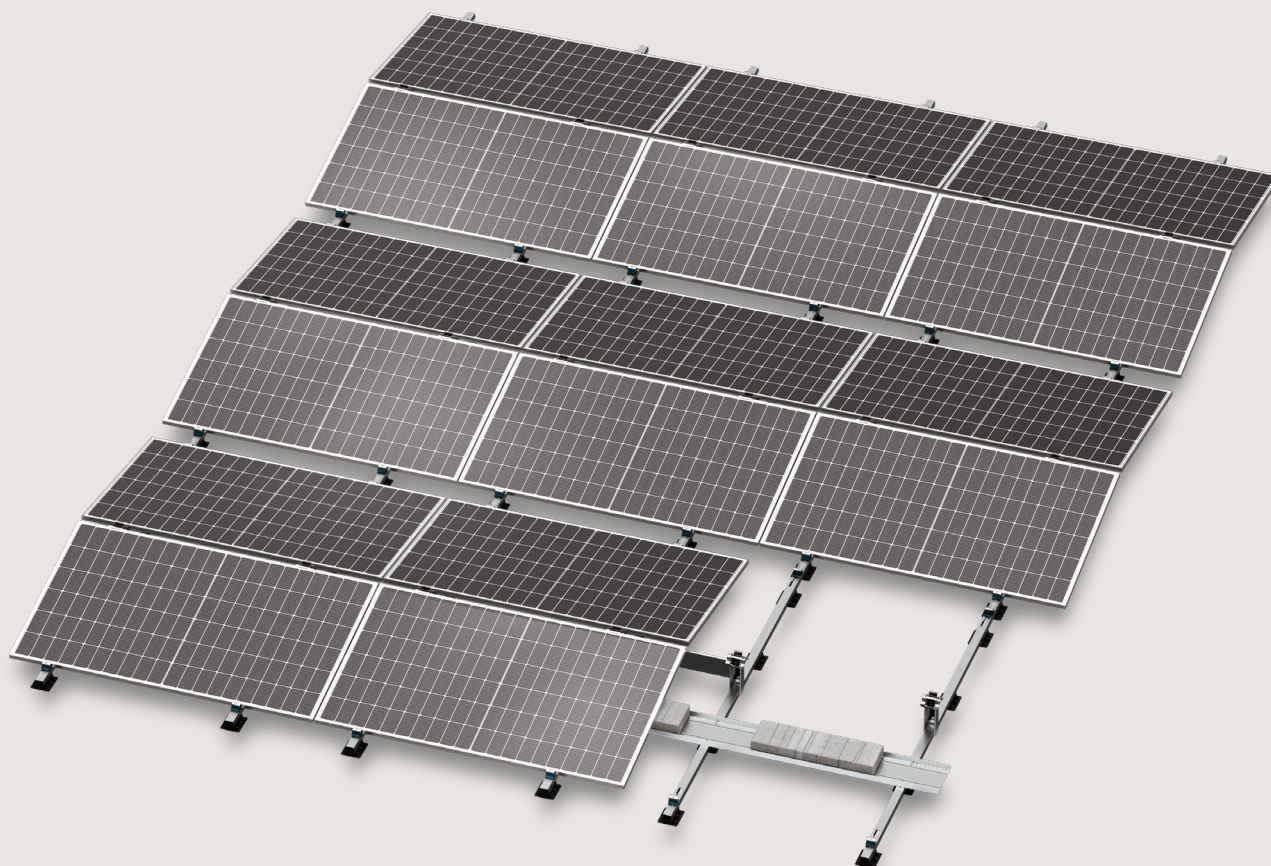


Flow

Symmetrical



This manual is an integral part of the unit. Please read the manual carefully before installation, operation or maintenance. Keep this manual for future reference.

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The main purpose of this installation manual is to provide instructions and detailed procedures for installing and maintaining the Autarco flat roof symmetrical Flow mounting system.

1.1 Safety symbols



DANGER! A danger symbol indicates a hazardous situation, which if not avoided, will result in death or serious injury.



WARNING! Indicates a hazardous situation which, if not avoided, can result in serious injury.



ATTENTION! Attention statements are used to indicate where a part of the process or equipment has a special requirement. Attention statements should always be followed.

1.2 Target audience

This manual is intended for qualified personnel who installs an Autarco solar PV solution with Flow mounting systems. Before any further action, the installer must first read all safety regulations and be aware of the potential danger to operate high-voltage devices such as PV modules.





ATTENTION! Qualified personnel refers to a person with a valid license from the local authority for:


- Installing electrical equipment and PV power systems (up to 1000 V)
- Applying all applicable installation codes and using personal protective equipment (PPE)
- Analyzing and reducing the hazards involved in performing electrical work


Make sure the delivery of components is complete before proceeding. Refer to 2.2 for the list of components.


2.1 Safety instructions


 **DANGER!** Do not install during severe or sub-zero weather conditions, do not install during strong winds.


 **WARNING!** Always follow the national safety regulations in the country of installation.


 **WARNING!** Never step or sit on the glass surface of a solar module. The glass may break, resulting in shock or bodily injury. The module may also stop generating power.


 **WARNING!** Always use the supplied parts to attach the solar modules and mounts. Use of other parts is dangerous and may cause the solar modules or mounts to loosen or fall. Ensure that the delivery is complete before installation.


 **WARNING!** Always use the configuration and ballast plan derived from Helios during installation.


 **WARNING!** Check that the roof covering is in good condition, the roof structures are strong enough to support the complete solar system as well as extra loads, in addition to wind and snow loads.


 **WARNING!** Check that the roof covering can withstand the maximum point load of the feet of the Flow system. If necessary, the point load can be reduced by using additional feet.

 **DANGER!** Do not place heavy pallets on the roof, especially those carrying modules ballast racks. Always employ suitable safety measures on the roof such as fall protection.

 **WARNING!** Always wear a safety harness and place bannisters along the roof edge to prevent falls.

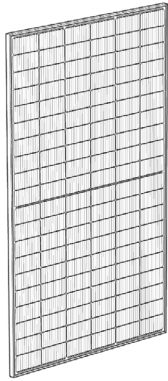
 **ATTENTION!** Place the system at least 30 cm from the edge of the roof.

 **ATTENTION!** Carry out system installation with at least two trained installers, and always keep a copy of the configuration, ballast plan and this manual with the project documentation.

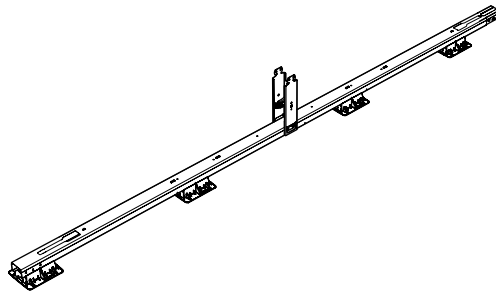
 **ATTENTION!** The installation, maintenance, recycling and disposal of the mounting components must be performed by qualified personnel in compliance with national and local standards and regulations.

Any unauthorized actions including modification of product functionality of any form will affect the validation of warranty service; Autarco may deny the obligation of warranty service accordingly.

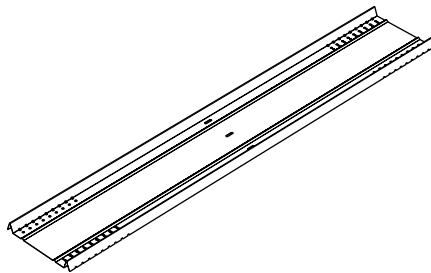
1. Solar modules
S1.XXX



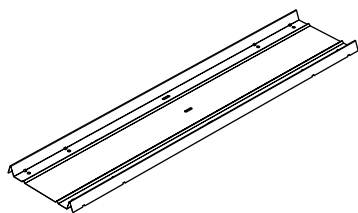
2. Base assembly unit
M3.FBS2300 / 2460 / 2785



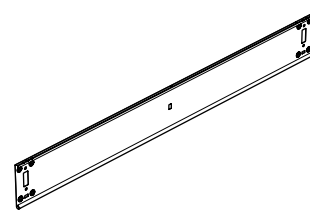
3. Ballast plate
M3.FBP-1580



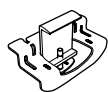
4. Ballast connector
M3.FBC-1130



5. Connector plate
M3.FCP-750 / 1050



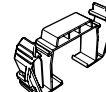
6. Top clamp
M3.FTC



7. Bottom clamp
M3.FBC



8. Cable clip
M3.FCC

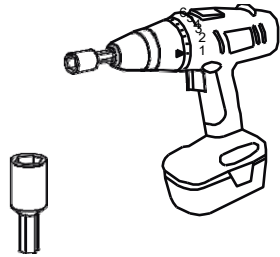


Please note the component numberings as they will be referenced in the installation section.

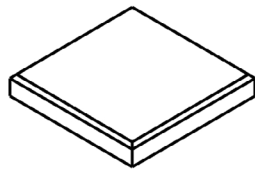
A. Short Screw (provided)
M3.MSS



Electric Screw Driver with 10mm
socket bit



Weights for ballast e.g. Ballast Tiles



Squaring Tool, e.g.

- a. Folding square
- b. Laser tool
- c. Marker and ruler
- d. Chalk line reel + chalk

Measuring Tape (if solar panels are not yet in hand)

The configuration and ballast plans are project specific and calculated using Autarco’s Helios remote survey tool. Please follow the exact instructions of the configuration and ballast plans.

Below is an example of a ballast plan screenshot. The numbers on the solar panels represent how many ballast units or tiles are needed at that position. The weight of each ballast unit can also be adjusted in the drop-down menu.

The minimum clearance of solar panels from the roof edges, gutters and ridges is typically 30cm (please check with your local building regulations before proceeding).



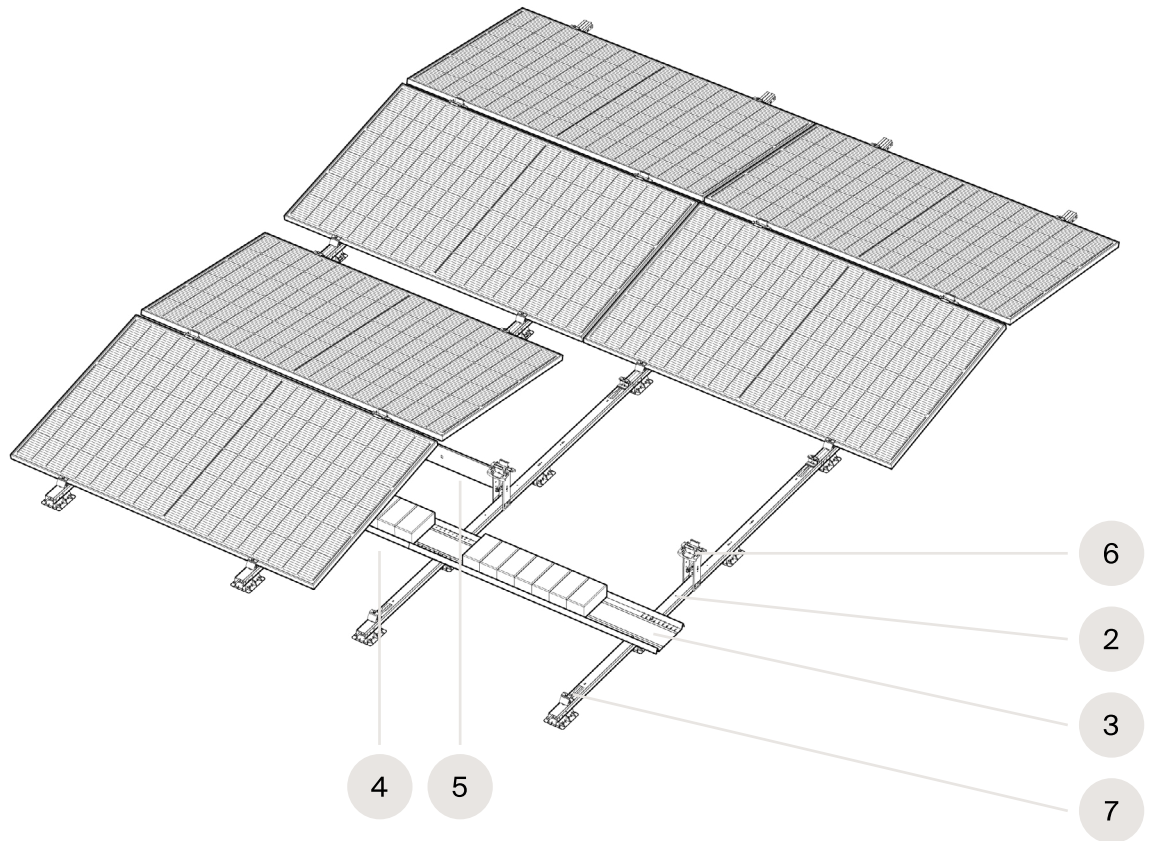
WARNING! Every configuration and ballast plan is project specific. Always use the Helios ballast calculator for every Flow project.



WARNING! Only systems installed according to the configuration and ballast plan from the Helios calculator are eligible for the Autarco product warranty.

The screenshot displays the Helios software interface. On the left, the 'Ballast' configuration panel is visible, showing settings for 'Edge zone' (50 cm), 'Basic wind speed' (24.5 m/s), 'Surroundings' (checkboxes for building height, open area, and distance from water), 'Roofing type' (Bitumen), and 'Tile' (21 x 10.5 x 8 cm (4 kg)). Summary statistics include 506 tiles, 41 racks, and an average weight of 18.8 kg/m². On the right, an aerial view of a roof shows a grid of solar panels. Each panel is labeled with a number representing the required ballast units. Dimensions of the array are shown as 18.40 m, 21.86 m, 21.51 m, and 16.73 m. Two callout boxes are present: one pointing to the 'Tile' selection in the configuration panel with the text 'Weight of each Ballast unit/tile', and another pointing to the numbers on the panel grid with the text 'Number of Ballast units/tiles needed'.

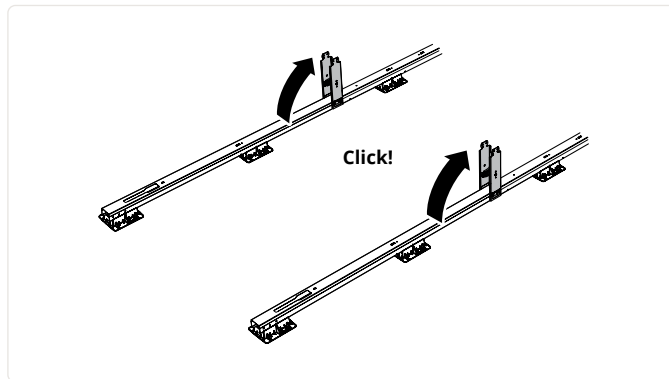
Exploded view of the Matrix Mounting System installation. See pages 7 and 8 for component numberings.



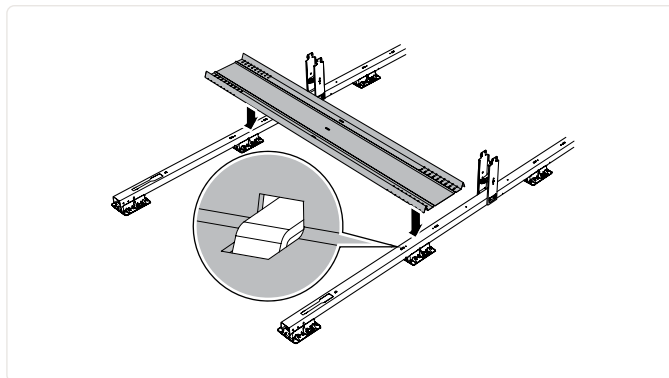
An overview of the installation steps for the Matrix Mounting System:

- 3.1 Positioning the rows
- 3.2 Placing the panels
- 3.3 Finishing

1. Place the first row of base units on the roof according to the configuration plan.



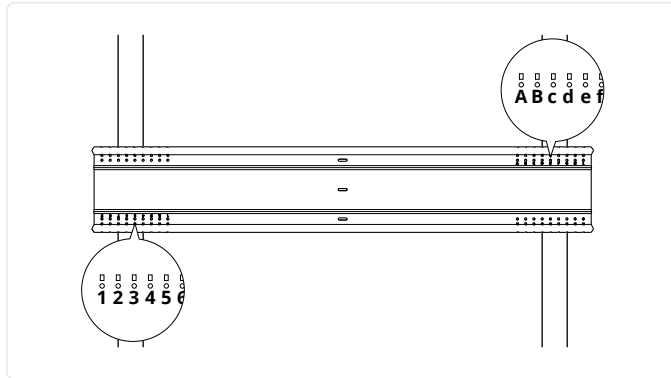
2. Lift up the pillars until you hear a click!



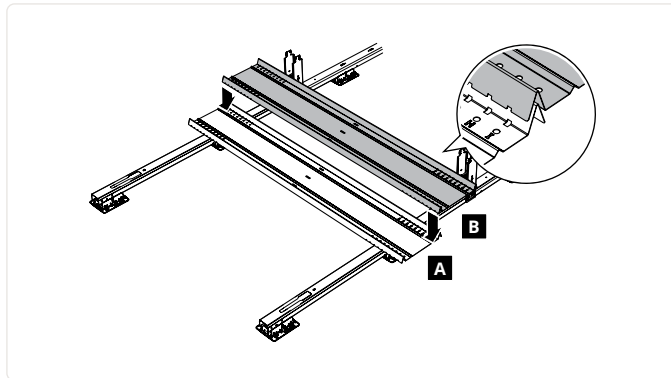
- 3A. In the case of a single ballast rack:
Place the ballast rack across the two base units below the panel position.



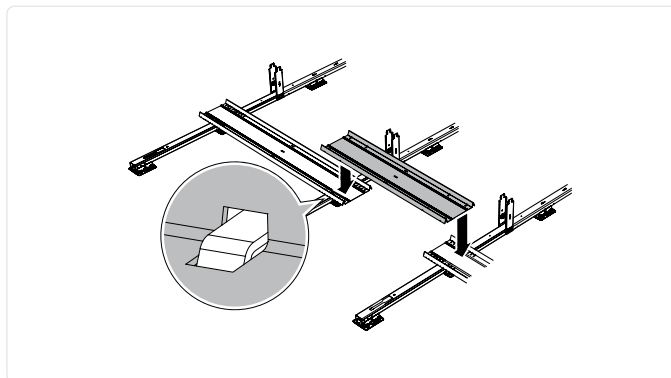
ATTENTION! Do not screw down the ballast rack yet.



ATTENTION! The ballast rack features numbers and letters. The number-letter combination of the panel used can be found in the configuration plan, or in the back of this manual.

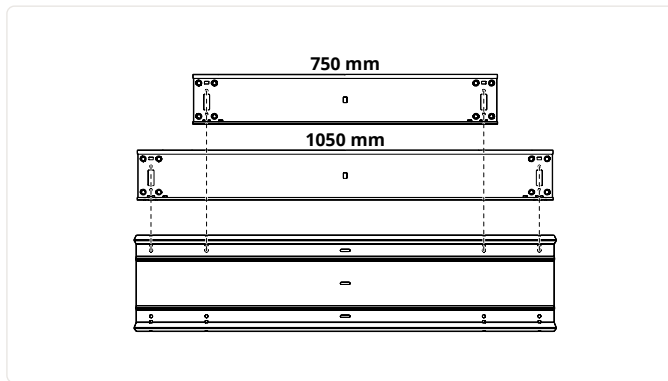


- 3B. In the case of double ballast racks:
Place a ballast rack at position A and position B.

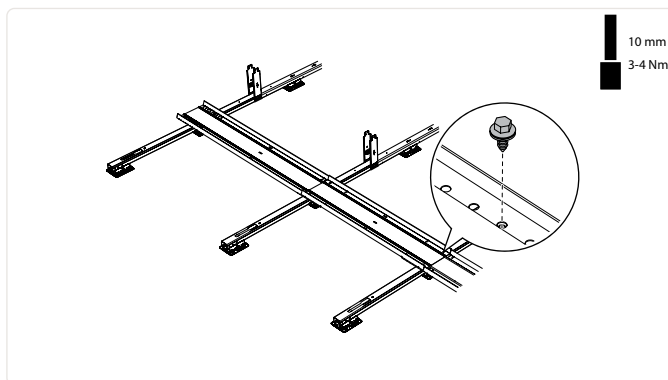


4. Place the ballast connector between the ballast racks.

Mounting system



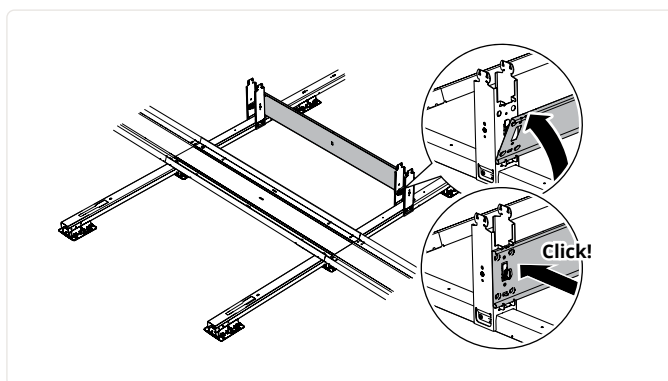
ATTENTION! Make sure the holes used in the ballast connector match the length of the connector plate.



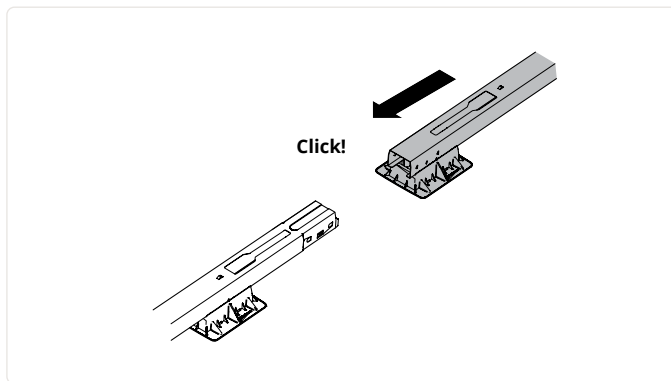
5. Fix the ballast rack with four short screws.



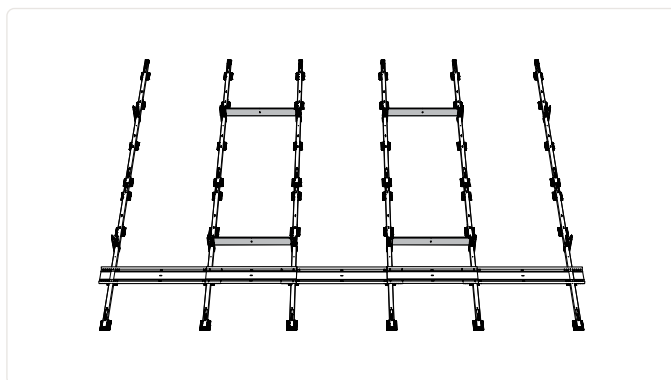
ATTENTION! When using double ballast racks, only the first ballast rack needs to be fixed with screws.



6. Place the connector plate between the pillars. Align the holes of the connector plate with the holes in the pillars. Press down the connector plate until you hear a click.
7. Repeat steps 3 to 6 for the first row of base units.



8. Place the next row(s) of base units on the roof according to the configuration plan. Slide the base units into each other until you hear a click.

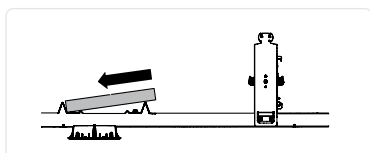


9. Place all the remaining connector plates between the panel positions.
10. Place the remaining ballast racks according to the ballast plan.
11. Place the ballast according to the ballast plan.

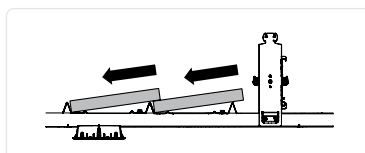


ATTENTION!

- Only use the type of ballast described in the ballast plan.
- Never stack ballast.
- When using tiles as ballast, place the tiles as shown below.



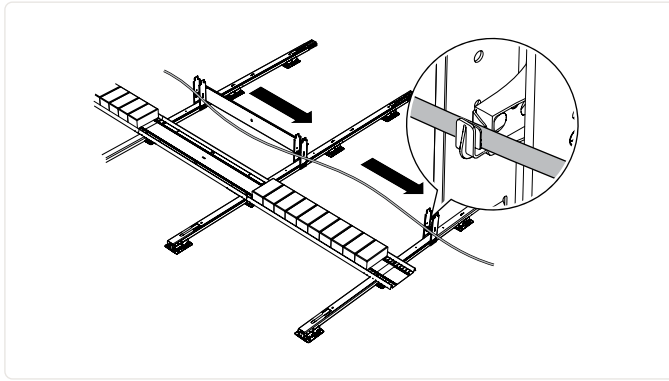
Single ballast rack

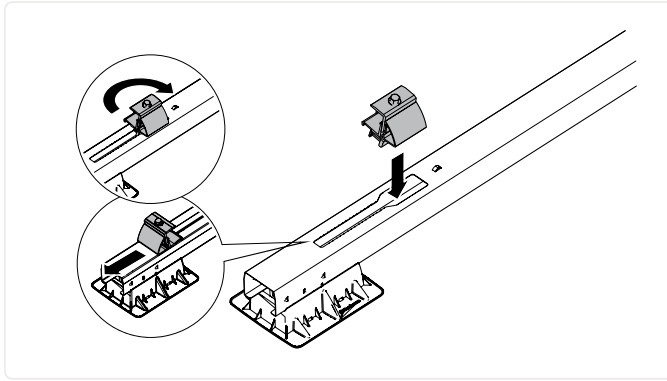


Double ballast rack

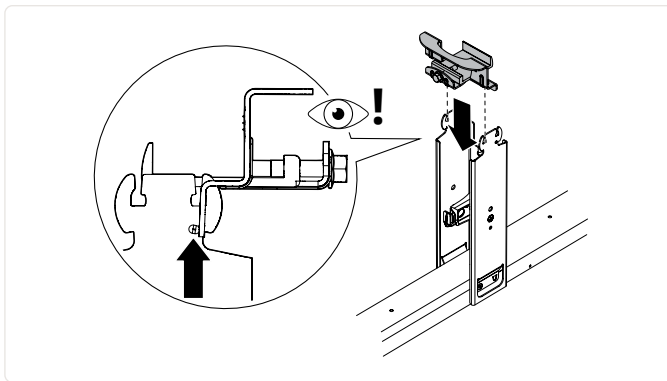
12. Lay out the return cables.

Mounting system





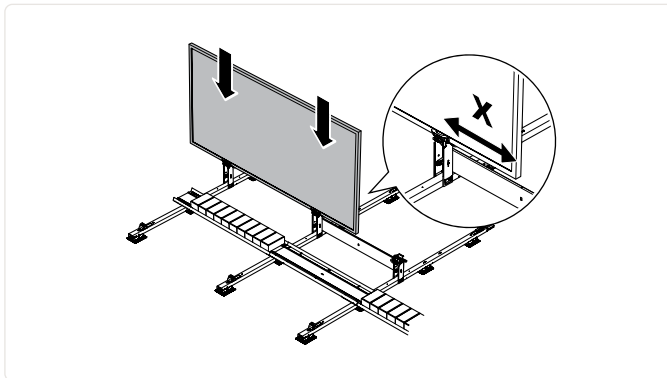
13. Twist the bottom clamps into the base units and slide them backwards into the channel.



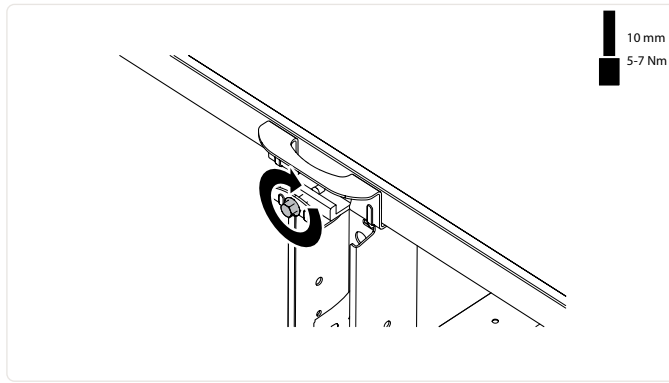
14. Insert the top clamps facing upwards into one side of the pillars.



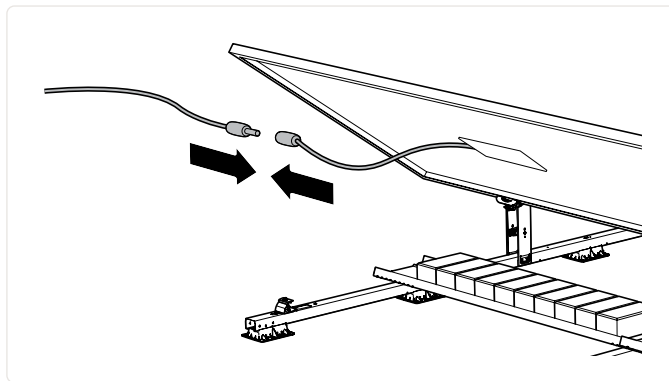
ATTENTION! Make sure the top clamp is in the front of the ridge of the pillar, so that the clamp remains facing upwards.



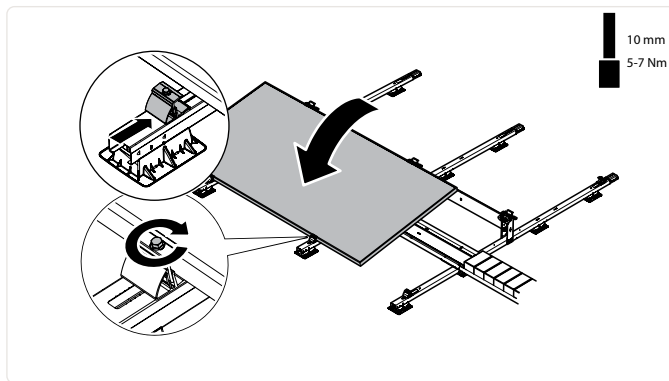
15. Place the panel upright into the top clamps. Align the panel so that the distance from the short side of the panel to the clamp (x) is equal on both sides.



16. Tighten the screws of the top clamps.

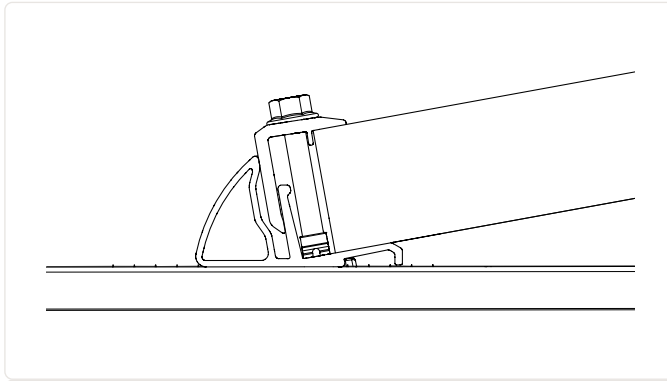


17. Connect the panel cable..



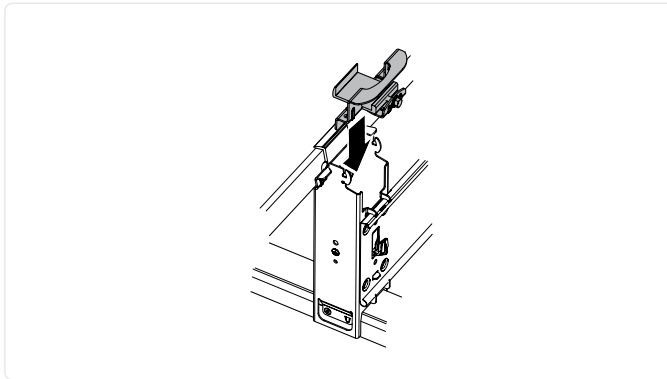
18. Turn the panel downwards.

19. Slide the lower clamps against the panel and tighten the screws.

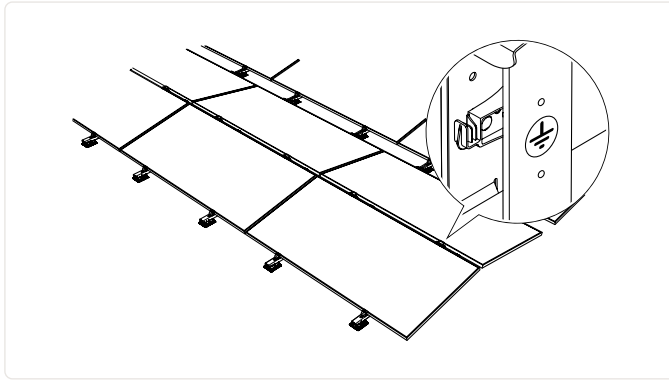


Correct mounting of lower clamp

20. Repeat steps 15 to 19 to lay the rest of the first row of panels.



21. Insert the top clamps facing upwards into the other side of the pillars.
22. Repeat steps 15 to 19 to lay the rest of the rows.



23. Ground the system. Use the grounding option on the side of the pillar.



ATTENTION! Check that all screws and clamps are firmly in place upon completion of the installation.

Ballast plate positioning for Autarco panel series, according to panel length.

Autarco panel series Cells/Water size	##H series 72/166	##L series 60/182	##M series 66/182	##N series 72/182	##Q series 78/182
Panel type	MHH	MHL, TBL, TGL	MHM	MHN, TBN	TNQ
Ballast plate position	G7	D3	G7	E5	I8
Panel gap (mm)	31	22	31	22	10
Base assembly	M3.FBS-2300	M3.FBS-2460	M3.FBS-2460	M3.FBS-2460	M3.FBS-2460
Connector plate	M3.FCP-750	M3.FCP-750	M3.FCP-750	M3.FCP-1050	M3.FCP-1050
Panel length(mm)	2094	1903	2094	2278	2465
Panel width(mm)	1038	1134	1134	1134	1134
Mechanical Load	5400 Pa (front) / 2400 Pa (back)				
Material	Magnelis®, aluminium, stainless steel				
Suitable roof types	Flat roofs (Bitumen, PVC, EPDM, TPO); Up to 5° surface inclination				

If the Autarco panel you are using is not mentioned in the above table, please refer to the table below to determine the correct position of the ballast rack according to respective panel length.

Flow Connector Plate M3.FCP-750		Flow Connector Plate M3.FCP-1050		Position
Minimum panel length (mm)	Maximum panel length (mm)	Minimum panel length (mm)	Maximum panel length (mm)	
1776	1800	-	-	A1
1801	1825	-	-	A2
1826	1850	-	-	B2
1851	1875	-	-	B3
1876	1900	-	-	C3
1901	1925	2201	2225	D3
1926	1950	2226	2250	D4
1951	1975	2251	2275	E4
1976	2000	2276	2300	E5
2001	2025	2301	2325	F5
2026	2050	2326	2350	F6
2051	2075	2351	2375	G6
2076	2100	2376	2400	G7
2101	2125	2401	2425	H7
2126	2150	2426	2450	H8
2151	2175	2451	2475	I8
2176	2200	2476	2500	I9

The national regulations in the country of installation must be observed at all times. Make sure you are aware of the safety measures prescribed by Sunbeam or the country of installation. If in doubt, consult your safety officer. Ensure safety or health hazards are shared with the employer, supervisor and employee carrying out the work for their information.

General safety

- For the Netherlands: Working Conditions Decree Articles 3.16, 7.23 and 8.1 to 8.3.
- For Belgium: General Regulations for Occupational Health and Safety (ARAB).

Electrical installation

For the Netherlands:

- NEN1010 - Chapter 7.12
- NPR 5310 - Chapter 7.12
- NEN 3140

For Belgium:

- General Regulations on Electrical Installations (AREI).

Roof construction and various loads

General:

- EN 1990
- EN 1991-1-3
- EN 1991-1-4

For the Netherlands:

- NEN 7250

To comply with European Directive 2002/96/EC on waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Ignoring this EU Directive may have severe effects on the environment and your health.