

SQ LARSTONE

Solar Full Roof™

Installation Manual

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Roof.
Design.
Power.



Contents

Disclaimer	4
Product Description	5
Before you start	6
Verify Roof Structure	6
Use only watertight underlayment membrane	6
Roof Geometry and Roof Pitch	7
BIPV module installation	8
Installation by Column	8
Installation by Row	8
Determining the roof openings and penetrations	9
Determining the Position of Modules	10
Ventilation and Counter Battens	11
Flashings installation	12
Closed Eaves (Natural Drainage)	12
Closed Eaves with Condensation Flashing	13
Roof Without Eaves	14
Double-Batten Eaves	15
Double-Batten Eaves with Condensation Flashing	16
Eave Ventilation Flashing Installation	17
Ridge Ventilation Flashing Installation	18
Valley flashings	19
Hip roof flashings	23
Joint flashings	28
Mounting Clamp Installation	30
Installation of first row Starter Clamps	30
Installation of regular Middle Row Clamps	32
Landscape Orientation	33
Portrait Orientation	34
Electrical Connections	35
PV-cabling and MC-4 connections	35
Grounding	37
Installation of BIPV & FILLER Modules	41
FILLER-panel cutting	42
Roof Openings and Penetrations	43
Roof Window	43
Roof Access Hatch	46
Chimney	48
Ventilation Outlets	50
Roof Accessories	52
Assembly of Snow Guard	53
Assembly of Roof Walkway	54
Assembly of Roof Ladder	55
Installation of Snow Guard	56
Installation of Roof Walkway	58
Installation of Roof Ladder	59
Maintenance	60
Cleaning the roof	60
Replacing BIPV/FILLER modules	61
Installer self-control declaration	63
Version	65

Disclaimer

This guide is intended to provide comprehensive instructions for installing the **SOLARSTONE's Solar Full Roof™** solar roof solution. If you have any questions or concerns that are not addressed in this document, please do not hesitate to reach out to the SOLARSTONE technical support team at support@solarstone.com

It is imperative that you adhere to all safety precautions outlined in this guide as well as any applicable local regulations. Please note that the installation of the **Solar Full Roof™** requires professional skills, knowledge, and should only be carried out by qualified personnel. To ensure a successful installation, please read this manual in its entirety before beginning the installation process. It is essential that the installation personnel are familiar with the mechanical and electrical requirements of the system.

SOLARSTONE makes every effort to ensure that the information provided in this manual is accurate, complete, and up to date. However, the installation and use of **Solar Full Roof™** products must always comply with local laws, building codes, regulations, and standards applicable in the installation location.

SOLARSTONE assumes no responsibility or liability for any damages, losses, or legal consequences arising from: Failure to comply with local regulations, permitting requirements, or safety codes; misrepresentation, misuse, or misinterpretation of this manual; unauthorized modifications to the system design or installation process; work performed by unqualified or uncertified individuals or entities.

It is the responsibility of the installer, contractor, and end user to consult with local authorities, certified professionals, and relevant regulatory bodies before proceeding with the installation.

By using this manual, you acknowledge and agree that SOLARSTONE shall not be held liable for any consequences resulting from non-compliance with legal or regulatory requirements.

Safety & Protective Equipment

The safety of the workers and individuals on the job is paramount to finishing the roof installation correctly. Always protect yourself with protective equipment and abide by all safety precautions in this guide and local regulations. It is mandatory to use safety harness equipment, helmet, gloves, safety glasses, and other personal protective equipment.

SOLARSTONE will not take any responsibility for safety nor health issues that have come up during the installation.

Product Description

The SOLARSTONE's Solar Full Roof™ is a building-integrated photovoltaic (BIPV) roofing system developed and manufactured by SOLARSTONE in Estonia, Europe. The system combines the functions of a weatherproof roof covering and a photovoltaic power plant, generating electricity for on-site consumption while protecting the building from the elements. Surplus electricity may be exported to the public grid in accordance with local regulations.

The PV modules used with the Solar Full Roof™ system are selected for high performance, durability, and visual appearance. All approved modules comply with IEC 61215 and IEC 61730 standards. The complete Solar Full Roof™ system has also been tested for wind uplift resistance and external fire performance, including BROOF(t1) and BROOF(t2) classifications.

SOLARSTONE's patented Click-on® mounting technology is designed for use with approved Tier1 photovoltaic modules, providing a secure installation while reducing installation time and system complexity. The Solar Full Roof™ system is designed to withstand a wide range of environmental conditions and is suitable for most sloped roof applications.

Solar Full Roof™ BIPV modules can be installed in either portrait or landscape orientation. Areas around the roof perimeter, valleys, ridges, chimneys, roof windows, and other obstacles are finished using matching FILLER panels, ensuring a uniform appearance while maintaining the required weather protection. FILLER panels can be easily cut and adapted on site where necessary.

SOLARSTONE using only approved PV module models listed in the latest Solar Full Roof™ Technical Datasheet. The available module models are subject to availability and will be confirmed by your SOLARSTONE sales representative.

SOLARSTONE Solar Full Roof™ BIPV modules and FILLER panels can be inherently of different color due to manufacturing processes. Every projected roof should be installed with PV modules from the same batch. Nevertheless, due to the raw materials and production process, monocrystalline silicon crystals might have a slightly different reflection on light, which may result in undesirable end-result. Additionally, PV modules and dummy panels have a different look due to different materials used.

Before you start

Verify Roof Structure

Before installation, verify that the roof structure is suitable for the Solar Full Roof™ system.

The roof structure, rafters, battens, and all supporting components must be capable of safely carrying the permanent and variable loads of the completed roof and shall comply with all applicable local building regulations and structural design standards.

Before installation, verify the following:

- The roof structure is structurally sound and free from damage.
- Rafters are correctly aligned and securely fixed.
- The roof pitch meets the requirements of the Solar Full Roof™ system, **min 18° angle**.
- Battens are suitable for the intended loads and installation method.
- Batten spacing complies with the project design.
- Roof geometry is square and within acceptable tolerances.
- Local wind and snow loads have been considered.

If there is any doubt regarding the structural capacity of the roof, consult a qualified structural engineer before installation.

Use only watertight underlayment membrane

The underlayment forms the secondary weatherproof layer beneath the Solar Full Roof™ system. Its purpose is to protect the roof structure from wind-driven rain, condensation, and any moisture that may pass beneath the roof covering.

The roof assembly shall be designed to allow any water reaching the underlayment to drain safely to the eaves while maintaining adequate roof ventilation.

As no roofing material is completely waterproof under all weather conditions, the use of a high-quality roofing underlayment is essential.

The underlayment shall:

- be breathable and water-resistant
- comply with EN 13859-1:2014
- achieve Water Resistance Class W1
- withstand continuous operating temperatures of at least 120 °C
- provide sufficient mechanical strength for installation
- offer adequate UV resistance during the construction period

For roof pitches below 18°, breathable membranes shall not be used. Instead, a continuous waterproof SBS or PVC roofing membrane shall be installed in accordance with the membrane manufacturer's instructions.

If roof construction is interrupted, all exposed underlayment shall be protected from UV radiation, rain, snow, ice, hail, and other environmental conditions using temporary weather protection.

SOLARSTONE accepts no responsibility for failures resulting from the use of unsuitable underlayment materials or installations that do not comply with these instructions.

Roof Geometry and Roof Pitch



Before installing the Solar Full Roof™, verify that the roof geometry is accurate and within acceptable tolerances.

Measure both roof diagonals to confirm that the roof area is square. Also verify that the roof pitch corresponds to the project design.

If the diagonal measurements differ, the roof structure may be out of square. This shall be corrected before installation whenever possible. If correction is not feasible, the roof layout may require **custom-sized FILLER panels** or custom transition flashings to achieve a proper fit and weatherproof finish.

The minimum roof pitch for the Solar Full Roof™ system is **18°**.

For roof pitches **below 18°**, a continuous waterproof **SBS** or **PVC roofing membrane** shall be installed beneath the Solar Full Roof™ system in accordance with the membrane manufacturer's installation instructions.

BIPV module installation

The Solar Full Roof™ system can be installed with PV modules in either landscape or portrait orientation. Depending on the project design, installation may proceed by column or by row.

The selected installation method should be determined during the design phase. When planning the layout, consider the length of the factory-installed PV cables, the position of the MC4 connectors, and the string configuration to minimize the use of extension cables.

Installation by Column



Installation by Row



Determining the roof openings and penetrations



Before installing the Solar Full Roof™, carefully review the roof layout and identify all roof details that may affect the installation layout, such as chimneys, roof windows, valleys, ventilation outlets, roof access hatches, and other roof penetrations. Around these obstacles, **FILLER-panels (dummy)** shall be installed in accordance with the approved project documentation and roof layout plan.

The roof shall also be evaluated for potential shading caused by chimneys, trees, neighboring buildings, or other obstructions. Where shading cannot be avoided, the PV system design should be adapted by selecting an appropriate string layout or, where required, by incorporating power optimizers.

Maintain the minimum clearance between BIPV modules and chimneys in accordance with the applicable local fire safety regulations. The installer is responsible for ensuring that the Solar Full Roof™ system is installed in compliance with all applicable local building codes, electrical regulations, and statutory requirements.

Determining the Position of Modules



Mark the exact positions of all BIPV modules and FILELR-panels (dummy) in accordance with the approved roof layout plan.

The width indicated on the label on the back of each PV module refers to the module only. When marking the installation positions, add 23 mm to the module width to account for the Solarstone Click-on® frame. The 5 mm vertical gap between adjacent PV modules is already included in the project design and does not need to be added during marking.

When setting out the modules, maintain a vertical gap tolerance of ± 3 mm between adjacent PV modules.

The width of each filler/dummy panel shall be determined according to the approved project documentation and the actual roof dimensions. Cut FILELR-panels (dummy) as required to achieve the specified roof layout and maintain a uniform appearance.

Ventilation and Counter Battens



Install the ventilation battens and counter battens in **accordance with the project drawings** and applicable local building regulations.

Ventilation battens shall be fixed directly to the rafters through the underlayment. Counter battens shall then be installed perpendicular to the ventilation battens, creating a continuous ventilation cavity beneath the Solar Full Roof™ system.

Each batten shall be secured using two nails or two screws at every rafter intersection. Fasteners shall be of sufficient length to penetrate the battens and achieve a minimum embedment depth of one-third of the rafter height, or as required by applicable structural standards.

The dimensions and structural properties of the battens shall be selected according to the applicable Eurocode requirements, considering local wind loads, snow loads, roof geometry, and fastener spacing.

For optimum ventilation performance, SOLARSTONE recommends the following batten dimensions:

Component	Recommended dimensions
Ventilation battens	45–53 × 45–53 mm
Counter battens	45–53 × 95–103 mm

Flashings installation

Closed Eaves (Natural Drainage)



Condensation and incidental moisture are drained naturally through the ventilation cavity and are not directed into the gutter.

Install the gutter in accordance with the manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter.

Closed Eaves with Condensation Flashing



Install the condensation (anti-ponding) flashing in accordance with the project design. Seal all joints using a suitable weatherproof sealing tape.

Install the gutter in accordance with the manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter.

Roof Without Eaves



Condensation and incidental moisture shall be directed into the gutter using a footplate and drip flashing. This detail is suitable for both concealed and exposed gutter systems.

Install the gutter in accordance with the manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter.

Double-Batten Eaves



Install the drip flashing over the double-batten system.

Install the gutter in accordance with the manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter.

Double-Batten Eaves with Condensation Flashing



Install the condensation flashing over the double-batten system. Use starter clamps without hooks for this installation detail.

Install the gutter in accordance with the manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter.

Eave Ventilation Flashing Installation



Install the ventilation flashing and secure it with suitable fasteners in accordance with the approved project documentation. Where required, install the drip flashing to ensure that all water draining from the BIPV modules is directed into the gutter. The angle and position of the flashings shall be adjusted to suit the roof pitch and the selected eaves detail.

The BIPV modules, flashings, and gutters shall be correctly aligned to ensure reliable water drainage. Install the gutter in accordance with the gutter manufacturer's installation instructions, ensuring that all water is discharged into the center of the gutter and does not overshoot the gutter.

This version is generic, technically accurate, and works for all eaves configurations, so you no longer need to reference a specific version of the eaves detail.



Align the BIPV modules and the gutter to ensure that all water draining from the roof is discharged into the gutter without overshooting. For gutter positioning requirements, refer to the gutter manufacturer's installation instructions.

Ridge Ventilation Flashing Installation



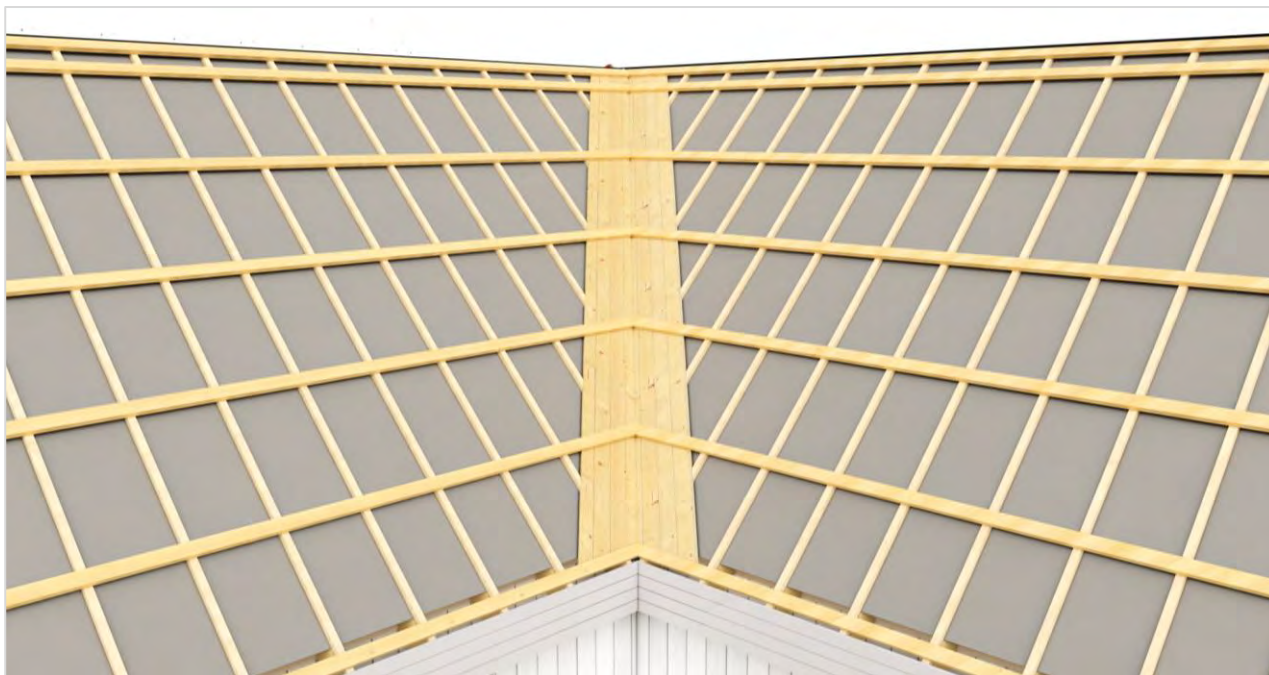
Install the ridge ventilation flashing only after the BIPV/FILLER modules have been installed up to the ridge. The ridge ventilation flashing shall always be installed along the ridge on the side where BIPV/FILLER modules are present.

If the opposite roof slope does not contain BIPV/FILLER modules, a custom-sized ridge flashing may be required to provide a weatherproof and aesthetically consistent roof finish.

Please note that the fastening method for the ridge ventilation flashing differs from that of the ridge flashing. Install both components in accordance with the approved project documentation and the corresponding installation details.



Valley flashings

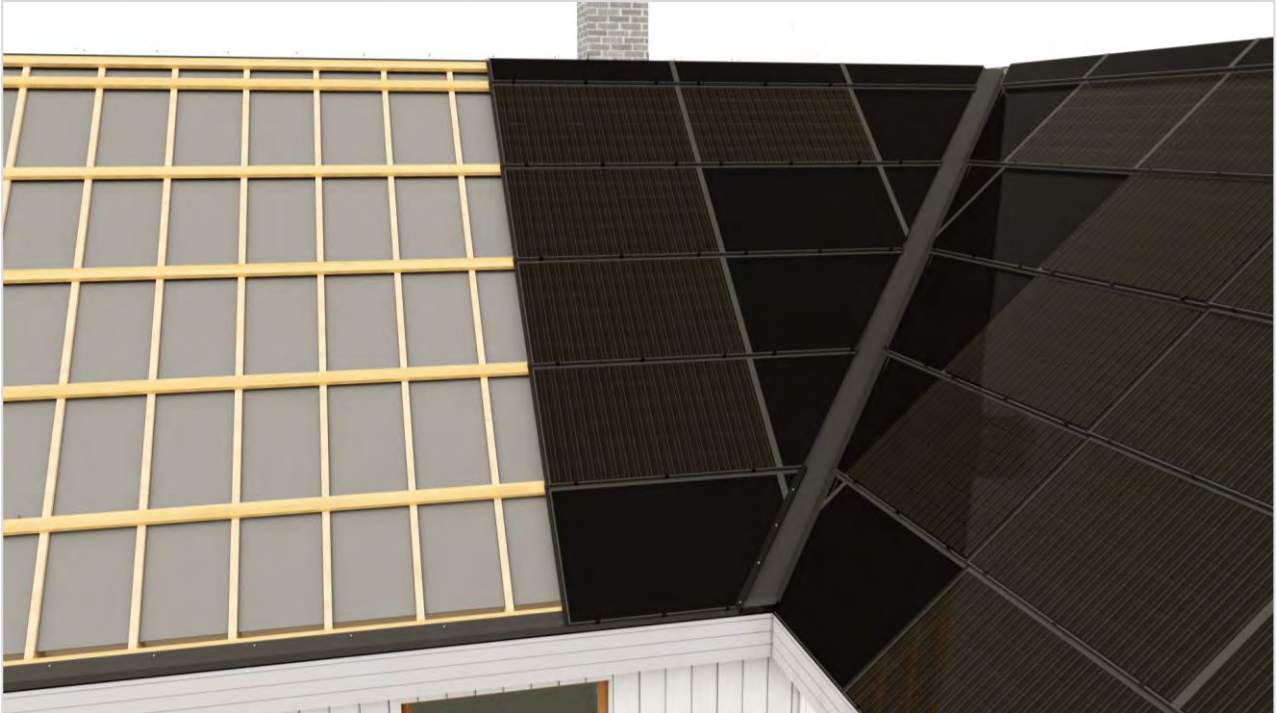


Before installing the valley flashing, verify that the correct flashing components have been selected for the specific side and position of the valley, as the flashing profiles may vary depending on the roof layout.

A continuous and properly constructed valley deck shall be installed beneath the valley flashing to provide adequate structural support and ensure a durable, weatherproof installation.



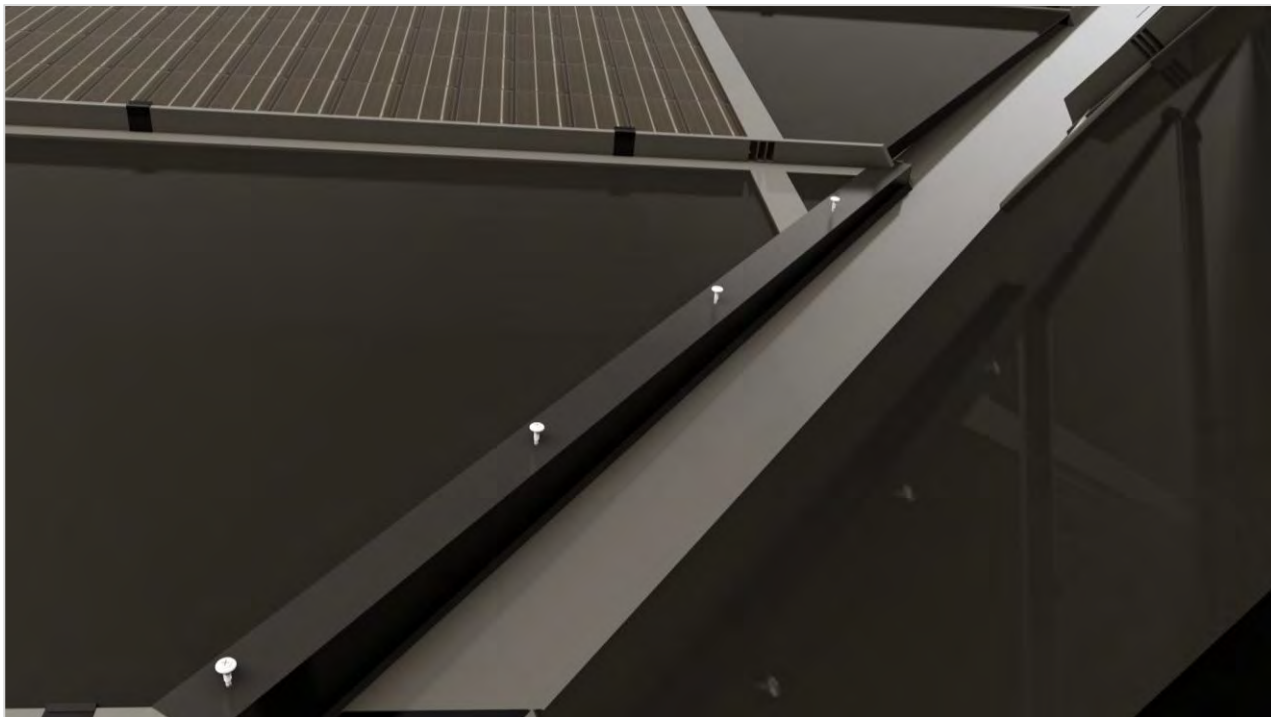
Installation of the valley flashing.



Once the valley flashing is fastened, dummy panels and BIPV/FILLER modules can be fitted.



If small triangular infill pieces are required to complete the roof area where mounting clamps cannot be installed, the dummy panel may be fastened directly to the batten. Secure the dummy panel by driving a 5 × 70 mm screw through the upper click profile into the batten.

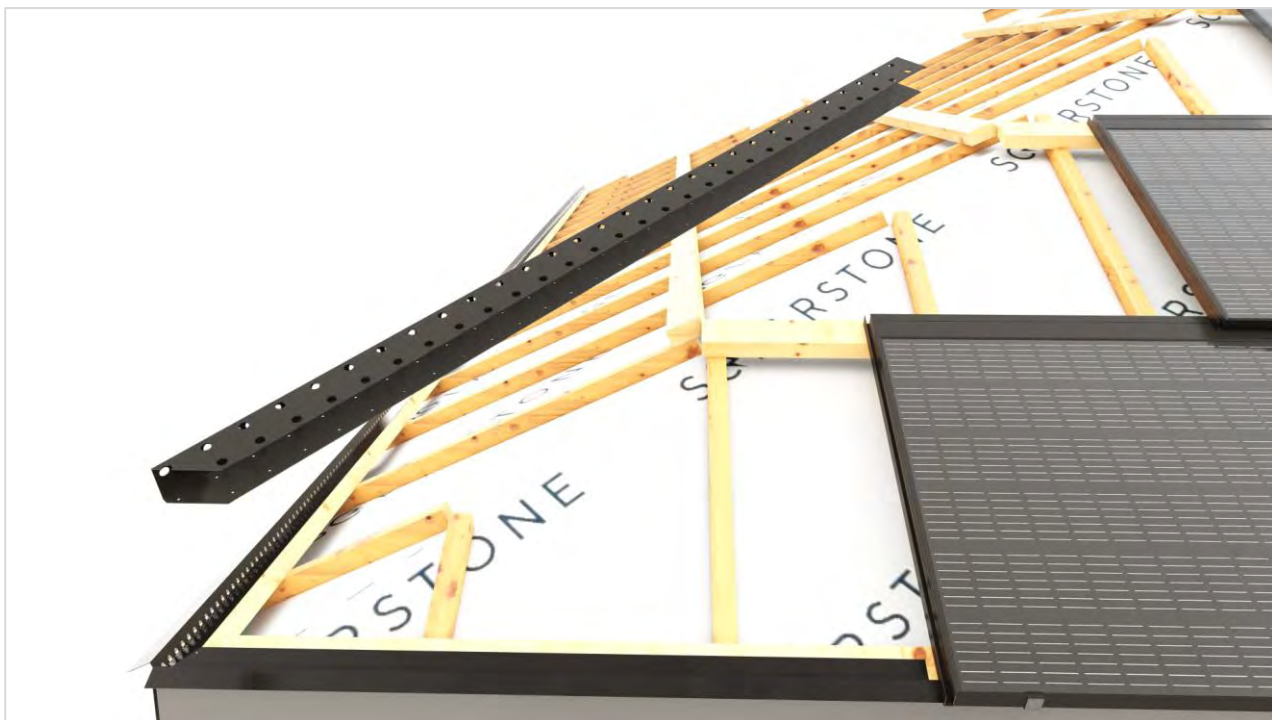


Add cover flashing to seal the cut section of the FILLER-panel (dummy). Fasten it with self-tapping screws.

Hip roof flashings



Hip roofs require special attention to ensure a weatherproof finish and a clean transition between roof planes. The SOLARSTONE hip roof solution uses dedicated hip roof fasteners, dummy panels, Wakaflex, and hip flashing to create a secure and durable installation. Follow the steps below to complete the hip roof detail correctly.



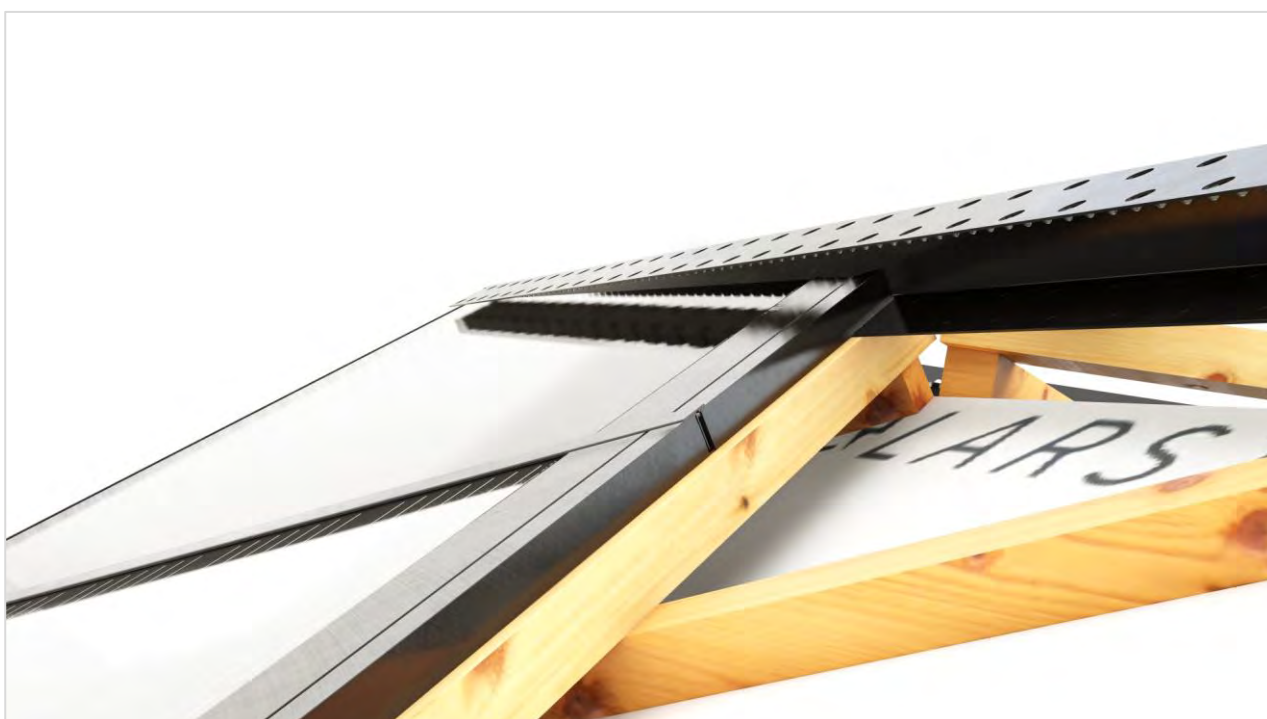
Start by placing the hip roof fastener on top of the battens. Make sure the FILLER-panel (dummy) will fit with the placement of other components.



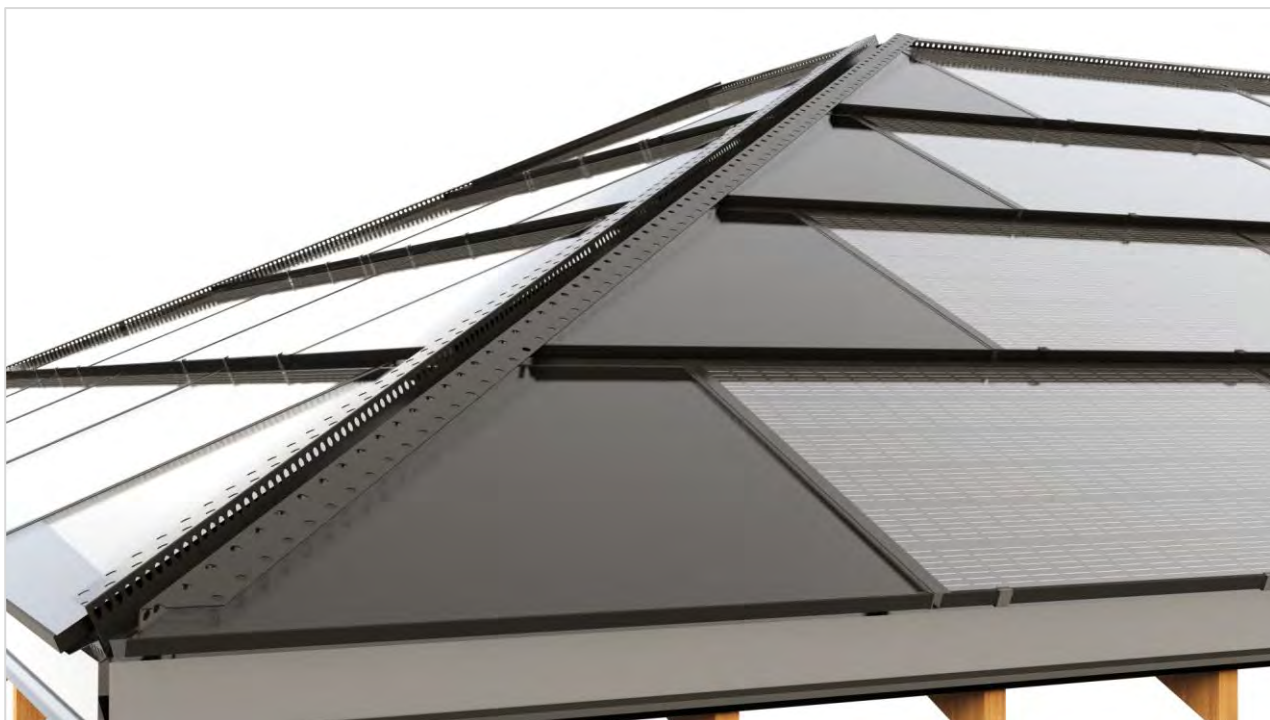
Fasten the hip roof fastener to the aluminum batten.



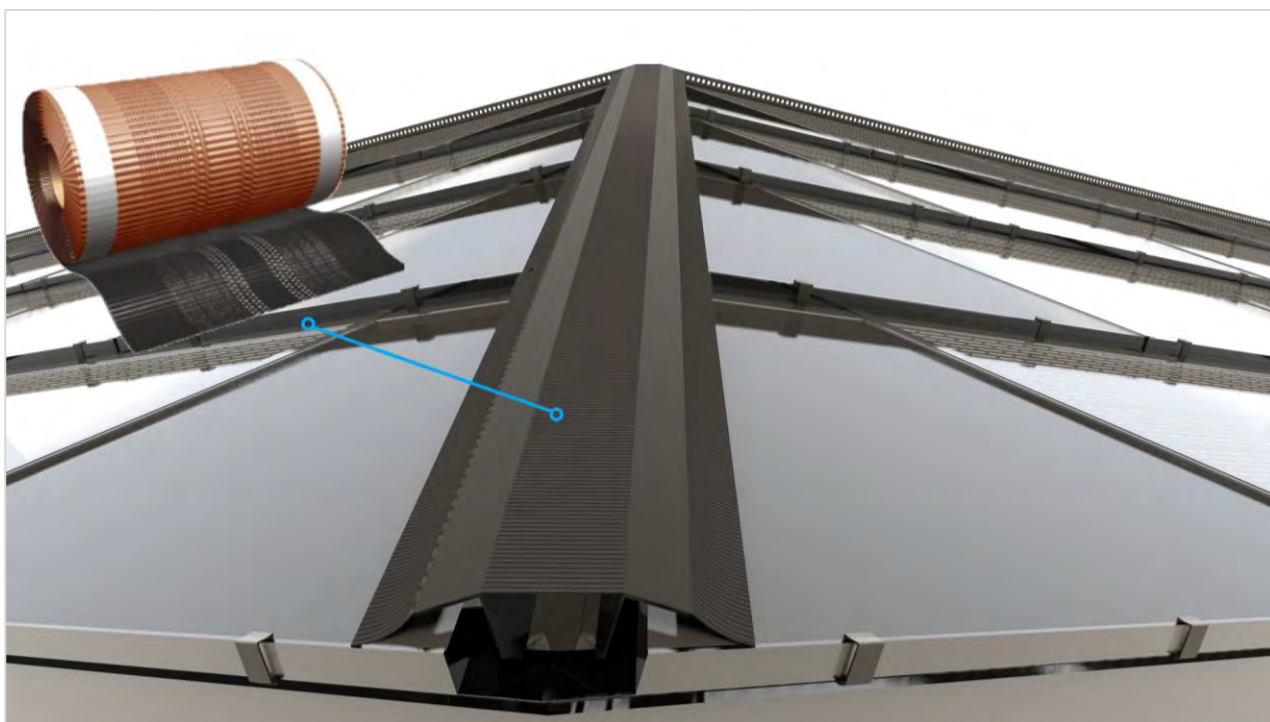
Repeat the process with both sides of the hip roof edge.



Install the FILLER-panel (dummy) between the hip roof fastener, fasten the clamps, and then continue with the next row.



Continue installing FILLER-panel (dummy) panels up to the ridge.

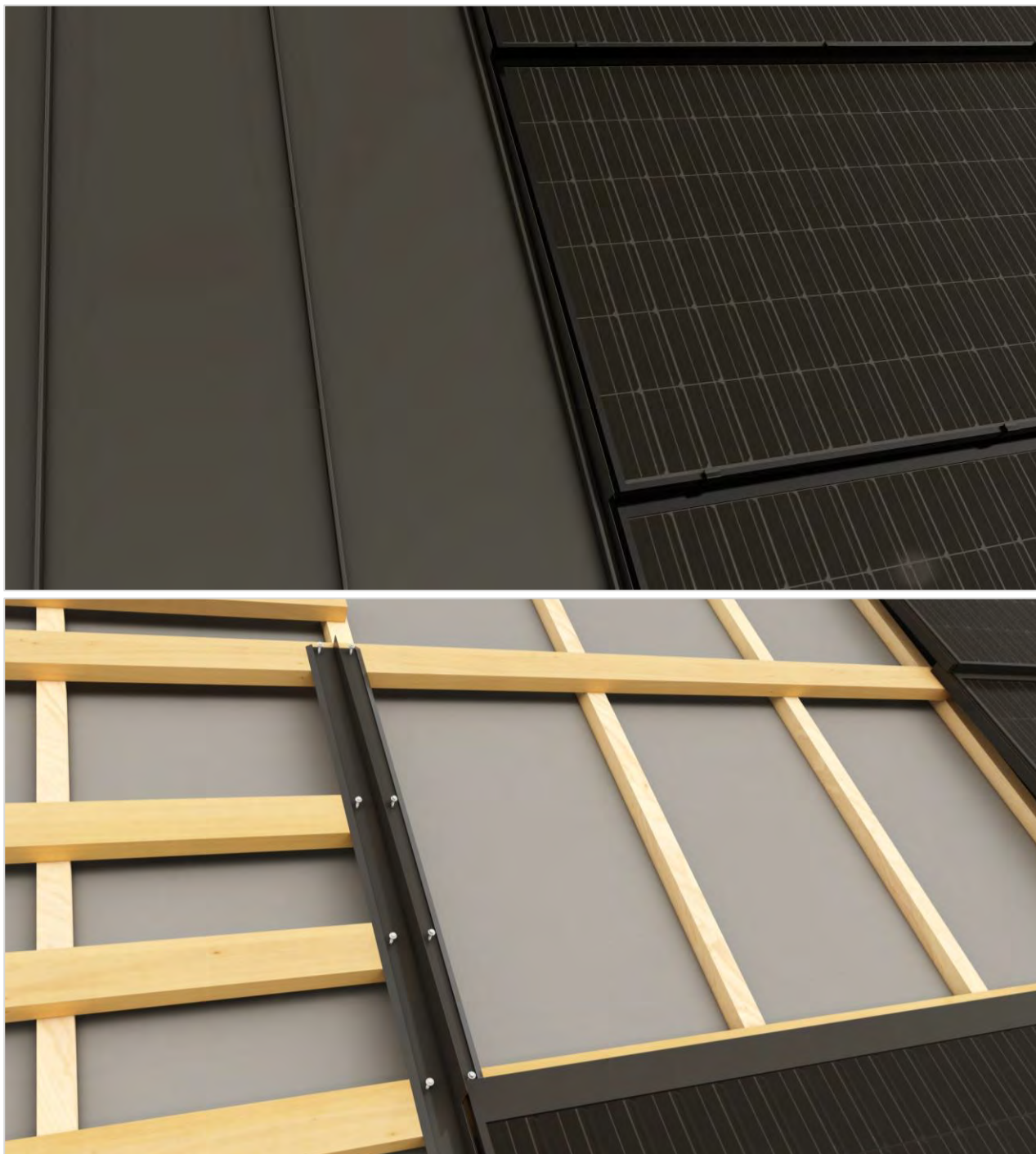


Install Wakaflex on top of the hip roof fastener to provide adhesivity for the flashing.



Install the flashing on top of the Wakaflex and fasten it with screws.

Joint flashings



The Joint Flashing (reversed T-shape) is used where FILLER-panel (dummy) are not included in the Solar Full Roof™ layout. It creates a durable, weatherproof transition between the solar roof and adjacent conventional roofing materials (e.g. roof tiles, standing seam metal roofing, or shingles). The batten layout must be installed according to the project-specific drawings to ensure proper integration with the surrounding roof covering.



Install joint flashing between the modules and secure it with screws.



Foam sealing tape is added on top of the joint flashing to provide watertightness. Apply it on both sides.

Mounting Clamp Installation

Installation of first row Starter Clamps



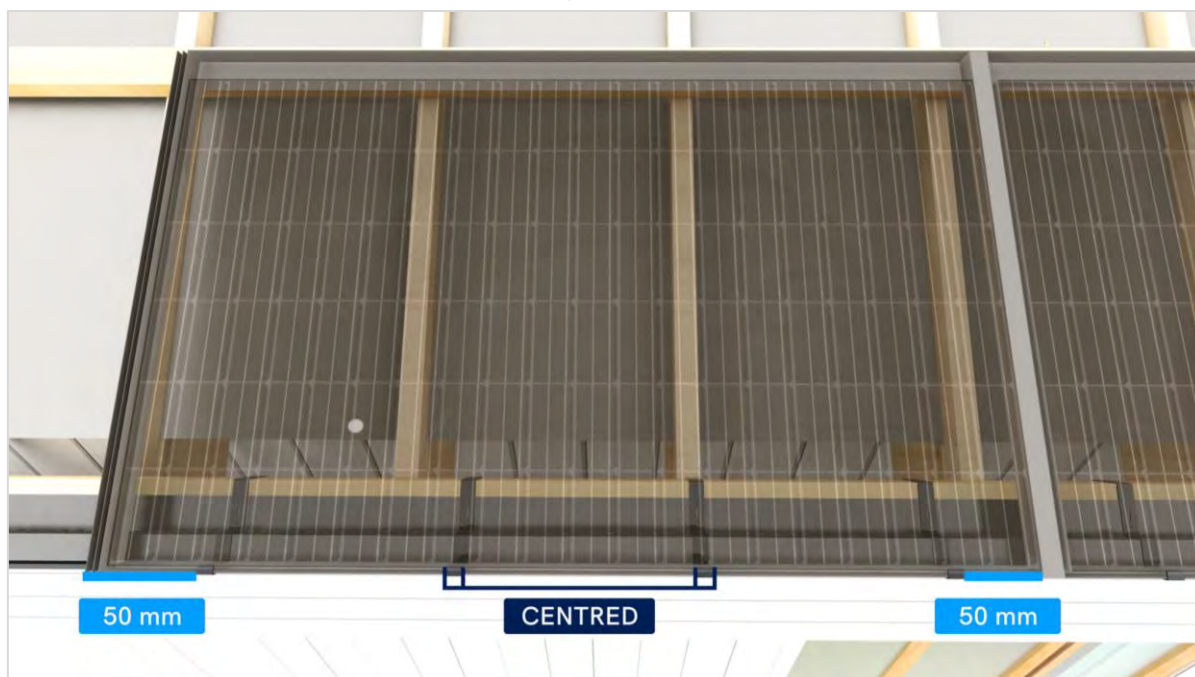
This section illustrates the installation of starter clamps for both landscape and portrait BIPV module orientations. Unless otherwise specified in the project documentation, the standard installation detail shown below shall be used.



Each FILLER-panel (dummy) and BIPV module in the first row shall be secured using **four (4x) starter clamps in landscape orientation** and **three (3x) starter clamps in portrait orientation**.

SOLARSTONE recommends fastening the starter clamps using ESSDRIVE PP 5.0 × 50 mm screws or an equivalent fastener. Follow the fastener manufacturer's recommendations for installation, including the specified screw driving speed and torque, to ensure proper fastening without damaging the components.

Landscape Orientation



Portrait Orientation



Position the starter clamps 50 mm from each side of the BIPV module or FILLER-panel (dummy). The **maximum spacing between adjacent clamps shall not exceed 450 mm**. Where four clamps are used, the two center clamps shall be evenly spaced.

If the width of a filler/dummy panel is less than 50% of a full-size BIPV module, a minimum of two starter clamps shall be used. The minimum height of a FILLER-panel (dummy) shall be **300 mm** and shall comply with the designed batten layout.

Installation of regular Middle Row Clamps

This section illustrates the installation of regular middle row clamps for both landscape and portrait BIPV module orientations. Use the installation method specified in the approved project documentation.



Regular Middle Row Clamps are used to secure BIPV modules and FILLER-panel (dummy) in all continuous rows.

For standard installations, each BIPV module or FILLER-panel (dummy) shall be secured using three regular clamps. In regions subject to high wind or snow loads, four regular clamps are recommended. Additional clamps should also be installed along the roof perimeter, where wind uplift forces are typically greatest, in accordance with the project design and local structural requirements.

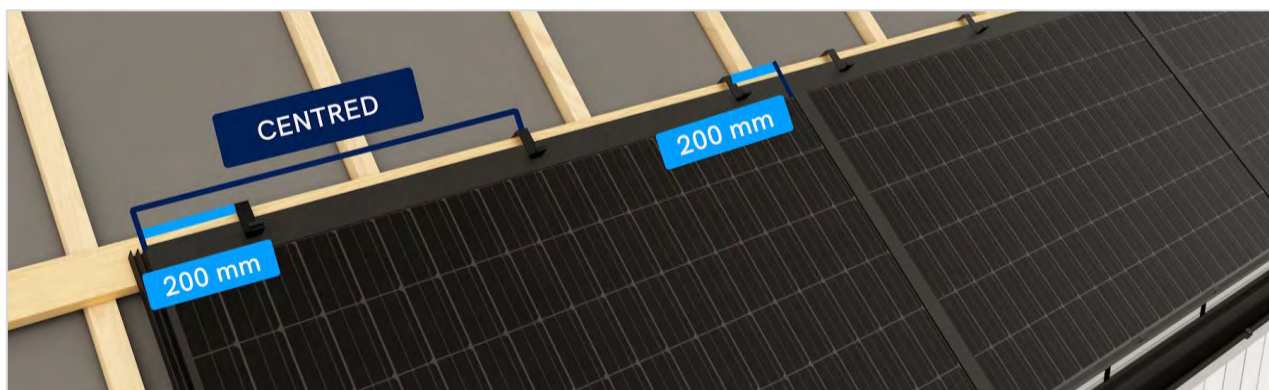
If the width of a FILLER-panel (dummy) is less than 50% of a full-size BIPV module, a minimum of two regular clamps shall be used. The minimum height of a FILLER-panel (dummy) shall be 300 mm and shall comply with the approved batten layout.



Secure each clamp by driving the screw through the fixing hole into the roof batten.

SOLARSTONE recommends fastening the regular clamps using ESSDRIVE PP 5.0 × 50 mm screws or an equivalent fastener. Follow the fastener manufacturer's recommendations for installation, including the specified screw driving speed and tightening torque, to ensure proper fastening without damaging the components.

Landscape Orientation

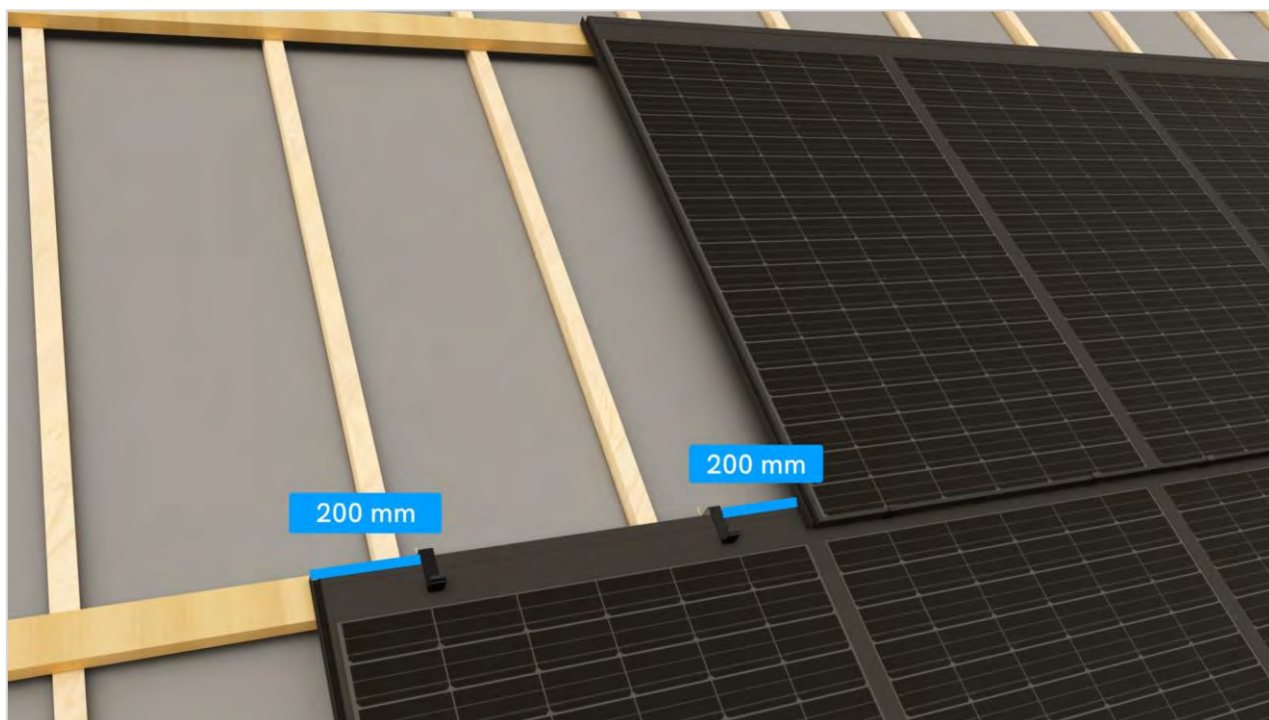


When installing regular clamps in landscape orientation, position the outer clamps 200 mm from each side of the PV module and center the remaining clamp between them.



Maintain a 15 mm clearance between the clamp and the PV module to allow the module to be removed for future maintenance or replacement, if required.

Portrait Orientation



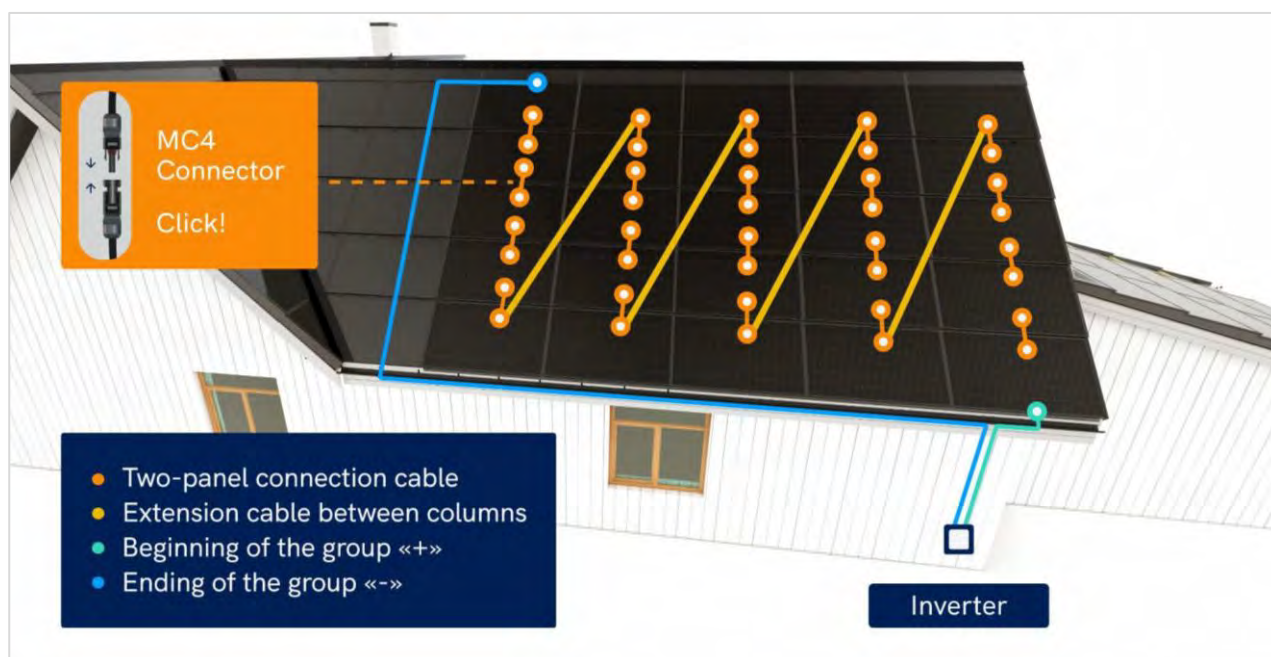
When installing regular clamps in landscape orientation, position the outer clamps 200 mm from each side of the BIPV module and center the remaining clamp between them.



Maintain a 15 mm clearance between the clamp and the PV module to allow the module to be removed for future maintenance or replacement, if required.

Electrical Connections

PV-cabling and MC-4 connections



Correct electrical connections are essential for the safe operation and long-term reliability of the Solar Full Roof™ system. All electrical work shall be carried out in accordance with the applicable electrical regulations, the PV module manufacturer's installation instructions, and recognized industry best practices.

Before connecting the BIPV modules, verify that the selected string configuration complies with the system design and that the maximum string voltage and current remain within the limits of the inverter and BIPV modules under the expected operating conditions.

Use only **MC4 connectors** approved by the PV module manufacturer. Connectors from different manufacturers, even if described as "MC4 compatible", may not provide a safe or reliable long-term electrical connection and shall not be mixed unless explicitly approved by the connector and PV module manufacturers.

Ensure that all MC4 connectors are fully engaged until the locking mechanism clicks into place. An incomplete connection may result in overheating, electrical faults, or system failure.

Support all cable connections so that the MC4 connectors remain suspended and do not rest directly on the underlayment or roof surface.

Electrical contact grease may only be used where specifically approved by both the PV module manufacturer and the MC4 connector manufacturer.

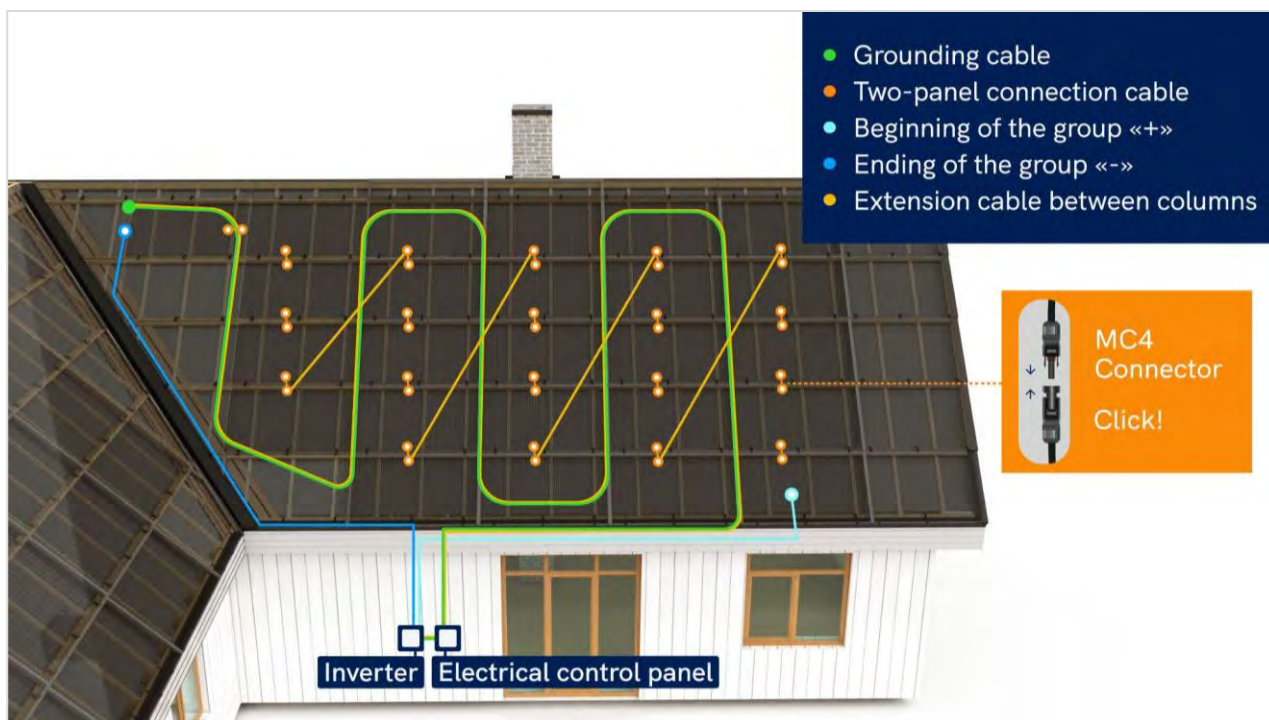
All electrical connections, testing, and commissioning shall be performed by a qualified electrician in accordance with the applicable local regulations.



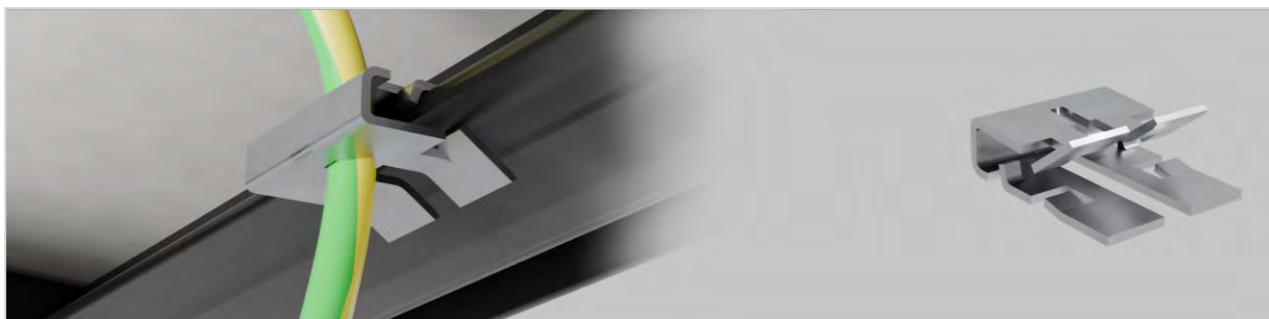
MC4 connectors are connected correctly if both connectors click together. Proper installation of MC4 connectors is very important, as faulty connections may lead to undesired results.



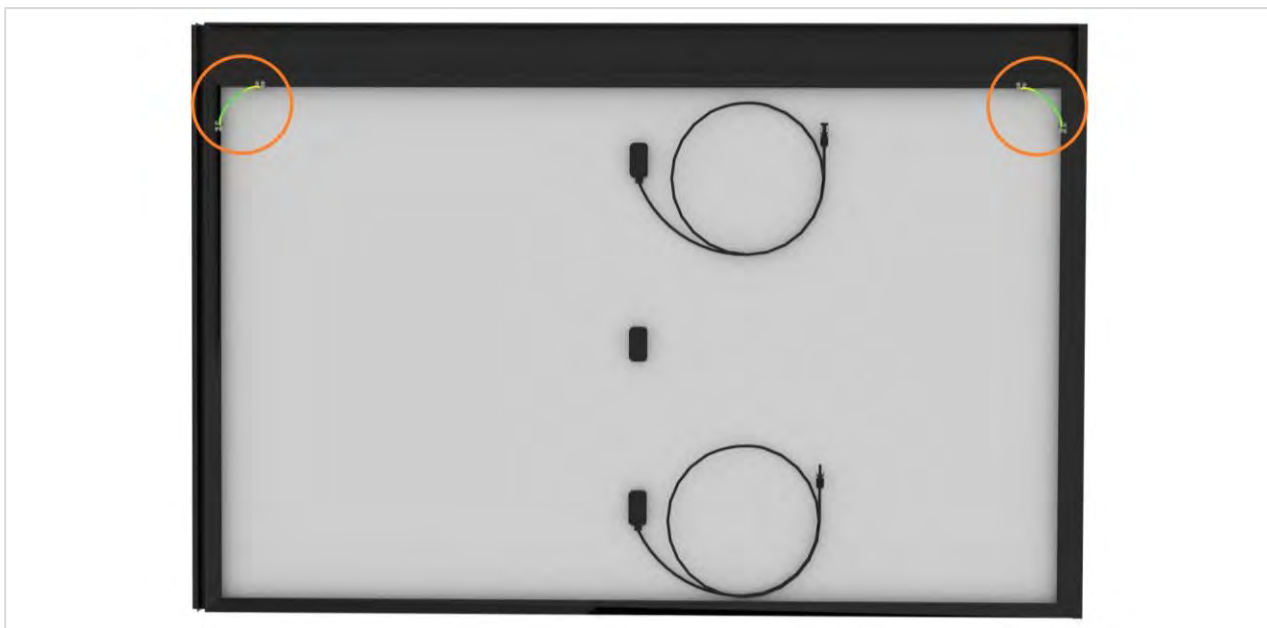
Grounding



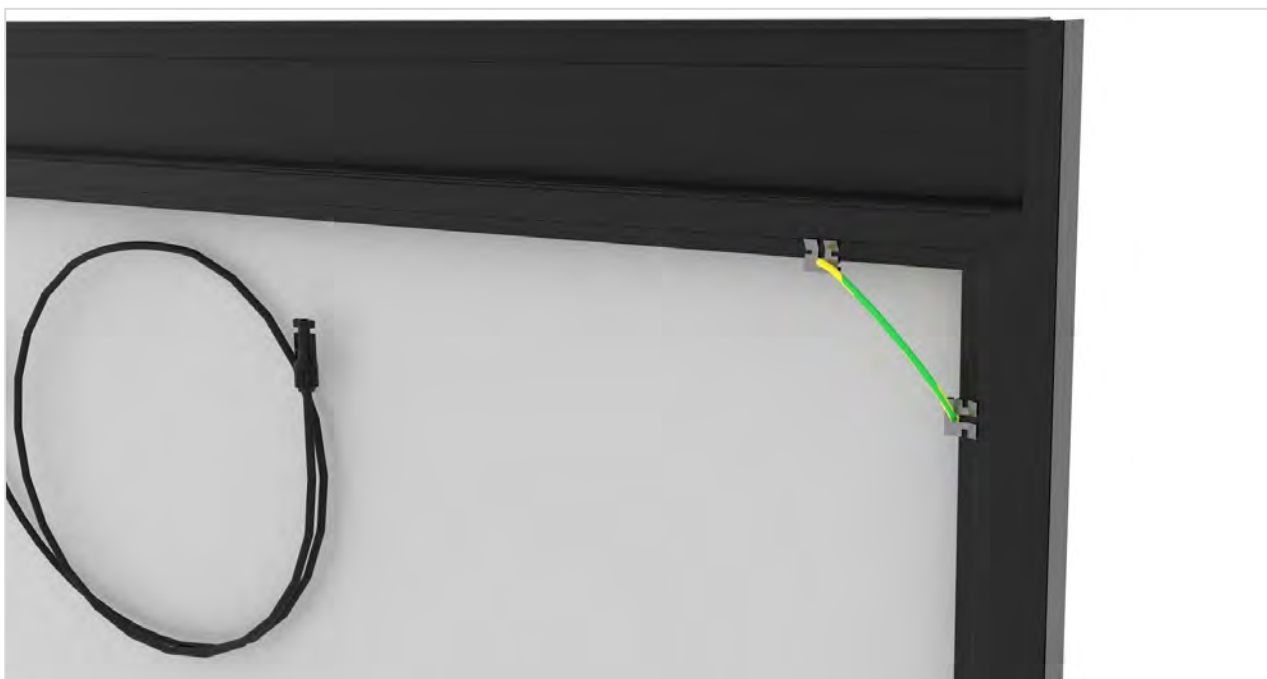
Grounding is recommended to ensure the safe operation of the SOLARSTONE system. However, grounding requirements vary by country and local electrical regulations and may not be mandatory in all jurisdictions. Always follow applicable local regulations, standards, and electrical installation practices.



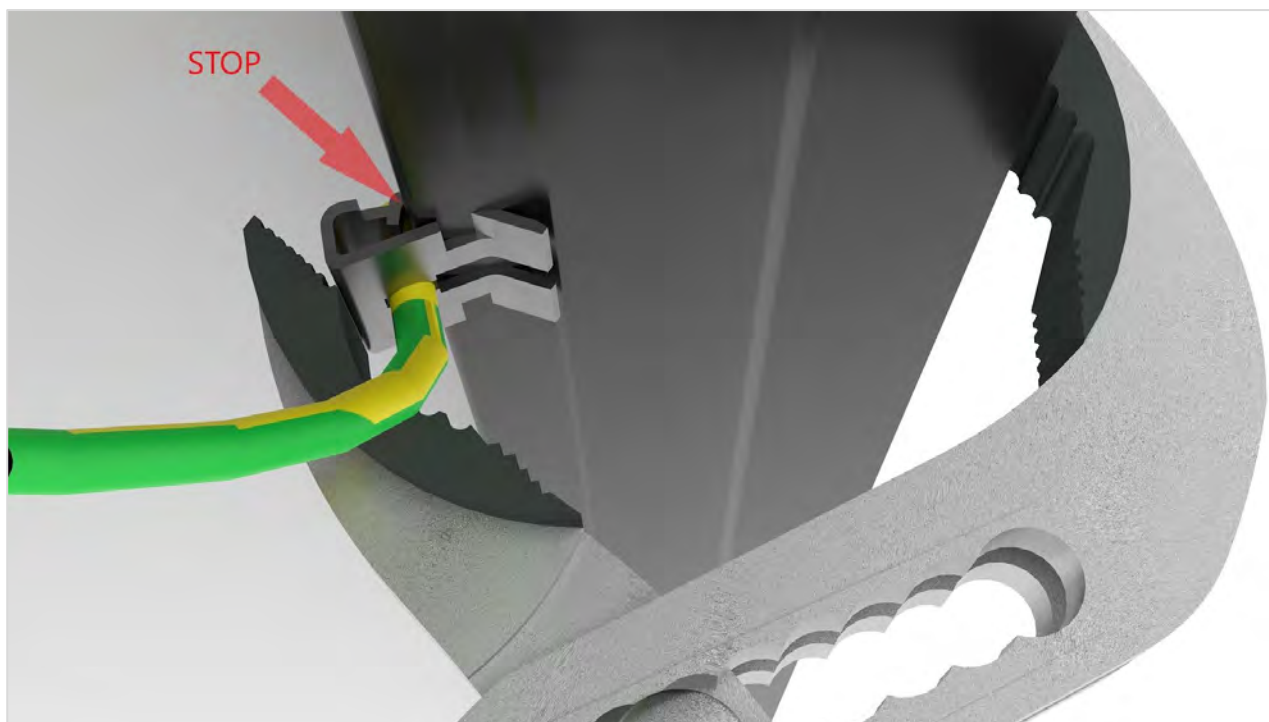
SOLARSTONE recommends using RayVolt grounding clips, which accommodate aluminum frame thicknesses from 1.5 mm to 2.5 mm and 6 mm² (H07V-K) multi-strand flexible grounding cable. RayVolt grounding clips comply with IEC 61730-2, IEC 60947-1, and EN 60068-2-11 within their intended scope of use.



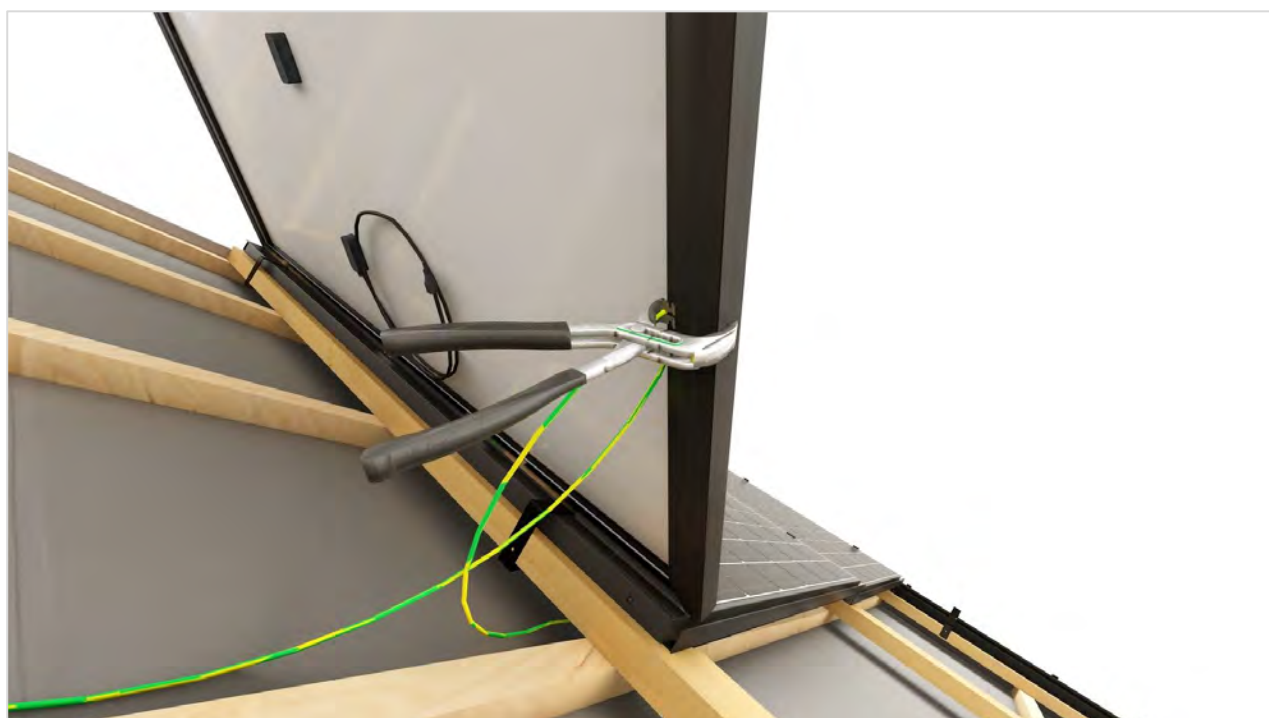
Grounding clip must be connected to each side of the PV module frame and Click-on kit with a grounding clip.



Grounding clip teeth will damage the color of the profile. This will provide conductivity, which is needed for grounding. Connect PV module's Click-on frame with a grounding clip.



Start by adding grounding clips to the aluminum frame and Click-on Kit. Press the grounding clip until it is not possible to press any further. Grounding wire with a surface area of 6 mm² is expected to be used



Add an extra grounding clip to the PV module with grounding/earth wire. Repeat the process with the rest of the PV modules.



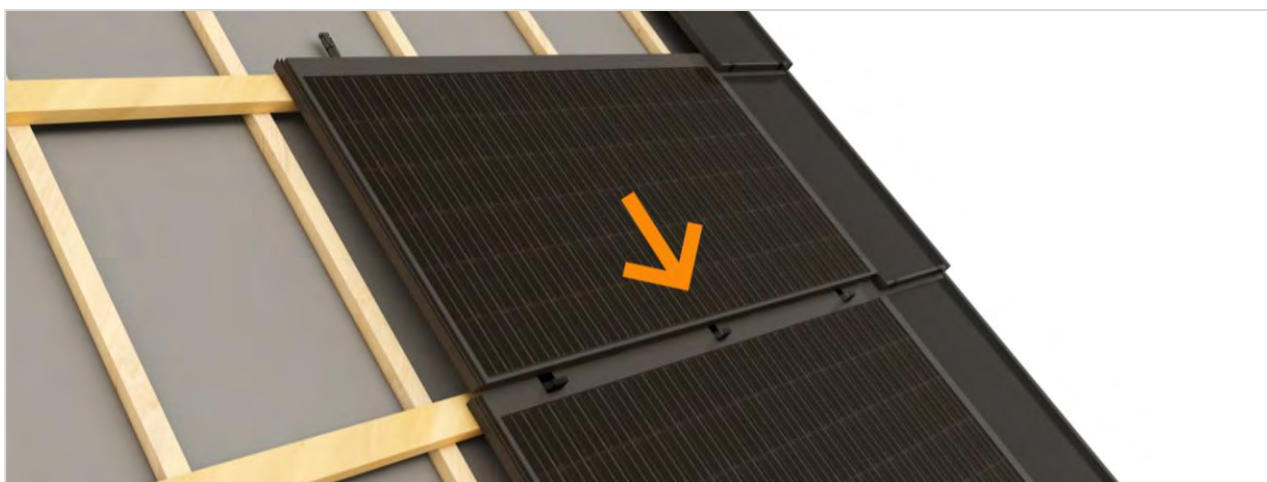
Make sure that the grounding wire is safely apart from objects that may harm the cable and its functionality.

Installation of BIPV & FILLER Modules

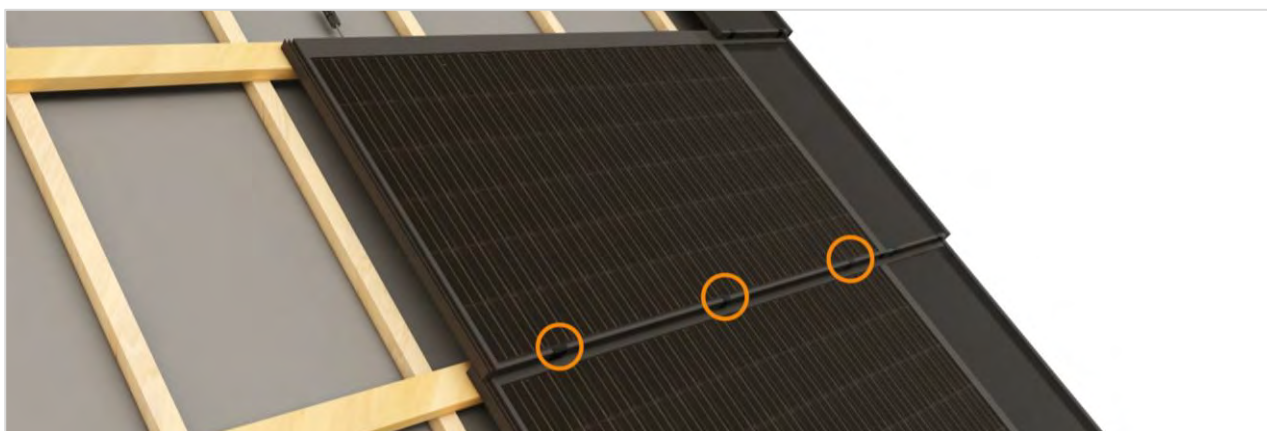
Before installing the BIPV/FILLER modules, verify that all mounting clamps have been correctly positioned and securely fastened.



Push the upper right corner of the module under the lower corner of the upper module.

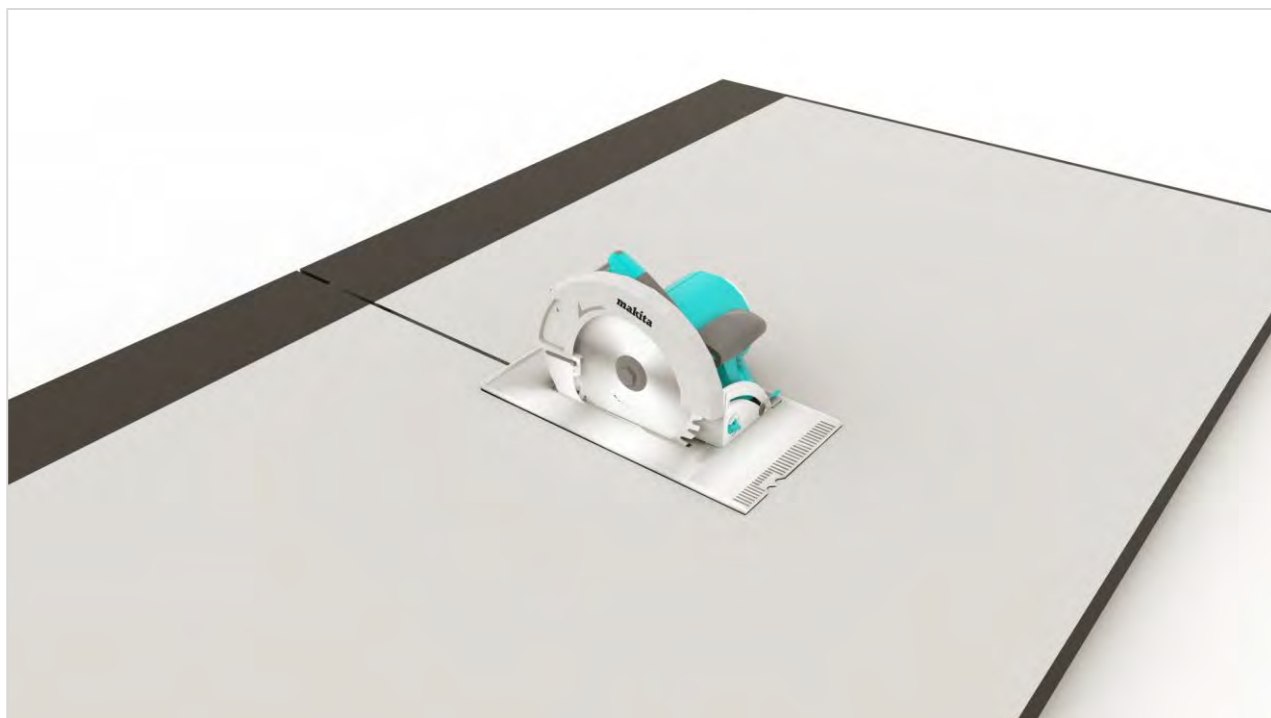


Drop the lower part of the module into the clamp slot.



Press the module into the clamps until it clicks into them. Make sure the clamps are entirely locked in with the module.

FILLER-panel cutting

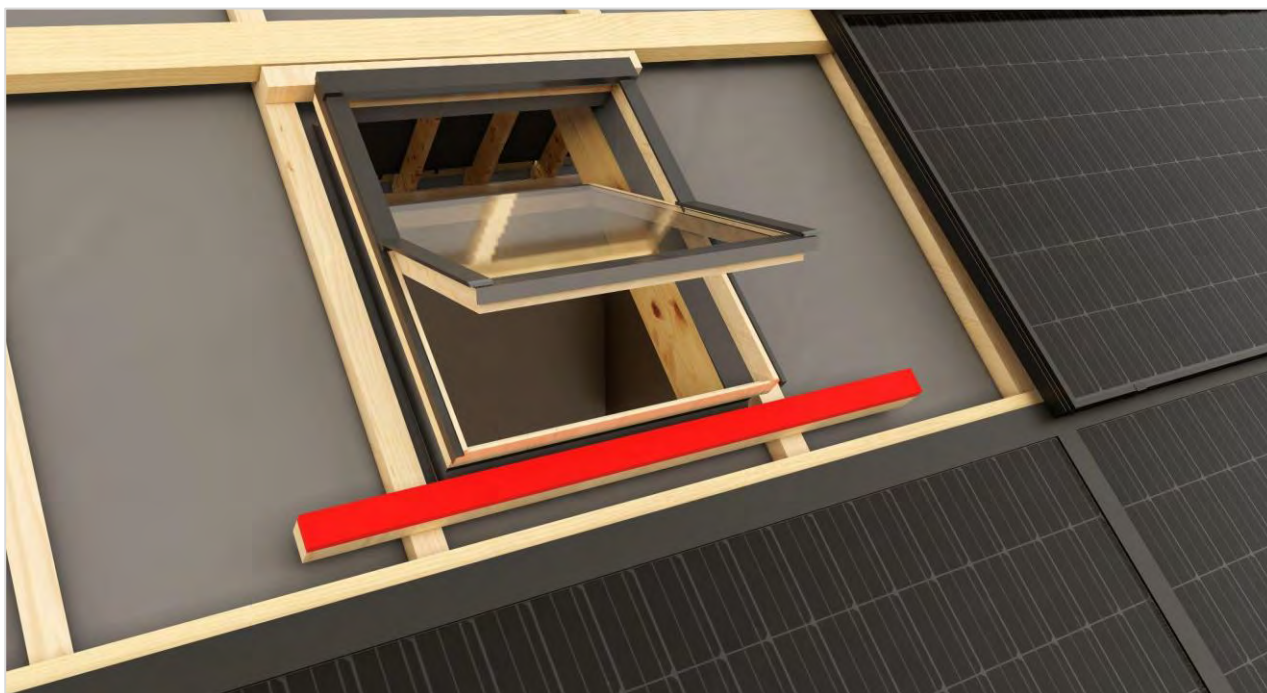


FILLER-panels (dummy) can be cut to size using a circular saw. To avoid damaging the factory-applied surface coating, always perform the cut from the back side of the panel. Wear appropriate personal protective equipment and follow all applicable safety precautions during cutting. After cutting, remove any sharp edges or burrs before installing the panel to ensure safe handling and installation.

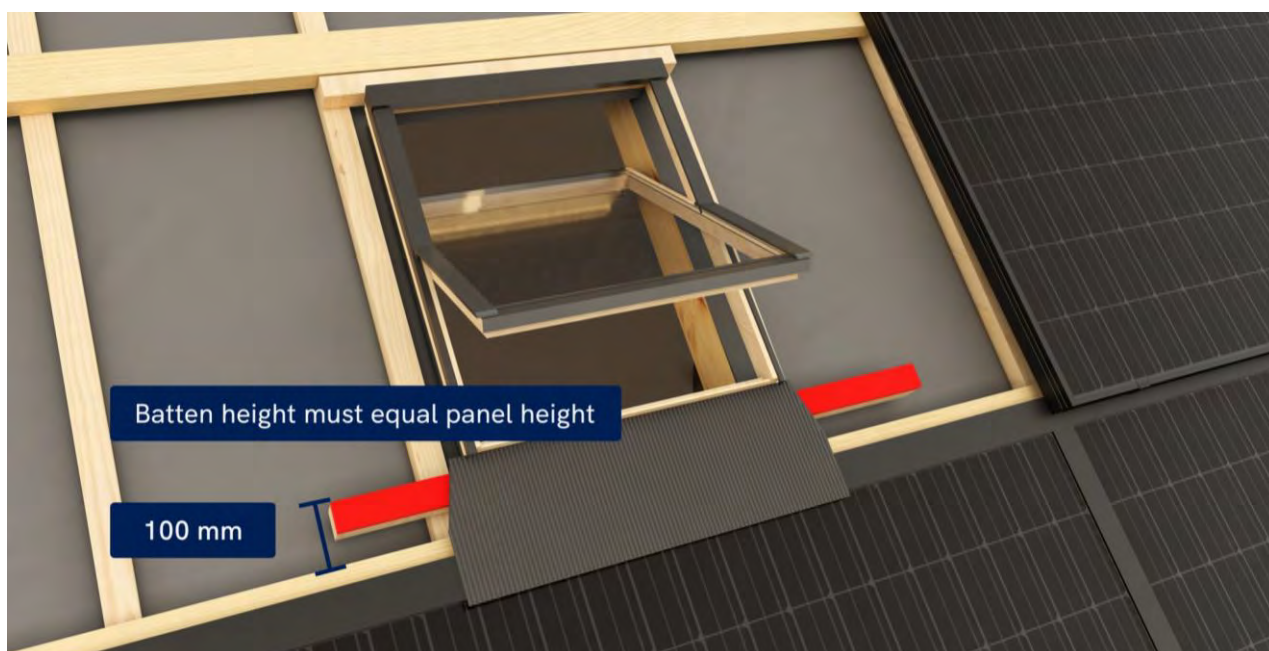
Roof Openings and Penetrations

Roof Window

When integrating a roof window into the Solar Full Roof system, a custom-cut FILLER panel is required to create a weatherproof transition between the roof window and the BIPV array. Measure all dimensions carefully and prepare the surrounding battens according to the project drawings.



Install an additional batten below the roof window. The batten must raise the support level so that it aligns with the row of BIPV modules or FILLER panels.



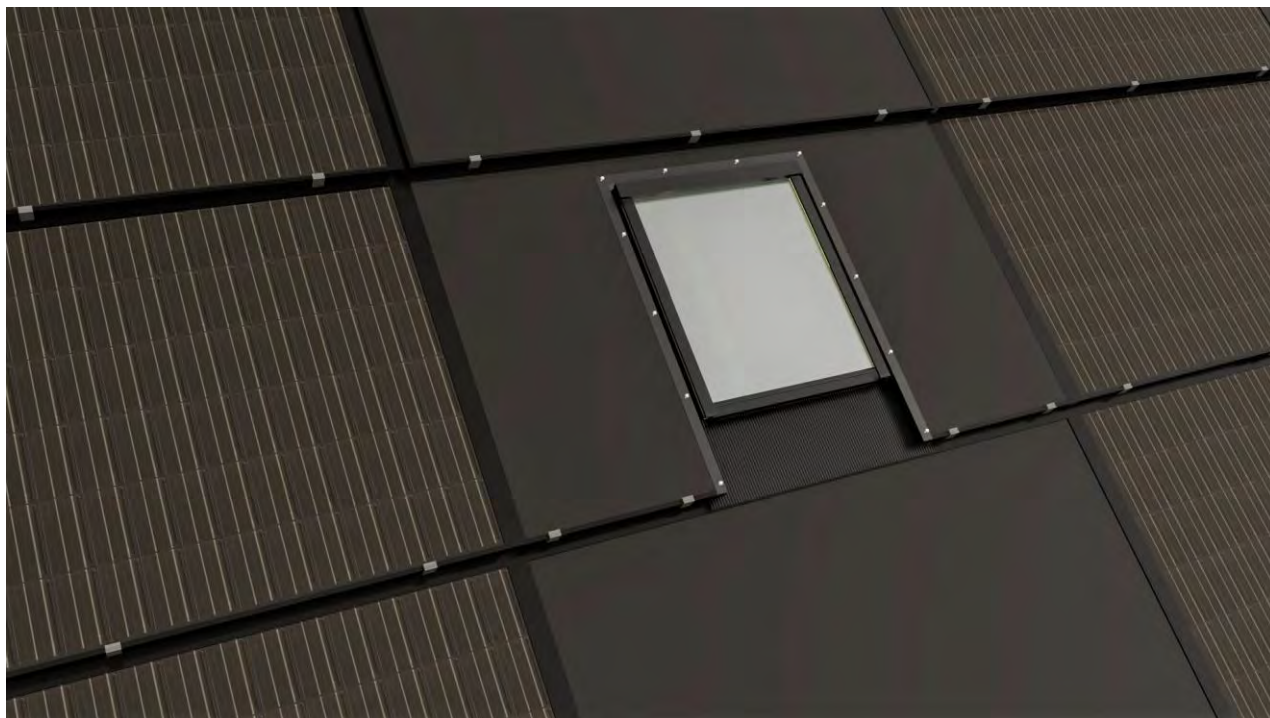
Install the bottom flashing in front of the roof window according to the roof window manufacturer's installation instructions.



Prepare the custom FILLER panel. If the FILLER panel needs to be cut, apply a continuous bead of silicone sealant between the roof window frame and the FILLER panel frame to ensure a weatherproof seal.



Fasten the frame to the FILLER panel using suitable screws.



Install the completed FILLER panel into the roof and continue the installation according to the project layout.

Roof Access Hatch

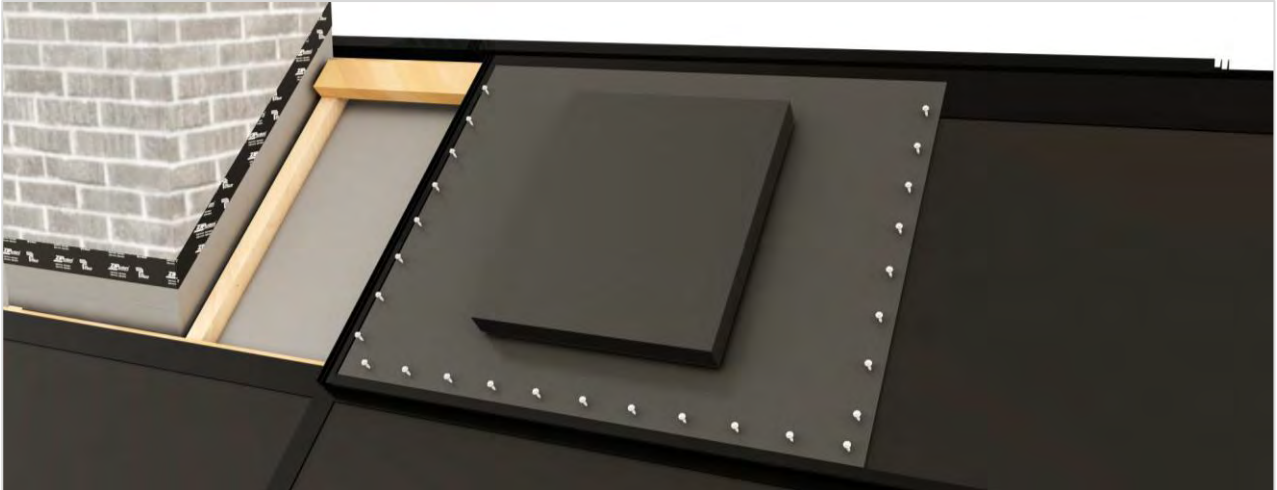
A roof access hatch can only be integrated into the Solar Full Roof system using a custom-cut FILLER panel. For recommendations on compatible roof access hatches, please contact your SOLARSTONE sales representative.



Prepare the custom FILLER panel. If the panel is cut to size, apply a continuous bead of silicone sealant around the outer perimeter of the roof access hatch to ensure a weatherproof seal.



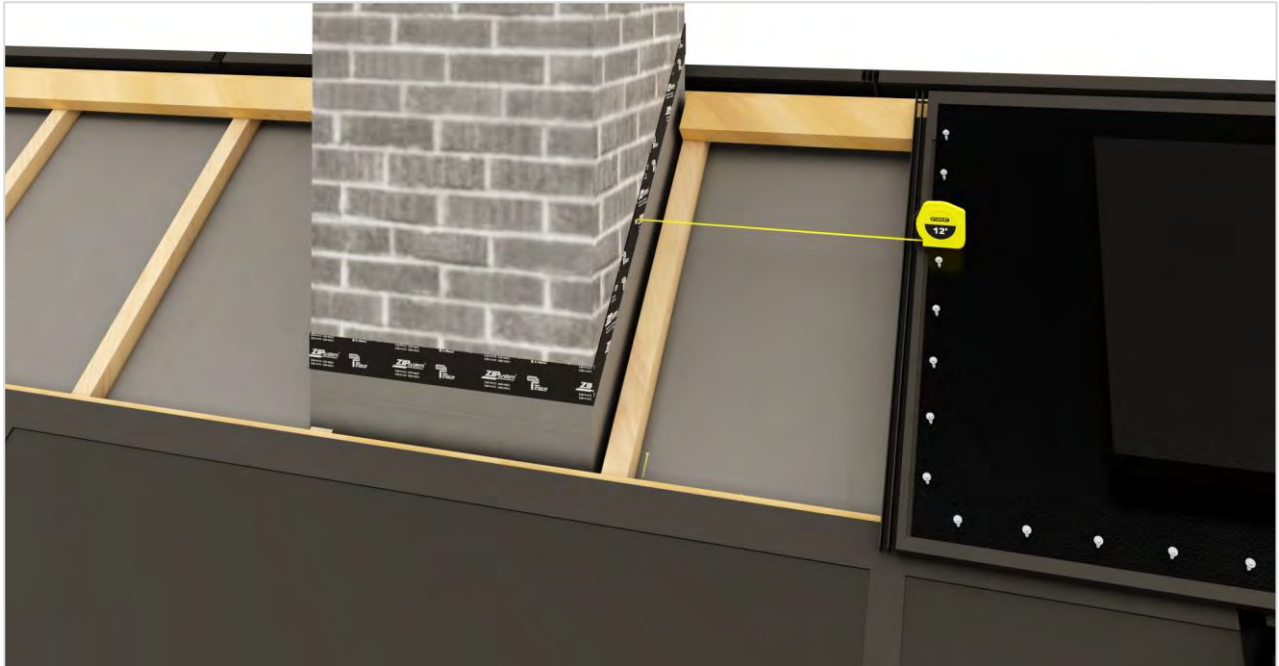
Install the bottom flashing (or bottom cover) of the roof access hatch according to the manufacturer's installation instructions.



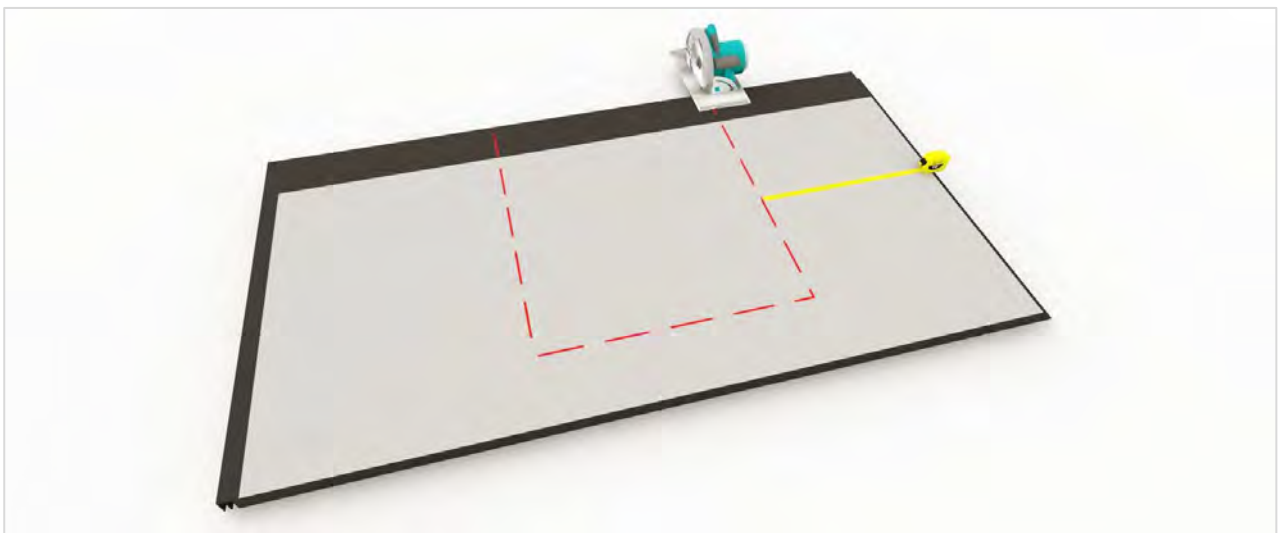
Install the top flashing (or top cover) and complete the installation in accordance with the roof access hatch manufacturer's instructions.

Chimney

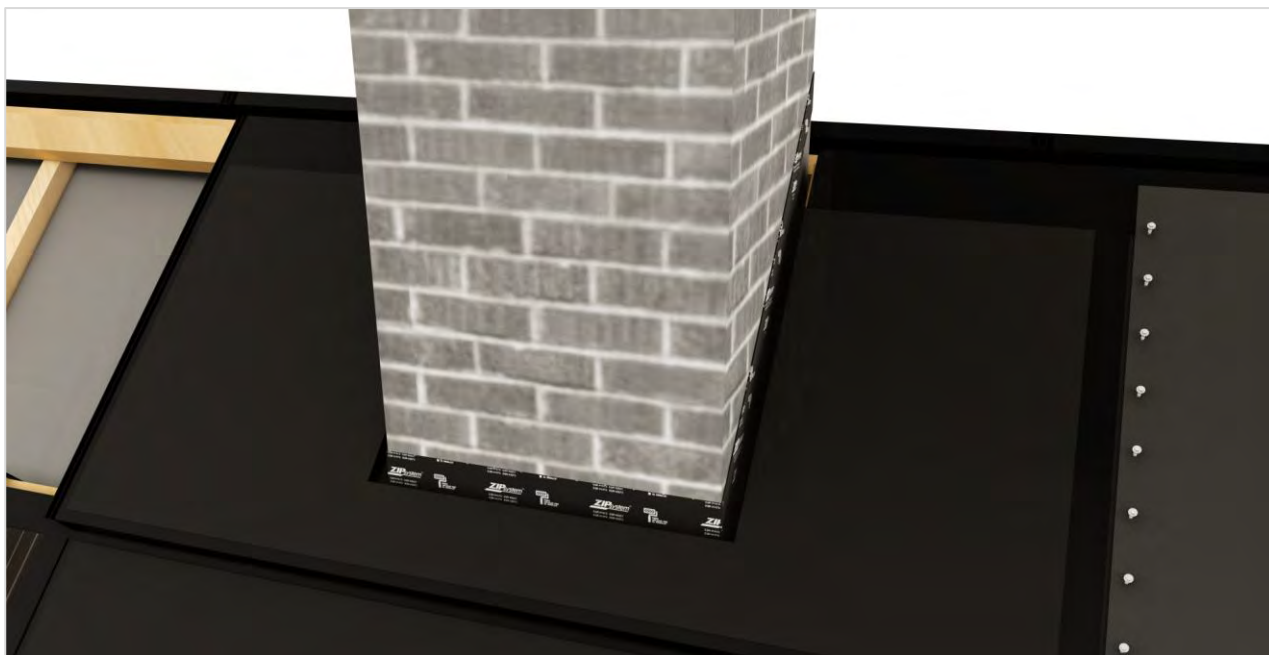
When installing the Solar Full Roof™ system around a chimney, always comply with applicable local building regulations and the chimney manufacturer's installation requirements.



SOLARSTONE recommends maintaining a minimum clearance of 800 mm on all sides of the chimney and using FILLER panels within this area. BIPV modules should not be installed directly adjacent to the chimney. Where local regulations specify additional clearances, the more stringent requirement shall apply.



Prepare the FILLER panel. Cut the FILLER panel to the required size, always cutting from the back side to avoid damaging the factory-applied surface coating.

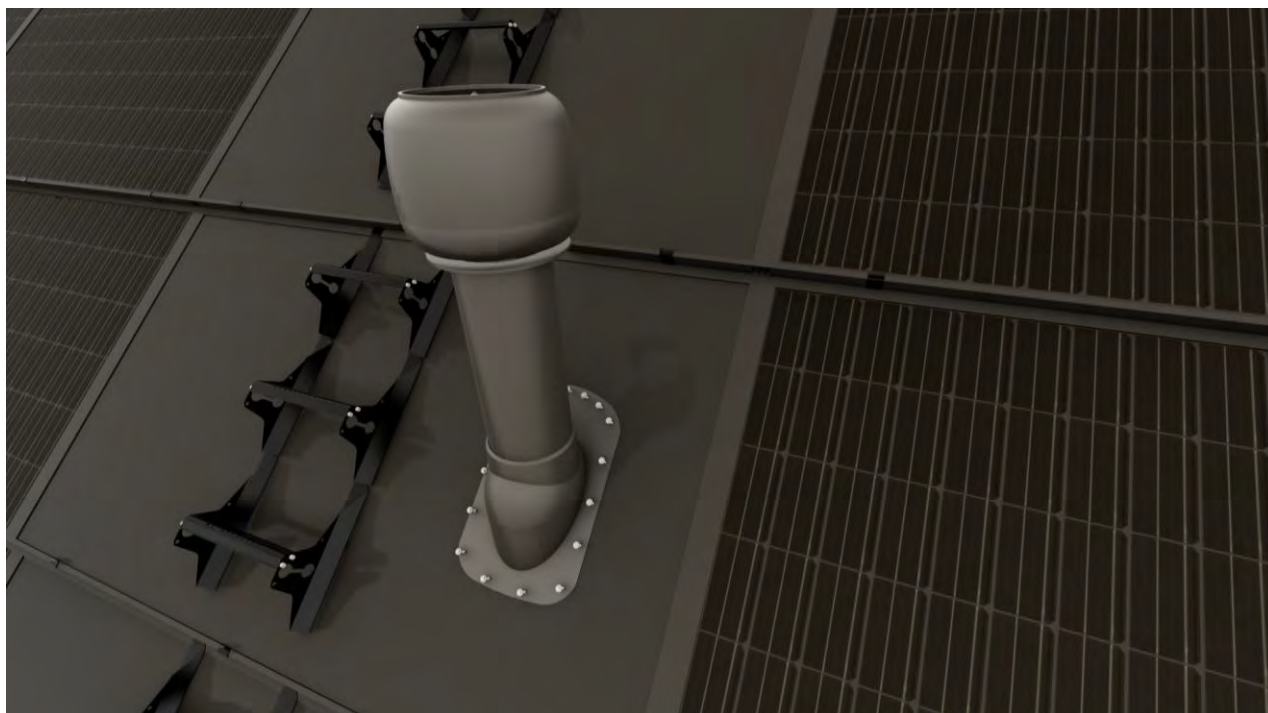


Install the FILLER panel according to the project layout.

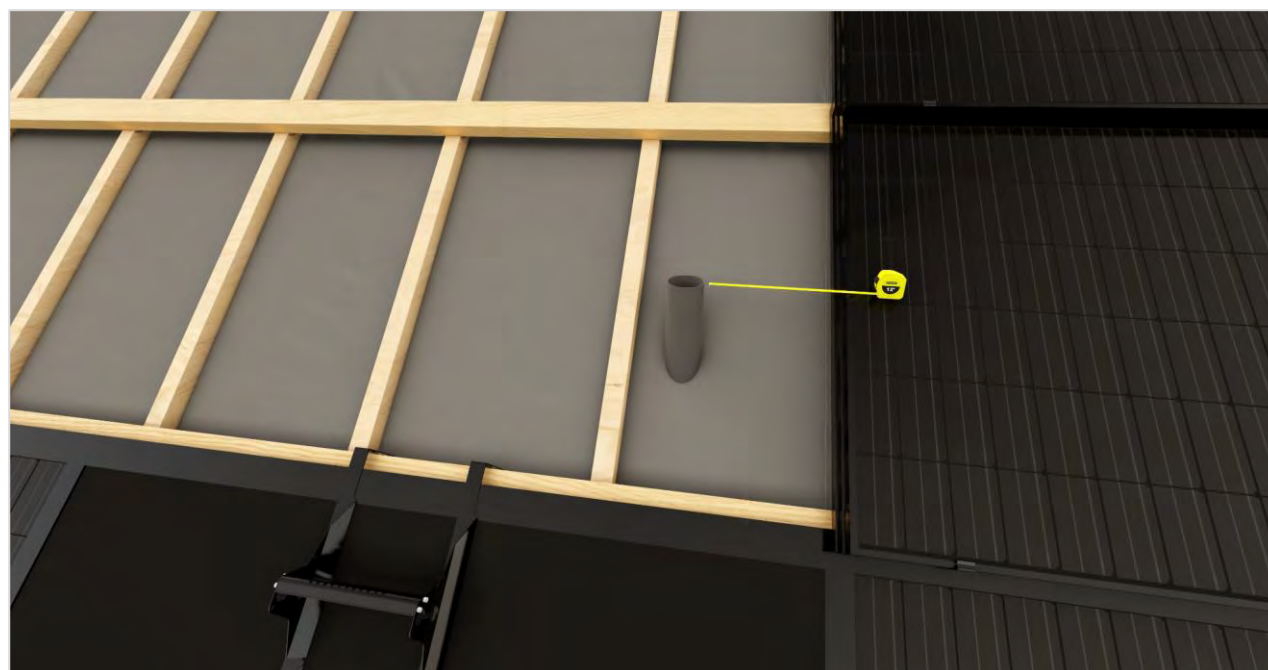


Install the chimney Wakaflex flashing to create a durable and weatherproof transition between the chimney and the roofing system.

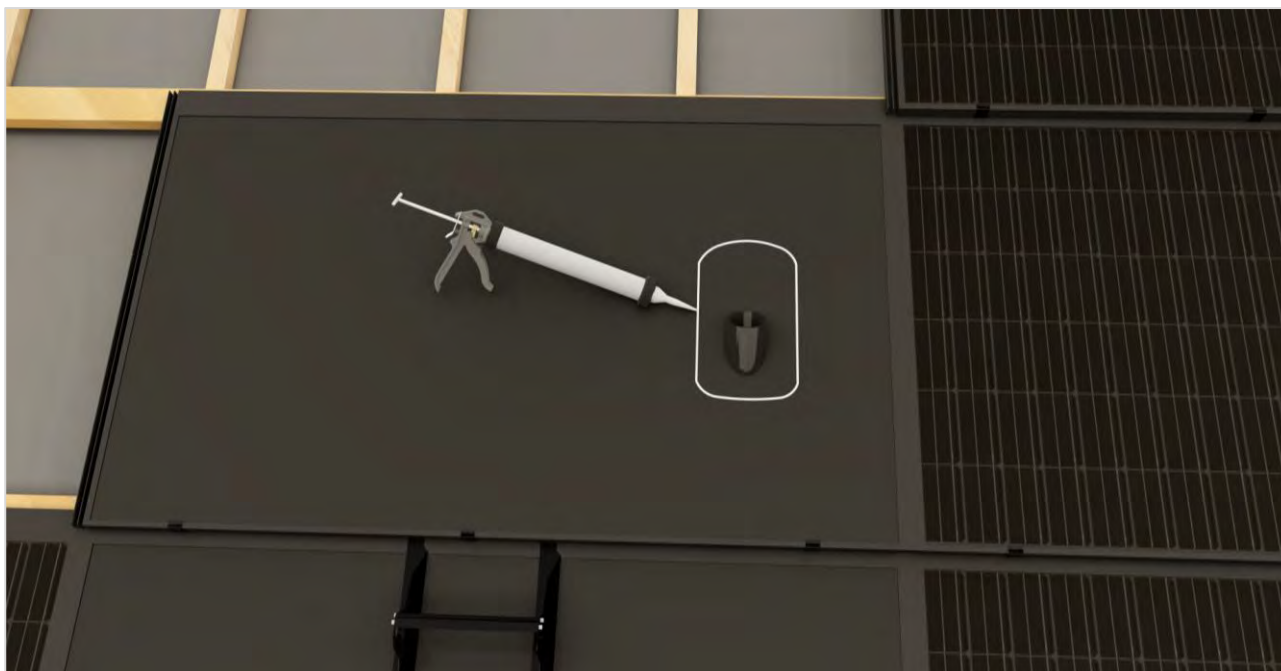
Ventilation Outlets



When installing ventilation outlets within the Solar Full Roof system, it always complies with applicable local building regulations and the ventilation outlet manufacturer's installation requirements.



SOLARSTONE recommends maintaining a minimum clearance of 800 mm between the ventilation outlet and the nearest BIPV module. FILLER panels should be used within this area instead of BIPV modules.



Prepare the FILLER panel. Cut the FILLER panel to the required size and apply a continuous bead of silicone sealant around the opening to create a weatherproof seal.



Install the ventilation outlet through the FILLER panel and secure it according to the ventilation outlet manufacturer's installation instructions. Complete the weatherproofing by ensuring all flashings and seals are correctly installed around the ventilation outlet.

Roof Accessories



Roof accessories may only be installed on FILLER panels. Never install roof accessories directly on BIPV modules.

SOLARSTONE recommends using the supplied 8 × 50 mm fastening bolts for mounting roof accessories. Unless otherwise agreed, these bolts are included with the roof accessory package. All fastening components are manufactured from high-strength steel to ensure reliable performance and long-term durability under demanding environmental conditions.

Assembly of Snow Guard



Step 1

The Start Hook is the base mounting component for SOLARSTONE roof accessories. It is installed over the batten and FILLER panel and provides the attachment point for the accessory system.



Step 2

The LP3 Snow Guard is an aluminum snow retention profile that slides into Start Hooks. Compared to a conventional two-pipe snow guard, it weighs approximately 30% less while providing effective snow retention.



Step 3

Once installed between the Start Hooks, the LP3 Snow Guard forms a continuous snow retention barrier that helps prevent snow from sliding off the roof.

Assembly of Roof Walkway



Step 1

Assemble the walkway bracket and walkway carrier using the supplied M8 × 20 bolts, nuts, and washers. Ensure the bolts are installed through the correct mounting holes.



Step 2

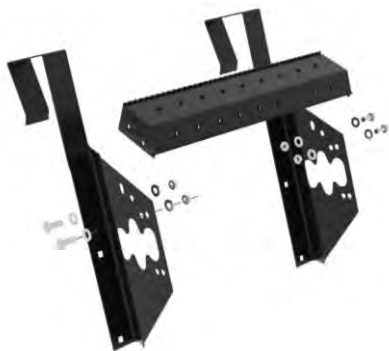
Attach the walkway to the assembled brackets using the supplied M8 × 20 bolts, nuts, and washers.



Step 3

The walkway assembly is now complete and ready to be installed on the roof.

Assembly of Roof Ladder



Step 1

Secure the roof step to the brackets using the supplied M8 × 20 round head square neck bolts, nuts, and washers. Ensure the bolts are installed through the correct mounting holes.



Step 2

Once the roof steps have been attached, connect the brackets together to extend the ladder to the required length.



Step 3

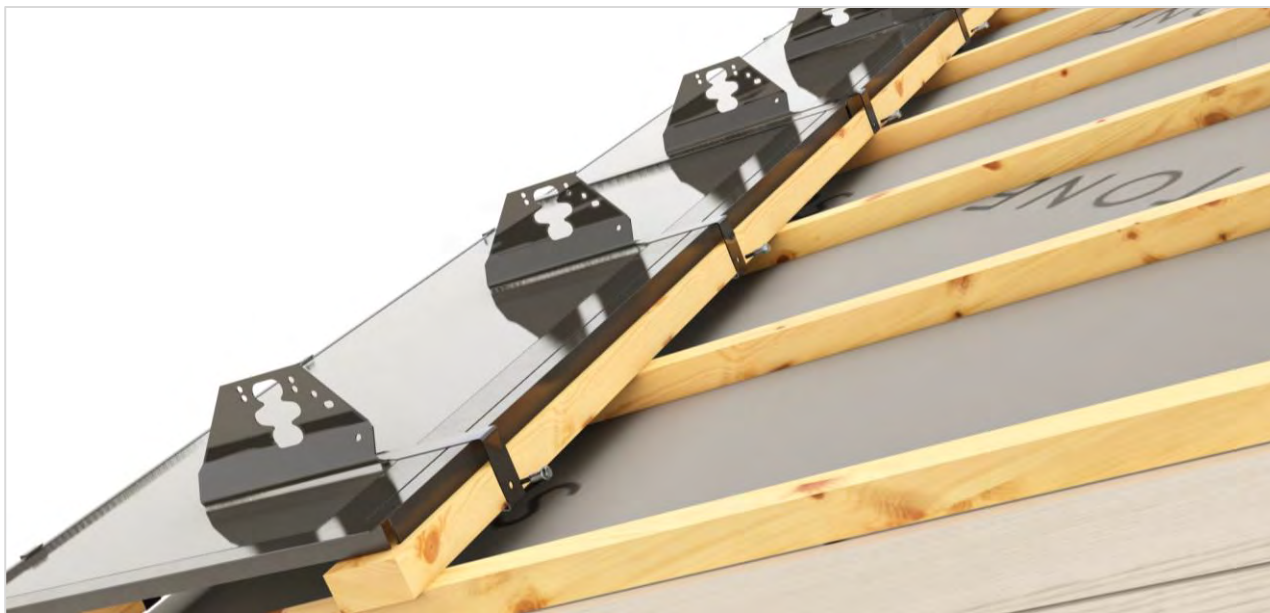
Fasten the brackets using the supplied M8 × 20 round head square neck bolts, nuts, and washers. Tighten all fasteners securely.



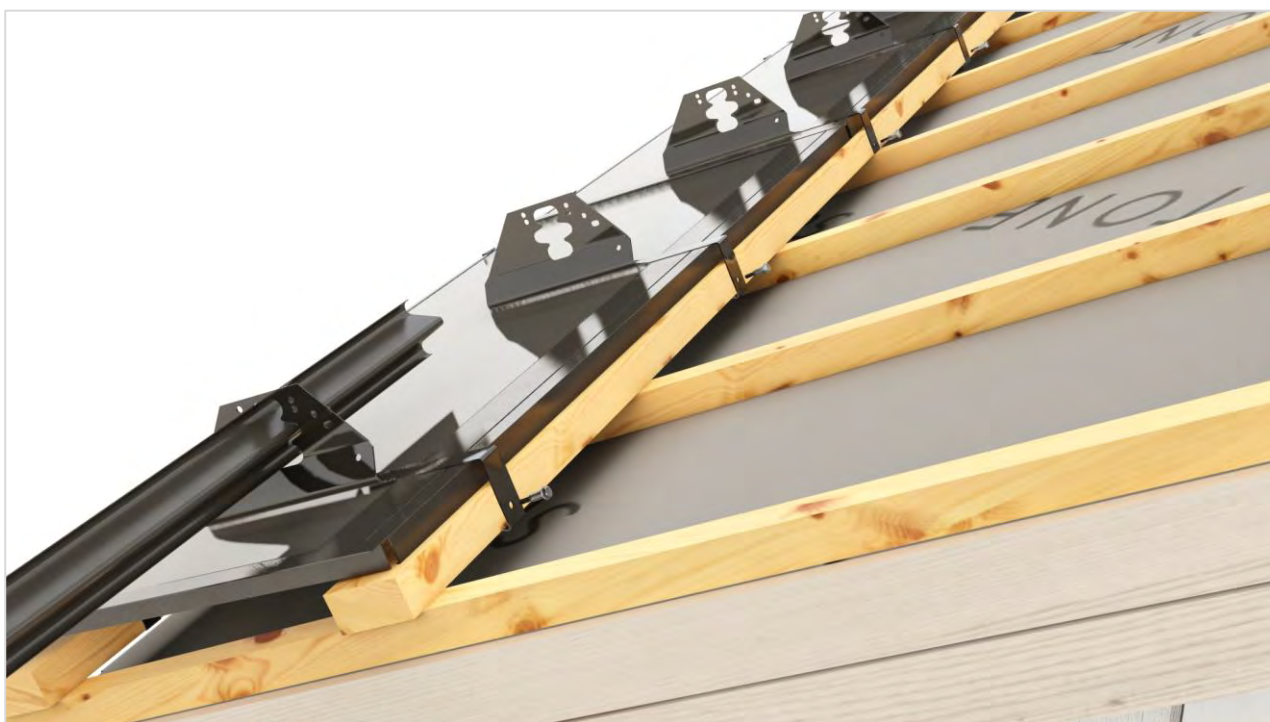
Step 4

When the required ladder length has been achieved, install the end hook. Secure the end hook using the supplied M8 round head square neck bolts, nuts, and washers, then tighten all fasteners securely.

Installation of Snow Guard



Install two start hooks on each full-size FILLER panel and secure them using the supplied 8 × 50 mm screws.



Slide the snow guard rail into the start hooks until it is correctly positioned.



Install the end stoppers on both ends of the LP3 rail to prevent movement.

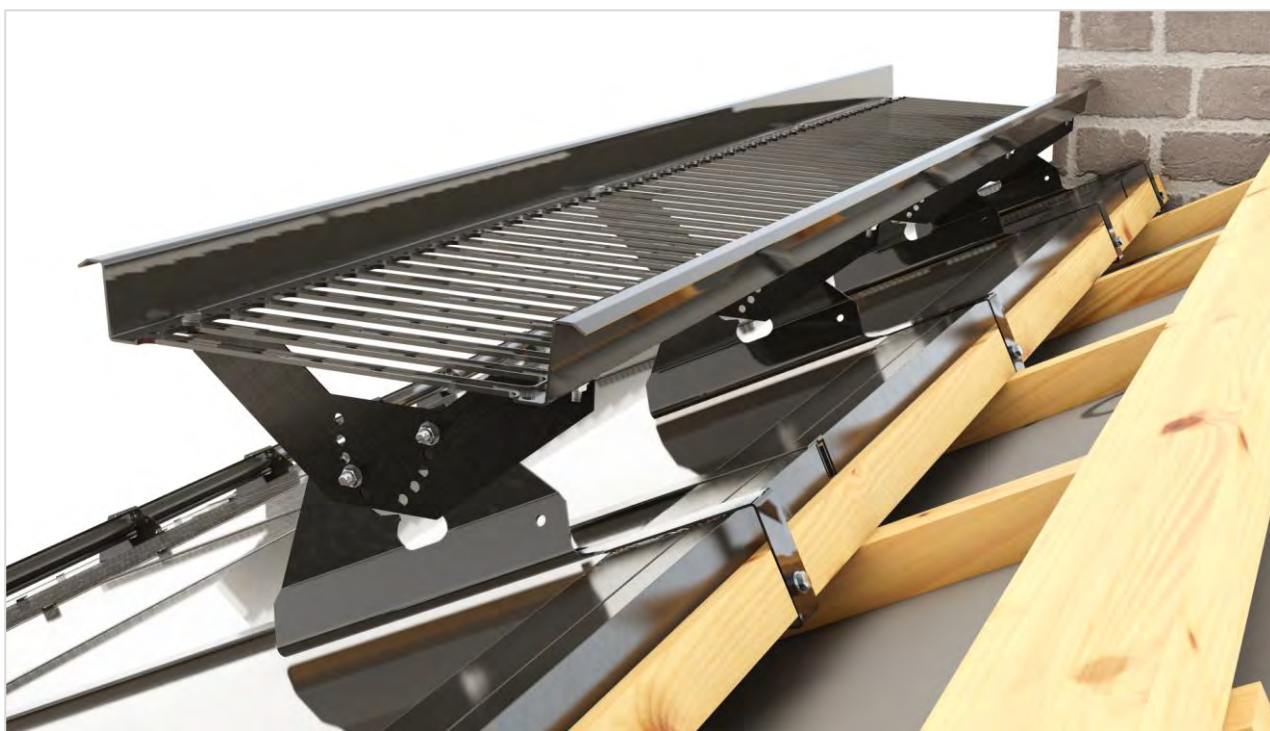


Finished installation of the snow guard.

Installation of Roof Walkway

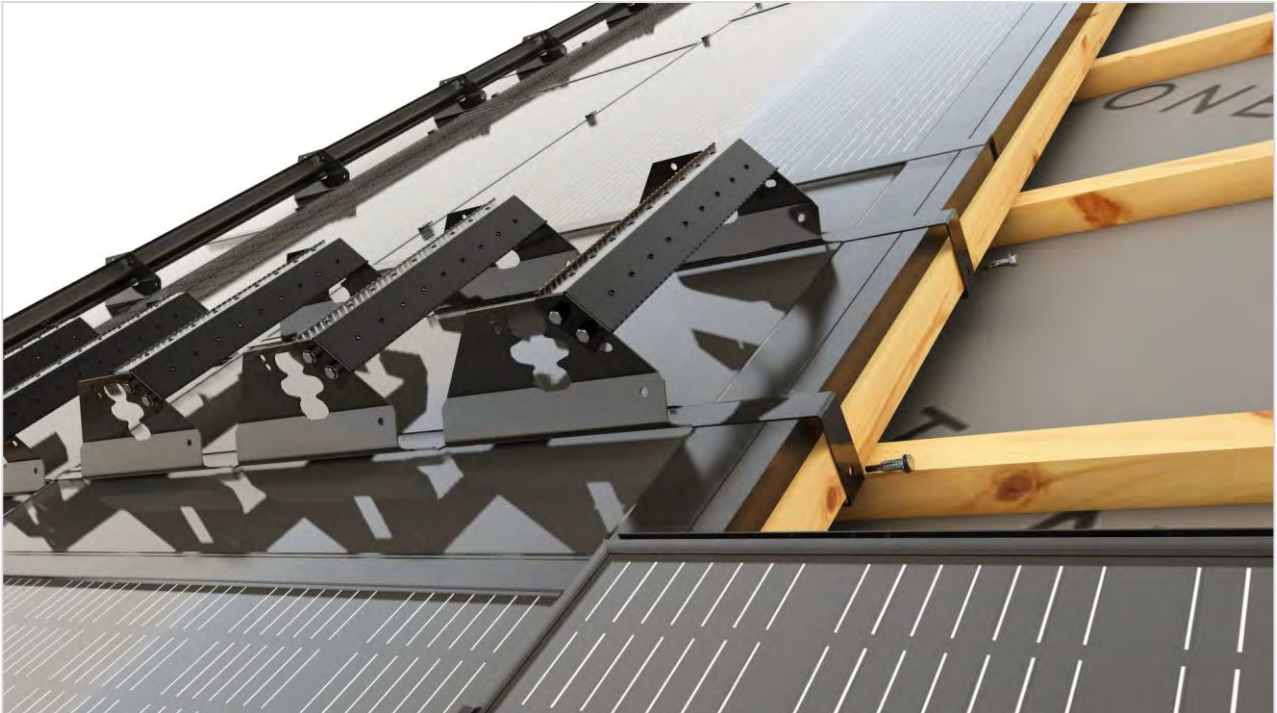


Assemble the start hooks and walkway brackets on the ground before installation. Secure the assembled brackets to the FILLER panels using the supplied 8 × 50 mm screws.

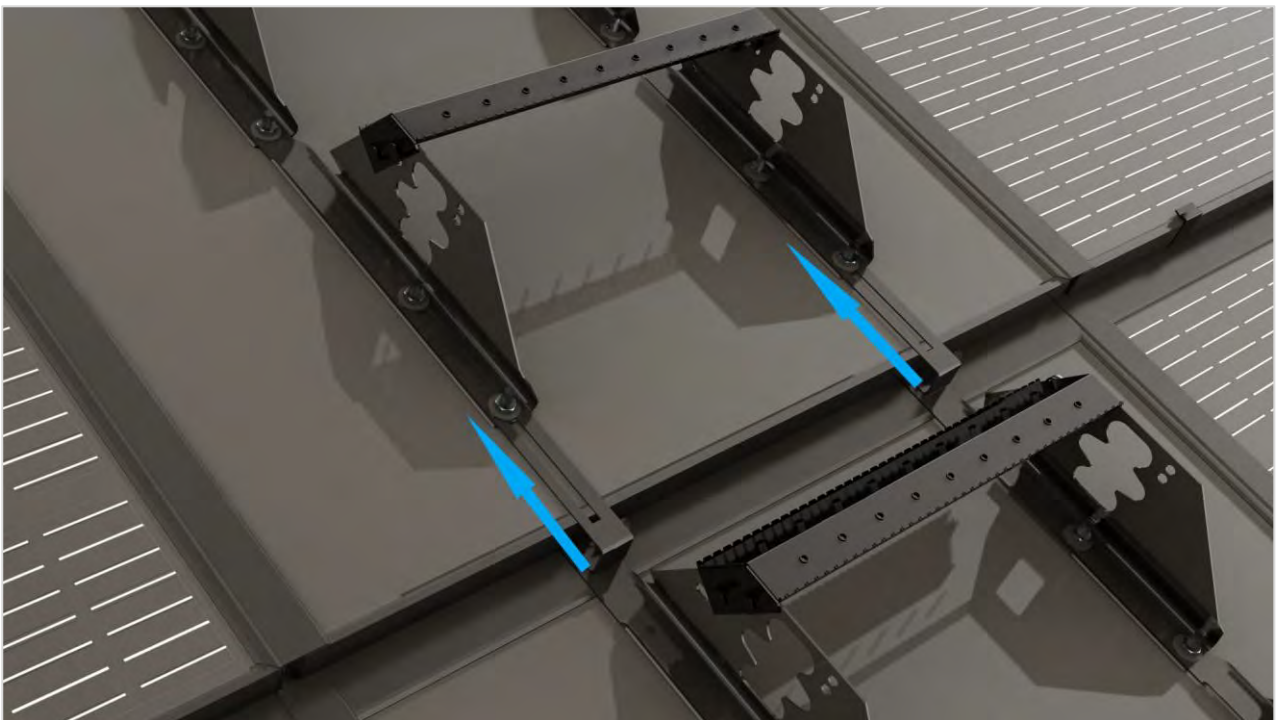


Install the walkway onto the brackets and secure it using the supplied M8 × 20 bolts, nuts, and washers.

Installation of Roof Ladder



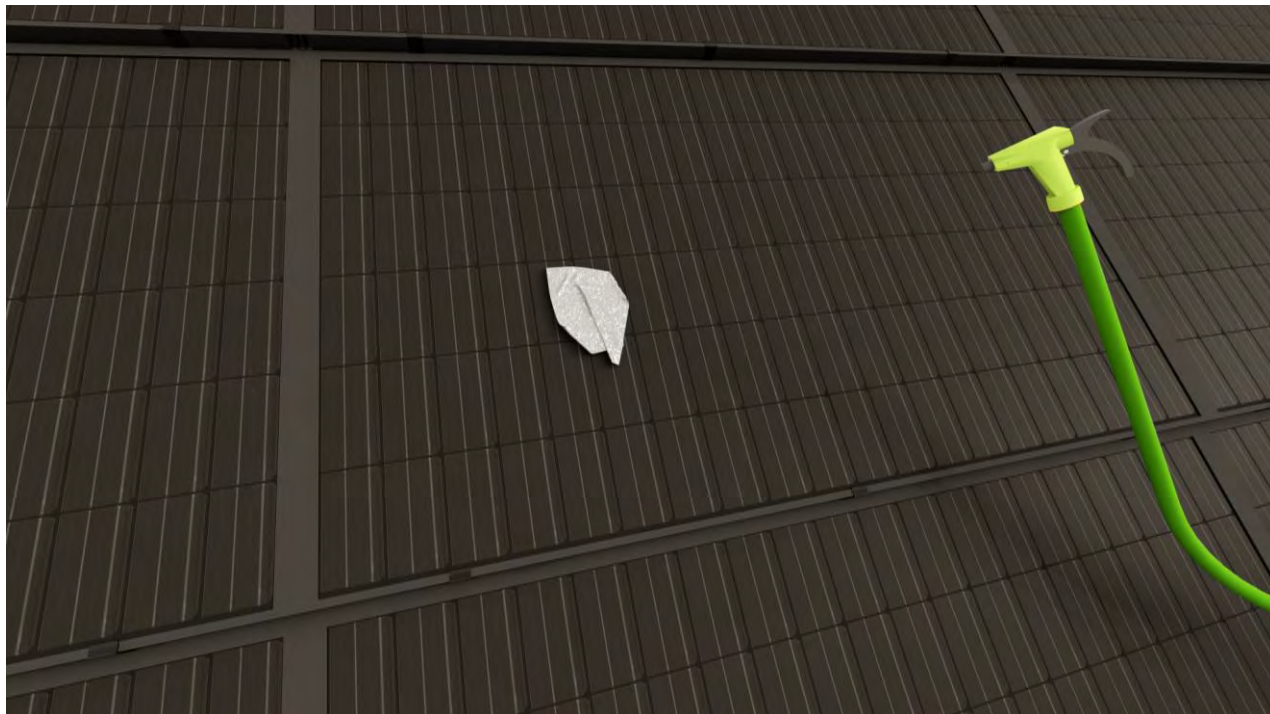
Once the roof ladder has been assembled, position it on the roof and secure the roof step brackets to the battens using the supplied 8 × 50 mm screws.



Adjust the position of the end hook as required to achieve the best fit, then tighten all bolts securely.

Maintenance

Cleaning the roof



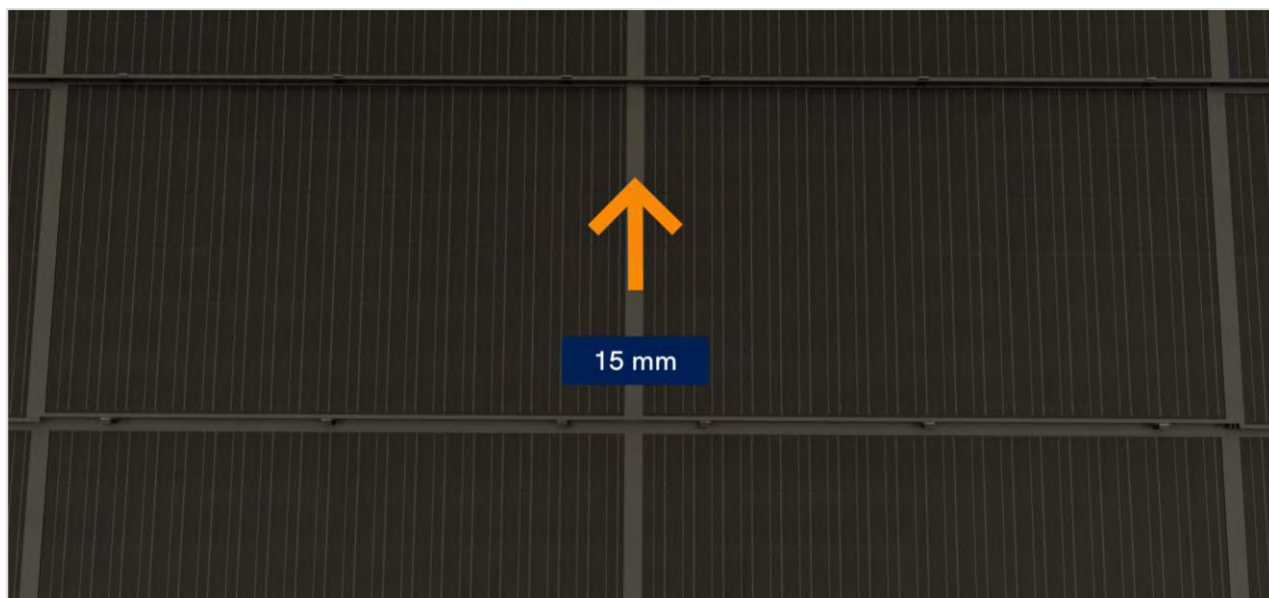
Inspect the Solar Full Roof™ system visually at least once a year. Check that the roof surface, flashings, visible cables, and connectors are in good condition and securely fixed.

In normal conditions, rain will usually clean the BIPV modules. If dirt, pollen, leaves, or other contamination remains on the modules after rainfall, the surface may be cleaned with clean water and a soft cloth.

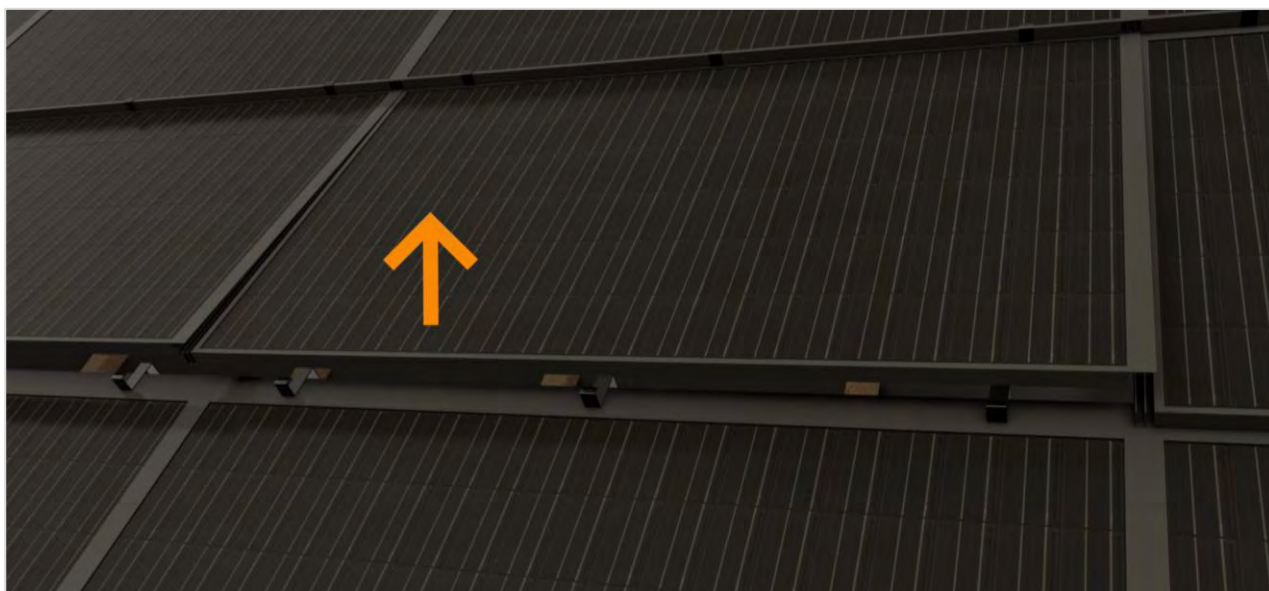
- Clean the modules only when solar irradiance is low, such as in the morning, evening, or during overcast conditions.
- Do not use metal tools, abrasive sponges, steam, corrosive chemicals, or other aggressive cleaning methods.
- If using a pressure washer, ensure the water pressure does not exceed 690 kPa (100 psi).
- Do not step on BIPV modules during cleaning, maintenance, or installation. FILLER modules may be stepped on when required for safe access.
- SOLARSTONE does not recommend removing snow from the BIPV modules. Snow should be allowed to slide or melt off naturally.
- Replace damaged components when required and ensure all maintenance work follows local safety and electrical regulations.

Replacing BIPV/FILLER modules

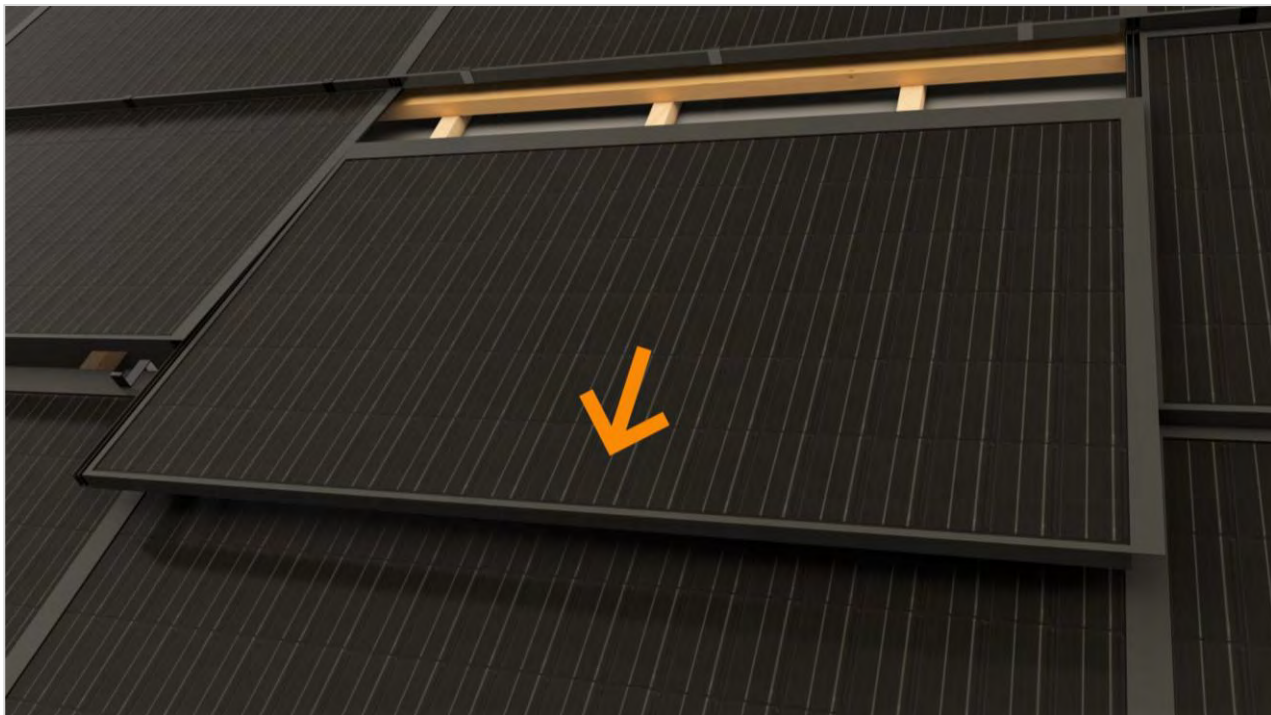
Replacement of a BIPV/FILLER module must only be carried out by a qualified installer or electrical professional familiar with the SOLARSTONE system. Before replacing a module, disconnect the BIPV system from all power sources and follow all applicable electrical safety procedures and local regulations. Never step on BIPV modules during replacement. Use a ladder or a suitable access platform to reach the affected area.



Carefully access the damaged or non-functional module. Push the module approximately 15 mm upward until it disengages from the mounting clamps. Release the clamps securing the adjacent module on the left to unlock the interlocking connection and allow safe removal.



Lift the module carefully and disengage it from the array. The adjacent left-hand module should remain partially released to provide sufficient clearance for removal.



Once the module has been freed from the clamps, pull it downward. All the cabling and the previous cabling system must be restored to their original state if a new module is installed.

Installer self-control declaration

INSTALLER'S BUSINESS NAME	DECLARATION DATE
CUSTOMER FULL NAME	SITE UNIQUE ID
INSTALLATION FULL ADDRESS	

BACKGROUND	This document is the installer's self-declaration of compliance. By completing this form, the installer confirms that all inspected areas met SOLARSTONE's guidelines, and applicable local standard, regulations and building codes. This record forms part of the project's quality documentation and must be retained throughout the warranty period.
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PURPOSE	This declaration promotes personal self-assessment, accountability, reduces installation errors, and provides a traceable quality record for the client, installer, and SOLARSTONE. It complements formal third-party inspections by capturing the roofer's own professional judgement at each stage.
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OBJECTIVE	The installer completing this form declares that, to the best of their professional knowledge and on-site observation, roof preparation, underlayment, battening, cable management, and equipment positioning were carried out in compliance with the project documentation and SOLARSTONE's requirements. Any deviations, site-specific conditions, or observations identified during the installation have been accurately documented as found on site. Complete and accurate documentation ensures traceability and supports efficient assessment and handling of future service requests, claims, and warranty matters.
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NOTES / SUMMARY

Master Roofer full name

Master Roofer signature

INSPECTED AREAS	
SITE SAFETY, ACCESSIBILITY & UTILITIES	RESULT
The work area was safe and vehicle access to the site was ensured.	☐ Compliant ☐ Not Compliant ☐ Not applicable
There was sufficient space for receiving, unloading, and storing materials.	☐ Compliant ☐ Not Compliant ☐ Not applicable
A crane and/or lifting equipment can was used on site.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Scaffolding was installed and used for the installation period.	☐ Compliant ☐ Not Compliant ☐ Not applicable
An electrical connection was available for tools and charging.	☐ Compliant ☐ Not Compliant ☐ Not applicable
NOTES & REMARKS:	
PROJECT DOCUMENTATION & COMPLIANCE	RESULT
Necessary approvals and permits for the work were in place.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Solarstone project documentation was available on site, valid, understood and followed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Solarstone installation manual was available on site, understood and followed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
PV-cable routing specification documentation was available and followed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Shadows from nearby obstacles were accounted for in the DC-string design.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Need for snow barriers, walking rails, and ladders were assessed and planned in project.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Maintenance walkways for larger solar areas were planned and accounted for.	☐ Compliant ☐ Not Compliant ☐ Not applicable
NOTES & REMARKS:	
ROOF CONSTRUCTION & UNDERLAYMENT	RESULT
Roof pitch complied with manufacturer requirements and the design; min $\geq 18^\circ$	☐ Compliant ☐ Not Compliant ☐ Not applicable
Roof structure complies with building standards and has load capacity $\geq 16 \text{ kg/m}^2$	☐ Compliant ☐ Not Compliant ☐ Not applicable
Roof geometry is correct; diagonals match; tolerance $\pm 20 \text{ mm}$.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Roof structure is straight and plumb; no deflection.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Underlayment is water- and UV-resistant; watertightness class $\geq W1$; -40°C to $+120^\circ \text{C}$	☐ Compliant ☐ Not Compliant ☐ Not applicable
Underlayment is watertight sealed according to the manufacturer's instructions.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Excess water on the underlayment is directed to the eaves and/or the rainwater system.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Ventilation batten dimensions are at least $45 \times 45 \text{ mm}$.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Batten dimensions: Solar Full Roof™ $45 \times 95 \text{ mm}$	☐ Compliant ☐ Not Compliant ☐ Not applicable
Battening complies with the design; straightness and spacing tolerance $\pm 2 \text{ mm}$.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Batten nails/screws are properly fixed, approx. 2/3 into the rafter.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Ventilation batten–underlayment–battening gaps are sealed with sealing tape.	☐ Compliant ☐ Not Compliant ☐ Not applicable
NOTES & REMARKS:	
PV-CABLE MANAGEMENT	RESULT
PV cable grouping and layout follow the design.	☐ Compliant ☐ Not Compliant ☐ Not applicable
PV cables are fixed, not resting on underlayment; main route is in conduit.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Roof cable penetrations are watertight and properly sealed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
PV group open-circuit voltage measured; results marked on cable ends.	☐ Compliant ☐ Not Compliant ☐ Not applicable
NOTES & REMARKS:	
SOLARSTONE ROOF INSTALLATION	RESULT
Valleys and eave flashings installed; penetrations watertight sealed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Fascia board, drip edge and gutter brackets installed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
Edge flashings properly fixed.	☐ Compliant ☐ Not Compliant ☐ Not applicable
BIPV modules correctly in clamps, straight and flush.	☐ Compliant ☐ Not Compliant ☐ Not applicable
For Solar Full Roof™, panels fit tightly edge to edge.	☐ Compliant ☐ Not Compliant ☐ Not applicable
NOTES & REMARKS:	

Version

No	Date	Description	Made by	Approved by
2.1	01.07.2026	Updated version	Romet Roosalu	Henri lass
2.0	15.01.2024	Specifications, Underlayment, Eaves and Gutters, Batten Step, Grounding, Installation of First and Regular Clamps, Cable Connections, Roof Accessories, Click-on Kit, Appendix A, B. Modifications include rewriting content and updating graphical representations in named chapters.	Henri Lass Alari Merbach,	Mattis Jürimäe
1.02	01.07.2023	Appendix A, B	Henri Lass	Mattis Jürimäe
1.01	16.03.2023	Revised batten step formula	Alari Merbach Kevor Reva Henri Lass	Mattis Jürimäe
1.0	11.01.2023	Released version	Alari Merbach Henri Lass	Mattis Jürimäe

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