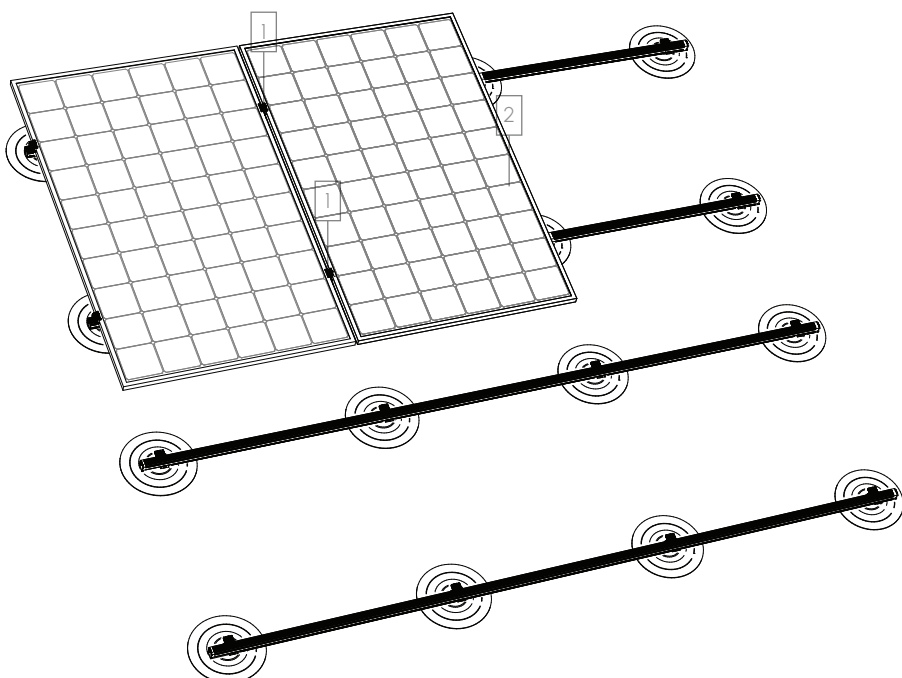
ASSEMBLY INSTRUCTIONS

10 Place the first PV module (end clamp)



Place the end clamps (1) at the end of the mounting rail. Ensure that the PV module is positioned firmly against the clamp. Tighten the clamps with a minimum torque of 4.5 N·m.

10 Install the middle clamp

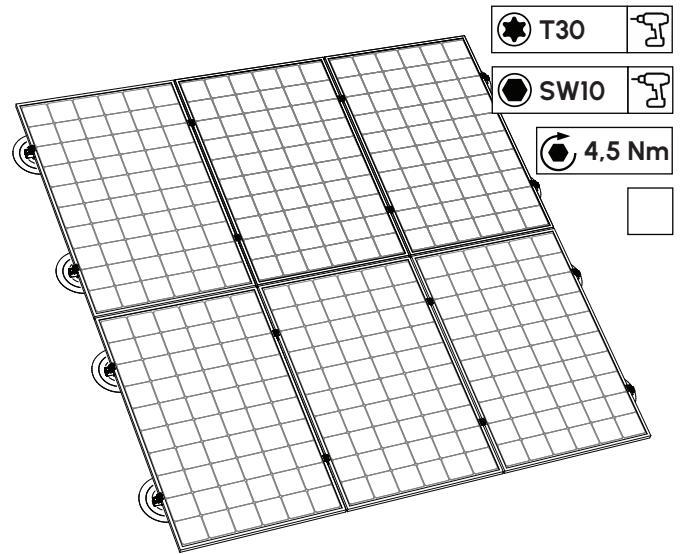


Install the mid clamp (1) and slide it tightly against the already mounted PV module. Do not tighten the clamp until the next PV module (2) has been placed. Then tighten the clamp to 4.5 N·m (3).

ASSEMBLY INSTRUCTIONS

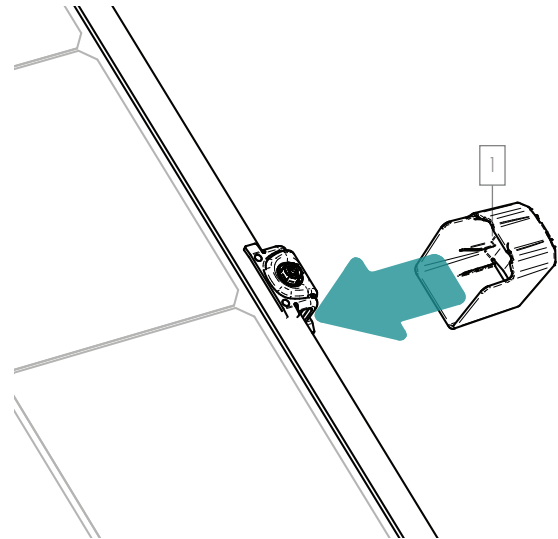
11 Complete the installation of the full PV array

Repeat all steps for each subsequent row of PV modules. By maintaining a spacing of 12 mm between the modules, the best visual result is achieved.

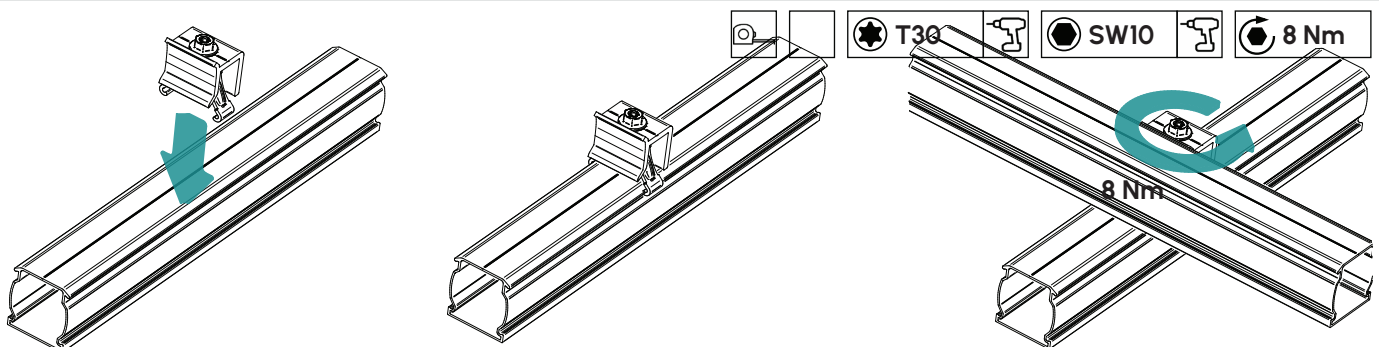


12 Install the end cap

Install the end cap



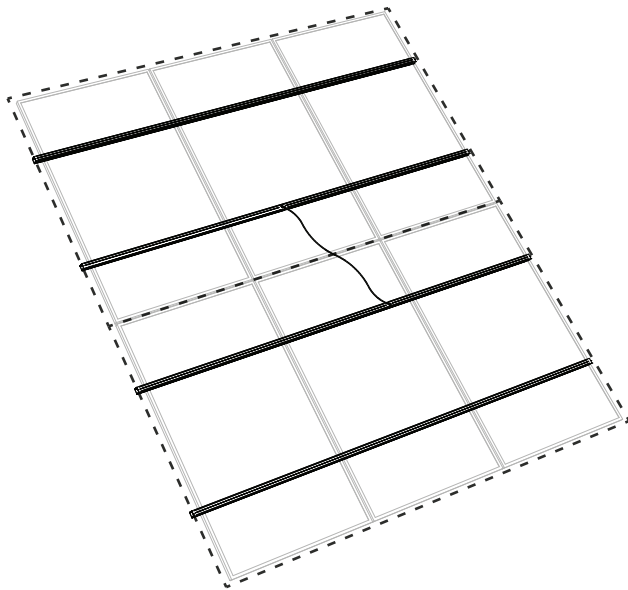
tip 4 Cross rail (using angle connector)



To install a cross rail, the cross connector must first be installed. Place the second mounting rail perpendicular to the first rail. Then tighten the bolt to 8 N·m.

ASSEMBLY INSTRUCTIONS

12 Potential Equalization



The clamps of Cobalt Mounting Systems are equipped with integrated equipotential bonding, ensuring that the modules within the same row are interconnected.

The rows can be interconnected according to the attached schematic. To achieve equipotential bonding between rows and towards the installation, refer to the applicable standards.

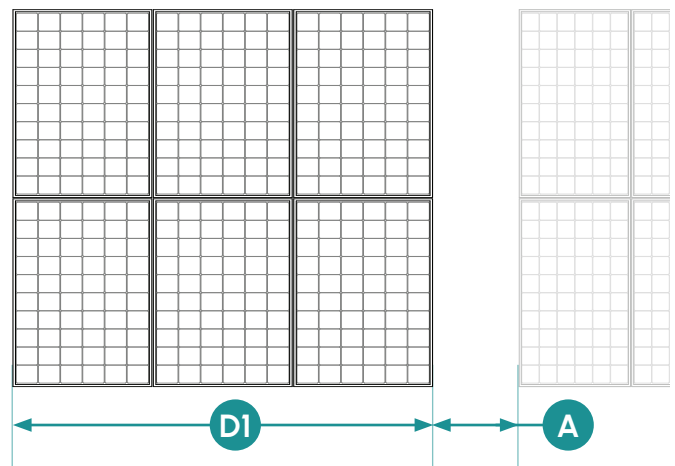
For further instructions or requirements regarding equipotential bonding and grounding, consult NEN 1010.

13 Expansion joints

To prevent damage caused by thermal expansion, the array must be fitted with expansion joints once it reaches a certain size.
As a rule of thumb, the following distances should be observed:

D1	=	max 21m (21.000mm)
A (spacing)	=	min 150mm

Tip! Use **calculator.cobalt.solar** to automatically calculate expansion fields based on the designed PV module layout.



TERMS AND CONDITIONS

/ Terms and Conditions

Our general terms and conditions apply and can be downloaded from our website at **www.cobalt.solar**.

/ Versions

Although the utmost care is taken in drafting and maintaining this manual, it cannot be guaranteed that all information is always up to date.

Cobalt mounting systems are continuously developed and improved, which means that the installation process may change at any time.

Before installation, please consult our website at **www.cobalt.solar** for the latest instructions. Upon request, we can provide you with the most recent version.

/ Rights

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We reserve the right to make changes as a result of technical progress.

/ Certification

Cobalt products are validated by independent engineering firms.

The studies and validation procedures form the basis for the Cobalt calculation tool and the structural calculations performed by Cobalt for installations.

For certificates, please visit our website at **www.cobalt.solar/nl/tools/downloads**

/ Eurocode

Cobalt mounting systems are designed, calculated, and manufactured in accordance with the Eurocodes, NEN 7250 requirements, their derivatives, and applicable national annexes (listed below):

EN-1990 - Basis of structural design
EN 1991-1-3 - Actions on structures (snowload)
EN 1991-1-3 - Actions on structures (windload)
EN 1993-1-1 - Design of steel structures
EN 1993-1-3 - Design of steel structures
NEN 7250 - Solar energy systems - Integration in roofs and facades
EN 1998 - Design of structures for earthquake resistance
EN 1090 - Standards for Execution of steel structures and aluminium structural all parts
BRL9931 - Mounting solar elements on and to buildings

INSTRUCTION MANUAL

PITCHED ROOF

ROOF ANCHOR