

ASSEMBLY INSTRUCTION

COMPACTFLAT GS15

VERSION: 02

LANGUAGE: ENGLISH

IMPORTANT! READ CAREFULLY BEFORE INSTALLATION!



LEGAL NOTICE

Subject to change due to technical modifications! 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. Therefore, in case of doubt or contradiction, the authentic German version shall prevail. The assembly instructions are protected by copyright. The assembly instructions may not be copied, reproduced, microfilmed, translated or converted for storage and processing in EDP systems, either in part or in full, without the written permission of the company AEROCOMPACT Europe GmbH.

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GENERAL

INFORMATION ABOUT THESE ASSEMBLY INSTRUCTIONS

These assembly instructions describe the assembly procedure and must be strictly observed. Read these assembly instructions carefully before starting the assembly. The personnel must have carefully read and understood these instructions before starting any work. The basic prerequisite for safe working is compliance with all the safety notes and handling instructions given in these assembly instructions. Furthermore, the local accident prevention regulations and general safety regulations for the product's area of application apply. Illustrations in this manual are for basic understanding and may differ from the actual design.

APPLICABLE DOCUMENTS

In addition to this manual, you have received the following documents. Always comply with the instructions and notes contained.

- AEROTOOL Project Report
- Planning documents and drawings

LIMITATION OF LIABILITY

All information and notes in these installation instructions have been compiled taking into account the applicable standards and regulations, the state of the art and our many years of knowledge and experience. Liability provisions are stated in our **GTC** and can be found at www.aerocompact.com/downloads.

EXPLANATION OF SYMBOLS

SYMBOLS FOR INSTRUCTIONS



Prerequisites for action instruction



Results of action steps



Step by step action instruction



This note provides useful information for proper assembly

SYMBOLS IN ILLUSTRATIONS - ACTIVITIES



Consult AEROTOOL project report or planning documents



Activity by hand



Optional component, optional mounting variation



Visual inspection



Observe right angle

SYMBOLS IN ILLUSTRATIONS - TOOLS



Measuring tape, measure



Pencil, mark



Chalk line



Scissors, tin snips, cut to size



Cordless screwdriver, screwdriver



Use a torque wrench, Observe torque



Use Allen key

SAFETY

The following list serves as an indication of the most common safety hazards that can occur when installing these products. There is no liability for the completeness of the risks presented. A concrete check of the necessary safety measures is to be carried out by an entrusted specialist company prior to installation.

APPROPRIATE USE

The CompactFLAT GS ground-mounted system is designed for installing PV modules on flat roofs. The inclination may be max. 5° (ballasting with ballast stones). A project specific clarification is required for a inclination of more than 5°. The system must be properly installed in accordance with these installation instructions and the planning documents supplied. PV modules used with the CompactFLAT GS-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 CompactFLAT GS system is considered improper.

The roof protection pad included in the scope of delivery is matched to the roof surface defined in the project. Due to the many available roof surfaces on the market, the responsible designer should ensure the compatibility of and the coefficient of static friction between the protection pad and the roof surface of the building used in the design. The friction value can be determined during the planning process with a coefficient of friction test.

REQUIREMENTS OF PERSONNEL

Installation may only be carried out by a specialist company and must be carried out strictly in accordance with the specifications in the installation instructions, the project report and the planning documents. A specialized company is one that is familiar with the installation and maintenance of photovoltaic systems as part of its normal business operations. National and site-specific building codes, standards and environmental protection must be strictly adhered to. The assembly personnel must never be under the influence of medication, alcohol, drugs or in any other condition that impairs consciousness (e.g. overtiredness). 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 contractual partner shall ensure that the necessary safety measures and the relevant provisions of labor law and occupational health and safety law are observed during the assembly of products from AEROCOMPACT Europe GmbH. References by AEROCOMPACT Europe GmbH to the necessity of compliance with security measures are made without guarantee and without claim to completeness and serve only to support the contractual partner. The contractual partner is obliged to inform himself about all relevant regulations concerning occupational safety and to comply with them. AEROCOMPACT Europe GmbH expressly assumes no responsibility here and consequently no liability.

Areas below the roof on which work is being carried out must be protected from any falling objects. Where this fails, the affected areas shall be closed to the public and to unauthorized personnel. In case of unsuitable weather conditions, work on the roof must not be continued any longer than necessary - or not 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 that a module could be torn off the roof and people could be injured. Never work in wet conditions or at temperatures below the freezing point. Depending on the roof pitch there is a risk of slipping.

Only use suitable, intact and tested ladders. Set up and secure ladders according to instructions. Separate rules apply to mechanical climbing aids (lifts, lifting platforms, ...). Never use the PV mounting system as a climbing aid. Keep sufficient distance from overhead electrical lines. Equipotential bonding between the individual system parts must be carried out in accordance with the respective country-specific regulations. When cutting materials, make sure that there are no burrs, especially at edges and corners, as there is a risk of injury.

BREAKTHROUGH PROTECTION

Skylights, skylights, large vents, etc. usually cannot withstand the weight or impact of a person. Such objects must be secured in a similar way as the edge of the roof. Corrugated fibre cement roofs can be prone to breakthrough over the entire surface. Define walking routes and secure them with load distribution measures. On roofing or roof structures that do not have sufficient load-bearing capacity (e.g. thin sheets, corrugated fibre cement), always work with load distribution aids.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment is used to protect persons from impairment of safety and health at work. Personnel must wear personal protective equipment during assembly. Personal protective equipment is explained below:



Wear protective goggles when drilling.



Wear cut-resistant work gloves during assembly.



Wear safety boots.



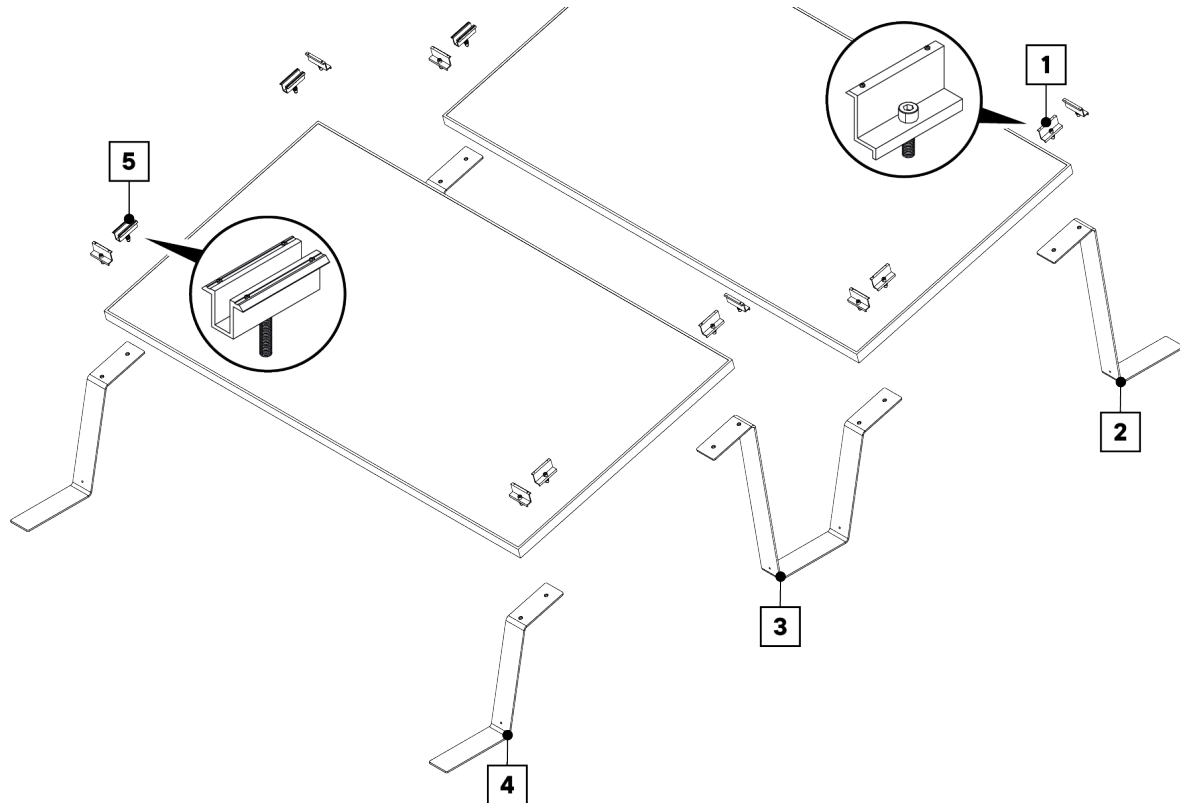
Use fall protection.



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

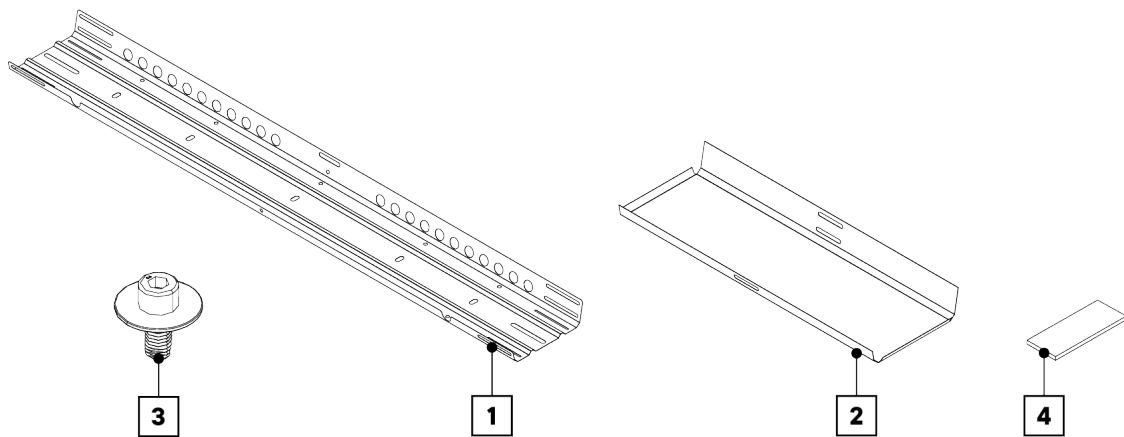
SYSTEM OVERVIEW

BASIC COMPONENTS GS15



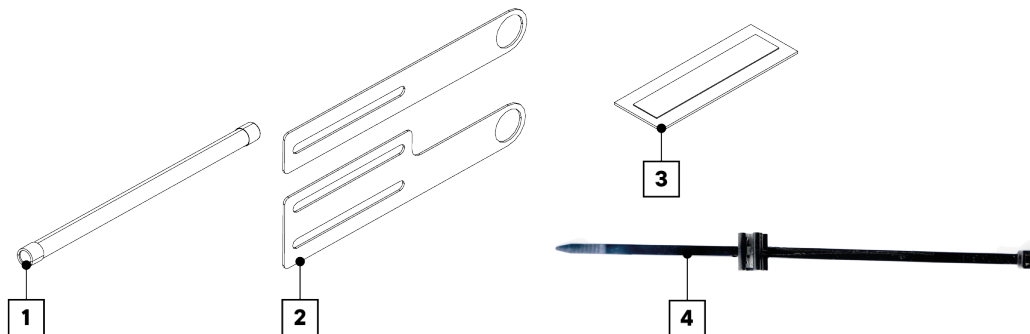
- 1 End clamp, varying clamp height for 30 - 50 mm frame heights | CLEG10-XX
- 2 End bracket GS15 | G1S5EB
- 3 Connector bracket GS15, shading angle 18°/25° | GS15CNS
- 4 Front bracket GS15, | GS15FB
- 5 Mid clamp, for 30 - 50 mm frame heights | CLMG10

BALLASTING



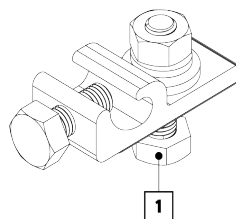
- 1 Long ballast tray | BT-1800, BT-2050, BT-2300
- 2 Short ballast tray | BT-880
- 3 Tapping combi screw M8x20 | SCS8x20
- 4 Roof protection pad for ballast blocks and ballast trays | PP200/80

ACCESSORIES



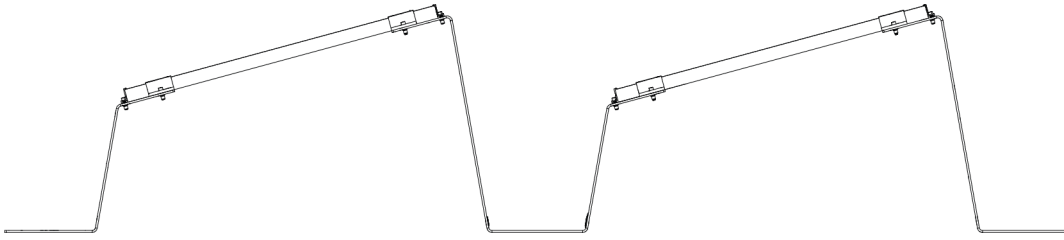
- 1 Cable conduit | CP-430, CP-620, CP-840
- 2 Bracket for cable conduit | BR-CP
- 3 Roof protection pad 290 x 100 x 3.8 | PP290/100
- 4 Cable Tie Clip for Module Frame | CLP-M

ACCESSORIES FOR GROUNDING / POTENTIAL EQUALIZATION (USA)



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

VARIANTS

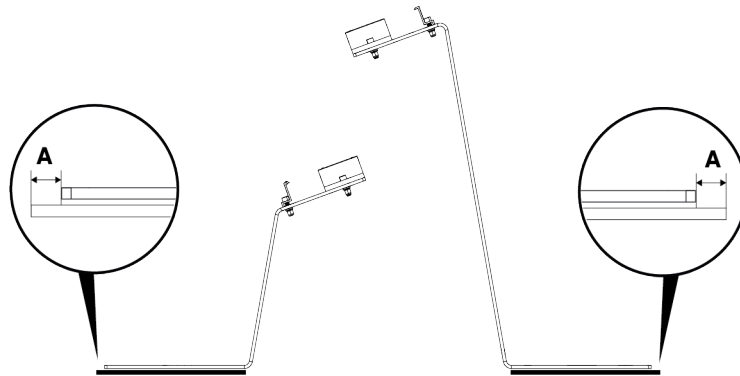


System GS15 21.85 in. inter-row | 25° shading angle | 15.75 in. ground clearance

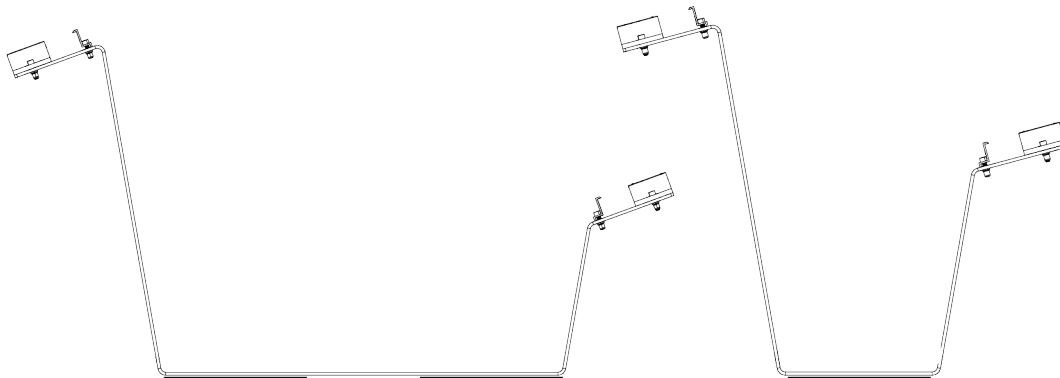
ASSEMBLY

ATTACH ROOF PROTECTION PAD (OPTIONAL)

I The roof protection pad is used for all roof coverings, except for green roofs. Make sure that the underside of the brackets is clean, dry, and free of grease and dust. Wipe the underside with a clean and dry cloth.



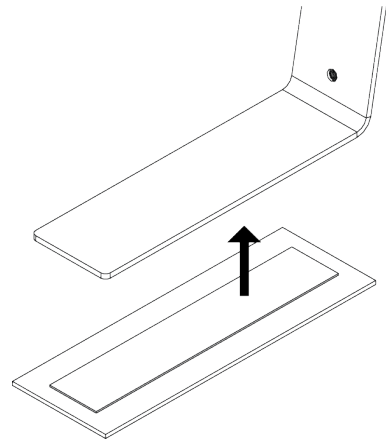
▶ For the bracket, make sure that the roof protection pad covers the edge in each case: $A = 10 \text{ mm}$.



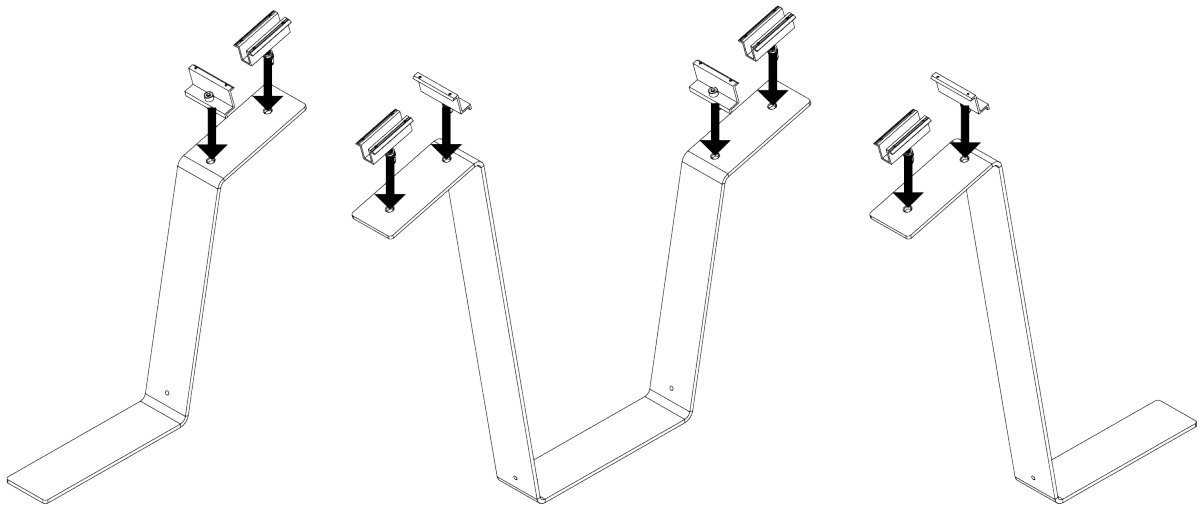
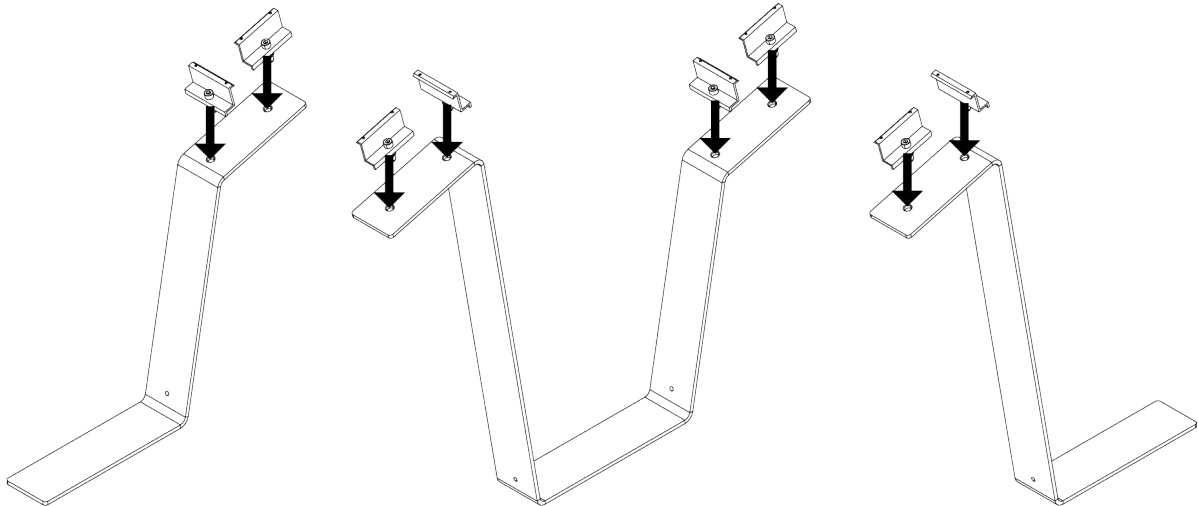
▶ Depending on the design of the connector bracket, attach 1 to 2 roof protection pads.



- ▷ Remove protective paper.
- ▷ Attach adhesive surface to the underside of the bracket.

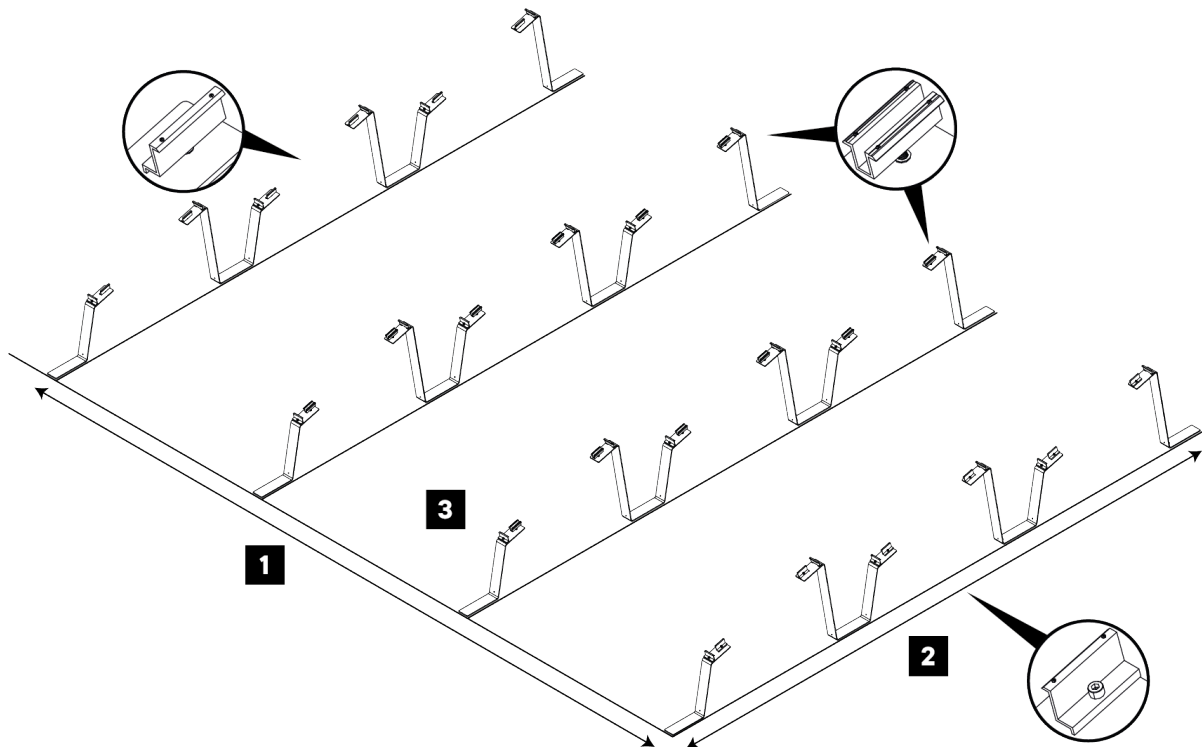


PRE-INSTALL THE CLAMPS



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

MEASURE AREA, PLACE BRACKETS AND CONNECTOR BRACKETS

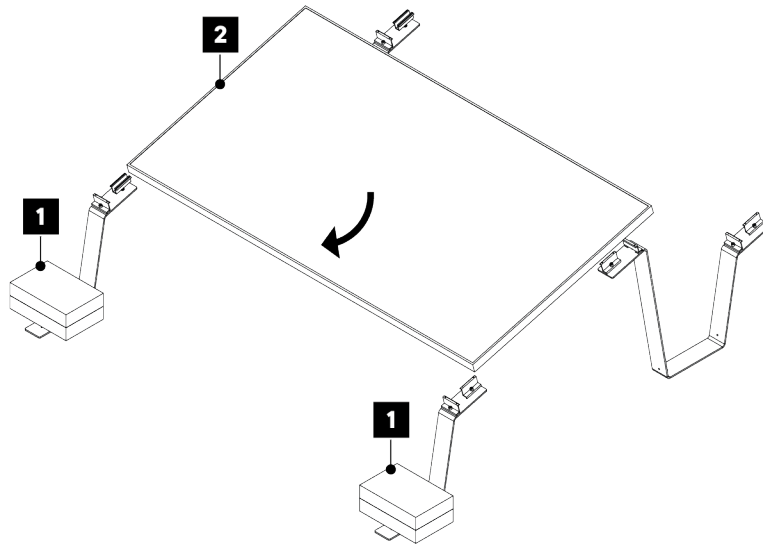


- Take the dimensions of the array field from the planning documents.
- Measure the length of the module field and mark the line.
- Measure the width of the array and mark the line.
- Place feet and connectors in the array field (3)
 - :Vertical field edge: Place front brackets, end brackets and connector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

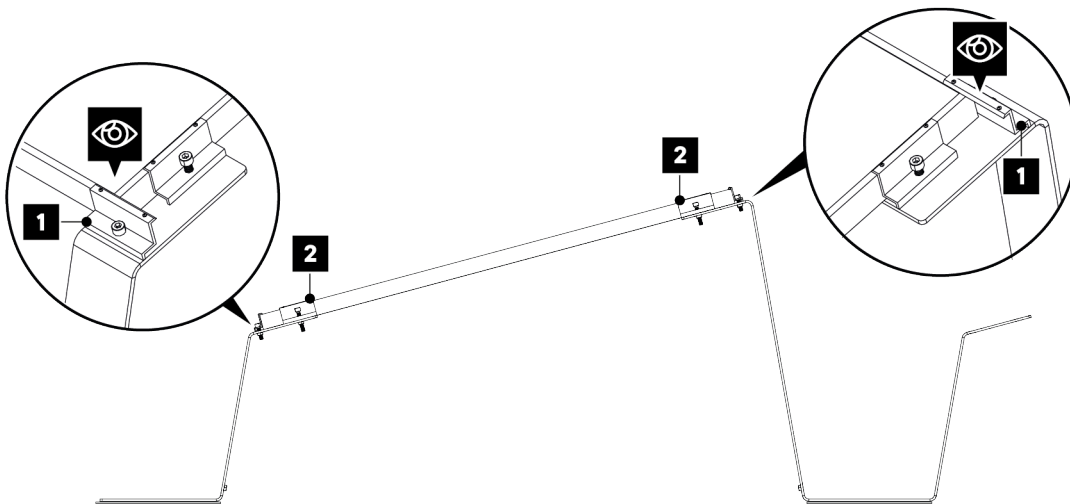
INSTALLING THE MODULES

i Tip: When installing, wire the modules at the same time. The cables can be attached to the module with the cable tie clip (CLP-M).

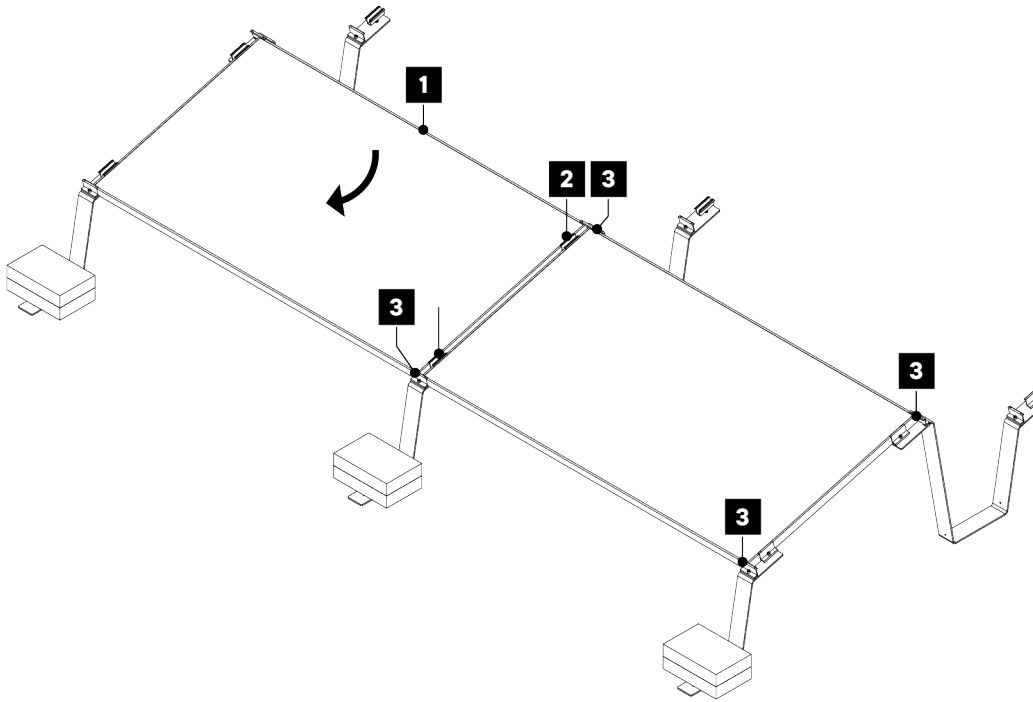
i The distance between the clamps is determined by the brackets and connector brackets or by the module size.



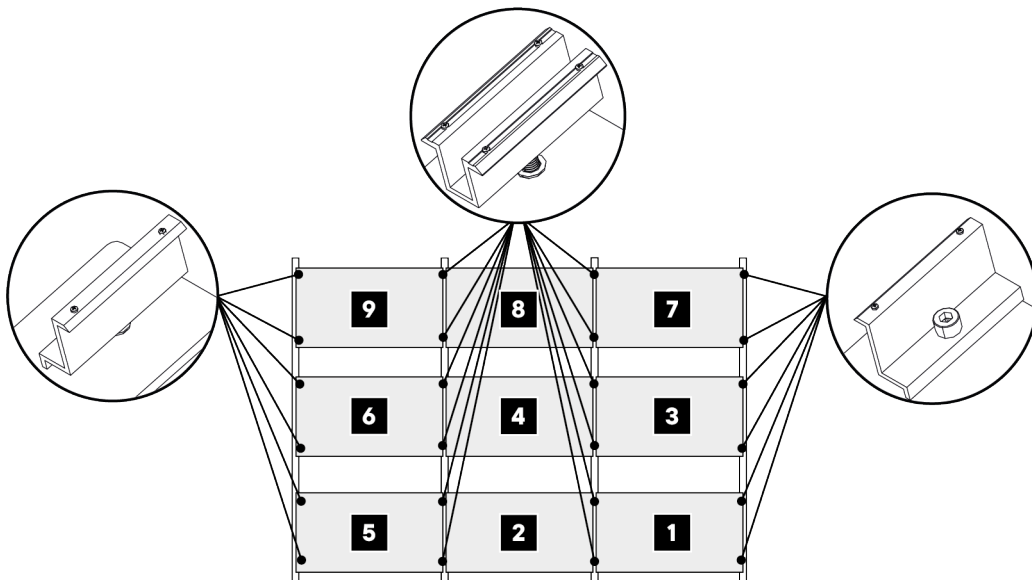
- Weight the initial feet with 1 - 2 ballast stones each (1).
- Place the module on the front feet and connectors (2).



- Position each module flush with the end clamps (1) and loosely tighten the screws.
- Tighten the screws of the side end-clamps (2) to 20 Nm or 14,75 ft lbs.



- Place the next module (1).
- Align the module flush at the upper and lower end clamps (3).
- Tighten the screws on the center clamps (2) between the modules to 20 Nm or 14,75 ft lbs.
- Tighten the screws on the upper and lower end clamps (3) of the mounted modules with 20 Nm or 14.75 ft lbs.



- Install remaining modules according to the recommended sequence.
- Tighten the screws at the clamps with 20 Nm or 14.75 ft lbs each.

PLACE BALLAST

i Depending on the project circumstances, ballast requirements will vary.

Option 1: Ballasting directly on the front brackets, middle brackets or connector brackets

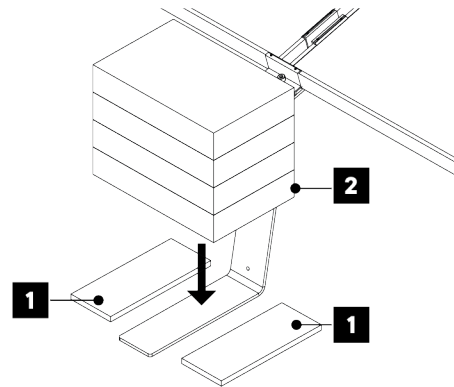
With this ballasting option, the ballast blocks are placed directly on the front brackets, middle brackets or connector brackets.

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

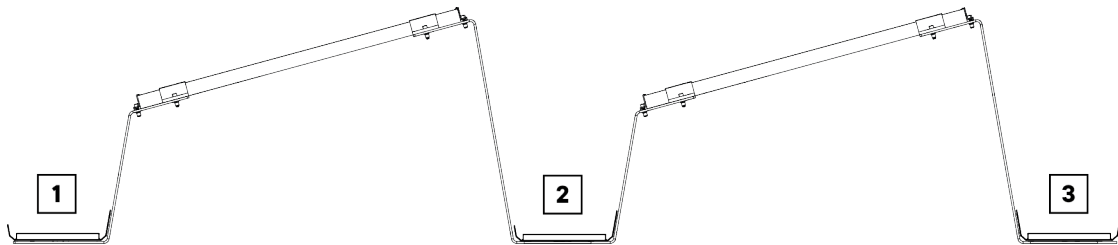


i Recommendation: Gluing the protection pads to the ballast blocks will prevent movement of the pads. Use weatherproof construction adhesive.

- Position the protection pads (1) to the right and left of the feet or connector.
- place the ballast stones (2).



Version 2: Short ballast trays



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

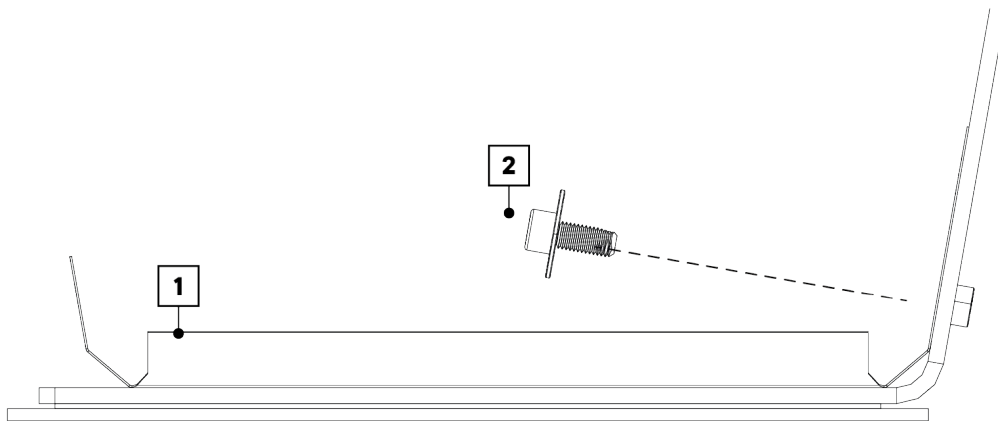
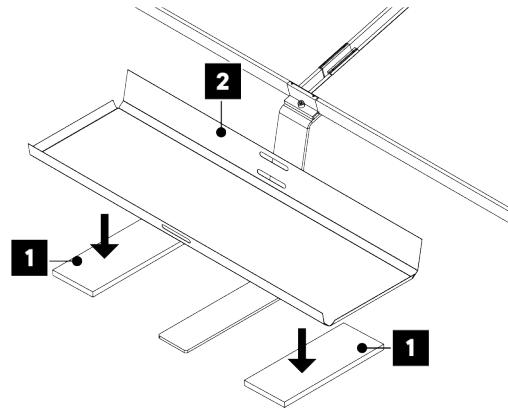
- (1) at front bracket
- (2) at connector bracket.
- (3) at the end bracket - last row - mirror of front bracket.

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

INSTALLING THE SHORT BALLAST TRAY

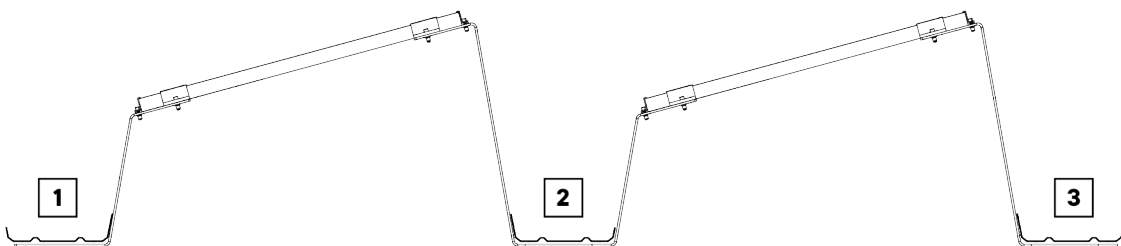


- ▶ Protection pads (1) are position to the right and left of the edge of the ballast tray.
- ▶ Place the ballast tray (2) centered on the bracket or connector bracket.



- ▶ Screw the ballast tray (1) to the bracket or connector bracket with the tapping combi screw (2).
- ▶ Tighten the screws with 15 Nm or 11 ft lb.

Version 3: Long ballast tray



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

- (1) at front bracket.
- (2) at mid bracket.
- (2) at connector.
- (4) across the end bracket (last row, mirror of front bracket).

I Refer to the Aerotool planning documents for the exact number and location of long ballast trays.

PLACING THE ROOF PROTECTION PADS

Depending on the length of the ballast tray, a different number of protection pads are required per ballast tray:

Length 1800 mm: 3 roof protection pads per ballast tray

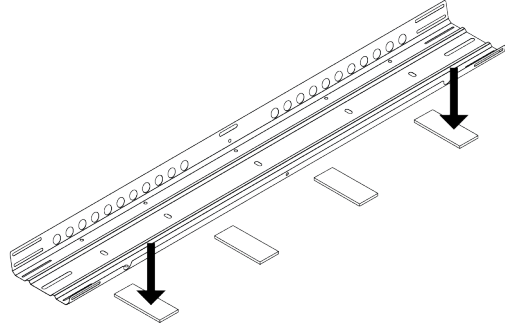
Length 2050 mm: 4 roof protection pads per ballast tray

Length 2300 mm: 5 roof protection pads per ballast tray

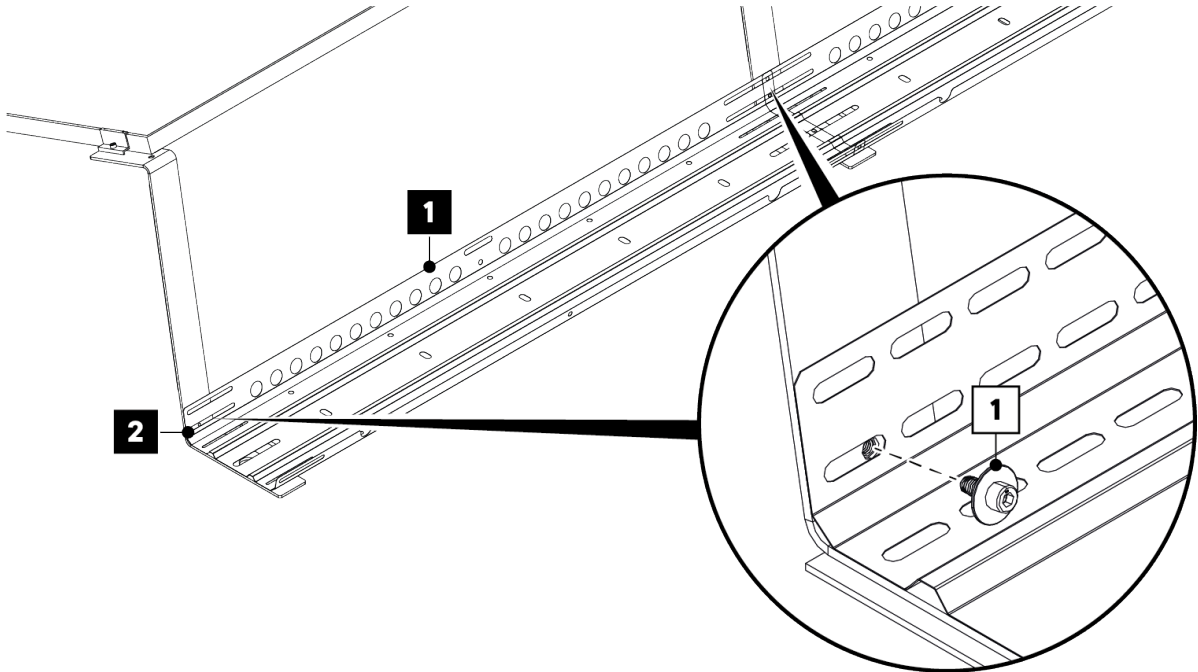


1 When positioning the protection pads, make sure that the drain holes at the bottom of the ballast tray are not covered.

2 Distribute roof protection pads evenly under the ballast trays.



INSTALLING THE LONG BALLAST TRAY



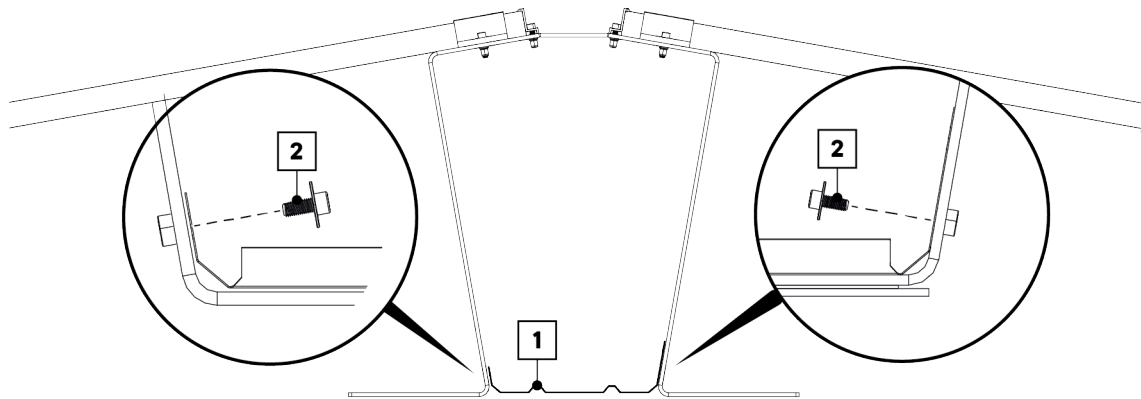
2 If several ballast trays are adjacent to each other: Lay out the ballast trays (1) so that they overlap at the connector brackets or end brackets.

2 Fastening the ballast trays (2): Screw the ballast tray to the feet or connector with the combi screw (1).

2 Tighten the screws with 15 Nm or 11 ft lb.

2 Place the ballast tray (1) under the middle bracket.

INSTALL LONG BALLAST TRAY ACROSS MIDDLE BRACKETS.

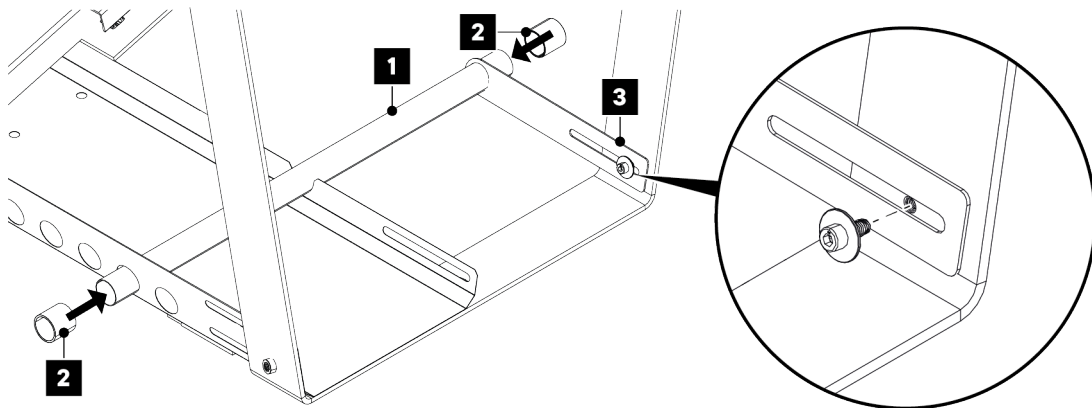


- Place the ballast tray under the middle brackets.
- Screw the ballast tray to each middle bracket with 2 tapping combi screws (1).
- Tighten the screws with 15 Nm or 11 ft lb.

INSTALL CABLE PIPE ASSEMBLY (OPTIONAL)

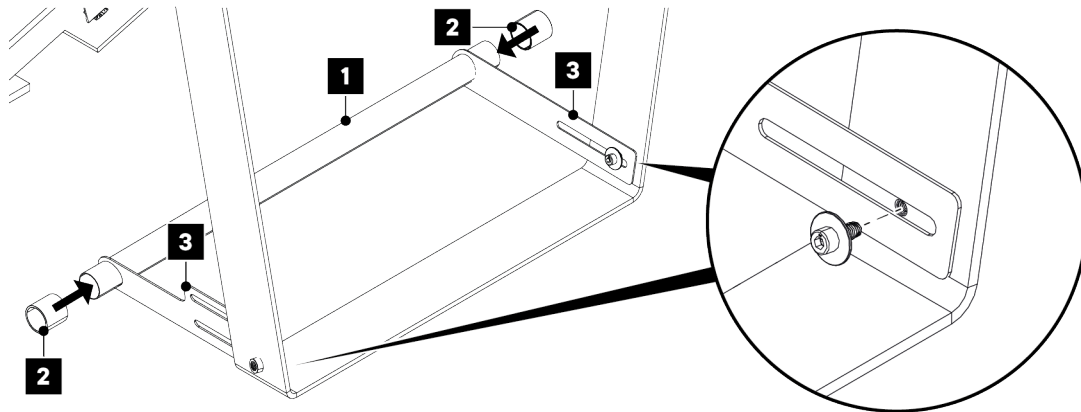
- i The cable pipes can be installed at the edges or interior of the module field. Depending on the situation, the cable pipes can be installed with the brackets provided or on the long ballast tray.

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 brackets to the connector or to the feet (3).
- Tighten the screws with 15 Nm or 11 ft lb.

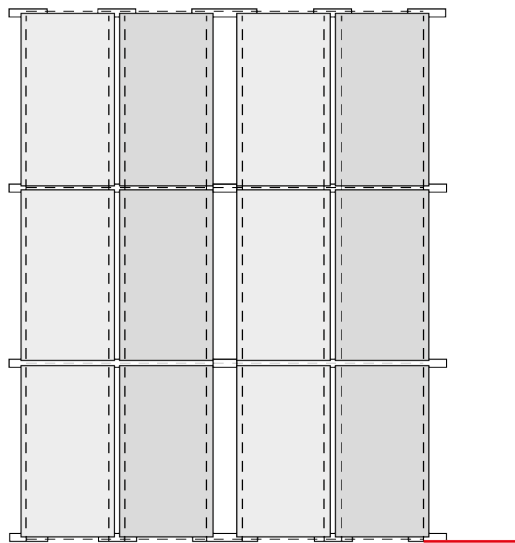
Fasten cable pipes with brackets



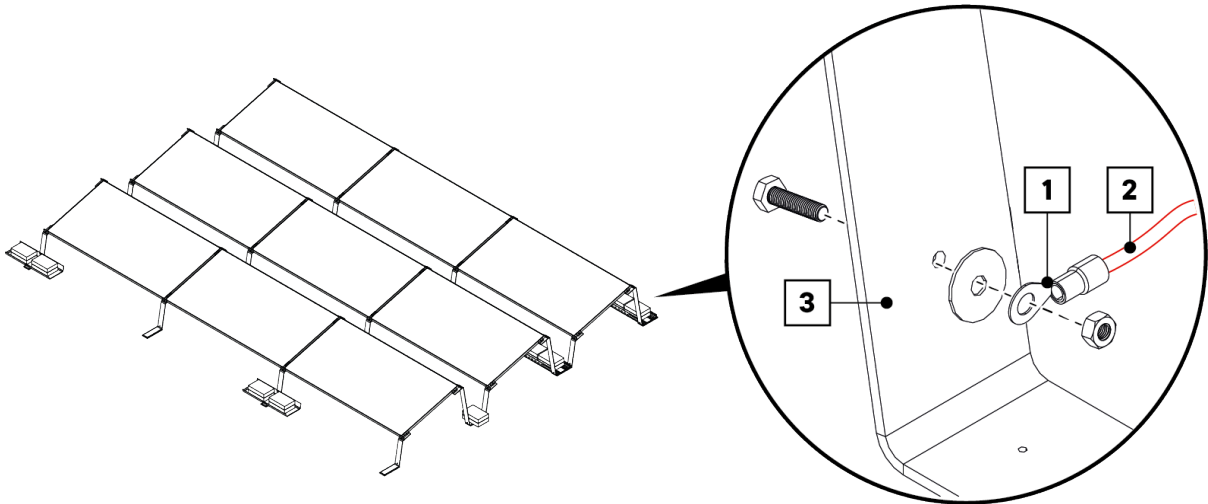
- ▶ Attach the brackets to the cable pipe (1).
- ▶ Attach the plastic caps (2) to the end of the cable pipe.
- ▶ Tighten the bracket for cable pipe on the connector brackets or on the bracket (3) each with a tapping combi screw.
- ▶ Tighten the screws with 15 Nm or 11 ft lb.

BONDING AND GROUNDING (NOT VALID IN USA)

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



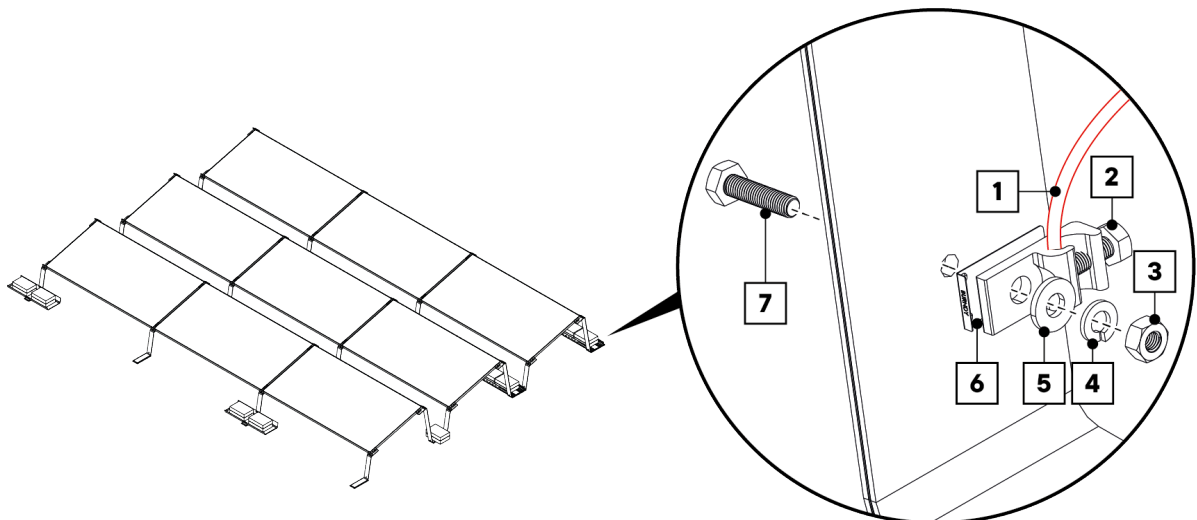
Install grounding / bonding equipment (not USA-compliant)



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

- 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 / bonding equipment (USA-compliant)



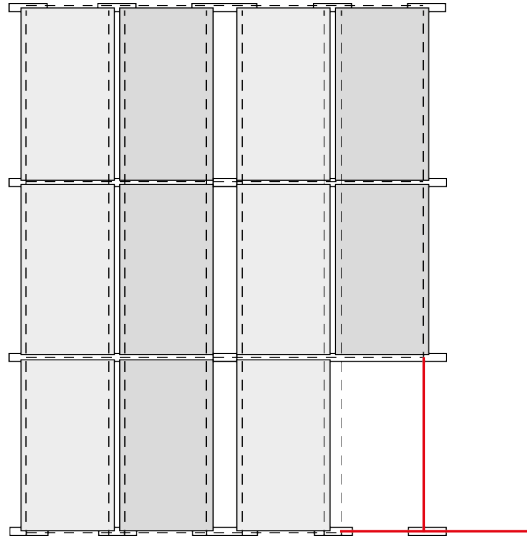
i The grounding / potential equalization is mounted at the edge of a module field on a bracket. The grounding / potential equalization can be mounted together with the ballast trays.

- Die Grounding lug (6) screw to the base with 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!

In case of a module removal, a temporary grounding lug and wire will be required to attach the remaining modules with each other and maintain an appropriate bonding path.



MAINTENANCE, DEMOUNTING AND DISPOSAL

MAINTENANCE

To prevent personal injury and property damage, the system must be inspected regularly by qualified personnel; an annual visual inspection is recommended for this purpose.

- Check all components of the system for damage. In case of damage, replace the affected component as soon as possible.
- Check all screw connections. Tighten loose screw connections, observing the tightening torque according to the assembly instructions.
- Inspect all components for damage from weather, animals, dirt, debris, buildup, vegetation, roof penetrations, waterproofing, stability, corrosion. In case of damage, clean, repair or replace the affected component.

DISASSEMBLY

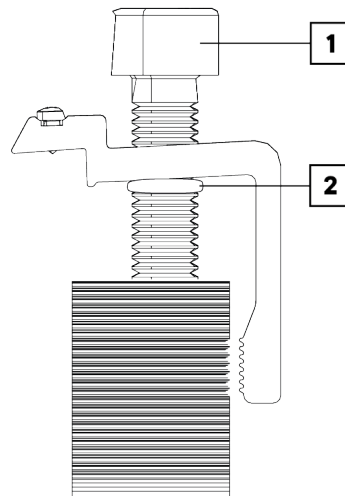
DISMOUNTING CLAMPS (EXAMPLE)



i For demounting the system, carry out the assembly steps in reverse order.

- Unscrew screw (1) on the clamp completely.
- When reusing the clamps, make sure that the O-ring (2) is not lost.

i When reusing the components, it must be noted that these are wearing parts. In case of excessive wear, reuse is not given, beyond that there is no warranty claim.



DISPOSAL

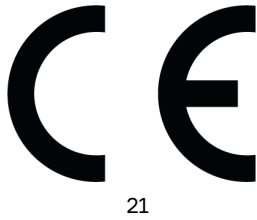
Unless a take-back or disposal agreement has been made, disassembled components should be recycled:

- Scrap metals.
- Give plastic elements for recycling.
- Dispose of remaining components sorted according to material composition.

i Incorrect disposal may result in hazards to the environment. In case of doubt, obtain information on environmentally sound disposal from the local municipal authority or from specialized disposal companies.

APPENDIX

DECLARATION OF CONFORMITY GS10 PLUS | GS15



Manufacturer: **AEROCOMPACT Europe GmbH**
Designation: **CompactFLAT GS system for flat roofs**
Identification code: **GS**
Applied standard: **EN 1090-1**
Certification body: **2397-CPR-65/2511**



[For the declaration of performance](#)