ASSEMBLY INSTRUCTIONS

SOLARSPEED 3.0

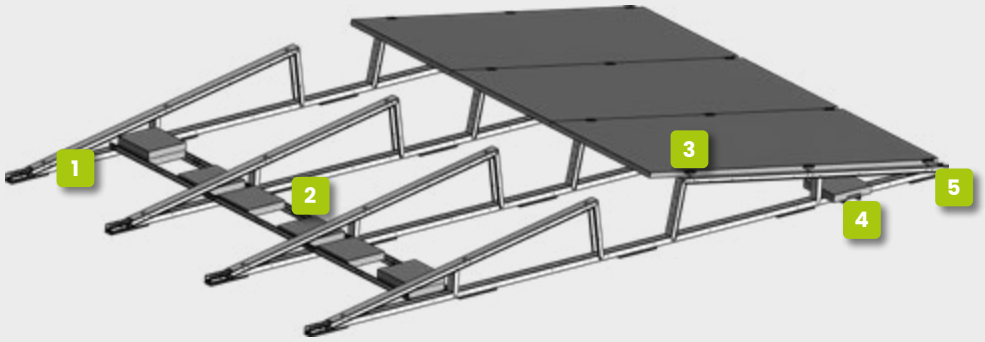
EAST-WEST PORTRAIT INVERSE

180926.ENG

avasco solar

SOLARSPEED

COMPONENTS



STANDARD COMPONENTS

1 basic unit
- semi-assembled triangles
- rail
- protective rubbers*
- vertical reinforcement

2 set of L-profiles

3 clamps + M8 bolts

4 ballast support

5 end rubber

** For PVC roofs use rubber with aluminium underlay.*

FOOTING SYSTEMS

- concrete footing (12kg) + hammer plug
- PP footing
- omega bracket

ADDITIONAL COMPONENTS

- ridge connection
- anchor profile
- C-rail end reinforcement
- centre piece for set of L-profiles

PROVIDED BY INSTALLER

- ballast tiles
- lightning connection
- earthing connection
- solar module

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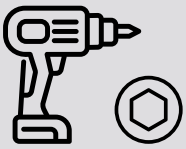
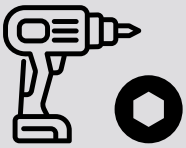
required assembly tools

torque wrench
range 15-30Nm
+
hex 6.0



electric tool
+
socket 3/8”



electric tool
+
socket SW8

hammer
+
driver tool

chalk line

Avasco Solar spacer

prior to assembly

Ensure that the roof surface where the frame will be mounted on is clean, dry, and flat.
Contaminants such as gravel, sand or pebbles can cause roof damage or installation instability.

correct installation of M8 bolts

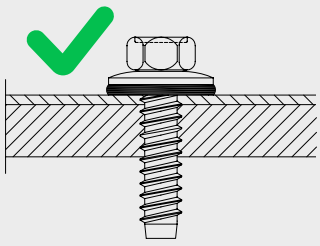
Always tighten the M8 bolts with the correct torque: Minimum 19Nm is required, maximum 25Nm is allowed.

A loss of torque is to be expected: at least 13Nm must be measured during inspection after installing.

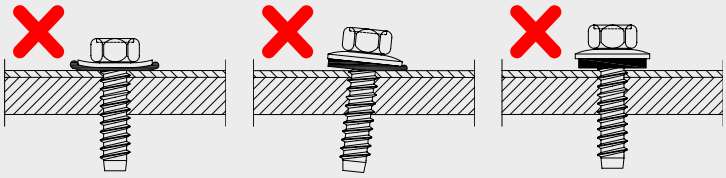
Using an impact wrench is not advised, as it may damage bolts and nuts.

correct installation of sheet metal screws

Prescribed compression EPDM washer: 25% of original thickness.
Use tools with depth control!



Correctly screwed on



Secured too far | Secured too angled | Secured too loosely

Choosing the correct installation tool is essential for the screw to drill and tap as designed. The selected electric tool must have a variable trigger to deliver a controlled speed between 1700 and 2000 rpm without end loading. It should provide torque up to 30Nm with a clutch mechanism to prevent excessive torque and speed, which can cause damage or ‘stripping out’ the screw. Socket 3/8” must be used with sheet metal screws, socket SW8 with self-drilling screws.

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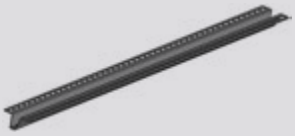
step 1: mounting basic units

step 1.1: from semi-assembled to assembled basic units

required components:

basic unit
(semi-assembled)

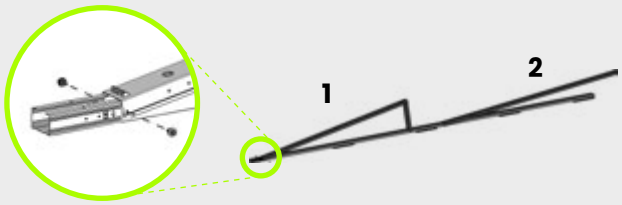
vertical
reinforcement



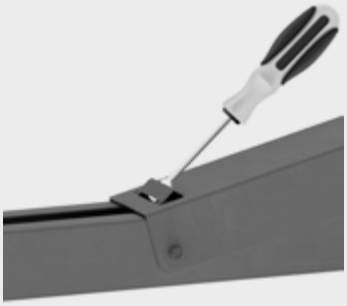
C-rail end
reinforcement
(optional)

sheet metal screws
(Ø6.5x19mm)

Lift the semi-assembled basic unit and bend it until the holes in the top of the triangle are alligned. Squeeze the sides of the short leg to fit them inside the longer leg while bending.



Secure the end of assembly triangle **1** to the rail with 2 sheet metal screws (Ø6.5x19mm). Do the same with triangle **2** but only after assembling the basic units (step 1.3)



Bend the panel stop to a 90° angle using a screwdriver.

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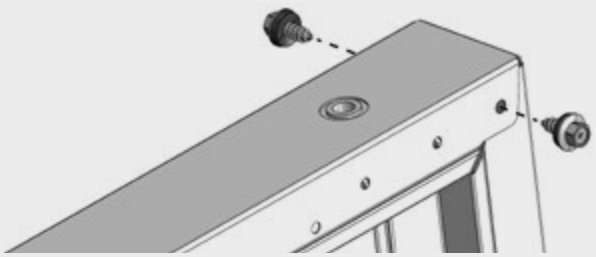
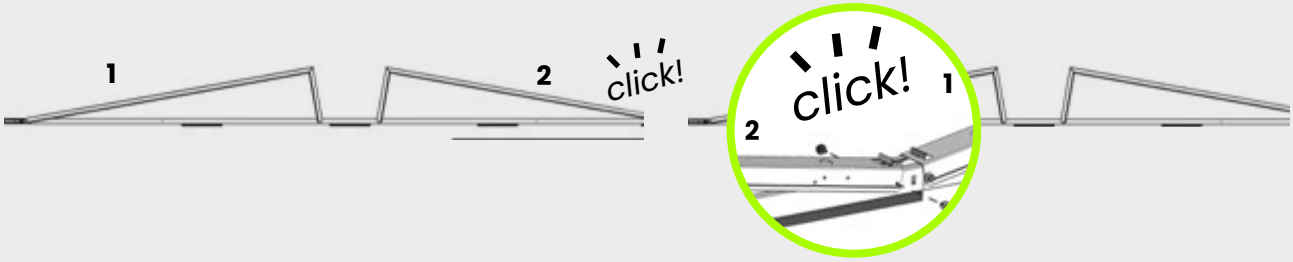
step 1.2: securing top of triangles

Secure the top of each assembly triangle with 2 sheet metal screws (Ø6.5x19mm).



step 1.3: connecting the basic units

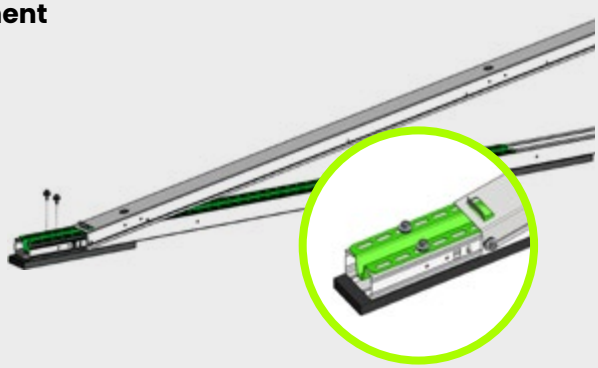
- Place the basic units on a flat and stable roof surface.
- Connect the basic units by sliding the tapered rail end into the rail of the previous basic unit until you hear a clicking sound.
- Secure assembly triangle **2** of the previous basic unit with 2 sheet metal screws (Ø6.5x19mm).
- Every 30 metres a dilatation must be provided. See step 2.2.



step 1.4: (optional) installing C-rail end reinforcement

Install the C-rail end reinforcement by sliding it between the assembly triangle and the rail. Secure it with 2 sheet metal screws (Ø6.5x19mm).

An indication of the locations can be calculated with our free online calculator: solarspeed.avasco.be.



step 1.5: installing reinforcements

Install the vertical reinforcements in the provided holes with 4 sheet metal screws (Ø6.5x19mm).

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step 1.6: (optional) installing single East or West facing module.

required components:

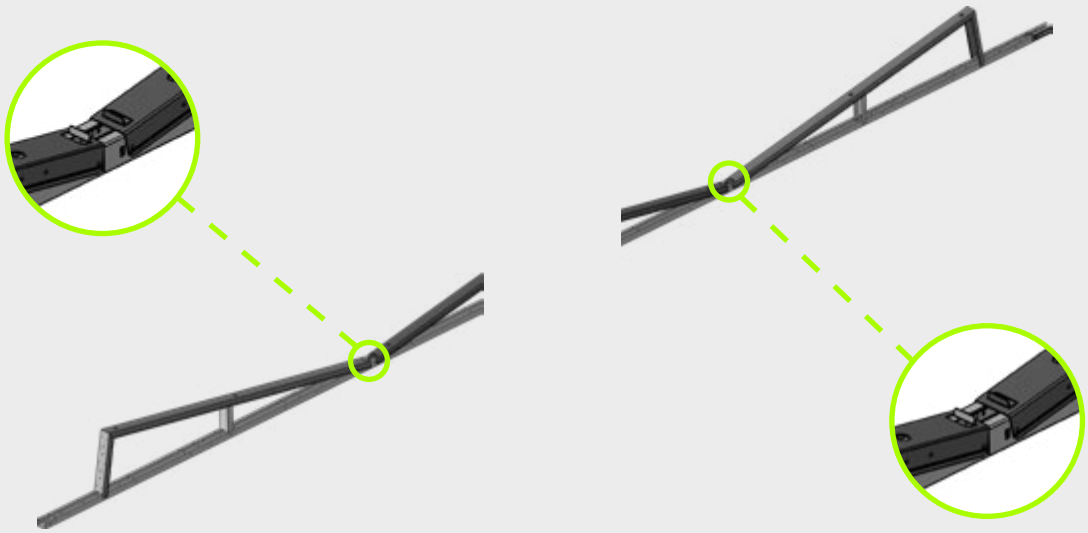
EWE rail

triangle

vertical reinforcement

sheet metal screws (Ø6.5x19mm)

The triangle is installed in the first or the last hole of the rail as shown in the image below to create an East or West facing basic unit.
Secure the East or West facing basic unit in a similar way as described in the previous steps.



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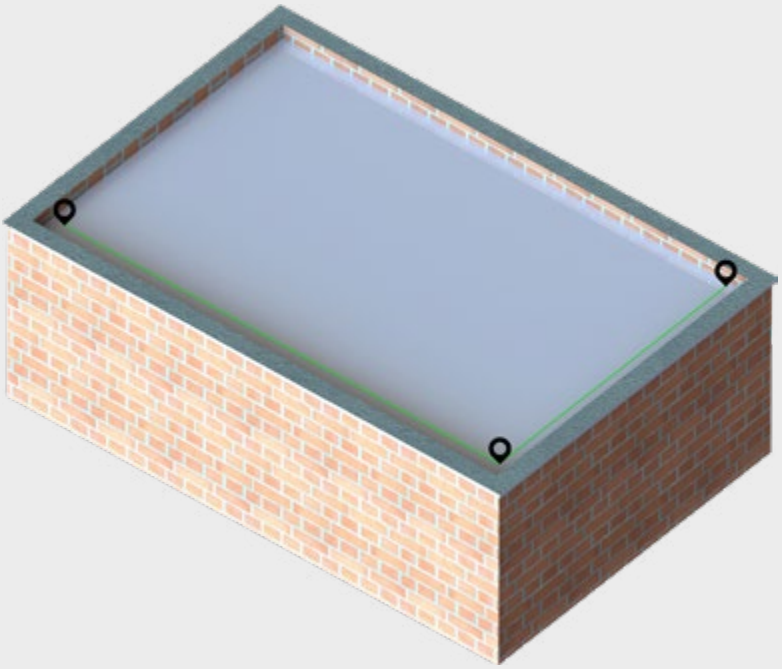
step 2: aligning the rows

step 2.1: plotting the rows

required assembly tools:

spacer

chalk line



Tip!

Make a horizontal and vertical mark on the roof using a chalk line. When setting out the markers, respect the minimum edge zones (see general notes).

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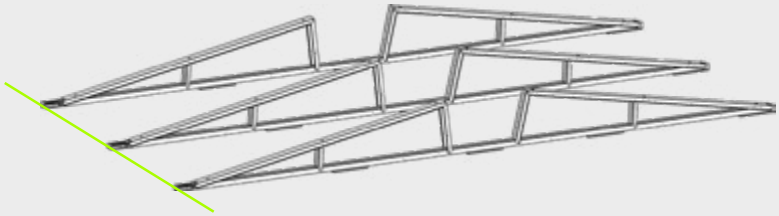
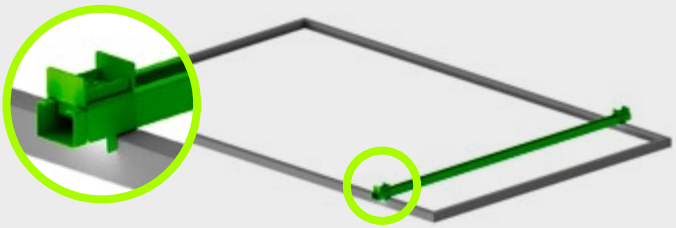
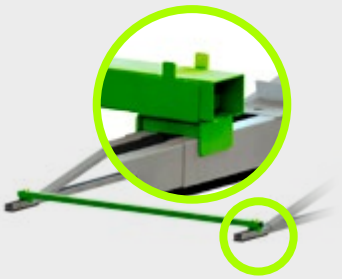
Align the rows according to plan, taking into account the width of the panels.
To easily determine the distance between the basic units, you can use the spacer.





Set the width of the panel on the spacer.

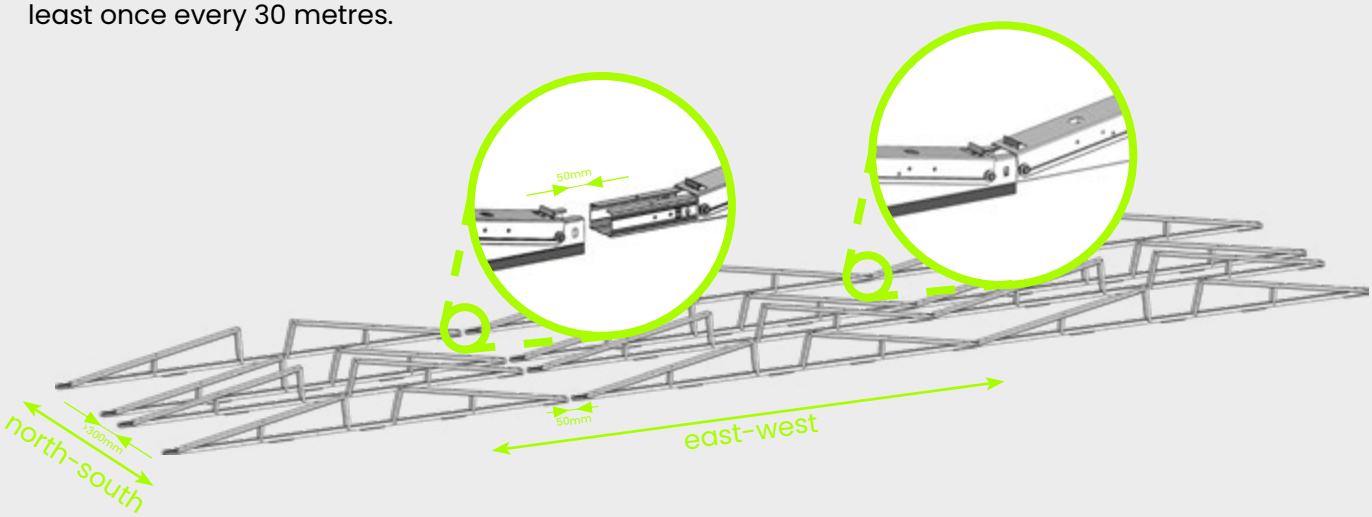


Turn the spacer 180° and align the rows.

step 2.2: providing dilatations (thermal breaks)

In the north-south direction, also referred to as the ALU direction, a dilatation must be provided at least once every 26 metres. The distance between these 2 basic units must be at least 300mm to allow the use of ballast supports.

In the east-west direction, also referred to as the steel direction, a dilatation must be provided at least once every 30 metres.



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step 3: attaching footing system

An indication of the required footing systems and ballast, their locations and the method of footing and ballasting can be calculated with our free online calculator: solarspeed.avasco.be.

Several options are possible:
- Go to step 3.1 for rubbers
- Go to step 3.2 for PP footings
- Go to step 3.3 for concrete footings
- Go to step 3.4 for mounting on metal substructure
- Go to step 3.5 for mounting with roof anchors

step 3.1: attaching end rubber at the end of the rail

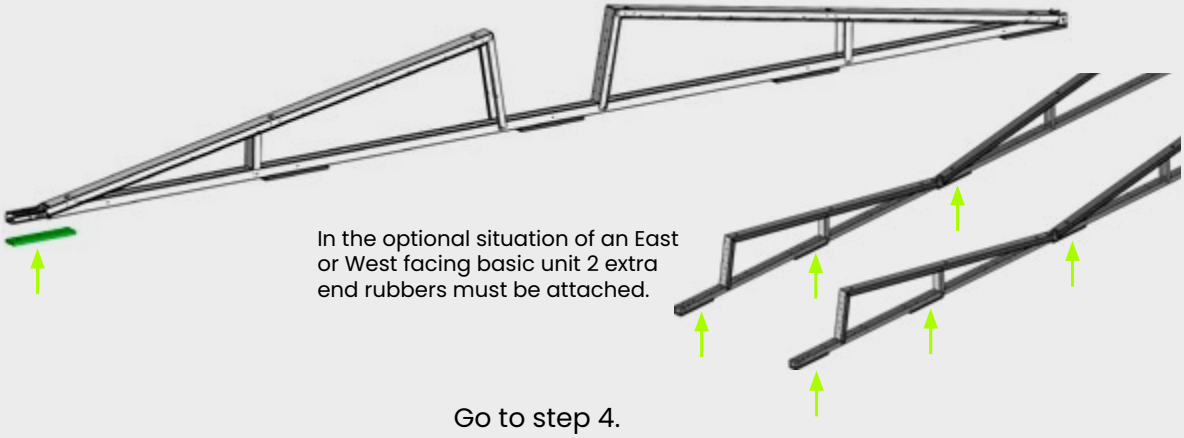
required components:

end rubber

plastic plugs

Push 2 plugs into
the holes of the rubbers.

Attach the rubbers to the rail by pushing
the plugs into the provided holes.



In the optional situation of an East or West facing basic unit 2 extra end rubbers must be attached.

Go to step 4.

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step 3.2: installing PP footing

required components:

PP footing

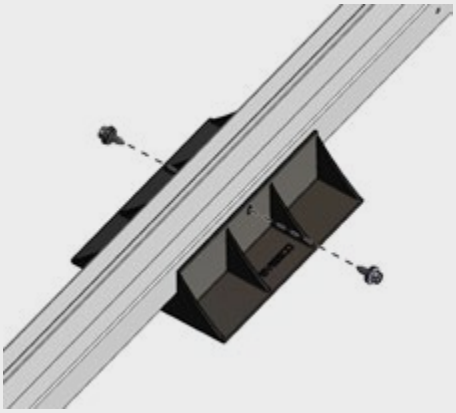
sheet metal screws
(Ø6.5x19mm)

In the optional situation of an East or West facing basic unit extra PP-footings must be attached.

At least 4 PP footings are placed under each basic unit. Add one PP footing at the end of the first rail.

The PP footing can be attached to the basic unit by securing it with 2 sheet metal screws in the provided holes in the rail of the basic unit.

The PP footings are available with or without pre-installed rubbers.



Go to step 4.

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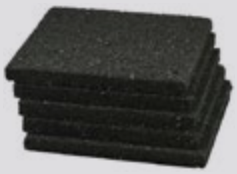
step 3.3: installing concrete footing

required components:

concrete footing + hammer plug



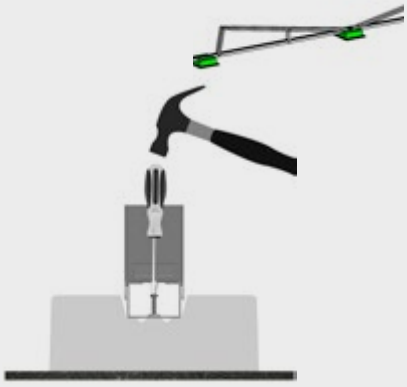
rubber protection

A concrete footing is placed at the beginning, centre and the end of the connected basic units. A rubber is always placed under the concrete footings to protect the roof surface. At least 5mm of rubber must be visible on each side of the concrete footing.

In case of green or pebble roofs, remove the plants or pebbles at the places where the concrete footings need to be installed.

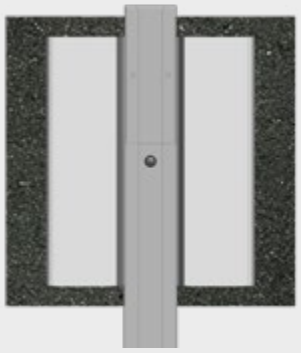
In the optional situation of an East or West facing basic unit an extra concrete footing must be attached.

Caution! Depending on the required ballast, it may also be necessary to place an extra concrete footing in the centre of the basic unit.



Once the concrete footings are correctly positioned, the connected basic units can be attached to them. This is done with hammer plugs HPS-1 R 8/10x40.

The hammer plug is inserted into the provided holes and hammered down. Use a screwdriver as an extension to prevent damage to the basic unit.



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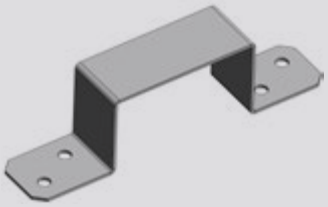
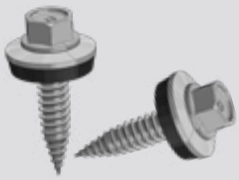
step 3.4: installing on metal substructure

required components:

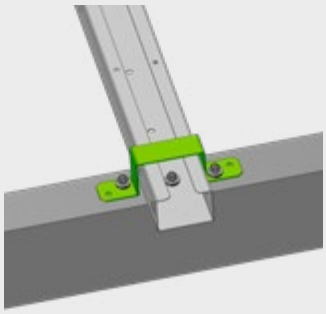


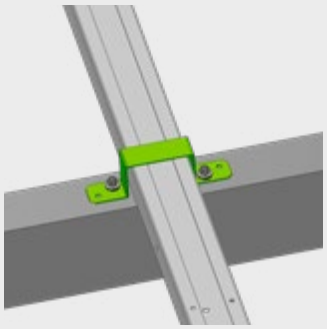
omega bracket

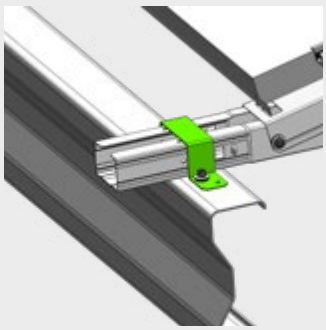


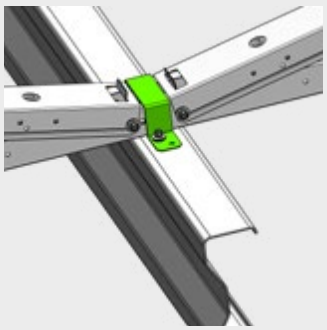
self-drilling screws
(Ø5.5x25mm)

SolarSpeed can be installed on metal substructure e.g. steeldeck, aluminium or steel profiles, ... This can be done with an omega bracket and self-drilling screws, see specific metal substructure assembly instructions.









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step 3.5: installing on roof anchors

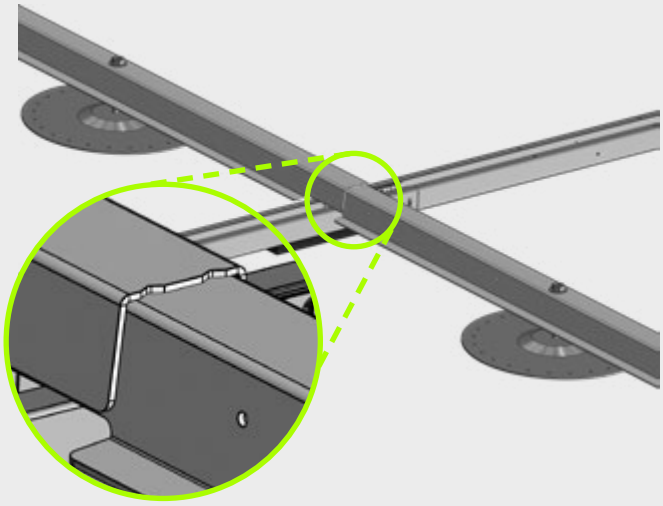
required components:

anchor profile

washer
(provided by installer)

nut
(provided by installer)
(Ø5.5x25mm)

Position the basic units so that the pre-installed roof anchor is precisely centered between the two C-rails. Secure the anchor profile over the roof anchor, fastening it with a washer and nut according to the roof anchor manufacturer's installation manual.



If two roof anchors are present on each side of the C-rail, the roof anchor profiles can be stacked. The widest side of the profile is identified by two indents.

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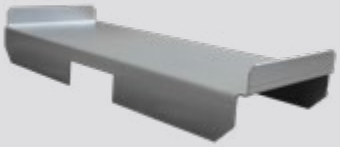
step 4: placing the ballast

An indication of the required footing systems and ballast, their locations and the method of footing and ballasting can be calculated with our free online calculator: solarspeed.avasco.be.

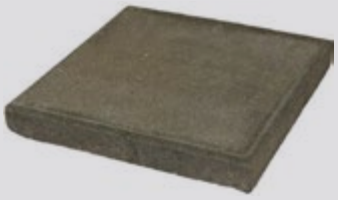
If the ballast report says to place an L-profile set without any ballast, you must still install at least one L-profile for mechanical and equipotential connection. You do not need to install center pieces beneath L-profiles without ballast.

step 4.1: providing ballast with ballast support

required components:

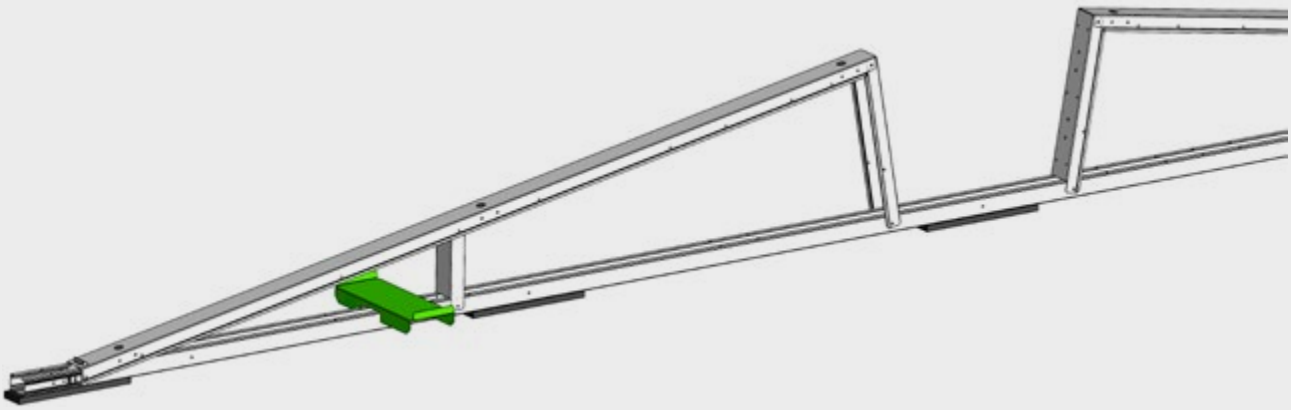


ballast support



ballast tile
(provided by installer)

On the inside of the installation, the ballast can be placed on ballast supports.
These can simply be placed over the rails.



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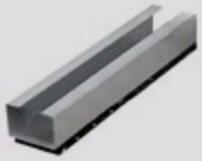
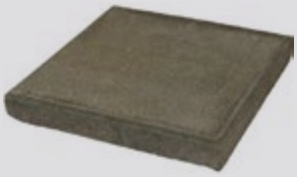
step 4.2: providing ballast with L-profiles

required components:

set of L-profiles



centre piece for set of L-profiles (optional)



ballast tile (provided by installer)

sheet metal screws (Ø6.5x19mm)

On the outer side of the installation ballast is always placed on sets of L-profiles.

The sets of L-profiles must be fixed with 4 sheet metal screws (Ø6.5x19mm) in the pre-drilled holes of the rails of the basic units (together with the optional C-rail end reinforcement).

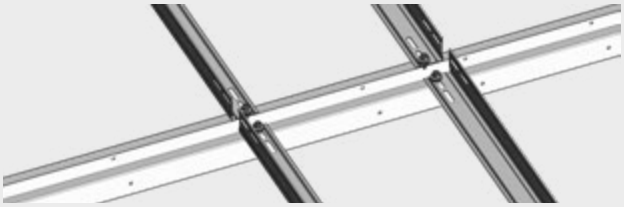
Each optional C-rail end reinforcement must always be fixed with 4 sheet metal screws (Ø6.5x19mm) together with the L-profiles.

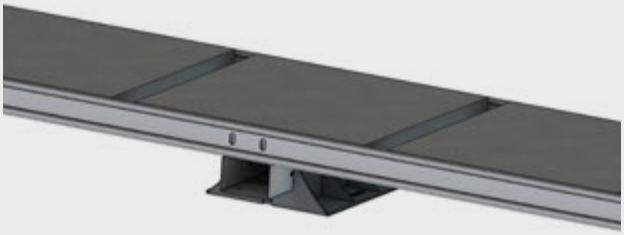
The optional centre piece must be placed in the centre of the L-profiles set where it can be assembled with 2 sheet metal screws (Ø6.5x19mm) in the pre-drilled holes.

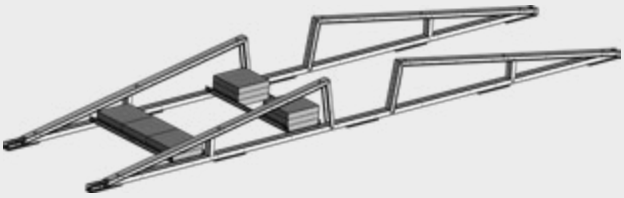
For a set-up on PP footings the centre piece must also be placed on a PP footing.

For a set-up on concrete footings a higher centre piece is provided.

On the inner side of the installation sets of L-profiles are used when not enough ballast can be placed on ballast supports.







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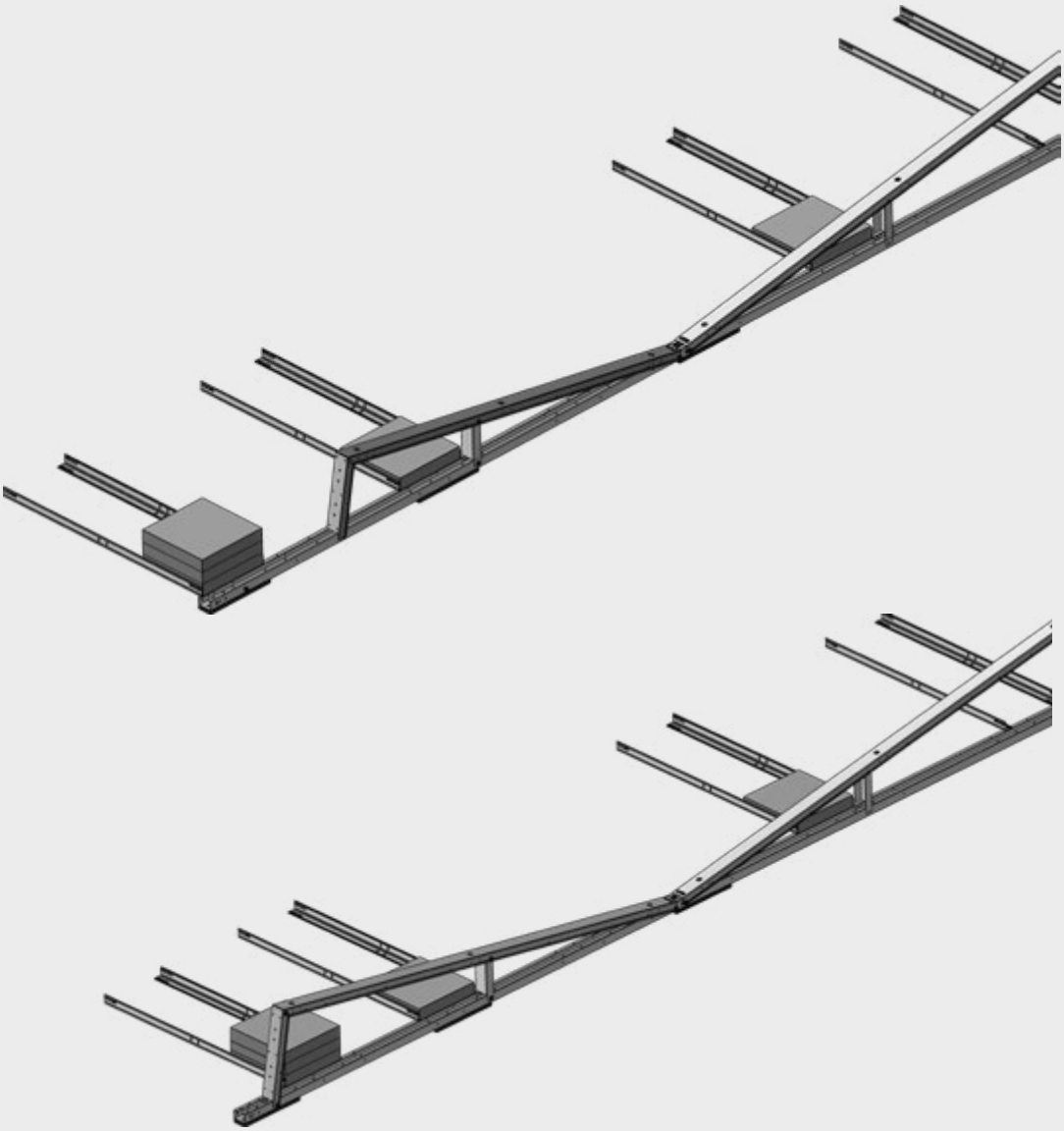
Step 4.3: (optional) providing ballast with L-profiles on the East or West facing modules

The ballast must primarily be placed at the most outside position possible. Depending on the size of the triangle and THE position of the backplate, this will be;

- at the end of the basic unit
- just at the inside of the triangle

Install the L-profiles in a similar way as described in the previous step.



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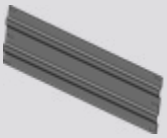
step 5: (optional) installing backplates on the East or West facing module.

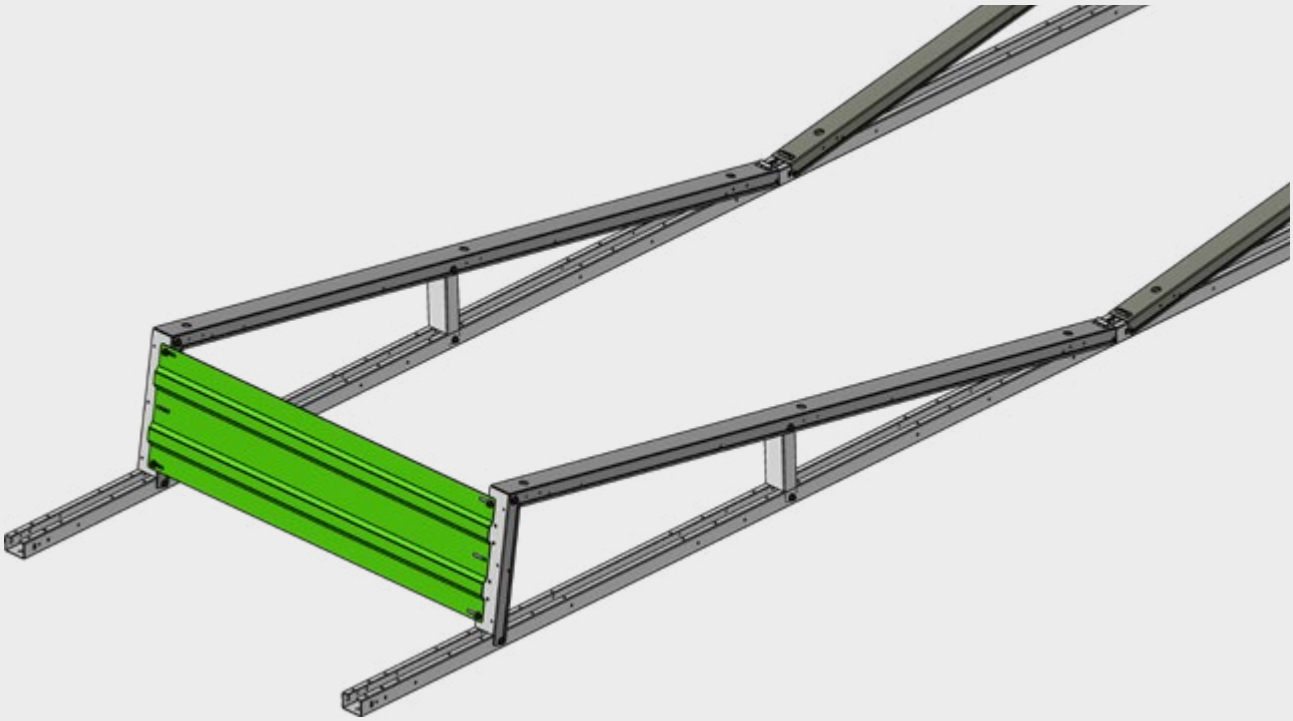
required components:



backplate

sheet metal screws
(Ø6.5x19mm)

Secure the backplates with 4 sheet metal screws (Ø6.5x19mm) on each East or West facing basic unit.



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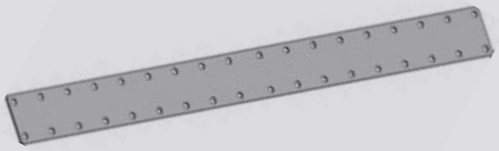
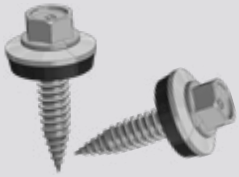
step 6: installing ridge connection

required components:



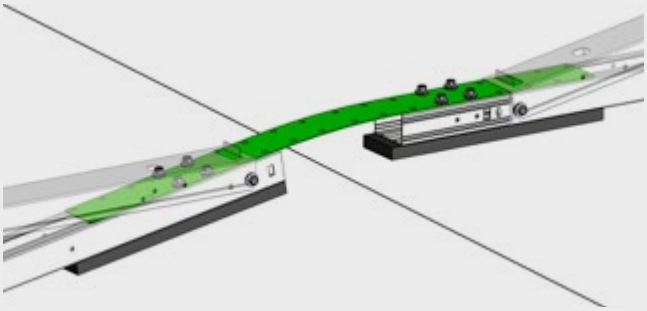
ridge connection



self-drilling screws
(Ø5.5x25mm)

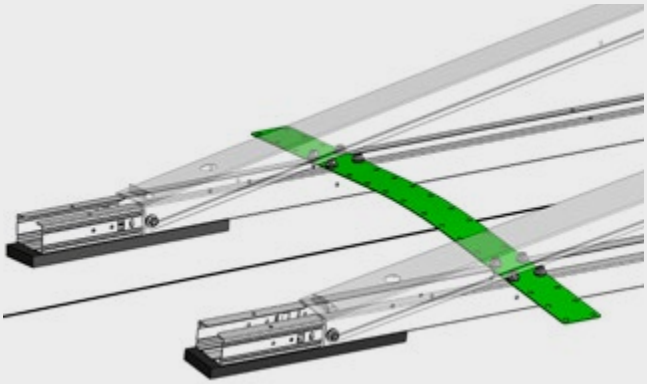
step 6.1: transverse ridge connections

In the transverse direction, one ridge connection is placed on every basic unit. These are attached on top of both rails. The ridge connection wil bend to the appropriate slope when attached to the basic units. Use 4 self-drilling screws (Ø5.5x25mm) per rail.



step 6.2: longitudinal ridge connections

In the longitudinal direction, one ridge connection is placed on every basic unit. These are attached on top of both rails. The ridge connection wil bend to the appropriate slope when attached to the basic units. Use 4 self-drilling screws (Ø5.5x25mm) per rail.



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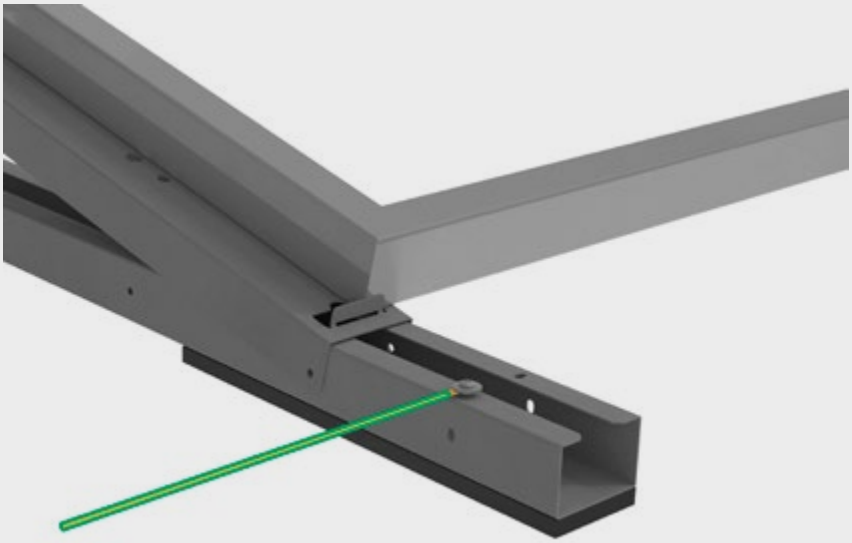
step 7: ensuring earthing and equipotential bonding

Since the rows are electrically and mechanically interconnected, no additional connections are required between the different basic units for proper grounding.

However, the individual fields must be connected to each other with an earthing wire. This wire can be attached to the basic unit using a sheet metal screw. Ensure you use cable shoes that are not made of uncoated copper or stainless steel.

Finally, connect the SolarSpeed to the building's earthing wire.



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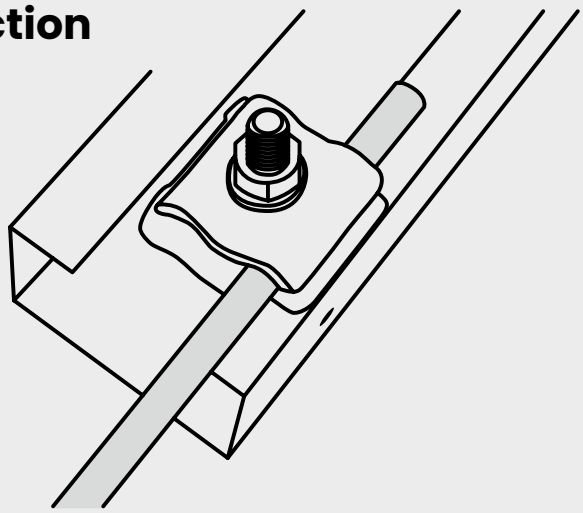
step 8: ensuring lightning protection

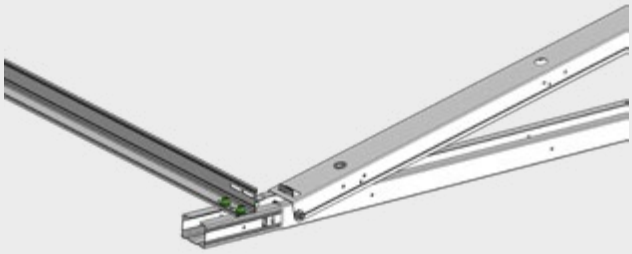


All Avasco SolarSpeed basic units are tested and approved following the principles of
IEC 62561-1:2023-03 and IEC 62305-3.

Connections between each SolarSpeed field and the earthing wire must be made with approved connectors on the C-rails following the lightning protection plan of the specific project (lightning protection plan is not provided by Avasco Solar). An example of an approved connector is Seam Clamp of the manufacturer DEHN (Part-No. 365 010) with aluminium round wire (Ø8mm).

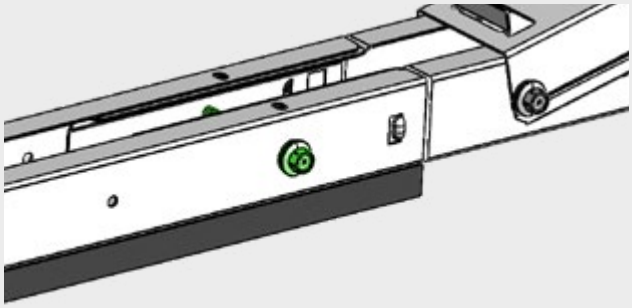
Replace solar panel & clamps after a direct lightning strike.

When making changes to the Avasco SolarSpeed due to
the variations in the different roof lay-outs, ensure
following guidelines:



- At beginning and end of each row:
  - A L-profile set consisting of 2 L-profiles must be screwed on the C-rails over the full length of the individual fields.
  - A single L-profile must be screwed with 2 sheet metal screws on each C-rail over the full length of the individual field.

Remark: The L-profiles and backplate provide
equivalent protection against lightning and can therefore be used interchangeably.



- Secure the click system of the basic units with at least
  1 sheet metal screw.

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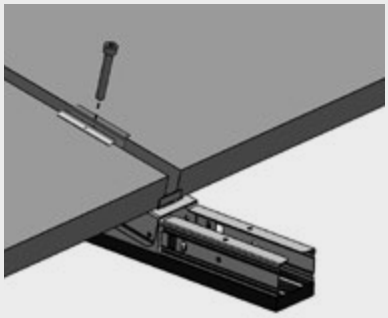
step 9: installing the modules

required components:

middle and end clamps

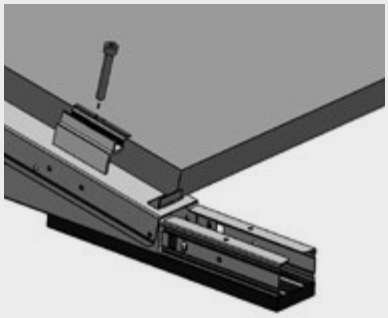
M8x55/55 bolt

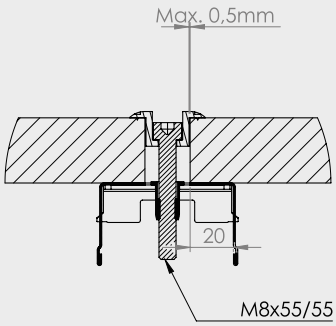
solar panel
(provided by installer)

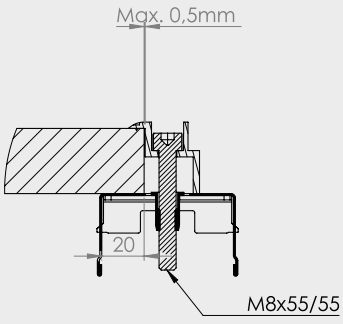


Fix the clamps into the 3 screw thread provided in the assembly triangles with the M8 bolts. Screw the 3 bolts hand tight.

After the complete solar module array has been assembled, tighten the 3 bolts with minimum 19Nm and maximum 25Nm.
(see general notes)







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general notes

- The installer shall verify that the rubber protection is adequate and compatible with the roof surface, particularly on soft or semi-soft surfaces. Care is required on bituminous roofs, where heat may soften the bitumen, increasing the risk of deformation or damage from localized loads and thermal movement. The installer is responsible for verifying the roof's suitability for the PV installation under these conditions.
- Only use the clamps approved and/or recommended by the module manufacturer.
  Always tighten the clamping bolt with the correct torque: Minimum 19Nm is required, maximum 25Nm is allowed.
  A loss of torque is to be expected: At least 13Nm must be measured during inspection after installing.
- In the following situations/circumstances, the mounting frames of Avasco Solar plc are not suitable, unless written confirmation is provided for a specific project:
  - PVC or TPO roofs with pitches > 3°
  - Bitumen or EPDM roofs with pitches > 5°
  - Places where buildings or other objects can cause a wind tunnel effect or increased wind speeds.
  - Installations closer than 2 km as the crow flies from the coastline.
  - The product is designed and intended for use in environments classified up to corrosivity category C3. It is not designed for use in highly corrosive, aggressive, or saline environments. Any use outside the specified environmental classification requires prior written approval from the manufacturer.
- Polluted roof surfaces can lead to a lower friction coefficient over time, which means that more ballast or (extra) mechanical connections must be provided to prevent sliding.
- Edge zone: The installer must always keep the minimum edge zone free as described in the applicable standard(s). An example of such a standard is the NEN7250, but this is not exhaustive.
- Installers must always provide sufficient ballast depending on the situation. In case of doubt, please contact a specialised consultancy/engineering bureau.
- It is the installer's responsibility to check if the panels can be clamped in the manner (on the short or long side, position of the clamps, etc.) as provided in this manual. If this is not the case, Avasco Solar plc can in no way be held responsible for any damage, in whatever form.
- Avasco Solar plc can never be held liable if materials are used for assembly that are not supplied by Avasco Solar plc.
- The warranty conditions with regard to the assembly frames of Avasco Solar plc are available upon request. Failure to strictly follow the assembly instructions will void all warranty.
- The installer is responsible for the use of the necessary PPE.
- Avasco Solar plc reserves the right to change the assembly instructions at any time. It is the installer's responsibility to always follow the latest version, which is the only valid one. This is available at all times on www.avasco-solar.be or can be obtained upon request.

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