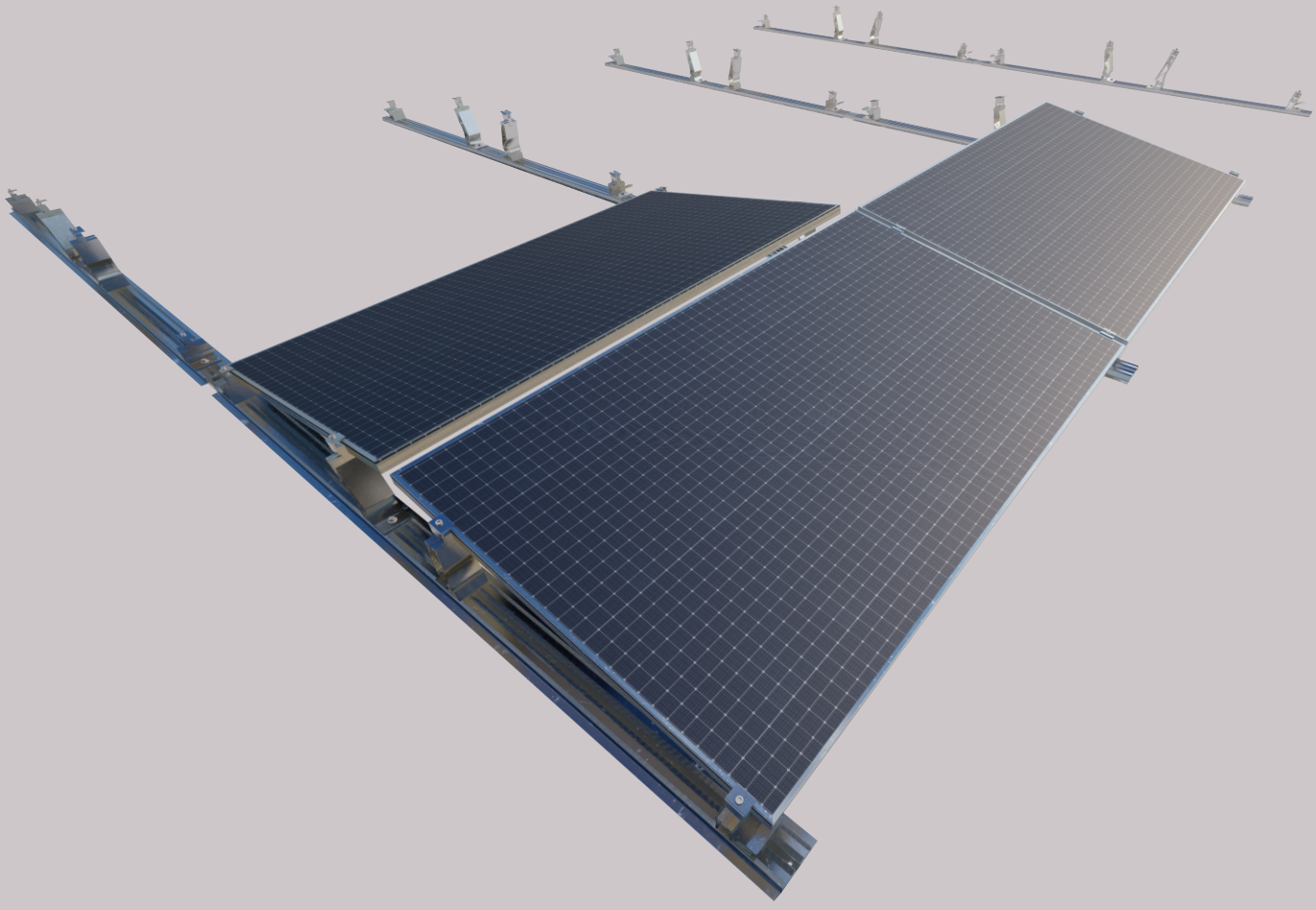
Instructions

Mounting railing for flat roof

East/West orientation system



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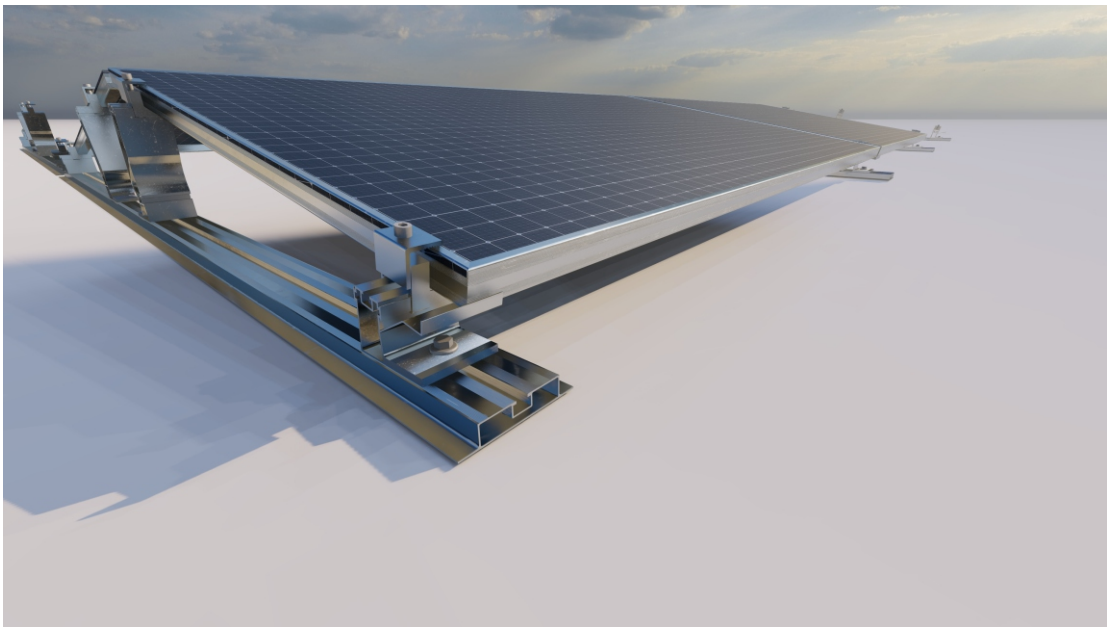
1.1 INTENDED USE

East West mounting system is designed for PV modules and can be installed in East West direction with 10° or 12° angle.

The system is suitable for easy installation in flat roof.

East West system produce energy in the morning using the east faced panels and later in the day using west faced panels and this system is the best choice to maximise morning and afternoon energy generation on a flat roof.



1.2 SYSTEM DESCRIPTION

East West system, enables fitting more panels on the roof because they are arranged close to each other and there are fewer shading issues between the panels.

This system is available in installation angle 10° or 12°.

The profiles for the substructure and the profiles for the accessories are produced by the extrusion process and are used as raw material, billets with EN AW 6060 and 6063 alloy.

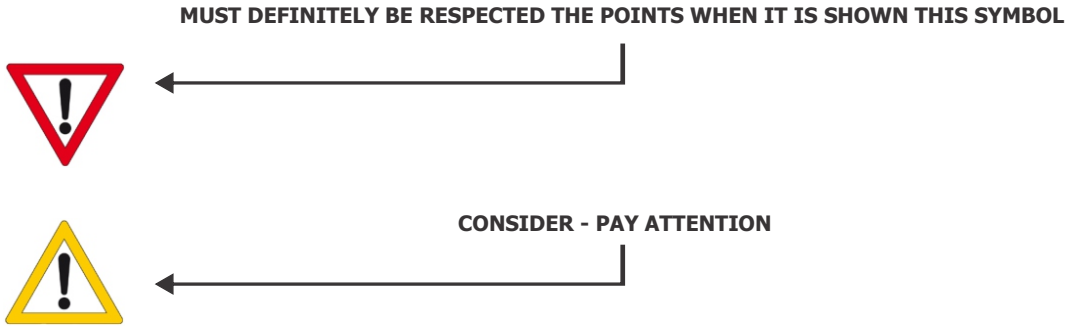
The profiles are heat-treated to increase product solidity and bending stability, to decrease relative elongation, to increase the strength of the profile and to reduce internal tensions. For assembling are used A2-70 inox screws and bolts.

1.3 WARNINGS

The warnings used in this instruction manual lay out the critical points where attention should be paid for the proper functioning of the assembly process and optimal results of the final product.

They consist of:

1. Warnings on tightening bolts and fixing accessories
2. Warnings on the care that must be taken when fixing the solar panel
3. The attention that must be shown when moving and working at height
4. The care that must be taken to check the materials before assembly



1.4 GENERAL INFORMATION - STANDARDS AND GUIDELINES

The consistency of quality, technical conditions and required performance of products and service are secured from continuos monitoring beginning from purchasing, fabrication process until final products delivery.

The aim of the present manual describes how to keep under control the montage process of the photovoltaic substructures

All photovoltaic systems are installed referring to the project and the calculations performed.

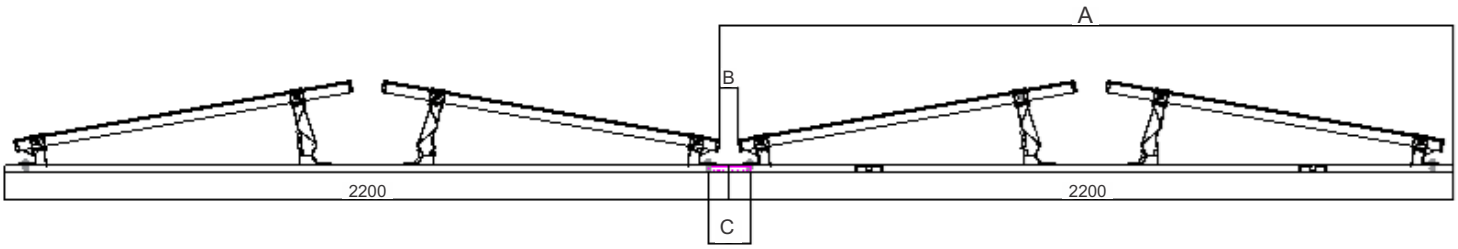
An important procedure for the successful installation of a product in the site is the selection of the right assembly materials and the visual control and checking over possible deformations caused during transport to ensure the conformity of all products before the assembly process.

The manufacturer declares that all the product properties meets the requirements for optimal fuctionality and quality in compliance with the intended use.

Do not take shortcuts, always follow the rules . Wear appropriate and safe work clothing and footwear. Keep workspace and walkways clean.

The installation process is recommended to be carried out by trained specialists

1.5 RAIL OPTIONS

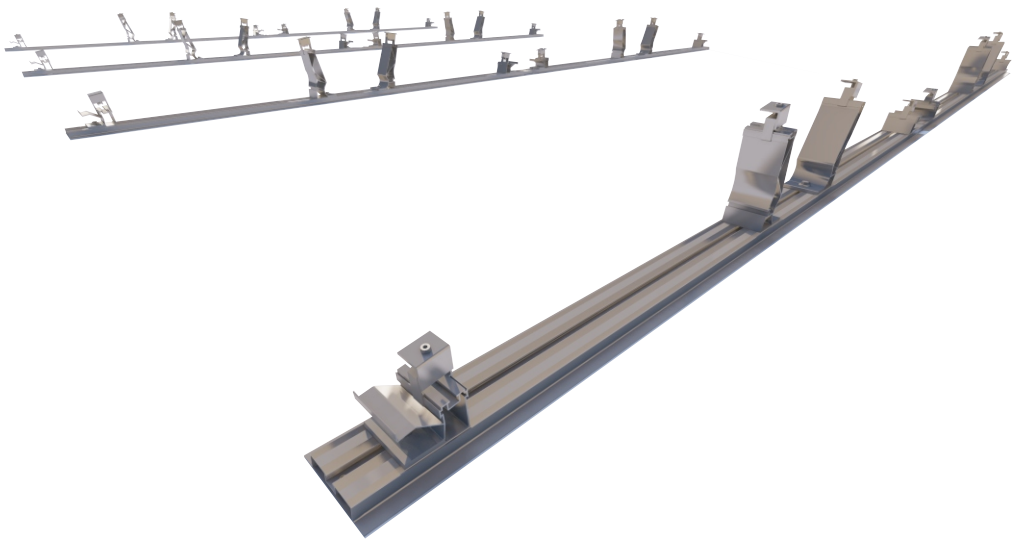


A in mm	B in mm	C in mm
2200 mm	43 mm	127 mm
2200 mm	183 mm	267 mm
2200 mm	283 mm	367 mm
2200 mm	483 mm	567 mm

1.6 SYSTEM BUILD

The system is built for East-West orientation with two angle options, 10 and 12 degrees. The profiles and accessories used are aluminum produced by extrusion and thermally treated. As raw material are used aluminium alloy EN AW 6063 or EN AW 6060 with a temper T6. All the mechanical properties are in accordance to the reference standard EN 755-2 .

For assembly are used only stainless steel bolts, nuts and washers for achieving the optimal quality.

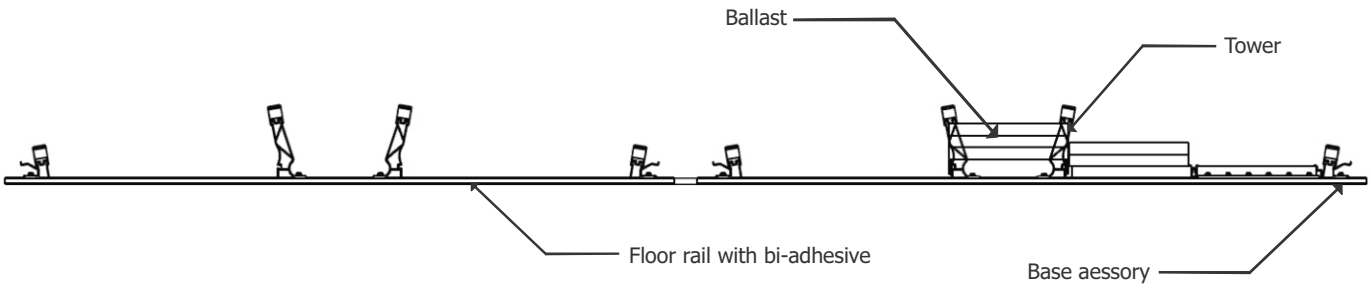


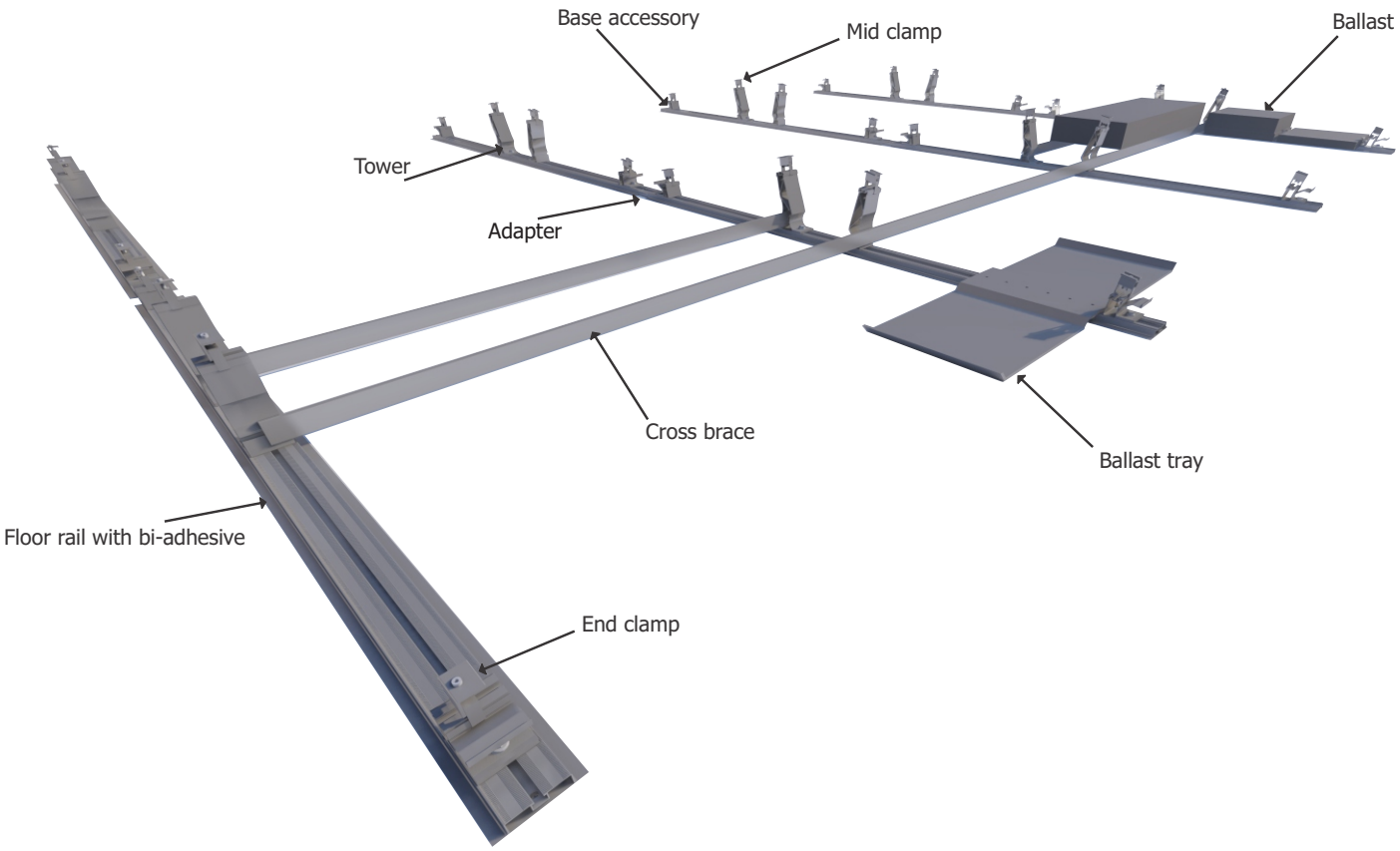
1.6.1 SYSTEM BUILD

To hold the panels in place we have to add weight that is why it is required additional ballasts. To specify the weight of the ballast have to know the parameters and the state of the roof if it is able to support the weight of solar system .

If the building is located in an area with strong winds and severe atmospheric condition it is required to add more weight.

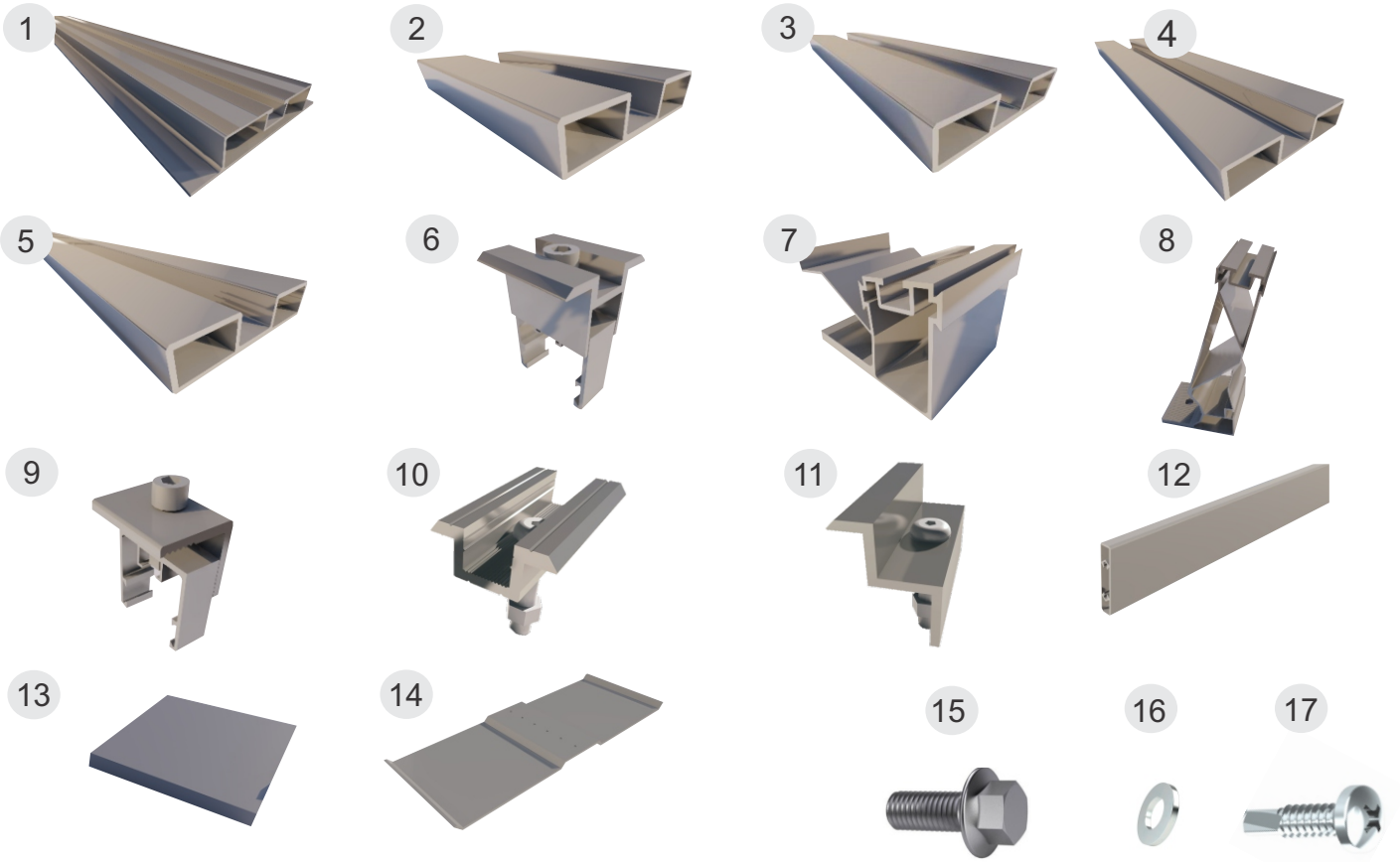
To use ballasts in some places may be useful to prevent issues with wind lift.





2.1 SYSTEM COMPONENTS

Components for roof connection



1 - Floor rail with 5 bi-adhesive 100x110x10 mm

2 - Floor rail adaptor 127 mm

3 - Floor rail adaptor 267 mm

4 - Floor rail adaptor 367 mm

5 - Floor rail adaptor 567 mm

6 - Mid clamp

7 - Base

8 - Tower

9 - End clamp

10 - Mid clamp for fixing ballast

11 - End clamp for fixing ballast

12 - Cross-brace

13 - Ballast 400mmx400mmx40mm

14 - Ballast tray

15 - Hexagon flange bolt din 6921 Stainless Steel M10x20

16 - Flat washer Stainless Steel M10 din 125

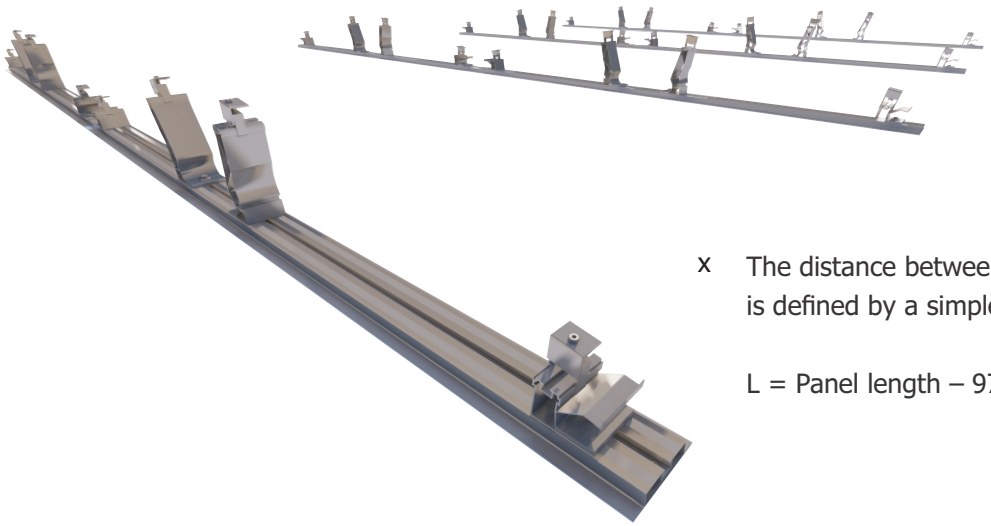
17 - Stainless Steel self drilling screw 3.9x19 din 7504

18 - Hexagon nut Stainless Steel M8 din 934

19 - Screw Mounting 4.8x19

2.2 FLOOR RAIL ASSEMBLY

Make sure to respect the mounting distances according to the planning provided in the project



x The distance between two substructures is defined by a simple calculation as below:

L = Panel length – 97 mm

All floor rails have the 5 bi-adhesive rubber 100x110x10 mm set as the entire length of the profile.

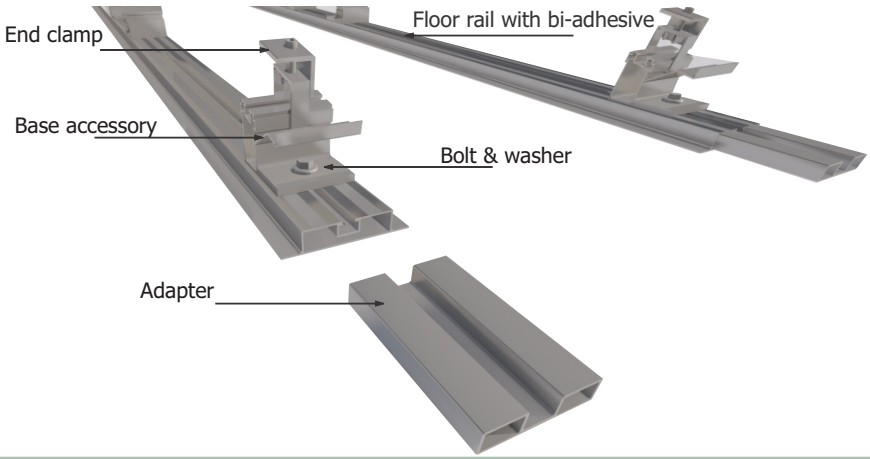
2.3 ADAPTER ASSEMBLY

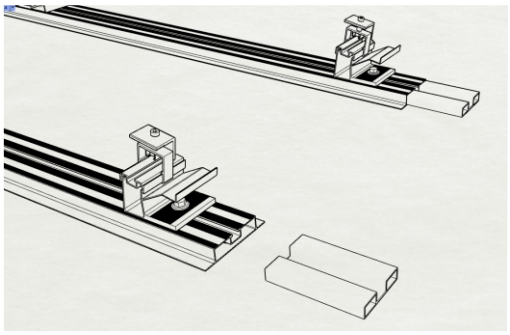
Procedure:

Adapters are used to align and connect the floor rails.
They are connected to floor rails by being inserted up to 25 mm from each side.

Initial work:

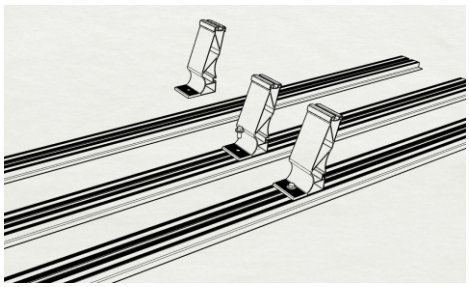
1. Cleaning the surface where assembly will be done
2. Marking the surface where the substructure will be installed according to the project
3. Visual inspection of the material before installation
4. Check the tools necessary for the assembly



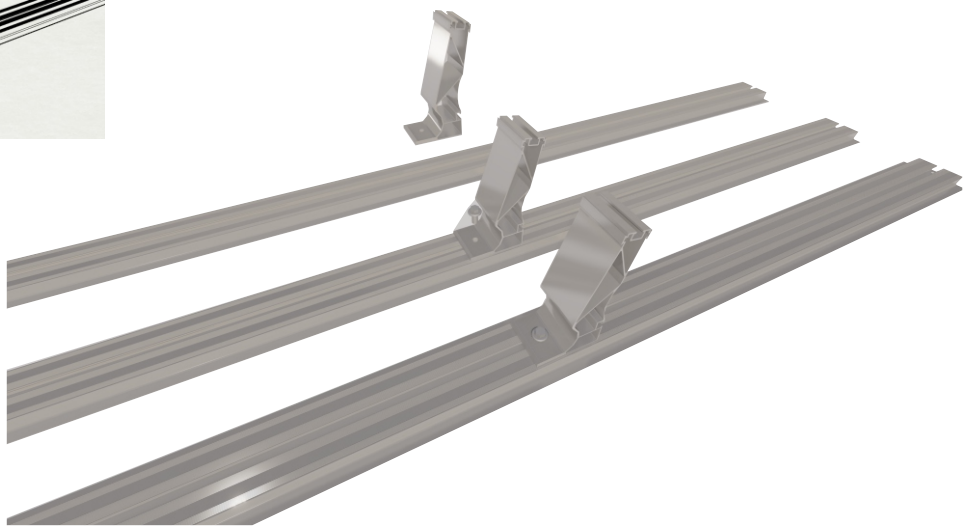


Be careful to respect the dimensions when installing the adapter

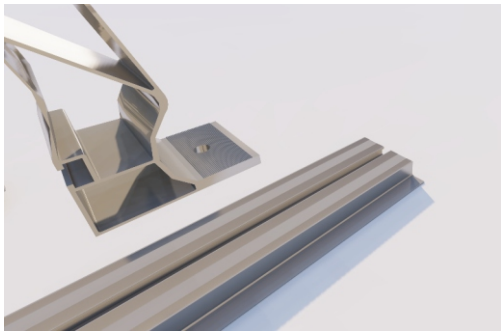
2.4 TOWER ASSEMBLY

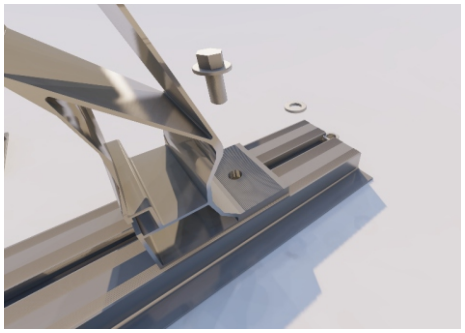


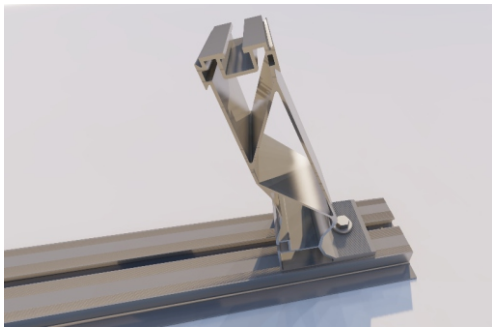
The tower accessory serves to hold the solar panels.



2.5 ASSEMBLY STEPS





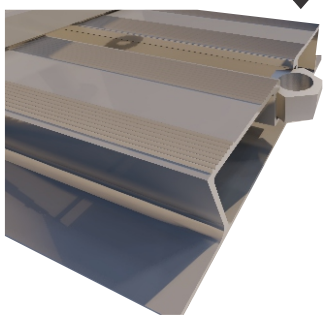


For the assembly of the accessory with the floor rail are used M10x40 bolt din 6921 , M10 washer din 125 and simple nut M10 din 934.

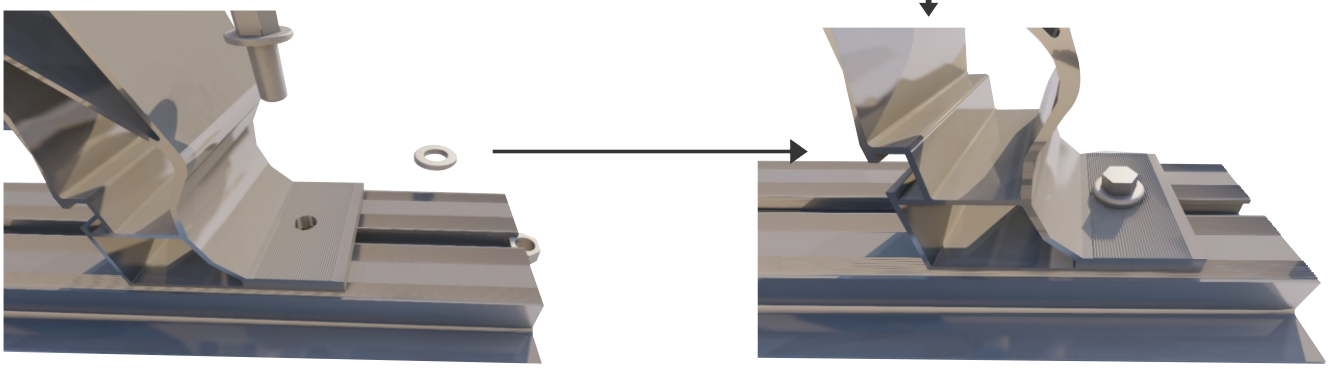
All the assembly materials must be stainless steel because this guarantees longevity, resistance to corrosion, strength and low maintenance.

2.6 ASSEMBLY PROCEDURE

Insert the nut into the profile channel as below



Fix the accessory with the bolt and washer to the floor rail.



Be careful to tighten the bolt well enough but without deforming the floor rail profile area.

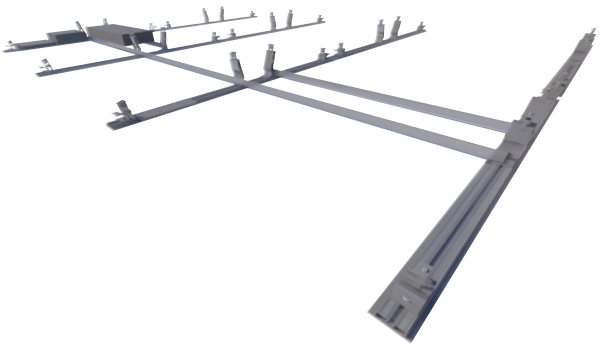
Before mounting the tower accessory, check the technical design to determine the mounting distance to the profile.

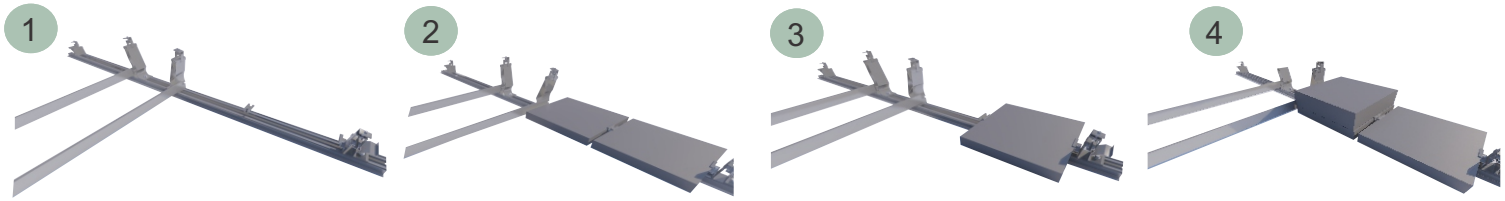
2.7 BALLAST MOUNTING

Ballast are used on flat surface and have easy and fast installation. They keep firm the structures and do not harm the roof surface because are made for non-penetrating application.

The amount of ballast to use is found in the project, which is predetermined depending on the parameters of the building, the location and the atmospheric conditions in that country.

The decision to use ballasts and the determination of their parameters should be made only by a licensed professional engineer. Due to incorrect calculations, there is a possibility that the roof will not be able to handle the load.





Procedure:

Apply the ballast on the floor rail in the positions provided according to the technical project. The ballast must be positioned in a way to permanently prevent sliding, turning or tilting.

Ballast stone size: 400mm x 400mm x 40mm

Pay attention during transportation and placement of ballasts on the floor rail

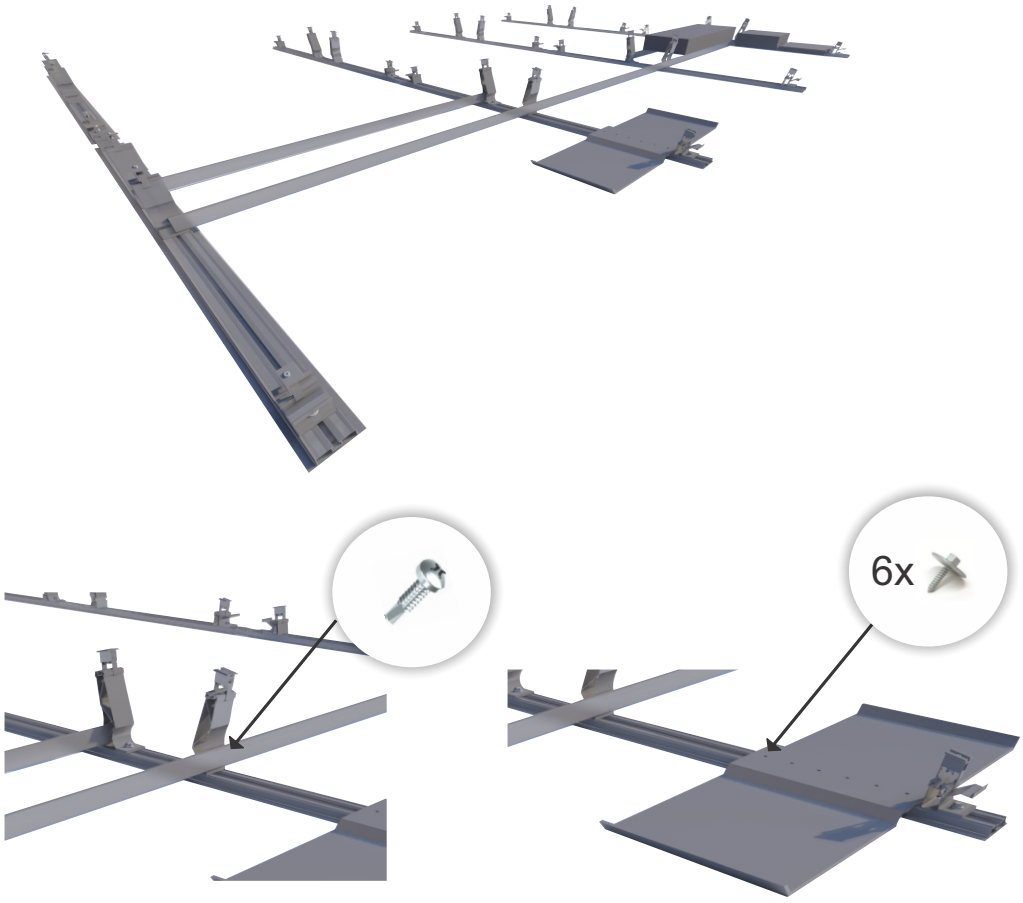
2.8 BALLAST TRAY & CROSS-BRACE

Ballast tray serves to hold the ballast blocks inside.

It is applicable to all flat floors and must be assembled according to the pre-determination in the project

Procedure:

The ballast tray have to be placed in the correct position in the floor rail between the base accessory and the tower according to the project specifications. Mount with 6 mounting screws 4.8x19 located in the middle.



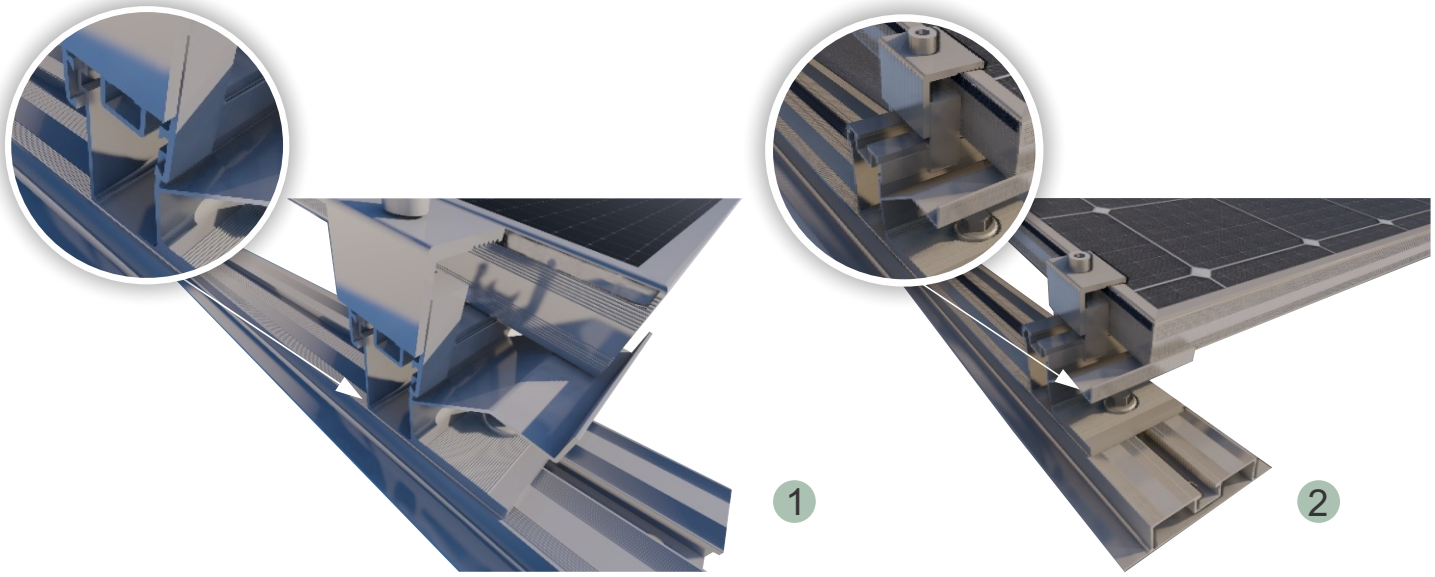
Cross braces are used to support the ballast but also help optimize the static bond.

Procedure :
Cross braces are mounted on the tower up to the center of the accessory with self-tapping screws.

Be careful when assembling the ballast tray and cross-brace screws. Tighten as much as necessary without damaging the material.

2.9 END CLAMP ASSEMBLY

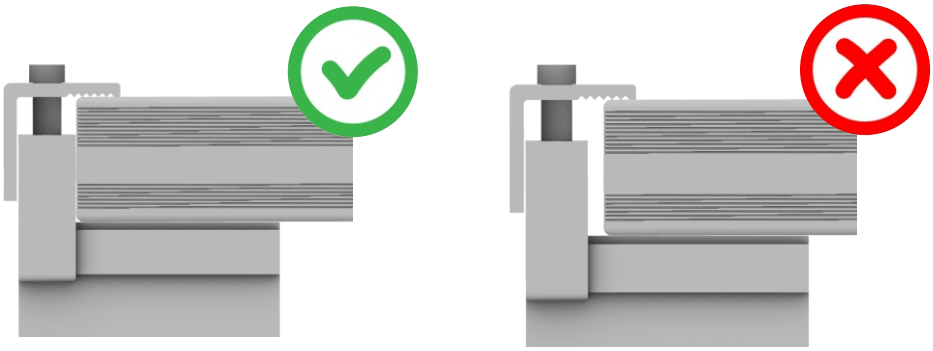
The end clamps must be inserted into the towers and base accessories slots and attached to the panel as it is shown in the picture 1 in the right and 2 in the left.



It must not have space between the end clamp and panel frame and the panel have to be fixed well

Use a hexagon M6 key for tightening the end clamp M8x35 DIN 912 bolt and fix the panel

Defined clamping surface

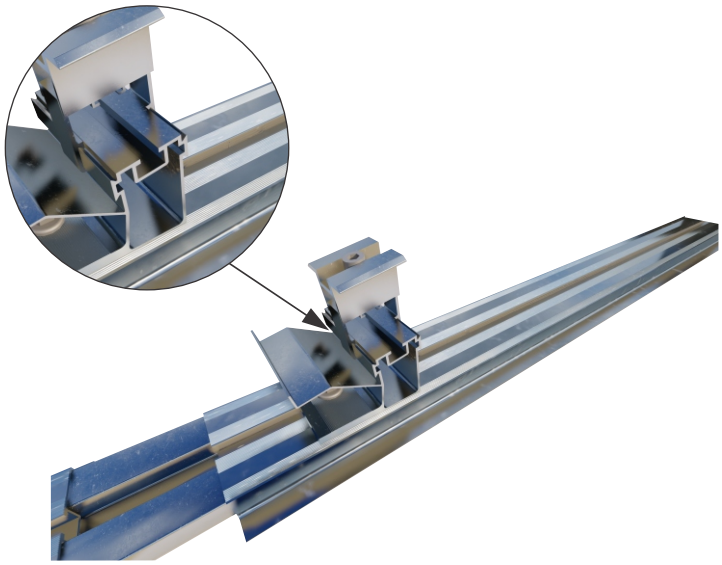


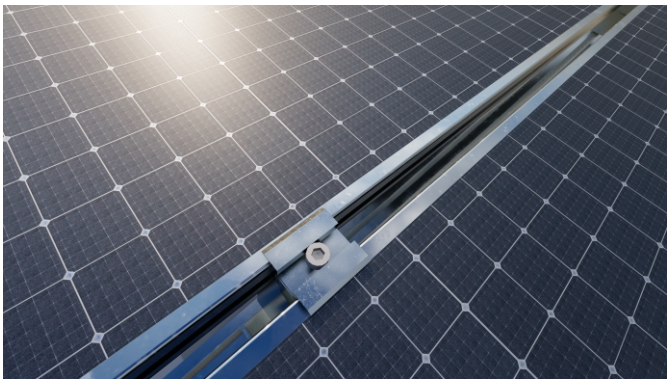
Correct **Incorrect**

Make sure the end clamp fits the tower and base accessory

Make sure that the end accessory is not installed at the edge of the tower and base accessory, since it can create a risk for the accessory to come out

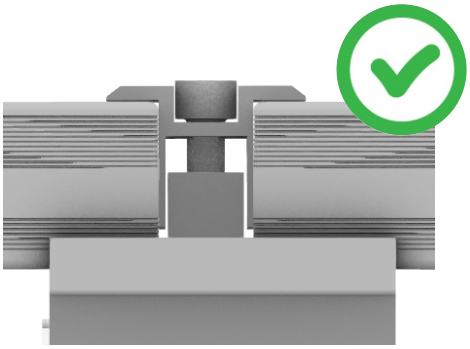
2.10 MID CLAMP ASSEMBLY



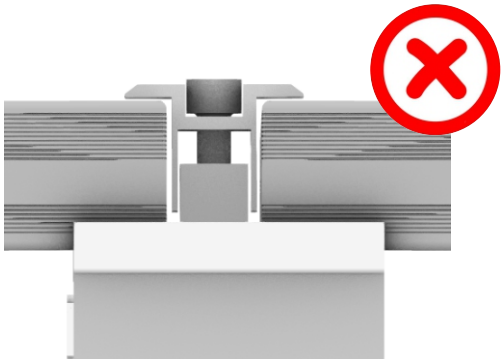


It must not have space between the mid clamp and panel frame and the panel have to be fixed well

Use a hexagon M6 key for tightening the mid clamp M8x35 DIN 912 bolt and fix the panel



Correct



Incorrect

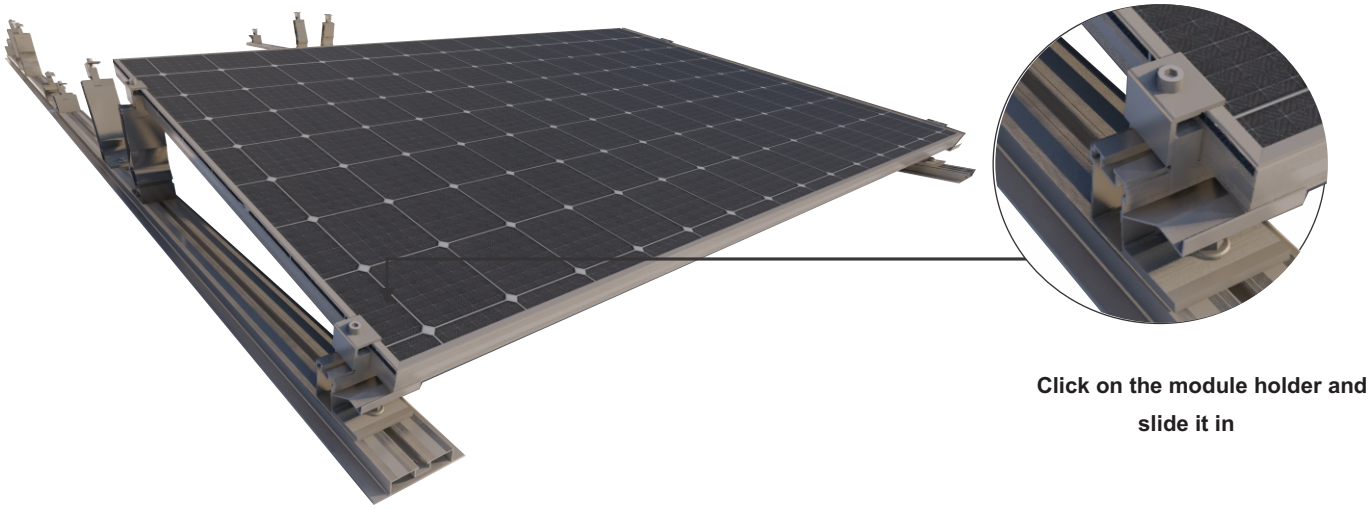
Make sure the mid clamp fits the tower and base accessory

Make sure that the mid accessory is not installed at the edge of the tower and base accessory, since it can create a risk for the accessory to come out

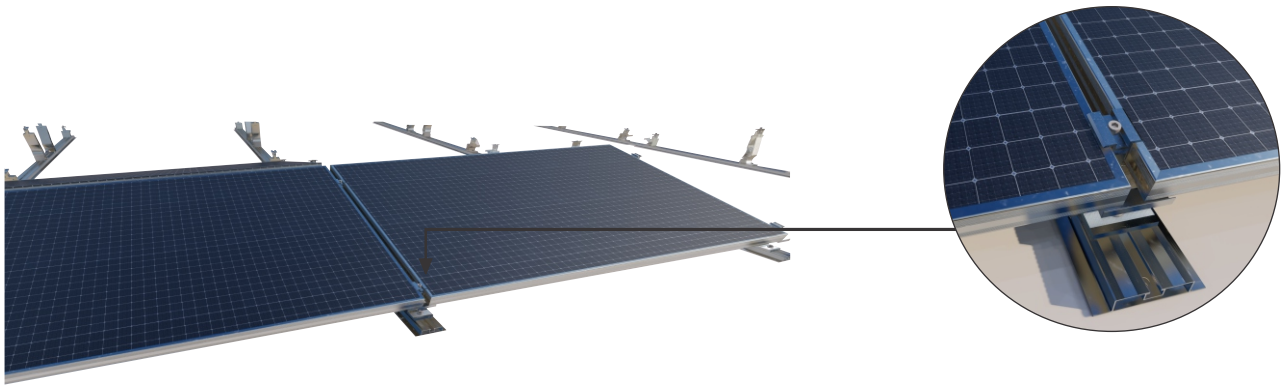
2.11 MODULE ASSEMBLY

After assembling the accessories to the profile, the next step is the assembly of the solar panel.

During assembly, must be careful not to leave a space between the panel clamp and the solar panel. Also must make sure that the clamp fixes the panel by tightening the bolt enough without deforming the frame profile.



Click on the module holder and slide it in



Submit module and Tighten module holder

Be careful during the transportation and installation of the solar panel

Use a hexagon M6 key for tightening the mid clamp M8x35 DIN 912 bolt and fix the panel

3.1 DISASSEMBLY

During the disassembly process, the same requirements must be applied to guarantee safety and preserve the quality of the material and it is recommended that disassembly be performed by a specialized group, as for the assembly.

The instruction must be applied as for the installation but in the opposite order.

All solar panels must be checked that are disconnected from the electrical grid. All the electrical lines of the modules must be separated from the frames.

Be careful when disassembling, transporting and storing the panels. Incorrect dismantling and transportation can lead to damage until the destruction of the product.

Care should be taken during the disassembly of the substructure to preserve it and the installation surface.

4.1 USER AGREEMENT

Every client's order is always analyzed by the company's engineering office going through and approving all the details requested by the client. The customer can be a reselling business (B2B) or an installation company.

The moment of presenting the request, the client shall bring the product's project/drawings with the requirements and technical parameters that must be completed based on the tests through the engineering studios or respective laboratories.

This step should have special attention because construction sites are never the same, considering that different countries and areas have different climatic conditions and rules including static requirements, snow load, wind power, space needed for ventilation, angle and way of aligning the panels, etc.

After the tests are performed and, in the event, that necessary changes are required in the project, our company is ready to complete, adjust and improve any type of technical request, guaranteeing the passing of each required test, responding to the client within 30 days. Our work is not limited to standard products, but always prioritizes the above-mentioned specific requests of the client.

We highly recommend that a specialized group must be employed for the installation of the product.