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Assembly Instruction

## COMPACTPITCH XM-PL

Version : 3.0

Language : English

Important! Read carefully before installation!

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## **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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## **Creation date**

12/2024

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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. Illustrations in these instructions are for basic understanding and may differ from the actual design.

## APPLICABLE DOCUMENTS

In addition to this manual, you have received an AEROTOOL project report, planning documents and drawings. Always comply with the instructions and notes contained therein.

## 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](http://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



Check AEROTOOL project report or planning documents



Visual inspection



Observe right angle



Montagetipp

### 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 CompactPITCH pitched roof system is intended exclusively for the installation of PV modules on tiled roofs or similar roof coverings. Proper use also includes correct installation in accordance with these installation instructions. Approval from the module manufacturer is required for the use of PV modules with the CompactPITCH system. AEROCOMPACT accepts no liability for loss of performance or damage of any kind to the PV modules. Any other use of the CompactPITCH system is considered improper use. Do not enter the mounting rails during installation. It is strictly forbidden to place any objects, such as pallets, on the mounting rails.

### ENSURING TIGHTNESS DURING INSTALLATION

**i** The following instructions are essential to ensure that the roof is watertight during the installation of roof hooks and hanger bolts and to prevent subsequent damage due to leaks.

**Correct positioning:** Roof hooks and hanger bolts must be positioned exactly in accordance with the planning documents and local building regulations. Incorrect positioning can impair the roof waterproofing and lead to water ingress. It is particularly important to look out for sharp-edged or protruding noses on roof tiles, which may need to be removed to ensure tightness - this applies especially when using replacement roof tiles.

**Correct torque setting:** Great care must be taken when tightening the fastening screws of both the roof hooks and the hanger bolts. Excessive tightening can damage the roof waterproofing and cause leaks. It is essential to adhere exactly to the torques specified in these installation instructions in order to maintain the structural integrity of the roof and the seal.

**Final check and inspection:** After the roof hooks and hanger bolts have been installed, a comprehensive inspection of the installed components must be carried out. Pay attention to damage to sealing materials or potential leaks. Incorrect installation can cause serious consequential damage to the building fabric and interior fittings.

**Legal notice:** By adhering to these installation instructions, responsibility is assumed for the correct installation of roof hooks and hanger bolts in accordance with regulations. Damage, in particular due to improper installation and resulting leaks, may result in liability claims. Careful observance of these recommendations makes a decisive contribution to the longevity and tightness of the roof.

### NOTE ON THE PROCESSING OF THIN SHEET METAL SCREWS

**i** The installation of thin sheet metal screws with impulse or impact wrenches 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, the project report and the planning documents. 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 shall ensure that all relevant safety and labor regulations are complied with during installation. Information from AEROCOMPACT Europe GmbH is supportive, but without guarantee or claim to completeness. The contractual partner is responsible for informing himself about all applicable regulations and implementing them. Areas below the roof must be protected from falling objects and blocked off if necessary. Work must not be carried out in unsuitable weather conditions, strong winds, wet conditions or temperatures below freezing. Only use intact, tested ladders and secure them. Mechanical climbing aids have their own rules and the PV mounting system must not be used as a climbing aid. Maintain a distance from overhead power lines and carry out equipotential bonding in accordance with country-specific regulations. When cutting materials to size, ensure that there are no burrs, especially on edges and corners. Rooflights, skylights and large ventilation flaps do not generally bear the load of people. Secure these areas such as roof edges. Corrugated fiber cement roofs are generally susceptible to breakthrough. Define routes and secure them with load distribution. Always use load distribution aids on non-load-bearing roof coverings (e.g. thin sheet metal, corrugated fiber cement).

## 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**

## STRUCTURE OF THE WARNINGS ACCORDING TO HAZARD LEVELS

The warnings used in these installation instructions indicate safety-relevant information. They consist of:

- > Signal word and warning sign to indicate the hazard level
- > Type and source of danger
- > Consequences of ignoring the danger
- > Escape (measures to avoid the danger)

### WARNING SIGNS ACCORDING TO EN ISO 7010 - EXAMPLES



### SIGNAL WORDS ACCORDING TO EN IEC/IEEE 82079

#### Personal injury

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**GEFAHR**

#### Personal injury

Indicates a potential hazard which, if not avoided, will result in death or serious injury.

**WARNUNG**

#### Personal injury

Indicates a potential hazard which, if not avoided, will result in death or serious injury.

**VORSICHT**

#### Material damage

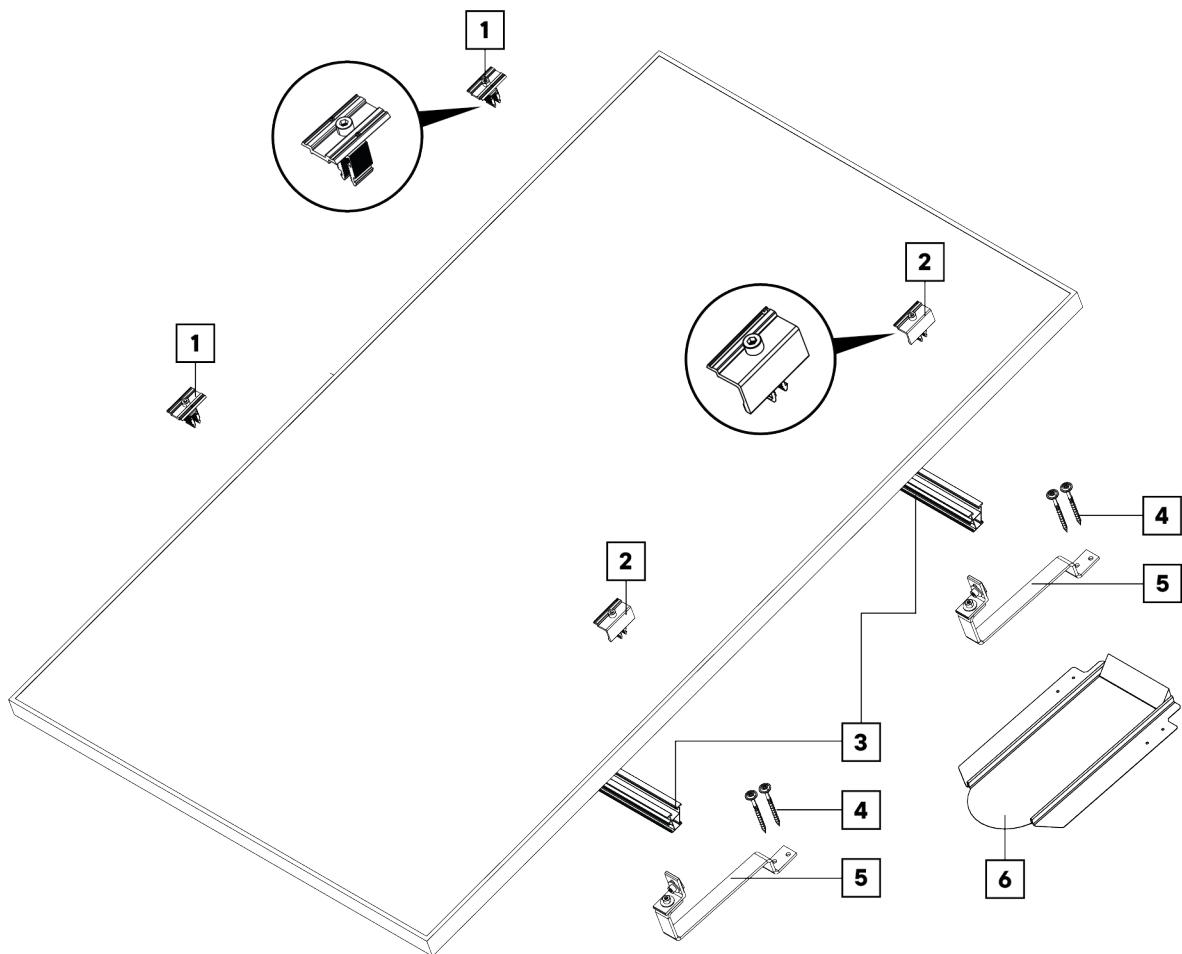
Indicates a situation which, if not avoided, may cause damage to the product or other property.

**HINWEIS**

**i** The information given here on warning signs covers the minimum requirements. However, there may be additional national, regional or project-specific requirements that must also be fully observed. Compliance with all relevant regulations is essential.

# SYSTEM OVERVIEW

## BASIC COMPONENTS XM-PL



- 1 CLM10**  
Middle clamp Click 30 - 46 mm
- 3 X40 | X50 | X60**  
Mounting rail
- 5 XM-PL30X**  
Roof hook for plain/crown tiles

- 2 CLE10**  
End clamp Click 30-46
- 4 SDS-W-6\*XXX | SDS-W-8\*XXX**  
Self drilling screws wood
- 6 XM-PLR | XM-PLB**  
Plain metal tile | red, black

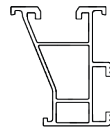


## MOUNTING RAILS AND ACCESSORIES



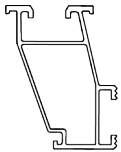
### X40-XXXX

Mounting rail X40 1980 mm 3300 mm 3550 mm 4400 mm 4750 mm 5500 mm 5850 mm



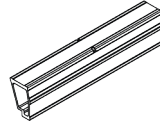
### X50-XXXX

Mounting rail X50 1980 mm 3300 mm 3550 mm 4400 mm 4750 mm 5500 mm 5850 mm



### X60-XXXX

Mounting rail X60 1980 mm 3550 mm 4750 mm 5850 mm



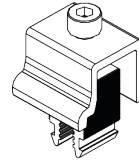
### XPCN60

Rail connector X60



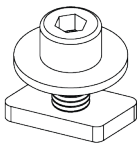
### XPCN-XX

Rail connector X40, X50



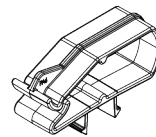
### XDL

Cross connector X40, X50, X60



### SCR-MA

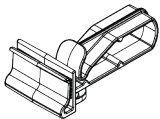
Bolting set module accessories



### CLP-R

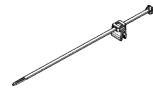
Cable clip rail

## MODULE ACCESSORIES



### CLP-U

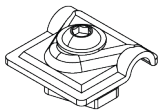
Cable clip universal



### CLP-M

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

## POTENTIAL EQUALIZATION



### WCL8-10

Wire clamp 8 - 10 mm

# ASSEMBLY

## 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**



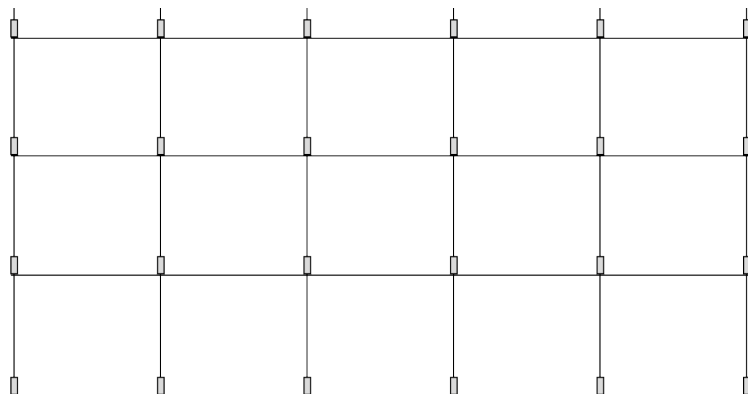
**Torque wrench 10 - 30 Nm with hexagon socket bit 6mm**



**Cordless screwdriver**

## MEASURE THE AREA

**i** The roof hooks are each screwed to the counter-battening.



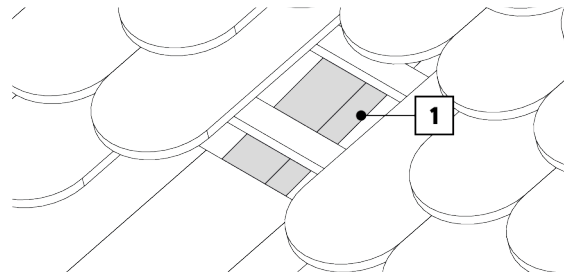
- Take the dimensions of the array field from the planning documents.
- Determine module size.
- Check the position of the counter-battens.
- Determine and mark positions of roof hooks.

## INSTALL ROOF HOOKS

**i** The roof hook is mounted to the rafters with two waver-head screws. When mounting the roof hooks pay attention to the horizontal and vertical alignment. Depending on the type of roof tile, hire a specialized professional to install the roof hooks and properly leak proof the roof.

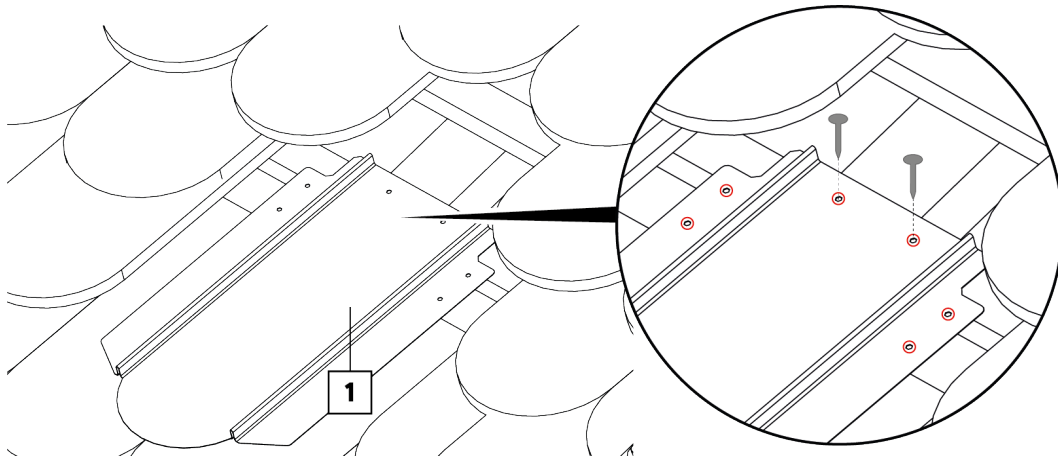


- Expose rafters (1):  
Remove the corresponding roof tile and move the side and top roof tiles.



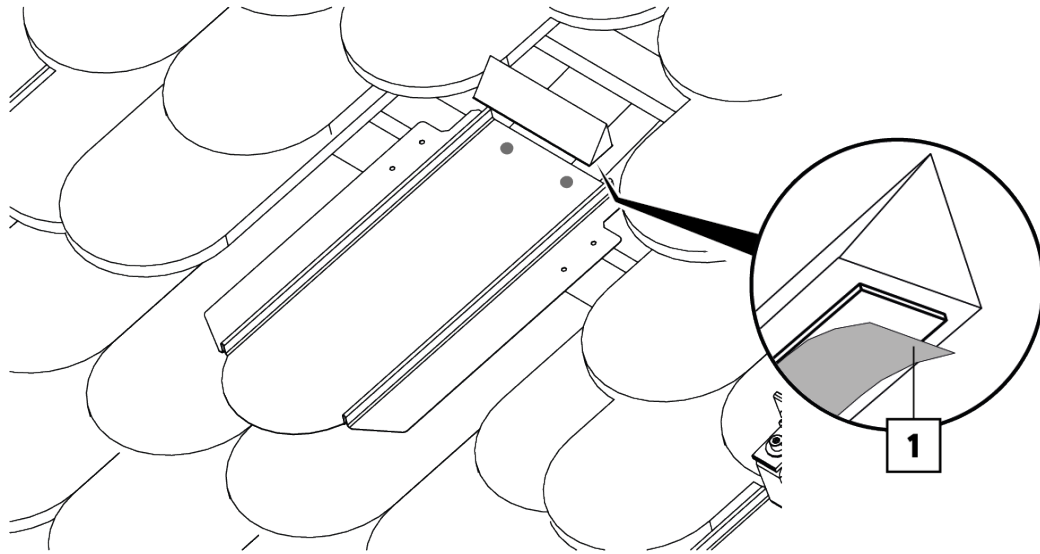
## Installing Metal Tiles

**i** When positioning the metal tile, make sure that everything is covered when completing the roofing.



- Place the metal tile (1) and fix it with at least two wire nails. The metal tile can be attached to either the top or side holes.
- i** The wire pins for fastening the metal tiles must be organized by the customer and should be chosen accordingly, taking into account the thickness of the roof battens.

## Attach foam wedge

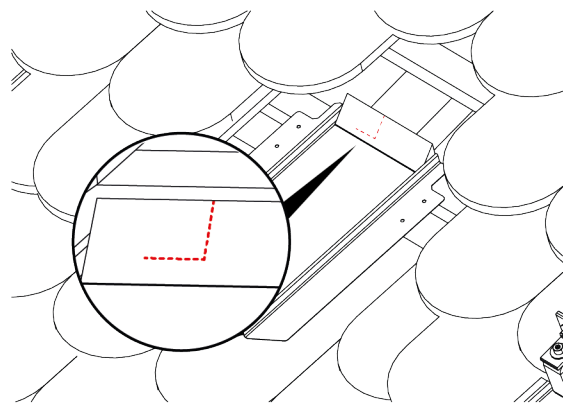


- Remove the protective film (1) of the adhesive strip from the foam wedge.
- i Caution!** It is important to ensure that the surface to be covered is dry and free of dirt.
- Press the foam wedge in the area of the adhesive strip.

| <b>WARNING</b> |  |
|----------------|--|
|                | <p><b>Risk of injury from sharp objects</b></p> <p>Cuts from sharp objects can cause severe bleeding.</p> <p>➤ <b>Wear safety gloves</b></p> |



- Als Vorbereitung für die Dachhakenmontage den Schaumkeil entsprechend einschneiden (siehe Abbildung).

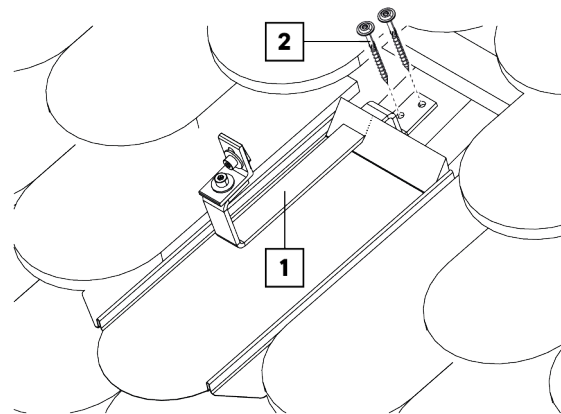


## Install roof hooks

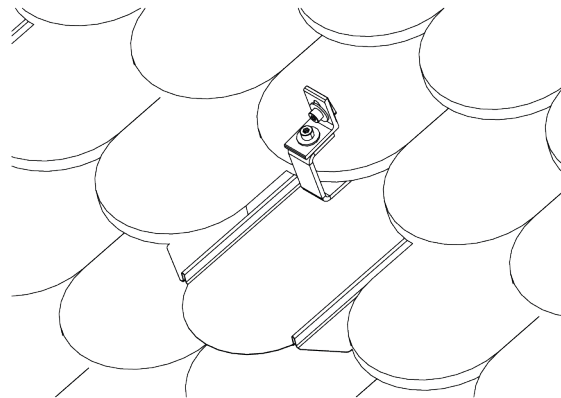


**i** When fixing the roof hook, the minimum edge distance to the edges of the counter-battening according to ETA-11/0024 must be observed.

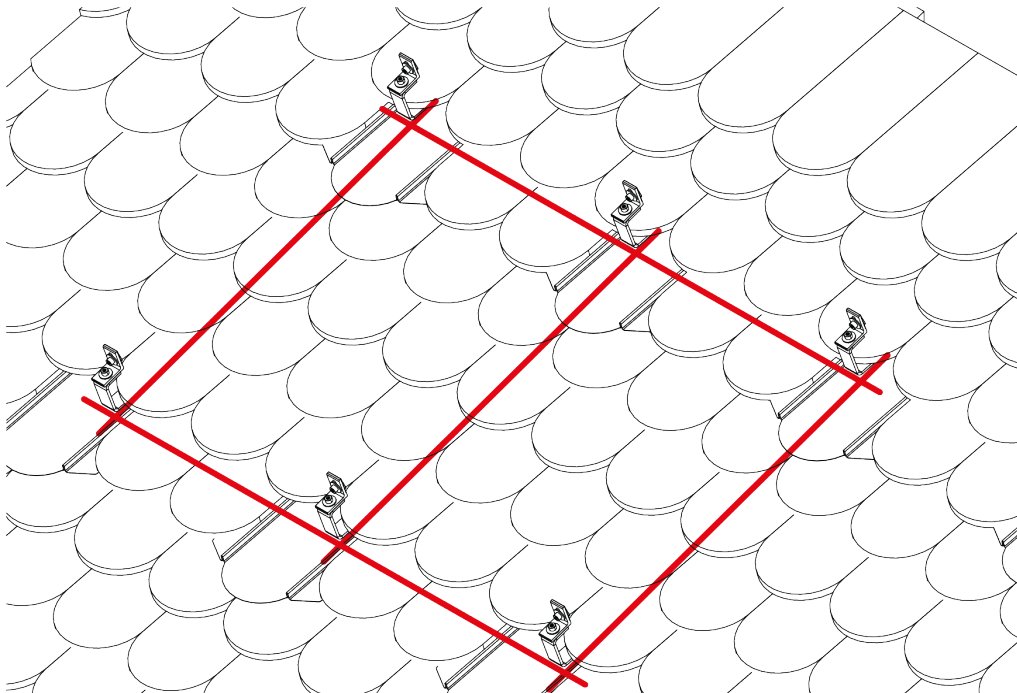
- >** Take the position of the roof hook (1) from the planning documents.
- >** Screw the roof hook (1) to the rafter with two waver-head screws (2).
- i** The foam wedge must completely enclose the roof hook.



- >** Place the displaced roof tiles back in the original position.
- i** **Ensure roof tightness!** Make sure that the roofing is properly closed around the roof hook.



- ✓** The roof hook is now ready.



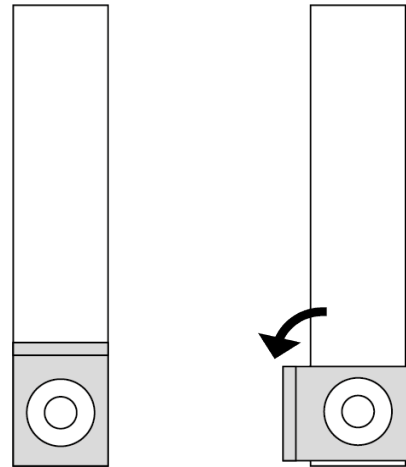
- >** It is important to ensure that the roof hooks are aligned horizontally and vertically.

## MOUNT RAIL

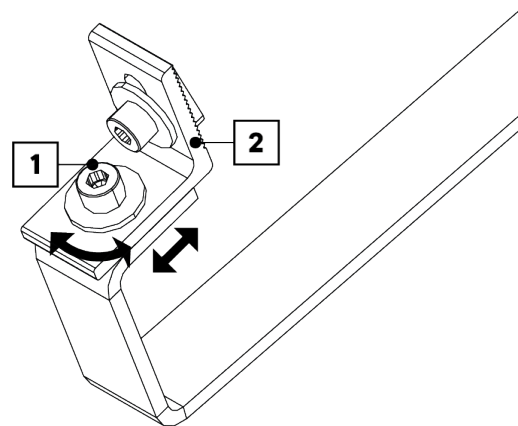
### Align angle bracket on roof hook

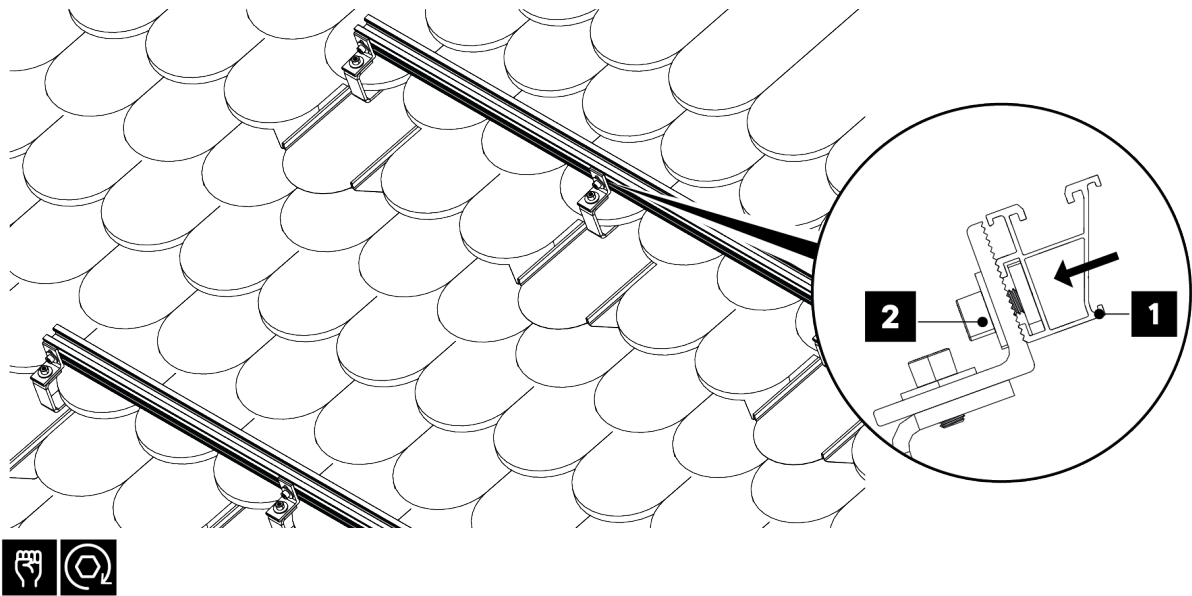


1 Depending on the mounting method of the mounting rails, the angle attachment is rotated 90 ° on the roof hook.



- 2 Unscrew the Allen screw (1).
- 2 Align angle (2) as required.
- 2 Tighten the Allen screw (1) to 30 Nm or 22 ft-lb (for strength class A2-70).

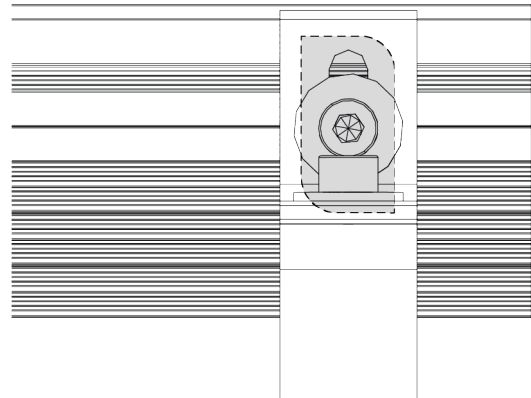


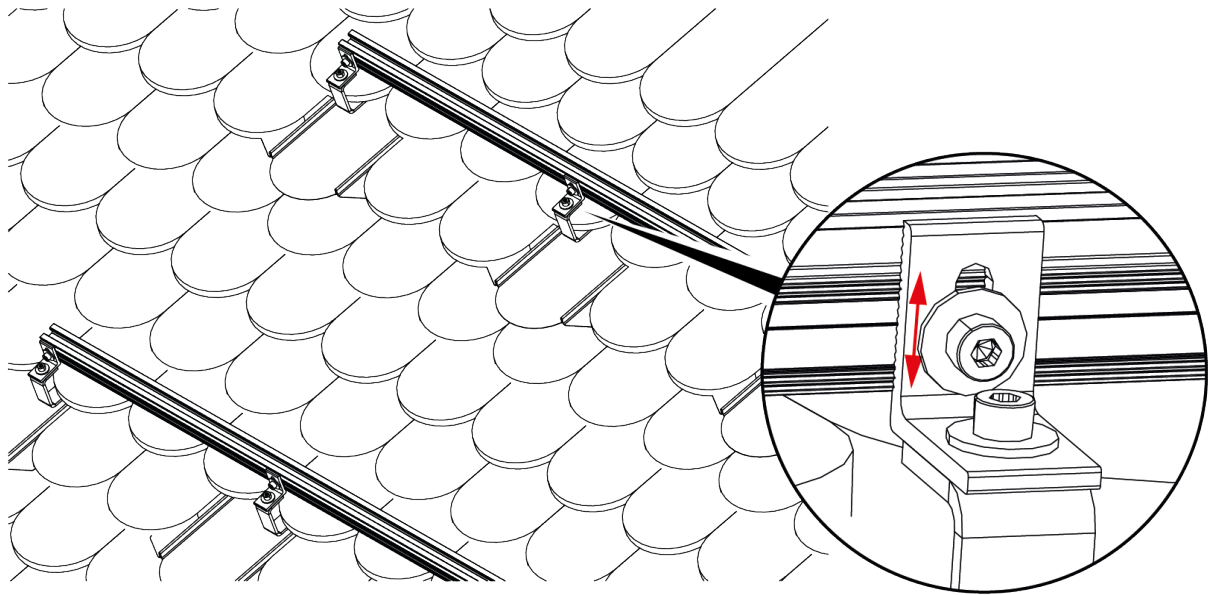


- ▶ Guide the mounting rail (1) to each roof hook and hang it in place.
- ▶ Then tighten the screw (2) to 15 Nm.



- 1 Mount T-Bolt screws correctly: Notch must be aligned vertically.
- 1 Establish a force-fit and form-fit connection between hook and rail.



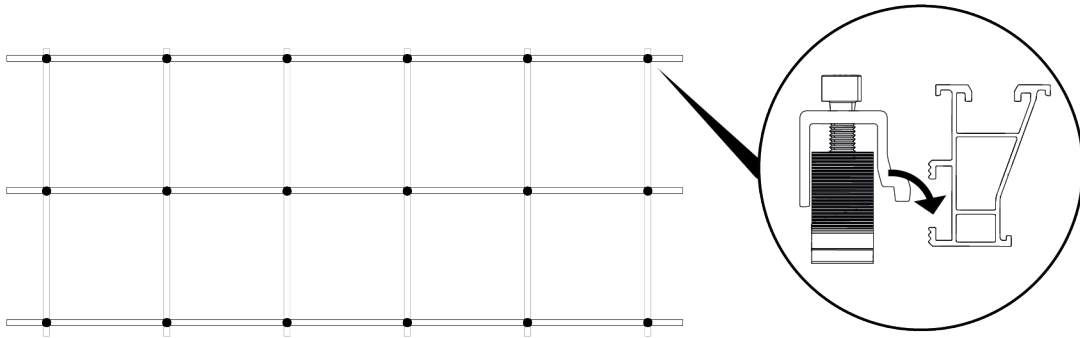


- ▶ Then check the horizontal alignment of the mounting rail.
- ▶ The angle attachment can be adjusted in height as required by means of the oblong hole.

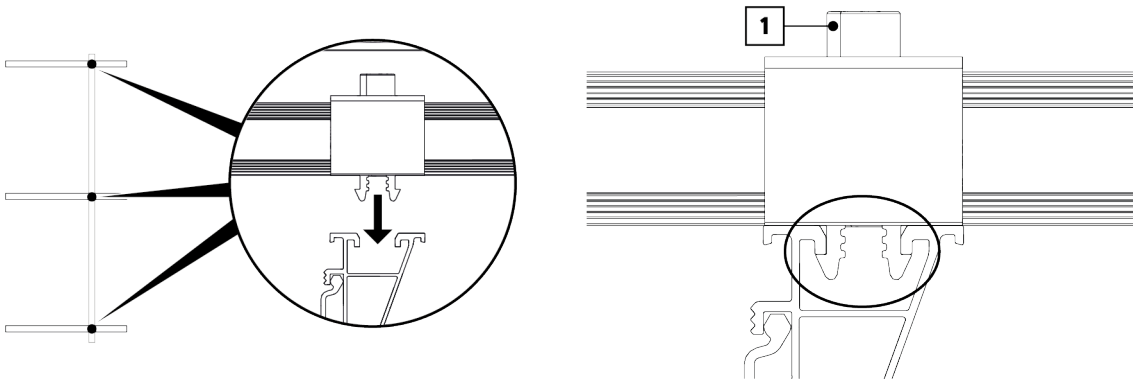


## INSTALLING THE MOUNTING RAIL IN THE CROSS CONNECTION (OPTIONAL)

**i** At each point where the rails cross, the rails are joined together with a cross connector.



**>** Attach a cross connector to the top rails for each crossing point.

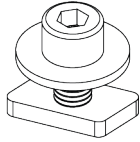


- >** Attach each of the cross connectors with the upper rail to the lower rail.
- >** Make sure that the cross connector is fully clicked into place.
- >** Tighten the Allen screw (1) on each of the cross connectors to 15 Nm or 11 ft lbs.

## MLPE FOR MOUNTING MOUNTING RAIL (OPTIONAL)

**i** Die **SCR-MA** Verschraubung ist für die Montageschienen **X40**, **X50** und **X60** vorgesehen. In den nachfolgenden Schritten wird die Montage anhand einer **X40** Montageschiene dargestellt. Die Vorgehensweise ist identisch für **X50** und **X60** Montageschienen.

### REQUIRED COMPONENTS



**SCR-MA**  
Bolting set module accessories

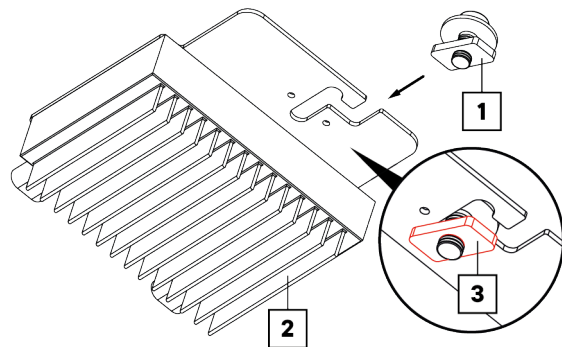


**X40-XXXX**  
Mounting rail X40 1980 mm 3300 mm 3550 mm 4400 mm 4750 mm 5500 mm 5850 mm

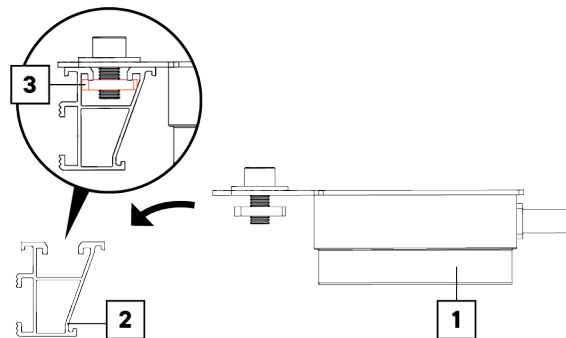
### MONTAGE (BEISPIEL MONTAGESCHIENE X40)



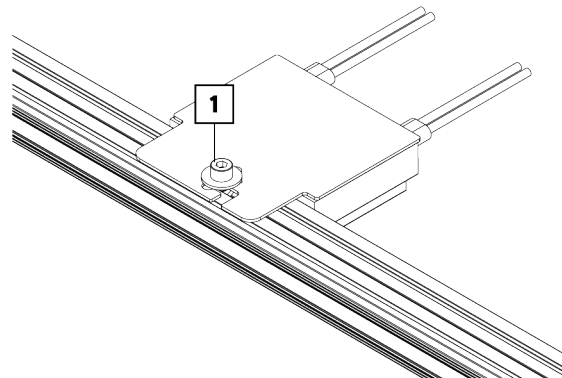
- Die Verschraubung (1) bei der Vorrichtung des MLPE (2) gemäß Abbildung einführen.
- Darauf achten, dass die Gewindeplatte (3) nach unten zeigt.



- Die MLPE (1) mit der Verschraubung an die Oberseite der Montageschiene (2) heranführen.
- Die Gewindeplatte (3) einführen gemäß der Abbildung.



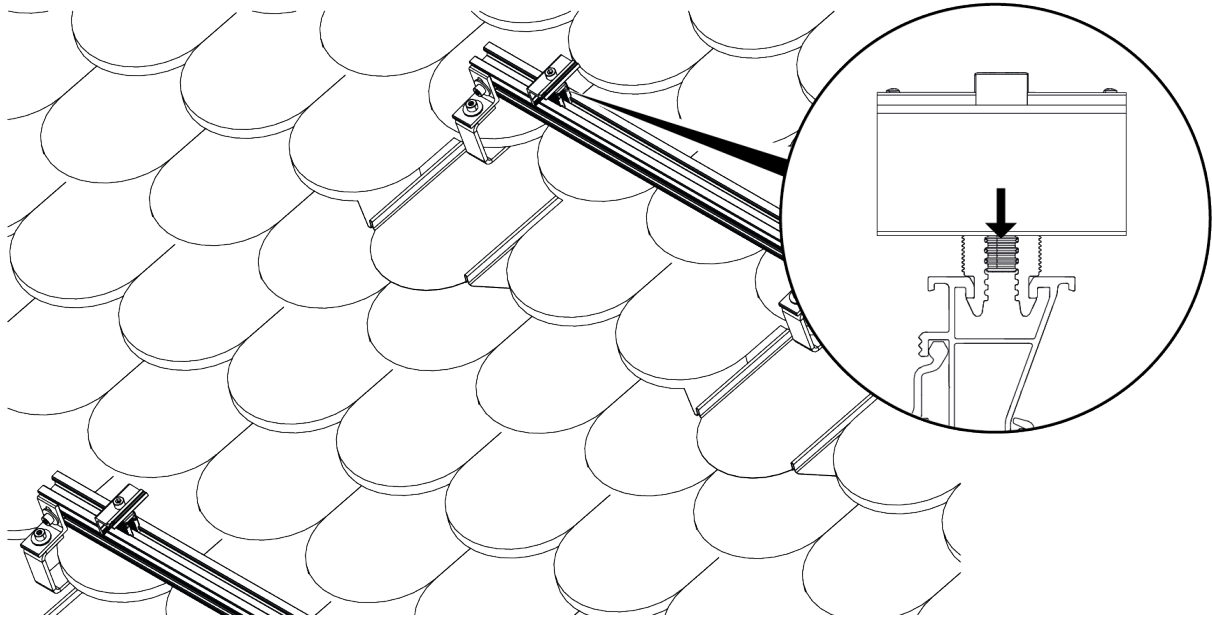
- Im Anschluss die Inbusschraube (1) mit einem Drehmoment von 15 Nm anziehen.
- ☑ Der MLPE ist nun montiert.



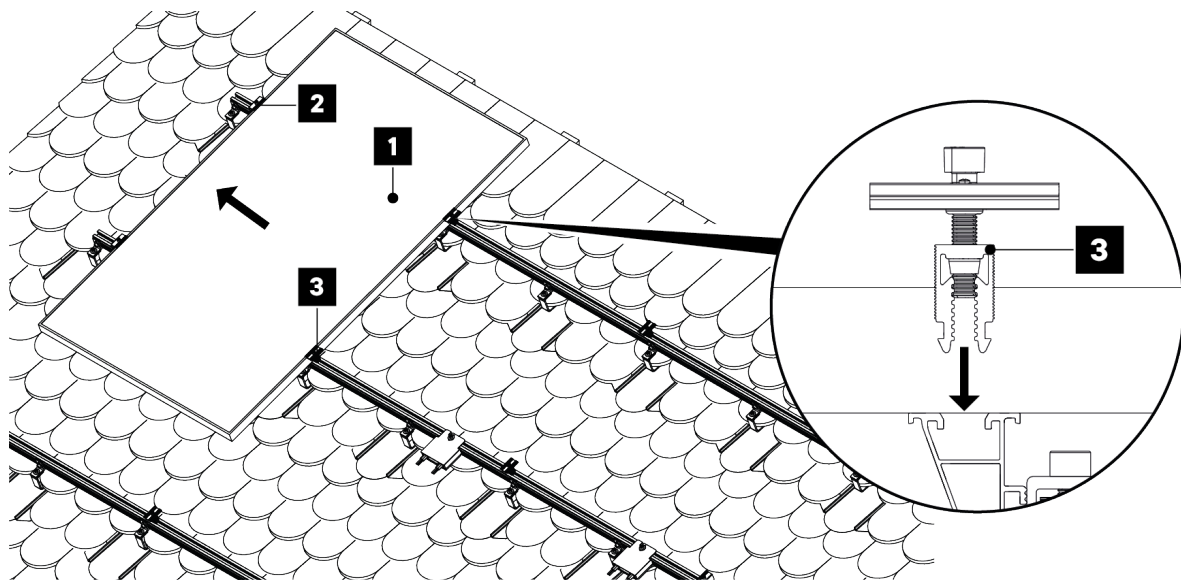
## INSTALLING MODULES

**i** Do not enter the modules under any circumstances.

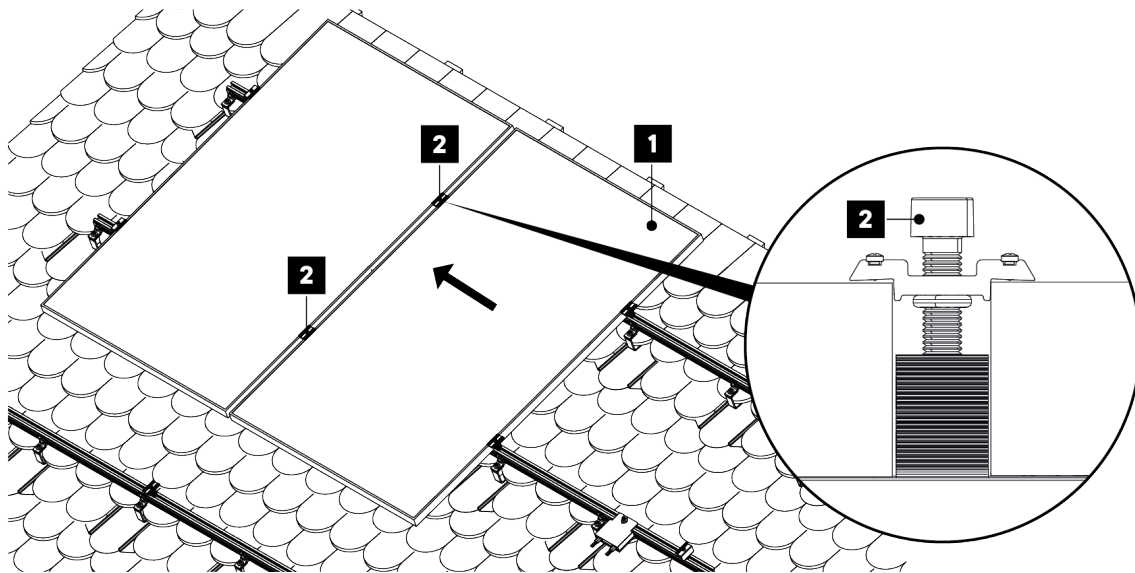
**i** Tip: When installing, wire the modules at the same time. The cables can be attached to the module with the cable tie clip (CLP-M).



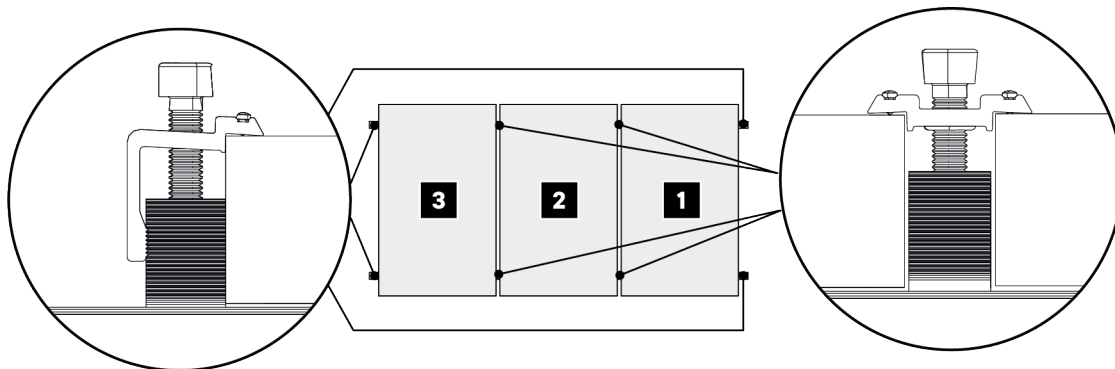
**▶** Click the end-clamps into the rail at the edge of the module field.



- ▶** Place the first module (1).
- ▶** Tighten the screws of the end clamps (2) with 15 Nm or 11 ft lbs.
- ▶** After the first module, attach the mid-clamps (3).



- Position the second module (1).
- Tighten the screws (2) of the mid-clamps to 15 Nm or 11 ft lbs.



- Continue mounting 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.

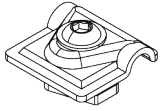
#### REPOSITION / REPLACE CLAMPS

- 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.

## POTENTIAL EQUALIZATION

**i** For potential equalization, **AEROCOMPACT Europe GmbH** provides the wire clamp as an accessory. 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.

### NECESSARY COMPONENTS



**WCL8-10**  
Wire clamp 8 - 10 mm



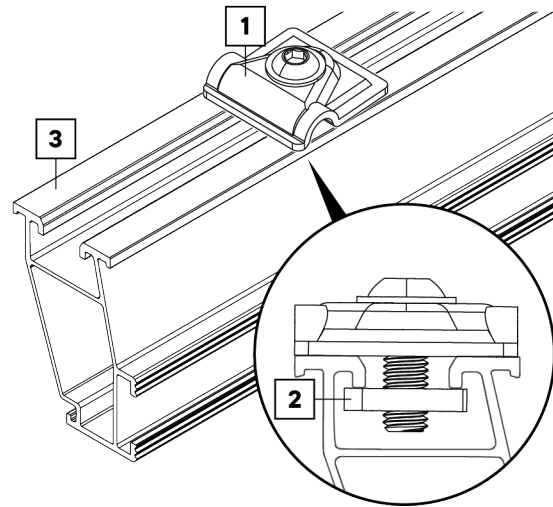
**X60-XXXX**  
Mounting rail X60 1980 mm 3550 mm 4750 mm 5850 mm

### MOUNTING WIRE CLAMP (EXAMPLE MOUNTING RAIL X60)



- Insert the wire clamp (1) into the mounting rail (3).
- Ensure that the threaded plate (2) is positioned as shown in the illustration.
- With the wire inserted, tighten the screw of the wire clamp (1) to a torque of 10 Nm or 7.38 lb-ft.

**i** In the following steps, the installation of the clamp is shown using an **X60** mounting rail. The procedure is identical for **X50** and **X40** mounting rails.



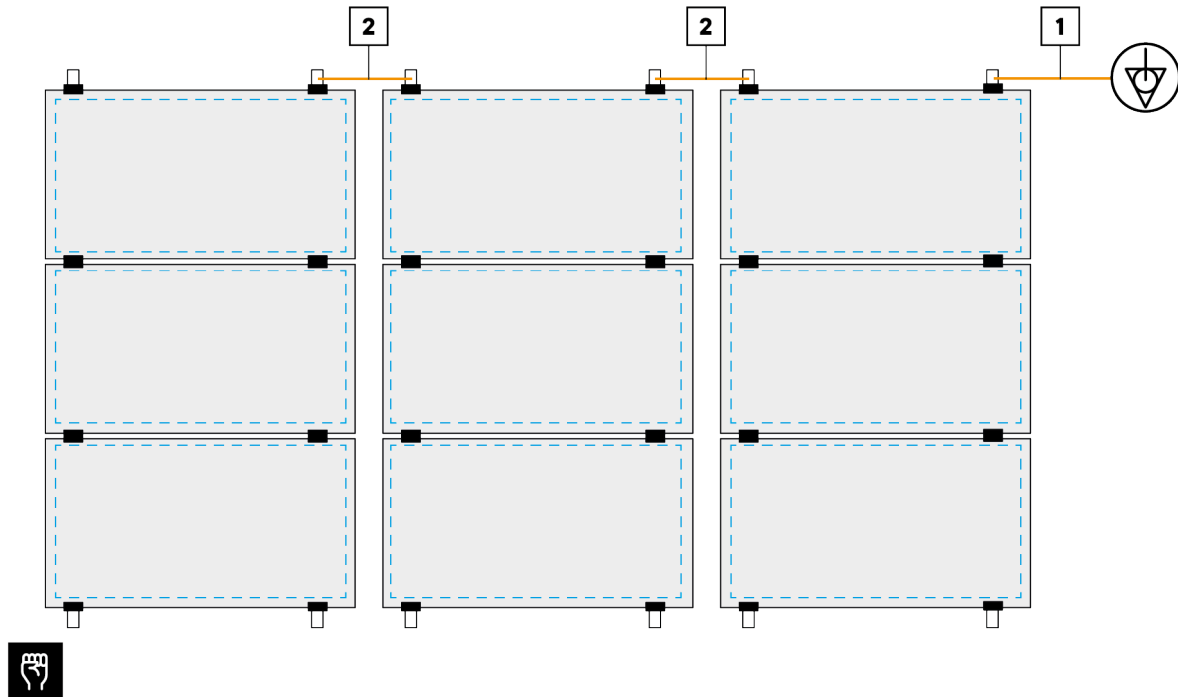
### MINDESTQUERSCHNITTE FÜR DEN BAUSEITIGEN POTENZIALAUSGLEICH

#### **i** Caution!

Der Fachplaner, Ausführende oder Installateur ist dafür verantwortlich, die Mindestquerschnitte für den bauseitigen Potenzialausgleich entsprechend den geltenden gesetzlichen Vorgaben und Normen festzulegen. AEROCOMPACT Europe GmbH assumes no liability for this.



## WIRING DIAGRAM FOR EQUIPOTENTIAL BONDING



- Attach the on-site potential equalization (1) to a point on the system.
- Create a connection (2) for the module columns.

# 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.

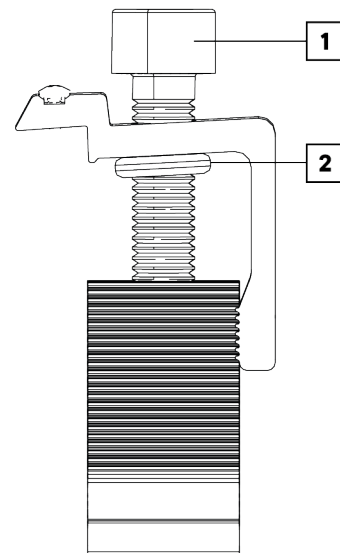
## DISASSEMBLY

### DISMANTLING THE CLAMPS (EXAMPLE)



**i** 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.
- i** 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.

**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 XM-PL



Manufacturer: **AEROCOMPACT Europe GmbH**  
Designation: **Roof hook system for the installation of PV modules on tiled roofs using roof replacement tiles.**  
Identification code: **XM-PL**  
Standard applied: **EN 1090**  
Certification body: **2397**



[To the declaration of performance](#)



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