

# ESDEC

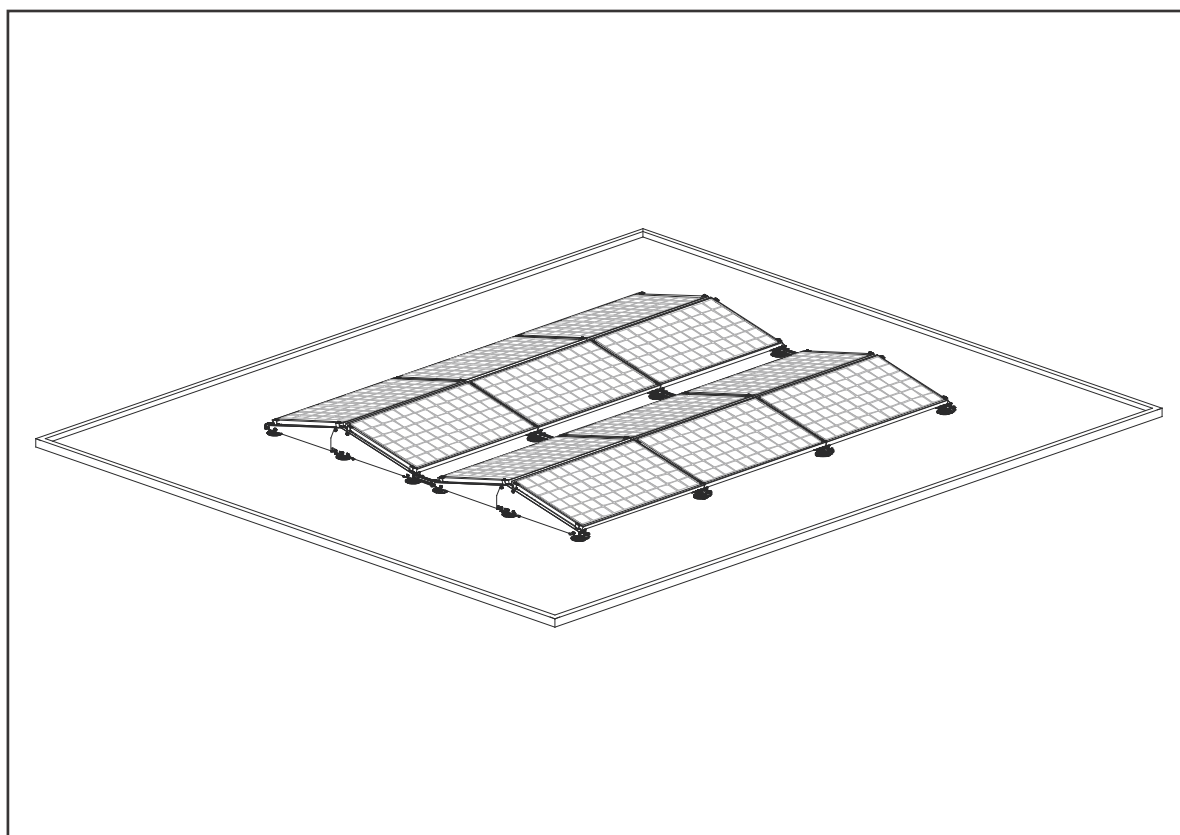
INNOVATIVE MOUNTING SYSTEMS

## FLATFIX FUSION

# MANUAL

FLATFIX FUSION MOUNTING SYSTEM FOR FLAT ROOFS

# EN



## FlatFix Fusion

### Flat roof mounting system for solar panels in a dual landscape setup

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FLATFIX

[www.esdec.com](http://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](http://www.esdec.com)

# CONTENTS

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	<b>page</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. General installation conditions</b>	<b>1</b>
<b>3. Product description</b>	<b>3</b>
<b>4. Parts overview</b>	<b>3</b>
4.1 Exploded view	3
4.2 Parts list	4
<b>5. Mounting preparation</b>	<b>5</b>
5.1 Check of tools and accessories	5
5.2 Determining and measuring position of solar panels	6
5.3 Cleaning roof	6
<b>6. Installation</b>	<b>7</b>
6.1 Mounting roof supports to base elements	7
6.2 Mounting extra roof supports (optional)	7
6.3 Mounting of TPO Protective Mat (optional)	7
6.4 Equipotential bonding and mounting of the base profile to the base elements	8
6.5 Positioning FlatFix Fusion segments	10
6.6 Mounting ballast holders	10
6.7 Perimeter ballast (see annex)	12
6.8 Mounting the first solar panel	13
6.9 Equipotential bonding and mounting remaining solar panels	14
6.10 Mounting optimisers & cables	15
6.11 Equipotential bonding of multiple rows (optional)	16
6.12 Equipotential bonding of the ballast holders (optional)	17
6.13 Placing ballast	18
6.14 Mounting and equipotential bonding of the stabilisers	19
6.15 Mounting second row of solar panels	20
6.16 Mounting wind deflectors left/right	21
6.17 Multiple rows in succession	22
6.18 Shortening base profiles (optional)	22
<b>7. Annex</b>	<b>23</b>

THESE INSTALLATION INSTRUCTIONS MUST BE STORED CAREFULLY FOR FUTURE USE!

For the warranty terms and conditions, we recommend contacting your supplier. Please also refer to our General Sales & Delivery Conditions, which are supplied on request.

The manufacturer denies any responsibility for damage or injury as a result of a failure to carefully follow these installation instructions, and failure to take common precautions in the transport, mounting and use of the FlatFix Fusion mounting system.

As a result of our continuous pursuit of improvement, it may occur that the product deviates in detail from that which is described in this manual. For this reason, the instructions provided serve only as a guideline for installing the product stated in this manual.

This manual is compiled with the greatest possible care, but the manufacturer cannot be held responsible for any errors in this manual or any resulting consequences.

Furthermore, all rights are reserved and nothing in this manual may be copied in any way whatsoever.

# 1. Introduction

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

Read the manual carefully so that you are fully aware of the entire content. Follow the instructions in the manual carefully. Always carry out the actions in the correct order.

Store the manual in a safe and dry location. If you lose the manual, you may always request a copy from Esdec BV or download it from [www.esdec.com](http://www.esdec.com). Where there is a reference to the construction plan, we also refer to the FlatFix Calculator that allows you to generate a construction plan.

## 2. General installation conditions

### General

A failure to adhere to the guidelines stated in this document and/or in the construction plan may lead to all warranty and product liability claims lapsing.

The details, comments and recommendations in this document are binding and must be checked to ensure they are complete and up-to-date. Esdec BV retains the right to revise this document without notification.

### Stability and condition of the roof

The roof must be in good condition and strong enough to bear the weight of the solar panels, incl. associated materials, ballast, wind and snow load. Check the stability of the roof/structure and where necessary employ a builder to correct it. Make sure the load reserve of the roof is not exceeded either locally or in its entirety.

### Insulation / roofing material

The continual pressure loading capacity (point load) of the insulation and the roofing material must be checked thoroughly and found to be sound before installation. The suitability of the roof supports combined with the roofing material must be checked and found to be sound, and if necessary or desirable extra roof supports must be fitted at the required locations. In case of doubt, employ a roofer.

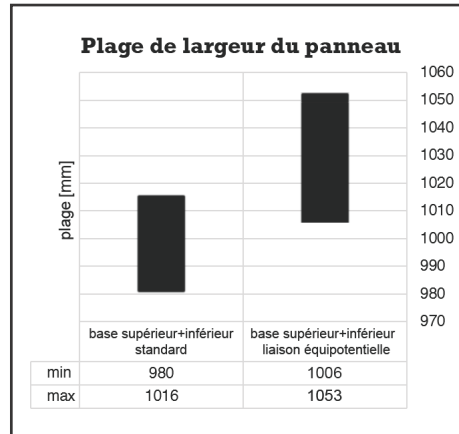
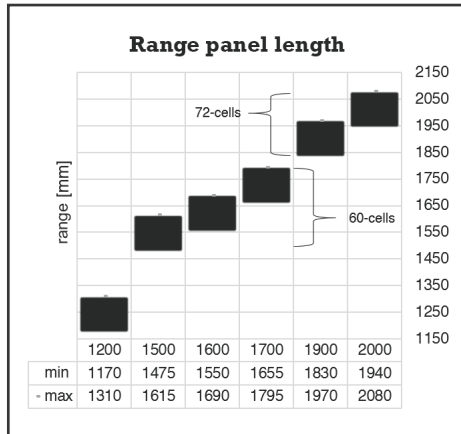
### Safety warnings

- FlatFix Fusion mounting systems must be fitted as standard by qualified technical personnel (at least two skilled people).
- The addition or omission of parts may have a detrimental effect on the function of the system and is strongly discouraged!
- Before placing the solar panels, the roof must be clean, dry, flat and free of algae and the like.
- Avoid fitting in high winds and a wet, slippery roof surface.
- Fitting of the FlatFix Fusion mounting system may only take place at temperatures between 5° and 40°C (due to the fitments of the plastic parts).
- Always work on a roof using fall protection and safety nets and edge protection where necessary.
- Wear shoes with reinforced toecaps and sturdy anti-slip soles.
- Always wear the proper protective clothing when carrying out the work.
- Always use lifting aids / hoist systems when moving the material (solar panels, etc.).
- Always place a ladder on a sound and stable surface.
- Always place the ladder at an angle of around 75° and ensure it sticks out about 1 metre above the roof edge.
- If possible, fasten the top of the ladder with a rope or strap.

### Range of application of FlatFix Fusion

- Wind zone (1 to 3 with the exception of coastal areas).
- Roof height (3-12m) If your roof is higher, contact your supplier.
- Type of roofing material: Concrete, bitumen / EPDM / PVC / TPO.
- Roof pitch: maximum 3°. Between 3° and 7° (between 2° and 7° with PVC), the base plates must be sealed. For a roof pitch of over 7°, contact your supplier.
- Setup: Landscape mounting. Angle of inclination solar panels: 13°
- Maximum solar panel dimensions: length 1170–1310 mm, 1475–1615 mm, 1550–1690 mm, 1655–1795 mm, 1830–1970 mm, 1940–2080 mm, width 980–1053 mm, thickness 25–50 mm. (See table on Page 02)

## Table of panel dimensions range



### Edge zone

The distance of the solar panels to the edge of the roof must be around 1/5 of the height of the building, with a minimum distance of 30 cm (due to the strongly turbulent wind flows in this zone). No solar panels may be fitted to this zone, neither partially nor fully. The edge zone to be observed follows from the FlatFix Fusion calculator.

### Ballast

If your roof is higher than 12 metres, we recommend you consulting your supplier to assist in determining the correct ballasting.

Use stone or grit as ballast. Consult the construction plan.

### Standards, guidelines and regulations

When fitting a mounting system, it is important that you follow the mounting instructions and associated standards to prevent incidents. Especially, considering the following standards, guidelines and regulations:

- Dutch Building Code
- PPE Personal Protective Equipment
- KEMA Inspection of Electrical Equipment
- DIN 1055 Design loads for buildings
- DIN 18299 General rules applying to all types of construction work
- DIN 18451 Scaffolding works
- NEN EN 1991
- NEN 7250

### Removal and dismantling

Remove the product as per local legislation and regulation. At the end of the design life, all materials are recyclable.

The aluminium base profiles are fastened to the base elements using a click system. Use combination pliers to dismantle the base profile.

### Warranty

The warranty is subject to the warranty conditions and the general conditions of Esdec BV. These can be found on our website [www.esdec.com](http://www.esdec.com).

### Liability

The manufacturer does not accept any liability whatsoever for damage or injury caused by a failure to (strictly) comply with the safety guidelines and instructions in this manual, or due to negligence during installation of the product stated in this document and any related accessories.

- printing errors reserved

# 3. Product description

The mounting system is made of top-grade plastic base elements, which are connected lengthways to aluminium base profiles. Widthways the FlatFix Fusion segments are connected to stabilisers. The necessary mounting materials are also supplied for mounting the solar panels in a landscape setup. The FlatFix Fusion mounting system may be used for all types of roofing material.

## Placing ballast

The FlatFix Fusion system is not fixed to the roof and only rests on the surface. Only when the roof pitches above 3° (2° for PVC) should the roof supports be sealed to the roof. Take note of the processing instructions of the sealant and the roofing material in reference to the compatibility.

The system is made wind-proof by reinforcing the ballast. The ballast weight is partly related to the height of the building and the configuration. Place the ballast in the ballast holders. Consult the construction plan for ballast positioning and amount.

## Securing the panels

The solar panels are positioned on top of the base elements and are secured using universal mid clamps, end clamps and mounting screws. The mounting screws are screwed directly into the mounting holes of the base elements.

These can be screwed into the base element a maximum number of 3x in total. When refitting after unscrewing, it is strongly recommended to use the existing screw thread for screwing in again. The first turn(s) should therefore be done by hand. The tightening torque is 4.5 Nm. The tightening torque at periodic inspection must be between 3.0 Nm and 3.5 Nm.

## Equipotential bonding of the FlatFix Fusion mounting system

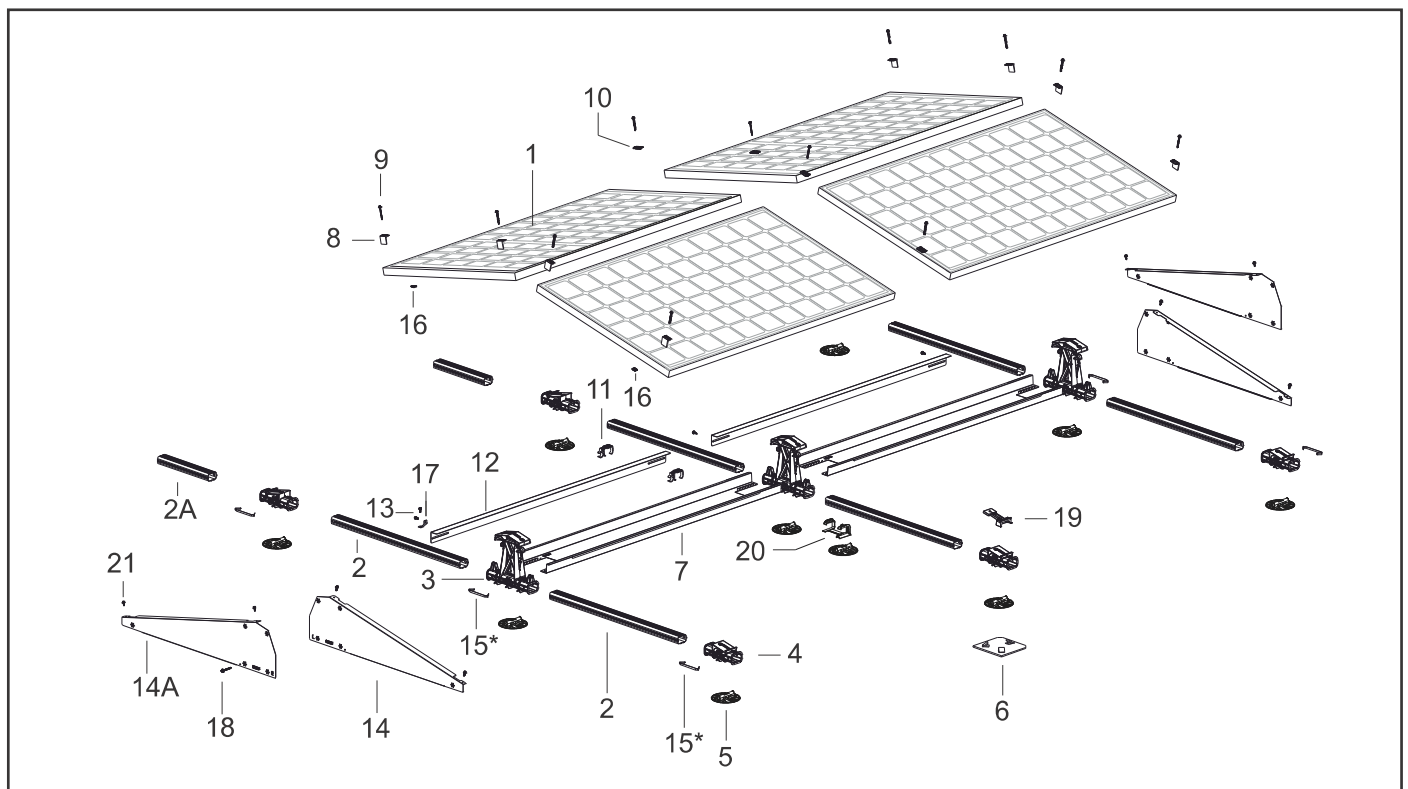
The system is bonded quickly and easily. There are various possibilities for bonding the FlatFix Fusion mounting system:

- The solar panels are bonded using the integrated bonding function in the mid clamp.
- Multiple rows and ballast holders are bonded using a standard multi-core cable and special clips.
- The base profiles are bonded using grounding springs (can also be supplied pre-assembled).
- The stabilisers are bonded using grounding brackets.
- The wind deflectors left/right are bonded using mounting screw 6.5 x 19.

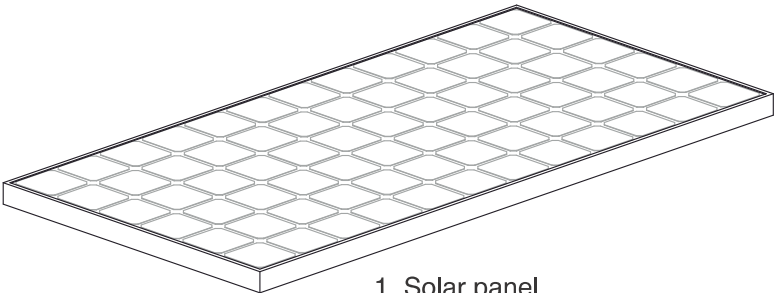

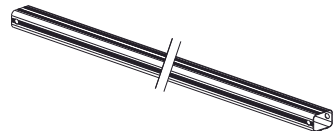



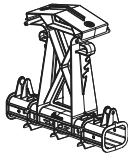
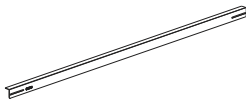





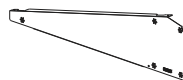


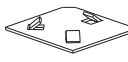

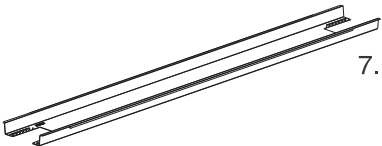






Grounding is done once the bonded elements are also connected to the earthing rail.

# 4. Parts overview

## 4.1 Exploded view



## 4.2 Parts list

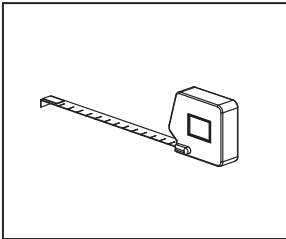
- |   |  |   |   |
|---|--|---|---|
|     | <p>1. Solar panel</p>  |     | <p>9. Mounting screw 6,5 x ____<br/>Item no: 100-65____<br/>For type, see Annex section 7</p>   |
|     | <p>2. Base profile 940 mm<br/>Item no: 100-7194</p>                                  |     | <p>10. Universal mid clamp<br/>Item no: 100-3022</p>  |
|    | <p>2A. Base profile<br/>Item no: 100-71____<br/>For length, see Annex section 7</p>  |     | <p>11. Cable clip optimiser ready<br/>Item no: 100-7041</p>   |
|   | <p>3. Base element high<br/>Item no: 100-7030</p>                                    |     | <p>12. Stabiliser<br/>Item no: 100-72____<br/>For length, see Annex section 7</p>   |
|  | <p>3A. Base element high with grounding spring<br/>Item no: 100-7030-S</p>           |    | <p>13. Mounting screw 6,5 x 19<br/>Item no: 100-6519</p>  |
|  | <p>4. Base element low<br/>Item no: 100-7021</p>                                     |     | <p>14. Wind deflector left<br/>Item no: 100-7204</p>  |
|  | <p>4A. Base element low with grounding spring<br/>Item no: 100-7021-S</p>            |    | <p>14A. Wind deflector right<br/>Item no: 100-7205</p>  |
|  | <p>5. Roof support<br/>Item no: 100-7012</p>   |   | <p>15. Grounding spring<br/>Item no: 100-7502<br/>*optional<br/>Deliverable pre-assembled<br/>Item no: 1007021-S<br/>Item no: 1007030-S</p> |
|  | <p>6. TPO Protection mat<br/>Item no: 100-7015<br/>*optional</p>                     |   | <p>16. Grounding clip<br/>Item no: 100-7505<br/>*optional</p>   |
|  | <p>7. Ballast holder<br/>Item no: 100-72____<br/>For length, see Annex section 7</p> |   | <p>17. Grounding bracket<br/>Item no: 100-7503<br/>*optional</p>  |
|  | <p>8. End clamp<br/>Item no: 100-41____<br/>For type, see Annex section 7</p>        |   | <p>18. Self-tapping screw 6,3 x 32<br/>Item no: 100-3015</p>  |
|   |  |   | <p>19. Low base extension<br/>Item no: 100-7021-WP<br/>*optional</p>  |
|   |  |   | <p>20. Roof support adapter<br/>Item no: 100-7011<br/>*optional</p>   |
|   |  |  | <p>21. Self-tapping screw 6,0x25<br/>see section 6.7<br/>Item no: 100-3010</p>  |

# 5. Mounting preparation

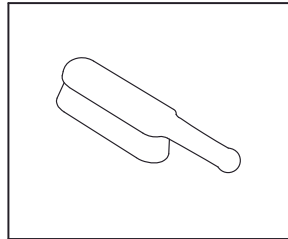
## 5.1 Check of tools and accessories

Below is a list of necessary tools/aids:

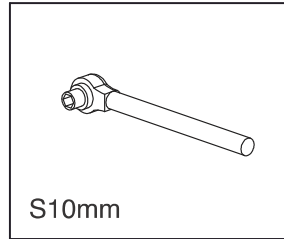
Tape measure



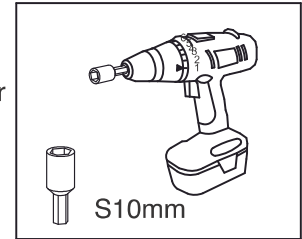
Brush



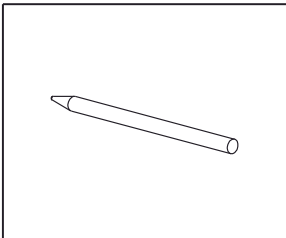
Ratchet with hexagon head



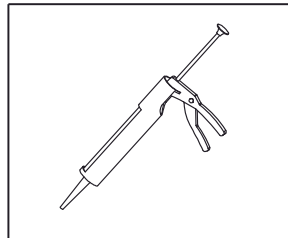
Powered screwdriver



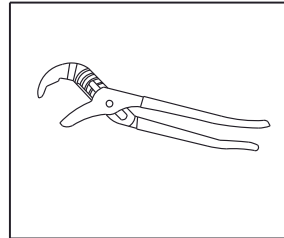
Marker/chalk



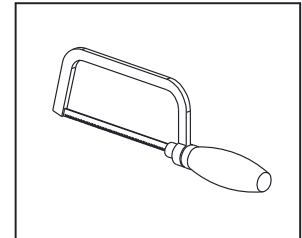
Sealant pistol optional for roof pitch > 2°/3°



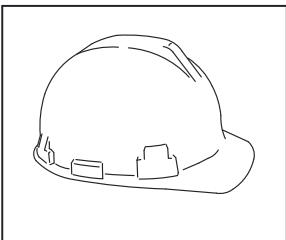
Water pump pliers



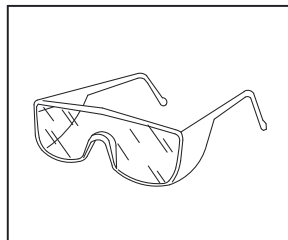
Metal saw



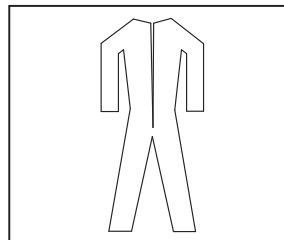
Safety helmet



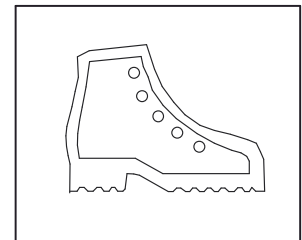
Safety goggles



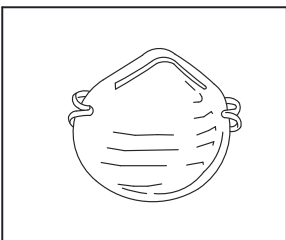
Protective clothing



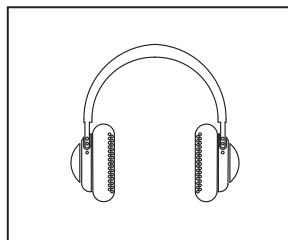
Safety shoes



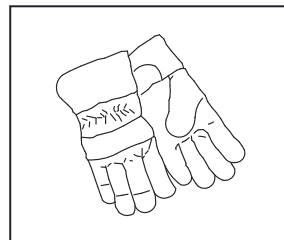
Dust mask



Ear protection



Safety gloves



Scaffold or stable safe ladder

## 5.2 Determining and measuring position of solar panels

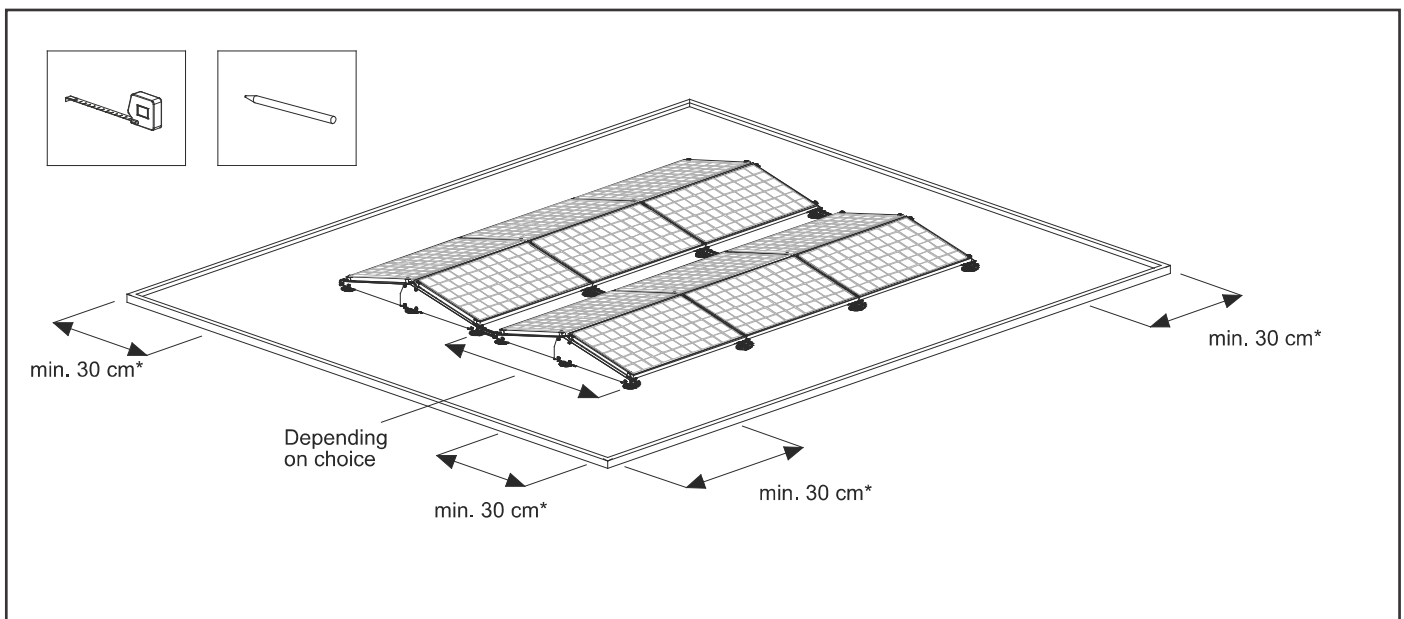
When determining the location of the solar panels on the flat roof, the movement of the sun throughout the whole day and the entire year are very important to take into account. Place the solar panels on an area of the roof that never falls into shade. The shadows of chimneys, trees or adjacent buildings all have an unfavourable effect on the yield of solar panels.

### Measuring and marking out

To place a panel (in the landscape setup), you roughly need the same space for each setup as the panel is long. With this system, a solar panel is placed on each side to create a pitched roof shape. If multiple rows of solar panels (in pitched roof shape) are placed in succession, you must leave a distance between them to prevent shadows on the panels. The distance of the solar panels to the edge of the roof must be around 1/5 of the height of the building, with a minimum distance of 30 cm due to the strongly turbulent wind flows in this zone

\*(see construction plan for the correct distance).

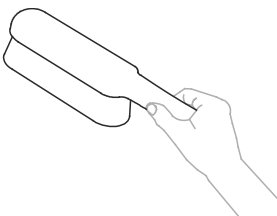
Mark the outlines of the panel field on the roof with chalk or a marker.



## 5.3 Cleaning roof

Clean the roof with a brush.

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



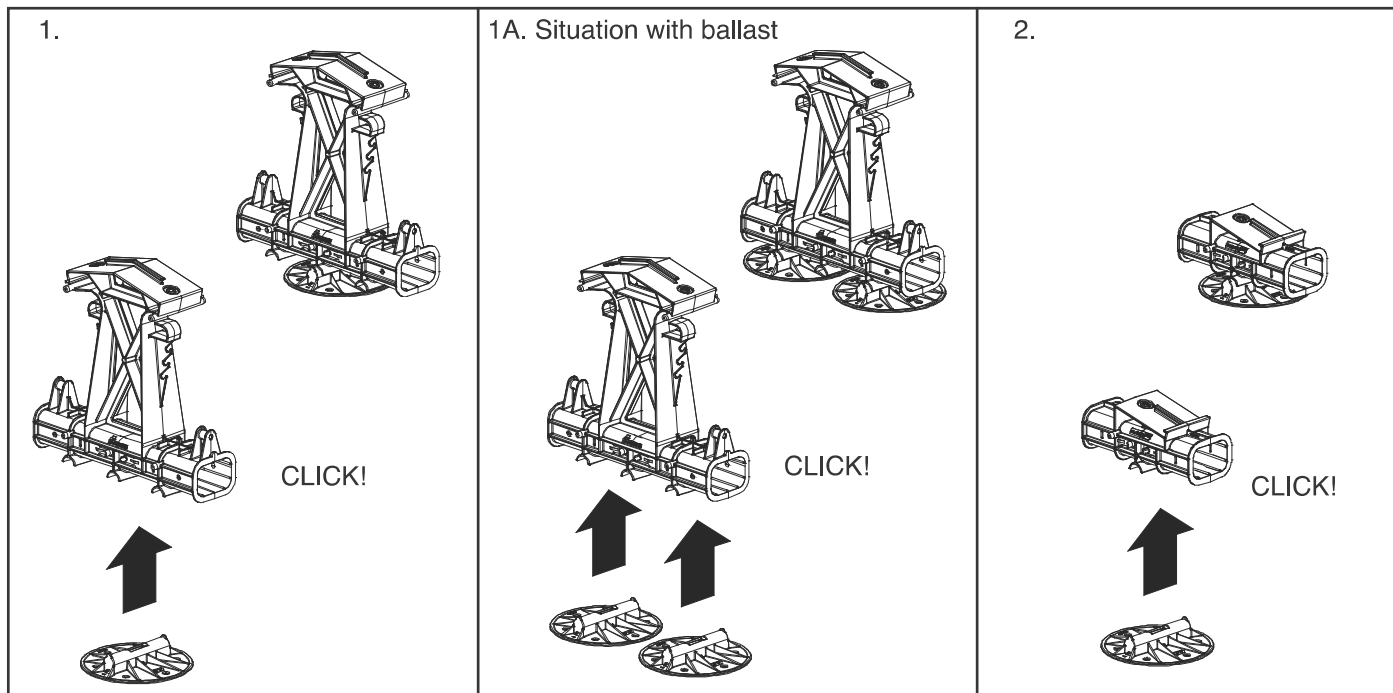
# 6. Installation

## 6.1 Mounting roof supports to base elements

As standard, the high base element is placed on a single roof support.

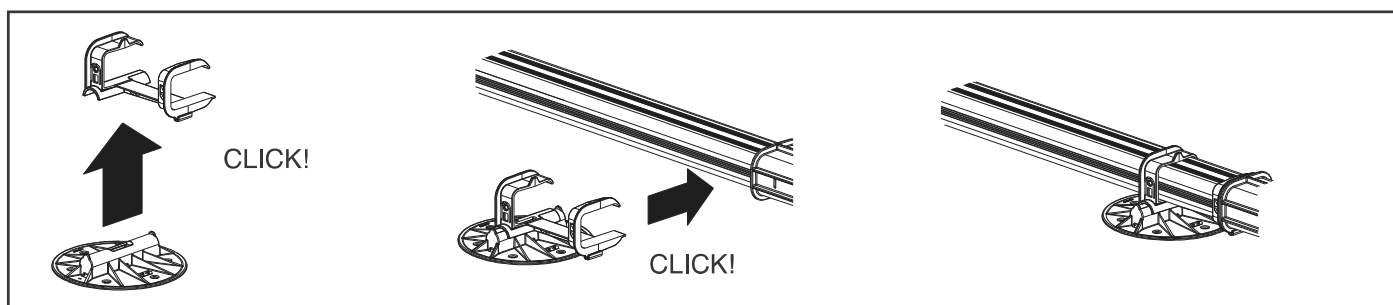
1. Secure the roof support to the high base element using the click connector. Use the centre click connector to the underside of the high base element for this. Optional: In situations where ballast is to be placed, two roof supports are secured under the high base element. Use the two click connectors at the centre (1A) for this.

2. Secure the roof support to the low base element using the click connectors.



## 6.2 Mounting extra roof support (optional)

If an extra roof support is needed, these can be applied flexibly using the roof support adapter. Secure the roof support to the adapter using the click connectors. This setup can then be clicked onto a base profile at any point lengthways.



## 6.3 Mounting of TPO Protective Mat (optional)

The optional TPO protective mat can be used to protect the TPO roofing material. Bend the three rubber lips of the protective mat open and place the roof support under the lips of the protective mat. Ensure that the roof support is fully enclosed by the rubber lips.

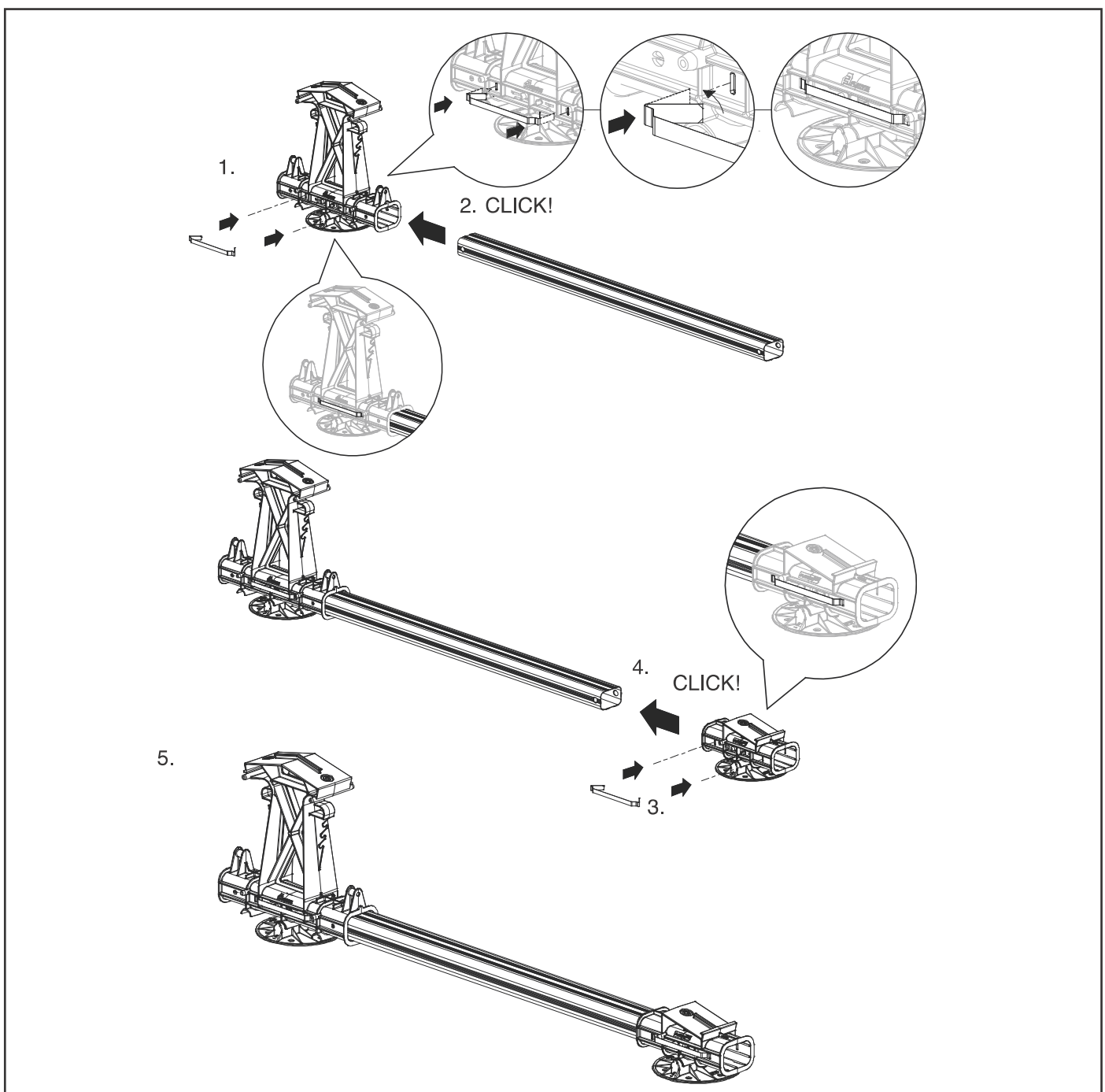


## 6.4 Equipotential bonding and mounting of the base profile to the base elements

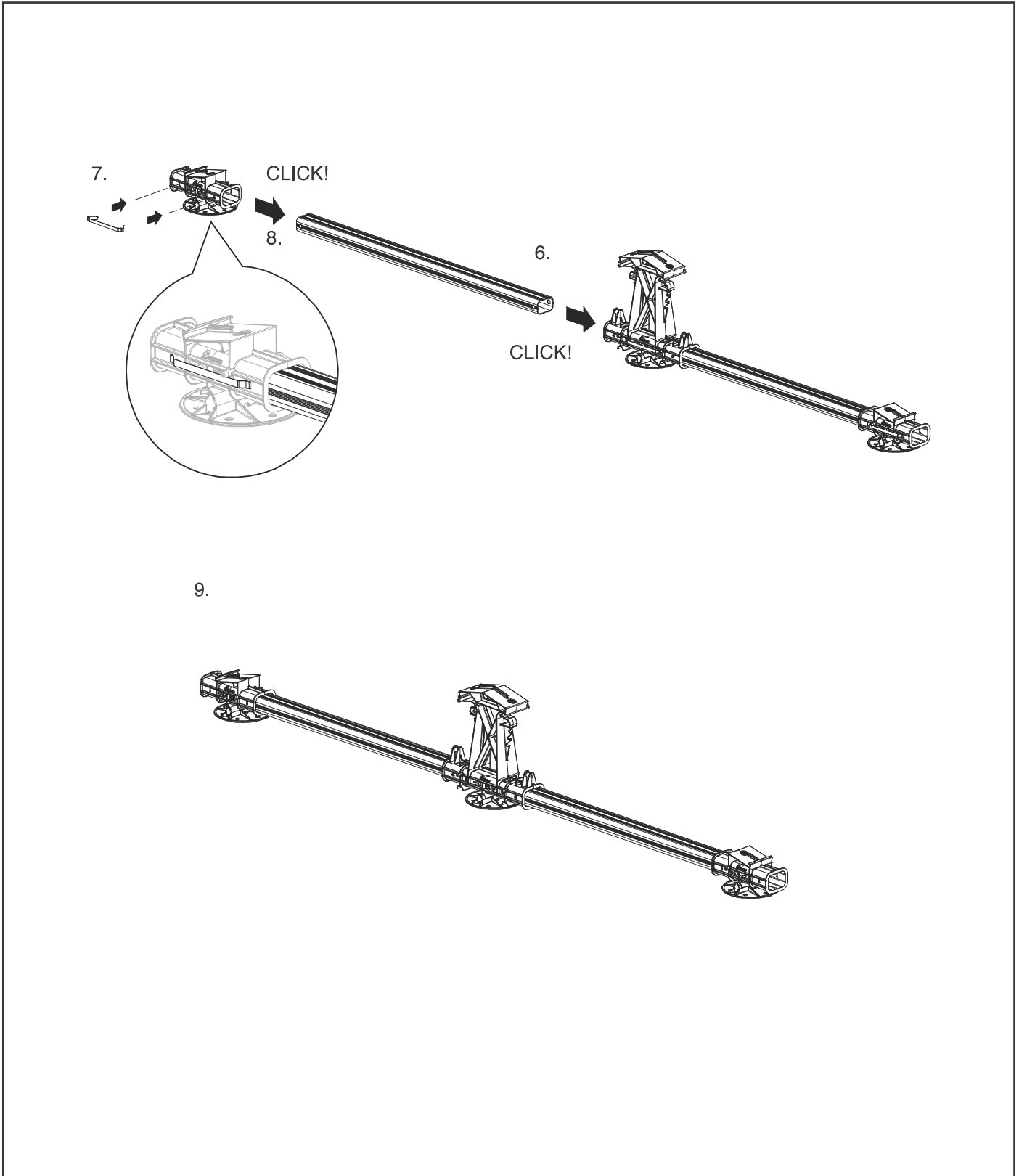
The high and low base elements are also available pre-assembled: 1007021-S and 1007030-S If you assemble them yourself, then follow the instructions below.

### Equipotential bonding of the base profiles (optional)

1. Place the grounding spring in the grooves of the high base element before clicking the base profile in the high base element. The use of one grounding spring is equal to a joint surface of 3 mm<sup>2</sup>. Two grounding springs (one spring on each side of the base element) is equal to a joint surface of 6 mm<sup>2</sup>. The edges of the grounding spring bite into the base profile and guarantee a solid and durable connection.
2. Set the base element (incl. roof support) upright and slide the tip of the base profile (length 94 cm) in the opening of the high base element until it clicks into place.
3. Place the grounding spring in the grooves of the low base element before clicking the base profile in the low base element.
4. Slide the low base element (incl. roof support) to the other tip of the base profile until it clicks into place.
5. One side of the FlatFix Fusion segment is ready.



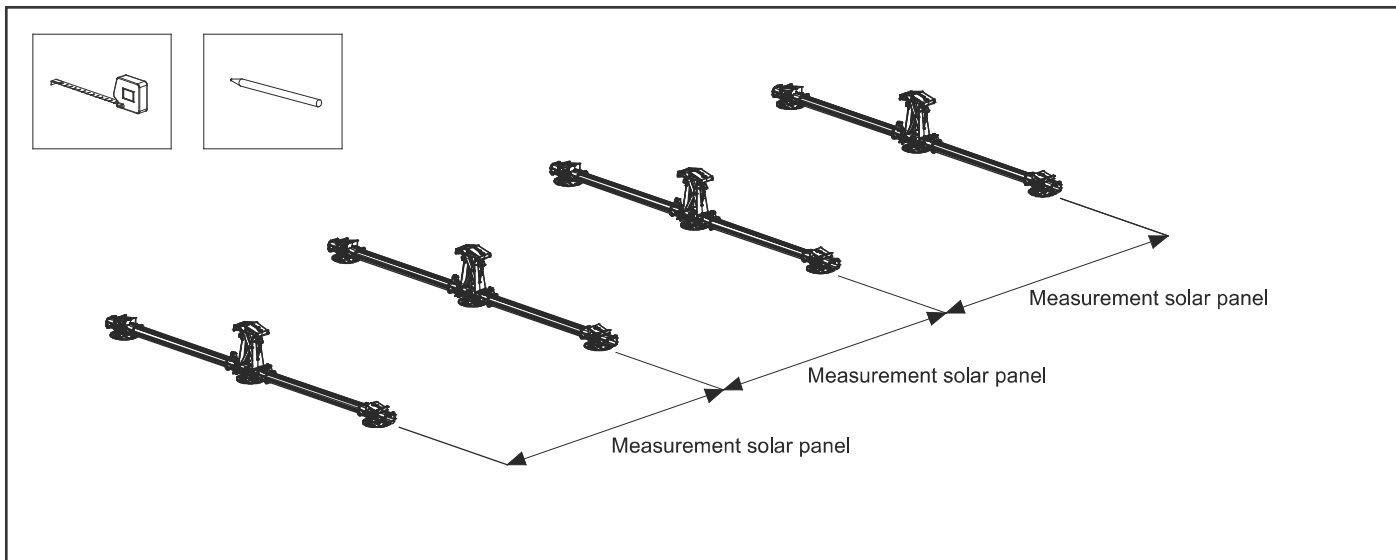
6. Slide the tip of the second base profile (length 94 cm) in the opening of the high base element until it clicks into place.
7. Place the grounding spring in the grooves of the low base element before clicking the base profile in the low base element.
8. Slide the low base element (incl. roof support)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



## 6.5 Positioning FlatFix Fusion segments

The place of the solar panels on the roof is used to determine the position of the FlatFix Fusion segments. Spread the FlatFix Fusion segments evenly along the line where the solar panels are to be placed. The FlatFix Fusion segments may be placed centre-to-centre at a maximum of 2 m apart (see calculator for distance).

Use the chalk or marker to mark out on the roof where the FlatFix Fusion segments are to be fitted. Ensure the FlatFix Fusion segments are aligned with each other.

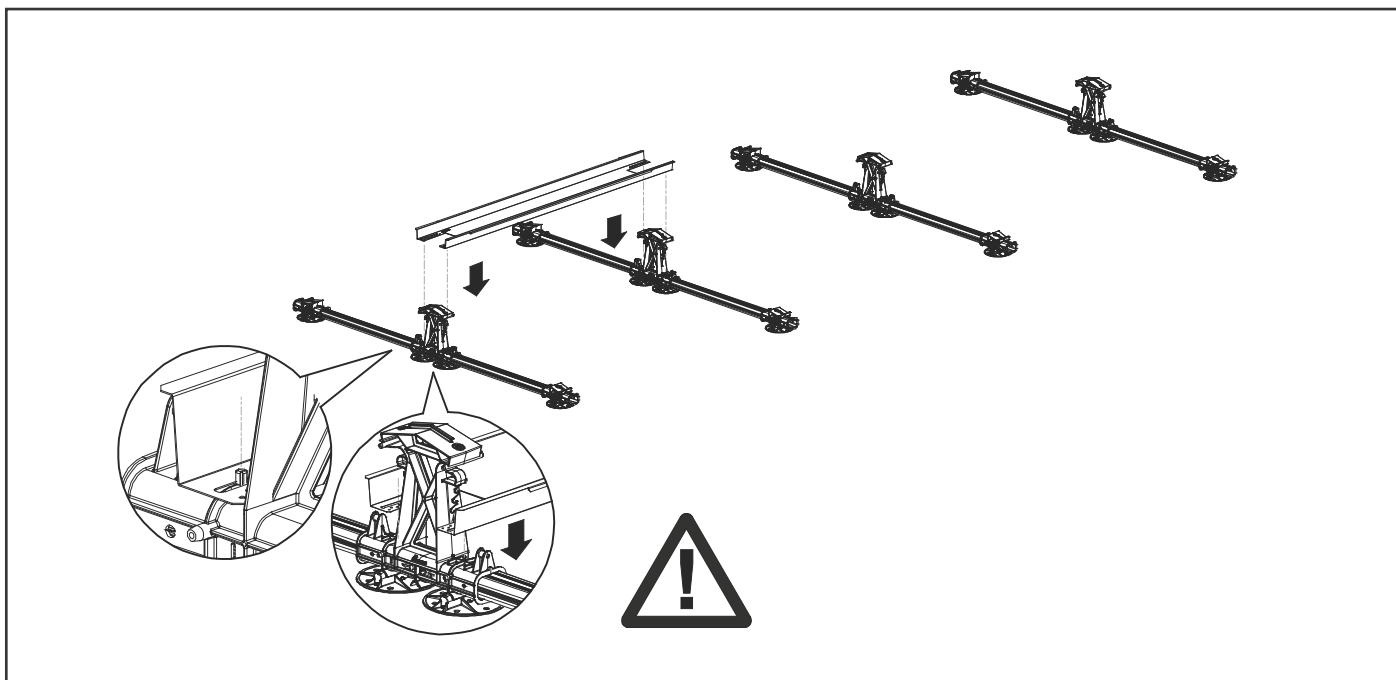


## 6.6 Mounting ballast holders

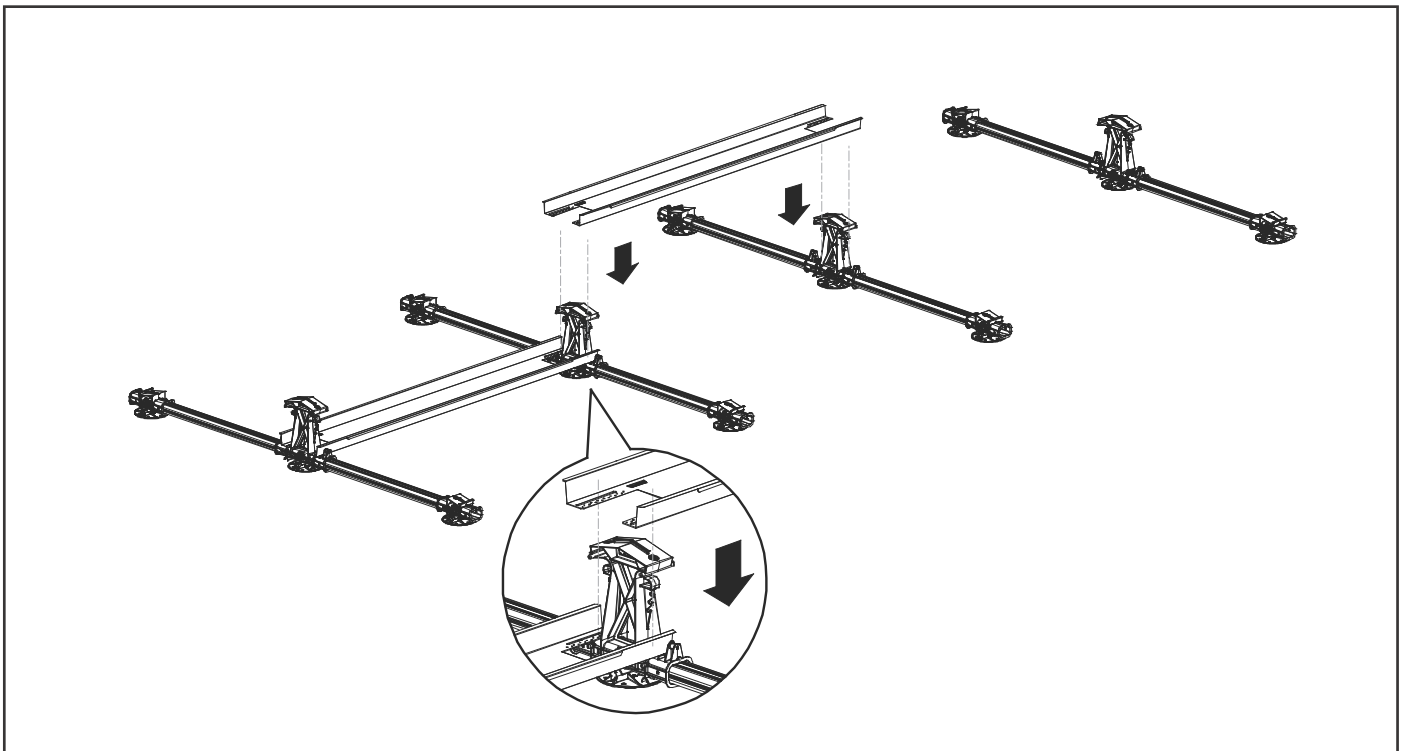
The ballast positions are determined using the calculator. Place the ballast holders at the locations indicated by the calculator. **ATTENTION!** Ensure that the high base elements are always fitted with two roof supports at the location of the ballast holders!

First insert the ballast holder at an angle between the FlatFix Fusion segments in such a way that the fitted holes of the ballast holder are positioned over the upright ridges of the high base element.

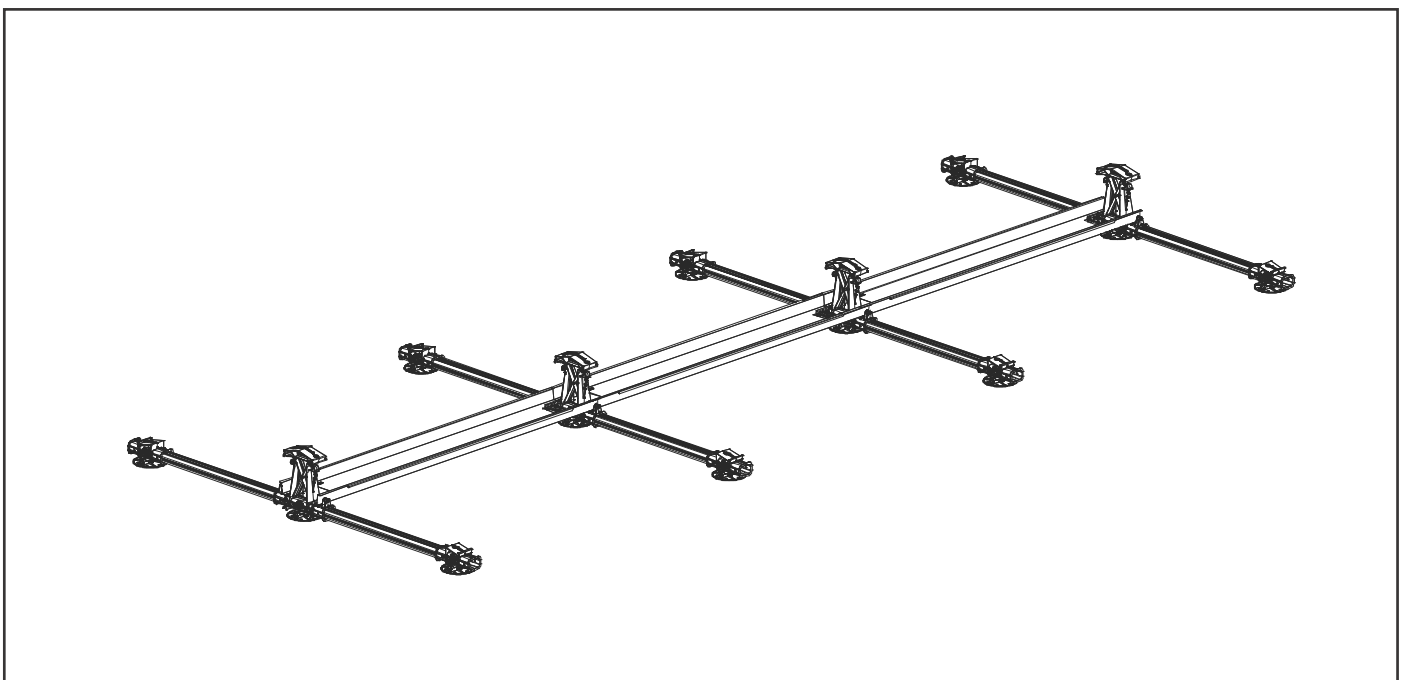
Make sure that the FlatFix Fusion segments are positioned straight beside each other for the alignment of the solar panels!



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



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

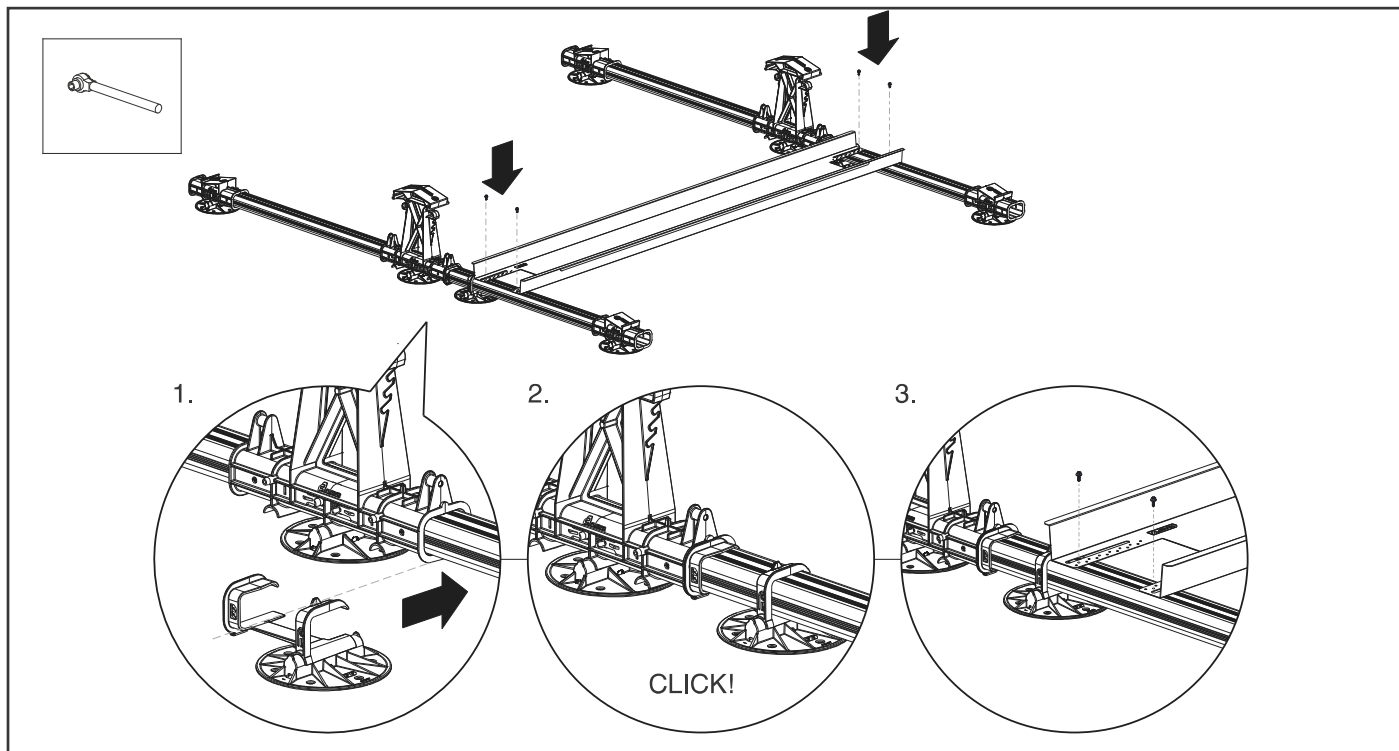


## 6.7 Perimeter ballast (see annex)

Perimeter ballast, with ballast trays being mounted in the direct vicinity of the high base, under the panel.

### Under the panel:

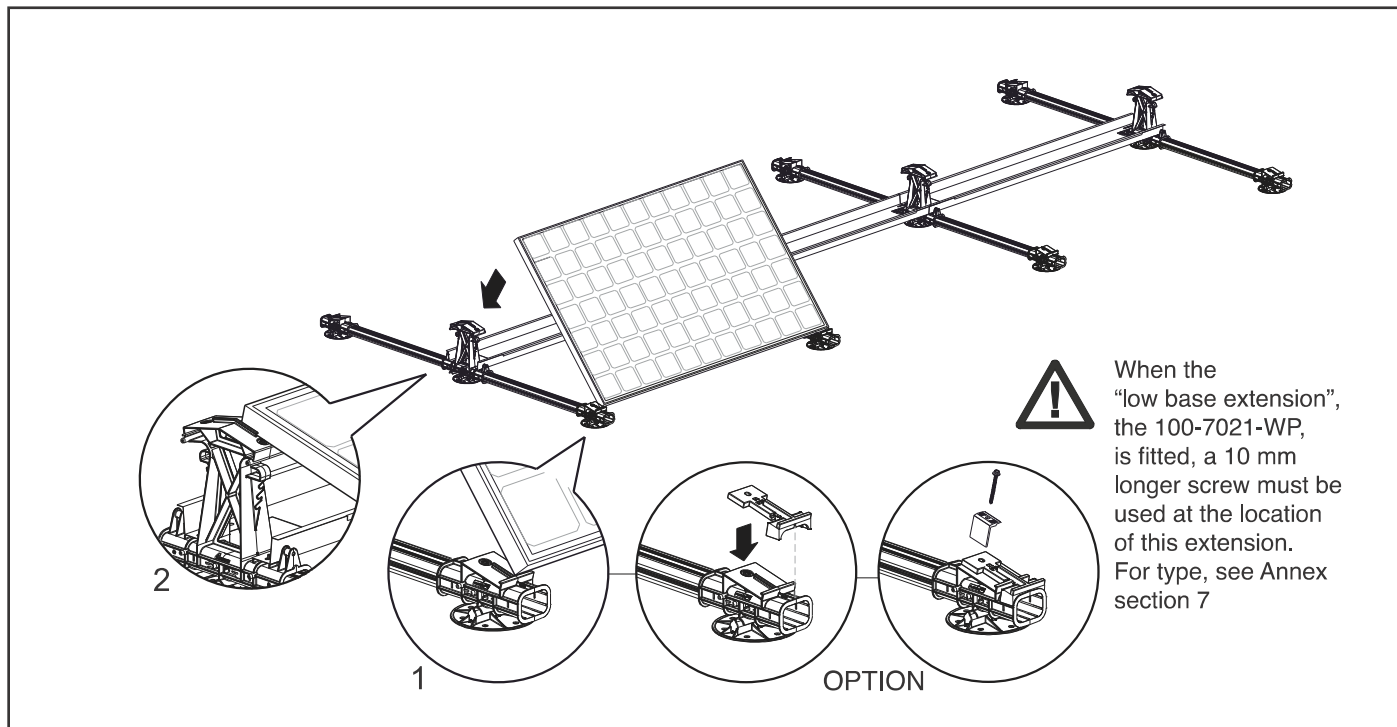
Mount an extra roof support with adapter to the base profile under the panel. Place the adapter in such a way that it is also hooked over the rib under the high base. This way, the adapter also functions as a spacer for the ballast tray to be placed. The ballast tray must then be screwed to the base profile using the self-tapping screw 6.0x25 (Item no. 100-3010) through one of the pre-punched holes in the ballast tray. Where two ballast trays positioned beside each other overlap, one screw is enough.



## 6.8 Mounting the first solar panel

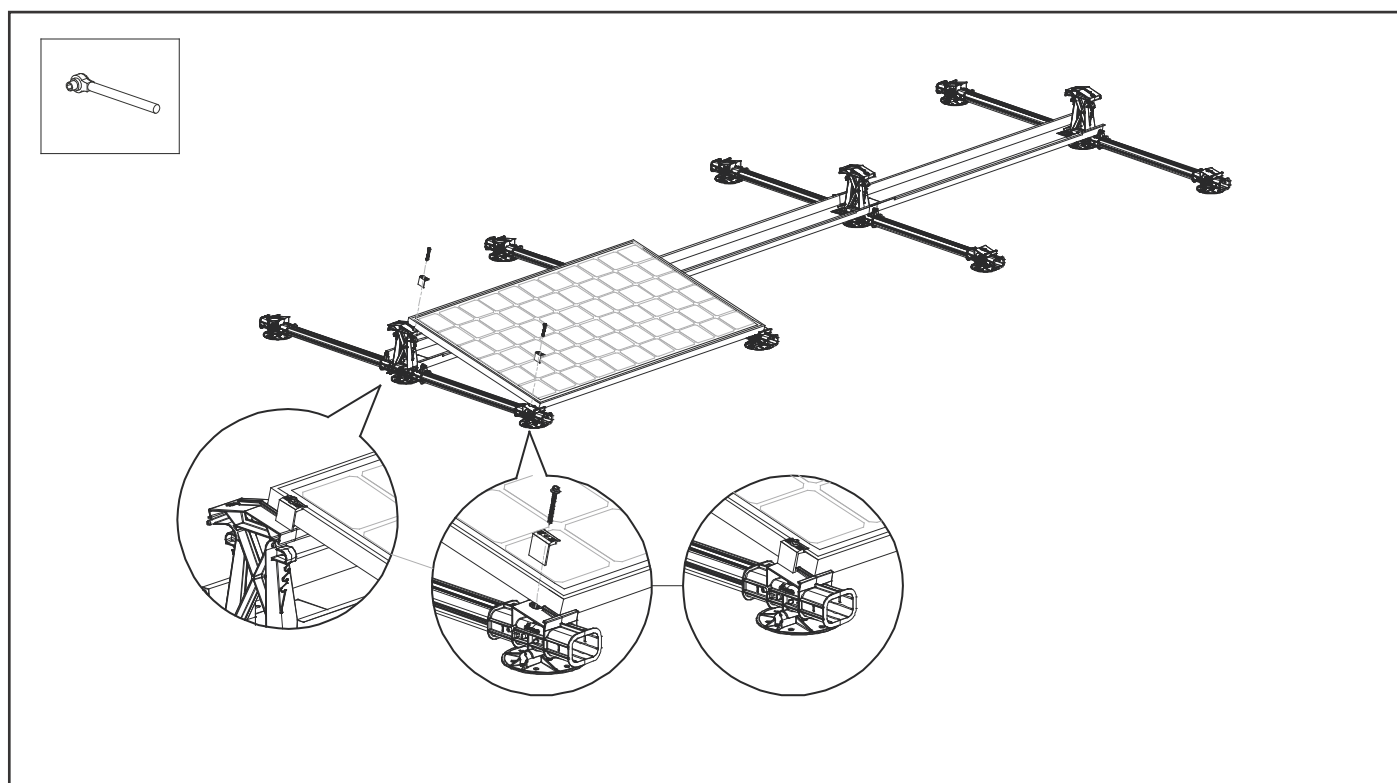
1. Place the first solar panel between the upright ridges of the low base element.
2. Tip the solar panel carefully so that it lies between the upright ridges of the base element.

**ATTENTION!** Optionally a low base extension can be fitted for greater panel reach. (See table of panel dimensions range on Page 02)



3. Place the end clamps to the edge of the solar panel and position these at the location of the mounting holes in the high and low base elements. Tighten the end clamp using the mounting screw in the mounting hole.

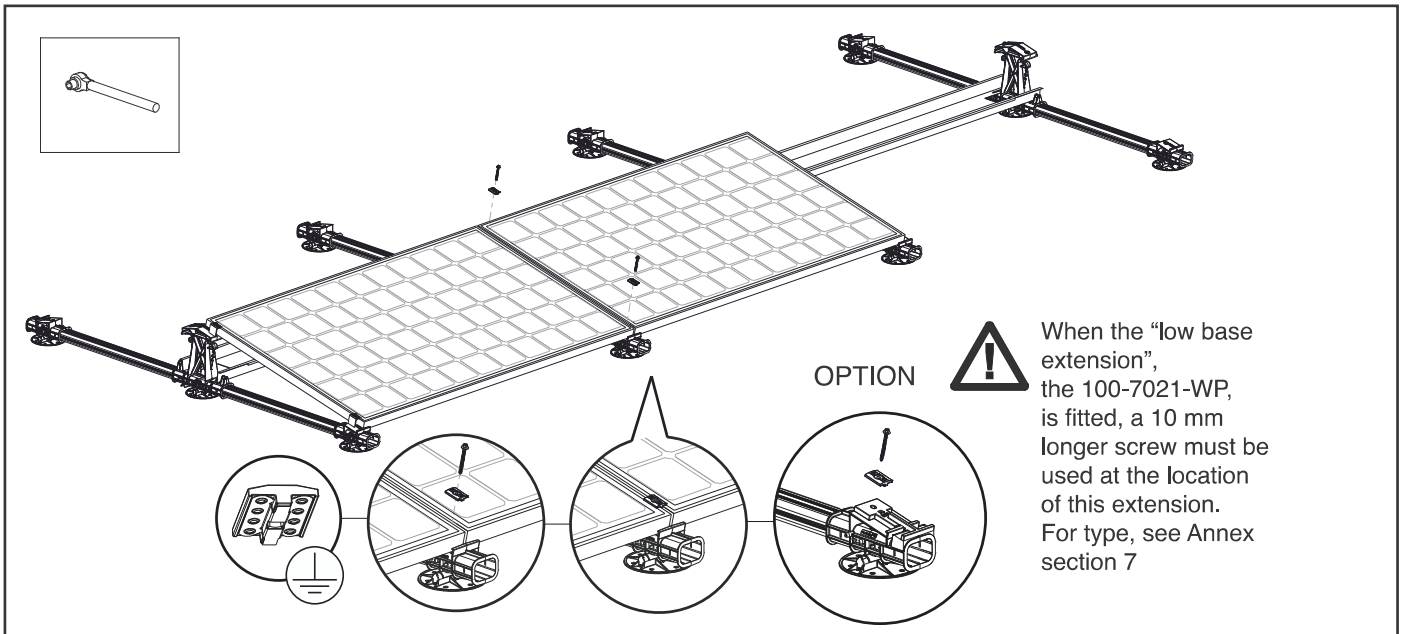
**ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm). Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque.



## 6.9 Equipotential bonding and mounting remaining solar panels

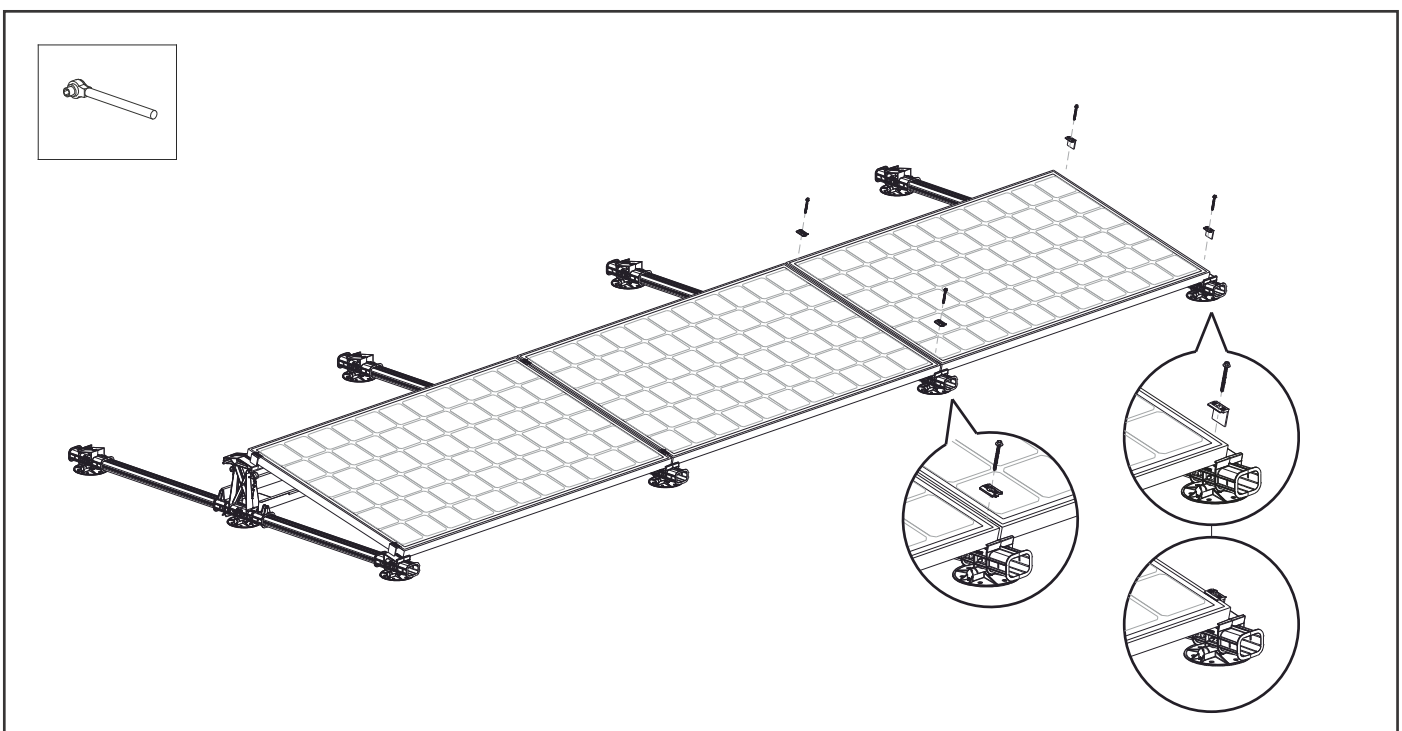
Place the second solar panel on the base elements so that it lies between the upright ridges. Then screw the mounting screw with a mid clamp in the mounting holes of the base elements. The mid clamp has an integrated bonding function so that the panels are mutually bonded, after which the full row can be connected to the earthing rail. Make sure that the solar panels are properly aligned before tightening the screw fully!

**ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm). Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque. Repeat the steps above for the remaining intermediate panels.



Place the last solar panel on the row of the base elements so that it lies between the upright ridges. Then screw the mounting screw with a mid clamp in the mounting holes of the base elements. Then tighten the two end clamps using the mounting screw in the mounting hole. Make sure that the solar panels are straight before tightening the screw fully!

**ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm). Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque.

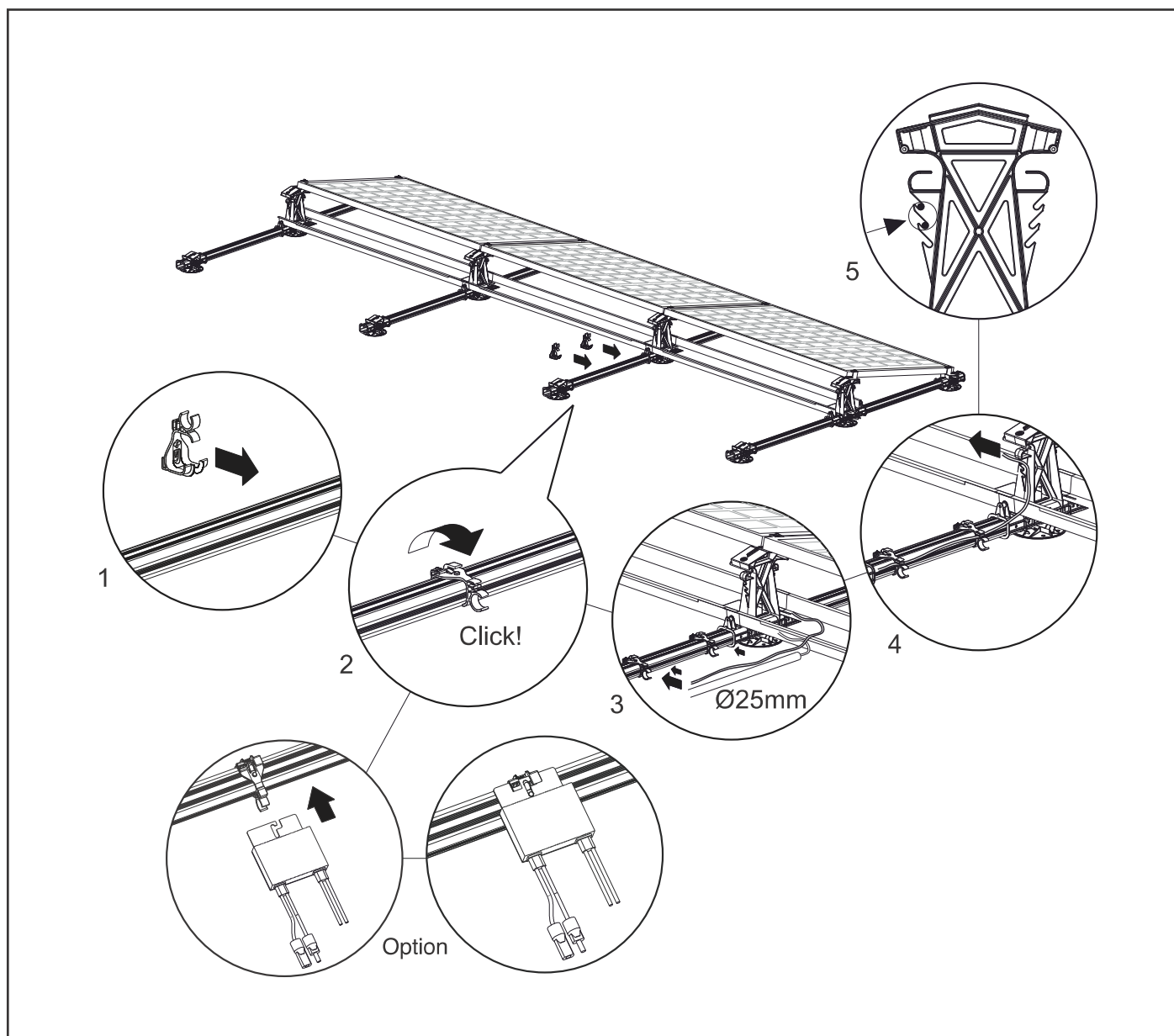


## 6.10 Mounting optimisers & cables

Clips are supplied with integrated cable management and optimiser fastenings so that the cables are well-routed and remain secure. There are also notches in the high base elements for feeding the cables through. This prevents the cables from lying on a (wet) roof. Follow the steps below for mounting:

1. Place the clips over the narrow side of the base profiles.
2. Rotate the clips so that they are clamped along the broad side of the base profiles.
3. Place the cables in the notches. The clips also allow for the inclusion of a Ø25 mm conduit.
4. Feed the end of the cable through one of the cable guides of the high base element.
5. The plugs of the solar panel can be fastened to the high base element in the cable guide.

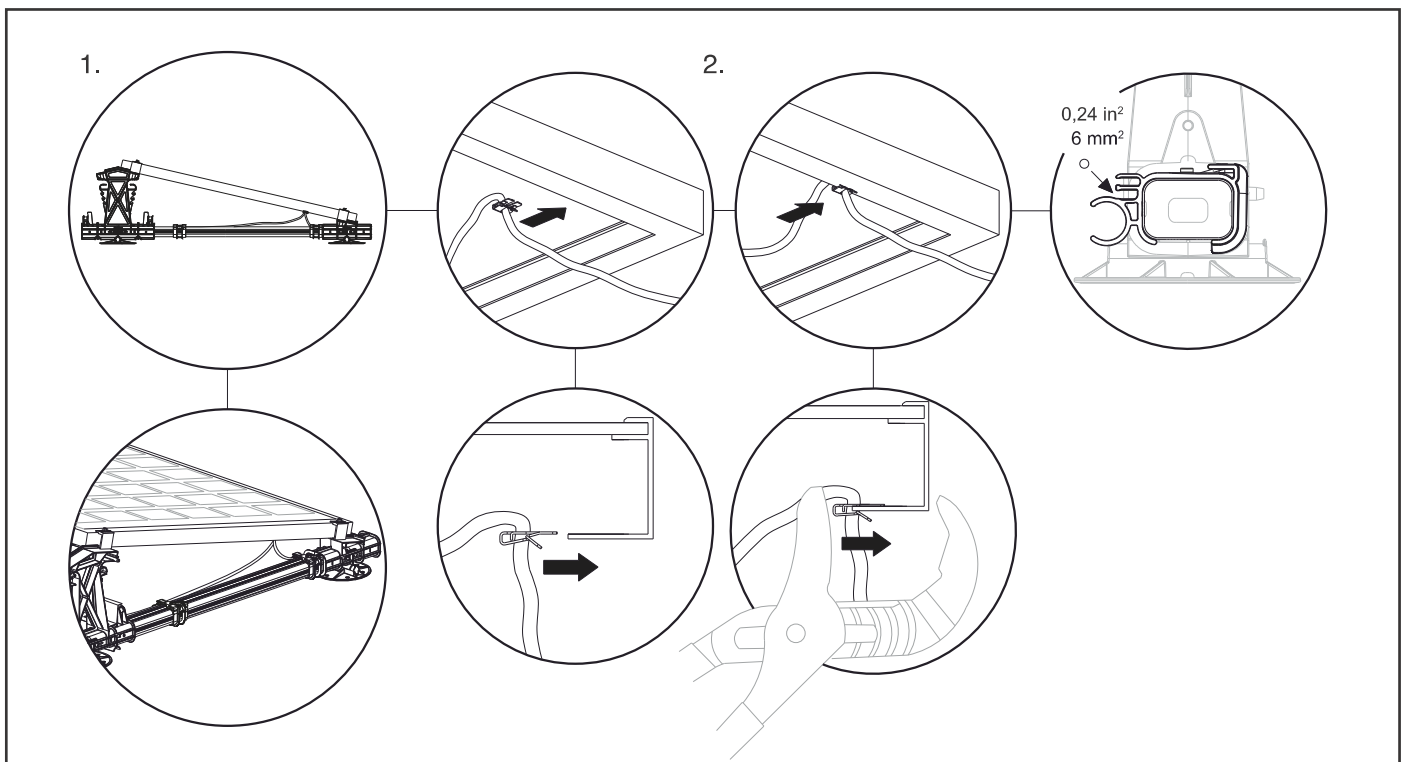
Optional: Click the optional optimiser onto the cable clip.



## 6.11 Equipotential bonding of multiple rows (optional)

If the PV system is made up of multiple rows, these rows can easily be grounded with a multi-core cable of 6 mm<sup>2</sup> and special grounding clips. The design of the grounding clips ensures an effective and durable connection between the multi-core cable and the solar panel.

1. Place the multi-core cable to one side of the system. The multi-core cable can easily be clamped into the FlatFix Fusion cable clip. To connect the multi-core cable to the solar panel, a loop must be made to the solar panel.
2. Use the grounding clip to connect the multi-core cable to the solar panel. Insert the multi-core cable into the grounding clip and clamp the grounding clip securely to the solar panel using a pair of pliers. Place a grounding clip on each first solar panel in the row.



## 6.12 Equipotential bonding of the ballast holders (optional)

The ballast holders can easily be grounded in the same way as the rows.

The grounding clips are pressed onto the ballast holders. The edges of the grounding clips bite into the ballast holder, creating a solid and durable connection.

The earthing cable for grounding the rows can also be used to ground the ballast holder. Place a grounding clip on each first and last ballast holder of a row to ground all rows separately.



## 6.13 Placing ballast

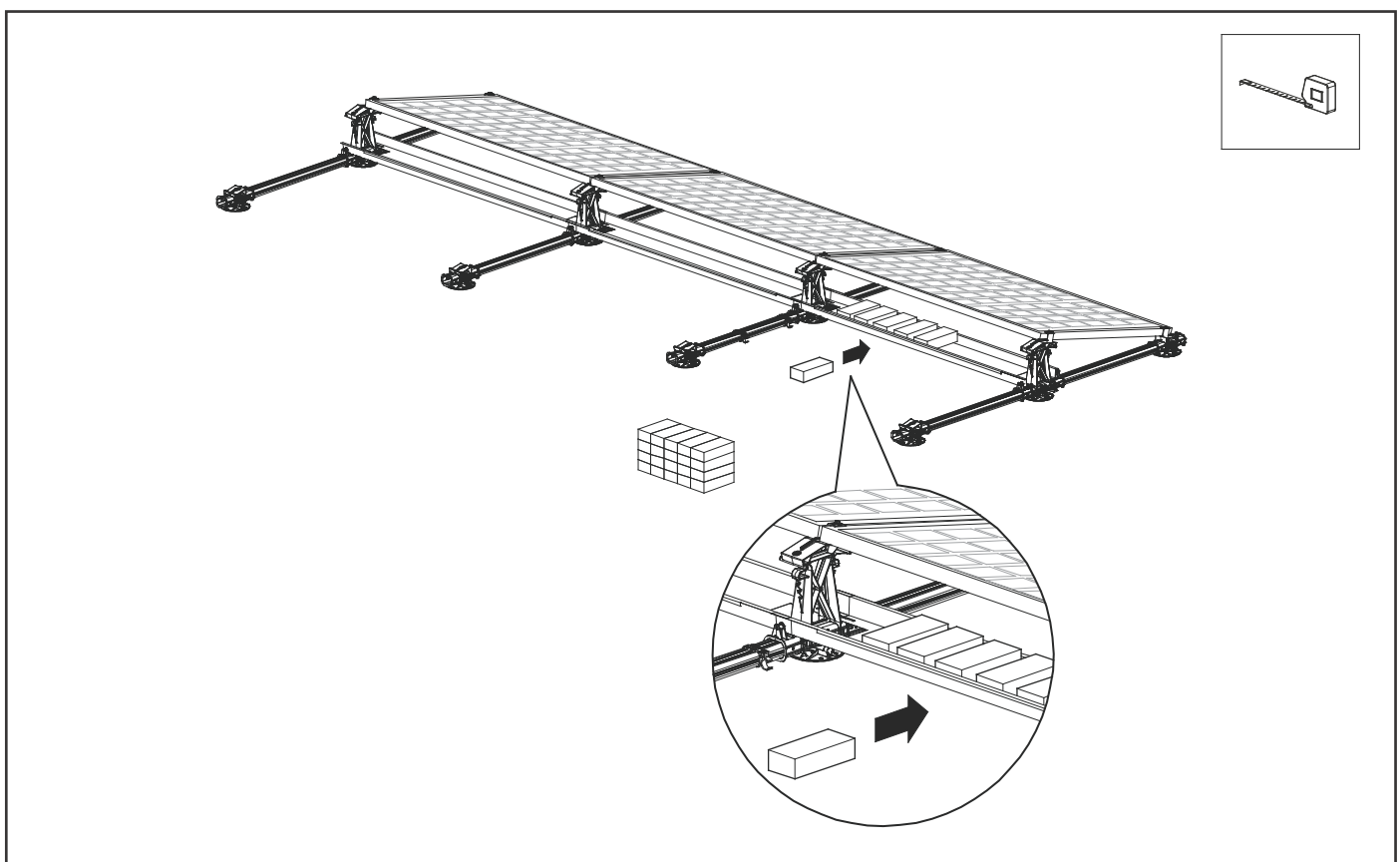
To keep the solar panels in place, you must place ballast in the ballast holders.

As standard you can use 21x10.5x8 cm concrete paving slabs as ballast. These weigh about 4 kg/pc and in terms of size fit well in the ballast holders. As an alternative, you can also use flagstones of max. 21x21 cm, kerbing of 20x100 cm or grit. If you use grit, first place a concrete paving slab left and right in the ballast holder. This prevents the grit from sliding out of the ballast holder.

Follow the ballast weights from the calculator precisely!

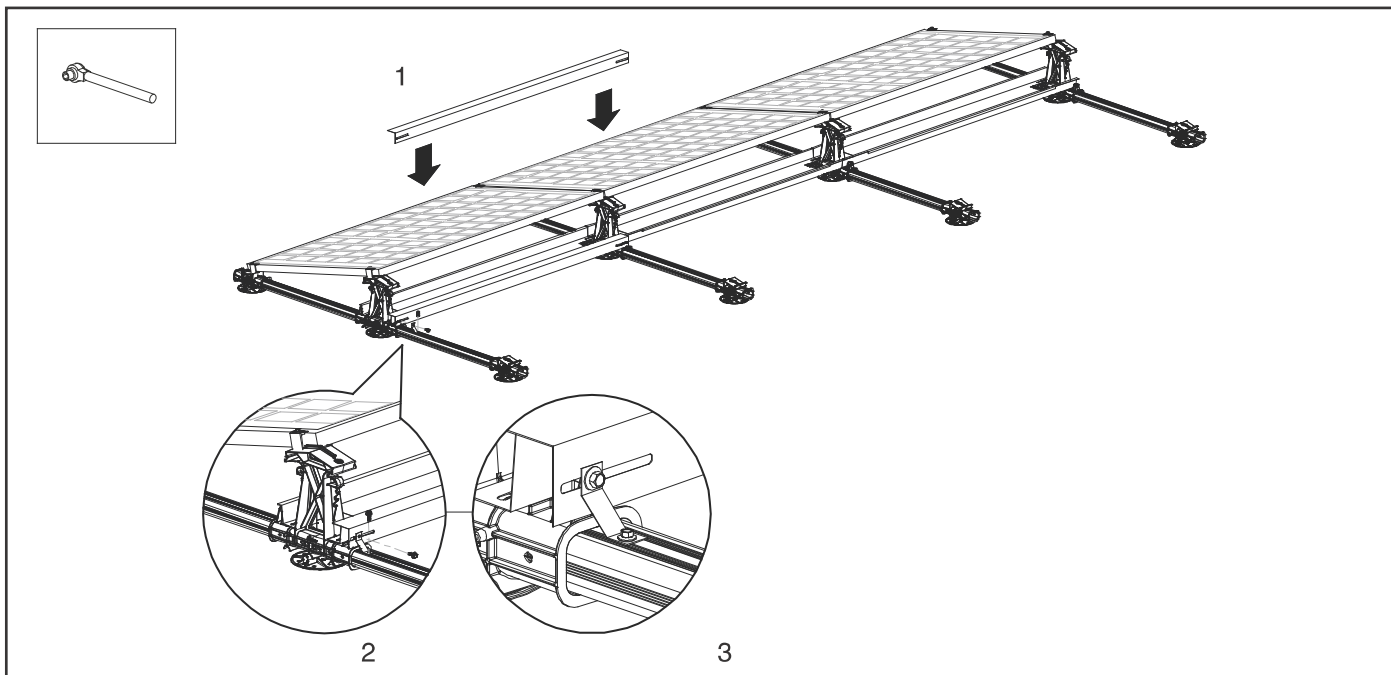
**ATTENTION!** Before placing the ballast, you must check that the solar panel field is in the correct position and that it is properly aligned relative to the roof edges. The panel field can still be adjusted slightly at this point. Once the ballast has been placed, correction is no longer possible!

If your roof is higher than 12 metres, we recommend you contact your supplier. They will then determine the correct weight as per your situation.



## 6.14 Mounting and equipotential bonding of the stabilisers

1. Place the first stabiliser to the rear of the solar panels, so that they lie between the upright ridges and the high base element.
2. Place the grounding bracket (optional) on the base profile and to the rear of the stabiliser. Fasten the grounding bracket to the base profile using a mounting screw 6.5 x 19.
3. Only fix one side of the stabiliser (at the edge of the panel field) to the high base element by placing the mounting screw 6.5 x 19 in the hole of the grounding bracket and in the slotted hole of the stabiliser and tighten it in the mounting hole of the base element. **ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm). Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque.

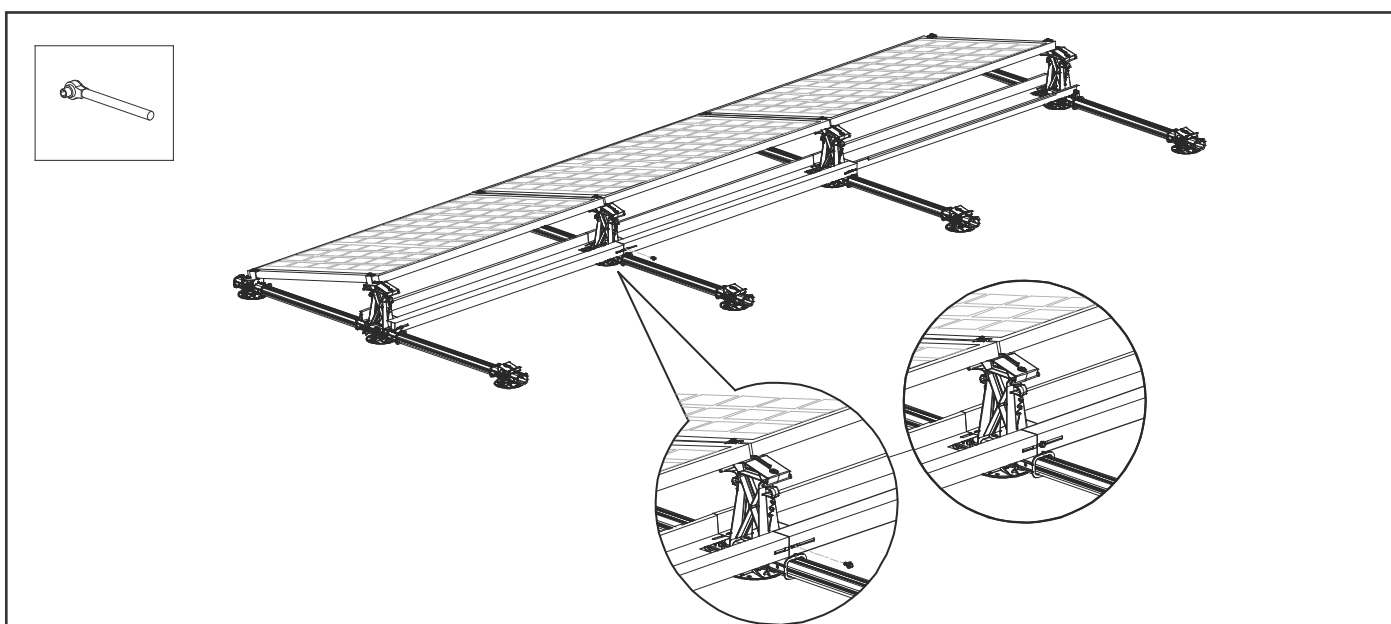


Place the second stabiliser to the rear of the solar panels, so that they lie between the upright ridges and the high base element, ensuring a small overlap with the first stabiliser.

Only fix one side of the stabiliser (at the overlap) to the high base element by placing the mounting screw 6.5 x 19 in the slotted hole of the two stabilisers and tightening it in the mounting hole of the base element.

**ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm).

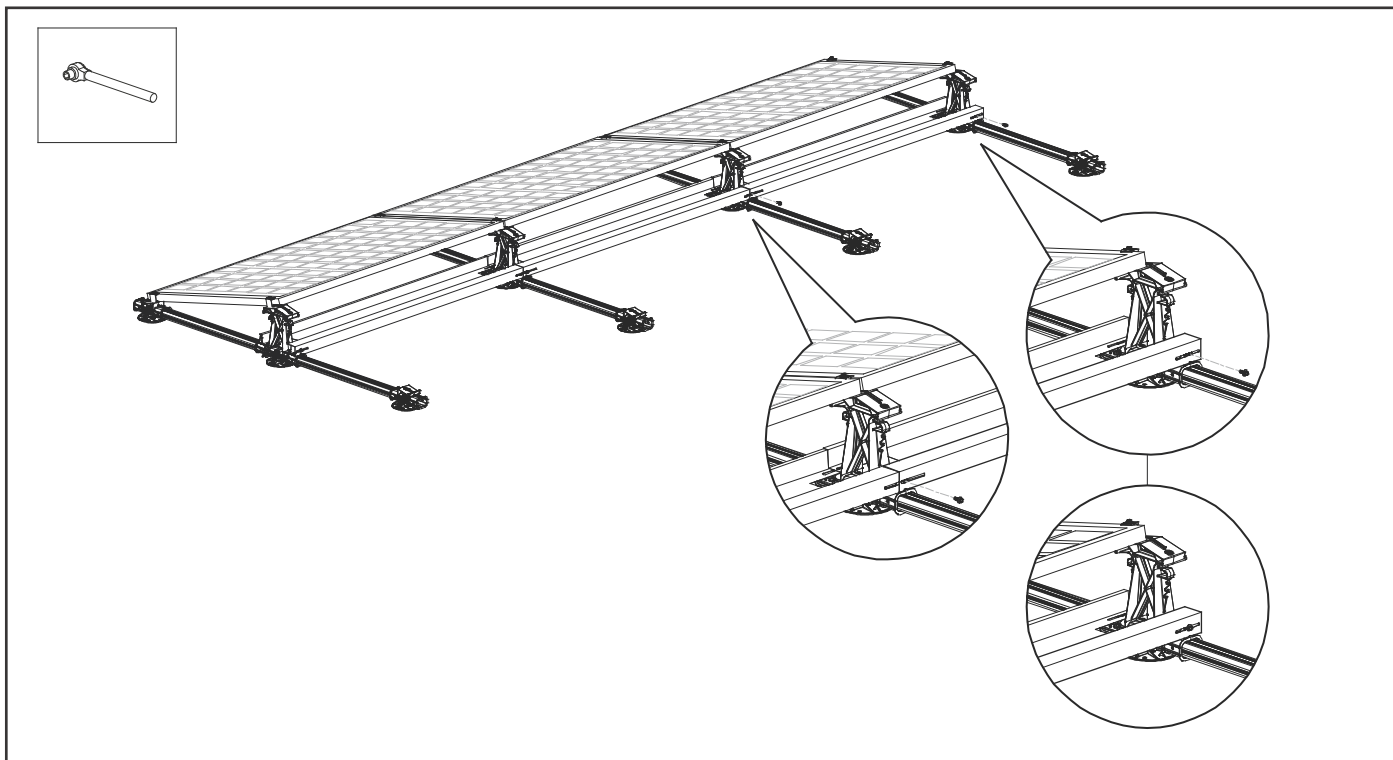
Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque. Repeat the steps above for the remaining intermediate stabilisers.



Place the last stabiliser to the rear of the solar panels, so that they lie between the upright ridges and the high base element, ensuring a small overlap with the adjacent stabiliser.

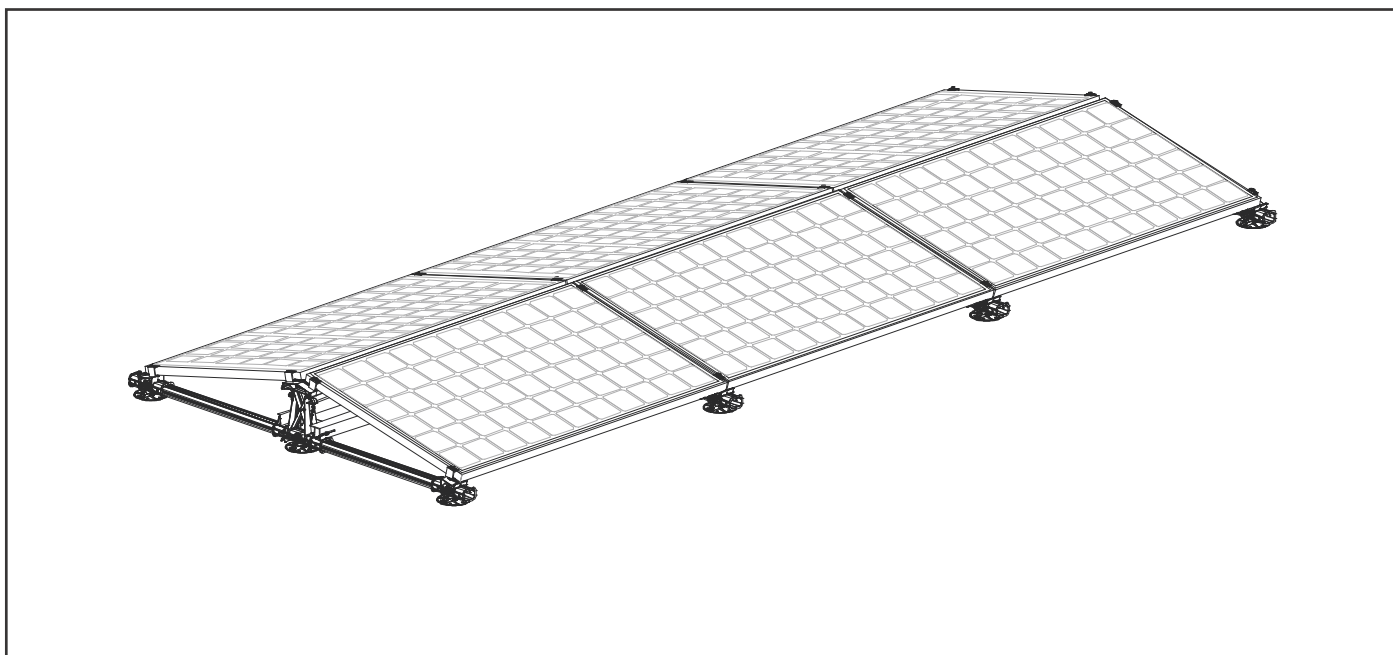
Mount the stabiliser (on both sides) to the high base element by placing the mounting screw 6.5 x 19 in the two slotted holes of the stabiliser and tightening it in the mounting holes of the base element.

**ATTENTION!** The torque of the screw connection is 4.5Nm (max. 6.5Nm). Do not overtighten the mounting screws in the base element. Consult the manual for your tool to set it to the correct torque.



### 6.15 Mounting second row of solar panels

You may now mount the second row of solar panels. Follow the mounting steps in sections 6.8 & 6.9.

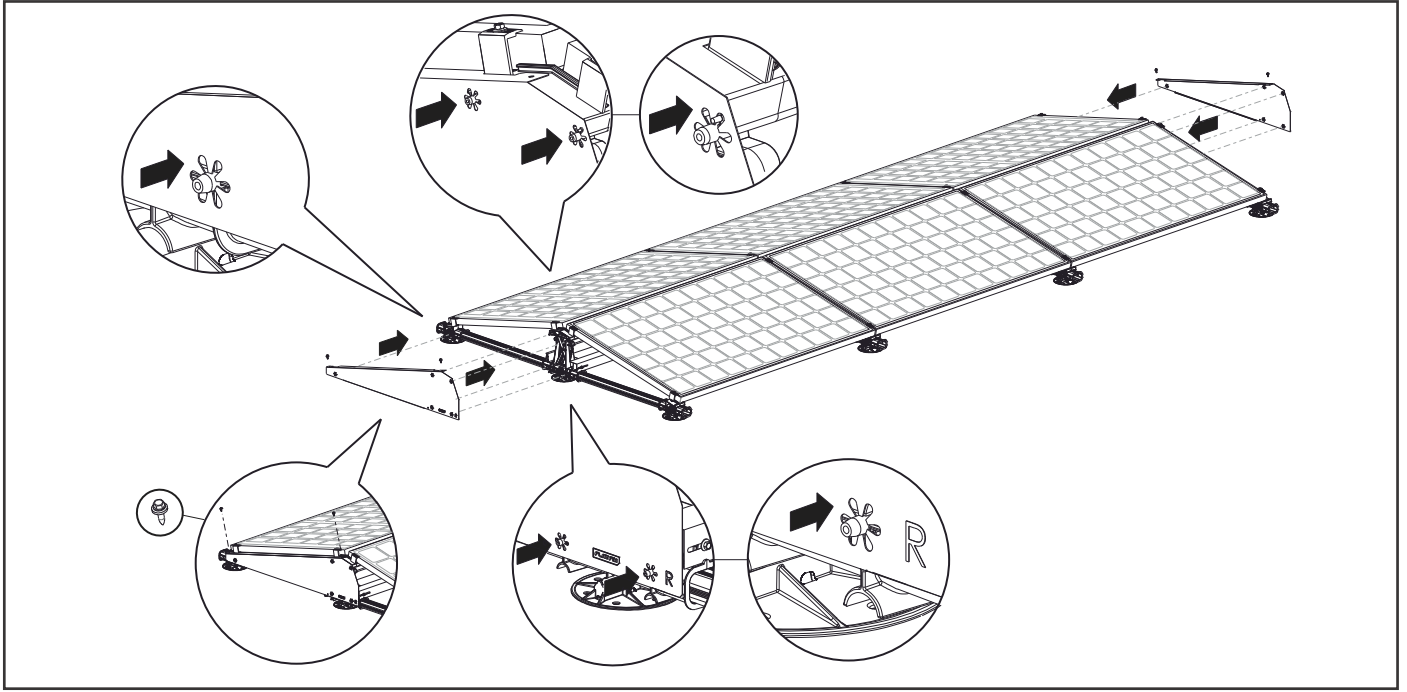


## 6.16 Mounting wind deflectors left/right

Lay the first left-hand wind deflector to the left of the panel field and the first right-hand wind deflector to the right side.

**ATTENTION!** The flange of the wind deflector must always be oriented towards the panel field.

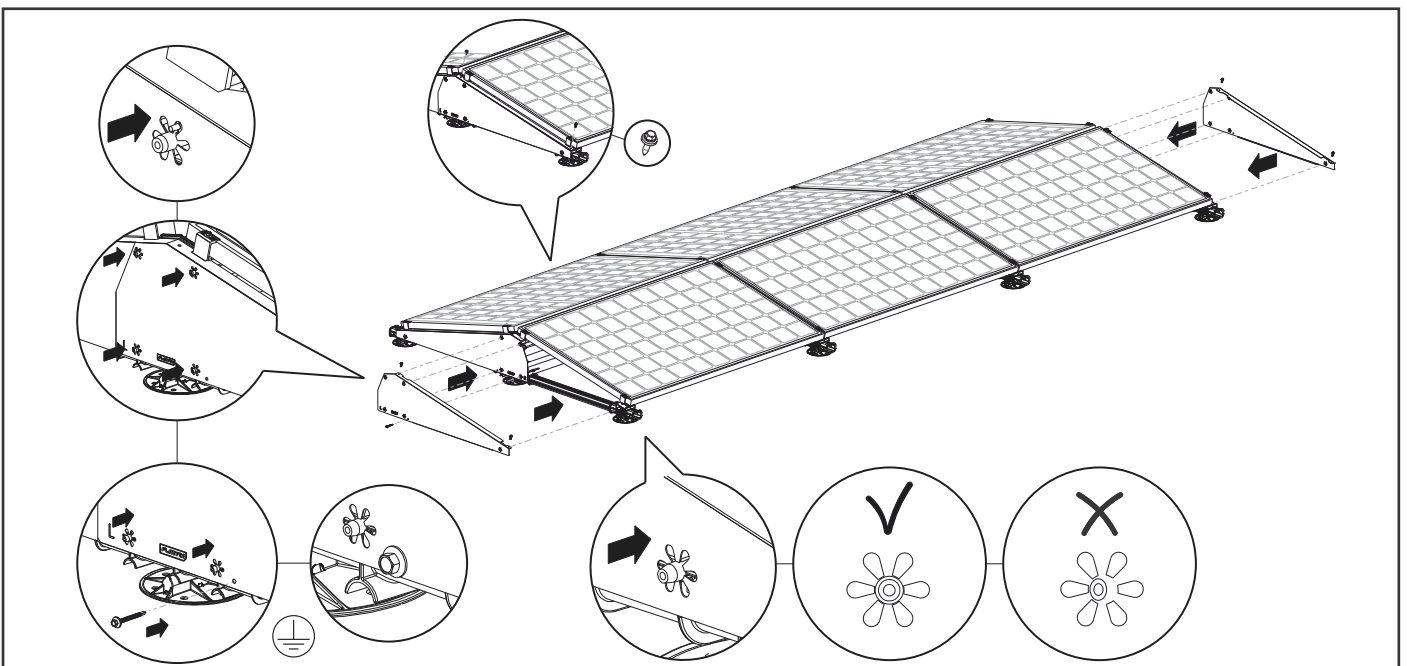
Mount the two wind deflectors (left and right) carefully by pressing the sunlocks in the wind deflectors over the pawls of the base elements. All lips of the sunlock must equally grip the pawl of the base element. Press the wind deflector firmly so that it connects properly to the base element. The wind deflectors have then to be fastened further using a self-tapping screw (100-3010) at the location of the base element high and low.



Lay the second left-hand wind deflector to the left of the panel field and the second right-hand wind deflector to the right side. **ATTENTION!** The flange of the wind deflector must always be oriented towards the panel field.

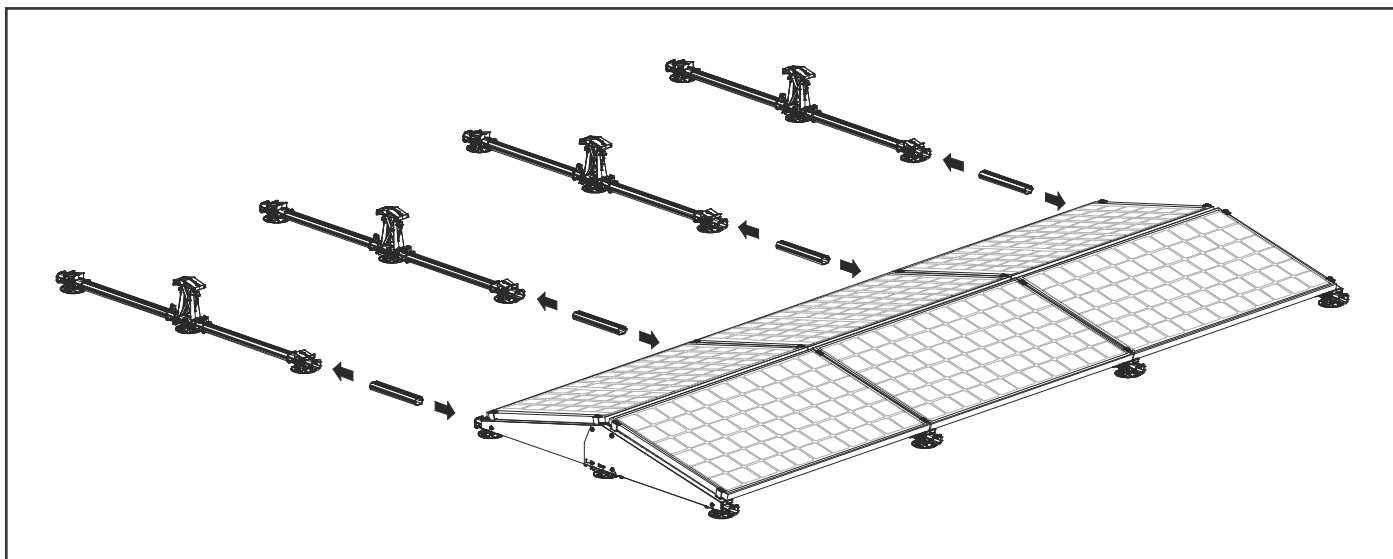
Mount the two wind deflectors (left and right, with overlap) carefully by pressing the sunlocks in the wind deflectors over the pawls of the base elements. The wind deflectors have then to be fastened further using a self-tapping screw (100-3010) at the location of the base element high and low.

When required to ground the wind deflectors (optional), you can fasten them with a self-tapping screw 6.3x32. Tighten this screw through the wind deflector and the base profile. Use the pre-drilled hole beside the lower sun lock in the wind deflector as reference. The side wind deflectors are now grounded and secured. And the first row of solar panels is now ready!

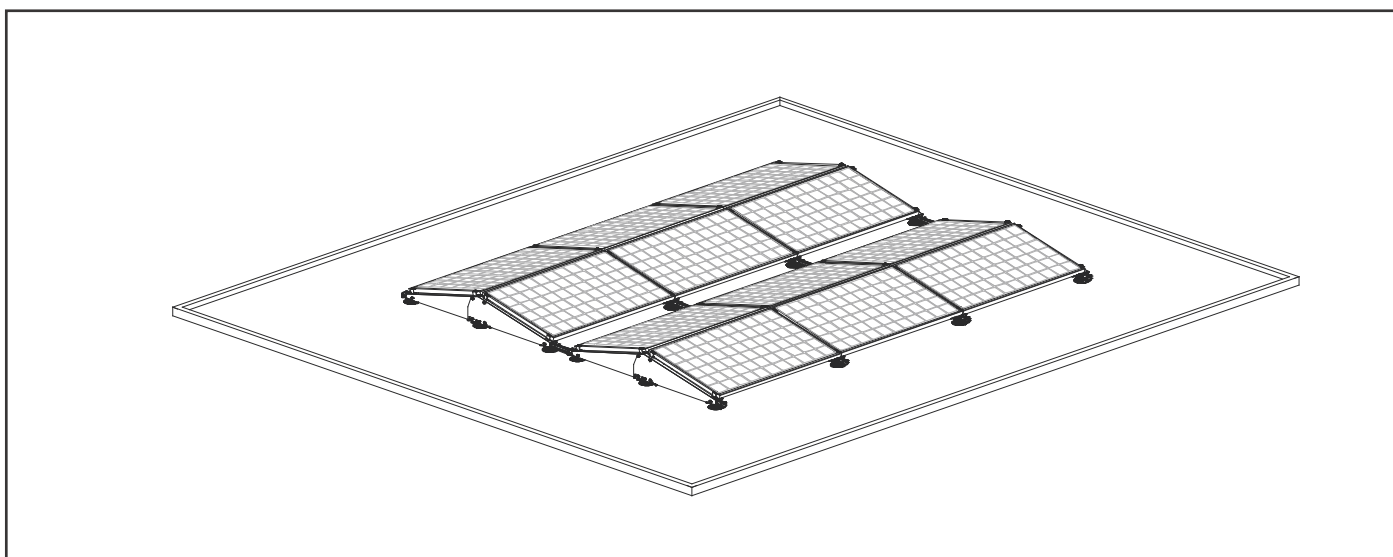


### 6.17 Multiple rows in succession

If you want to mount multiple rows of solar panels in succession, you must first make further FlatFix Fusion segments (see Section 6.1) and connect these to the base profile of the already mounted panel field.

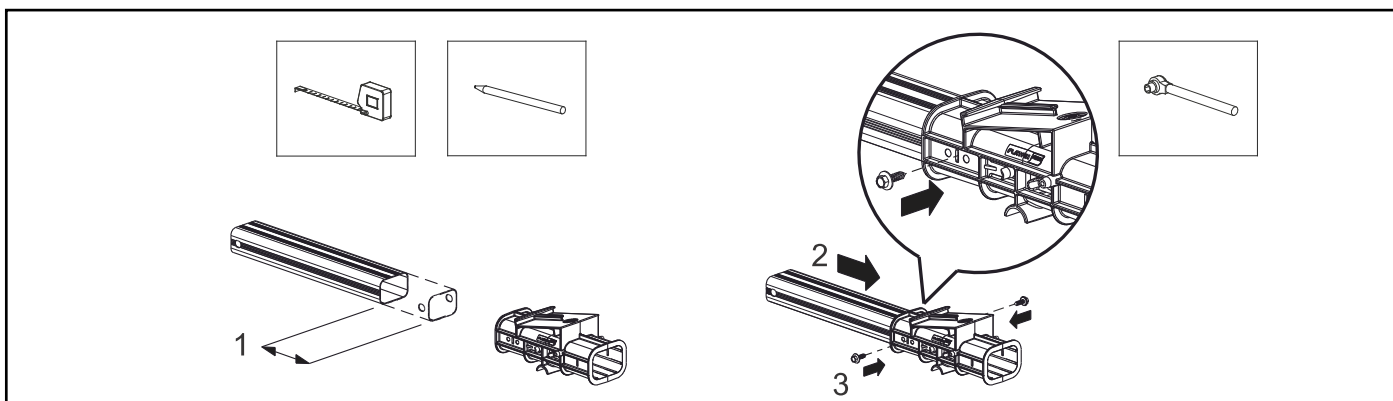


The panel field is now ready!

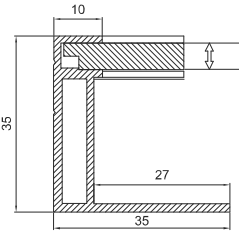
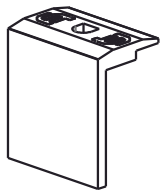
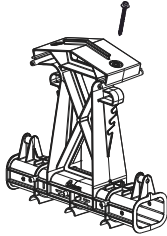
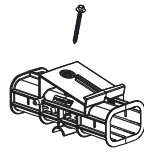
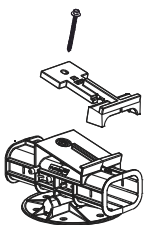


### 6.18 Shortening base profiles (optional)

The base profiles between the rows of solar panels may be shortened if necessary. Saw the profiles on one side to the required length. Slide the base profile in the low base element and fasten it with two self-tapping screws 6.0x25 (Item no.100-3010).



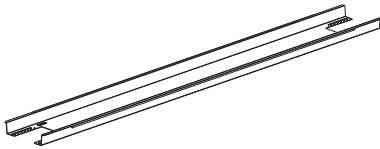
# 7. Annex

Frame thickness [mm]	End clamp	Mounting screw			
		Mounting screw - High base	Mounting screw - Low base	Mounting screw - Low base <u>with</u> <u>extension</u>	
					
					Item number
	<b>Grey</b>	<b>Black</b>			
29			100-6555 (55mm)	100-6555 (55mm)	100-6563 (63mm)
30	100-4130	100-4930			
31	100-4131	100-4931			
32	100-4132	100-4932	100-6560 (60mm)	100-6560 (60mm)	100-6570 (70mm)
33	100-4133	100-4933			
34	100-4134	100-4934			
35	100-4135	100-4935	100-6563 (63mm)	100-6563 (63mm)	100-6575 (75mm)
36	100-4136	100-4936			
37	100-4137	100-4937			
38	100-4138	100-4938			
39	100-4139	100-4939			
40	100-4140	100-4940	100-6570 (70mm)	100-6570 (70mm)	100-6580 (80mm)
41	100-4141	100-4941			
42	100-4142	100-4942			
43	100-4143	100-4943			
44	100-4144	100-4944			
45	100-4145	100-4945			
46	100-4146	100-4946	100-6575 (75mm)	100-6575 (75mm)	100-6585 (85mm)
47	100-4147	100-4947			
48					
49					
50	100-4150	100-4950			

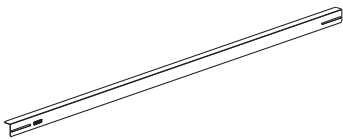


Item number		Description	Row distance dual [mm]
Grey	Black		
100-7121	100-7621	Base profile 210 mm	2110
100-7137	100-7637	Base profile 370 mm	2270 *
100-7155	100-7655	Base profile 550 mm	2450
100-7175	100-7675	Base profile 750 mm	2650
100-7194	100-7694	Base profile 940 mm	2840

\* Standard length in the FlatFix Fusion calculator

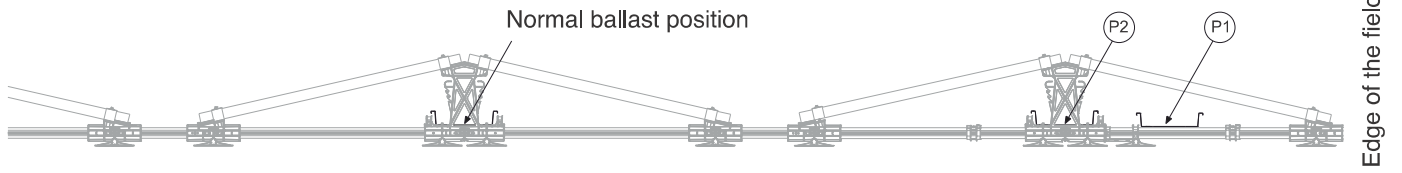


Item number	Description	Panel length [mm]	
		Min.	Max.
100-7215	Ballast holder 1200	1170	1310
100-7207	Ballast holder 1500	1475	1615
100-7202	Ballast holder 1600	1550	1690
100-7210	Ballast holder 1700	1655	1795
100-7213	Ballast holder 1900	1830	1970
100-7086	Ballast holder 2000	1940	2080



Item number	Description	Panel length [mm]	
		Min.	Max.
100-7216	Stabiliser 1200	1170	1310
100-7208	Stabiliser 1500	1475	1615
100-7203	Stabiliser 1600	1550	1690
100-7211	Stabiliser 1700	1655	1795
100-7214	Stabiliser 1900	1830	1970
100-7087	Stabiliser 2000	1940	2080

## Possible ballast positions (Normal / P1 / P2)



## **Points of attention during the design and installation of the system:**

The installation of a PV system on an existing building changes the building loads (e.g. snow/wind) or building structures relative to the factors that have applied up to that point. To prevent personal injury and/or material damage, it is necessary to employ a qualified technician to revise the statistical calculations of the existing building. This involves accounting for current regulations, and specifically NEN6702, NEN7250, NEN1991-1-1-4 A1 + C2/NB. Failing to check the statistical calculations of the building could in the worst-case scenario lead to buckling (of the load-bearing structure) of the building. We recommend consulting the insurer in case of any structural changes. Roofs are always subject to vibration and movement. This can be caused by, for example, activities in the building, weather effects, thermal dynamics or even seismic activity, causing PV systems to move, shift or subside. In some cases, it may be necessary to fasten/anchor the PV system to the roof. When determining the edge and corner zones of a building, the current regulations must be factored in. When an edge or corner zone is indicated by Esdec, this relates to the minimum edge or corner zone. Placing solar panels in the edge or corner zone of a building is always at your own risk and is strongly discouraged.

Among other things, the following factors must be checked structurally and declared sound by, for instance, a builder:

- The loads resulting from the additional weight of the complete PV system on the building.
- The loads resulting from the changed geometry of the roof surface on the building.
- The loads resulting from the static load of the PV system on the building.
- The loads resulting from the dynamic wind pressure and possible accumulation of precipitation on the building and the PV system.
- The loads resulting from installation on the building, roof structure, roofing material and insulation.
- The compatibility of the insulation and roofing material at the location of the contact points of the load-bearing structure of the PV system over the longer term resulting from point load.
- The compatibility of the roofing material combined with the PV system at the location of the contact points.
- The effect of thermal dynamics of the building and the PV system on each other.
- The effect of any movement and vibrations of the roof and the PV system on each other.

Despite the fact calculations by Esdec staff and within the software are carried out with great care, no rights may be derived from them. Prices in the software, catalogues, quotations, etc. are indicative and may change as a result of, for instance, rising raw material prices or duties. Calculations, drawings and dimensioning in the software, catalogues, quotations, etc. are indicative, and no rights may be derived from them. All systems and services supplied by us are subject to our general terms and conditions. In addition to the points of attention above, our general terms and conditions should be read and understood thoroughly before going ahead with installation. When you award Esdec a job, you tacitly agree with the above.