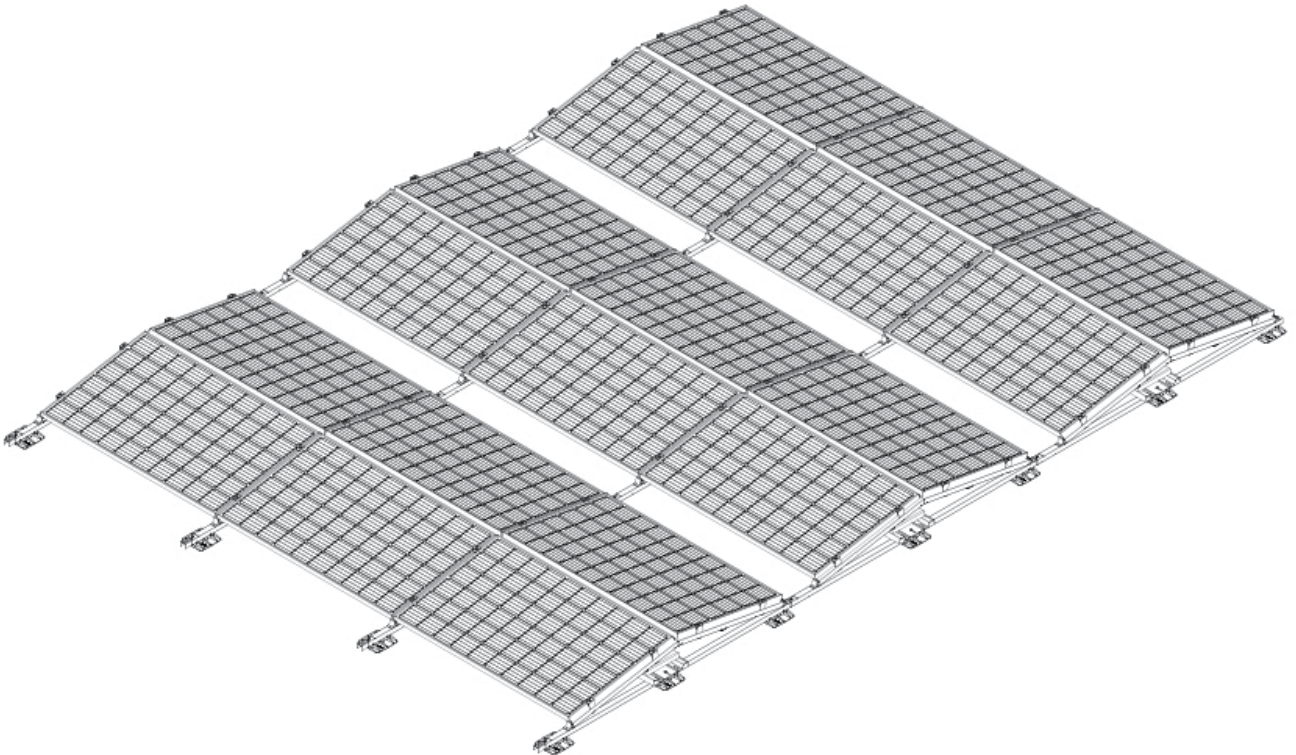




## Installation Manual

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# Matrix Mounting System Symmetrical





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## **Other Information**

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

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# 1. Introduction

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

## 1.1 Safety Symbols



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



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



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

## 1.2 Target Audience

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



**ATTENTION!** Qualified personnel means a person with valid license from the local authority for:

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

## 2. Preparing for Installation

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

### 2.1 Safety Instructions



**DANGER!** Do not install during severe or sub-zero weather conditions.



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



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



**DANGER!** Do not place heavy pallets on the roof, especially those carrying modules, ballast racks or windplates.



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

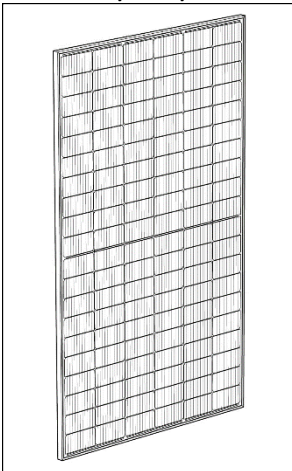


**ATTENTION!** The installation, maintenance, recycling and disposal of the mounting components must be performed by qualified personnel in compliance with national and local standards and regulations.

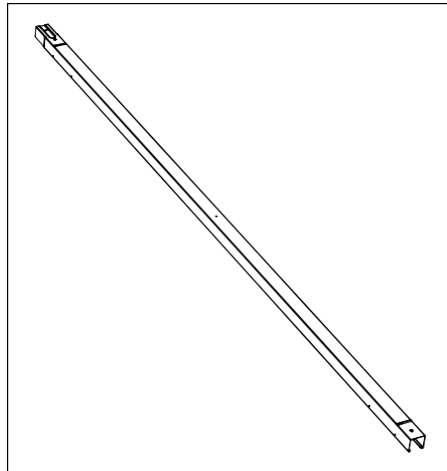
Any unauthorized actions including modification of product functionality of any form will affect the validation of warranty service; Autarco may deny the obligation of warranty service accordingly.

## 2.2 List of Components

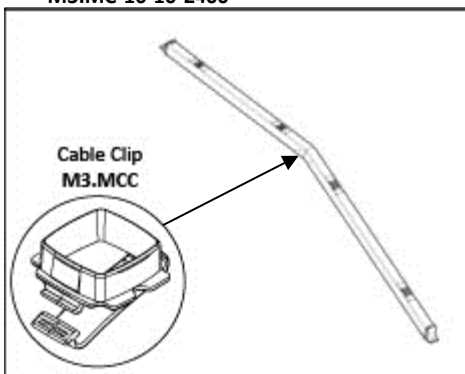
① Solar Modules  
S1.MHJ / MHL / TBJ



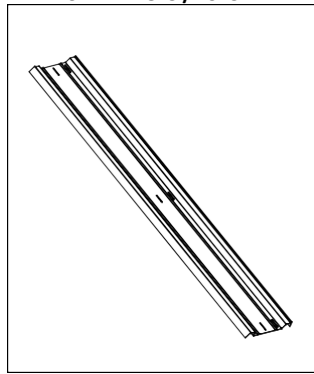
② Base Unit  
M3.MBU-2500MS



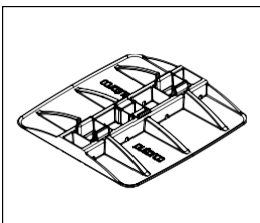
③ Carrier  
M3.MC-10-10-2400



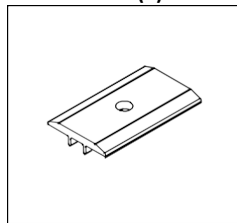
④ Ballast Rack  
M3.MBP-1825 / 1975



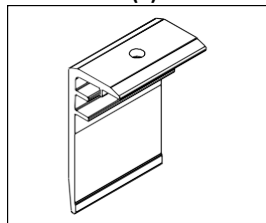
⑤ Foot  
M3.MF



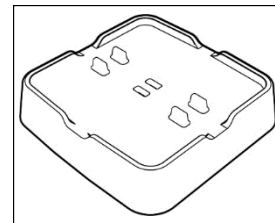
⑥ Mid Clamp  
M3.MMC(B)



⑦ End Clamp  
M3.MEC(B)



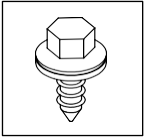
⑧ Booster Foot  
M3.MBF



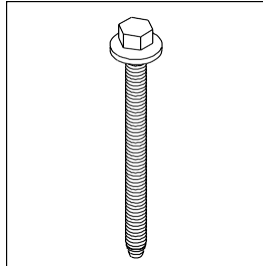
Please note the component numberings as they will be referenced in the installation section.

## 2.3 Tools and Materials

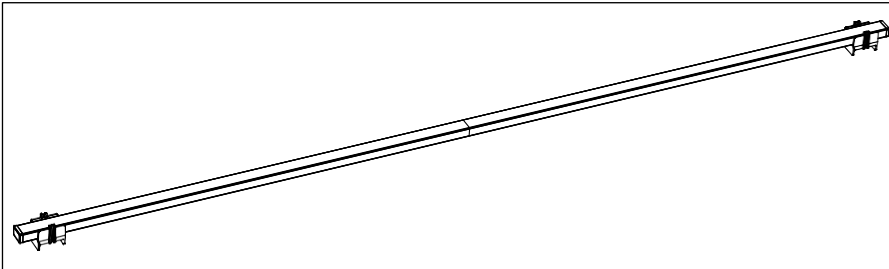
(A) Short Screw *provided*  
M3.MSS



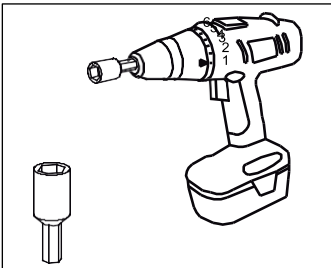
(B) Long Screw *provided*  
M3.MCS(B)



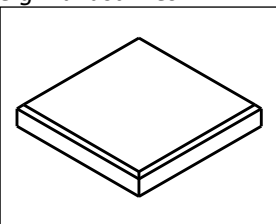
(C) Sizing Tool *provided*  
M3.MST



Electric Screw Driver



Weights for ballast  
*e.g. Ballast Tiles*



Squaring Tool, e.g.  
a. Folding square  
b. Laser tool  
c. Marker and ruler

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

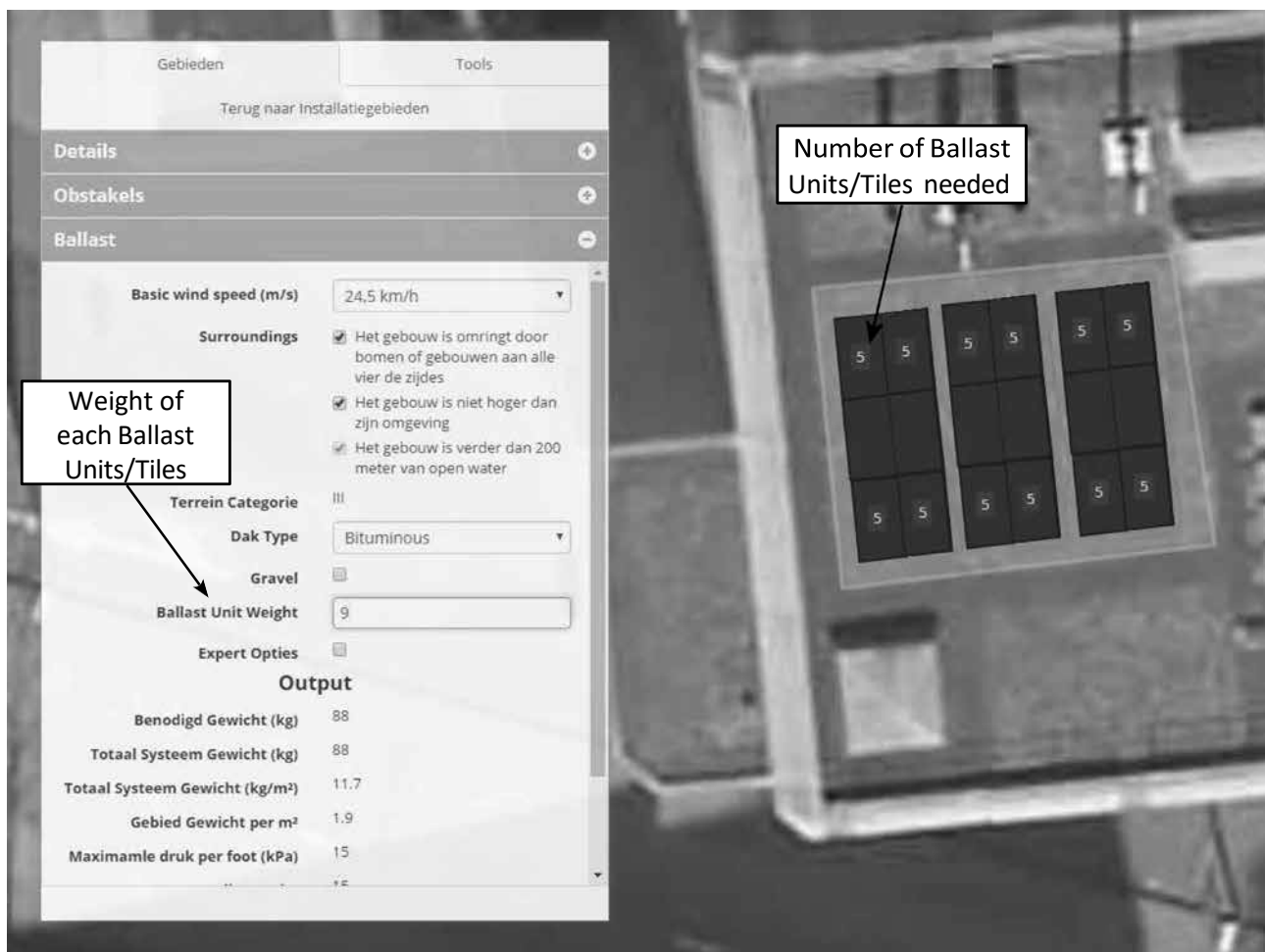


## 2.4 Configuration and Ballast Plan

The configuration and ballast plans may be calculated using Autarco’s Helios remote survey tool. If available, please follow exactly the instructions in this configuration and ballast plans.

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

If the configuration and ballast plans are not available, please make sure to follow all applicable building standards and local regulations concerning module positioning and ballast requirements.



## 2.5 Adjusting the Sizing Tool

**Step 1** – Place the sizing tool onto the module.

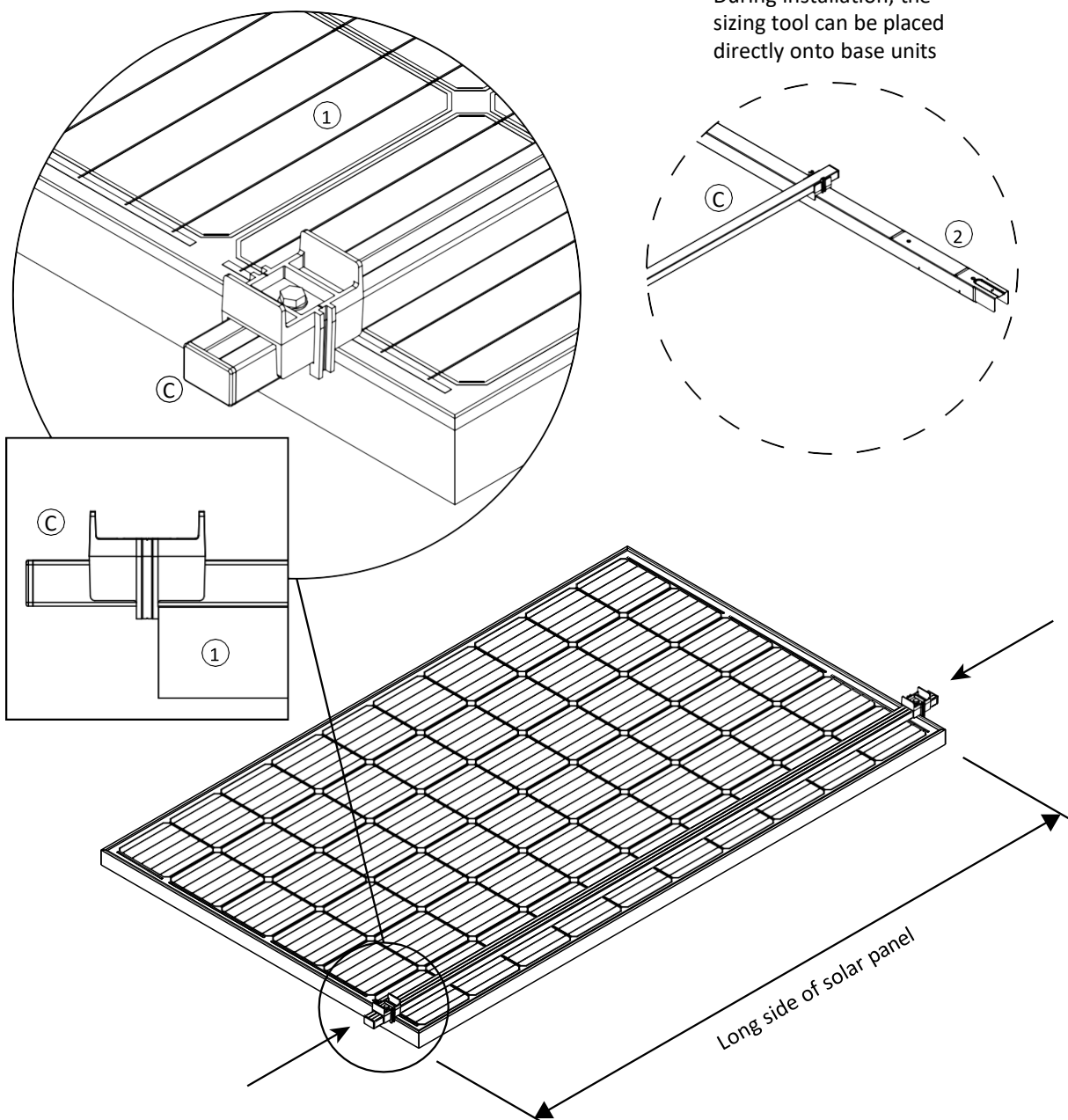
**Step 2** – Slide the protruding flanges of the plastic slider (C) firmly against the sides of the solar panel (1). This measures the long side of the solar panel.

**Step 3** – Screw the plastic sliders into place to fix the distance.

**NOTE:** The sizing tool (C) can be placed directly on the base unit (2) to position the distance between each base unit.

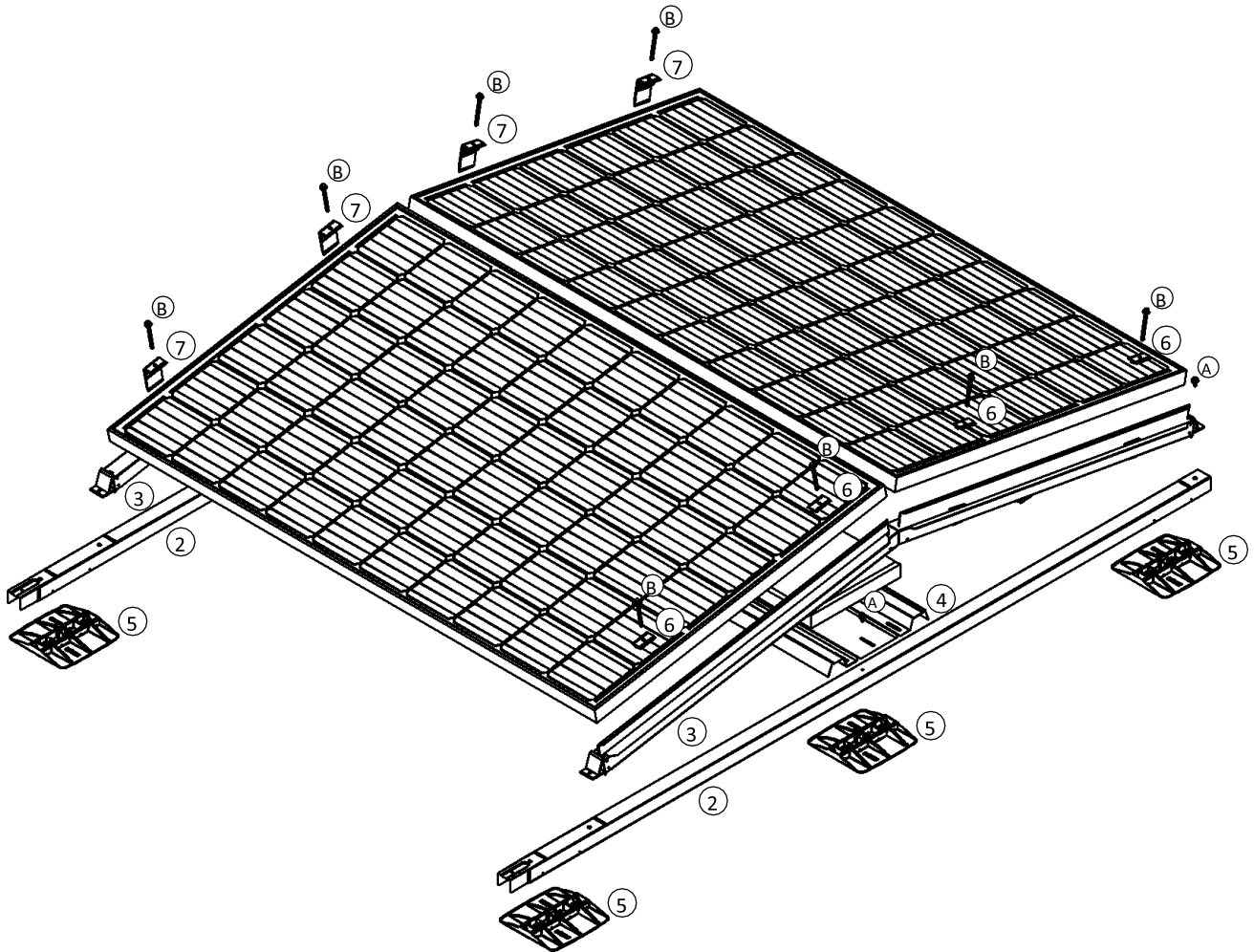
*Use a measuring tape to note the distance if solar panels are not in hand.*

Steps 1 & 2



### 3. Installation

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



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

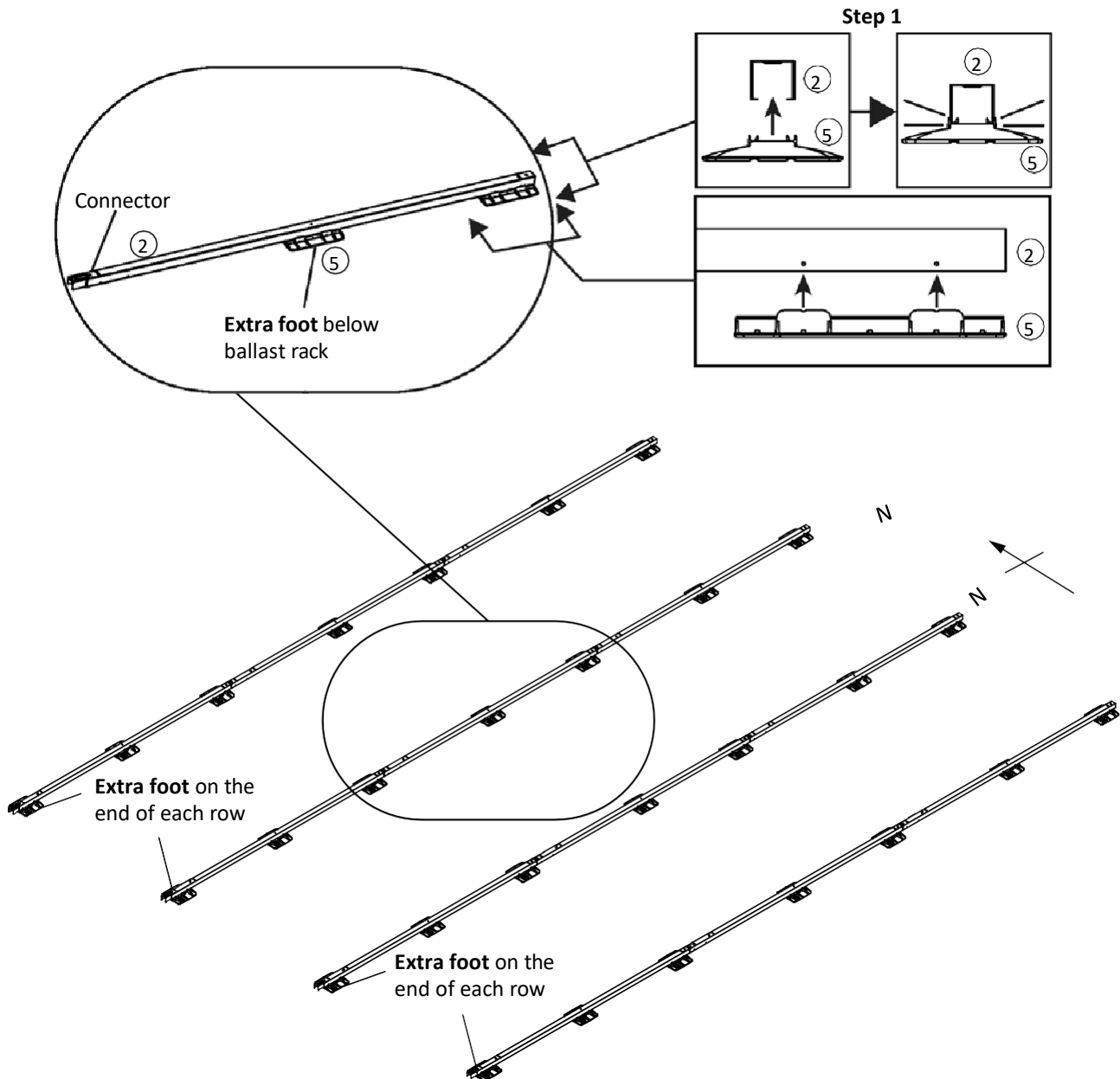
- 3.1 Preparing the base units
- 3.2 Assembling the carriers onto the base units
- 3.3 Aligning the base units and attaching the ballast racks
- 3.4 Loading the ballast
- 3.5 Placing the solar panels
- 3.6 Installation complete

## 3.1 Preparing the base units

**Step 1** – Click the foot (5) onto the bottom of the base units (2), at the end without connector.

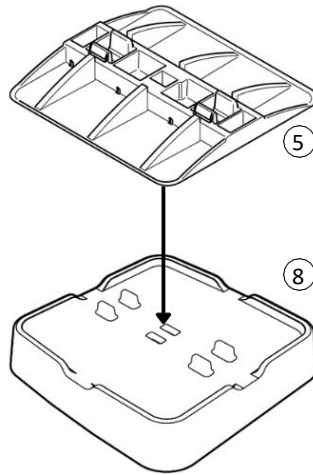
**Step 2** – Arrange the base units (2) in the arrangement of the configuration and ballast plan provided.  
*Do not screw or fix the base units yet.*

**Step 3** – Add an extra foot for the end of each row, and below each ballast racks.



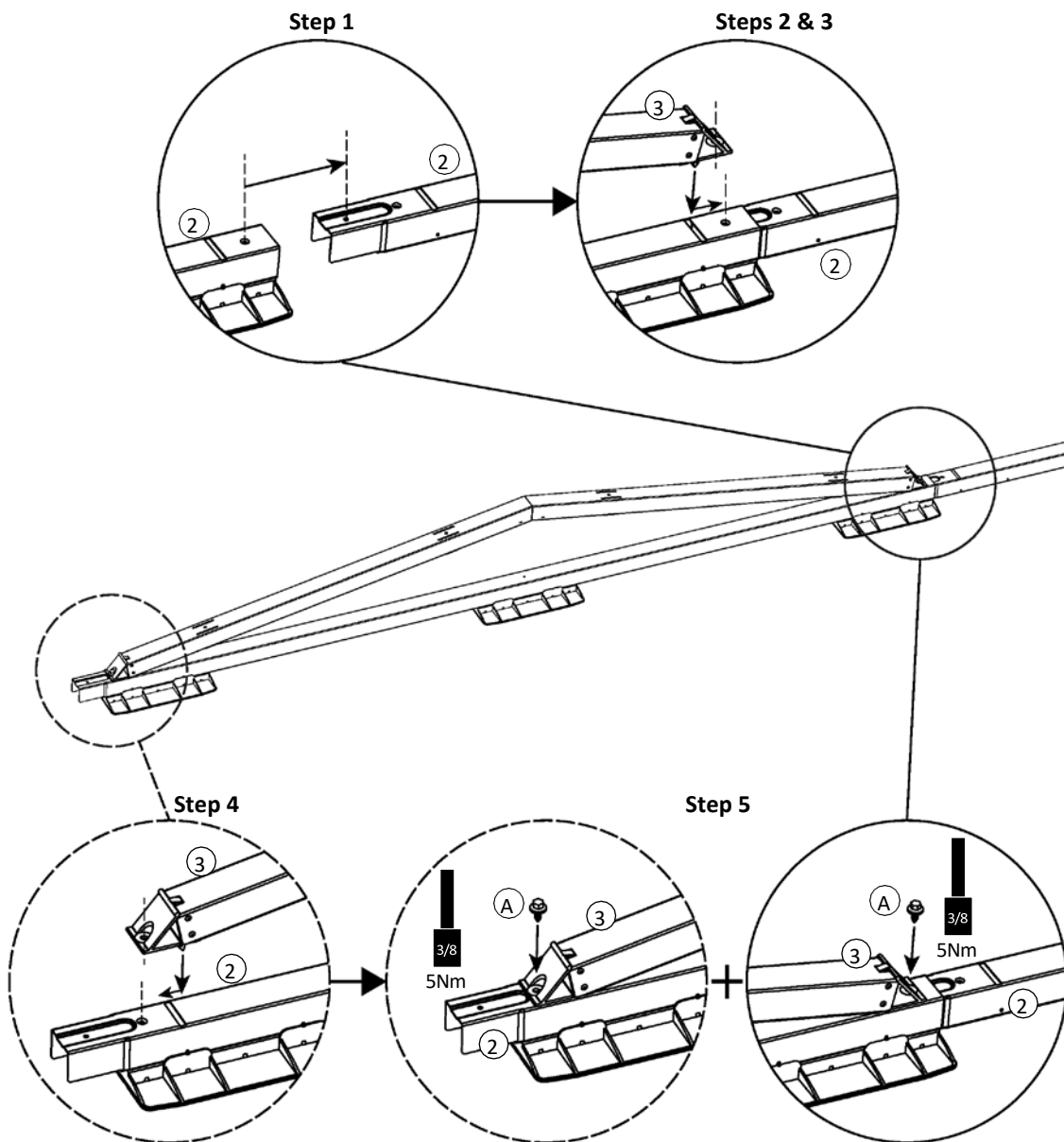


ATTENTION! Is your installation on an inclined surface between 2 to 5 degrees?  
Make sure to use the supplied ⑧ Matrix Booster Foot with your install!  
Simply place ⑤ on ⑧ and the feet are ready for installation on an inclined surface!



## 3.2 Assembling the carriers onto the base units

- Step 1** – Insert the connector into the next base unit (2) until the screw holes align.
- Step 2** – Insert the protruding flange below the carrier (3) end into the slit on the base unit (2).
- Step 3** – Push the carrier end (2) outwards until the screw holes align.
- Step 4** – Repeat steps 2 and 3 for the other carrier (3) end.
- Step 5** – Screw on the carrier (3) at both ends with a short screw (A). This secures the base units and carriers. *Check that the screw holes are all aligned before screwing and tighten screws to no more than 5Nm.*



### 3.3 Aligning the base units and attaching the ballast racks

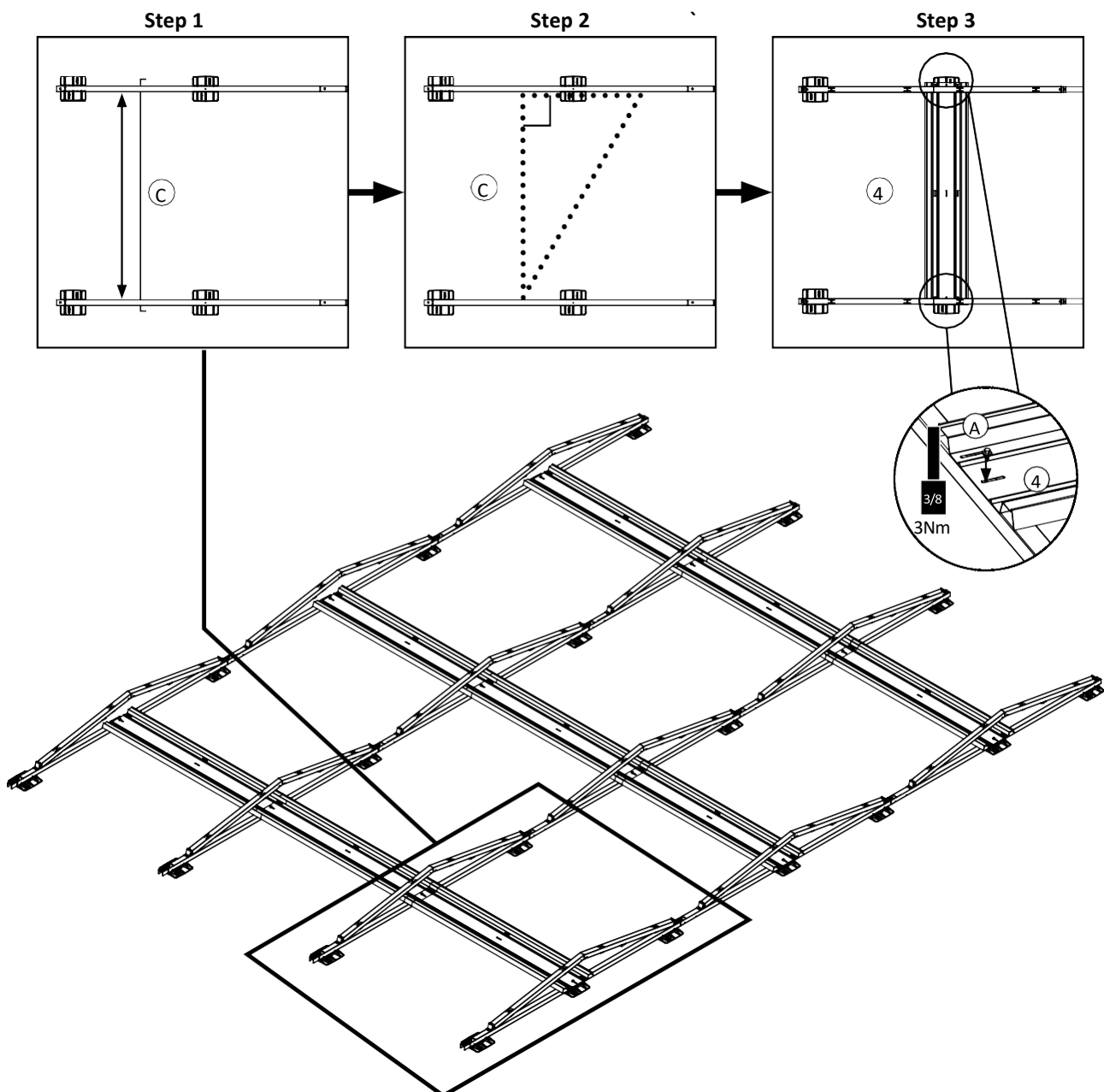
**Step 1** – Use the sizing tool (C) to position the base units (2) at the correct distance from each other.

**Step 2** – Make sure the system is straight and squared, using one of the following methods:

- a. Folding square
- b. Laser tool
- c. Marking a 3-4-5 triangle

**Step 3** – Place the ballast racks (4) on the beam and secure it using a short screw (A) on each side. Note that ballast racks may overlap. *Tighten screws to no more than 3Nm and be careful not to strip the thread.*

**Step 4** – Repeat steps 1 to 3 for the remaining ballast rack.



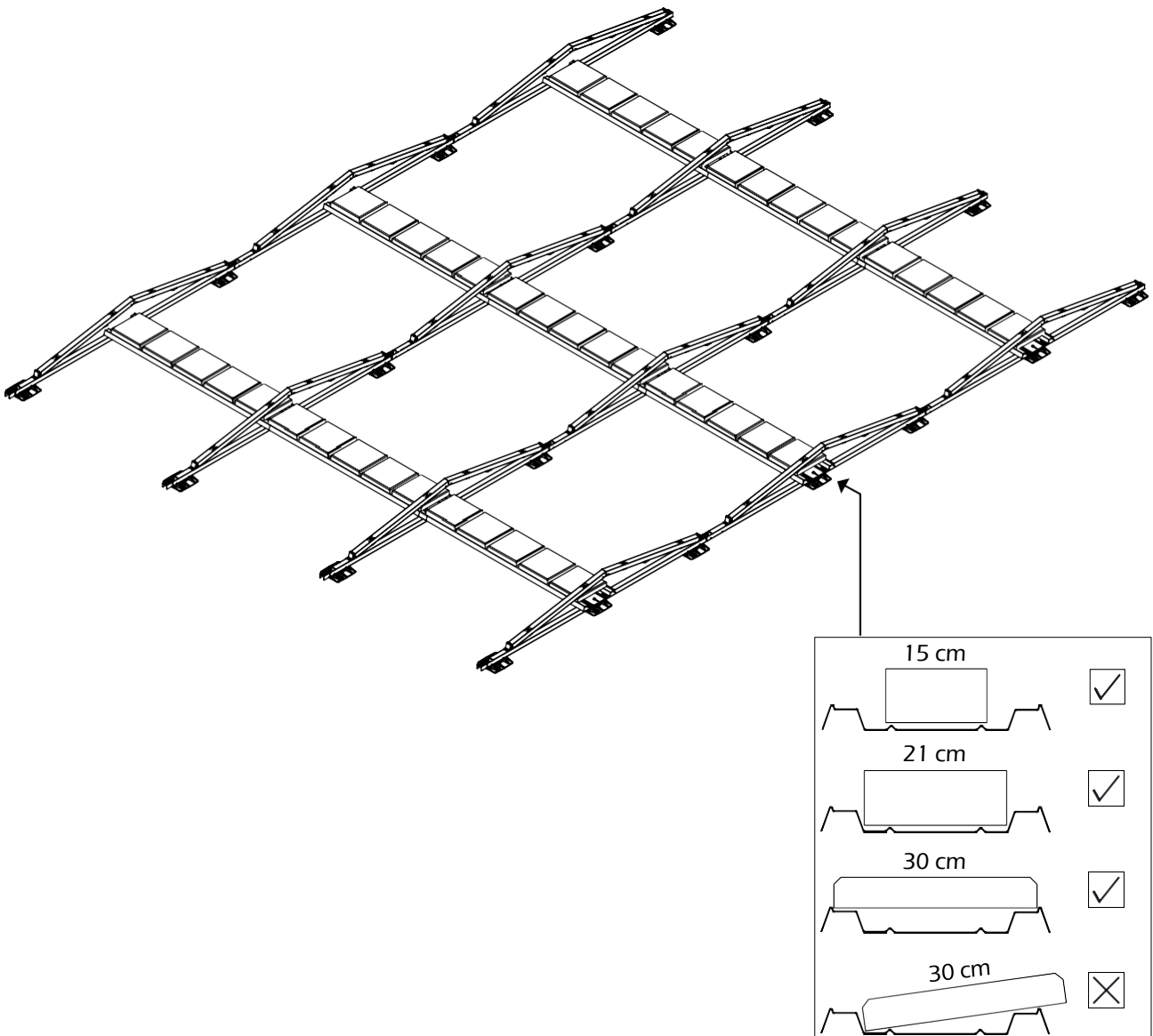
## 3.4 Loading the ballast

Place the ballast weights or tiles onto the ballast racks according to the ballast plan. See 2.4 on page 9 for more information about the ballast plan.

Oversized ballast tiles can be placed on top of the rack. The figure below shows the placement for different sized ballast tiles onto the ballast rack.



**ATTENTION!** Make sure the actual weight of ballasts match the weight used in the ballast plan calculation.





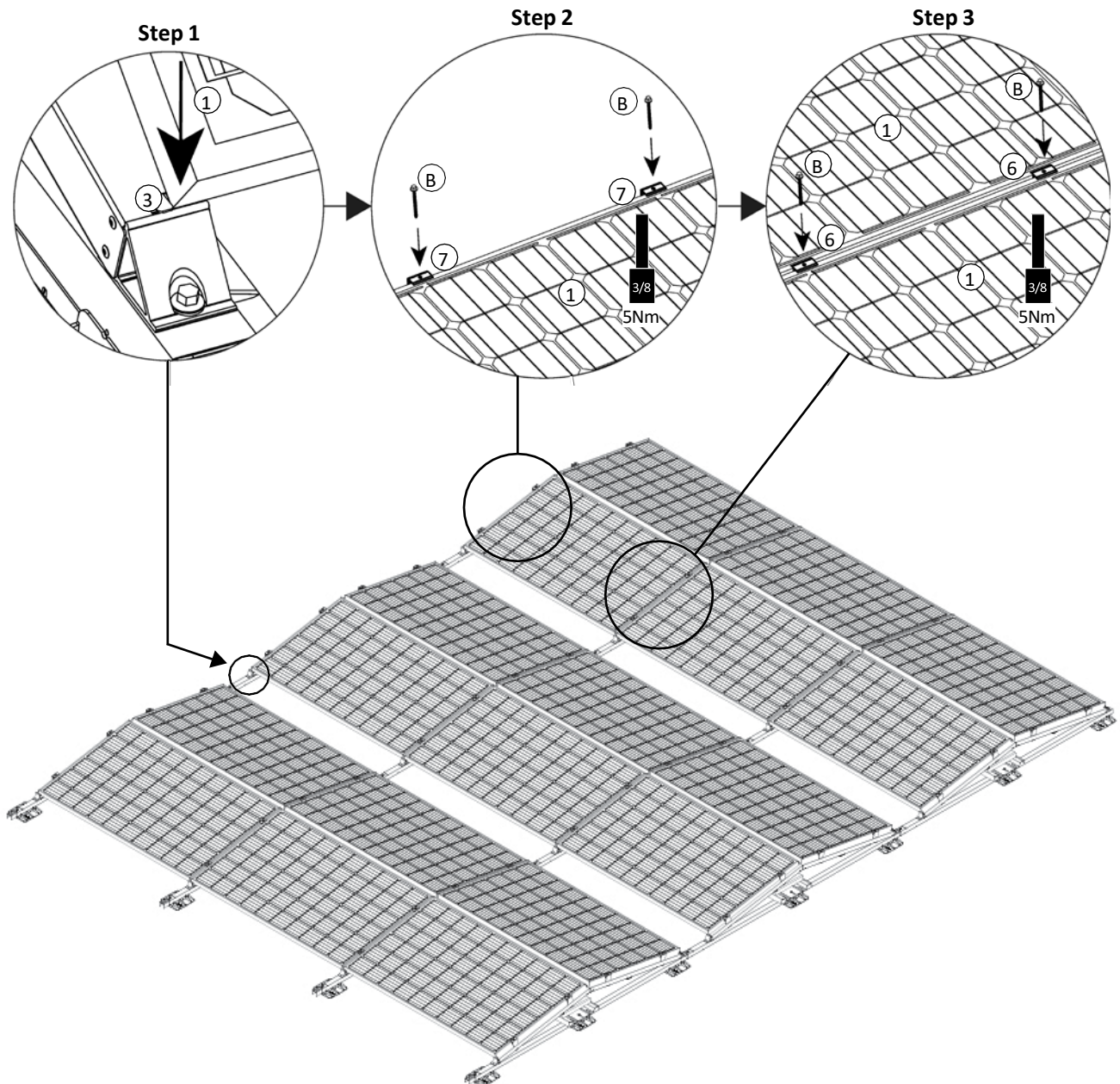
## 3.5 Placing the solar panels

**Step 1** – Place the solar panel ① on the carrier ③. Note that the solar panel should be supported by the lip at the end of the carrier.

**Step 2** – Screw on the end clamps ⑦ using the long clamp screws ②. *Tighten screws to 5Nm.*

**Step 3** – Screw on the middle clamps ⑥ using the long clamp screw ②. *Tighten screws to 5Nm.*

**Step 4** – Tie up the cables that run between panels with cable clips pre-assembled on the carriers.



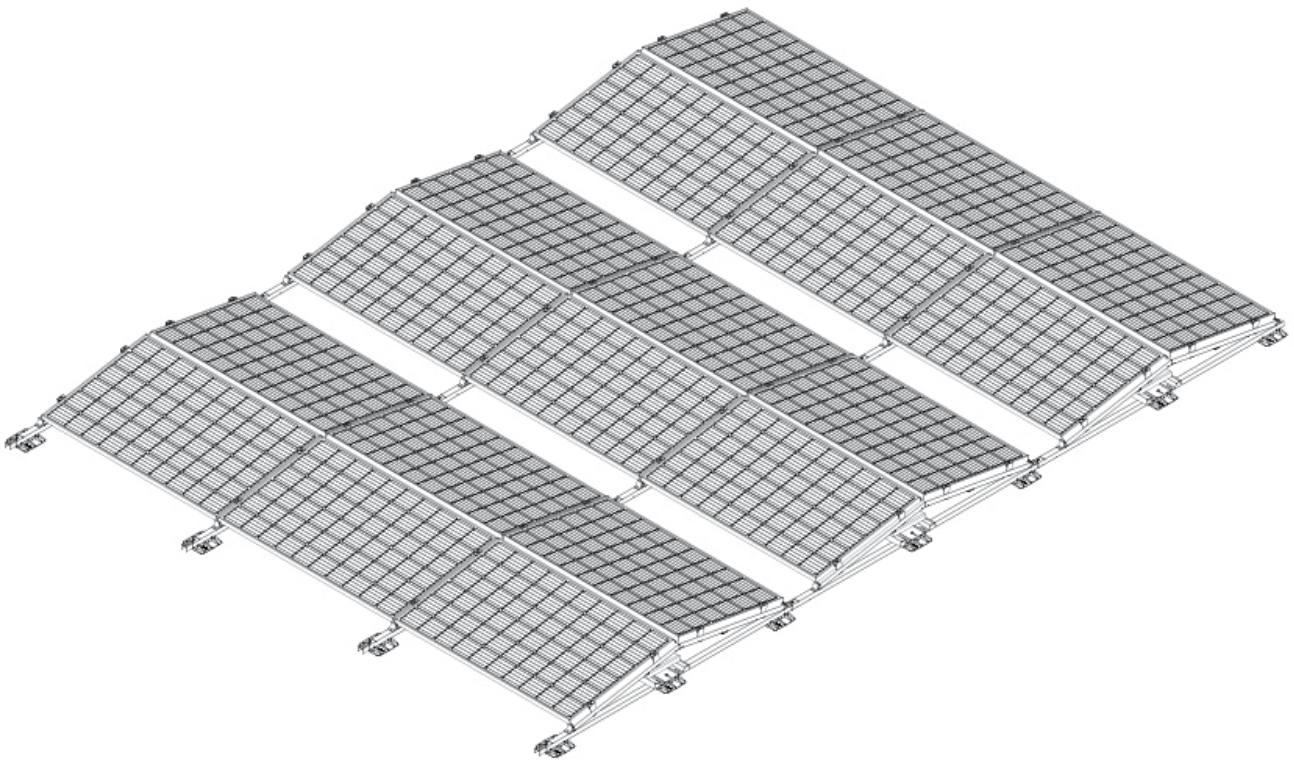
### 3.6 Optimizers

Optional power-optimizers can be mounted on the carriers using a selfdrilling screw (not provided).

### 3.7 Installation complete



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



## 4. Disposal

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

