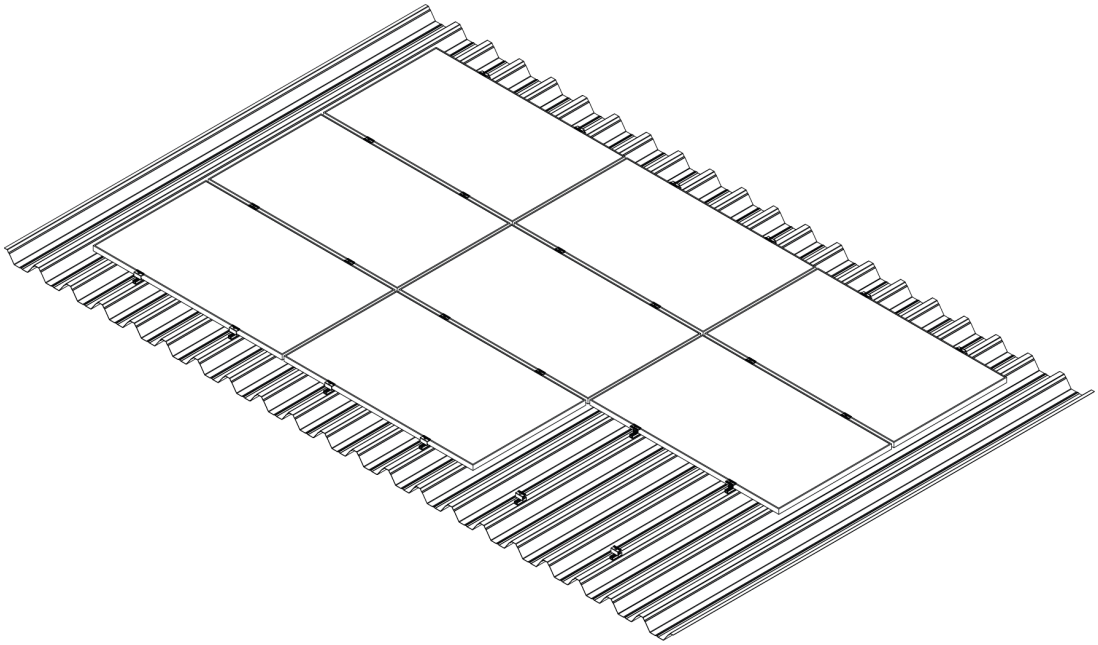
AEROCOMPACT®

ENGLISH



Assembly Instruction

COMPACT**METAL** TS15

Document Version : 09 | Document reference number : AI_TS15_09
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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TOC

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 conditions 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 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 TS15 system is intended exclusively for mounting PV modules on metal roofs made of trapezoidal metal sheet with a thickness of ≥ 0.7 mm. Approval from the module manufacturer is required for the use of PV modules with the TS15 system. AEROCOMPACT accepts no liability for loss of performance or damage of any kind to the PV modules. Any other use of the TS15 system is considered improper use.

NOTE ON THE PROCESSING OF THIN SHEET METAL SCREWS

ⓘ The attachment of thin sheet metal screws with impulse or impact screwdrivers is not permitted. The high speeds can cause damage to the screw bodies, the flashing and the sealing. Thin sheet metal screws may **only** be used **once,** as their performance is not guaranteed if they are reused.

☑ Apply pressure to the thin sheet metal screw and screw in at low speed (< 500 rpm).
☑ Then reduce the pressure and screw in the thin sheet screw at a higher speed.

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 exerts 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

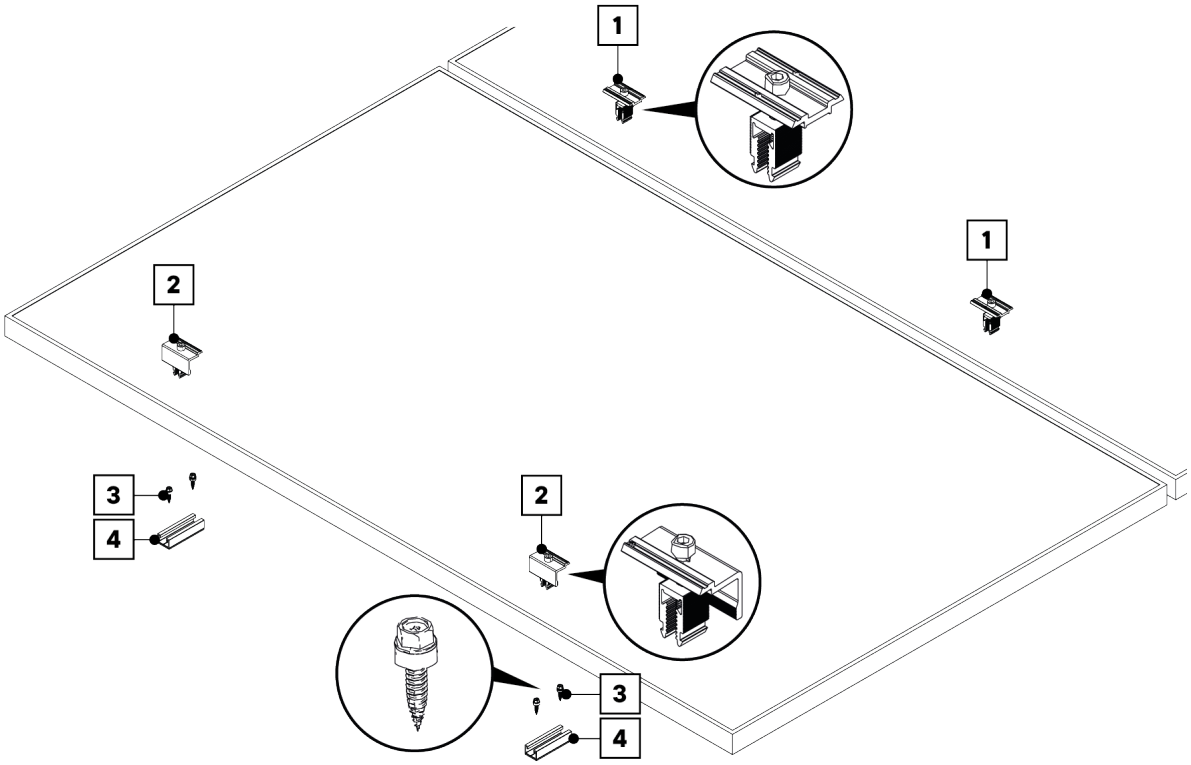
Use fall protection

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

Wear hearing protection

SYSTEM OVERVIEW

BASIC COMPONENTS TS15



1 **CLM10**
Middle clamp Click 30 - 46 mm

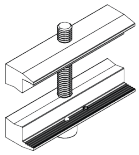
2 **CLE10**
End clamp Click 30-46

3 **MSS 6x25***
Metal sheet screw 6x25

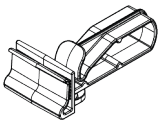
4 **TS15**
Trapezoidal metal sheet short rail 150 mm

* This component is intended for single use only.

SYSTEM ACCESSORIES TS15



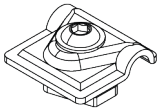
BR-MI
Mounting bracket for MLPE



CLP-U
Cable clip universal

CLP-M
Cable tie clip module

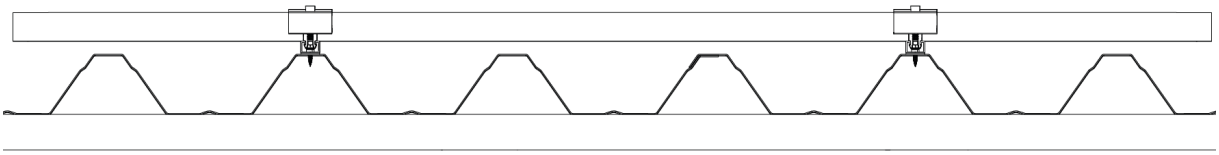
POTENTIAL EQUALIZATION



WCL8-10
Wire clamp 8 - 10 mm

MOUNTING VARIANTS

MOUNTING OF THE MODULES DIRECTLY ON TRAPEZOIDAL SHEET METAL SHORT RAIL TS15



ASSEMBLY

ASSEMBLY PREPARATION

Required tools for assembly

ⓘ 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

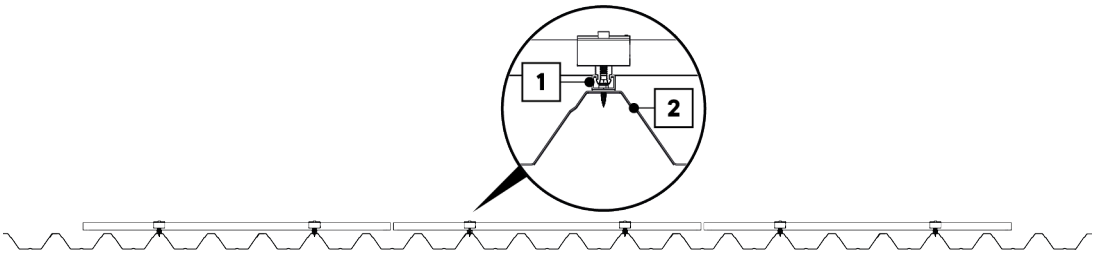
Torque wrench 10 - 30 Nm with hexagon socket bit 6mm

Cordless screwdriver

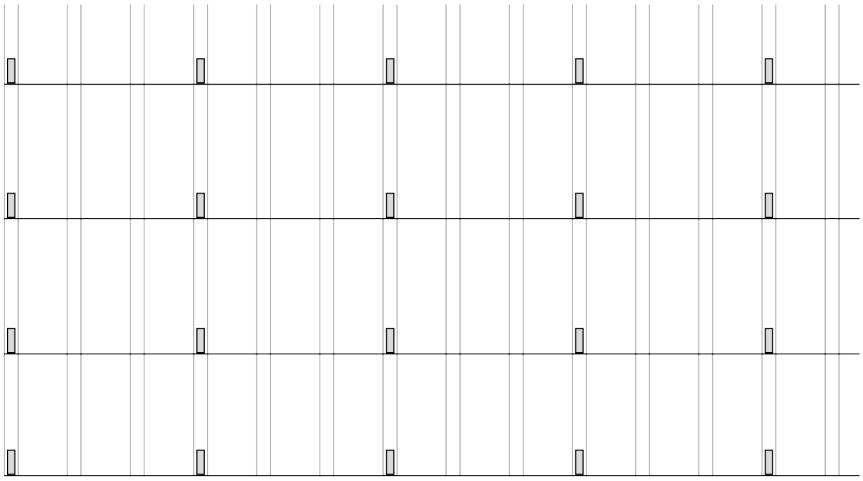
Measuring tape

Socket bit 8 mm

MEASURE THE AREA



The rails (1) are each mounted on one peak (2). The distance between the rails depends on the width of the modules and the distance between the peaks.



Determine module size.
Determine the distances between the peaks/ crowns.
Determine and mark the positions of the short rails.

FASTENING AND POSITIONING OF TS15

GENERAL

A module must be clamped at least twice along its long sides. For the purpose of clarity, two modules require at least six short rails, four end clamps, and two middle clamps.

HORIZONTAL X-AXIS

The horizontal (X axis) spacing between trapezoidal short rail centres is determined by the gaps between the roof profiles, the length of the module as well as the corresponding clamping zones. Modules should only be clamped in the designated clamping sections. The following module clamping limitations must be met: the minimum distance between the center of the module clamp and the nearest outer short edge of the module is 250 mm, and the maximum is 330 mm.

VERTICAL Y-AXIS

The vertical (Y axis) spacing between trapezoidal short rails is determined by the width of the module. The maximum vertical (Y axis) spacing between trapezoidal short rail centres is 1153.53 mm (end clamp - middle clamp module clamping) and 1154 mm (middle clamp - middle clamp module clamping).

RELEVANT APPROVED DISTANCES

Item	Distance in mm
Minimum horizontal (X axis) spacing between trapezoidal short rail centres	**1102 mm**
Maximum horizontal (X axis) spacing between trapezoidal short rail centres	**1262 mm**
Maximum vertical (Y axis) spacing between trapezoidal short rail centres (module clamped with end clamps on one side and middle clamps on the other side)	**1153.53 mm**
Maximum vertical (Y axis) spacing between trapezoidal short rail centres (module clamped with middle clamps on both sides)	**1154 mm**

TS15 MOUNT SHORT RAIL

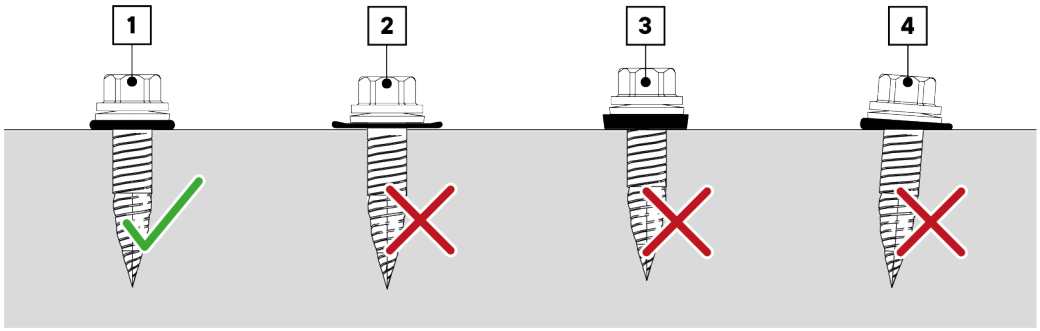
NOTE ON THE PROCESSING OF THIN SHEET METAL SCREWS

ⓘ The attachment of thin sheet metal screws with impulse or impact screwdrivers is not permitted. The high speeds can cause damage to the screw bodies, the flashing and the sealing. Thin sheet metal screws may **only** be used **once,** as their performance is not guaranteed if they are reused.

- Apply pressure to the thin sheet metal screw and screw in at low speed (< 500 rpm).
- Then reduce the pressure and screw in the thin sheet screw at a higher speed.

TIGHTEN METAL SCREWS WITH ATTACHED EPDM WASHER

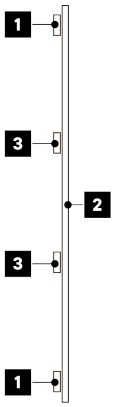
ⓘ Mount metal screws with EPDM washer always with mechanical depth stop. The sealing washer must be compressed by approx. 30 %.

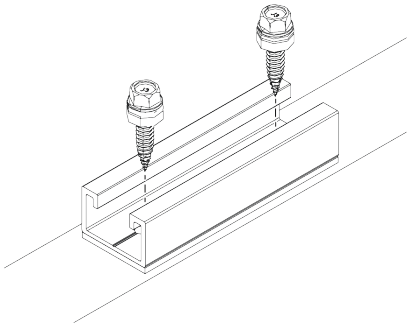


(1) Correct | (2) Tightened too tight | (3) Tightened too weak | (4) Tightened too diagonally

TS15

ⓘ When mounting, make sure that the short rails are mounted in parallel.



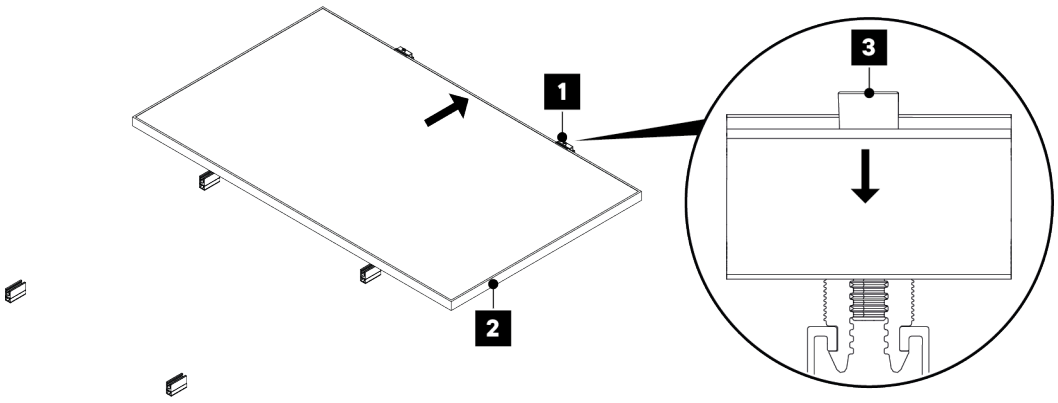


- Position the foremost and rearmost short rail (1) and tighten with two screws.
- Clamp a metal rail or wooden batten (2) to the short rails as a stop.
- Mount the other short rails (3).
- Please keep in mind that the middle/end clamp must be positioned in the center of the trapezoidal short rail.
- Please be aware that the screws must be screwed into the outer predrilled holes. The middle predrilled hole is intended for fitting an existing roof screw.
- Please keep in mind that the trapezoidal short rail must be positioned centrally on the rib in order to screw the screws as centrally as possible with respect to the rib.

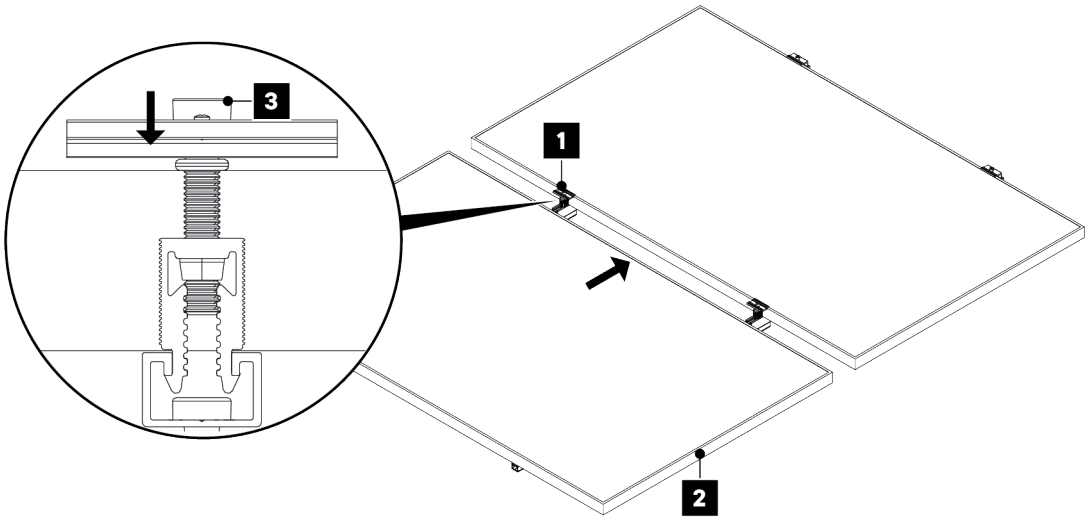
INSTALLING MODULES

ⓘ Depending on the accessories used, the following options are available:
Mounting of the modules on the short rails.

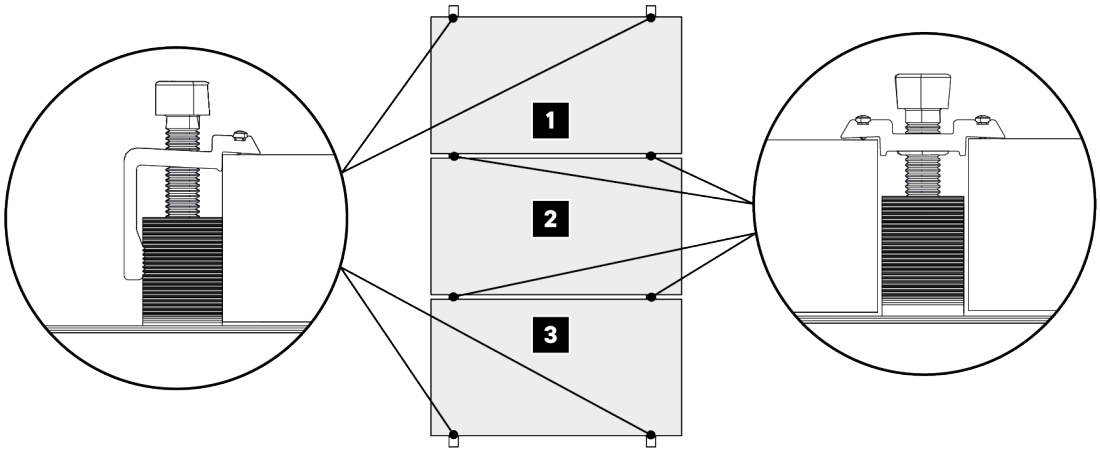
When installing the modules, ensure that the module clamps are positioned as centrally as possible on the short rails or adapters.



- ☐ Place the end clamps (1) on the outermost row.
- ☐ Place the first module (2).
- ☐ Tighten the screws (3) on the end clamps to a torque of 15 Nm or 11 ft-lb.



- ☐ After the first module, attach middle clamps (1).
- ☐ Position second module (2).
- ☐ Tighten the screws (3) on the middle clamps to a torque of 15 Nm or 11 ft-lb.



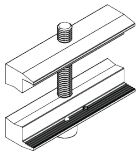
- Continue placing the modules row by row.
- Make sure that the modules are installed in a line.
- Tighten the screws of the end-clamps with 15 Nm or 11 ft lb each.

REPOSITION / REPLACE CLAMPS

- Dismantle the mounted clamp: Unscrew the screw on the clamp completely.
- Depending on the installation situation, press the clamp together at the side and pull it out or pull it out of the rail at the side.

ASSEMBLE MLPE (MODULE)

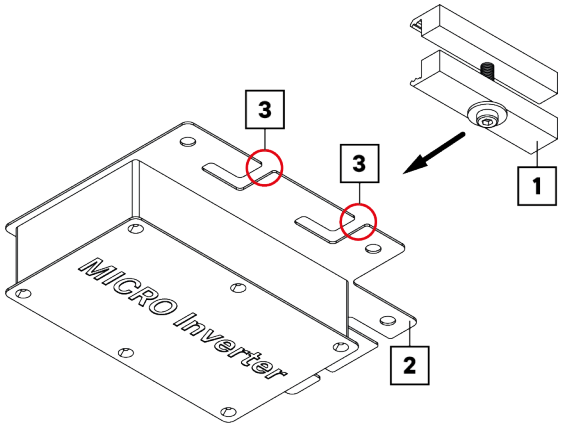
REQUIRED COMPONENTS



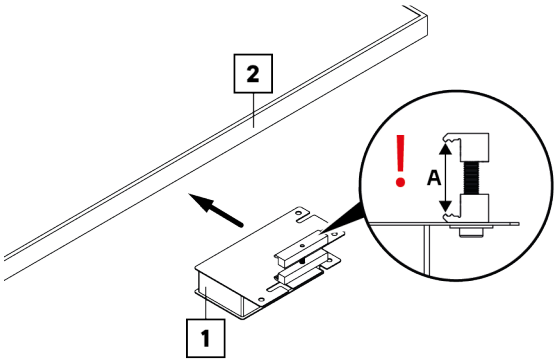
BR-MI
Mounting bracket for MLPE

ASSEMBLY

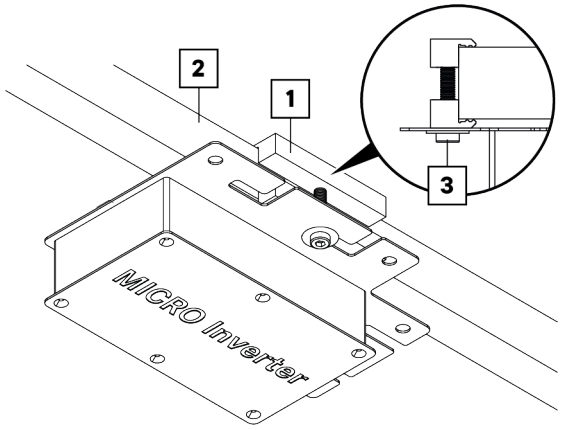
- [ ] Insert the clamp (1) into the device (3) of the MLPE (2) as shown in the illustration.



- [ ] Guide the MLPE (1) with the clamp to the underside of the module frame (2).
- [ ] The module frame height must not exceed **A = 48 mm**.

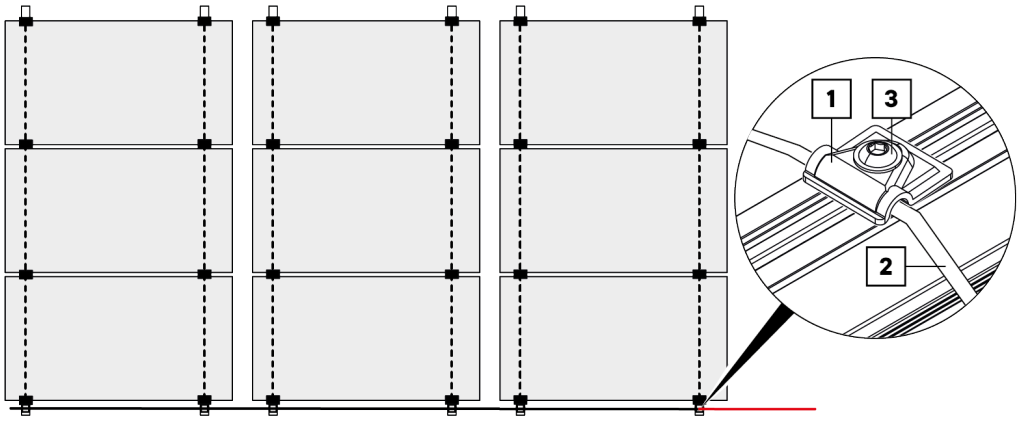


- [ ] Insert the clamp (1) so that the module frame (2) is positioned between the upper and lower attachment of the clamp and rests on it.
- [ ] Then tighten the screw (3) with a torque of 15 Nm or 11 lb-ft.
- [x] The MLPE is now mounted.



POTENTIAL EQUALIZATION

ⓘ For equipotential bonding, **AEROCOMPACT Europe GmbH** provides the wire clamp and aluminum wire as accessories. These are each mounted on the mounting rail, depending on the mounting situation, the module rows are connected to each other by the module clamps.



Exemplary representation

ⓘ Dotted lines - connection by module clamps
Continuous lines (black) - connection module rows
Continuous lines (red) - connection of equipotential bonding **on-site**

- Attach the wire clamp (1) to the mounting rail.
- Insert the wire (2) at the wire clamp.
- Tighten the screw (3) with a torque of 10 Nm or 7.37 ft lb.
- Connect the wire (2) to the on-site equipotential bonding.

MAINTENANCE, DEMOUNTING AND DISPOSAL

MAINTENANCE

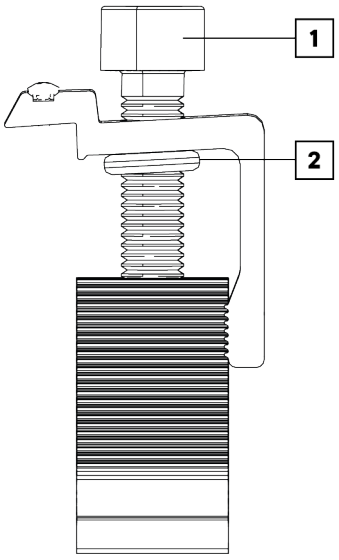
To prevent personal injury and damage to property, the system must be checked regularly by qualified personnel and annual maintenance is required.

- 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 (EXAMPLE)

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



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

ⓘ If the components are reused, it must be noted that these are wearing parts. Therefore, the AEROCOMPACT Europe GmbH cannot assume any responsibility for checking the degree of wear. For this reason, any liability or warranty of AEROCOMPACT Europe GmbH in case of reuse is excluded and reuse is at the installer's own responsibility.

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.

ⓘ 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 TS15

Manufacturer:	**AEROCOMPACT Europe GmbH**
Designation:	**Metal roof system** **CompactMETAL TS15 Trapezoidal sheet short rail**
Identification code:	**TS15**
Applied standard:	**EN 1090**
Certification body:	**2397**

For the declaration of performance

BASIC COMPONENTS OF THE MOUNTING SYSTEM COMPACTMETAL TS15, SYSTEM REF. -NR: TS15_1.0

Product name	**component number**
Middle clamp Click 30 - 46 CLM10	707011
Middle clamp Click 30 - 46 CLMB10	707611
End clamp Click 30 - 46 CLE10	707003
End clamp Click 30 - 46 CLEB10	707603
Trapezoidal metal sheet short rail 150 mm TS15	705512-150
Metal sheet screw 6x25 MSS 6x25	701514

ⓘ The list above represents the certificated components of the single certificated system COMPACTMETAL TS15. Please be advised that only the above-mentioned components are tested according to certification standards and therefore certified.

TECHNICAL DATA TS15

Installation type	Above roof
Compatible roof type	Pitched roof
Permissible panel orientation	Landscape
Max. solar panel size (Length x Width)	1762 mm x 1134 mm
Permissible solar panel thickness range	30 mm - 46 mm
Roof pitch range	5 ° - 45°
Max. field size	Approx. 12 m, along continuous rail, otherwise unlimited
Min. field size	1 x 1 module
Wind load	Maximum design wind uplift resistance of 1553 Pa. with 2 panels in landscape and 8 fixings, partial safety factor 1.25
Compatible roof covering	Trapezoidal metal sheet ≥ 0.7 mm

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