

# G15 | G20

## Legal Notice

Subject to changes due to technical improvements. These assembly instructions correspond to the technical status of the delivered product and not to the current development status at the manufacturer.

If pages or parts of the assembly instructions are missing, please contact the manufacturer's address given below.

The original language of these assembly instructions is German. Any assembly instructions in another language are a translation of the assembly instructions in German.

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## Manufacturer

AEROCOMPACT® Holding  
Sonnenstraße 10  
A 6822 Satteins | Austria

office@aerocompact.com  
www.aerocompact.com

## Update

This manual is subject to change without notice. This does not represent any obligation on the part of the manufacturer.

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# ABOUT THIS DOCUMENT

These installation instructions describe the procedure for installing the product. Read these assembly instructions carefully before starting the assembly. Follow the instructions carefully to ensure correct installation of the product.

## Applicable Documents

The following documents are a part of these installation instructions and are absolutely necessary for the correct assembly of the system:

- Project report from AEROTOOL
- Planning documents and drawings

## Explanation of Symbols

In order to make these assembly instructions easy to understand, uniform safety instructions, symbols, terms and abbreviations are used. The following symbols indicate notes which are not relevant to safety, but which make working with the assembly instructions easier.

- ✓ Requirements for an action are depicted with this symbol. Make sure that all requirements are met before you carry out the following actions.
- Action steps are depicted with this symbol. Carry out the steps in the specified order.
- ✓ The result of the action is depicted with this symbol.

**i** This note provides useful information for a smooth assembly of the product.

## Symbols in Illustrations

### Activities

Certain activities are required to carry out the assembly. These activities are shown in the illustrations with the following symbols.



Check AEROTOOL planning documents



Visual inspection



Activity by hand



Observe right angle



Optional component,  
optional installation method

## Tools

Certain tools are required to carry out the assembly. These tools are shown in the illustrations with the following symbols.



Measuring tape, measure



Cordless screwdriver, screwdriver



Pencil, mark



Torque wrench,  
Observe torque



Chalk line



Drilling machine, drill

## Target group

These installation instructions are intended for trained personnel who are familiar with the installation of photovoltaic systems. The personnel should also be familiar with working on roofs and know the local regulations regarding work safety. The personnel must also observe the instructions in the Safety chapter.

## Appropriate use

The CompactGROUND ground-mounted system is designed for installing PV modules on the ground. The slope must not exceed 10° (ballasting with ballast stones and/or ground screws). A project specific clarification is required for a slope inclination of more than 10°. The system must be properly installed in accordance with these installation instructions and the planning documents supplied.

PV modules used with the CompactGROUND system should be approved by the module manufacturer. AEROCOMPACT accepts no liability for loss of performance or damage of any kind to the PV modules.

Any other use of the CompactGROUND system is considered improper.

## Liability, Warranty, Guarantee

These assembly instructions and the project report supplied with the product are integral parts of the product. The information, data and instructions given in the assembly instructions were up to date at the time of printing. No claims can be made for products already delivered that deviate from the information, illustrations and descriptions.

The project report supplied with the system contains the static calculation related to the location. The position of the modules on the ground, the number and position of the ground screws and/or ballasting must be followed exactly as specified in the project report. The Aerocompact system is designed and planned with the Aerotool software.

### Planning documents

Before installation, check that the site conditions correspond to the planning document details.

This includes:

- The site
- The surroundings and the topography of the site
- Dimensions, surface and ground composition
- Position and size of obstacles (terrain levels, existing or planned pipeline routes, traffic routes and other structures, etc.)
- Drainage features
- Site preparation, i.e. grading, if necessary

If in doubt, measure the friction between the system components and the ground surface to validate the assumptions made in the design documents. If the project details in the planning documents do not match the values on-site, contact the responsible planner. This is especially true if the planning is not based on detailed and up-to-date data collection on-site.

Ensure that the weight and dimensions of the ballast blocks are in accordance with the planning documents. The ballast plans from AEROTOOL are optimized for specific block characteristics. If the block specified in the design report is not used, then a revised ballast plan will be needed.

The selection and procurement of the ballast blocks must be handled by the customer. Ensure that the ballast blocks have sufficient density to remain stable under local conditions over the lifetime of the PV system.

Before using ground screws, ensure that their entire length can be permanently anchored in the ground. Caution against the following should be taken:

- Hazards from contaminated sites
- Increased risk of corrosion due to high groundwater level and/or aggressive soil chemistry (strongly acidic or alkaline reaction).
- Restrictions on anchorage depth, e.g. in the soil depth above the cap of a landfill, excessive content of stones and boulders (which may require pre-drilling).

If the anchorage depth is limited, a shorter ground screw with a length of 10 inches (280 mm) can be used instead of the standard 18 inch (460 mm) ground screw. If a shorter ground screw (lower load capacity) must be used in place of the standard ground screw, then a new statics plan is required.

Aerocompact accepts no liability for damage and malfunctions caused by:

- improper use
- use of non-certified components.
- unauthorized modifications to the product.
- improper handling of the product.
- Installation errors
- Failure to comply with the installation instructions or planning documents.

## Guarantee

The warranty period for the system is 25 years. The warranty period for galvanized steel parts is 10 years. The guarantee is only valid if the installation is carried out professionally and all system components are purchased from Aerocompact. If the assembly instructions or the planning documents are disregarded, the warranty will be invalidated.

Photovoltaic racking systems are not maintenance-free. Carry out maintenance annually and immediately after unusual weather events, e.g., after heavy storms or heavy snowfall, etc. If the maintenance is not carried out at the specified interval, the warranty will become void.

### General information on liability

The ground mount system is sold within the framework of a purchase agreement. Assembly/installation by the purchaser or third parties is not carried out on behalf of or for Aerocompact and must be carried out by qualified personnel strictly in accordance with the installation instructions. The Aerocompact system must be designed and planned with the AEROTOOL software. Aerocompact is not responsible for the project-related construction of the ground or ground surface or for its professional execution.

Errors and damage as well as limited or insufficient functionality of the system due to incorrect installation and/or installation that deviates from the installation instructions and/or the project report (AEROTOOL) exclude any material defect for which Aerocompact is responsible. In the event of improper handling, the rights of the buyer due to a material defect shall expire. The system warranty is only valid if all system components are purchased from Aerocompact.

Each change must be approved by the responsible planner. Unauthorized deviations from the plans will result in loss of warranty and exclusion of liability in the event of property damage or personal injury.

### Systems with clamping on the short module side

For a system with a clamp on the short side of the module, it is assumed that the module may also be used in this mounting form (clamp on the short sides of the module). This approval can either be generally available as part of the module certification or, under certain circumstances, can also be given by the module manufacturer on a project-specific basis.



# SAFETY

## Requirements of personnel

The person must be physically and mentally fit. Under no circumstances must the installation personnel be under the influence of medication, alcohol or drugs.

Persons who are not healthy and fit must not work on roofs.

Personnel who are in training must only carry out work under the supervision of qualified personnel who are authorized to train personnel.

## Working safely

The company carrying out the installation is responsible for ensuring that the local regulations for work safety and accident prevention are observed.

## Weather conditions

In the event of unsuitable weather, work shall not be continued longer than necessary or shall not be started at all.

Never carry out assembly work in strong winds. Strong wind exerts enormous forces on the large-area PV modules. There is a risk of personal injury from a blown module.

## Dangers from the environment

Keep sufficient distance from overhead electrical lines. The following distances must be observed:

1 m to 1,000 V

3 m: 1,000 to 11,000 V

4 m: 11,000 to 22,000 V

5 m: 22,000 to 38,000 V

> 5 m: if the voltage is unknown

## Personal protective equipment (PPE)

Personal protective equipment is required to prevent injuries during assembly work.



Wear protective goggles when drilling.



Wear safety boots.



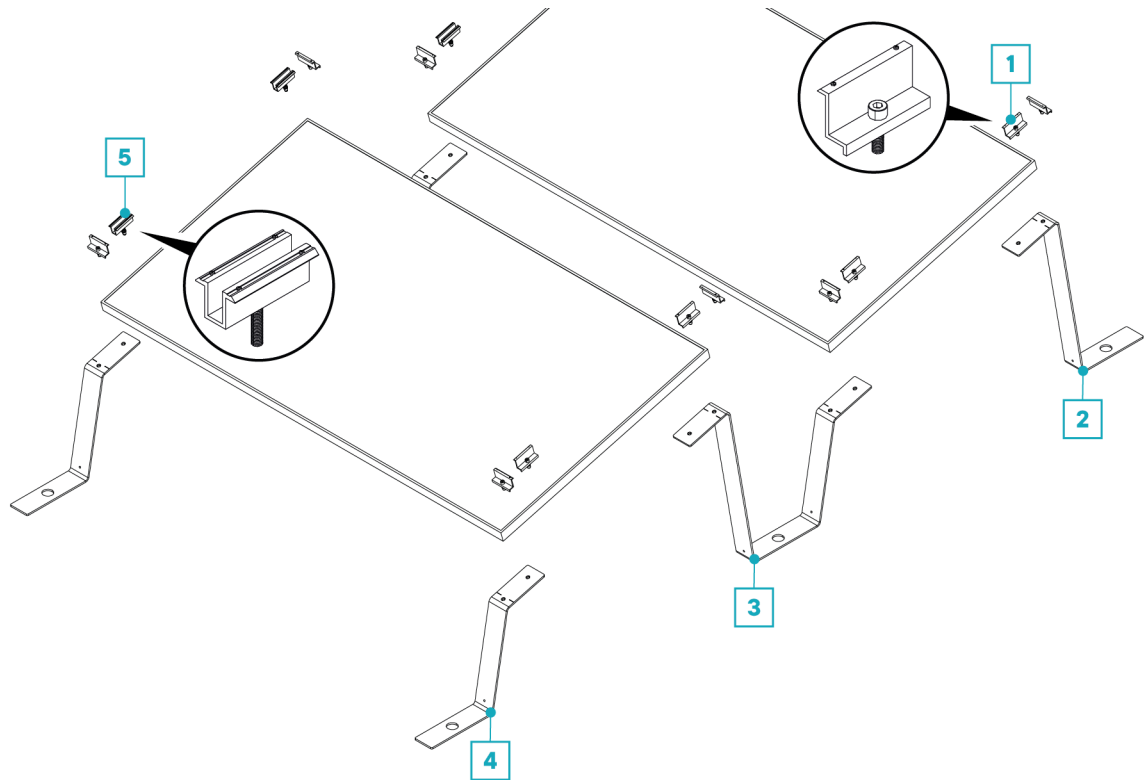
Wear cut-resistant work gloves during assembly.



Helmets are required for all persons involved on the construction site.

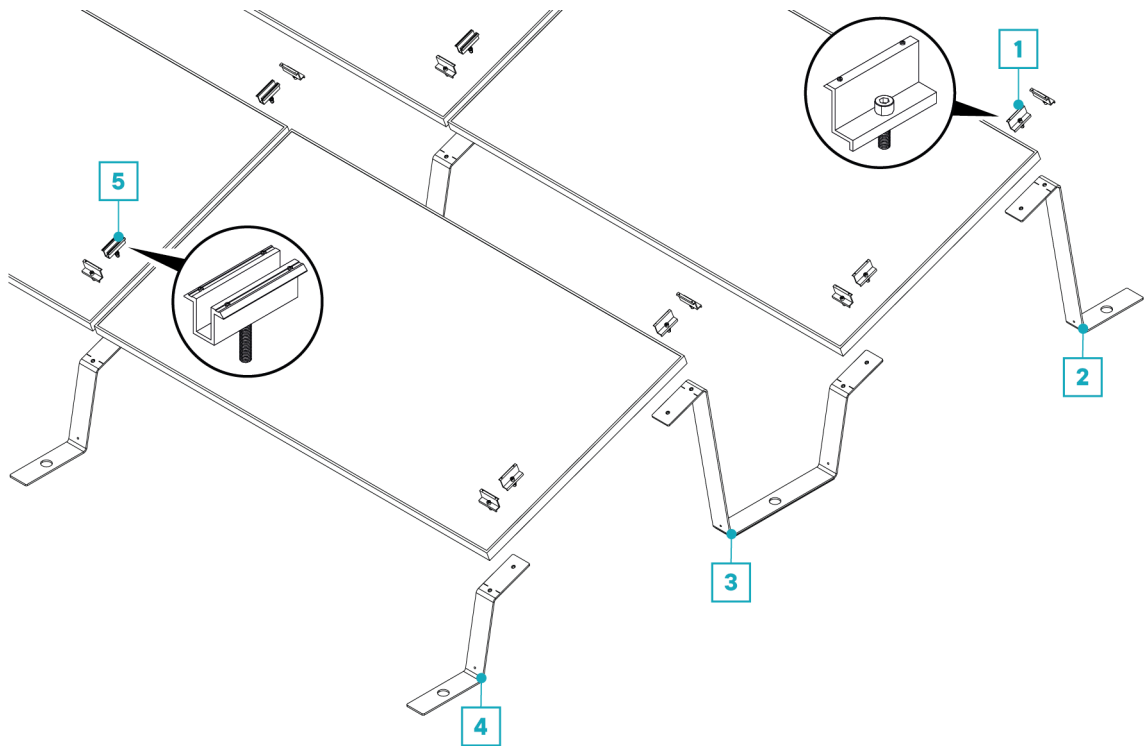
# SYSTEM OVERVIEW

## Basic components G15



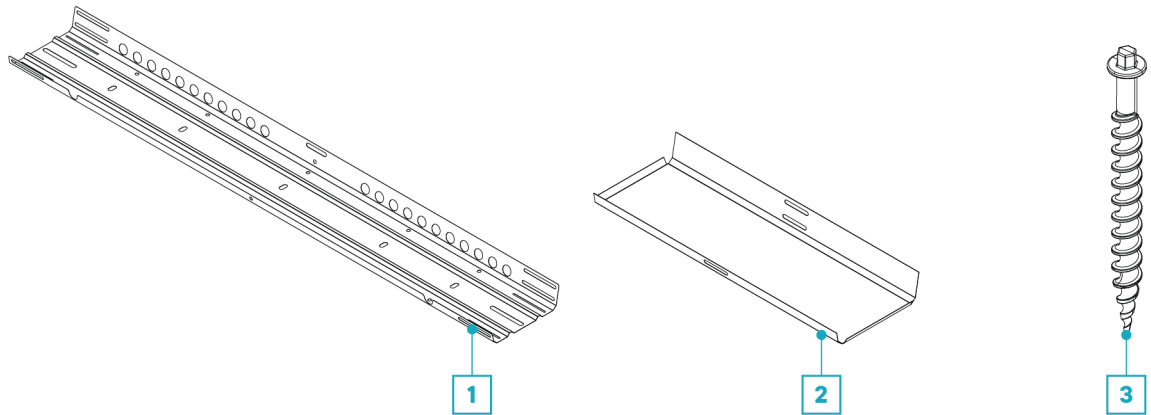
- 1** End clamp, varying clamp height for 30 - 50 mm frame heights | CLEG10-XX
- 2** Back foot G15 | G15EB
- 3** Connector G15, shading angle EU18°/US25° | G15CNL, G15CNS
- 4** Front foot G15, | G15FB
- 5** Middle clamp, for 30 - 50 mm frame heights | CLMG10

## Basic components G20



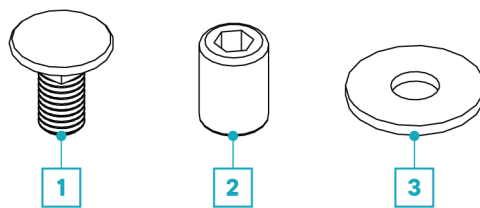
- 1** End clamp, varying clamp height for 30 - 50 mm frame heights | CLEG10-XX
- 2** Back foot G20 | G20EB
- 3** Connector G20, shading angle EU18°/US25° | G20CNL, G20CNS
- 4** Front foot G20, | G20FB
- 5** Middle clamp, for 30 - 50 mm frame heights | CLMG10

## Ballasting



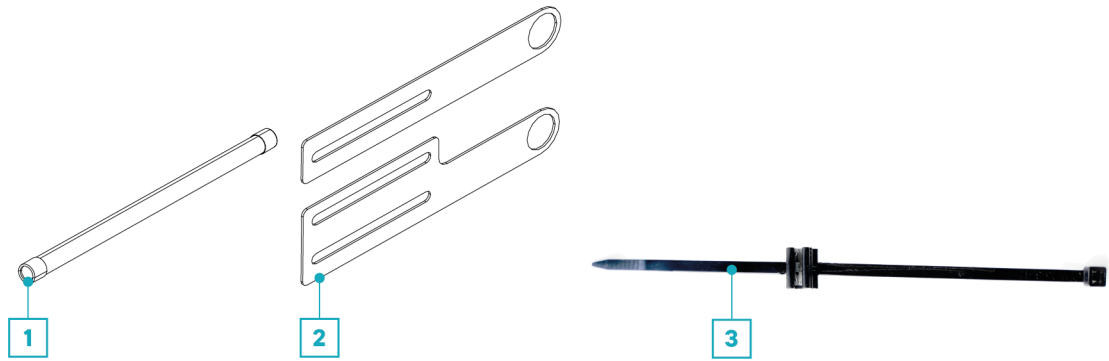
- 1** Long ballast tray | BT-1800, BT-2050, BT-2300
- 2** Short ballast tray | BT-880
- 3** Ground Screw 18 in. | GSC 1.75 in.x18 in.

## Fastening Material



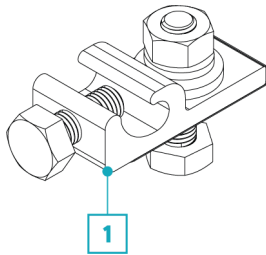
- 1** Carriage Bolt M8x20 | CB8x20
- 2** Allen Nut M8x16 | AN8x16
- 3** Flat Washer 8.4/30 | FW8.4/30

## Accessories



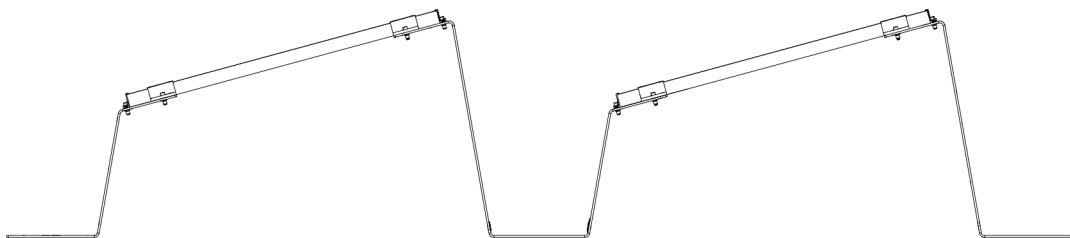
- 1 Cable conduit | CP-430, CP-620, CP-840
- 2 Bracket for cable conduit | BR-CP
- 3 Cable tie clip to module | CLP-M

## Accessories for grounding / potential equalization (USA)

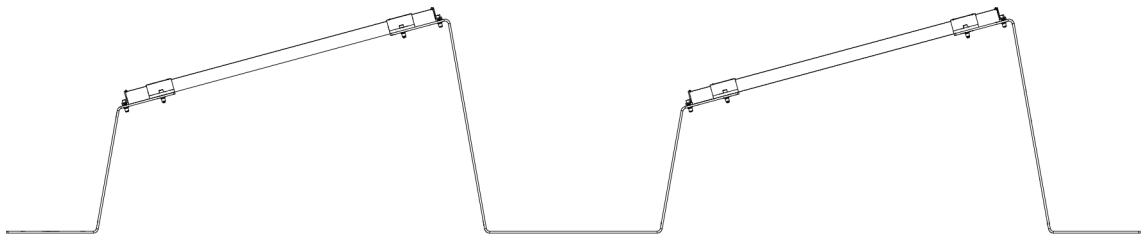


- 1 Grounding lug with nut (follows UL 476 or UL 2703 requirements) | GL18N

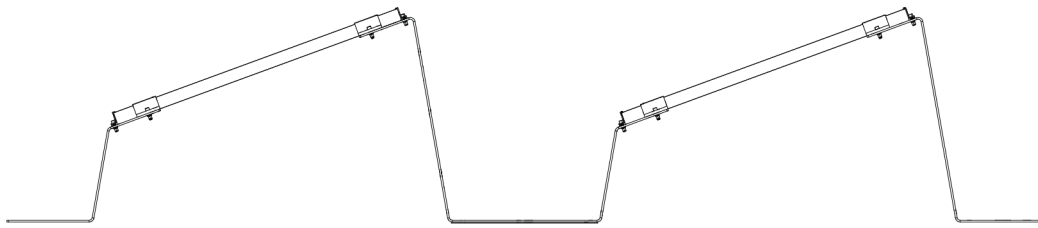
## Variants



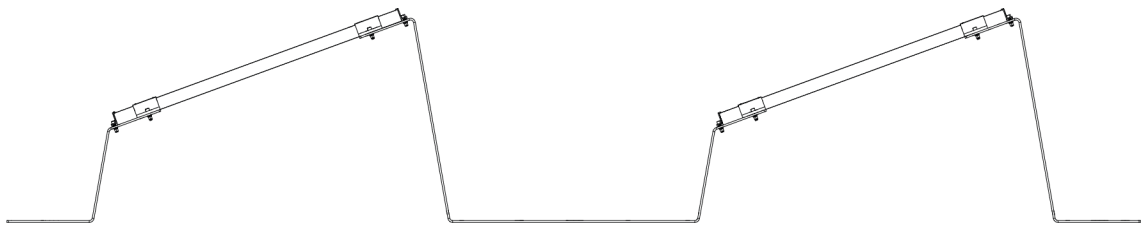
System G15 21.85 in. inter-row | 25° shading angle | 15.75 in. ground clearance



System G15 31.38 in. inter-row | 18° shading angle | 15.75 in. ground clearance



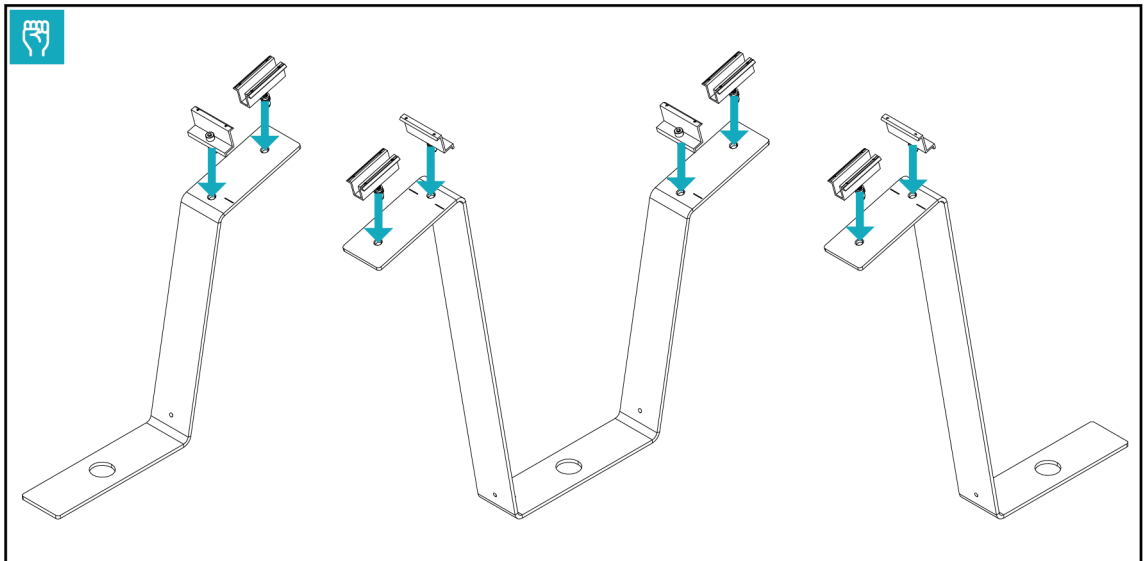
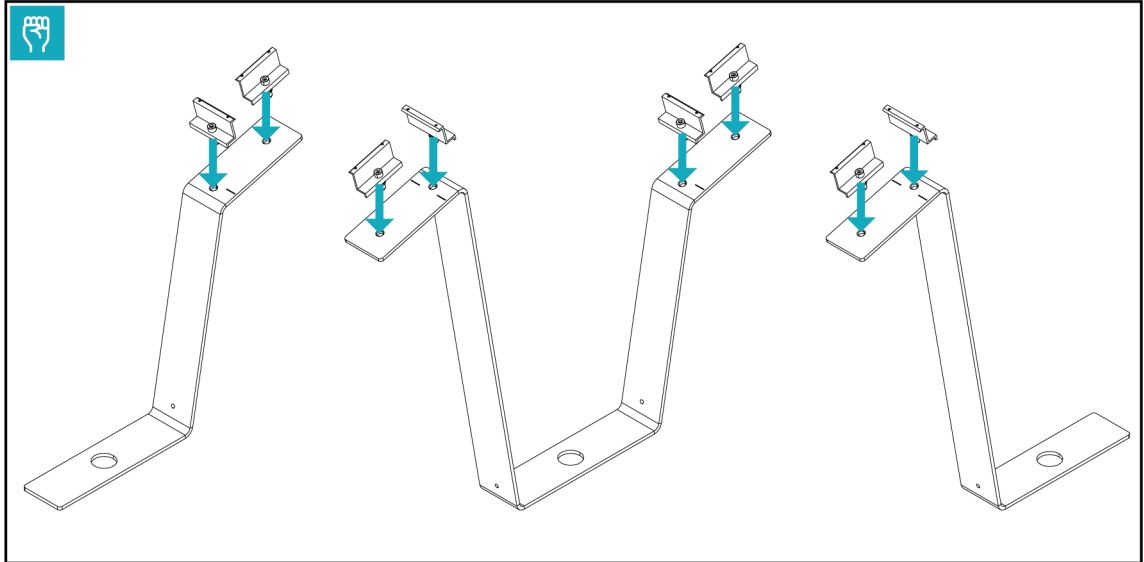
System G20 28.94 in. inter-row | 25° shading angle | 12.52 in. ground clearance



System G20 41.50 in. inter-row | 18° shading angle | 12.52 in. ground clearance

# ASSEMBLY

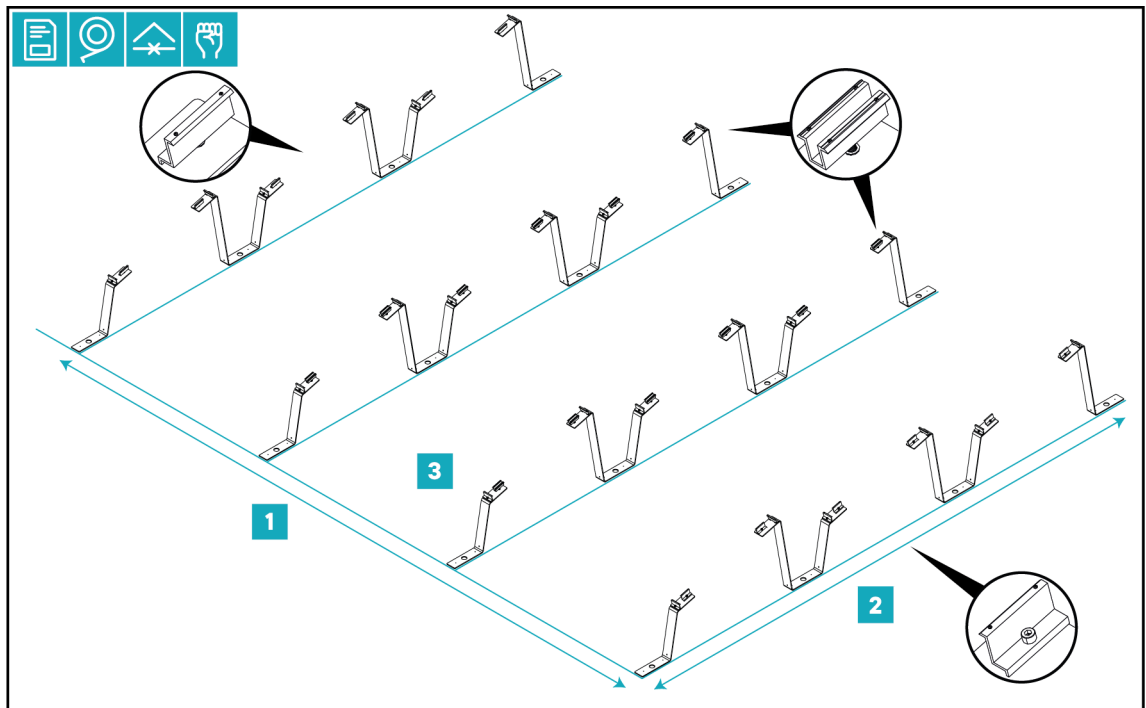
## Pre-install the clamps



- ▶ Attach end-clamps or mid-clamps to the front brackets, back brackets, and connector brackets as needed.



## Measure area, place brackets and connector brackets



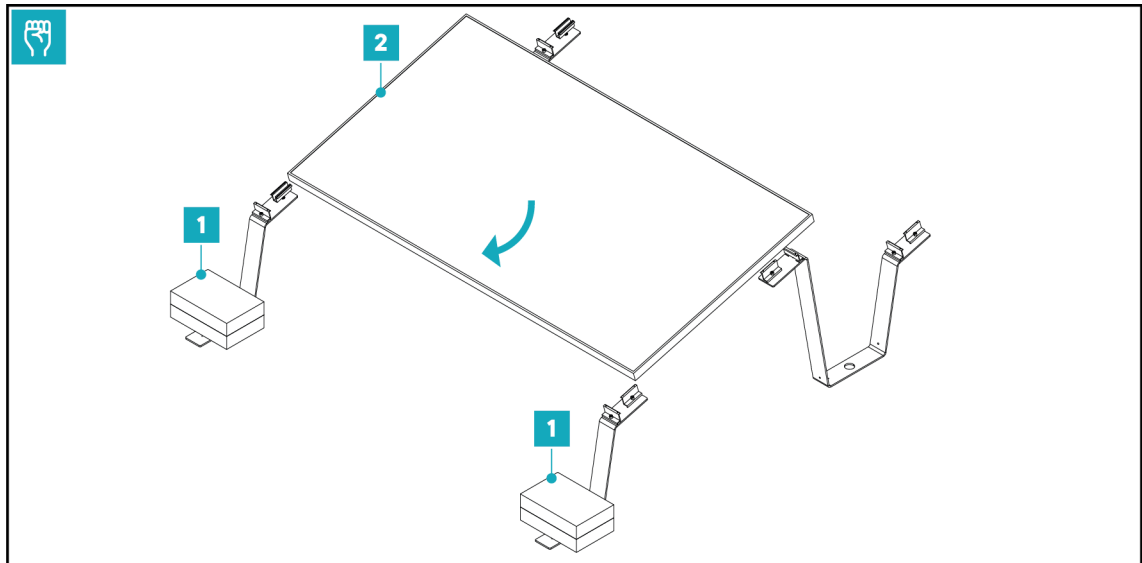
- Take the dimensions of the array field from the planning documents.
- Measure the length of the array field **1** and mark the line.
- Measure the width of the array field **2** and mark the line.
- Place brackets and connector brackets in the array field **3**:
  - Vertical field edge: Place front brackets, end brackets and connector brackets with end-clamps pre-installed.
  - Field interior: Place front brackets, end brackets and connector brackets with mid-clamps pre-installed.

## Installing modules

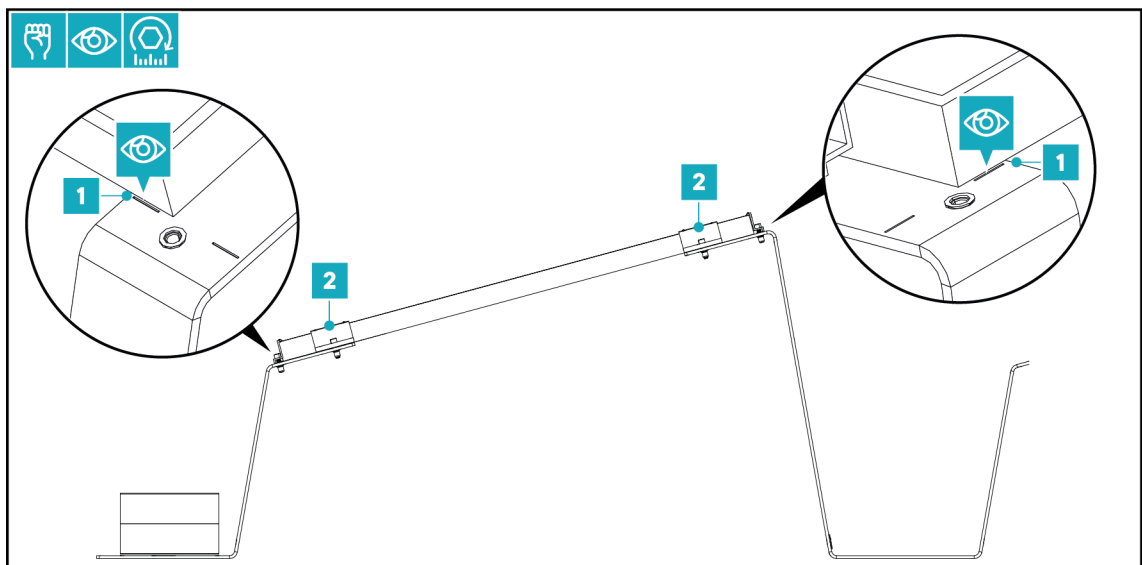
**i** Tip: When installing, wire the modules at the same time.

**i** The cables can be attached to the module with the cable tie clip (CLP-M).

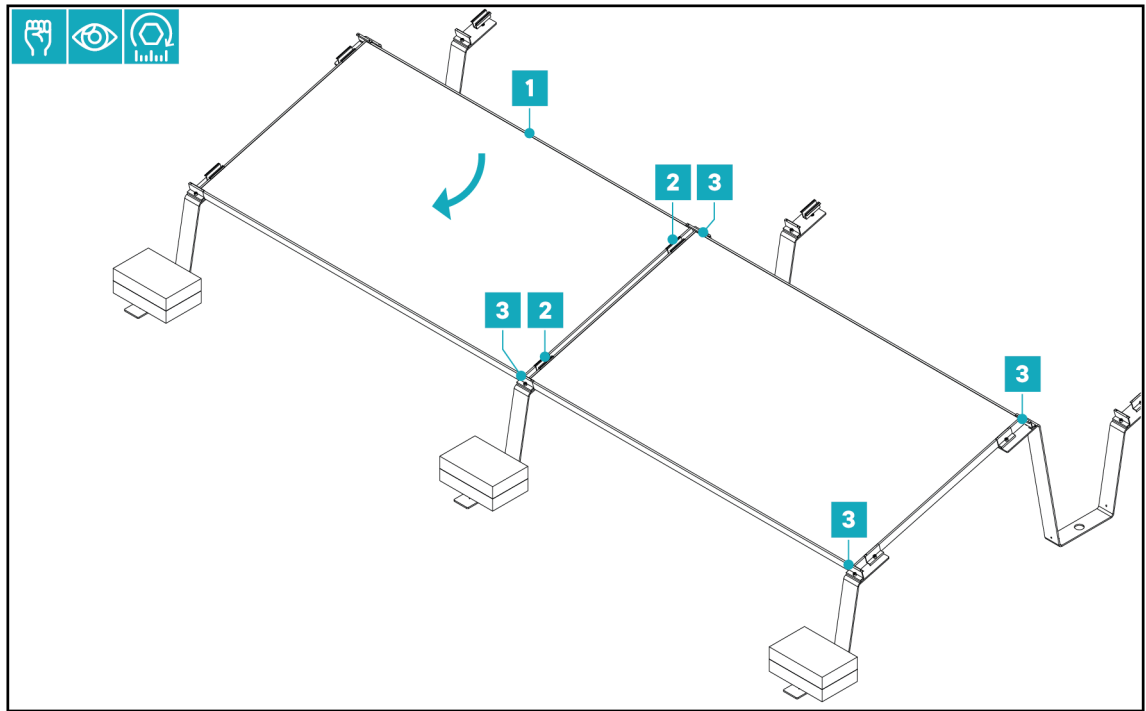
**i** The distance between the clamps is determined by the brackets and connector brackets or by the module size.



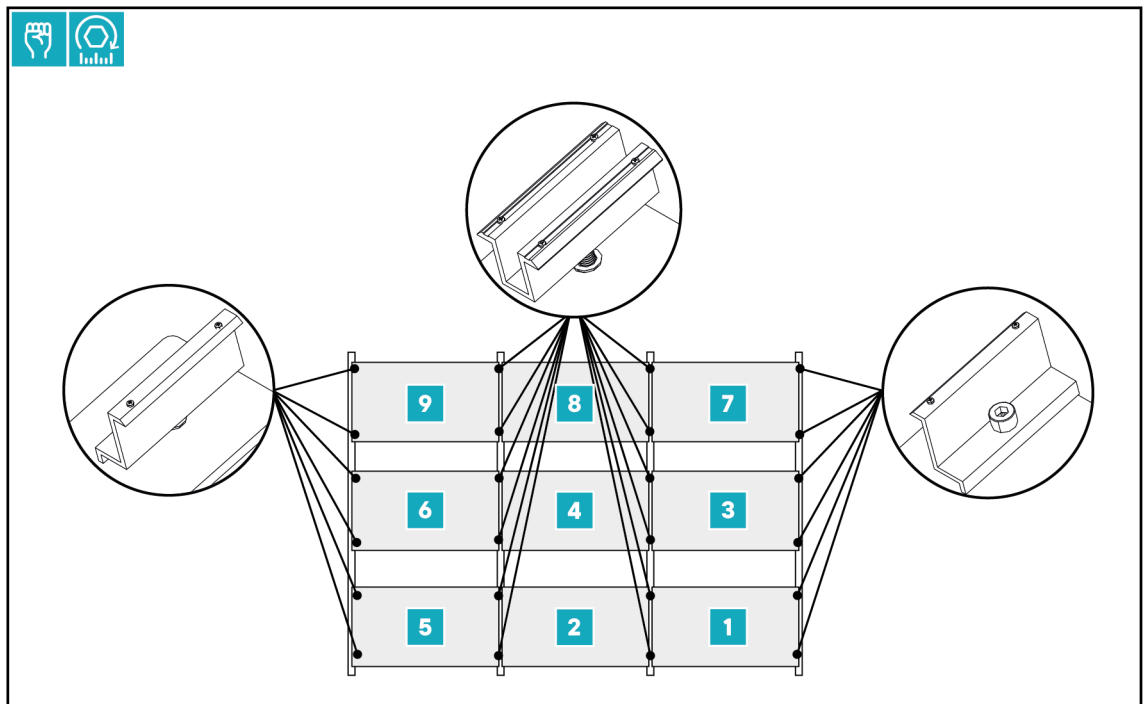
- Hold the front brackets in place with a ballast block **1**.
- Place the module on the front brackets and connector brackets **2**.



- Align the module with the notches **1** on the brackets and connector brackets.
- Tighten the screws of the side end-clamps **2** to 15 Nm or 11 ft lbs.



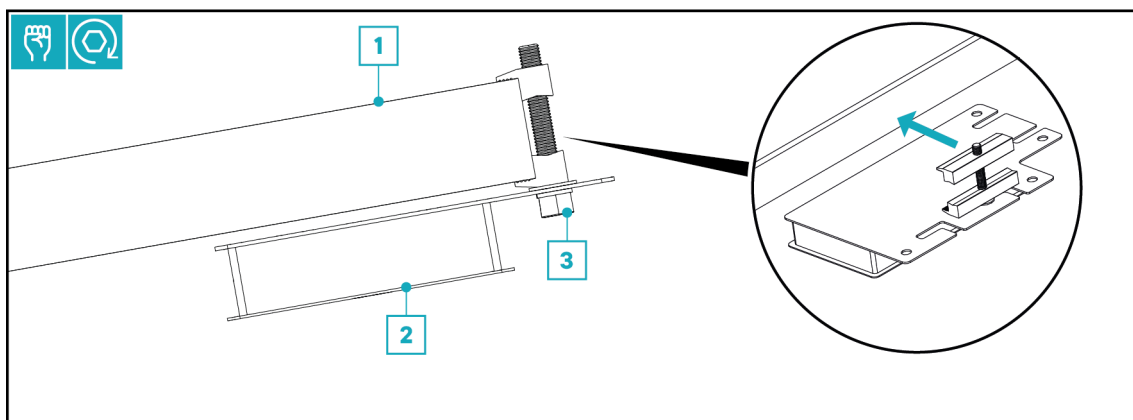
- Place the next module **1**.
- Tighten the screws on the mid-clamps **2** of the previous module with 15 Nm or 11 ft lbs..
- Tighten the screws on the upper and lower end-clamps **3** of the previous module to 15 Nm or 11 ft lbs.



- Install remaining modules according to the recommended sequence.
- Tighten the screws of the end-clamps with 15 Nm or 11 ft lb each.

## Installing Microinverters (optional)

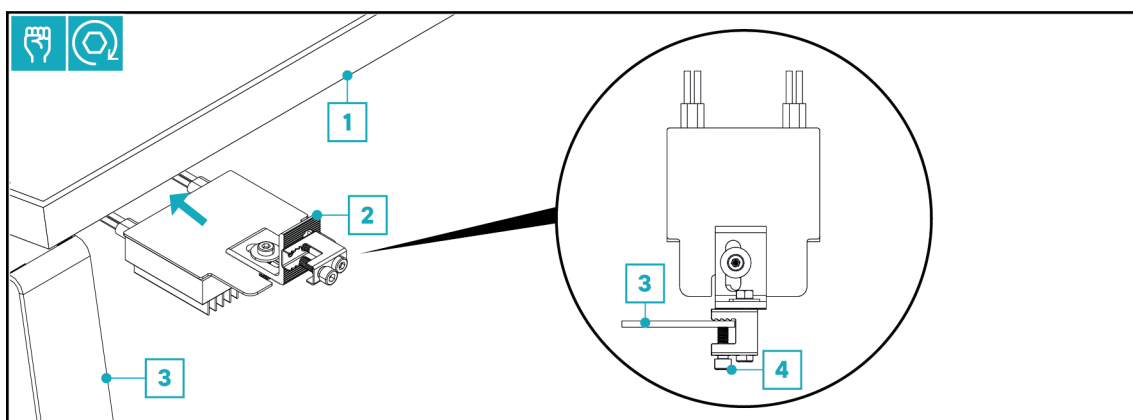
**i** The microinverter can be mounted directly onto the module frame.



- Observe the manufacturer's installation instructions (PV module, microinverter).
- Attach the microinverter with the microinverter clamp **2** to the module frame **1**.
- Carefully tighten the bolt **3** until the clamp is firmly attached to the module frame.

## Installing Microinverters - EU (optional)

**i** The microinverter can be mounted below the module on a bracket, connector bracket or support.



- Install the microinverter on the microinverter-bracket according to the manufacturer's specifications.
- Place installed microinverter **2** on the bracket, connector bracket or support **3** below the module **1**.
- Attach the microinverter-bracket to the bracket, connector bracket or support **3** and hand-tighten the Allen screw **4**.

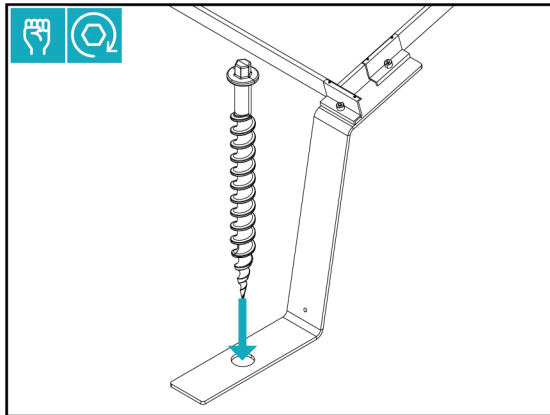
## Securing the system

**i** Depending on the circumstances, the system can be secured in various ways.

### Option 1: Securing with ground screws

The ground screws are used to anchor the brackets or connector brackets to the ground.

**i** Refer to the AEROTOOL planning documents for the exact number and position of the ground screws.

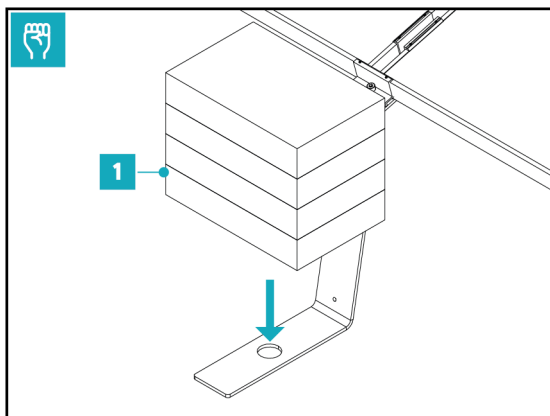


- Make sure that the ground screws are fully anchored into the ground at the appropriate brackets and/or connector brackets.

### Option 2: Ballasting directly on the brackets or connector brackets

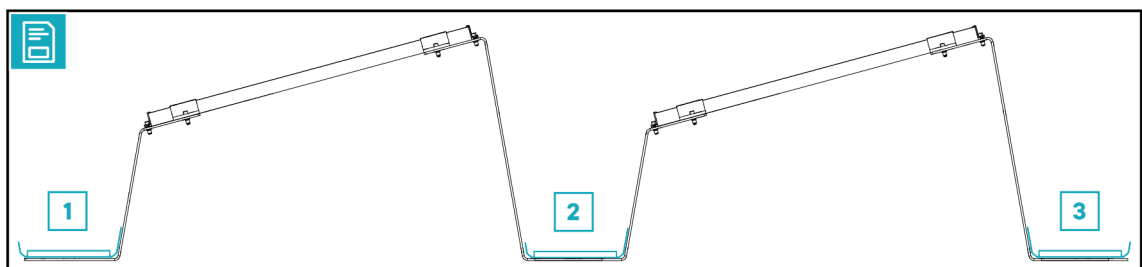
With this ballasting option, the ballast blocks are placed directly on the brackets or connector brackets.

**i** Take note of the exact number and position of the ballast blocks from the AEROTOOL planning documents.



- Protection pads are not required on ground mounts.
- Place the ballast blocks across the brackets/connector brackets **2**.

### Option 3: Short ballast tray

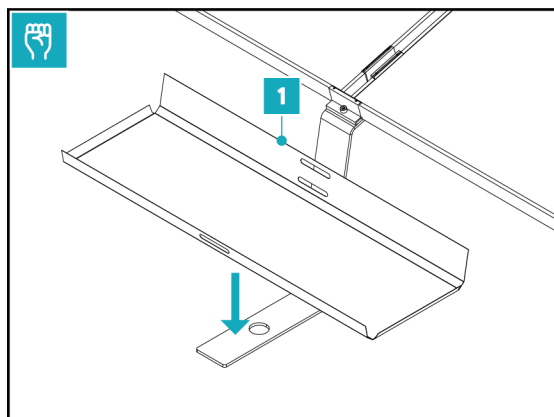


The short ballast tray can be installed in the following positions:

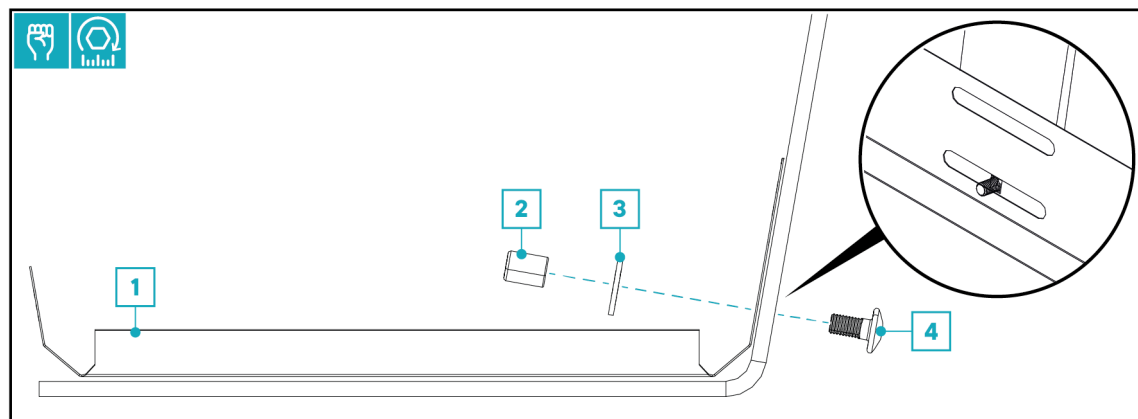
- 1** at the front bracket.
- 2** on the connector bracket.
- 3** at the end bracket.

**i** Refer to the Aerotool planning documents for the exact number and position of the short ballast trays.

### Installing the short ballast tray

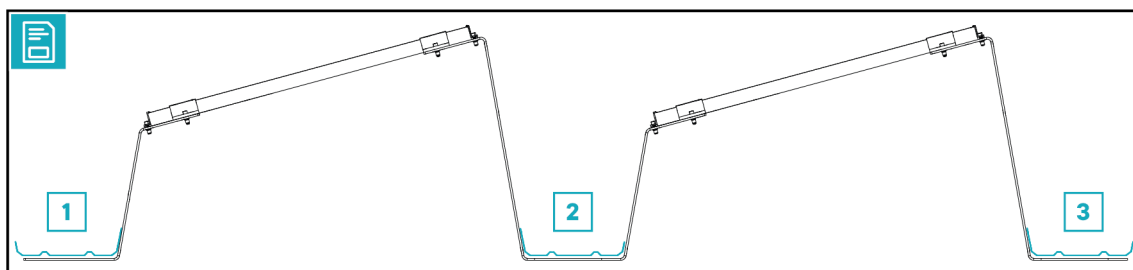


➤ Place the ballast tray **1** centrally on the bracket or connector bracket.



- Screw the ballast tray **1** to the bracket or connector bracket using the torx screw **4**, washer **3** and socket nut **2**.
- Tighten the screws with 15 Nm or 11 ft lb.

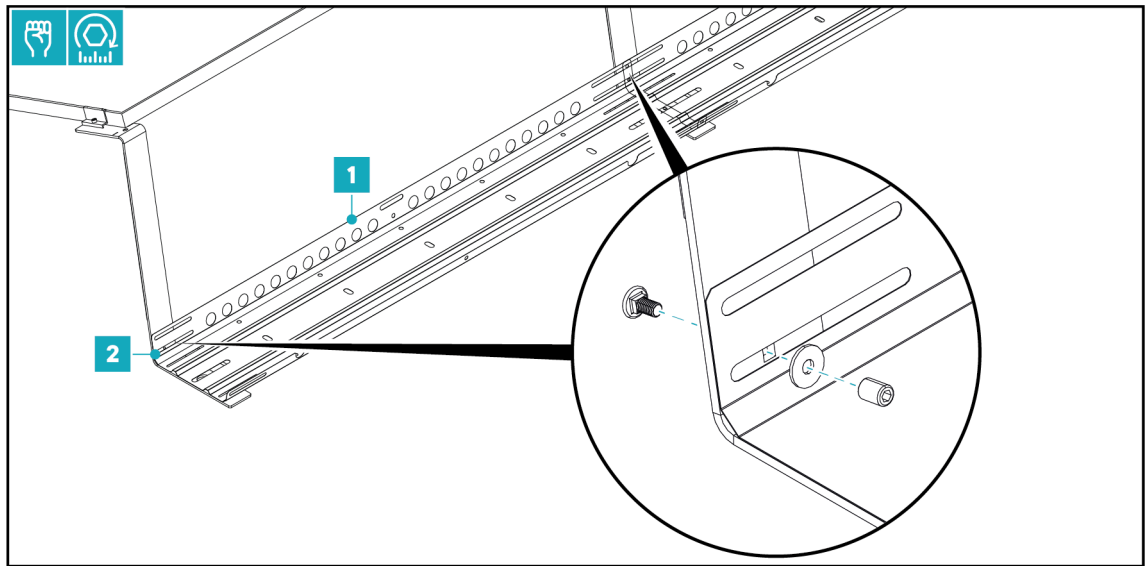
### Option 4: Long ballast tray



The long ballast tray can be installed in the following positions:

- 1** across the front brackets.
- 2** across the connector brackets.
- 3** across the end brackets.

### Installing the long ballast tray



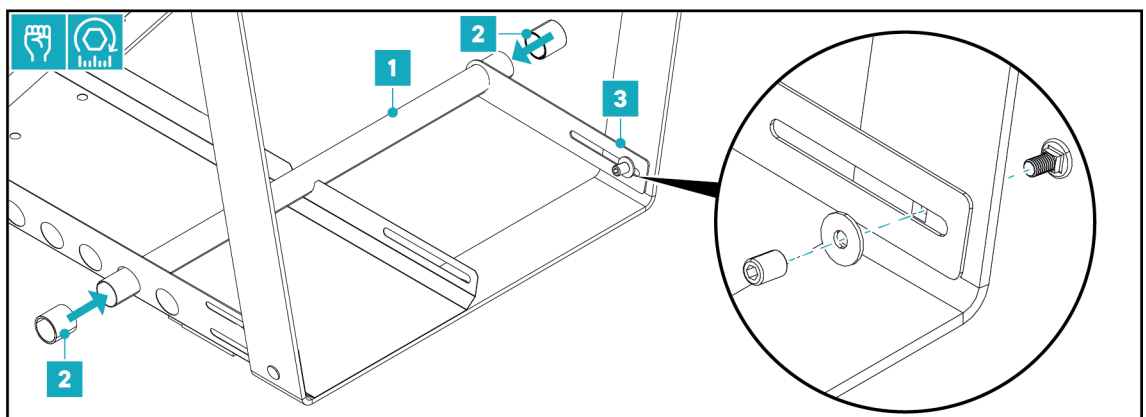
- When several ballast trays are placed side by side:  
Lay out ballast trays **1** so that they overlap at the connector brackets or end brackets.
- Attach ballast trays **2**:  
Screw the ballast tray **1** to the bracket or connector bracket using the torx screw **2**, washer **3** and socket nut.
- Tighten the screws with 15 Nm or 11 ft lb.

## Install cable pipe assembly (optional)

**i** The cable pipes can be installed at the edges or interior of the module field.

**i** Depending on the situation, the cable pipes can be installed with the brackets provided or on the long ballast tray.

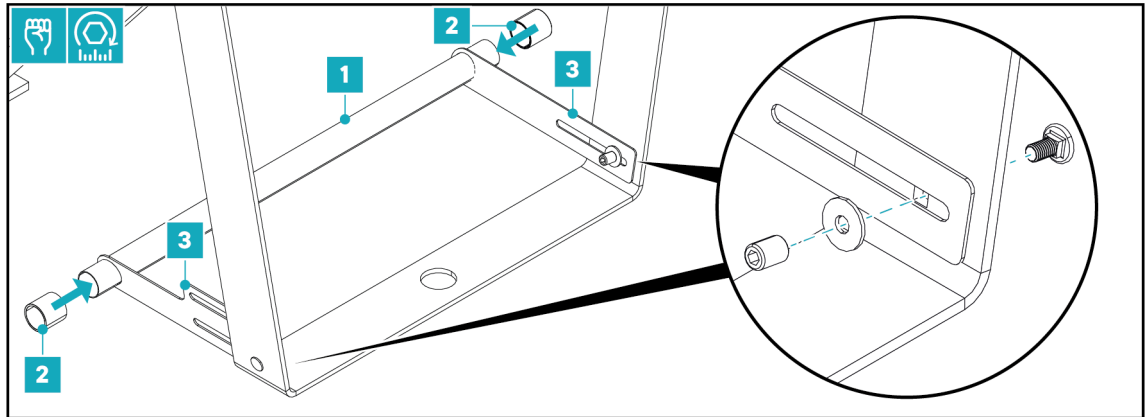
### Mount cable pipe to ballast tray



- Attach the cable pipe **1** to the ballast tray and bracket.

- Attach the plastic caps **2** to the end of the cable pipe.
- Screw the holder to the connector bracket or to the bracket **3**.
- Tighten the screws with 15 Nm or 11 ft lb.

### Fasten cable pipes with brackets

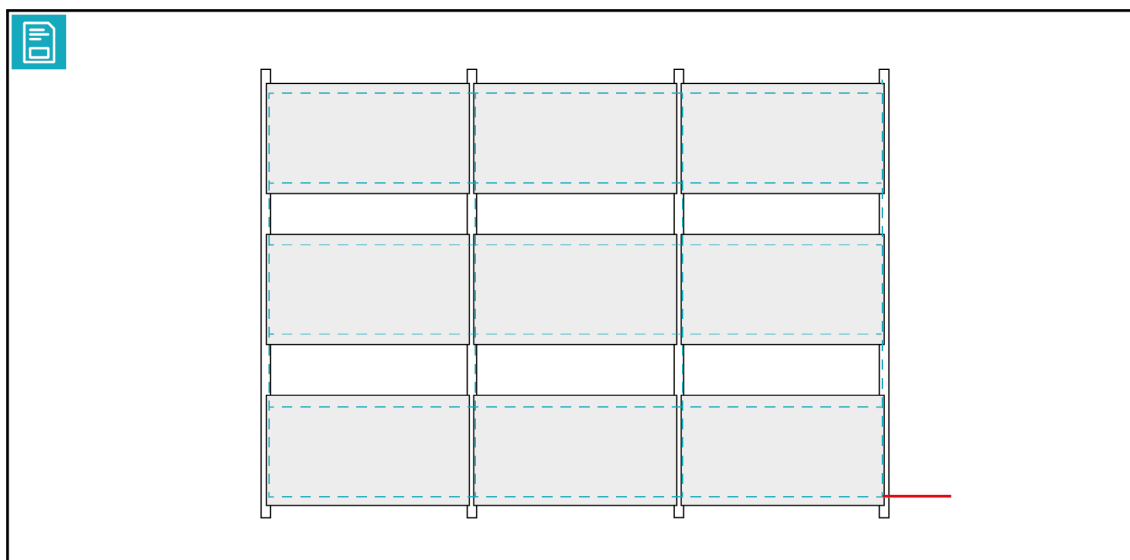


- Slide the cable pipe through the brackets **1**.
- Attach the plastic caps **2** to the end of the cable pipe.
- Screw the brackets to the connector bracket. **3**.
- Tighten the screws with 15 Nm or 11 ft lb.



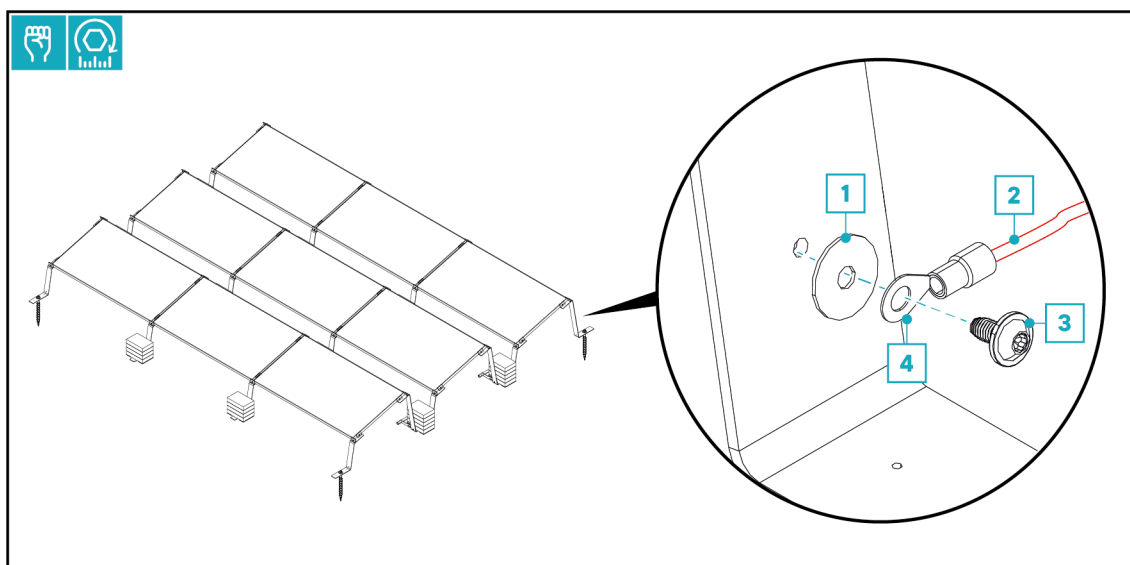
## Grounding

**i** The modules of an array field are bonded to each other by the module clamps and brackets/ connector brackets.



### Install grounding (not USA-compliant)

**i** For grounding, use a commercially available cable lug in accordance with national regulations/certifications.



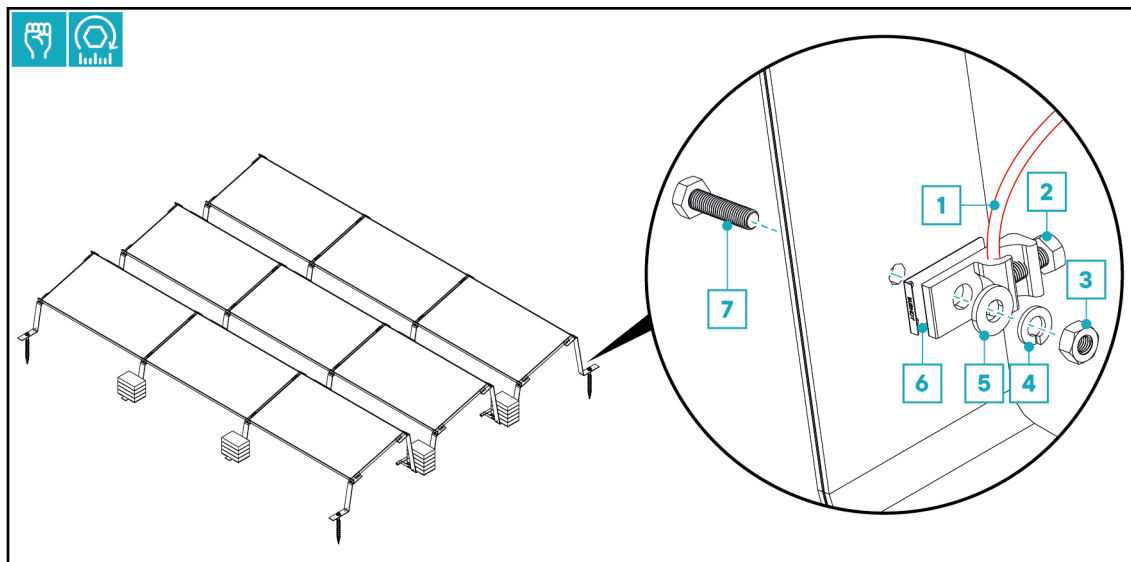
**i** The grounding / potential equalization is mounted at the edge of a module field on a bracket.

**i** The grounding / potential equalization can be mounted together with the ballast trays.

- Loosen and remove screw **3**
- Connect ground wire **2** firmly to cable lug **4**
- Attach washer **1** and cable lug **4** in the order shown with the screw **3**

- Tighten the screw [3](#)

### Install grounding (USA-compliant)



**i** The grounding / potential equalization is mounted at the edge of a module field on a bracket.

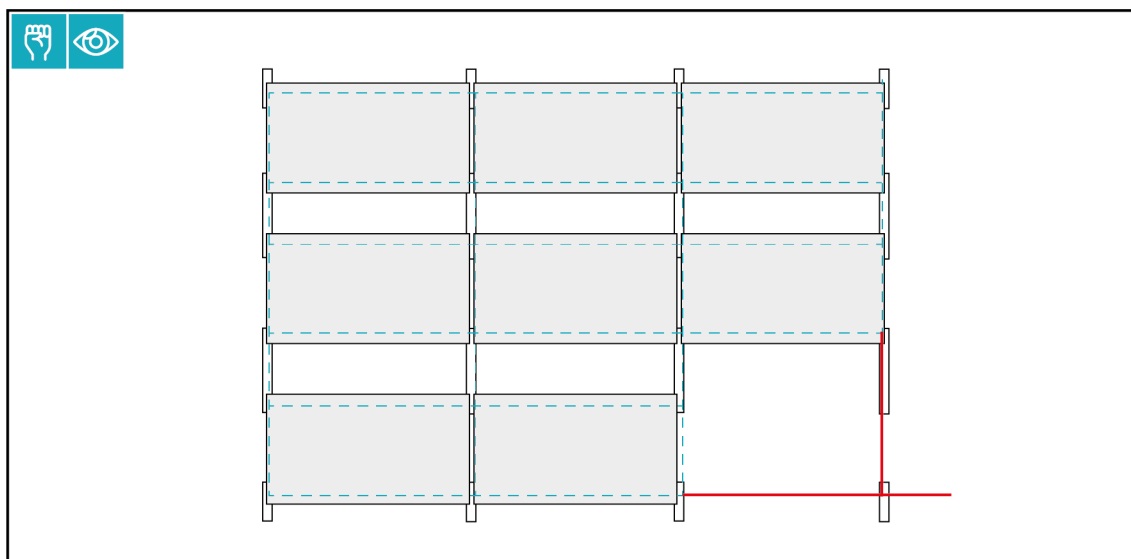
**i** The grounding / potential equalization can be mounted together with the ballast trays.

- Mount the grounding lug [6](#) at the bracket using the screw [7](#), washer [5](#), split ring [4](#) and nut [3](#).
- Attach an appropriately sized copper grounding wire (provided by customer) [1](#) to the grounding lug with the screw [2](#).

### Potential equalization during maintenance

**i** Attention!

If a module is removed, attach additional ground clamps and ground wire to ensure connection between modules and equipotential bonding.



# MAINTENANCE

To prevent personal injury and property damage, the system must be inspected regularly by qualified personnel. The operator of the equipment must perform the following maintenance items once a year.

A test of the system is necessary after severe weather events (e.g. wind storm, snow, hail, etc.) as well as after extreme events such as a hurricane or earthquake.

## Complete System

- ☑ Check all components of the system for damage.
- ☑ Replace damaged components as soon as possible.

## Fittings

- ☑ Check all screw connections.
- ☑ Tighten loose screw connections. Confirm the tightening torque according to the assembly instructions.

# DISMANTLING

## Disassemble components

▶ Disassembling the system: Carry out the assembly steps in reverse order.