

ESDEC

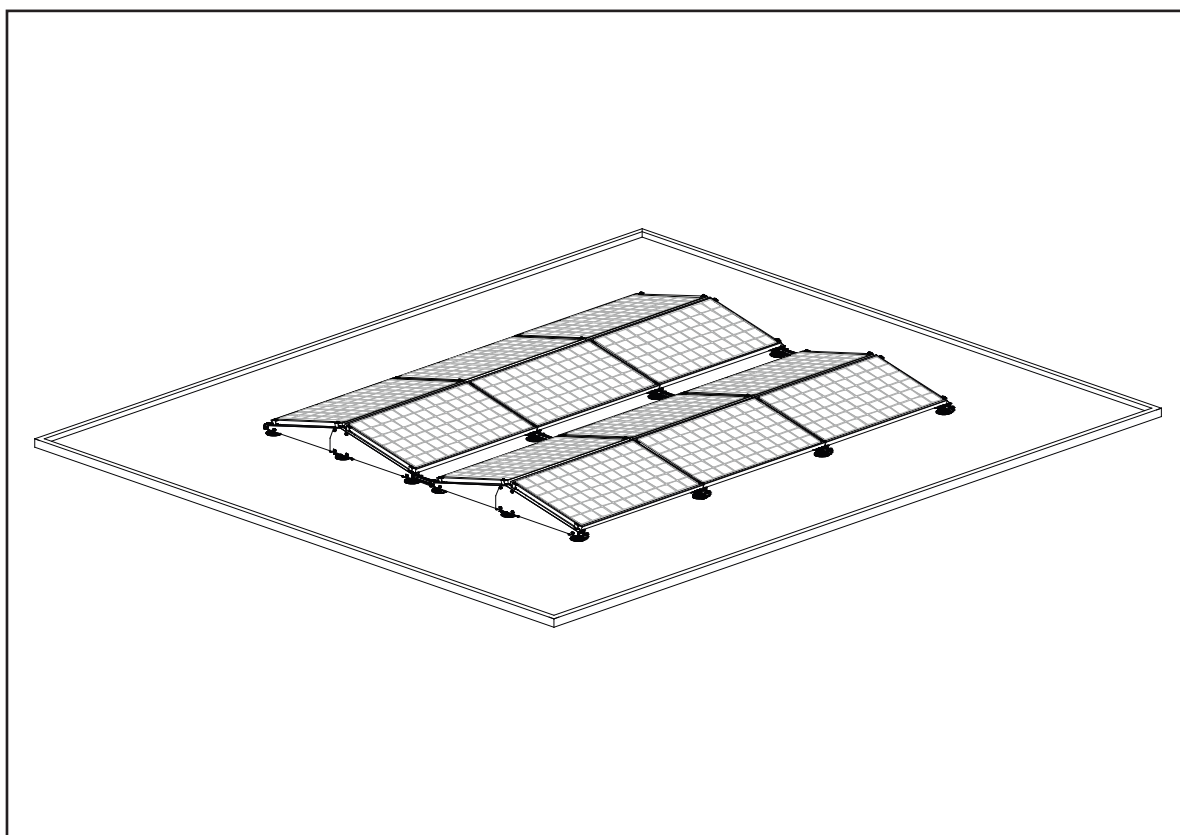
INNOVATIVE MOUNTING SYSTEMS

FLATFIX FUSION

MANUAL

FLATFIX FUSION MOUNTING SYSTEM FOR FLAT ROOFS

EN



FlatFix Fusion mounting system for flat roofs for solar panels in a dual landscape arrangement

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CLICKFIT

FLATFIX

www.esdec.com

All our transactions and sales apply our Terms and Conditions which are filed with the Chamber of Commerce (08127728). These can be downloaded at www.esdec.com

CONTENT

	pag
1. Introduction	1
2. EC declaration of conformity	1
3. General installation conditions	2
4. Product description	4
5. Components overview	4
5.1 Exploded-view	4
5.2 List of parts	5
6. Assembling preparation	6
6.1 Control tools and accessories	6
6.2 Determining position and measuring solar panels	7
6.3 Cleaning the roof	7
7. Installation	8
7.1 Mounting of roof support to base elements	8
7.2 Grounding and mounting of base profile to base elements	9
7.3 Positioning of FlatFix Fusion segments	11
7.4 Mounting of ballast holders	11
7.5 Grounding and mounting of 1st solar panel	13
7.6 Mounting of other solar panels	14
7.7 Mounting of cable clips optimizer ready & cables	15
7.8 Grounding of multiple rows (option)	16
7.9 Grounding of ballast holders (option)	17
7.10 Placement of ballast	18
7.11 Mounting and grounding of stabilizers	19
7.12 Mounting of 2nd row of solar panels	20
7.13 Mounting of wind deflector left/right	21
7.14 Several rows behind one another	22
7.15 Shorten base profile (option)	22
8. Annex	23

THESE INSTALLATION INSTRUCTIONS SHOULD REMAIN WELL KEPT FOR FUTURE USE!

We recommend that you contact your supplier for the duration and conditions of the guarantee. We also refer to our General Sales and Delivery Terms and Conditions that are available on request.

The manufacturer renounces all responsibility for damage or injury caused by not carefully follow these installation instructions and the disregard of customary caution in the transport, assembling and use of the FlatFix Fusion installation system.

As a result of constantly striving to improve, it may occur that the product is different from what is described in this manual. For this reason, the instructions given serve only as a guideline for installing the product mentioned in this manual.

This manual has been compiled with the utmost care, but the manufacturer cannot assume responsibility for eventual errors in this manual or the consequences thereof.

Furthermore, all rights are reserved and no part of this manual may be reproduced in any way.

1. Introduction

This manual describes the installation of the FlatFix Fusion mounting system for flat roofs (for solar panels in landscape arrangement).

Read the instructions carefully so that you are totally familiar with the contents of the manual. Follow the instructions in the manual carefully. Always perform the operations in the correct order.

Keep the manual in a safe and dry place. Should the manual get lost, then there is the possibility to ask for a new copy from Esdec B.V.

2. EC declaration of conformity

Manufacturer: Esdec BV
Londenstraat 16
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The Netherlands
Tel: +31 850 70 20 00

Declare under our responsibility that the product; the FlatFix Fusion mounting systems is in compliance with the following norms:

NEN-EN 14437: 2004
CEN/TR 15601: 2012
NEN-EN 1991-1-3 + C1: 2011
NEN-EN 1991-1-4+NB
NEN 6707: 2011
NPR 6708: 2013
BRL 4708
NEN 7250: 2013
MIS012
MCS012

3. General installation conditions

General

The non-compliance with the requirements mentioned in this document may cause that all guarantee and product liability claims lapse.

The information, comments and advices in this document are binding and must be checked for completeness and timeliness. Esdec BV reserves the right to amend this document without further notice.

Stability and condition of the roof

The roof must be in good condition and strong enough to bear the weight of the solar panels, including the additional materials, ballast, wind and snow loads. Check the stability of the roof and adjust the roof/structure where necessary; engage a constructor when in doubt. Take care that the load reserve of the roof is not exceeded, locally or as a whole.

Insulation/roofing

The continuous pressure load (point load) of the insulation and the roofing must be checked and approved before the assembly. The suitability of the base plates combined with the roofing should be checked and found to be in order; engage a roofing contractor when in doubt.

Safety warnings

- The assembly of the FlatFix Fusion mounting system should be standard implemented by qualified technical personnel (at least two qualified people).
- Adding or removing parts may have an adverse effect on the functioning and is strictly not advised!
- The roof must be clean, dry, flat and free from algae, etc. for the placement of the solar panels.
- Avoid mounting during high winds and a slippery wet roof area.
- The assembly of the FlatFix Fusion mounting system may only take place at temperatures between 5 ° and 40 ° C, because of assembly joints of the synthetic material parts.
- Always work on the roof with fall protection and, if necessary, with safety nets and edge protection.
- Wear shoes with reinforced toes and sturdy non-slip soles.
- Always wear the appropriate protective clothing when performing the work.
- Always use a lifting aid/hoist installation when moving equipment (solar panels, etc.)
- Always place the ladder on a firm, stable surface.
- Always place the ladder at an angle of approximately 75 ° and allow it to protrude approximately 1 meter above the eaves.
- If possible, secure the ladder at the top with a rope or tie.
- Work preferably according to the manual “work safely on roofs”.

Application range FlatFix Fusion

- Wind zone (1 to 3, with the exception of the coastal area)
- Roof height (3 - 12m). If you roof is higher, you should contact your supplier.
- Type of roofing: Concrete, bitumen / EPDM / PVC / TPO
- Roof slope: Maximally 3°. Between 3° and 7° (for PVC between 2° and 7°) the base plates should be glued. Please contact your supplier if the roof slope is more than 7°.
- Arrangement: Landscape installation
- Maximum solar panel dimensions: length 1200 -1306 mm, 1465 -1610 mm, 1611 -1680 mm, 1685 mm – 1789 mm, 1900 - 1972 mm, width 980-1008mm, thickness 25-50mm.

Edge zone

The distance from the solar panels to the edge of the roof should be approximately 1/5 of the height of the building, with a minimum distance of 30cm; this is because of strong turbulent wind flows in this zone. No solar panels may be placed in whole or in part in this zone. The edge zone that should be adhered to comes from the FlatFix Fusion calculator.

Measurement

All sizes and dimensions are in cm, unless otherwise mentioned.

Ballast

If your roof is more than 12 meters, we advise you to get in touch with your supplier; they can then determine the correct weight depending on your situation.

Use stones or gravel as ballast. The required ballast can be calculated by using the FlatFix Fusion calculator.

Standards, specifications and regulations

When installing the mounting system, it is important to follow the installation instructions and the associated standards in order to prevent accidents. Keep the following standards, specification and regulations particularly in mind:

- Building Act Construction
- PPE Personal Protective Equipment
- KEMA Inspection of Electro-technical Materials
- DIN 1055 Design loads for buildings
- DIN 18299 General rules for all construction sectors
- DIN 18451 Scaffolding
- NEN EN 1991
- NEN 7250

Removal and disassembly

Dispose of the product according to the local laws and regulations. All materials are recyclable at the end of their service life.

The aluminium base profiles are attached to the base elements by means of a click-system. Use combination pliers to disassemble the base profile.

Guarantee

Guarantee according to the guarantee conditions and general terms and conditions of Esdec BV. These can be found on the website www.clickfit.nl.

Liability

The manufacturer accepts no liability for damage or injury caused by not (strictly) adhering to the safety regulations and instructions contained in this manual, or by carelessness during installation of the product specified in this document and the eventual related accessories.

- printing errors reserved

4. Product description

The mounting system is constructed from high-quality synthetic base elements, which are connected to one another in the longitudinal direction with aluminium base profiles. In the width direction, the FlatFix Fusion segments are connected with a stabilizer. The required assembly materials are also included to mount the solar panels in a landscape arrangement on the roof. The FlatFix Fusion mounting system can be used for all types of roofing materials.

Placing ballast

You do not attach the FlatFix Fusion system to the roof; it stands loose on it. The roof supports must be glued to the roof at a roof slope of more than 3° (2° by PVC). Please check the processing instructions of the kit and the roofing for their compatibility.

You make the system resistant to the wind by increasing the ballast. The ballast weight is partly related to the height of the building and configuration. Place the ballast in the ballast holders. Use the FlatFix Fusion calculator for the determination of the amount of ballast and where to place it.

Mounting of the solar panels

The solar panels are positioned on the topside of the base elements and are affixed by means of universal module clamps, end clamps and mounting screws. The mounting screws are screwed directly into the mounting holes of the base elements.

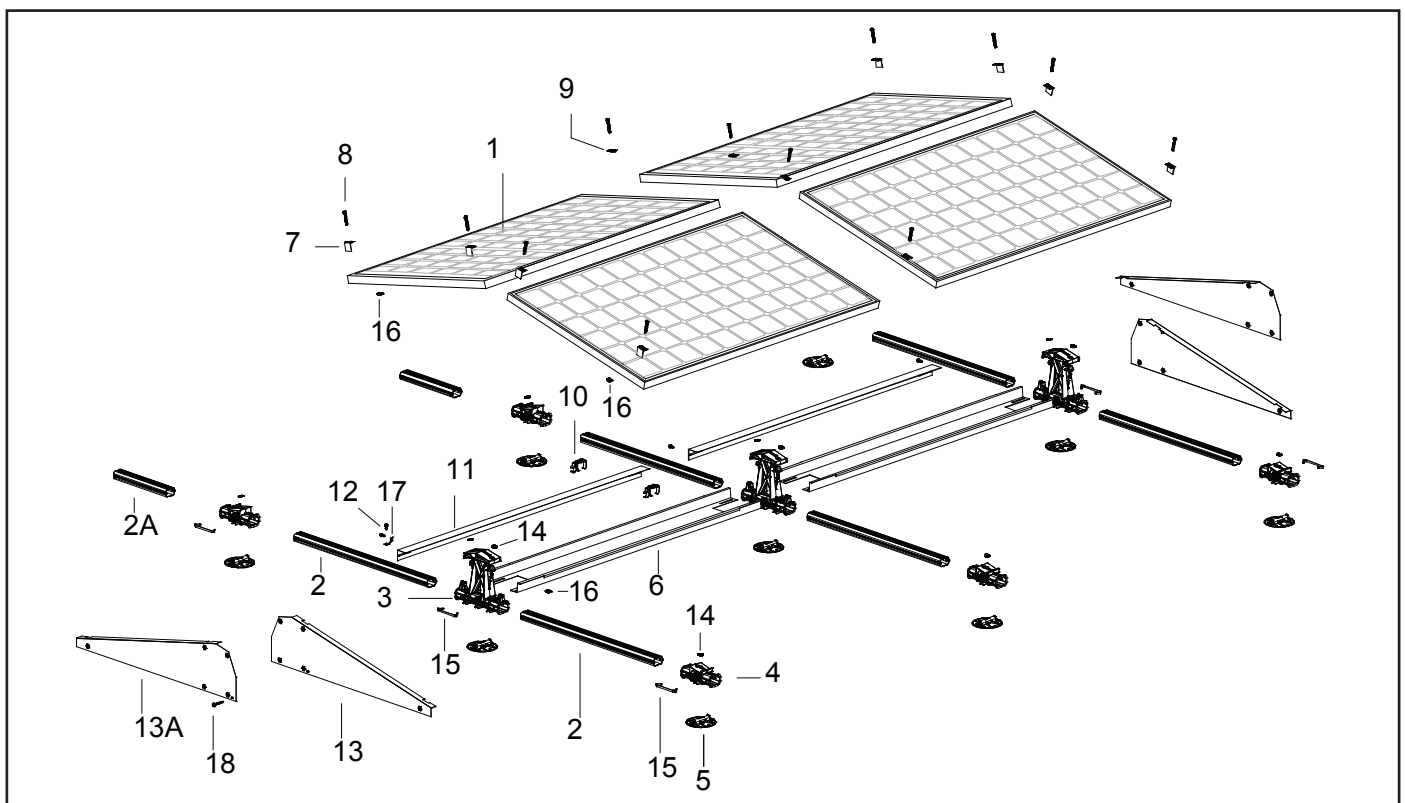
Grounding of the FlatFix Fusion mounting system

Grounding of the system is fast and simple. There are several possibilities for grounding the FlatFix Fusion mounting system:

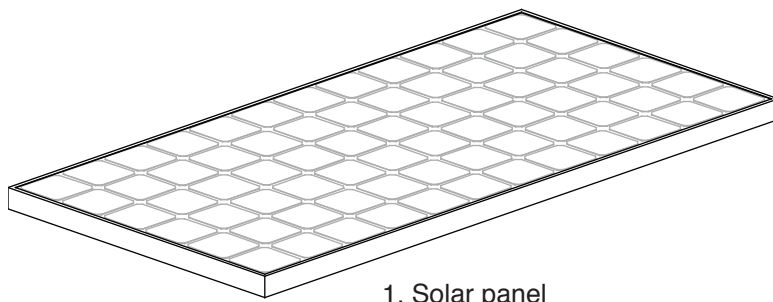
- Grounding of the solar modules by using grounding rings.
- Grounding of multiple rows by using a standard multistrand cable and special grounding clips.
- Grounding of the base profiles by using grounding spring.
- Grounding of the stabilisers by using grounding brackets.
- Grounding of the side wind deflector by using mounting screws 6,5 x 19 mm.

5. Components overview

5.1 Exploded-view



5.2 List of parts



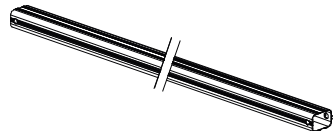
1. Solar panel



8. Mounting screw 6,5 x ___
Article nr: 100-65___
For type see annex chpt. 8



9. Module clamp
Article nr: 100-3020



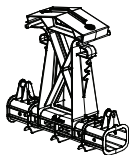
2. Base profile 940 mm
Article nr: 100-7194



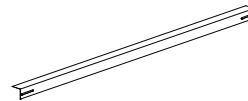
10. Cable clip optimizer ready
Article nr: 100-7041



2A. Base profile
Article nr: 100-71___
For length see annex chpt. 8



3. Base element high
Article nr: 100-7030



11. Stabilizer
Article nr: 100-707_
For length see annex chpt. 8



4. Base element low
Article nr: 100-7020



12. Mounting screw 6,5 x 19
Article nr: 100-6519



13. Wind deflector left
Article nr: 100-7055



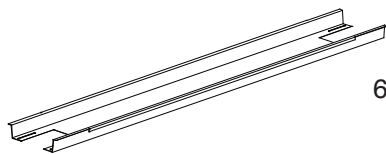
13A. Wind deflector right
Article nr: 100-7056



5. Roof support
Article nr: 100-7010



14. Grounding ring
Article nr: 100-7501
*optional



6. Ballast holder
Article nr: 100-706_
For length see annex chpt. 8



15. Grounding spring
Article nr: 100-7502
*optional



7. End clamp
Article nr: 100-41___
For type see annex chpt. 8



16. Grounding clip
Article nr: 100-7505
*optional



17. Grounding bracket
Article nr: 100-7503
*optional



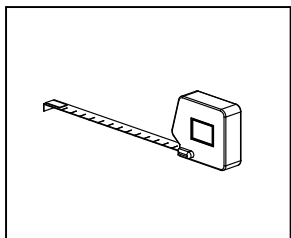
18. Self-tapping screw 6,3 x 32
Article nr: 100-3015

6. Assembling preparation

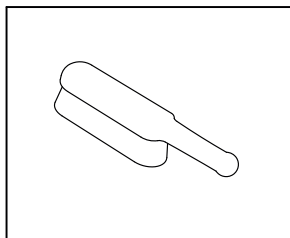
6.1 Control tools and accessories

The following is a list of the required tools/accessories:

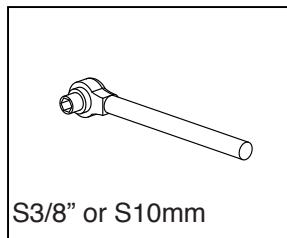
Tape measure



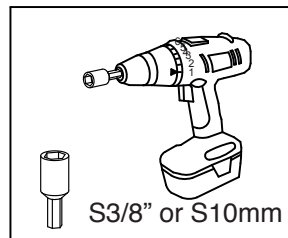
Brush



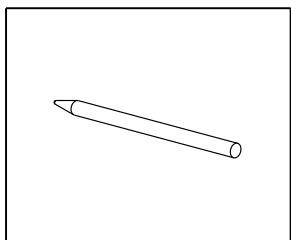
Ratchet with hexagon cap



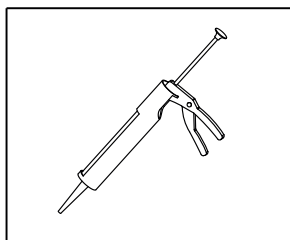
Battery-operated impact driver



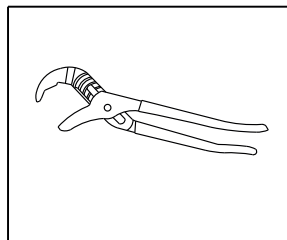
Marker/chalk



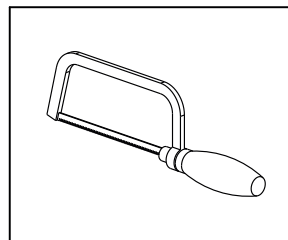
Mastic gun optional
At roof slope > 2° / 3°



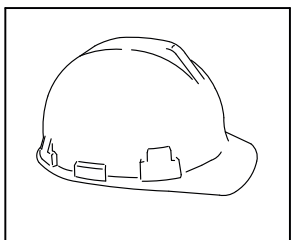
Pincers



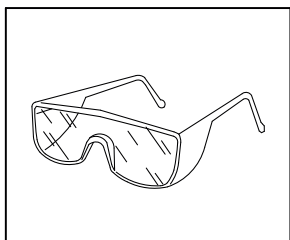
Iron saw



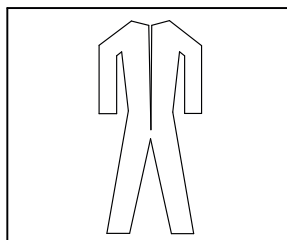
Safety helmet



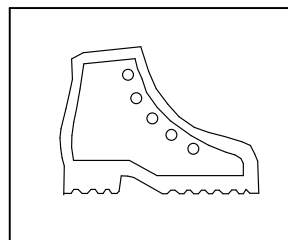
Safety glasses



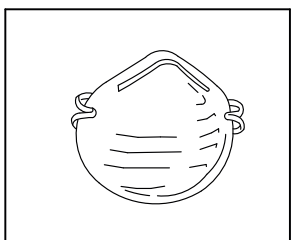
Safety clothes



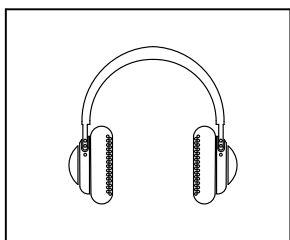
Safety shoes



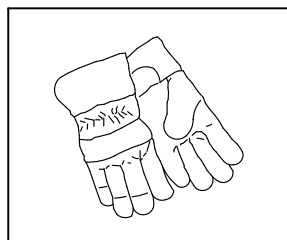
Dust mask



Ear protection



Safety gloves



Scaffold or stable
safe ladder

6.2 Determining position and measuring solar panels

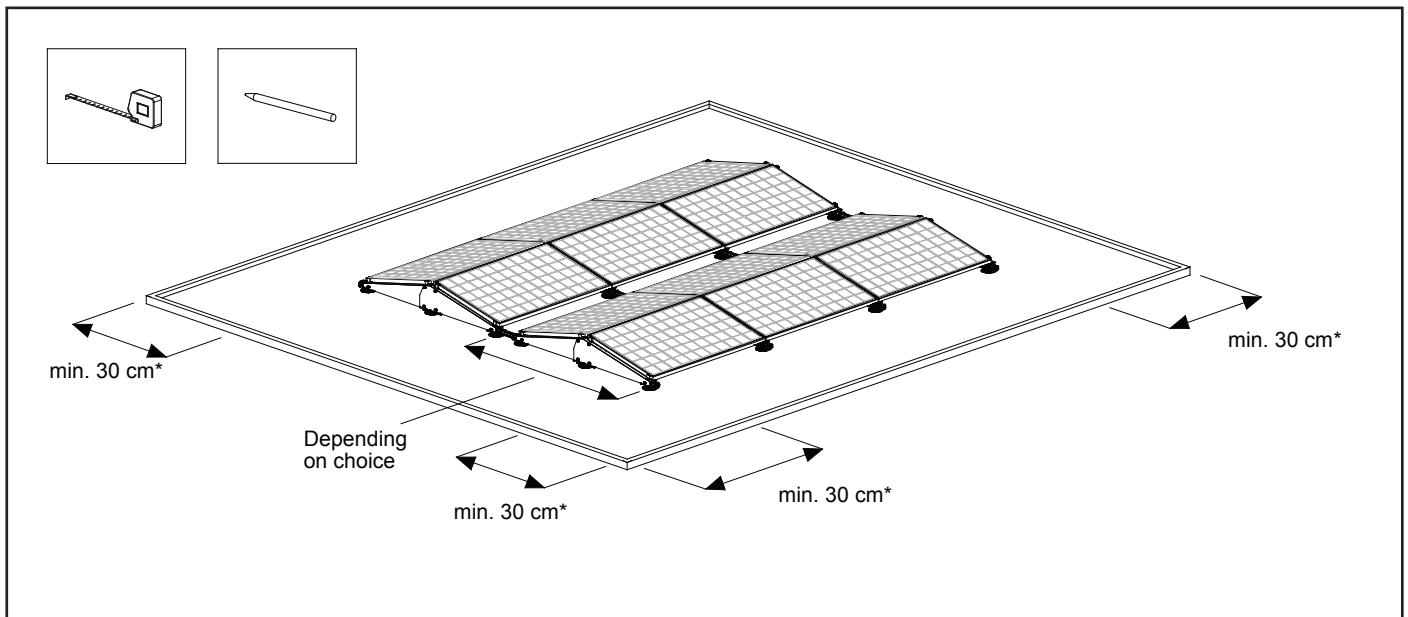
In determining the location of the solar panels on the flat roof, it is very important to pay attention to the incoming sunlight throughout the day and throughout the year. Place the solar panels on a roof that has no shadow. The shadow of a chimney, trees and nearby buildings have a detrimental effect on the yield of the solar panels.

Measuring and outlining

To place the solar panel (in a landscape arrangement), you need an area of approximately 160x100 cm per panel (depending on type of solar panel).

If there are multiple rows of solar panels in succession, there should be a distance between rows of solar panels come because of the shadow. The distance from the solar panels to the edge of the roof should be approximately 1/5 of the height of the building with a minimum distance of 30 cm; this is because of the strong turbulent wind flows in this zone * (See calculator for distance).

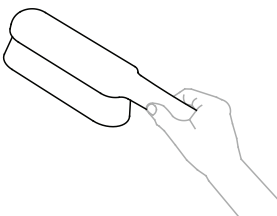
Mark the outline of the panel field on the roof with chalk or a marker.



6.3 Cleaning the roof

Clean the roof with a brush.

Make sure that the place where the solar panels are to be placed on the roof is clean, dry and flat. The presence of gravel, sand, stones, algae, dust, etc. can lead to instability of the system and/or can cause damage to the roof.



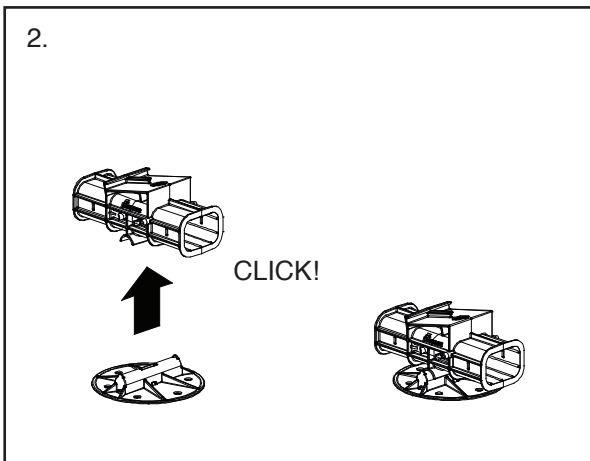
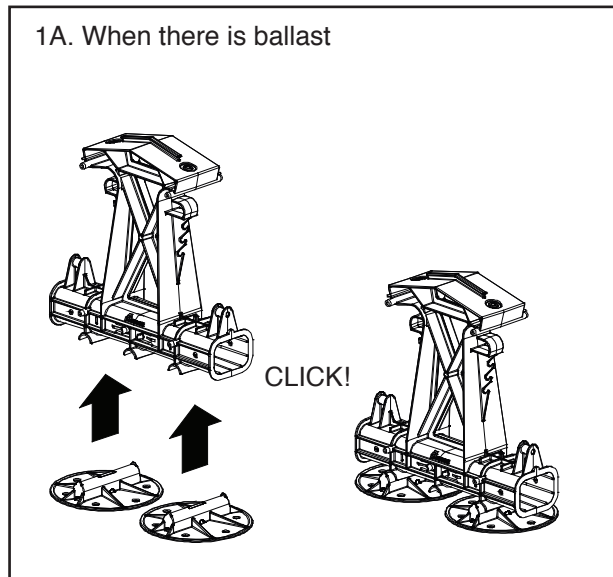
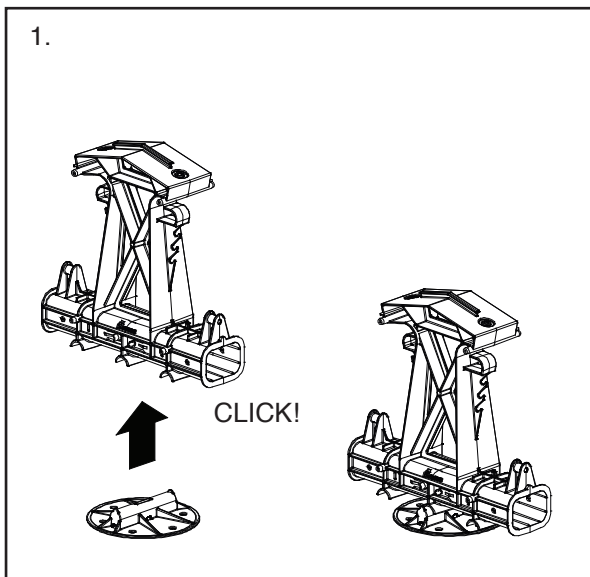
7. Installation

7.1 Mounting of roof support to base elements

The high base element is placed on one roof support by default.

1. Attach the roof support to the high base element by means of a click connection. Use the middle click connection at the bottom of the high base element for this. Optional: In situations where ballast is placed, two roof supports are attached under the high base element. Use the two click connections from the middle for this (1A).

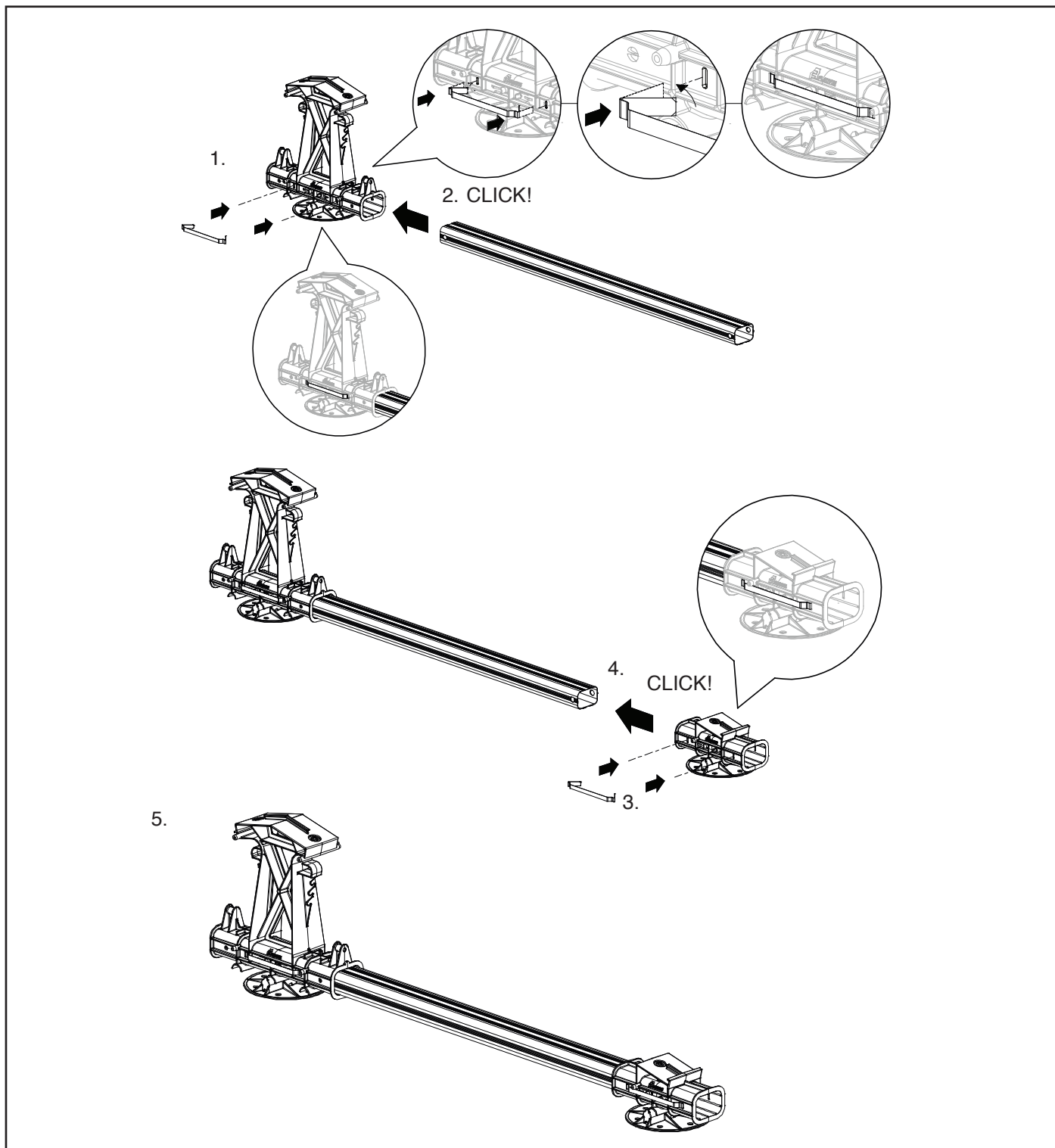
2. Attach the roof support to the lower base element by means of a click connection.



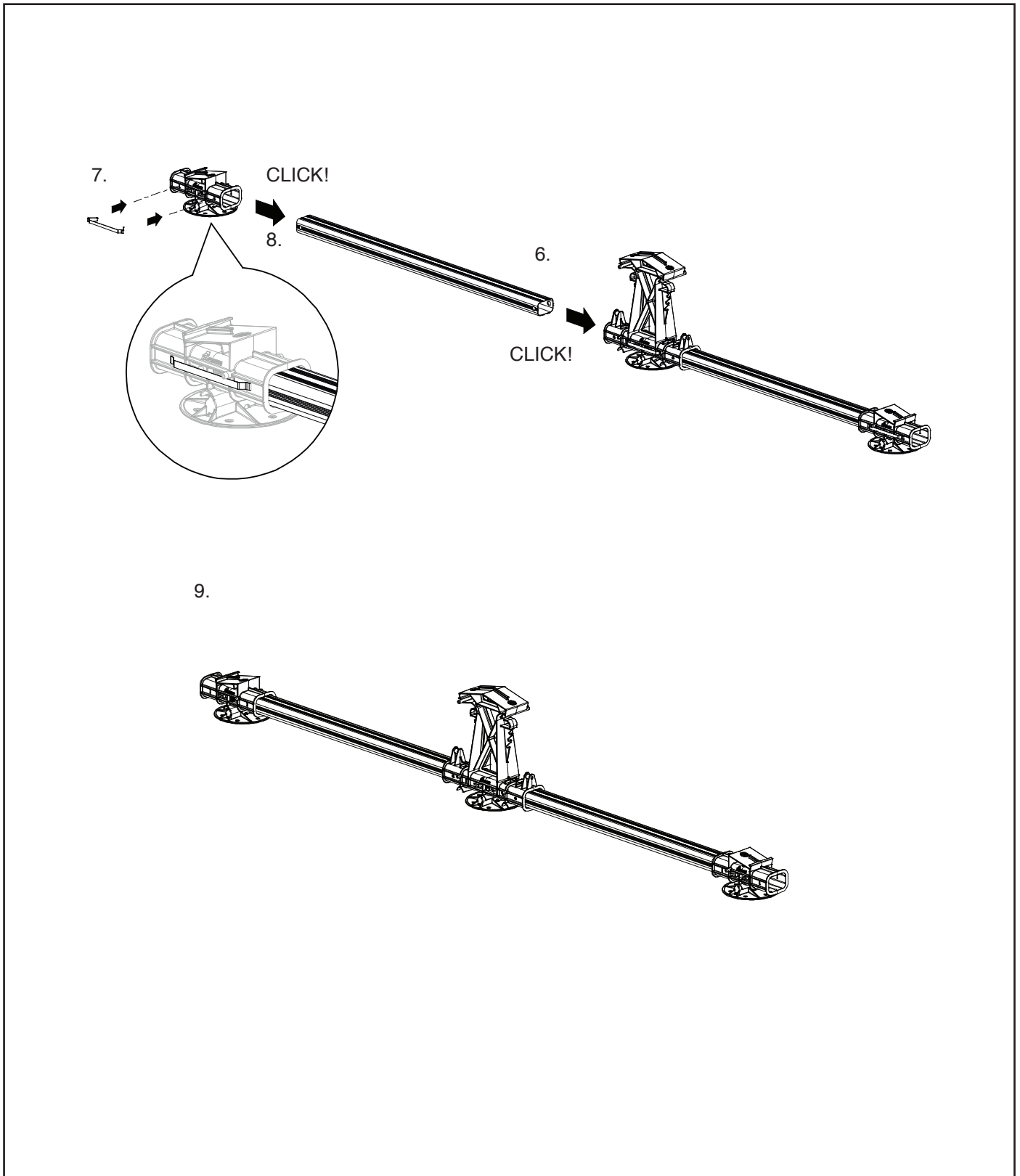
7.2 Grounding and mounting of base profile to base elements

Grounding of the base profiles (option)

1. Place the grounding spring into the slots in the high base units before clicking in the base profiles. Using 1 groundingspring equals a connection surface of 3mm², using two grounding springs (a spring on each side of the base units), equals a connection surface of 6mm². The spikes on the grounding springs bite into the base profiles ensuring a solid and durable connection.
2. Put the high base element (incl. roof support) upright and slide the end of the base profile (length 94 cm) into the opening of the high base element until it clicks.
3. Place the grounding spring into the slots in the low base units before clicking in the base profiles.
4. Slide the low base element (incl. roof support) on the other end of the base profile until it clicks.
5. One side of the FlatFix Fusion segment is ready.



6. Slide the end of the 2nd base profile (length 94 cm) into the opening of the high base element until it clicks.
7. Place the grounding spring into the slots in the low base units before clicking in the base profiles.
8. Slide the low base element (incl. roof support) on the other end of the base profile until it clicks.
9. The first FlatFix Fusion segment is ready. Repeat the abovementioned steps until you have enough Fusion segments to place the first two rows of solar panels.

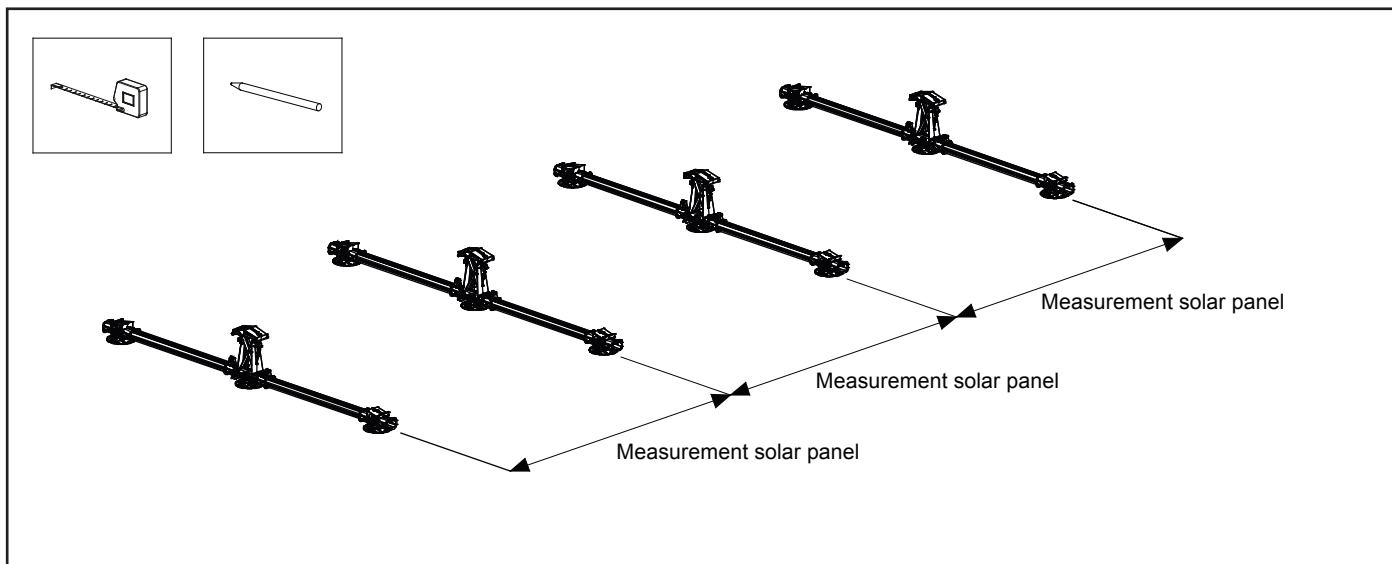


7.3 Positioning of FlatFix Fusion segments

You determine the position of the FlatFix Fusion segments based on the position of the solar panels on the roof. Divide the FlatFix Fusion segments proportionally in the line where the solar panels go. The FlatFix Fusion segments may be placed maximally 2 m apart from centre to centre (see calculator for distance).

Draw with chalk or a marker on the roof where the FlatFix Fusion segments should come.

Make sure the FlatFix Fusion segments are mutually aligned.

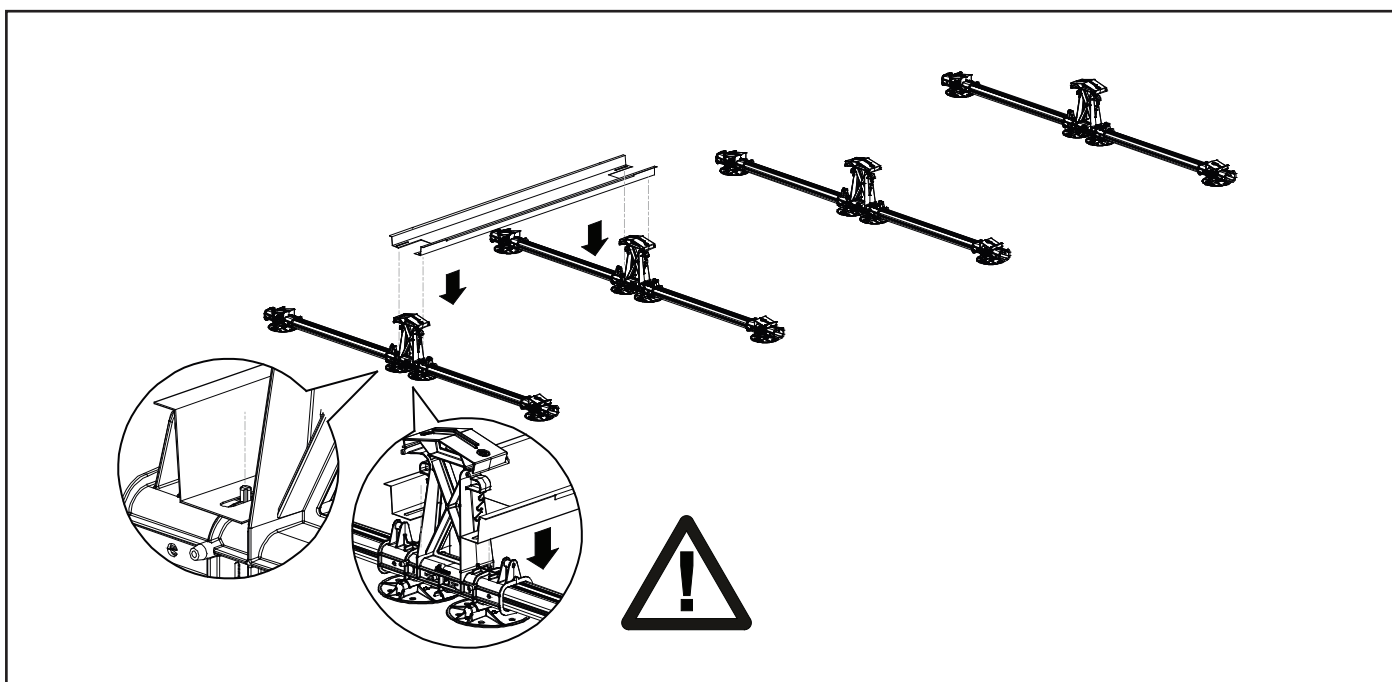


7.4 Mounting of ballast holders

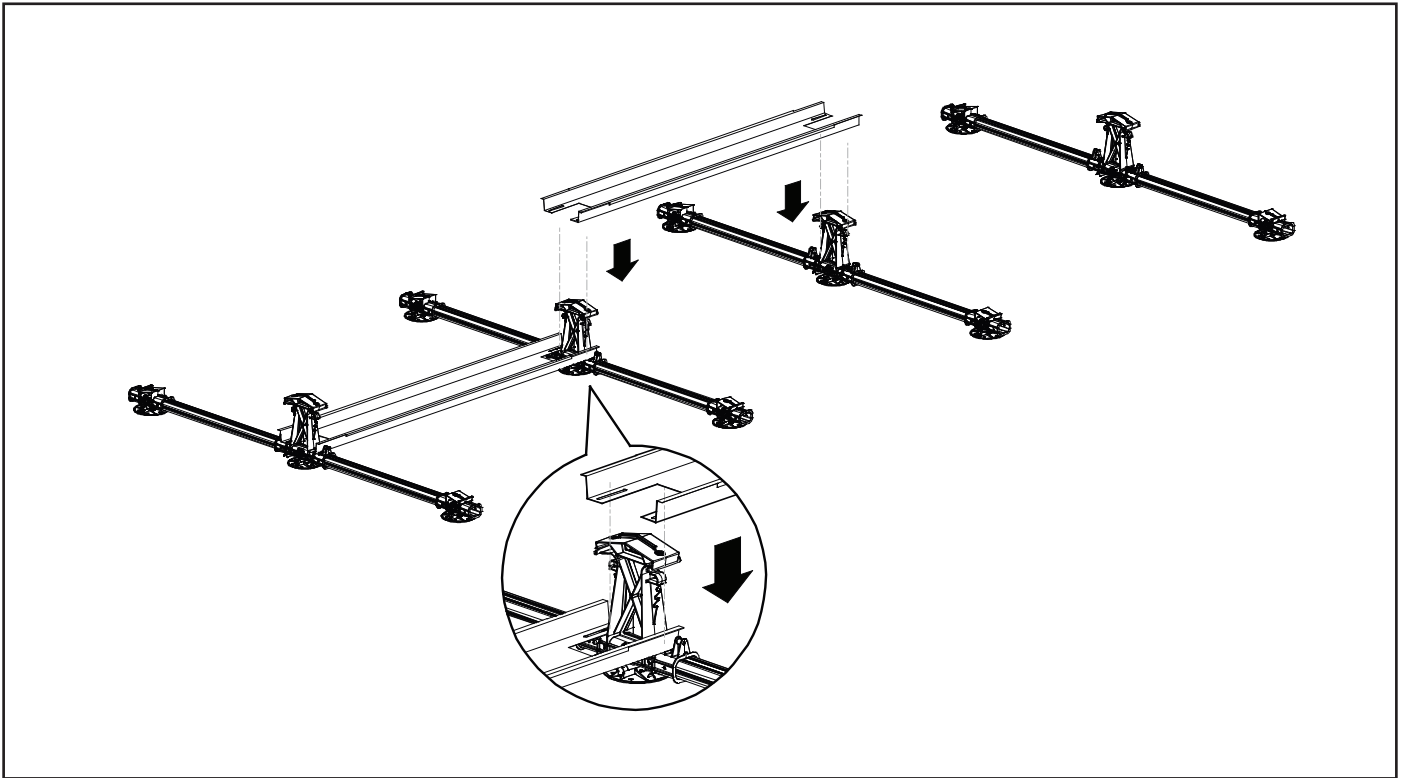
The ballast positions are determined by means of the calculator. Place the ballast holders on the locations indicated by the calculator. **CAUTION!** Make sure the high base elements at the location of the ballast holders always provided with two roof supports!

Insert the first ballast container diagonally and place it between the FlatFix Fusion segments in such a way that the elongated holes of the ballast holder are positioned over the upright notches of the high base element.

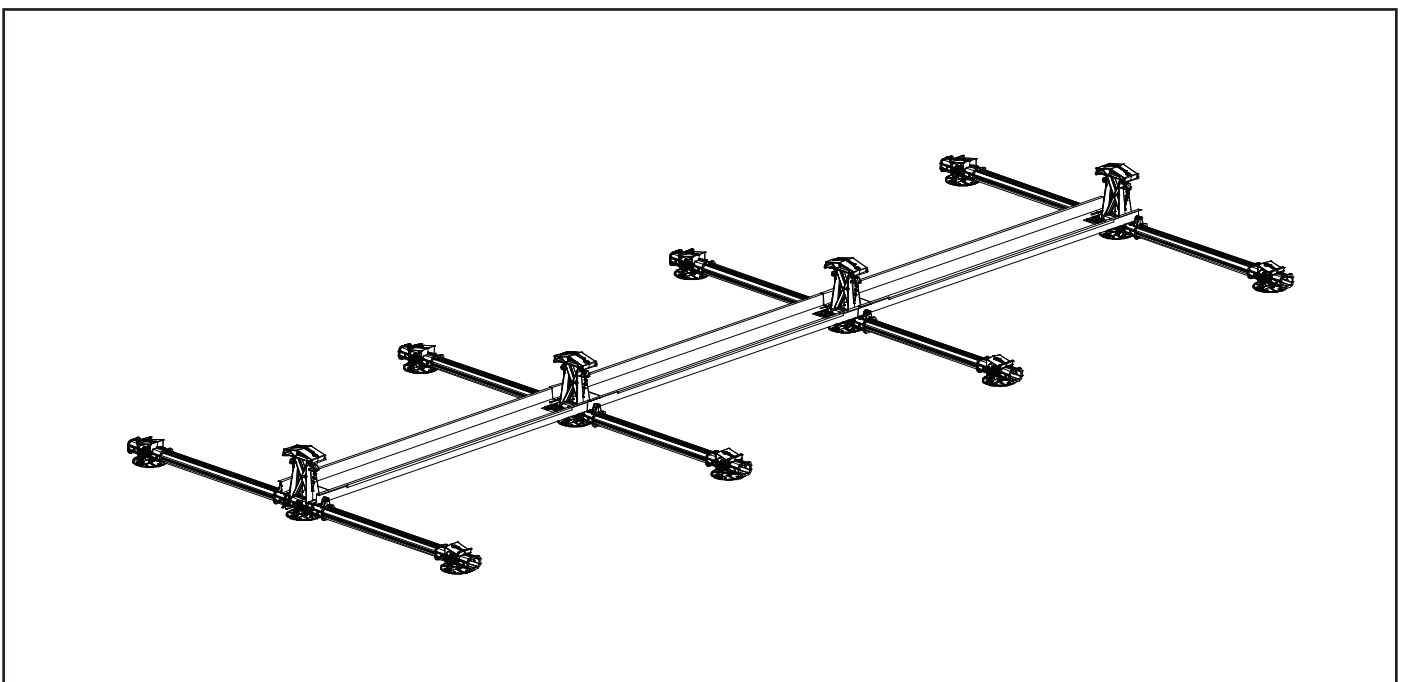
Check that the FlatFix Fusion segments are next to one another with regards to the alignment of the solar panels!



Place the second ballast holder between the FlatFix Fusion segments and in such a way that it overlaps the first ballast holder and that the elongated holes of the ballast holder are positioned over the upright notches of the high base element.

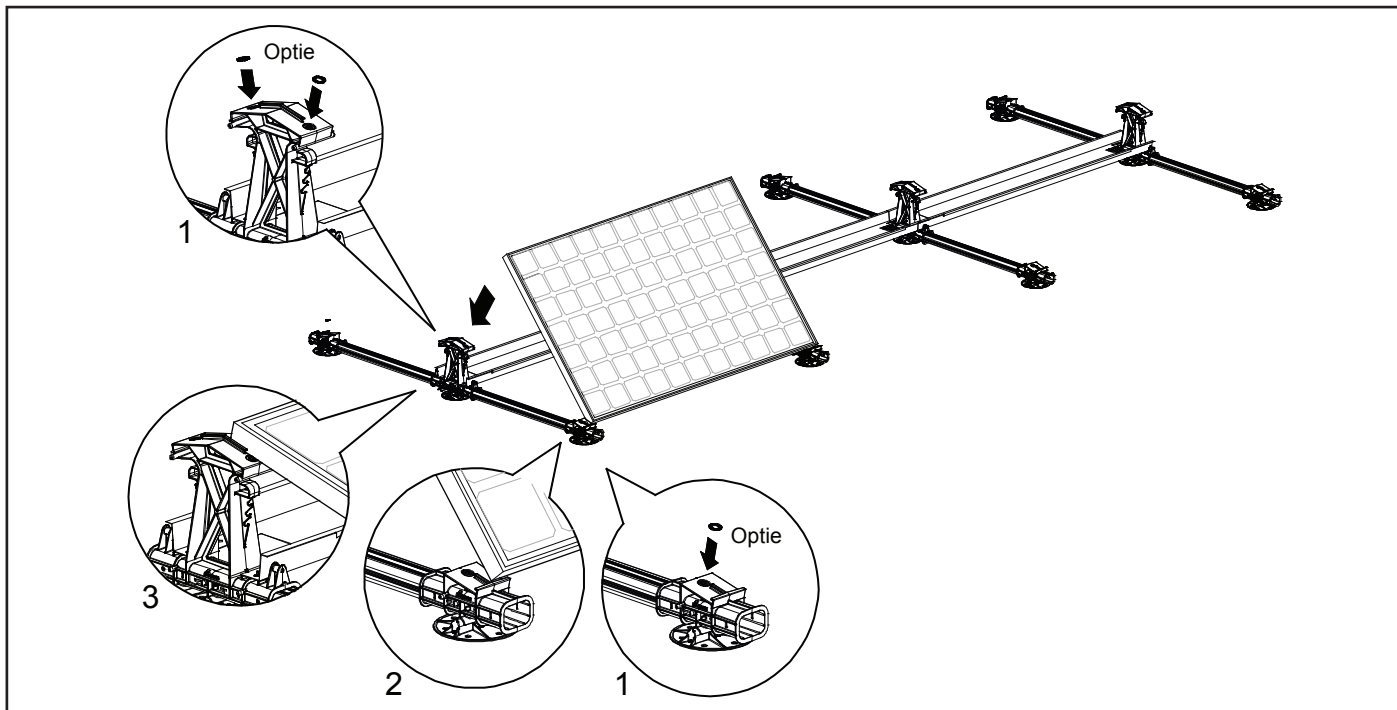


Place the third ballast holder between the FlatFix Fusion segments and in such a way that it overlaps the second ballast holder and that the elongated holes of the ballast holder are positioned over the upright notches of the high base element. Repeat these steps until all ballast holders are placed.

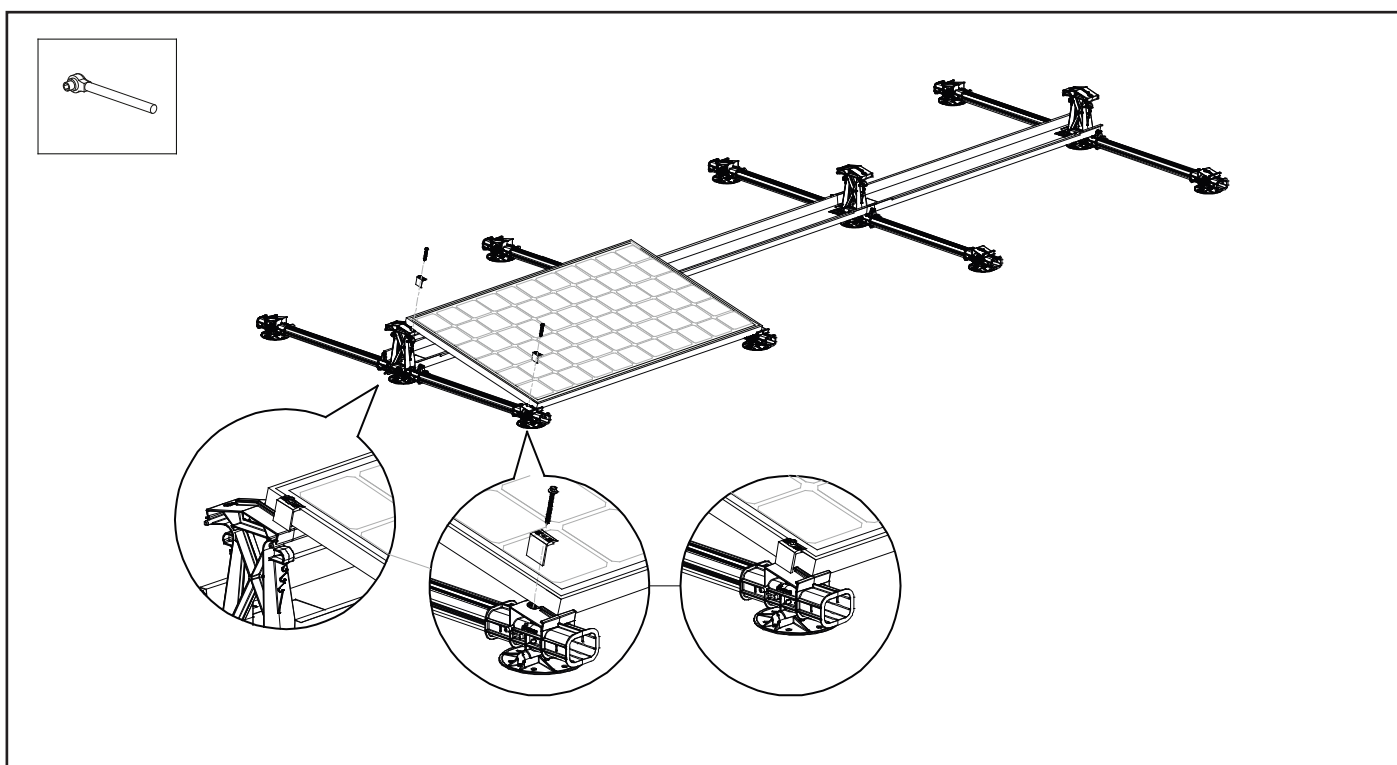


7.5 Grounding and mounting of 1st solar panel

1. Before placing the solar panels, it is optional to ground the FlatFix Fusion system per row. Place a grounding ring on both the Base element high and low.
2. Place the 1st solar panel between the upright notches of the low base element.
3. Carefully tilt the solar panel so that it comes to rest between the upright notches of the base elements.



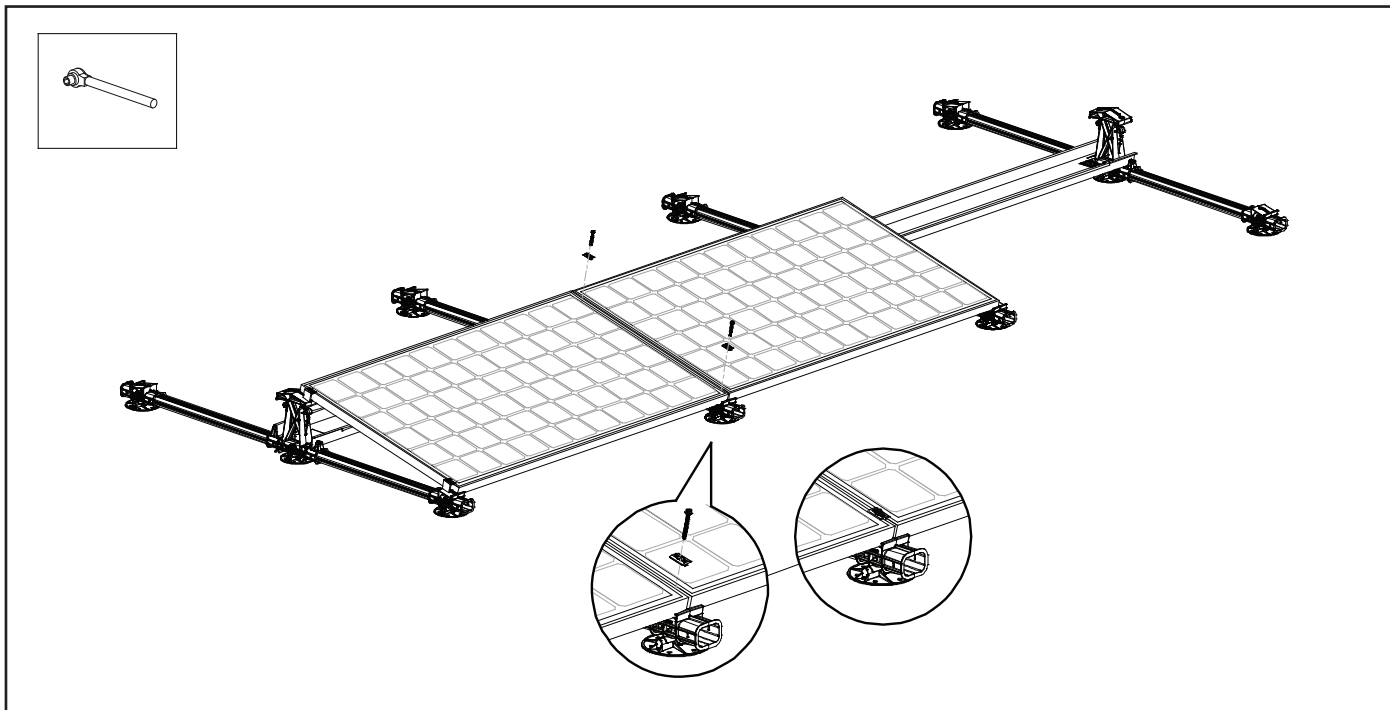
4. Place the end clamps on the edge of the solar panel and position them at the location of the mounting holes in the high and low base elements. Screw in the end clamp with the mounting screw into the mounting hole. The tightening torque of the screw connections is 4.5 Nm. **CAUTION!** Check that the mounting screws are not over-tightened in the base element.



7.6 Mounting of other solar panels

Place the second solar panel on the base elements so that it comes to rest between the upright notches. Then screw in the mounting screw with a module clamp in the mounting holes of the base elements. Check that the solar panels are aligned properly before tightening the screw!

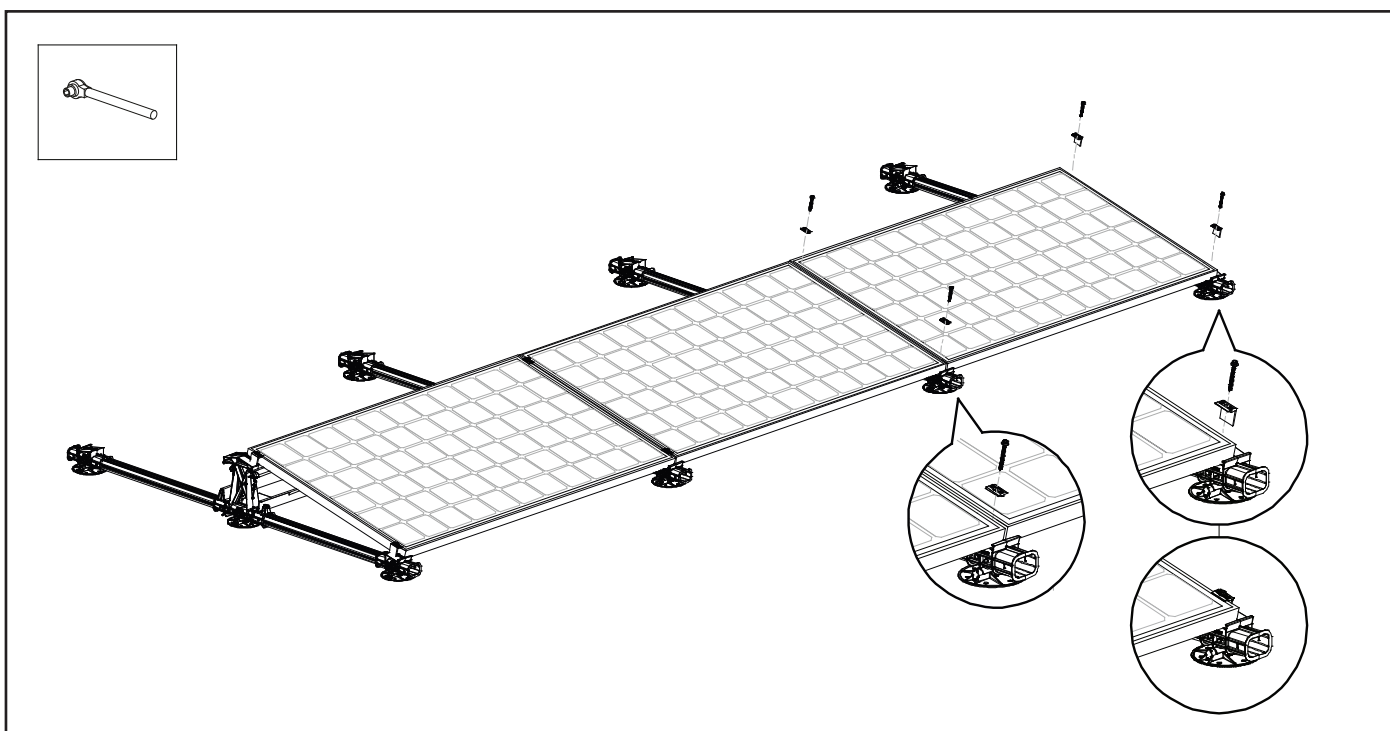
CAUTION! The tightening torque of the screw connections is 4.5 Nm. Check that the mounting screws are not over-tightened in the base element.



Place the last solar panel of the row on the base elements so that it comes to rest between the upright notches. Then screw in the mounting screw with a module clamp in the mounting holes of the base elements.

Then screw in the two end clamps with the mounting screw in the mounting hole. Check that the solar panels are aligned properly before tightening the screw!

CAUTION! The tightening torque of the screw connections is 4.5 Nm. Check that the mounting screws are not over-tightened in the base element.

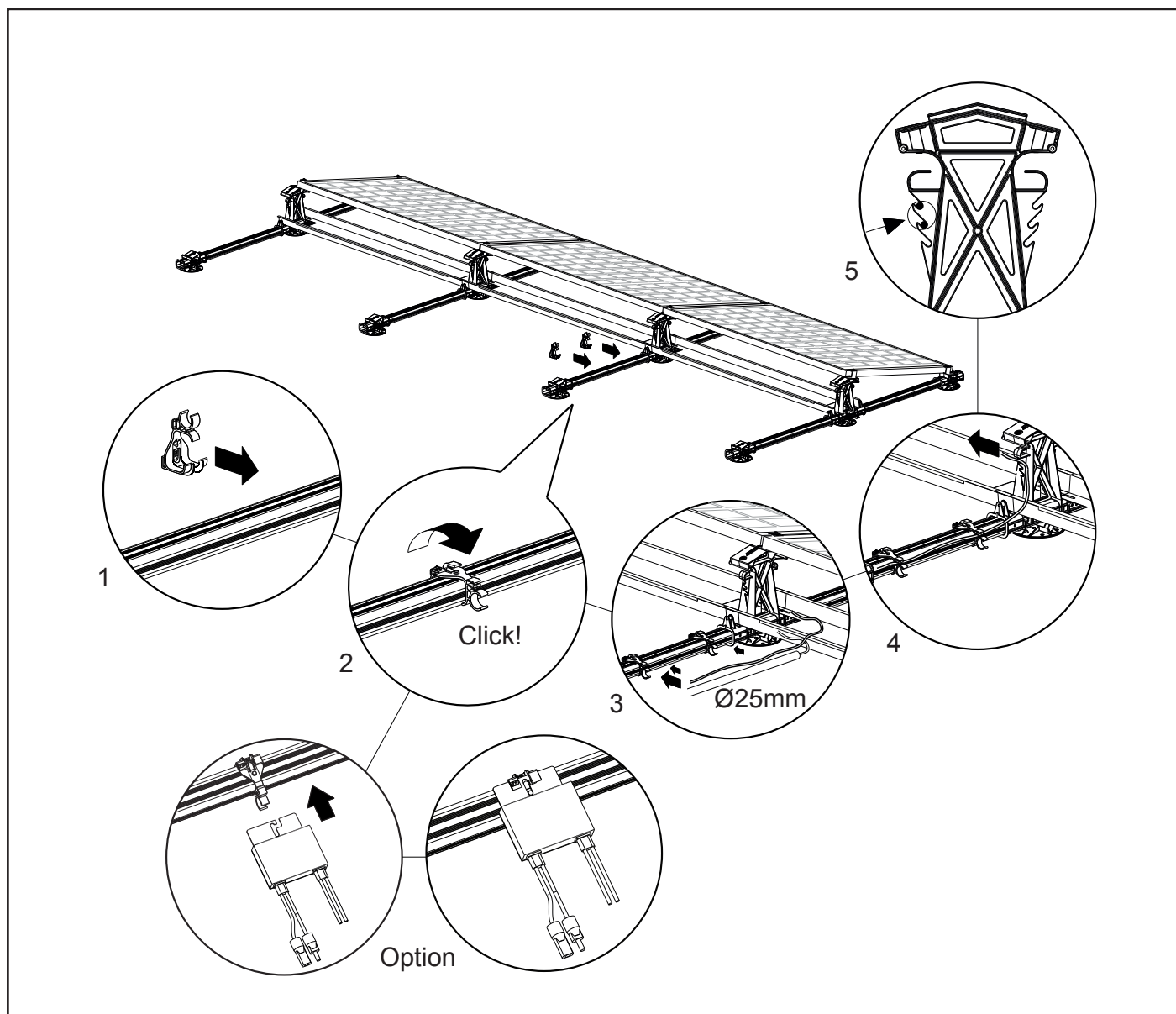


7.7 Mounting of cable clips optimizer ready & cables

There are cable clips supplied so that the cables of the solar panels can be guided well. There are also cut-outs present in the high base elements available to feed the cables through. This will prevent that the cables end up lying on the (wet) roof. For the installation, follow the steps below:

1. Place the cable clips over the narrow side of the base profiles.
2. Turn the cable clips so that they are clamped on the broad side of the base profiles.
3. Place the cables in the cable clips. The cable clip also provides for accommodation for a tube of Ø25 mm.
4. Feed the end through one of the cable conductors of the high base element.
5. The plugs of the solar panel can be confirmed to the high base element in the cable conductor.

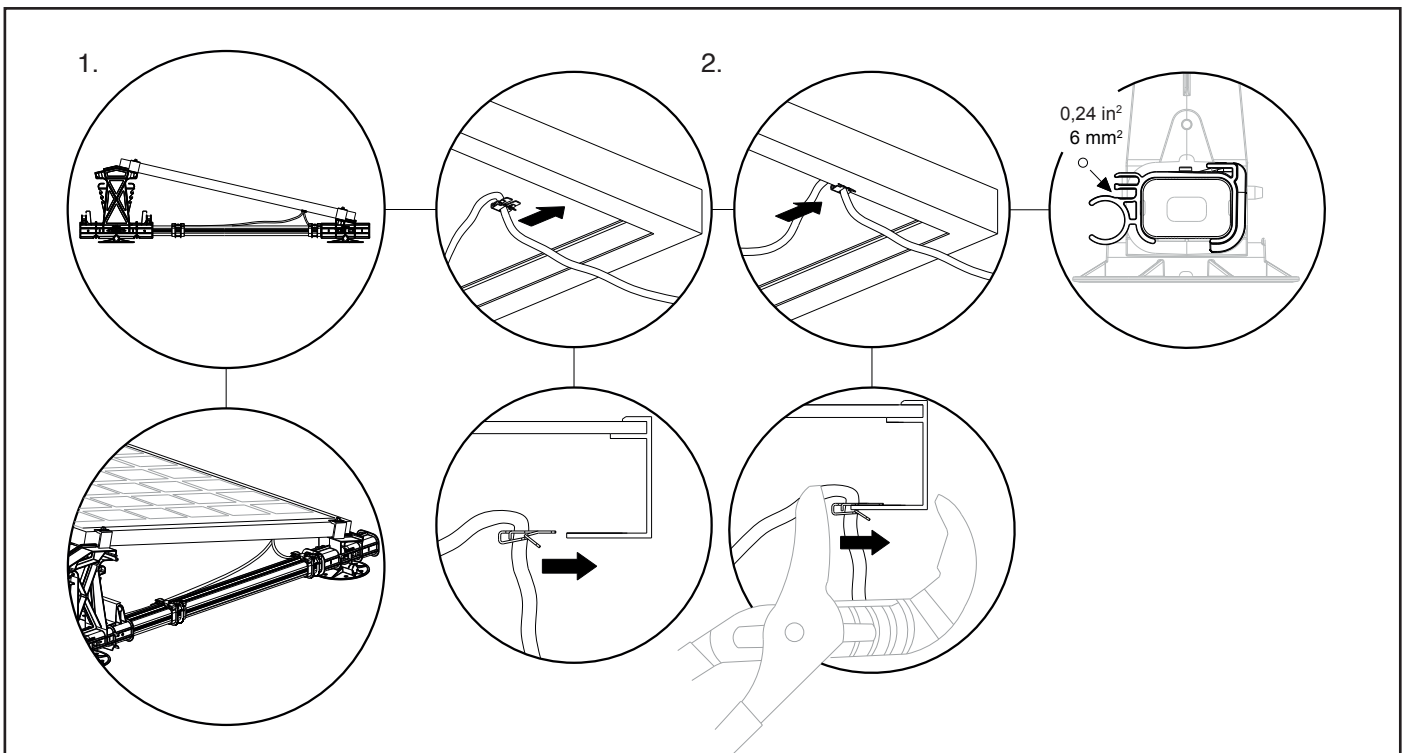
Optional: Click the optional optimizer onto the cable clip.



7.8 Grounding of multiple rows (option)

When the PV system is built in multiple rows these can easily be grounded by using a standard multistrand cable of 6 mm² and special grounding clips. The design of the grounding clips ensures a good and sustainable connection between the multistrand cable and the solar panel.

1. Place the multistrand cable on one side of the emplacement. The multistrand cable can be easily clicked into the FlatFix Fusion cable clip. To connect the multistrand cable to the solar panel a loop must be made towards solar panel.
2. Use the grounding clip to attach the multistrand cable to the solar panel. Insert the multistrand cable into grounding clip and use a pincers to clamp the grounding clip firmly to the solar panel. Place a grounding clip on each first solar panel in a row. When one makes use of the grounding rings in the FlatFix Fusion base elements the rest of the solar panels in the same row are automatically grounded.



7.9 Grounding of ballast holders (option)

The ballast holders can easily be grounded using the same method and as the grounding of the rows. The clips are pressed on to the ballast holders. The spikes on the clips will bite into the ballast holder ensuring a solid and durable connection. The grounding cable used for the grounding of the rows can be used for grounding the ballast holder as well. Place a ground clip on every first and last ballast holder of a row to ground all rows individually.

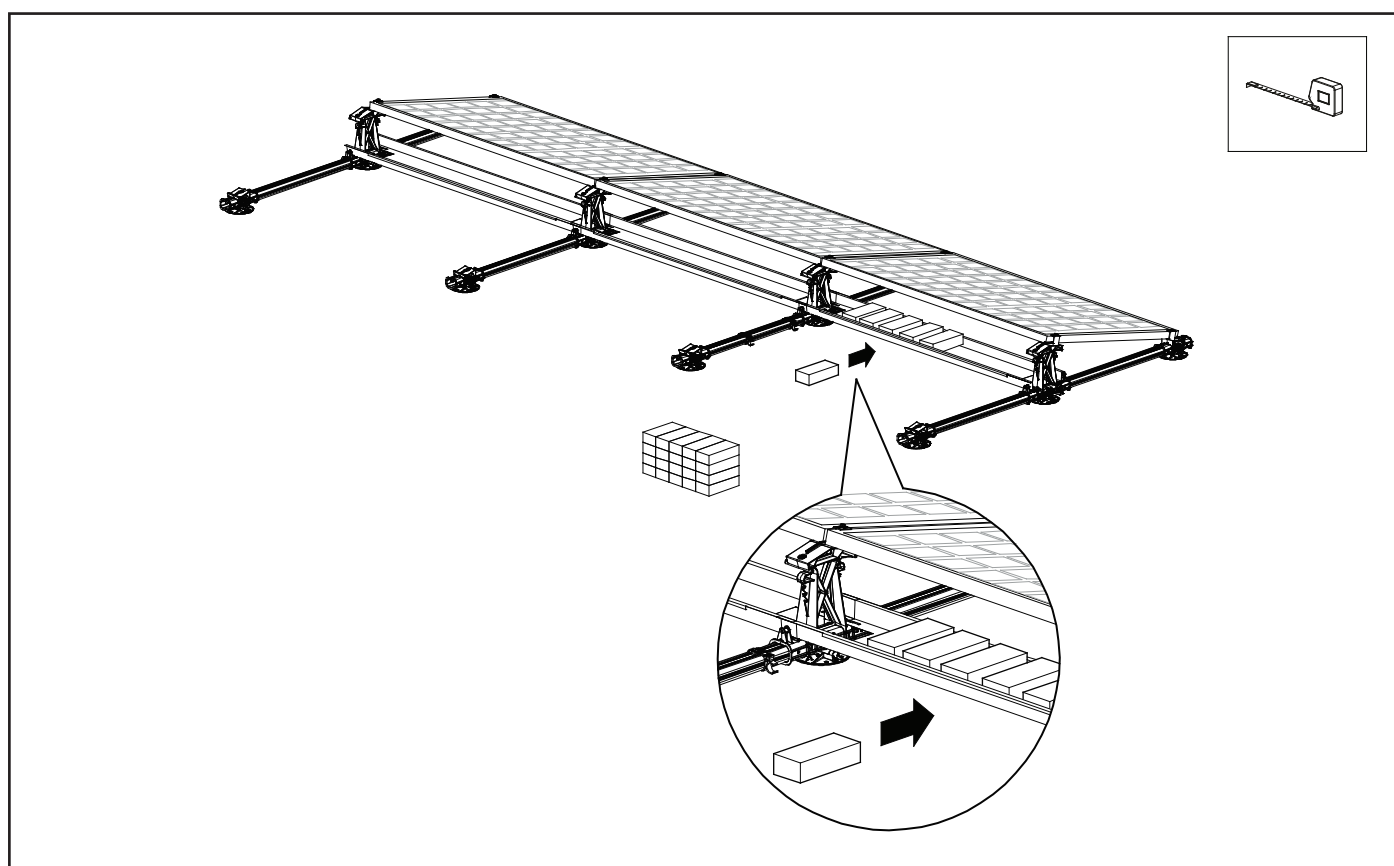


7.10 Placement of ballast

To keep the solar panels in place, you need to put ballast in the ballast holders. By default, you can use concrete paving blocks of 21x10,5x8 cm as ballast. They weigh approximately 4 kg/piece and fit well into the ballast holders with regards to their size. Alternatively, you can also use pavement tiles of maximally 21x21 cm, curb stones of 20x100 cm, or gravel. When using gravel, place a concrete paving block left and right in the ballast holder. Carefully adhere to the ballast weights from the calculator!

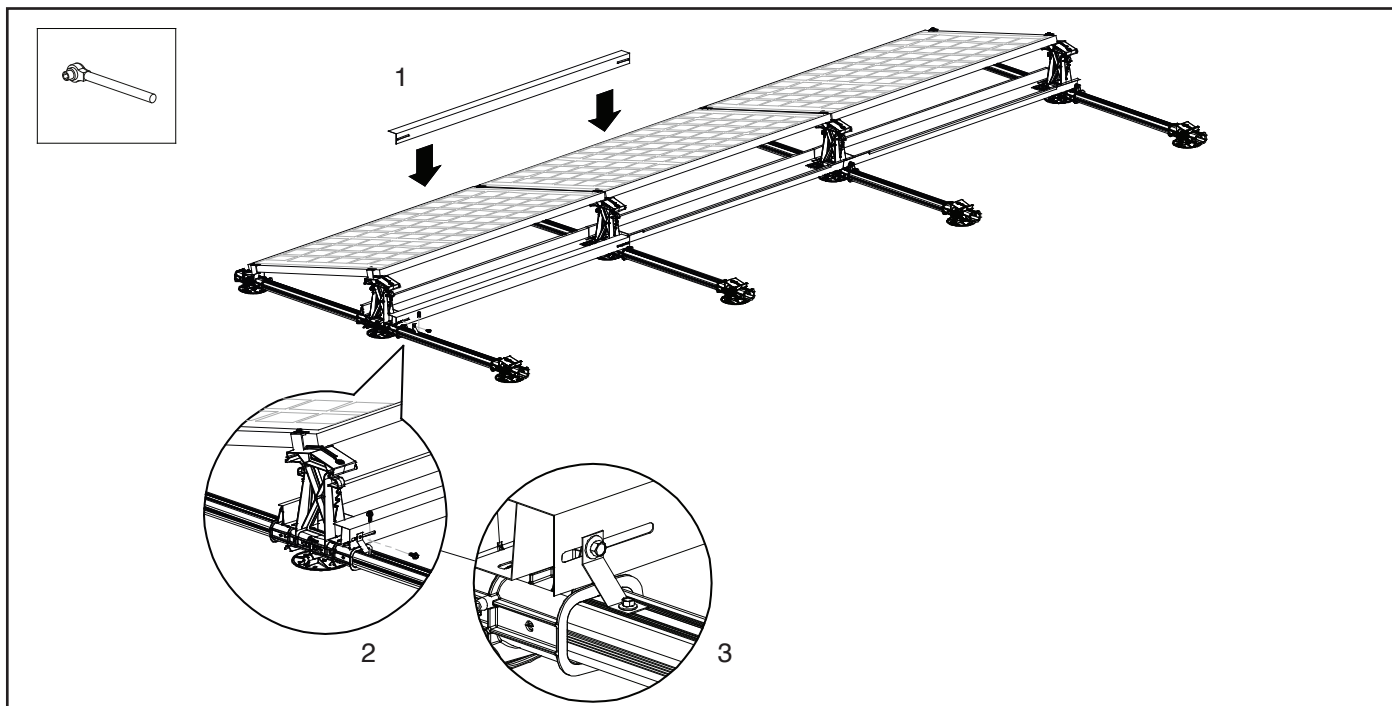
Take note: Before placing the ballast, you should check whether the solar panel field is in the correct position and that it is properly aligned with respect to the eaves. You can still adjust the panel field a little bit at this stage. Once the ballast has been placed, correction is not possible anymore!

If your roof is higher than 12 meters, we advise you to get in touch with your supplier; they can then determine the correct weight, depending on your situation.

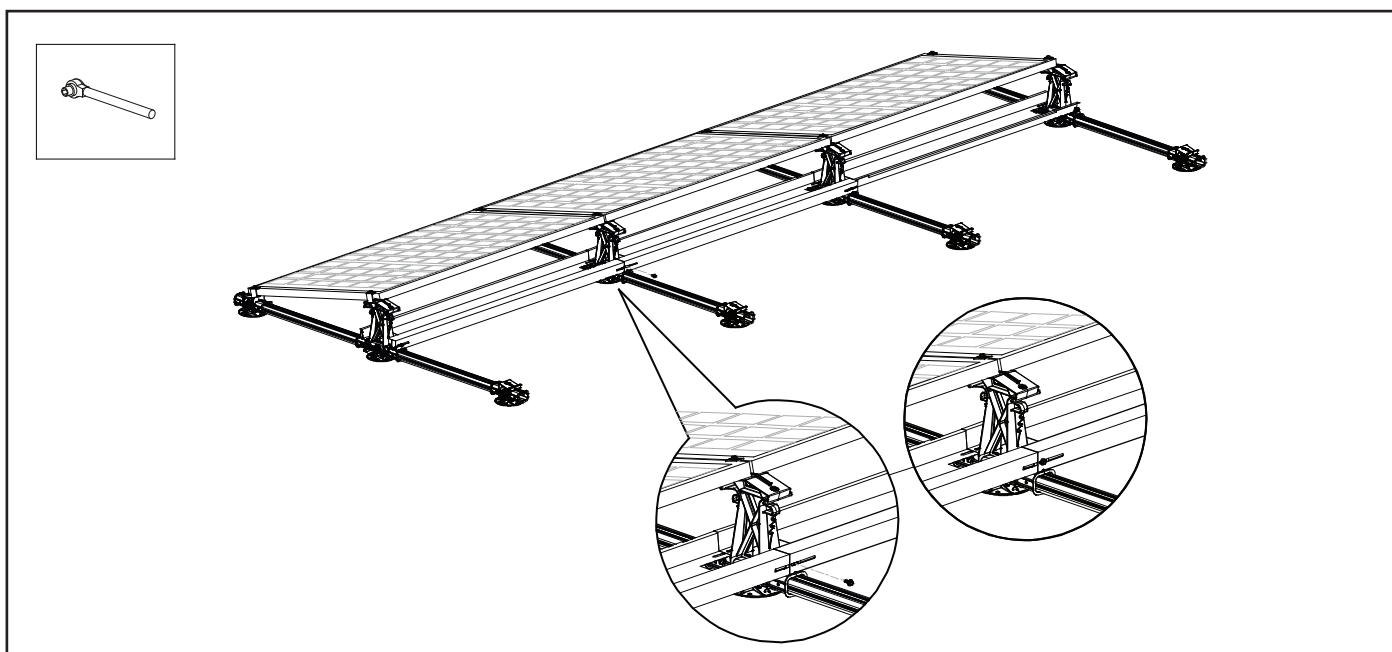


7.11 Grounding and mounting of stabilizer

1. Place the 1st stabilizer on the rear side of the solar panels so that it falls between the upright notches of the high base elements.
2. Place the grounding bracket onto the base profile and onto the back side of the stabilizer. Fasten the grounding bracket to the base profile using a mounting screw 6.5 x 19 mm.
3. Mount only one side of the stabilizer (at the location of the panel field's edge) to the high base element by placing the mounting screw 6.5 x 19 mm in the hole of the grounding bracket and in the slotted hole of the diagonal and screw it into the mounting hole of the high base element. **CAUTION!** The tightening torque of the screw connections is 4.5 Nm
Check that the mounting screws are not over-tightened in the base element.



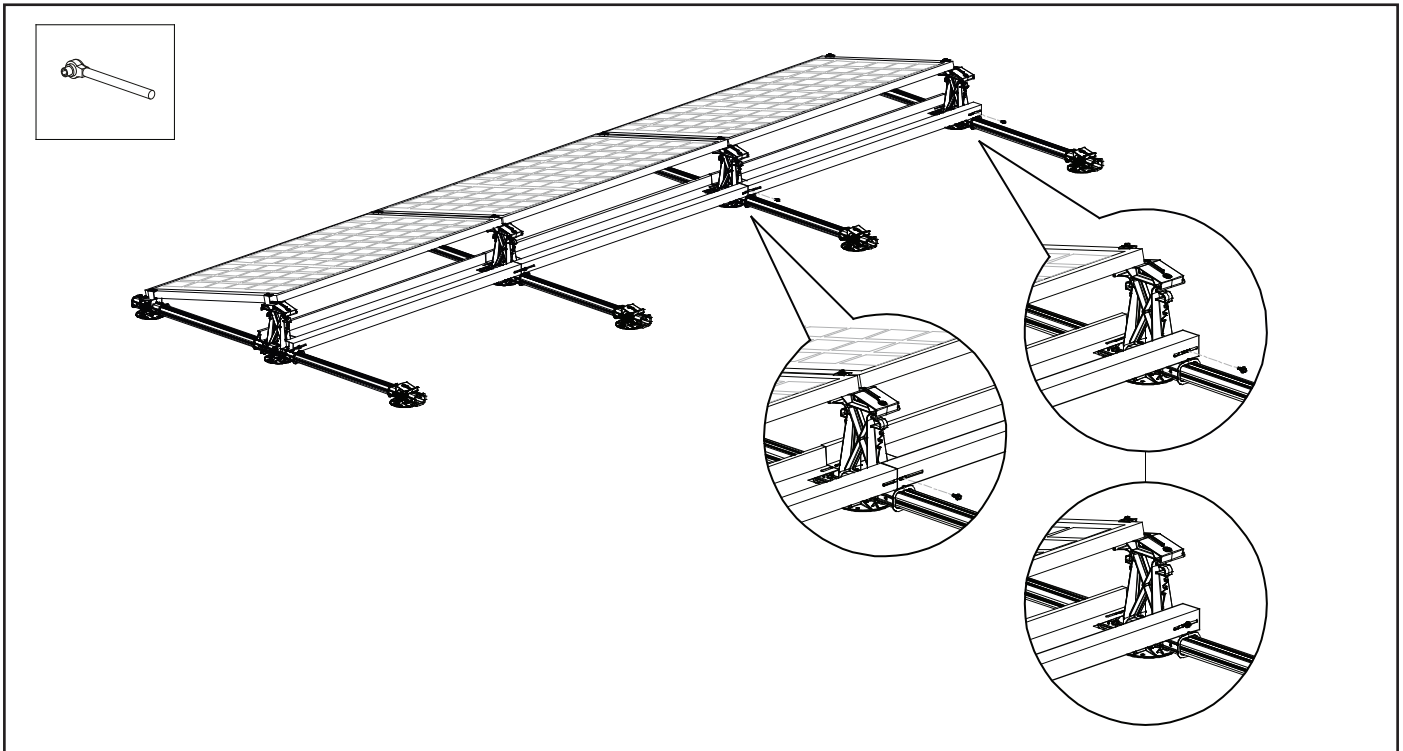
Place the 2nd stabilizer on the rear side of the solar panels so that it falls between the upright notches of the high base elements and that there is a small overlap with the 1st stabilizer.
Mount only one side of the stabilizer (at the location of the overlap) to the high base element by placing the mounting screw 6.5 x 19 mm in the slotted hole of the 2 stabilizers and screw it into the mounting hole of the high base element.
CAUTION! The tightening torque of the screw connections is 4.5 Nm
Check that the bolts are not over-tightened in the base element. Repeat the previous step for the other intermediate stabilizers.



Place the last stabilizer on the rear side of the solar panels so that it falls between the upright notches of the high base elements and that there is a small overlap with the adjacent stabilizer.

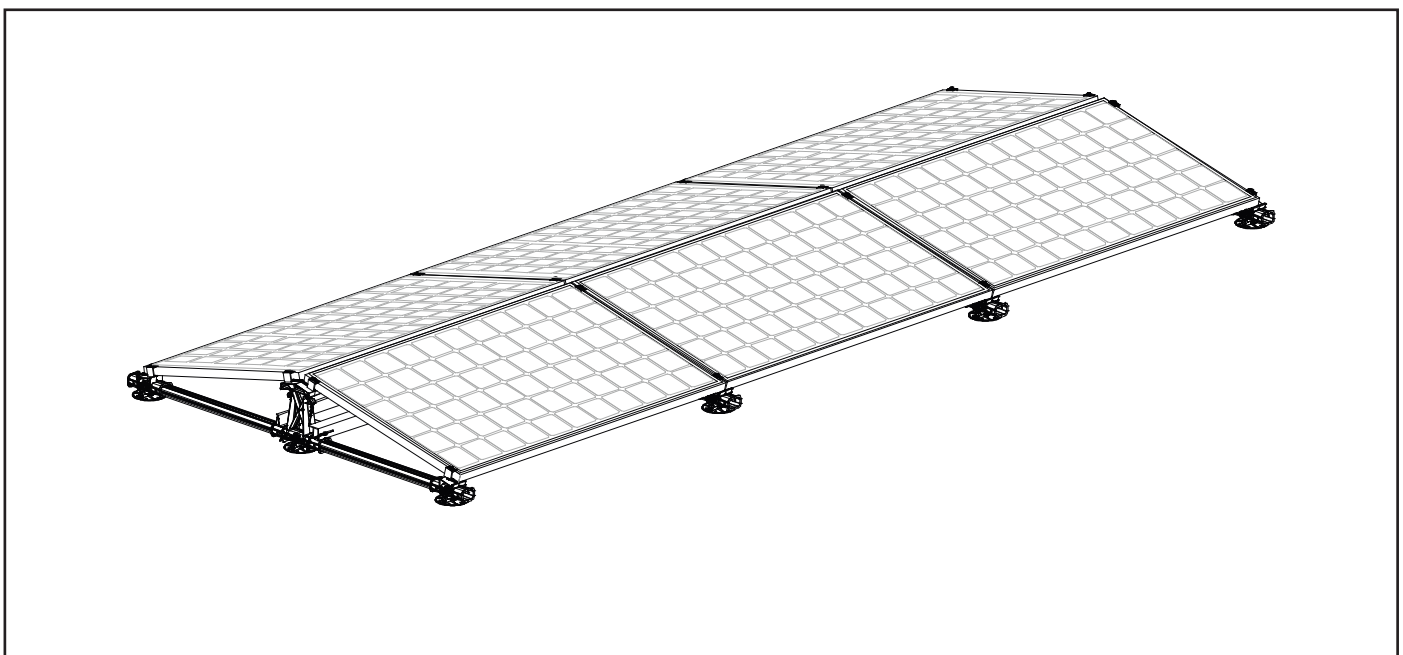
Mount the stabilizer (on both sides) to the high base elements by placing the mounting screw 6.5 x 19 mm in the two slotted holes of the stabilizer and screw it into the mounting holes of the high base element. **CAUTION!** The tightening torque of the screw connections is 4.5 Nm

Check that the mounting screws are not over-tightened in the base element.



7.12 Mounting of 2nd row of solar panels

You can now mount the 2nd solar panels row. To do this, follow the assembling steps from Chapter 7.5 to 7.6.

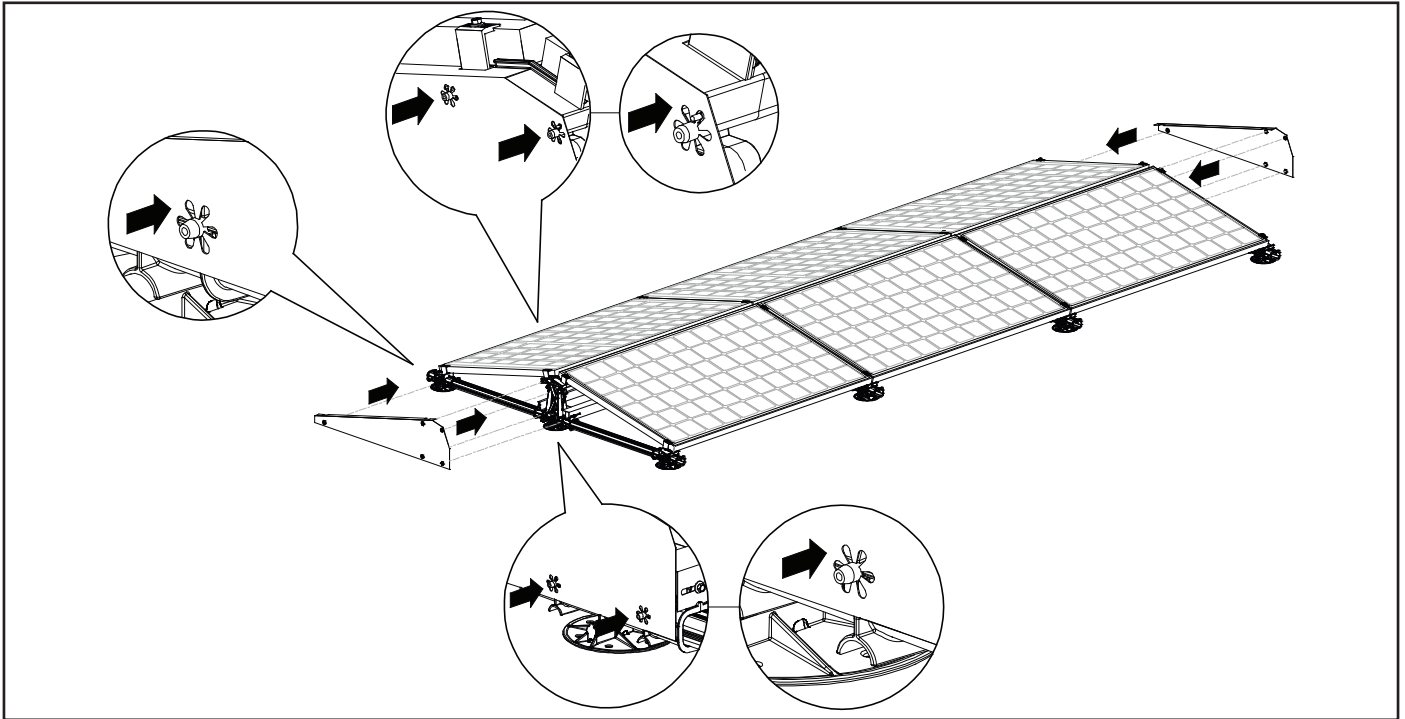


7.13 Mounting of wind deflector left/right

Place the left wind deflector next to the left side of the panel field and the right wind deflector next to the right side.

Take note: The flange of the wind deflector must always face the panel field.

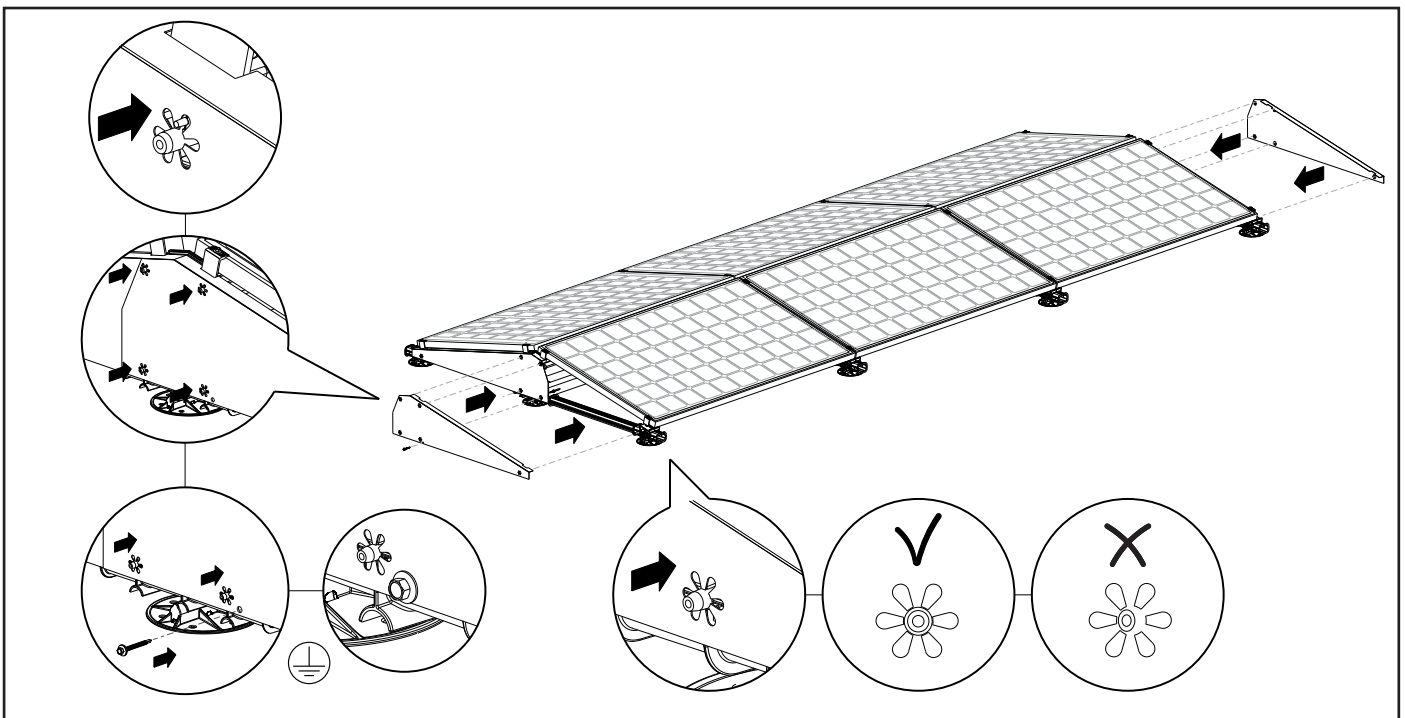
Install the two wind deflectors (left and right) by pressing the Sunlock in the wind deflectors over the catches of the base elements. Mount the wind deflector carefully. Make sure all the tabs on the Sunlock fit well over the catch of the base element. Press the wind deflector well so that it fits on the base. The wind deflectors are now locked.



Place the 2nd left wind deflector next to the left side of the panel field and the 2nd right wind deflector next to the right side.

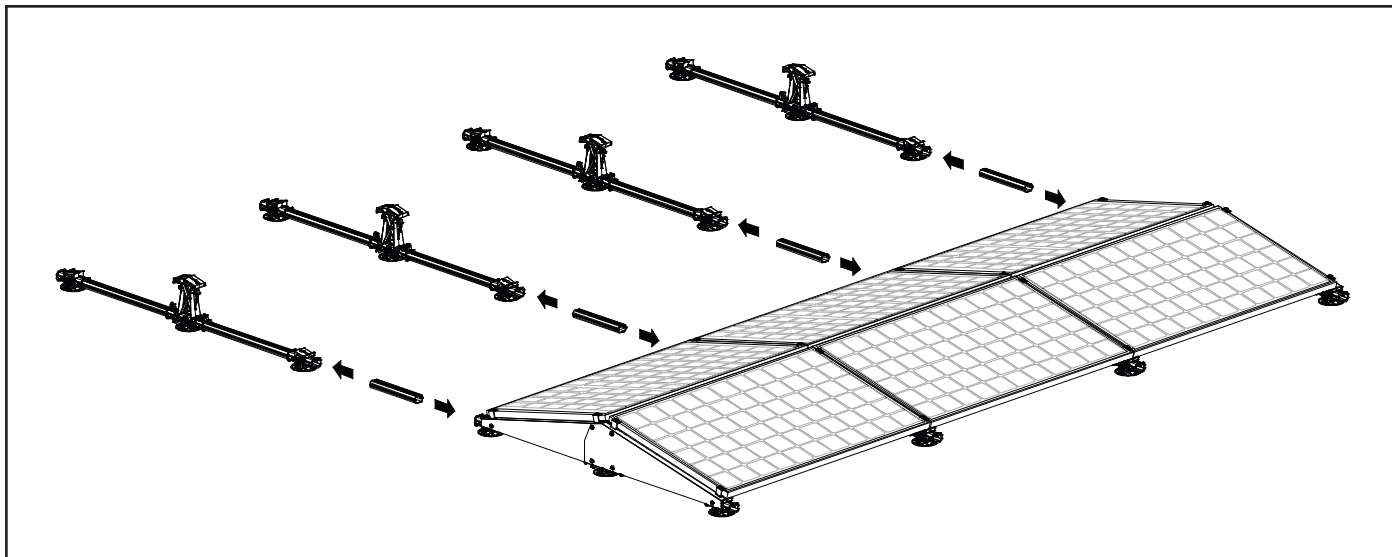
Take note: The flange of the wind deflector must always face the panel field.

Install the two wind deflectors (left and right, with an overlap) by pressing the Sunlock in the wind deflectors over the catches of the base elements. If you are in doubt whether the wind deflector is well secured or if you wish to ground it (option), you can secure it with a self-tapping screw 6,3 x 32 mm. Insert this screw in the wind deflector and the basic profile. Use the pre-punched hole in the side wind deflector next to the bottom sun-lock as a pilot. The side wind deflectors are now grounded and secured. And the first row of solar panels is ready!

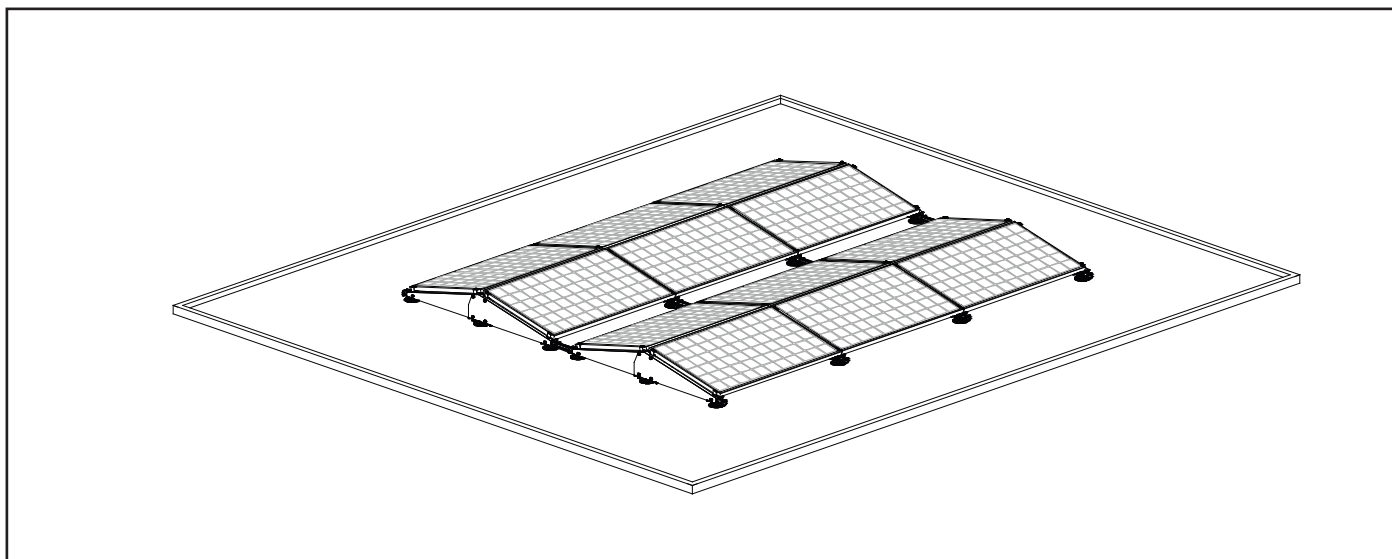


7.14 Several rows behind one another

If you want to mount more rows of solar panels one behind the other, then you must first create FlatFix Fusion segments again (see section 7.1) and connect them to the base profile to the already mounted panel field.

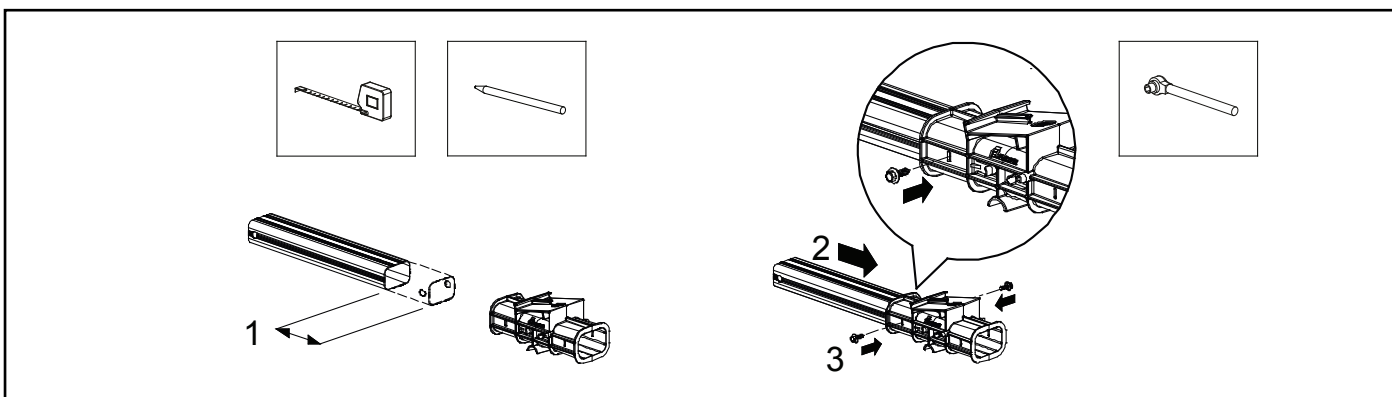


The panel field is now ready!



7.15 Shorten base profile (option)

If desired, the base profiles between the rows of solar panels can be shortened. Cut the profiles to the desired length on the side of the high base element. Slide the base profile in the high base and secure it with two self-tapping screws 6,0x25 (Article nr.100-3010).



8. ANNEX

Frame height	Screw length	End clamp height
29 mm	55 mm	29 mm
30 mm	55 mm	30 mm
31 mm	60 mm	31 mm
32 mm	60 mm	32 mm
33 mm	60 mm	33 mm
34 mm	60 mm	34 mm
35 mm	63 mm	35 mm
36 mm	63 mm	36 mm
37 mm	63 mm	37 mm
38 mm	63 mm	38 mm
39 mm	63 mm	39 mm
40 mm	70 mm	40 mm
41 mm	70 mm	41 mm
42 mm	70 mm	42 mm
43 mm	70 mm	43 mm
44 mm	70 mm	44 mm
45 mm	70 mm	45 mm
46 mm	75 mm	46 mm
47 mm	75 mm	47 mm
48 mm	75 mm	48 mm
49 mm	75 mm	49 mm
50 mm	75 mm	50 mm

2A. Available base profiles

Article nr	Description	Rowdistance dual
100-7021	FlatFix Fusion base profile 210 mm	2110 mm
100-7037	FlatFix Fusion base profile 370 mm	2270 mm*
100-7055	FlatFix Fusion base profile 550 mm	2450 mm
100-7075	FlatFix Fusion base profile 750 mm	2650 mm
100-7094	FlatFix Fusion base profile 940 mm	2840 mm
* Default length in FlatFix Fusion calculator		

6. Available ballast holders

Article nr	Description	Panel length
100-7060	FlatFix Fusion Ballast holder 1600	1611-1680 mm
100-7061	FlatFix Fusion Ballast holder 1200	1200-1306 mm
100-7062	FlatFix Fusion Ballast holder 1900	1900-1972 mm
100-7063	FlatFix Fusion Ballast holder 1500	1465-1610 mm
100-7098	FlatFix Fusion Ballast holder 1700	1685-1789 mm

11. Available stabilizer (dual)

Article nr	Description	Panel length
100-7070	FlatFix Fusion Stabilizer 1600	1611-1680 mm
100-7071	FlatFix Fusion Stabilizer 1200	1200-1306 mm
100-7072	FlatFix Fusion Stabilizer 1900	1900-1972 mm
100-7073	FlatFix Fusion Stabilizer 1500	1465-1610 mm
100-7099	FlatFix Fusion Stabilizer 1700	1685-1789 mm

Considerations during system design and installation:

By installing a PV system on or at an existing building the load compatibility, (e.g. snow/wind) up to that point will be changed. To prevent personal injury and/or material damages it is necessary to have the static calculations of the building reviewed by a qualified technician. It is also necessary to regard the current regulations, especially NEN6702, NEN7250, NEN1991-1-1-4 A1 + C2/NB. If the static calculations of the building are not verified, this may result in worst case scenario of the building collapsing (the supporting construction). The insurer should be consulted in the case of architectural changes. Roofs are always subject to vibrations and movement, which can be caused by activities in the building, such as the influence of the weather, thermal working or seismic activity, by means of which PV systems can move, shift or sag. In some cases it may be necessary to attach/anchor the PV system to the roof.

When determining the edge and angle zones of a building, it is necessary to adhere to the current regulations. When the edge and angle zones are indicated by Esdec, these are the minimum edge and angle zones. Placement of the solar panels in the edge and angle zones of a building is always at your own risk and is strongly discouraged.

The following subjects, amongst others, must be checked architecturally and approved, for instance by a builder:

- The emergent loads caused by the additional weight of the complete PV system on the building.
- The emergent loads caused by the changed geometry of the roof surface on the building.
- The emergent loads caused by the static load of the PV system on the building.
- The emergent loads caused by the dynamic wind pressure and possible accumulation of precipitation on the building and the PV system.
- The emergent loads during the installation on the building, the roof construction, the roof covering and the insulation.
- The long term compatibility of the insulation and the roof covering at the locations of the supporting structure contact points of the PV system, resulting from the point pressure.
- The compatibility of the roof covering in combination with the PV system at the location of the contact points.
- The effect of thermal activity between the building and the PV system.
- The effect of possible movement and vibration between the roof and the PV system.

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