

CREOVER

INSTALLATION INSTRUCTIONS

ENGLISH



Creotecc

by BayWa r.e.



- ▶ Safety instructions
- ▶ General notes
- ▶ Material & tool requirements
- ▶ System overview
- ▶ **INSTALLATION OF CREOVER**
- ▶ Maintenance

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2. SAFETY INSTRUCTIONS

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INTENDED USE

Creotecc mounting systems are solely intended for the purposes of mounting photovoltaic modules and associated anchoring systems on buildings or on the ground. To ensure that the mounting system is used correctly, the user must comply with the safety instructions and maintenance instructions (see chapter 7 "Maintenance") listed in these installation instructions.

To comply with the requirements for intended use the user must adhere to these instructions and the installation guidelines provided by the module manufacturer. Among other aspects, this applies to the mechanical attachment of the modules, the maximum loads that the module is capable of withstanding and other details such as orientation, rear ventilation, cable routing, wiring, choice of inverter etc.

INAPPROPRIATE USE

Any use other than those described in the previous paragraphs is regarded as inappropriate use.

All claims relating to damage incurred through inappropriate use will be rejected. Inappropriate use voids all liability, warranty and guarantee claims against the manufacturer and the user is liable for any damage to the mounting system incurred during the installation and operation of the system, as well as any subsequent damage to other parts of the system, the roof, the building and any personal injuries.

GENERAL SAFETY INSTRUCTIONS

Read the installation instructions fully and carefully before commencing any installation work. Make sure you have understood all the installation steps and instructions. Clarify any questions before you start the installation, then proceed according to the instructions and complete the various steps in the correct order.

The mounting system must be installed by qualified personnel. Ensure that the personnel performing the installation have read and understood the installation instructions and the safety instructions and that they are aware of—and able to recognise—any potential dangers. The installation must comply with all industrial safety regulations, accident prevention requirements, norms, building regulations and other relevant directives. The connection of all electrical equipment must comply with the relevant VDE guidelines and the safety regulations specified by the electrical industry.

Safety clothing that complies with the relevant national regulations must be worn at all times during the installation.

Make sure there is always a second person present throughout the entire installation, who can provide assistance in the case of an accident.

Leave at least one copy of the installation instructions near the installation site for the personnel to refer to. Only use original parts and accessories authorised by the manufacturer.

Keep a copy of the installation instructions in a safe and accessible place for documentation and maintenance purposes.

2. SAFETY INSTRUCTIONS



SPECIFIC SAFETY INSTRUCTIONS

SPECIFIC SAFETY INSTRUCTIONS FOR PHOTOVOLTAIC MOUNTING SYSTEMS

- ▶ Ensure that the installation follows a plan drawn up by a professional. In particular, the configuration of the mounting system (selection of materials and components, width, thickness of fastening elements) must be appropriate for the site conditions (snow and wind loads, roof and module tilt angle, other factors such as atmospheric and chemical stress and, if applicable, earthquakes).
- ▶ For installations on buildings, all personnel must adhere to the relevant building regulations; among others these include the technical regulations of the roofing industry and the timber construction industry (DIN EN 1995 among others) and the steel construction industry (DIN EN 1993 among others). The structure must be able to withstand the additional load of the PV system.
- ▶ If there are no exact planning guidelines available, the manufacturer or the user can generate a design for the mounting system using software. However, such measures are merely non-binding recommendations and are no substitute for a plan drawn up by a professional engineer.
- ▶ Before beginning the installation, check the plausibility of the structural design in relation to the local conditions. Ensure that the conditions of use specified in these installation instructions are adhered to.
- ▶ Take into consideration the installation guidelines for the other system components, e.g. modules, cables, plug connectors and inverters. When installing the cabling, you must comply with the relevant VDE guidelines and electrician industry safety regulations, as well

as the manufacturer's instructions regarding the modules, cables, plug connectors and inverters being used.

SPECIFIC SAFETY INSTRUCTIONS FOR WORKING ON ROOFS

- ▶ Secure the construction site to prevent unauthorised access.
- ▶ Safeguard the roof working space if the eaves height is 3 metres or more. Among other measures, this involves the installation of a personal fall protection system. If a fall protection system cannot be used for practical working reasons then a safety net for falling persons must be installed.
- ▶ If the installation of a safety net is impractical then a safety harness connected to suitable safety anchoring points may be used. However, this is only permissible for short-term work.
- ▶ Secure all objects on the roof against falling. The ground underneath the safety net must also be cordoned off. Check the load bearing capacity of the roof surface, the roof structure and other building components that will have to bear the weight of personnel or materials during the installation.



2. SAFETY INSTRUCTIONS

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SPECIFIC SAFETY INSTRUCTIONS FOR WORKING ON ELECTRICAL SYSTEMS

- ▶ Observe the relevant VDE regulations and guidelines.
- ▶ Be especially sure to observe the following instructions:
- ▶ Even at low levels of solar irradiation, photovoltaic modules generate significantly high voltages and series connections of several modules are designed for voltages of up to 1,000 volts. Touching open connectors can therefore increase the risk of an accident or even cause life-threatening electric shocks.
- ▶ For this reason you should establish the series connection of the modules as late as technically possible during the installation process, avoid lying or hanging cables and plugs and secure open electrical contacts against being touched.
- ▶ High DC currents flow in the circuits connected to photovoltaic modules and disconnecting these circuits can result in life-threatening arcing. Do not connect these circuits, e.g. to the inverter or generator junction box, until installation of the framing and modules has been completed. Always use the appropriate circuit breaker at the inverter or generator junction box to disconnect this circuit, e.g. for maintenance purposes.
- ▶ Do not perform any electrical connection work with moist or wet cable ends, sockets or plugs. Only install the modules under dry weather conditions.

CLASSIFICATION OF DANGER NOTICES INTO DANGER CLASSES

- ▶ Dangerous situations are identified using corresponding danger notices in these installation instructions:
- ▶ Danger classes as per ANSI Z535.6-2006

- ▶ **DANGER** indicates a directly dangerous situation that can lead to death or serious injury if not avoided.



- ▶ **WARNING** indicates a possibly dangerous situation that can lead to death or serious injury if not avoided.



- ▶ **CAUTION** indicates a possibly dangerous situation that can lead to light injury if not avoided.



- ▶ **ATTENTION** refers to a situation that may lead to material damage if not avoided.



PRODUCT DESCRIPTION / AREA OF APPLICATION

CREOVER is a mounting solution for installing photovoltaic modules on building facades. The system is suitable for insertion mounting of framed modules with frame heights of 31–50 mm. Frameless modules may be installed as well; the required modifications of the system are shown here.

CREOVER systems are fastened to the building facade using industryapproved frame dowels and the associated special screws. This fastening method is approved for a wide range of different wall facade materials such as concrete, brick or sand-lime brick, implemented with full bricks or hollow bricks. The suitability and load-bearing capacity of the wall material must be checked by the customer. The requirements specified in the approval (ETA-11/0008) are to be adhered to in the planning process and during on-site installation. We additionally make reference to the German DIBt paper on how to install dowel anchors ("Hinweise für die Montage von Dübelverankerungen" from October 2010, or the most recent issue of this paper).

CREOVER systems are usually not suitable for insulated facades, clad facades or integrated system facades. If necessary, the system can be adapted and the customer can obtain approval from the authorities responsible as an individual special case.

CREOVER installations ensure a clearance of 75 mm (somewhat more for frameless modules) between the building wall and the modules. To ensure adequate rear ventilation of the modules and allow extinguishing water to reach the facade in the case of fire, this intermediate space must not be filled or completely closed off. Only a partial cover using sufficiently permeable perforated sheet metal plates is

permitted (can be optionally ordered with the system).

Before using the CREOVER system, the customer must ensure that the intended modules are suitable and approved for this type of application on the specific facade.

CORRECT EDITION OF THE INSTALLATION INSTRUCTIONS







The mounting systems from Creotecc are continuously improved and optimised. Therefore installation procedures can change at short notice. Please compare the printed installation instructions with the currently valid instructions available on our website at www.creotecc.com. If you do not have access to the internet, we would be happy to send you an up-to-date printed copy of the instructions upon request. If you encounter any difficulties during the installation process please do not hesitate to contact us.

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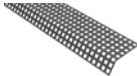




4. MATERIAL & TOOL REQUIREMENTS

MATERIAL – SYSTEM COMPONENTS

| ITEM | | ITEM NUMBER | DESCRIPTION |
|------|---|-------------|--|
| 1 |  | 251164 | Socket for façade 40×60×250, complete, black |
| 2 |  | 251009 | ALUTEC retaining clip with slot bolt |
| 3 |  | 251485 | ALUTEC insertion rail 35, 6m, black |
| 4 |  | 251286 | Connector set for ALUTEC black |
| 5 |  | 251157 | Edge stop set for ALUTEC black |
| 6 |  | 251000 | Adapter plate 80×20×8 with attachments |











MATERIAL – OPTIONAL COMPONENTS

| ITEM | | ITEM NUMBER | DESCRIPTION |
|------|---|-------------|---|
| 7 |  | 251043 | EPDM T-piece for securing framed modules |
| 8 |  | 251108 | Perforated sheet 1500×120, aluminium, folded, black |
| 9 |  | 251264 | Connector plate for perforated sheet, complete |
| 10 |  | 251001 | Adapter plate 96×20×3 with attachments |

4. MATERIAL & TOOL REQUIREMENTS

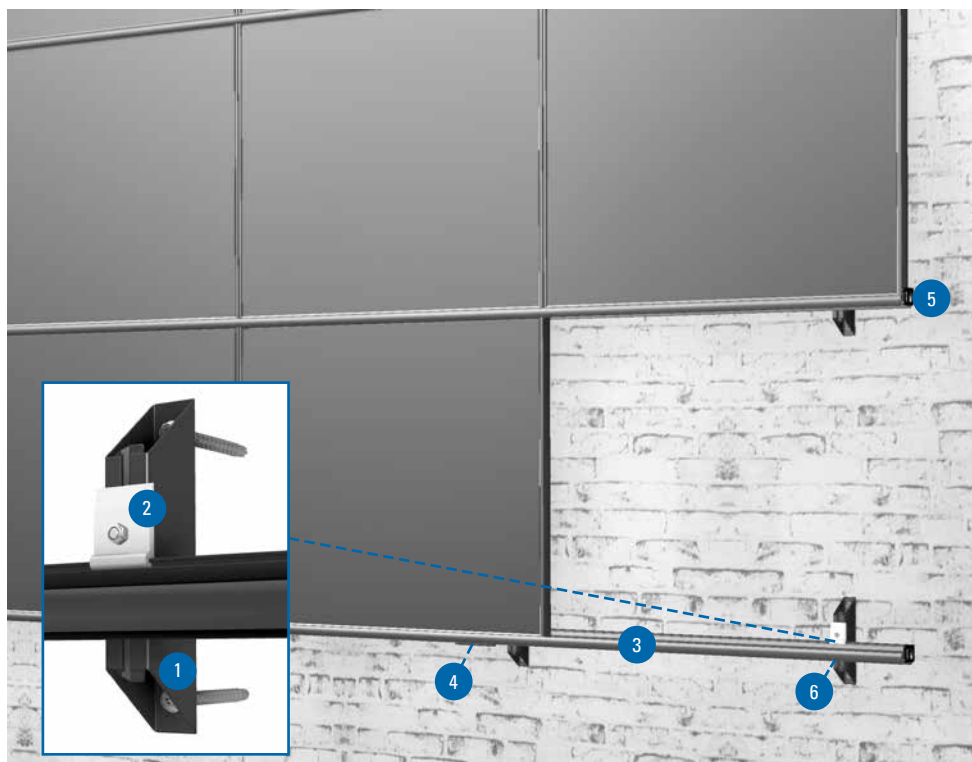


TOOL REQUIREMENTS

| ITEM | ITEM NUMBER | DESCRIPTION |
|---|-------------|---|
| A  | 251506 | 8 bit for hexagonal head, with annular spring |
| B  | 251574 | Mounting jig set 1,300–1,700 mm, 2-parts |
| C  | 251575 | Mounting jig set 800–1,200 mm, 2-parts |
| D  | On-site | Tape measure |
| E  | On-site | Chalk line |
| F  | On-site | Folding ruler |
| G  | On-site | Electric screwdriver |
| H  | On-site | TX30 bit |
| I  | On-site | Drilling bit |
| J  | On-site | Tin snips |



5. SYSTEM OVERVIEW



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► STRUCTURAL CALCULATIONS AND DESIGN

- The Creotecc in-house sales support staff can design the system for you and provide a bill of materials.
- Please also be sure to contact our sales support staff when you require assistance with mounting systems that are not standard in the context of these installation instructions.

5. SYSTEM OVERVIEW



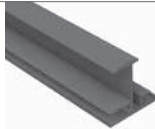
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2 Item No. 251009



3 Item No. 251485



4 Item No. 251286



5 Item No. 251157



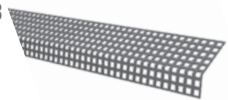
6 Item No. 251000



7 Item No. 251043



8 Item No. 251108



9 Item No. 251264



10 Item No. 251001

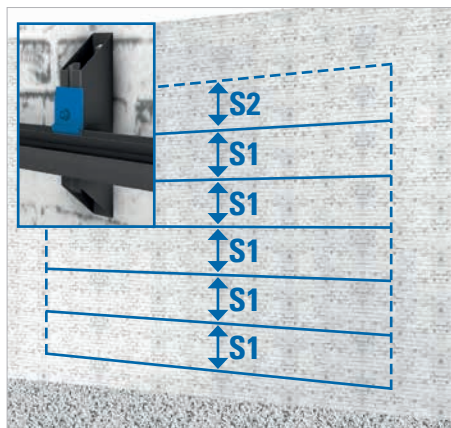
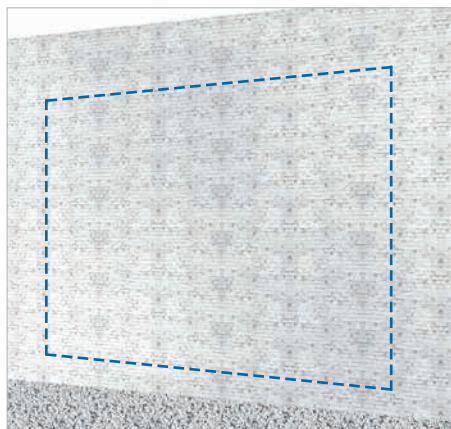


NOTE:

- ▶ The fastening sockets of the uppermost and lowermost rows are visible on the finished system. Use black sockets in these positions if the rails are also black and install the sockets as accurately as possible.
- ▶ All other sockets are hidden by the modules and are barely visible or not visible.



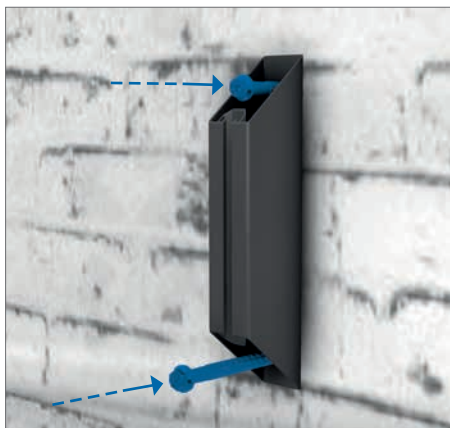
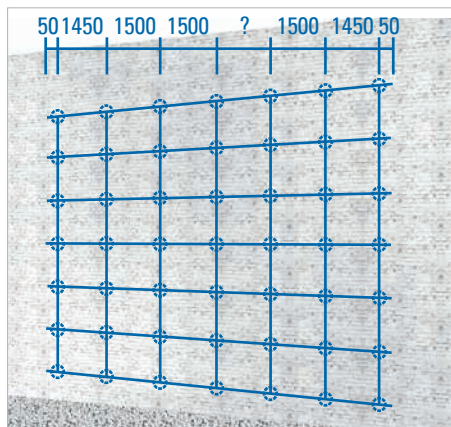
6. INSTALLATION OF CREOVER



► PREPARE AND MEASURE THE WALL

- **NOTE:** Adhere to the dimensional specifications of the building regulations approval for the frame dowels (item 1) requiring that the screwed connections on the wall are to be positioned preferably apart from wall joints.
- Mark the area on the wall that is planned for the module array. As a standard, account for the following clearances:
 - Horizontal clearance between the modules: 5 mm (10 mm for frameless modules)
 - Vertical clearance between the modules: 12 mm (22 mm for frameless modules)
- Mark the lower edges of the fastening (item 1). Be sure to account for the following clearances and overlaps (from below to above):
 - Lower fastening overlap: 97 mm (135 mm for frameless modules)
 - Grid spacing to penultimate row:
 $S1 = \text{module dimension} + 12 \text{ mm}$ (for frameless modules: module dimension + 22 mm)
 - Grid spacing to last row:
 $S2 = \text{module dimension} - 58 \text{ mm}$ (for frameless modules: module dimension + 22 mm; $S1 = S2$)
- If necessary, recheck the position of the uppermost fastening row
 - Clearance between the lower edge of the fastening and the upper edge of the fastening = 250 mm
 - Upper fastening overlap: 111 mm (114 mm for frameless modules)

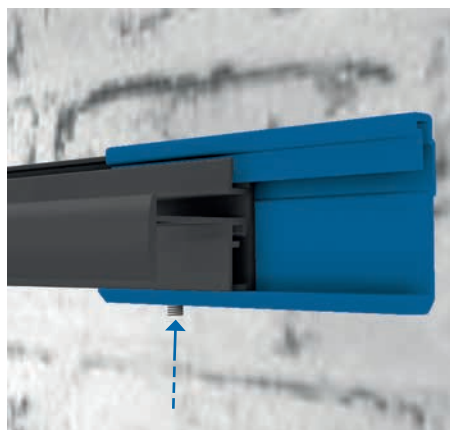
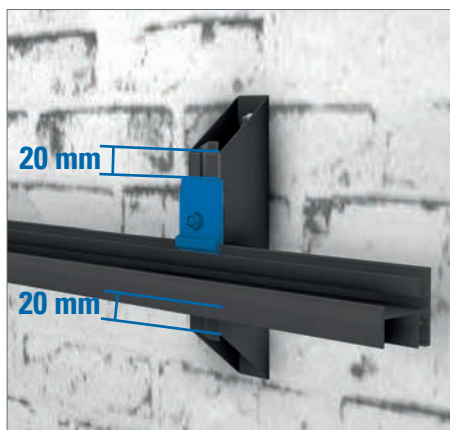
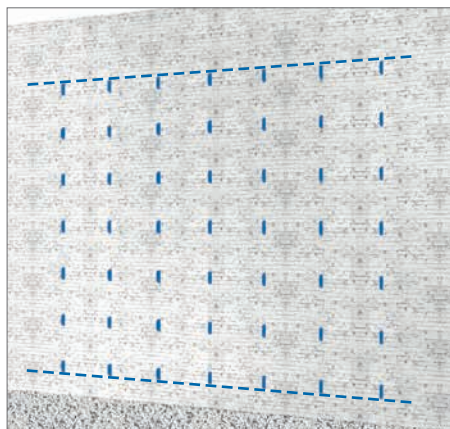
6. INSTALLATION OF CREOVER



- ▶ Mark the horizontal positions of the fasteners so that the maximum clearance between two fasteners is 1,500 mm and ensure that the left and right sides of the module array overlap each last respective fastening by the same amount.
- ▶ If necessary, plan additional hole plate connectors (item 9) if the maximum grid spacing of 1,500 mm cannot be adhered to.
- ▶ Use a suitable drill bit ($\varnothing 10$ mm) to drill two fastening holes in the wall (at least 80 mm deep) for each fastening socket, according to the dimensional specifications of the building regulations approval for the frame dowels (item 1).
- ▶ The lower of the two holes is 25 mm above the lower edge of the socket (marking on the wall) and the second hole is 200 mm above the first hole.
- ▶ Hold the rail socket (item 1) on the wall and align the holes in the socket with the holes in the wall.
- ▶ Insert one dowel into each hole (two per socket) deep enough so that the collar of each dowel rests against the base of the socket.
- ▶ Insert the screws and tighten them (max. tightening torque 10 Nm).



6. INSTALLATION OF CREOVER



FINISH SOCKET INSTALLATION

- ▶ If necessary, check that the sockets line up correctly before mounting the rails. Correct any deviations of more than 10 mm upwards or downwards to avoid difficulties in mounting the rails. If necessary, reposition misaligned sockets in the inner area.
- ▶ For an appealing visual appearance, take special care with the alignment of the lowermost and uppermost rows.

MOUNT THE LOWERMOST ALUTEC RAIL

- ▶ Fit the lowermost rail on the socket so that its lower edge lies 20 mm higher than the lower edge of the socket's mounting surface, and so that the rail end lines up with the edge of the modul array.
- ▶ Position the retaining clip (item 2) on the top of the rail. Position the head of the screw cross-wise in the socket slot and tighten the retaining clip nut.

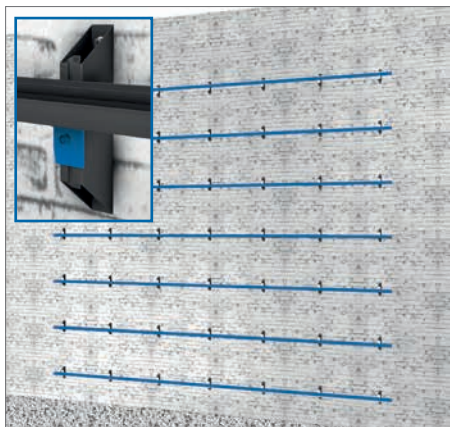
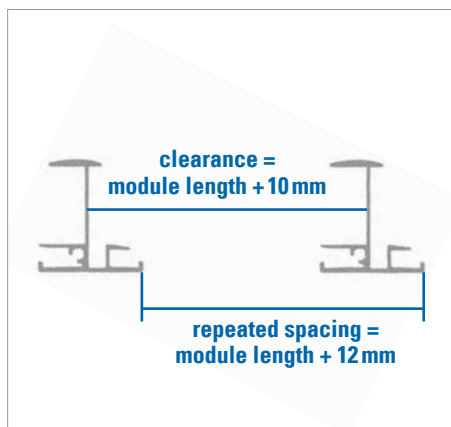
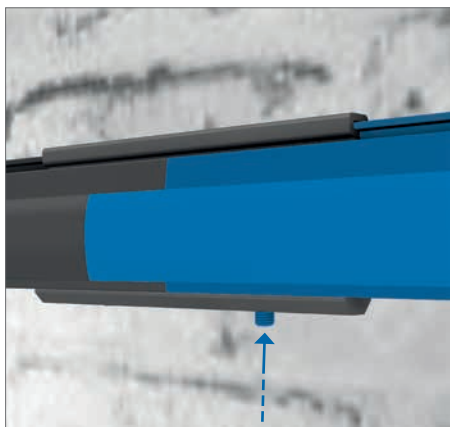
- ▶ **NOTE:** Above the clip and below the rail, 20 mm of the socket's surface remain visible.

EXTEND THE ALUTEC RAILS

⚠ ATTENTION Do not position any connectors outside the last rail support point. Fasten each rail piece with at least one fastening element, e.g. using a retaining clip.

- ▶ **NOTE:** The connector cannot be mounted in the region of the support points. If necessary, change the rail trimming length and/or rail arrangement.
- ▶ Slide the ALUTEC connector (item 4) halfway onto the end of the rail. Firmly tighten the grub screw on this side.

6. INSTALLATION OF CREOVER



- ▶ Insert the rail to be connected (item 3) into the connector, leaving a gap of 10 mm between the rails. Fasten the grub screw on this side tightly enough so that there is no free play in the connector but the connector is not prevented from moving under heat expansion.

Fasten the connected rail using retaining clips (item 2) as described previously.

- ▶ Now mount the remaining ALUTEC rails progressively from below to above. Use mounting jigs (item B or C) to ensure the correct clearance between the rails and sideways alignment of the rails.

- ▶ Set the mounting jig to the **module dimension PLUS 10 mm**. (The applicable module dimension is the width or the length of the module.)

- ▶ Insert the jig into the module mount of the lower rail. Position the upper rail to be mounted so that the mounting jig sits in the rail mount and fasten the upper rail with retaining clips.

MOUNT THE UPPERMOST ALUTEC RAIL

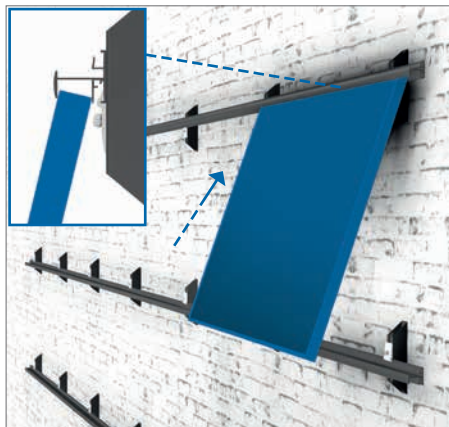
- ▶ With the uppermost ALUTEC rail, position the retaining clip below the rail and not above the rail so that the clips are later covered by the modules. The clearance between the penultimate rail and the last rail is the same as the clearance between all previous ALUTEC rails.

- ▶ Also leave 20 mm free on the socket below the clips and above the rail.

- ▶ Ensure that all rails and retaining clips lie completely on the socket.



6. INSTALLATION OF CREEVER



▶ INSERT THE MODULES

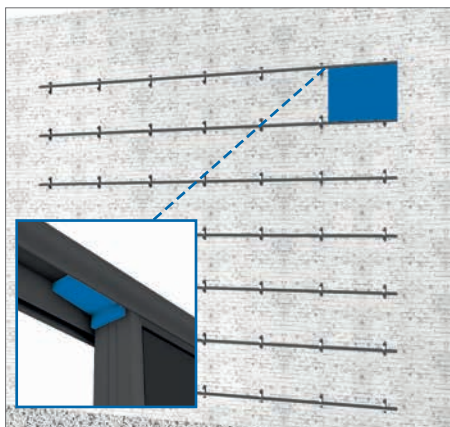
- ▶ Position the first module in the module mount of the uppermost ALUTEC rail (item 3).
- ▶ Slide the module all the way up.

- ▶ Lower the module on the next ALUTEC rail lying immediately below.

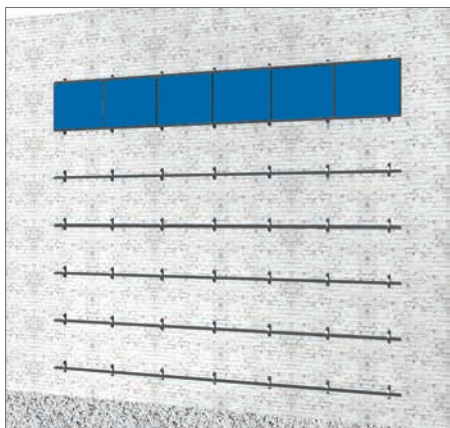
- ▶ Allow the module to slide down.

⚠ ATTENTION A gap of 9–11 mm should remain at the upper edge of the module frame. If the gap is wider than this, then the position of the ALUTEC rail must be corrected.

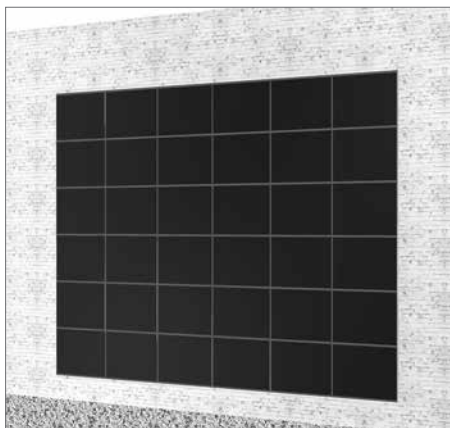
6. INSTALLATION OF CREOVER



- ▶ If intended, mount a EPDM-T-piece (item 7) next to the module in the upper ALUTEC rail (item 3).



- ▶ Insert the next module and slide it against the first module (flush with the T-piece)
- ▶ Leave a clearance of at least 3 mm between the modules.



- ▶ Continue in the same way with all other modules.



6. INSTALLATION OF CREOVER



► SECURE THE SYSTEM EDGES

- Use the adapter plates (item 6) to secure the lowermost ALUTEC rail against slipping downward.
- Use the edge stops (item 5) to secure the outermost modules against moving horizontally.

► MOUNT THE ANTI-SLIP PROTECTION

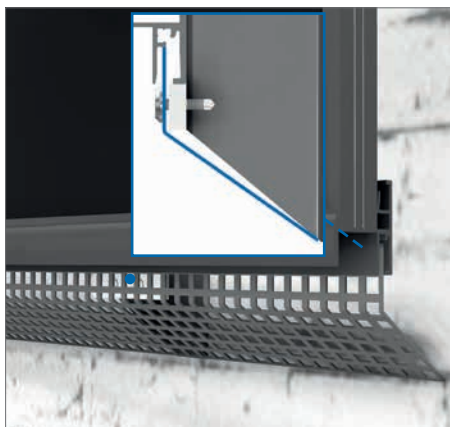
- Mount an adapter plate (item 6) centrally on each fastening socket below the lowermost ALUTEC rail, using two self-drilling screws, directly against the rail without leaving a gap.
- **TIP:** First screw the rightmost of the two self-drilling screws into the socket so that the plate does not rotate during screwing.

- **NOTE:** The adapter plates support any holed plates that may be present at the top and bottom of the edge of the system. Also fit adapter plates for the upper holed plates. (Start with the left self-drilling screw!)

► MOUNT THE EDGE STOPS

- Fit an edge stop (item 5) to each end of the ALUTEC rails so that the large opening leaves the drainage channel of the rail free. Screw the self-tapping screw into the screw channel of the rail as far as it will go.
- **NOTE:** In conjunction with the module securing fitting (item 7) the edge stop provides protection against module theft when it is fastened with a safety screw (available from Creotecc).

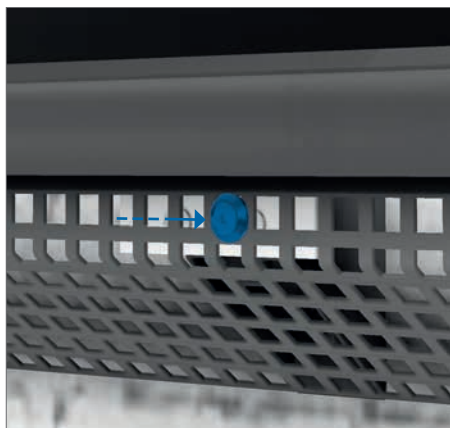
6. INSTALLATION OF CREOVER



MOUNT THE UPPER AND LOWER HOLED PLATES

CAUTION Wear work gloves during all installation work.

- ▶ Position the holed plates (item 8) so that the short leg passes over the adapter plate, but under the module mount, and is inserted as deeply as possible into the ALUTEC rail, and the long leg lies against the wall.
- ▶ Take care to ensure that the holed plates are flush with the left and right ends of the ALUTEC rail.



CONNECT THE HOLED PLATES

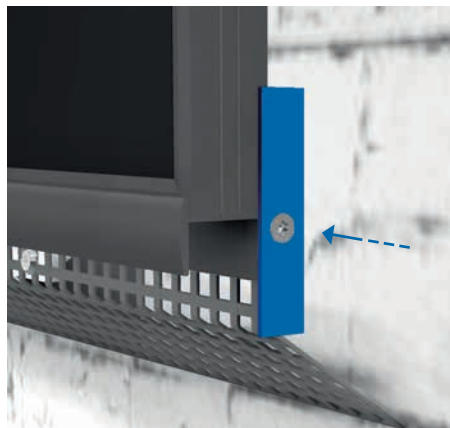
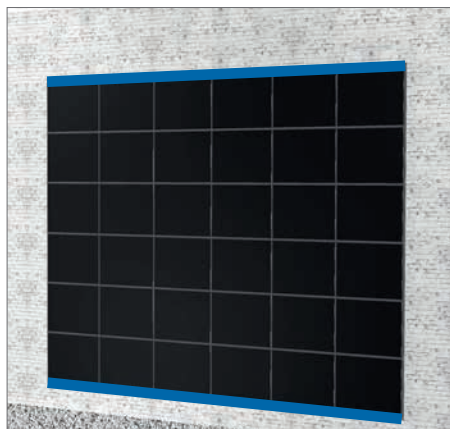
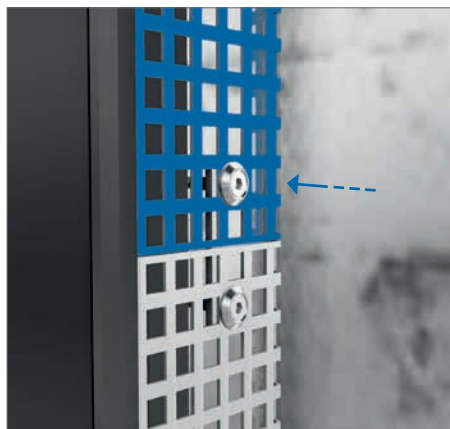
- ▶ Drill a 4-mm hole in the adapter plate through an opening in the holed plate next to the socket.
- ▶ Fasten the holed plate in the pre-drilled hole with a self-drilling screw and recessed washer.
- ▶ **NOTE:** If the joint between two holed plates lies in the region of the socket, you can fasten both plate segments to the adapter plate (without overlap). The connecting plate is then no longer required.



- ▶ Use the connecting plate (item 9) for joints between two holed plate segments.
- ▶ Position the connecting plate about halfway behind the first holed plate and slide the hole in the connecting plate behind an opening in the holed plate. Screw a self-drilling screw with a recessed washer through the opening and into the connecting plate.
- ▶ **NOTE:** Screw slowly and pay attention to the dead stop position to ensure that the connecting plate does not suddenly rotate at the end of screwing.



6. INSTALLATION OF CREOVER



- ▶ Position the second holed plate next to the first holed plate without a gap and in front of the connecting plate.
- ▶ When doing this, align the connecting plate so that the second hole lies behind an opening in the second holed plate. Screw a self-drilling screw with a recessed washer through the opening in the second holed plate and into the connecting plate.
- ▶ **NOTE:** If necessary, manually align the holed plates to ensure a smooth transition between the two segments.
- ▶ Mount the other holed plates on the upper edge of the system in the same way.

▶ MOUNT THE SIDE HOLED PLATE

- ▶ Fit an adapter plate (item 10, with the longer end pointing upwards) to the ends of each ALUTEC rail and fasten it with the countersunk screw in the screw channel of the rail. Align the adapter plate parallel to the wall.
- ▶ At the lower (and upper) system edge, the lateral adapter plate must lie flush with the corresponding upper (or lower) holed plate.
- ▶ **NOTE:** Screw slowly and pay attention to the dead stop position to ensure that the adapter plate does not suddenly rotate at the end of screwing.



► **NOTE:** The side lateral adapter plates replace the edge stops (item 5).



► Position the holed plates (item 8) at the side so that the end of the short leg lies against the wall pointing to the inside of the module array and the long leg lies on the side adapter plate perpendicular to the wall.

► Fasten the holed plate to each adapter plate using two self-drilling screws (with recessed washers) screwed directly into the adapter plate without pre-drilling.

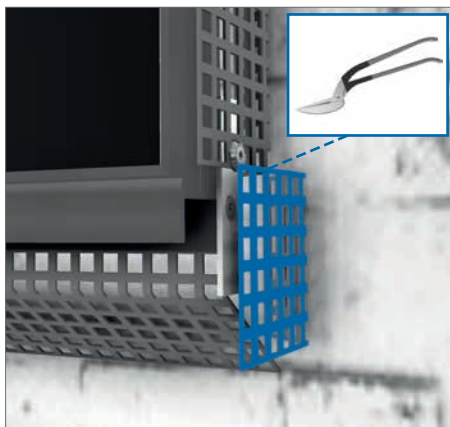
► **NOTE:** Screw slowly and pay attention to the dead stop position to ensure that the adapter plate does not suddenly rotate at the end of screwing.

► TRIM THE HOLED PLATE

► Use metal shears to cut between the openings through continuous material wherever possible.

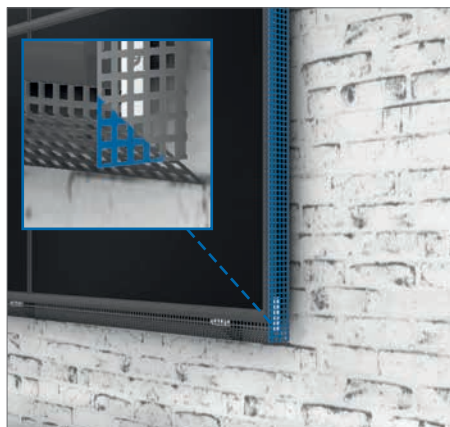
► Always avoid trimming lengths that are less than 40 mm. In corner regions, only install segments that are at least 200 mm long.

⚠ CAUTION Wear work gloves during all installation work.





6. INSTALLATION OF CREOVER



▶ CLEAN UP THE CORNERS

- ▶ Cut and bend the ends of the side holed plates using metal shears and pliers to create a visually appealing termination free of sharp edges and peaks that present a danger of injury.
- ▶ Take care not to damage the surface when performing this work and—if black plates have been installed—take special care not to damage the paint layer.
- ▶ Fully installed system.



► MAINTENANCE

- The following maintenance requirements must be adhered to:
- Have the photovoltaic system checked annually by a specialist photovoltaic company to confirm the full functionality and mechanical stability of the system. In addition to a visual inspection of the mounting system, especially the tightness of the screwed connections cladding are to be checked.
- The safety instructions and all other specifications in these installation instructions must be adhered to for all work on the mounting system and the DC cabling. The installation instructions also apply in principle to any removal work, in the reverse sequence where applicable.
- Especially the DC electrical connections must never be disconnected while under load (danger of arcing) and the current must always first be switched off via the circuit breaker in or on the generator junction box or inverter.

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