

Assembly Instruction

COMPACTFLAT GS15

Version : 3.2

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 installation instructions are protected by copyright. The installation instructions may not be copied, reproduced, microfilmed, translated or converted for storage and processing in computer systems, either in part or in full, without the written permission of AEROCOMPACT Europe GmbH

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GENERAL

These assembly instructions describe the assembly procedure and must be strictly adhered to. Read these installation instructions carefully before starting installation. The basic prerequisite for safe working is compliance with all the safety and handling instructions in these installation instructions. In addition, the local accident prevention regulations and general safety regulations for the area of application of the product apply.

LIMITATION OF LIABILITY

All information and instructions in these assembly 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 **terms** and can be accessed 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 smooth installation

SYMBOLS IN ILLUSTRATIONS - ACTIVITIES



Optional component, optional mounting variation



Activity by hand



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 risks that can occur when installing these products. There is no liability for the completeness of the risks presented. A specific check of the necessary safety measures must be carried out by an authorized specialist company before installation.

APPROPRIATE USE

The CompactFLAT GS ground-mounted system is designed for the installation of PV modules on flat roofs. The inclination must not exceed 5° (ballasting with ballast stones). A project-specific clarification is required for inclinations greater than 5°. Proper use also includes professional installation in accordance with these installation instructions and the planning documents supplied. Approval from the module manufacturer is required for the use of PV modules with the CompactFLAT GS system. 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 use. The building protection mat included in the scope of delivery is matched to the roof surface defined in the project. Due to the large number of different types of waterproofing used in the past and currently available on the market, the responsible planner must ensure compatibility and the static friction coefficient between the building protection mat and the roof structure of the building on which the system design is based. The friction coefficient is determined during the planning process using the Friction Measurement Kit.

MAXIMUM UNEVENNESS

The maximum unevenness of the flat roof must not exceed **±8 cm** over the length of 2 modules.

PERSONNEL REQUIREMENTS

Installation may only be carried out by a specialist company and must be carried out strictly in accordance with the installation instructions. A specialist company is a company that is familiar with the installation and maintenance of photovoltaic systems as part of its normal business operations. National and local building regulations, standards and environmental protection must be complied with. Under no circumstances may the assembly personnel be under the influence of medication, alcohol, drugs or in any other condition that impairs consciousness (e.g. overtiredness). Trainee personnel may only carry out work under the instruction and supervision of specialist personnel who are authorized to train personnel.

WORKING SAFELY

The contractual partner must ensure that the necessary safety measures and the relevant labor law and occupational safety regulations are observed when installing products from AEROCOMPACT Europe GmbH. Information from AEROCOMPACT Europe GmbH on the need to comply with security measures is provided without guarantee and without any claim to completeness and serves only to support the contractual partner. The contractual partner is obliged to inform himself about all relevant regulations concerning working safety and to comply with them. AEROCOMPACT Europe GmbH expressly assumes no responsibility and consequently no liability. Areas below the roof on which work is being carried out must be protected from falling objects. Where this is not possible, the affected areas must be closed to the public and unauthorized personnel. If the weather is unsuitable, work on the roof must not be continued for longer than necessary or must not be started at all. Never carry out installation work in strong winds. Strong winds exert particular enormous forces on the large-area PV modules. There is a risk of a module being torn off the roof and people being injured. Never work in wet conditions or at temperatures below freezing. 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 specifications. Separate rules apply to mechanical climbing aids (elevators, cherry pickers, etc.). Never use the PV mounting system as a climbing support. Keep sufficient distance from overhead power lines. Equipotential bonding between the individual system components must be carried out in accordance with the respective country-specific regulations. When cutting materials to size, make sure there are no burrs, especially on edges and corners where there is a risk of injury.

BREAKTHROUGH PROTECTION

Roof windows, skylights, large ventilation flaps, etc. generally cannot withstand the weight or impact of a person. Such objects must be secured in a similar way to the roof edge. Corrugated fiber-cement roofs can be at risk of breakthrough over the entire surface. Define routes and secure them with load distribution measures. Always use load distribution aids on roof coverings or roof structures (e.g. thin sheet metal, corrugated fiber cement) with insufficient load-bearing capacity.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment is used to protect people from health and safety hazards at work. Personnel must wear personal protective equipment during installation. Personal protective equipment is explained below:



Wear safety goggles when drilling and sawing



Wear cut-resistant work gloves during assembly



Wear safety shoes



Use fall protection



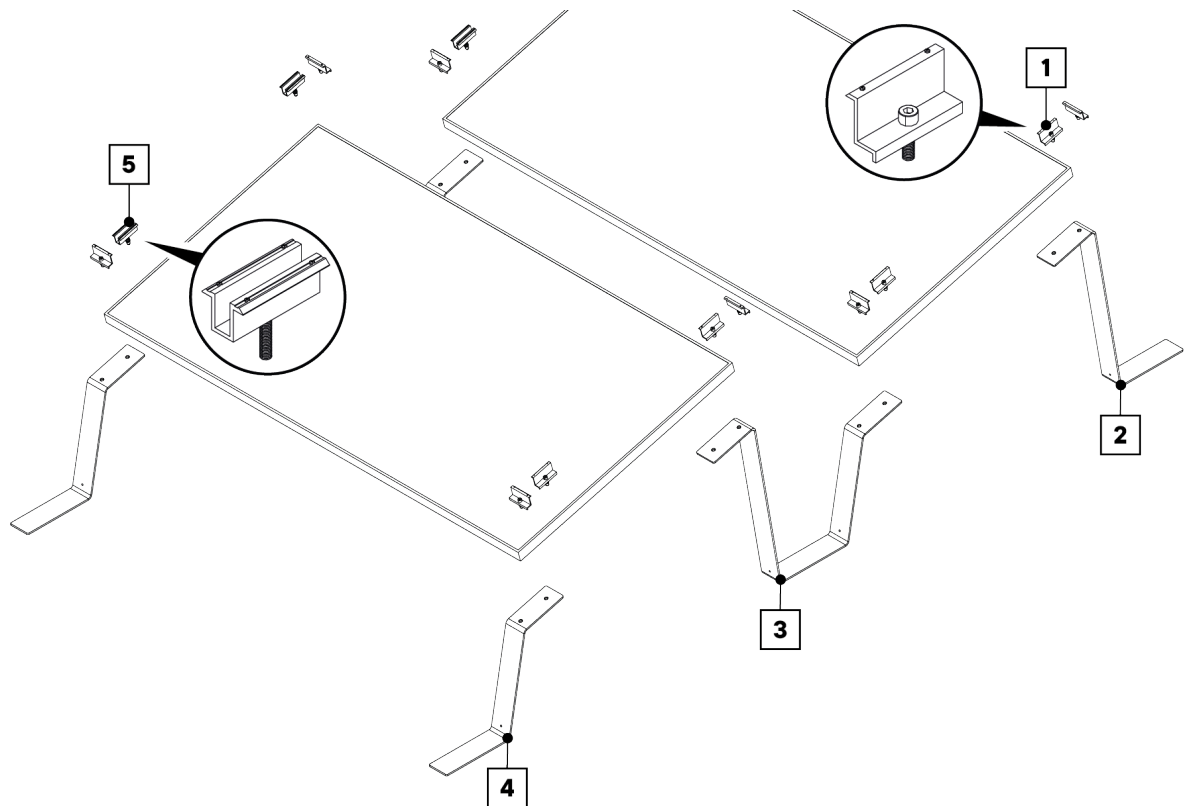
Helmets must be worn by all persons working on the construction site



Wear hearing protection

SYSTEM OVERVIEW

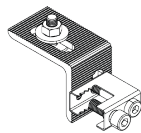
BASIC COMPONENTS GS15



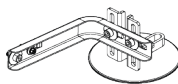
- 1 CLEG10-XX**
End clamp for frame height 30 - 50 mm
- 3 GS15CNS**
Connector short GS15
- 5 CLMG10-XX**
Middle clamp for frame height 30 - 50 mm

- 2 GS15EB**
End bracket GS15
- 4 GS15FB**
Front bracket GS15

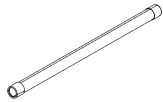
SYSTEM ACCESSORIES



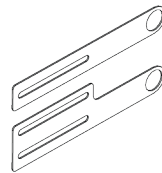
MA-BR
Mounting bracket for MLPE



APA
Roof anchor connection

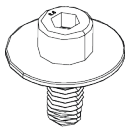


CP-430 | CP-620 | CP-840
Cable pipe

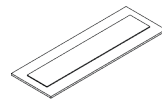


BR-CP
Brackets for cable pipe

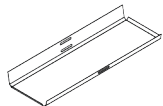
ACCESSORIES BALLASTING



SCS8x20
Thread rolling combination screw M8x20



PP200
Building protection pad for ballast stones and ballast tray

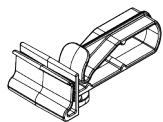


BT-880
Ballast tray short 880 mm

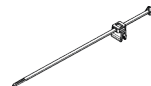


BT-1800 | BT-2050 | BT-2300
Ballast tray long

MODULE ACCESSORIES



CLP-U
Cable clip universal



CLP-M
Cable tie clip for module frames with a thickness of 1 - 3 mm

ASSEMBLY

ASSEMBLY PREPARATION

Required tools for assembly

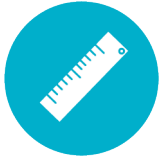
i Before starting the assembly, make sure that the assembly personnel are familiar with the proper use of the listed tools.



Bit hexagon socket 6 mm



Bit TORX T40



Measuring tape



Chalk line



**Torque wrench 10 - 30 Nm with
hexagon socket bit 6mm**



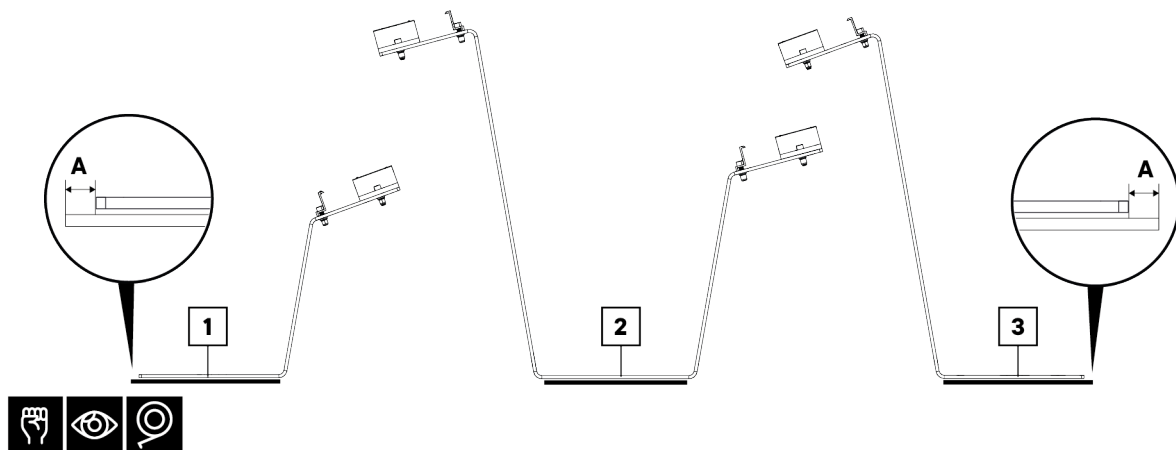
Cordless screwdriver



Socket bit 8 mm

ATTACH ROOF PROTECTION PAD (OPTIONAL)

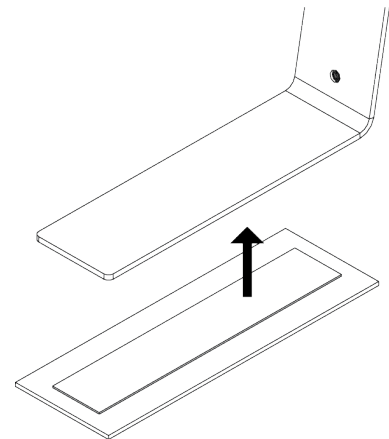
i The roof protection pad is used for all roof coverings, except for green roofs.



- For the front bracket (1), connectors (2) and end bracket (3), ensure that the underside is clean, dry and free of grease and dust.
- For the front bracket (1) and end bracket (3), ensure that the protection pad protrudes over the edge in each case: **A = 10 mm**



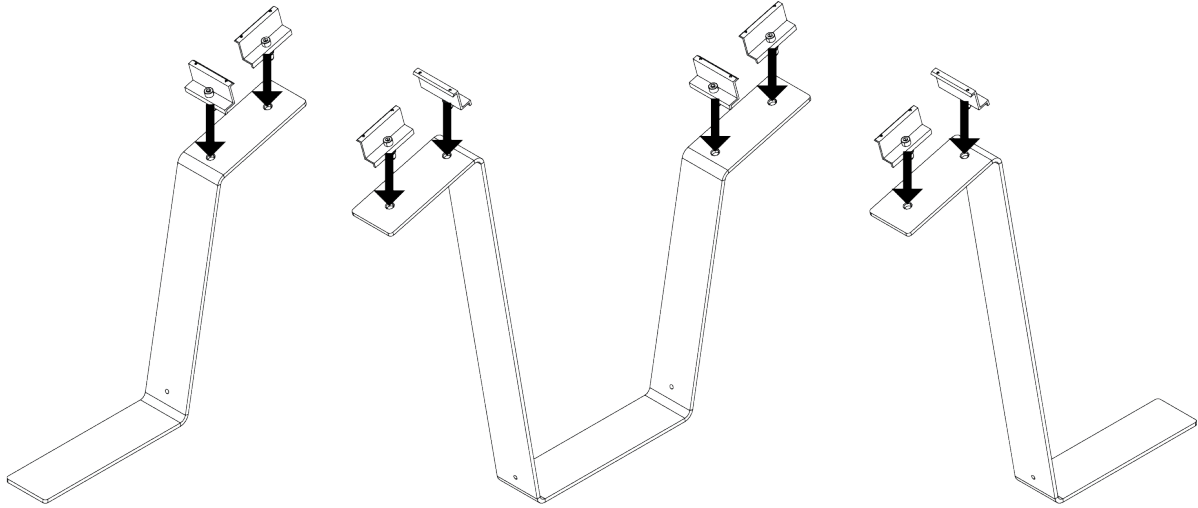
- Remove protective paper.
- Attach the adhesive surface to the underside of the bracket/connector.



PRE-ASSEMBLE THE CLAMPS

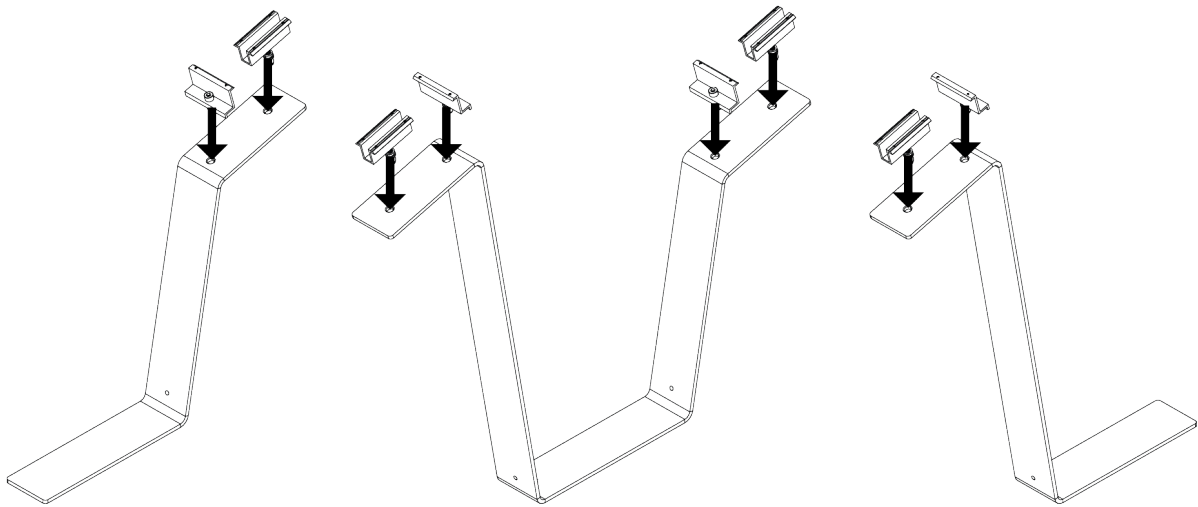
i When **pre-assembling** the end clamps and middle clamps, it is crucial to ensure that the front bracket, connectors and end bracket are correctly assigned. For more information, see "Measure module field" on the next page.

END CLAMPS (EDGE OF MODULE FIELD EAST | WEST)



▶ Attach the end clamps to the front brackets, connectors and end brackets- **2 to 3 threads, do not screw tight.**

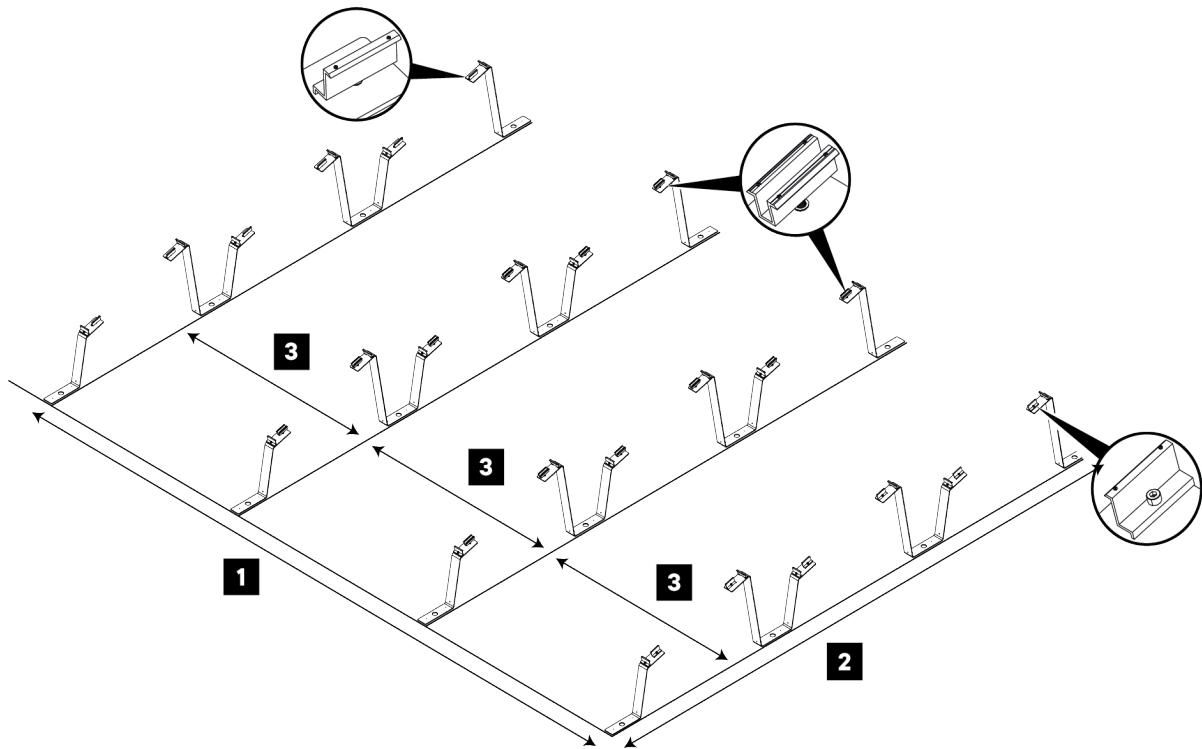
END CLAMPS AND MIDDLE CLAMPS



▶ Attach the end clamps and middle clamps to the front brackets, connectors and end brackets- **2 to 3 threads, do not screw tight.**

MEASURE THE MODULE FIELD

i The exact **dimensions** can be found in the attached **planning documents**.

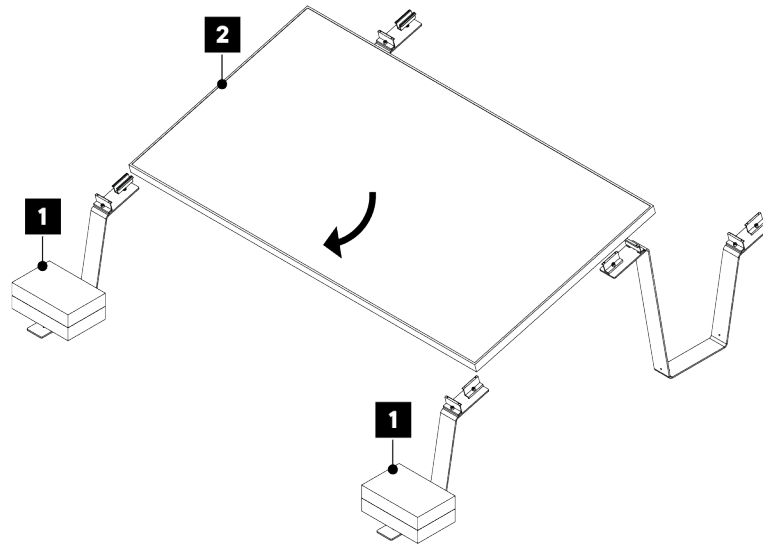


- Measure the length (1) and width (2) of the entire module field and mark the line.
- Measure the single module rows (3) and mark the line.
- Front brackets, connectors and end brackets in the module field in accordance with the planning documents.

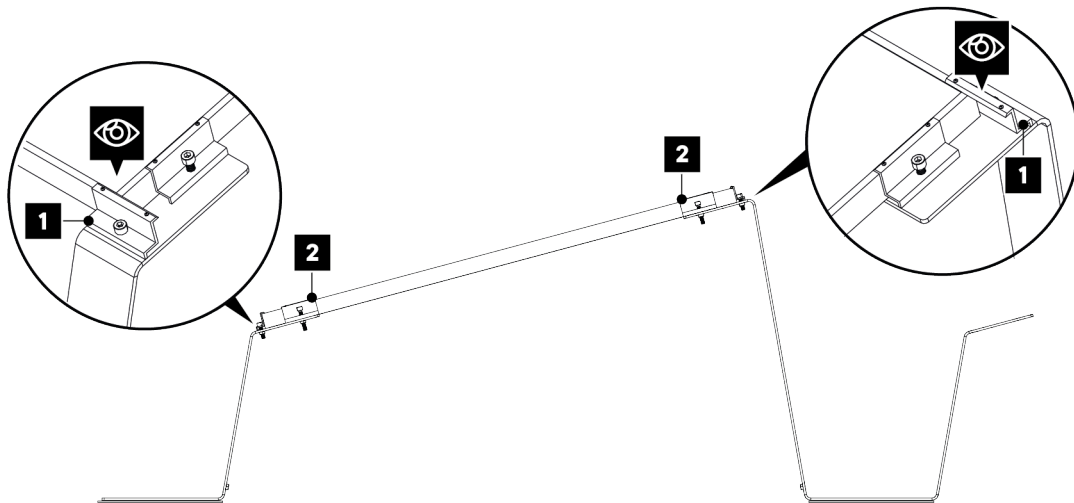
i When distributing, ensure that the **middle clamps** and **end clamps** are positioned correctly.

MOUNT MODULES

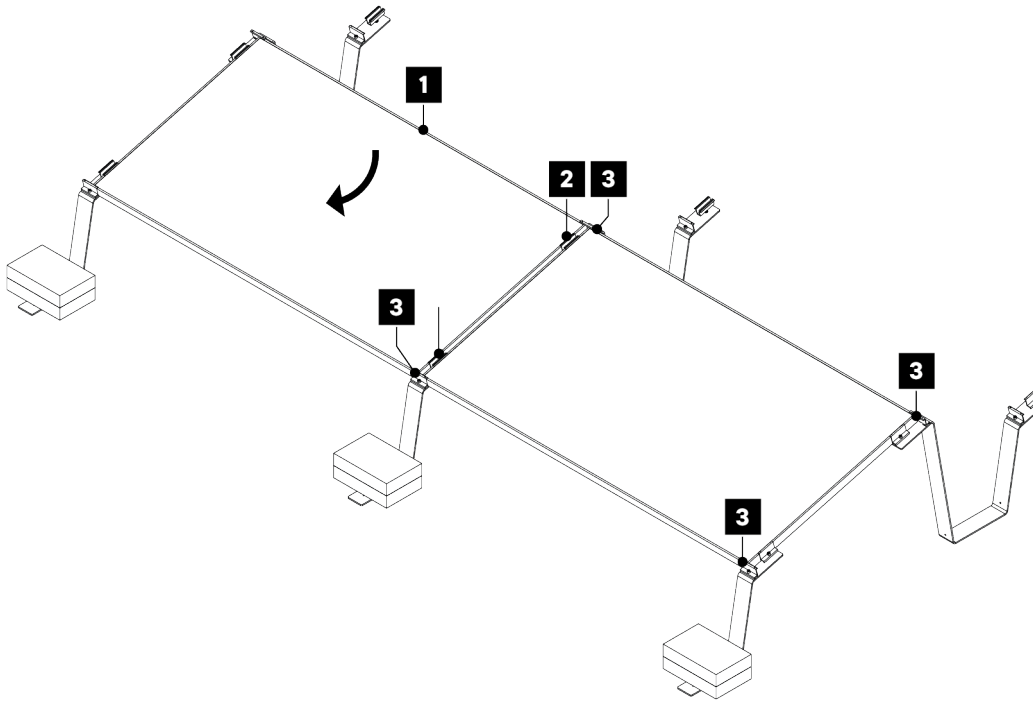
i The exact distance between the clamps is determined by the module size.



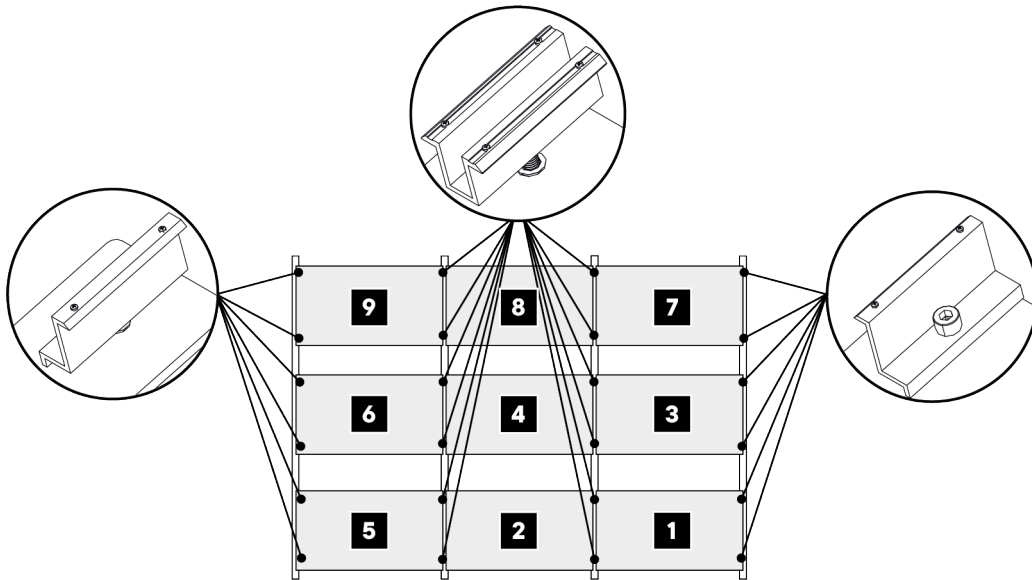
- Weigh down the front brackets with 1 - 2 ballast stones (1) each.
- Place the module (2) on the front brackets and connectors.



- Position the module flush with the end clamps (1) and tighten the screws hand-tight.
- Tighten the screws on the end clamps (2) to a torque of 20 Nm or 14 ft-lbs



- ▶ Place the following module (1).
- ▶ Align the module flush with the upper and lower end clamps (3).
- ▶ Tighten the screws on the middle clamps (2) between the modules to 20 Nm or 14 ft-lbs.
- ▶ Tighten the screws on the upper and lower end clamps (3) of the mounted modules to 20 Nm or 14 ft-lbs.



- ▶ Mount the other modules in the recommended order.
- ▶ Tighten the screws on the clamps to 20 Nm or 14 ft-lbs each.

PLACE BALLAST

i The ballasting of the system varies depending on the given conditions. The three variants are described in the following section.

Variant 1

With this ballasting variant, **ballast stones** are placed directly on the front brackets, end brackets, connectors and middle brackets.

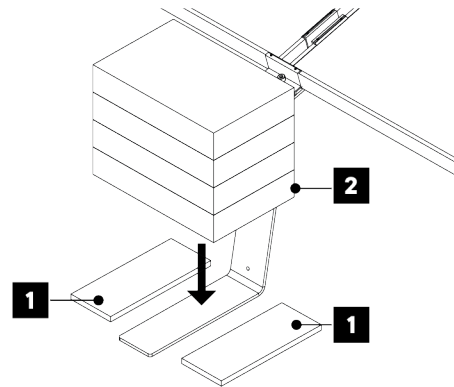


i Recommendation:

To minimize maintenance, the roof protection pads should be glued to the ballast blocks. It is recommended to use a weather-resistant construction adhesive for this purpose.

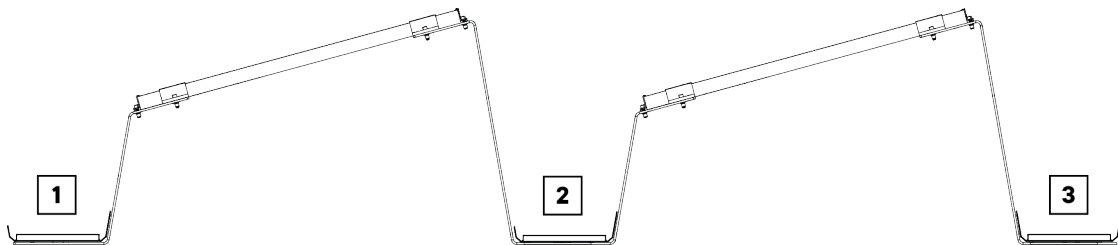
- Position the roof protection pads (1) to the right and left of the bracket or connector.
- Then place the ballast stones (2) specified in the planning documents.

i The exact **number** and **position** of the ballast stones can be found in the planning documents.



Variant 2

With this ballasting variant, **short ballast trays** are used at the front bracket, connectors and middle brackets.



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

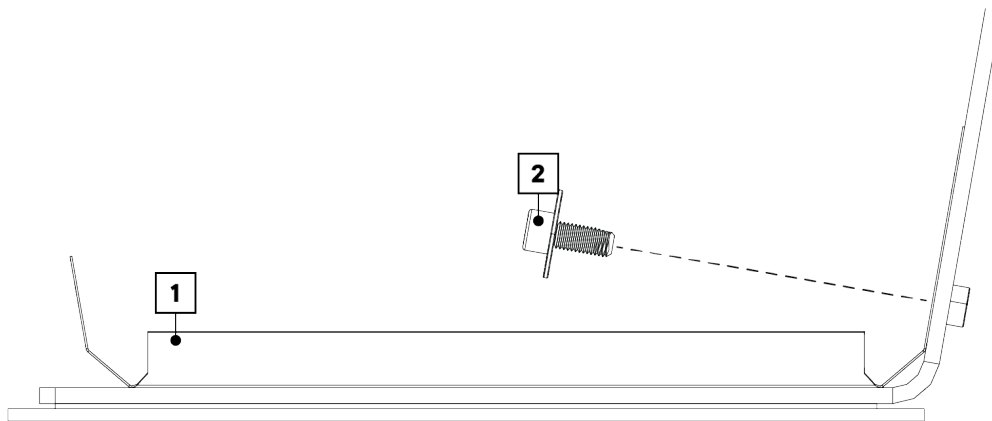
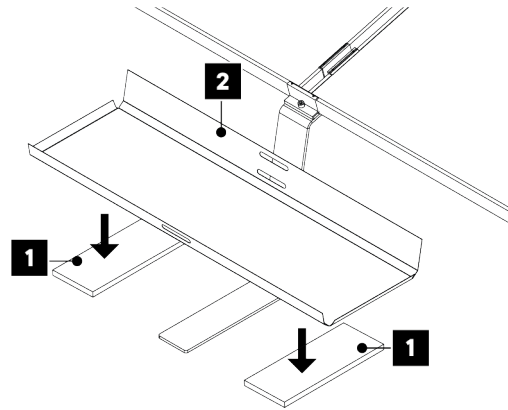
- (1) at front bracket.
- (2) at connector.
- (3) at the front bracket (last row, mirror-inverted).

i The exact **number** and **position** of the short ballast trays can be found in the planning documents.

ASSEMBLY SHORT BALLAST TRAY



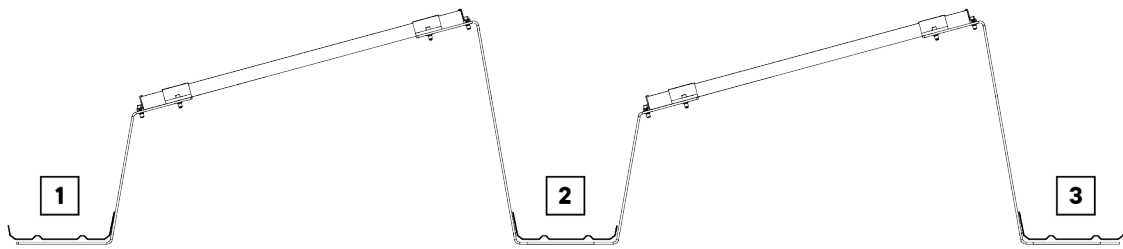
- ▶ Position the roof protection pads (1) to the right and left of the bracket or connector.
- ▶ Place the ballast tray (2) in the center of the bracket or connector.



- ▶ Screw the ballast tray (1) to the bracket or connector by using the screw (2).
- ▶ Tighten the screw (2) with a torque of 15 Nm or 11 lb ft.

Variation 3

With this ballasting variation, **long** ballast trays are used for the front bracket, connectors and middle brackets.



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

- (1) at front bracket.
- (2) at middle bracket.
- (3) at connector.
- (4) at the front bracket (last row, mirror-inverted).

i The exact **number** and **position** of the long ballast trays can be found in the planning documents.

PLACE ROOF PROTECTION PADS

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

Length 1800 mm: **3** structural protection pads per ballast tray

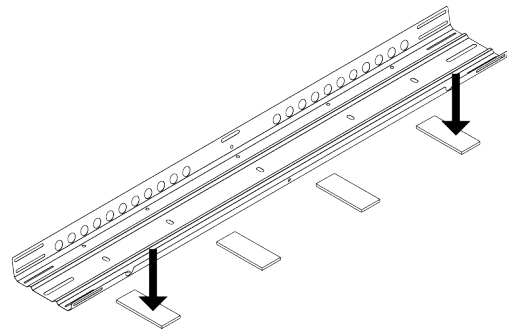
Length 2050 mm: **4** structural protection pads per ballast tray

Length 2300 mm: **5** structural protection pads per ballast tray

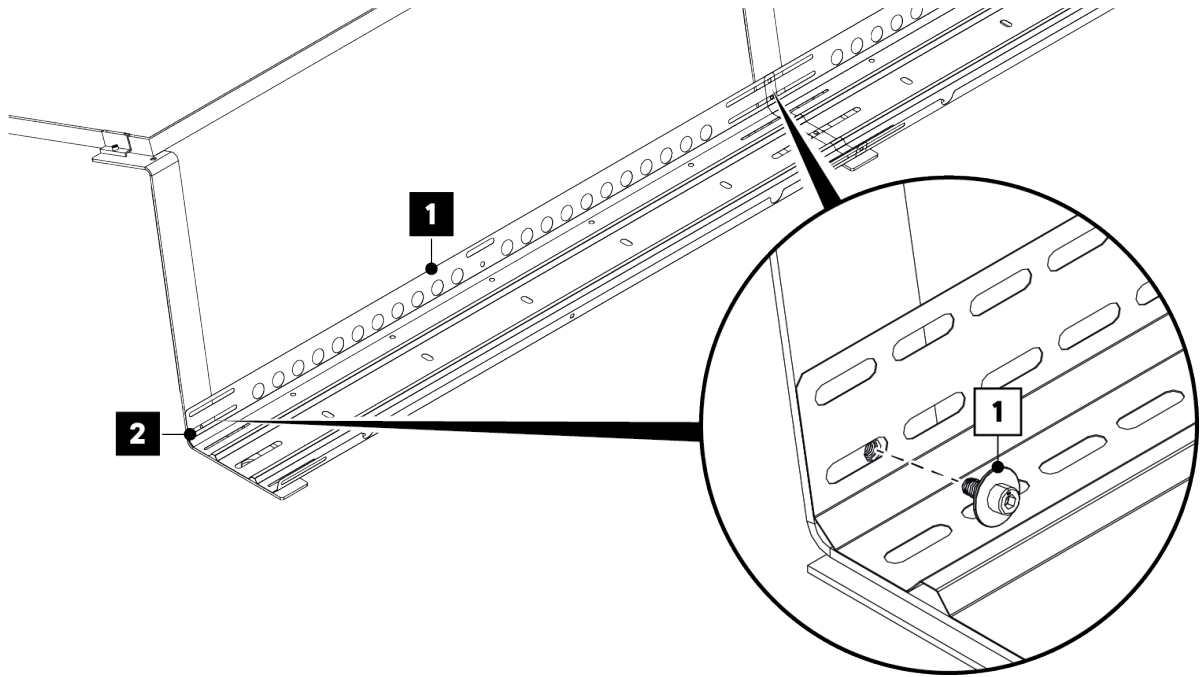


i When positioning the roof protection pads, ensure that the drain holes at the bottom of the ballast tray are not covered.

➤ Position the building protection pads (1) to the right and left of the bracket or connector.



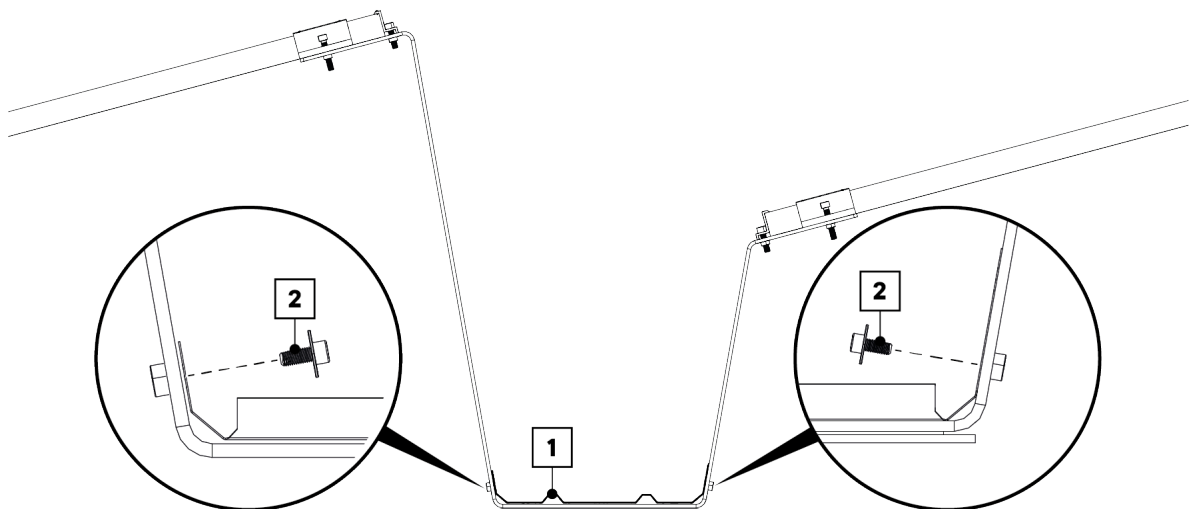
MOUNTING THE LONG BALLAST TRAY



In case of several consecutive ballast stones:

- Lay out the ballast trays (1) so that they overlap at the connectors or end bracket.
- Fastening the ballast trays (2): Screw the ballast tray to the bracket or connector by using the screw (1).
- Tighten the screws to a torque of 15 Nm or 11 lb-ft.
- Place the ballast tray (1) under the middle brackets.

MOUNT THE LONG BALLAST TRAY FOR MIDDLE BRACKETS

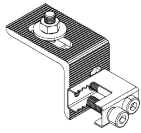


- Place the ballast tray under the middle brackets.
- Fasten the ballast tray to the middle bracket with two screws (1).
- Tighten the screws to a torque of 15 Nm or 11 lb-ft.

ASSEMBLE MLPE

i The **MLPE (Module Level Power Electronics)** is mounted on the front brackets, middle brackets, connectors or rear brackets.

REQUIRED COMPONENTS

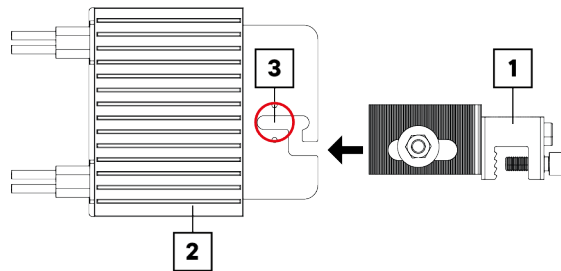


MA-BR
Mounting bracket for MLPE

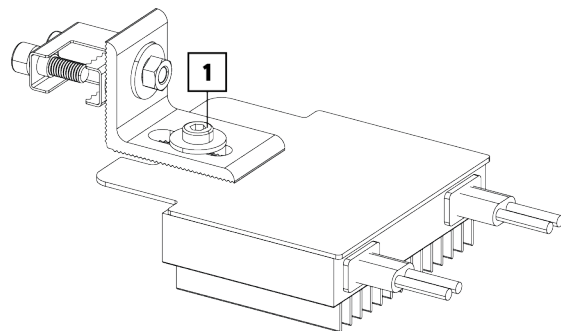
ASSEMBLY (EXAMPLE CONNECTOR)



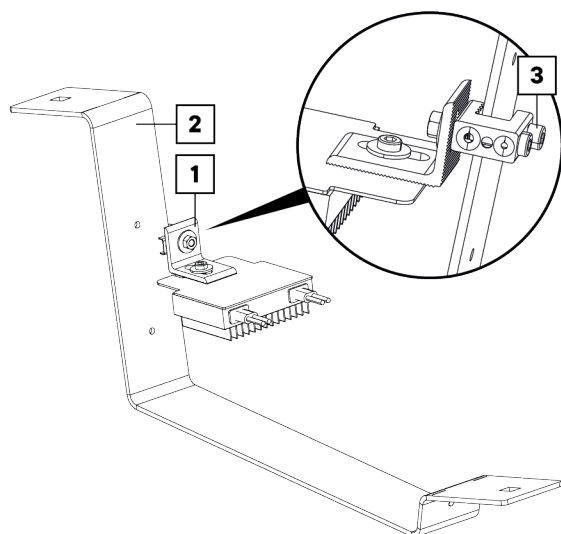
- Insert the clamp (1) into the device (3) of the MLPE (2) as shown in the illustration.



- Tighten the screw (1) with a torque of 15 Nm or 11 lb-ft.



- Guide the MLPE (1) with the clamp to the connector (2).
- Insert the clamp (1) so that the connector (2) is between the clamp.
- Then tighten the screw (3) with a torque of 15 Nm or 11 lb-ft.
- ✓ The MLPE is now mounted.



CABLE MANAGEMENT

CABLE CLIP CLP-M FOR MODULES

i The **CLP-M cable clip** is suitable for module frames with a sheet thickness of **1 - 3 mm**.



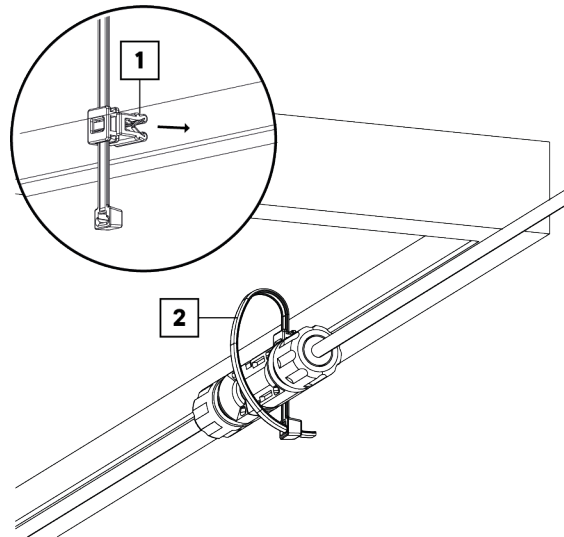
CLP-M

Cable tie clip for module frames with a thickness of 1 - 3 mm

ASSEMBLY

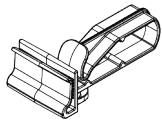


- ▶ Insert the CLP-M (1) into the module frame.
- ▶ The CLP-U is suitable for:
 - Solar plug (e.g. MC4)
 - Solar cable
- ▶ Then tighten the cable tie (2).



CABLE CLIP CLP-U FOR MODULES

i The **CLP-U cable clip** is suitable for module frames with a sheet thickness of **1.5 - 3 mm**.



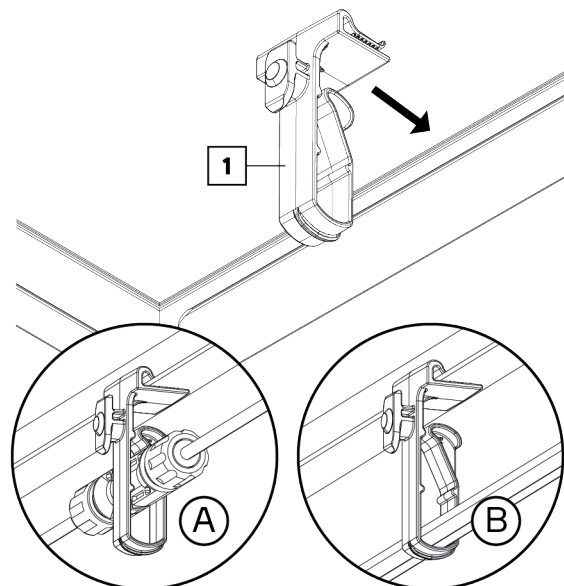
CLP-U

Cable clip universal

ASSEMBLY



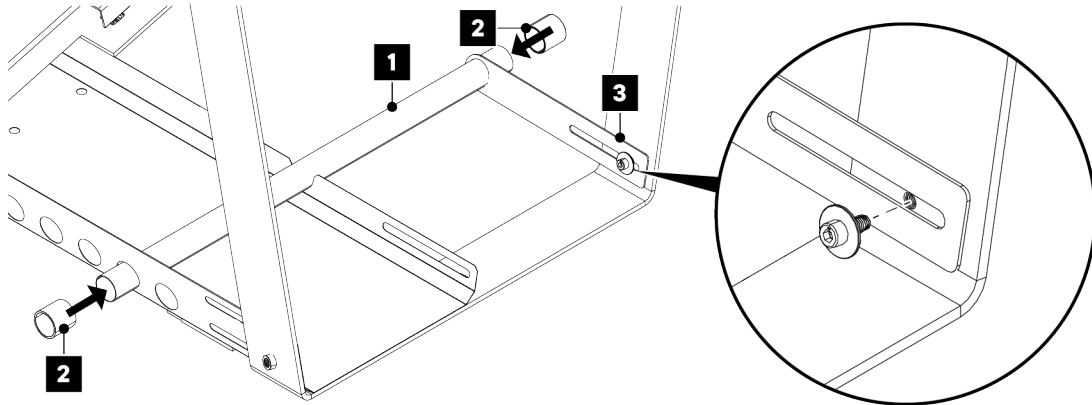
- ▶ Insert the CLP-U (1) into the module frame.
- ▶ The CLP-U is suitable for:
 - A** - Solar connectors (e.g. MC4)
 - B** - Solar wire



ASSEMBLY CABLE PIPE (OPTIONAL)

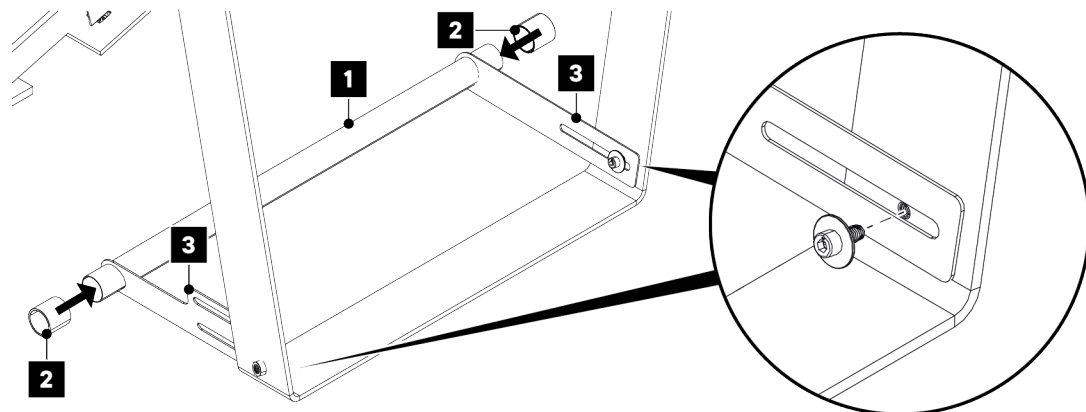
i The cable pipe are installed along the side edge of the module field. Depending on the specific conditions, the cable pipe are attached either using the brackets supplied or to the long ballast tray.

Cable pipe mounting ballast tray



- ▶ Attach the cable pipe (1) to the ballast tray and to the bracket.
- ▶ Attach the plastic caps (2) to each end of the cable pipe.
- ▶ Screw the bracket to the connector (3) or bracket (3).
- ▶ Tighten the screws with a torque of 15 Nm or 11 lb-ft.

Cable pipe mounting bracket



- ▶ Attach the brackets to the cable pipe (1).
- ▶ Attach the plastic caps (2) to each end of the cable pipe.
- ▶ Screw the brackets to the connector or bracket (3) by using a combination screw.
- ▶ Tighten the screw with a torque of 15 Nm or 11 lb-ft.

ASSEMBLY THE ROOF ANCHOR CONNECTION

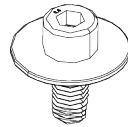
i The roof anchors must be provided by the customer and are not included in the scope of delivery of AEROCOMPACT Europe GmbH. For the installation of the roof anchor connection, the roof anchors must be equipped on site with a threaded rod with a maximum size of **M12 (7/16 inch)**. The number and positions of the roof anchors can be found in the planning documents.

REQUIRED COMPONENTS



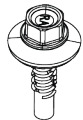
APA

Roof anchor connection



SCS8x20

Thread rolling combination screw M8x20



MSDS 5.5x25

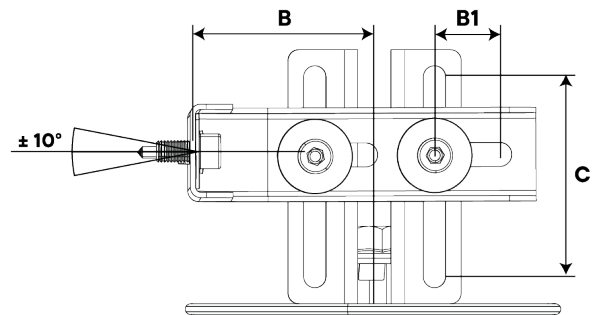
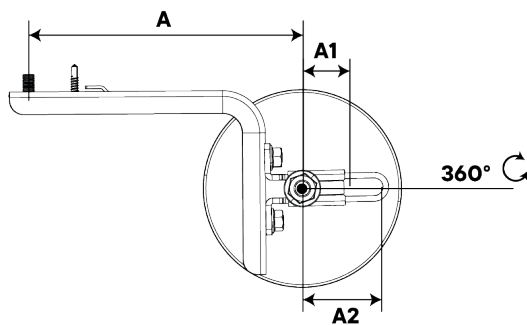
Self-drilling screw 5.5 x 25 mm



MSS6x25

Thin sheet metal screw 6x25

POSITION THE MECHANICAL ATTACHMENTS



i AEROTOOL marks only the components on which the mechanical attachments are mounted.

- Determine the exact position of the mechanical attachment according to the following dimensions/tolerances:
 A: 218 mm / 8.58 inch; A1: 0 - 30 mm / 0 - 1.18 inch; A2: 64 mm / 2.52 inch; B: 66 - 89 mm / 2.60 - 3.50 inch; B1: 28 mm / 1.10 inch; C: 74 mm / 2.91 inch

Connect system with mechanical attachments

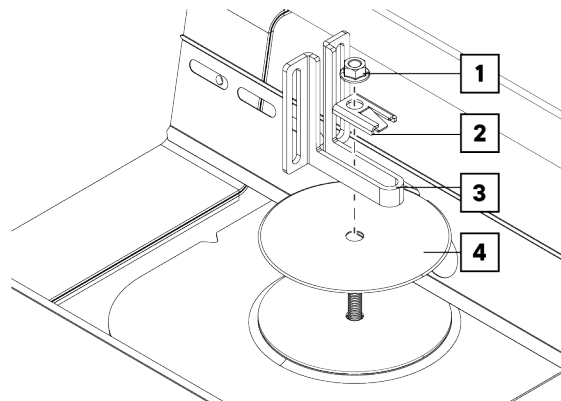
i It is possible to install the roof anchor in combination with the wind deflectors and/or ballast trays.



i The hexagon nut (1) is not included in the scope of delivery and must be organized by the customer.

- Fit the washer (4), bracket (3) and spacer (2) as shown in the illustration.
- Then tighten the hexagon nut (1) hand-tight.

i Make sure that the tab of the spacer (2) faces outwards.



INSTALL ANGLE CONNECTION WITH SELF-DRILLING SCREW

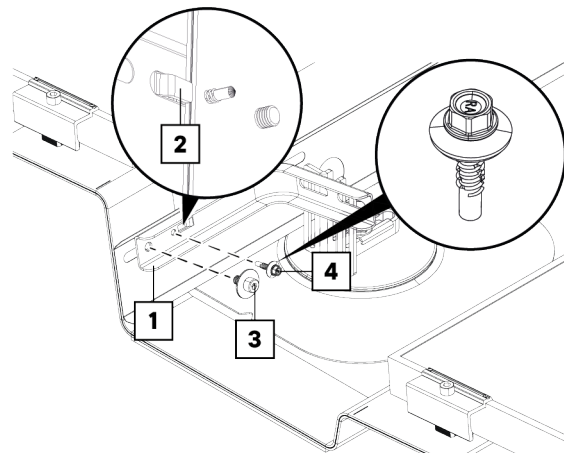
i The self-drilling screw is used when pre-drilling is not possible. It is recommended to always pre-drill if possible.



- When attaching the angle connection (1) to the connector, ensure that the tab (2) is in contact.
- Tighten the angle connection (2) with the SCS8x20 screw (3).
- Then screw in the MSDS 5.5x25 screw (4).

i Attention:

Remove the metal shavings from the MSDS 5.5x25 screw (4) from the roof covering.





INSTALL ANGLE CONNECTION WITH THIN SHEET METAL SCREW

Warning







Risk of injury from chips and sharp edges

Cut injury due to contact

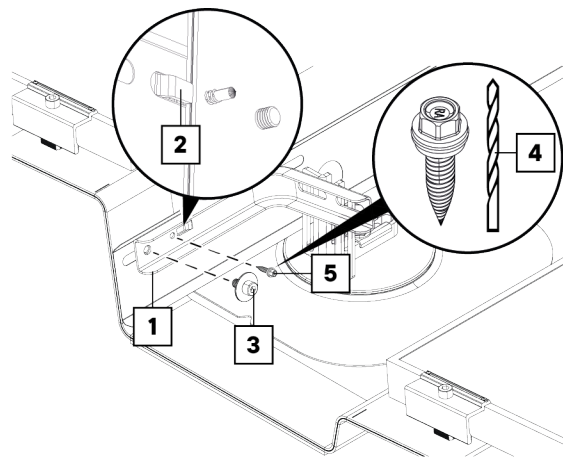
-  Wear safety goggles
-  Tie your hair up



-  When attaching the angle connection (1) to the connector, ensure that the tab (2) is in contact.
-  Tighten the angle connection (2) with the SCS8x20 screw (3).
-  Pre-drill the second hole of the angle connection with a drill \varnothing 4 mm.
-  Then screw in the MSS6x25 screw (4).




Attention:

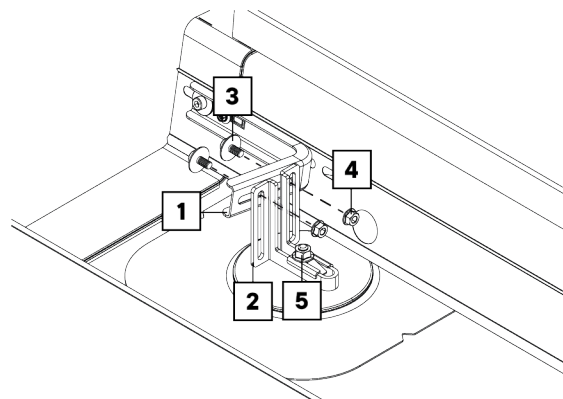
Remove the metal shavings from the MSS6x25 screw (4) from the roof covering.



Connect angle connection with bracket

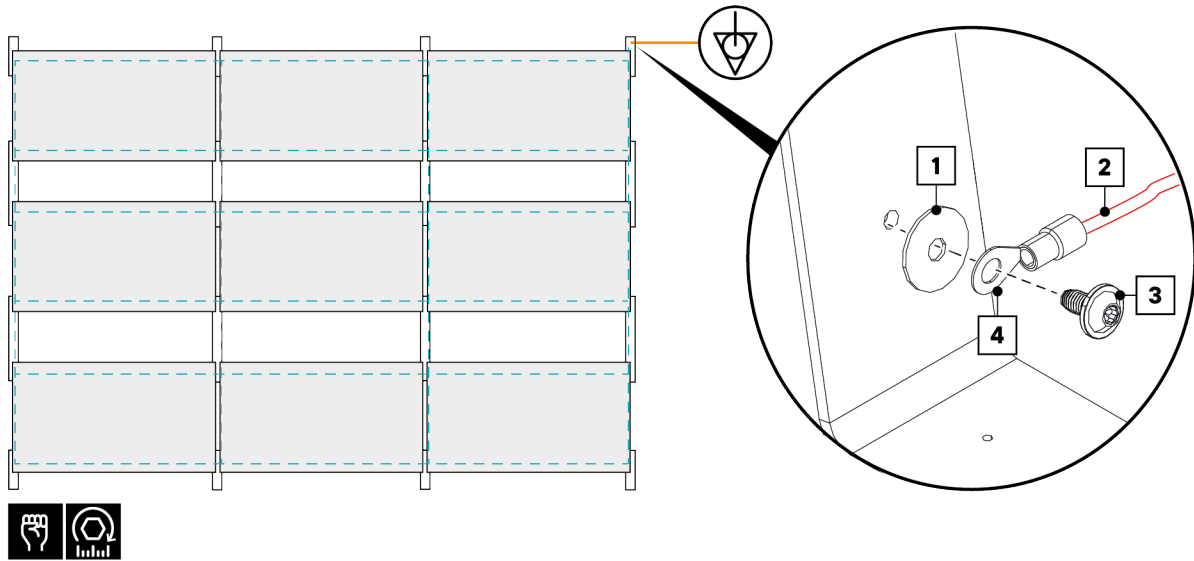


-  Position the angle connection (2) and the bracket (3) flush against each other.
-  Connect the angle connector (2) and the bracket (3) to each other at the slotted holes using the thread-forming screws (1) and hexagon nuts (4).
-  Tighten the hexagon nuts (4) and (5) each to a torque of 15 Nm or 11 ft-lb.



POTENTIAL EQUALIZATION AND LIGHTNING PROTECTION

POTENTIAL EQUALIZATION



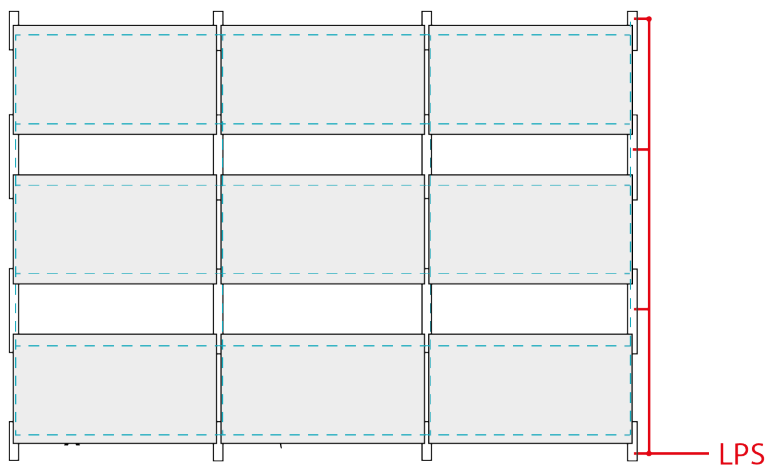
i The grounding / potential equalization is mounted on a base at the edge of a module field. The grounding / equipotential bonding can be installed together with the ballast trays

- Screw the M8 grounding lug (6) to the bracket by using the screw (7), washer (5), split ring (4) and nut (3).
- Attach the grounding wire (provided by customer) (1) to the grounding lug M8 by using the screw (2).

LIGHTNING PROTECTION

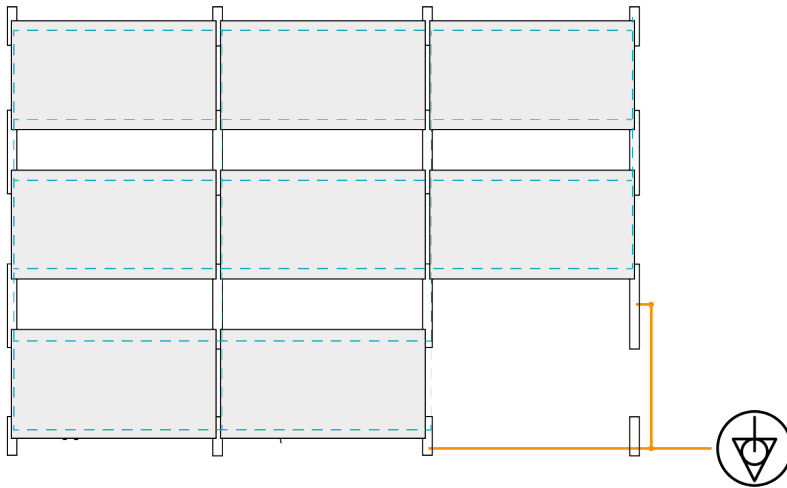
When integrating lightning protection or for projects in which the system takes over parts of the external lightning protection.

i If there is no continuous connection in the form of ballast trays or wind defectors, a cross connection is required.



LPS - Lightning Protection System

EQUIPOTENTIAL BONDING DURING MAINTENANCE WORK



i Attention!

To ensure that the connection between the remaining modules and the potential equalization is guaranteed, additional earthing terminals and earthing wire must be attached when a module is removed.

MAINTENANCE, DISASSEMBLY AND DISPOSAL

MAINTENANCE

To prevent personal injury and damage to property, the system must be checked regularly by qualified personnel and annual maintenance is required.

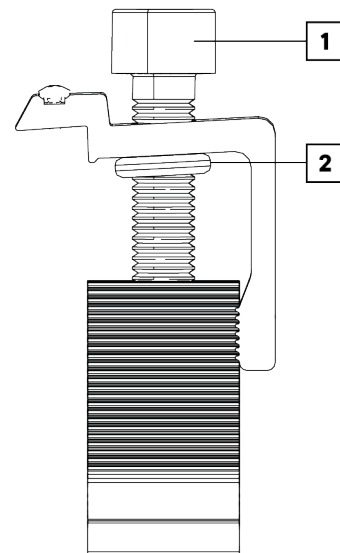
- Check all system components for damage. In the event of damage, replace the affected component immediately.
- Check all screw connections. Tighten loose screw connections, observing the tightening torque specified in the installation instructions.
- Checking all components for damage caused by the weather, animals, dirt, deposits, build-up, vegetation, roof penetrations, seals, stability and corrosion. In the event of damage, clean, repair or replace the affected component.

DISASSEMBLY

DISMANTLING THE CLAMPS



i To disassemble the system, carry out the assembly steps in reverse order.



DISPOSAL

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

- Give metals and 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 PERFORMANCE



Manufacturer: **AERCOMPACT 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](#)

REVISION HISTORY

Version	Chapter	Modification
v3.2	"Cable management" on page 20	New chapter added

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