

- DE | Lesen Sie diese Installationsanleitung vor Montagebeginn!
Montage nur durch sachkundige, qualifizierte Personen!
- GB | Read these instructions before installation!
Installation should only be carried out by skilled, qualified personnel!
- FR | Prenez soin de lire le présent manuel d'installation avant le début du montage!
Montage seulement par des personnes compétentes et qualifiées!
- IT | Leggere le presenti istruzioni di installazione prima di intraprendere i lavori di montaggio!
Il montaggio è consentito esclusivamente a personale esperto e qualificato!
- ES | Lea estas instrucciones de instalación antes de comenzar el montaje!
El montaje solo debe realizarlo personal experto y cualificado.
- NL | Lees deze installatiehandleiding alvorens met de montage te beginnen!
De montage mag uitsluitend plaatsvinden door deskundige, gekwalificeerde personen!
- DK | Læs installationsvejledningen før montagen påbegyndes!
Montagen må kun udføres af fagligt kvalificerede personer!
- SE | Läs den här installationsanvisningen innan monteringen påbörjas!
Installationen bör endast utföras av utbildad, kvalificerad personal!
- CZ | Přečtěte si tento návod k instalaci před začátkem montáže!
Montáž smí provádět jen odborné a kvalifikované osoby!
- PL | Przed rozpoczęciem montażu przeczytać niniejszą instrukcję!
Montaż tylko przez wykwalifikowanych fachowców!
- LT | Prieš montuodami perskaitykite šią įrengimo instrukciją!
Montuoti leidžiama tik profesionalams, kvalifikuotiems asmenims!
- HU | A szerelés megkezdése előtt olvassa el ezt a telepítési útmutatót!
A szerelést csak megfelelő szakképesítéssel rendelkező jogosult személy végezheti!



GB | Use

Mounting system for installing framed PV modules with heights between 30 and 50 mm on pitched roofs with the following characteristics:

- Roof pitch 5° - 60° (solar fasteners), 20°-60° (Roof hooks)
- Plain tile, natural slate, single and double roman, modern interlocking tiles with wooden substructures
- PV-panel landscape and portrait oriented
- Trapezoidal metal sheet roof with wooden or metal substructures
- Fibre cement corrugated sheet
- Corrugated metal sheet roof with wooden or metal substructures

Static calculation must exist and be considered according to local regulations.

The manufacturer's consent must be obtained prior to installation on sandwich roofing.

Installation guidelines

Ensure that the roof construction is suitable for the introduction of forces at the fixing points and their subsequent transmission.

In order to compensate thermal expansion, included a break every 12 meters when planning the PV-system.

Please follow to your local timber construction standard.

Please do not use installed roof connections as ladder.

If installation is located within 10km from the coast, we advice not to use zinc coated material like roof hook Pantile (R420180), Plain (R420181), Flexible (R420082) and Eco Basic (R420165).

For further information please contact your sales representative or the technical department at Renusol.



The structural stability of the PV-system must be verified before installation. The building must be able to support the additional weight safely.

Installation notes

Please read these installation instructions carefully before starting the installation. First, familiarise yourself with the system components.

During the installation and in particular whilst working on the roof, be sure to observe the relevant health and safety guidelines, safety guidelines during installation and please follow the current rules and regulations for the corresponding region.

The individual installation instructions are merely recommendations in accordance with the current state of technology and are based on previous experiences of how Renusol systems can be installed. If any special characteristics of the roof or object need to be taken into account, then we recommend that you consult specialists such as roofers or structural engineers where necessary.

Please also check that you use a manual which is up to date. All manuals are available in the download area at www.renusol.com

Testing/certification:

- TÜV
- MCS012

Applicable Documents

"General installation, maintenance and assembly instructions"

"Safety Instructions for Installation Instructions"

"Warranty and Disclaimer."

These documents are available at www.renusol.com

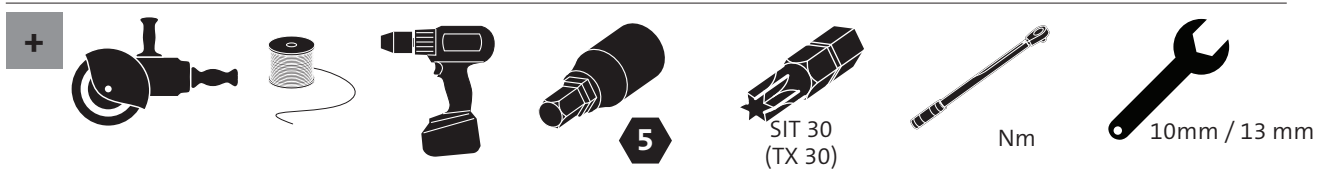
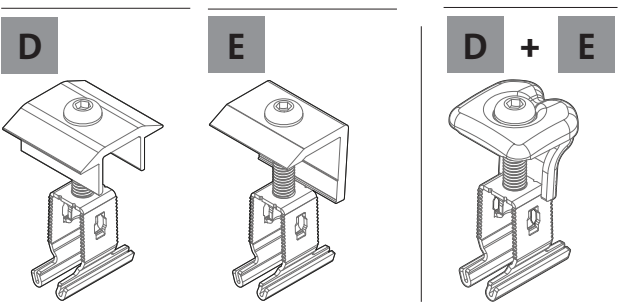
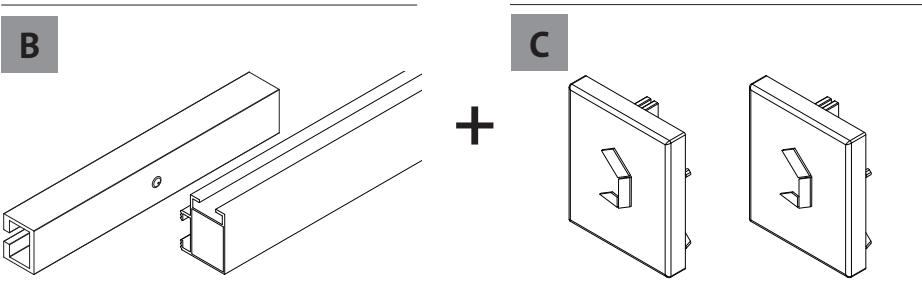
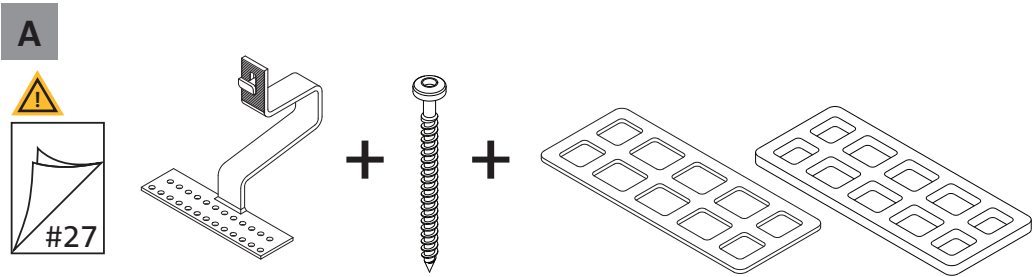
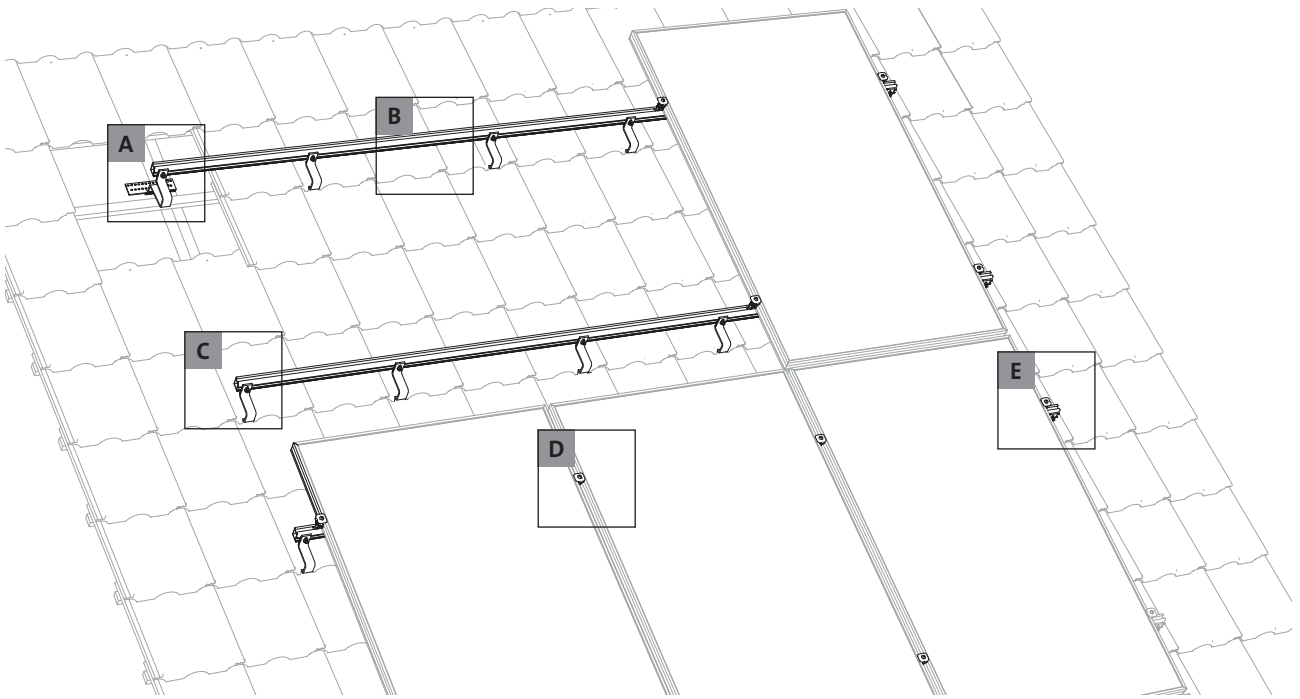
Warranty:

The warranty only applies if an original Renusol complete system is used with a layout designed by Renusol.

Please ensure that the roof construction is suitable for the introduction of forces at the fixing points and their subsequent transmissions.

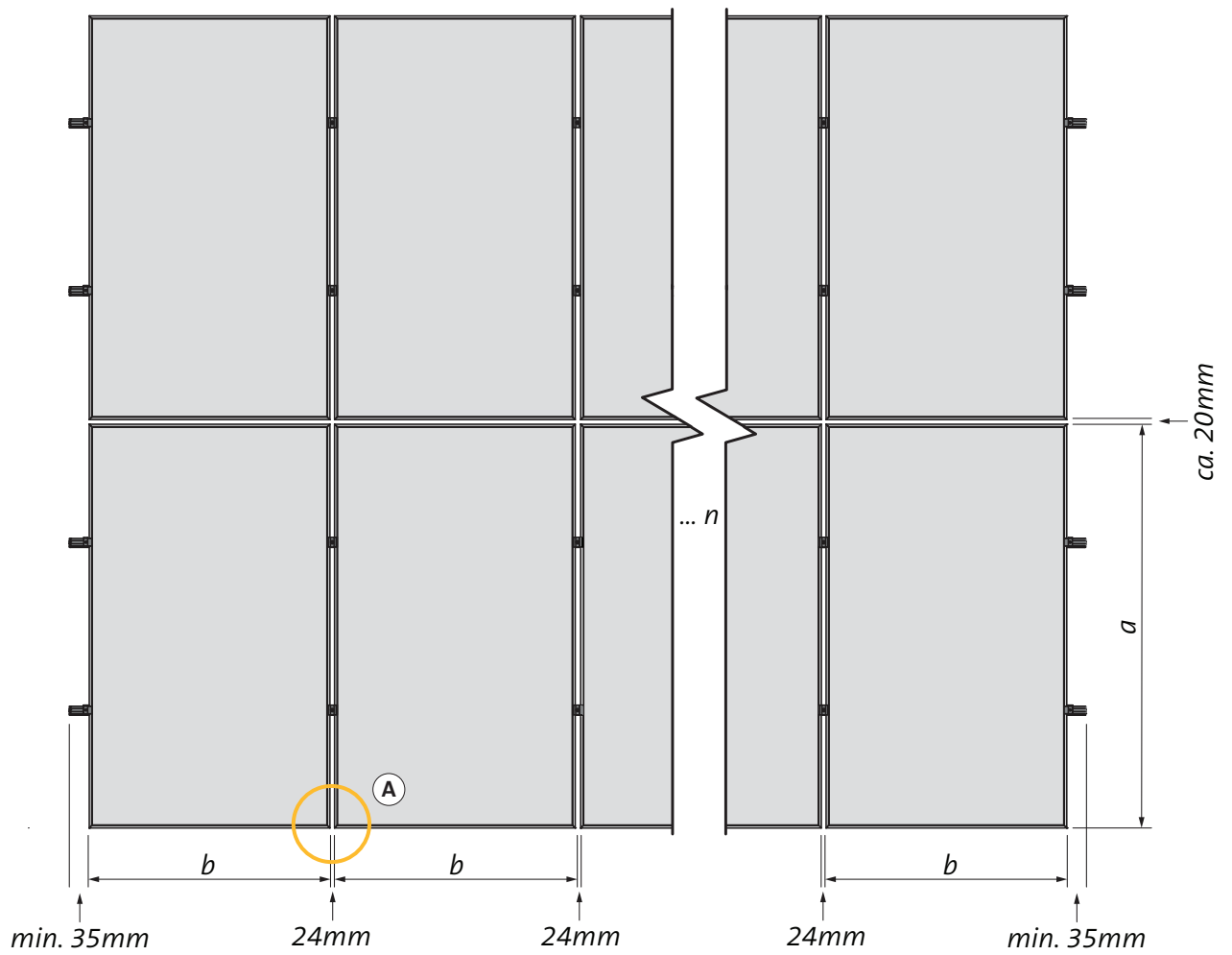
The current version of these installation instructions is available at: www.renusol.com

1.) SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)

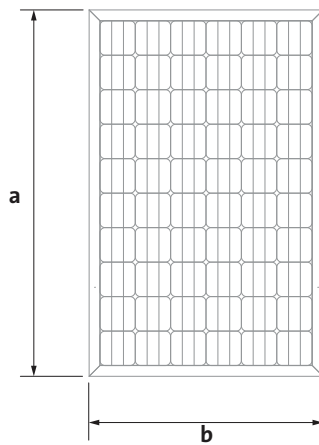
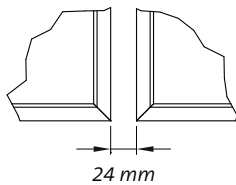


OVERVIEW SINGLE LAYER SYSTEM - VERTICAL ORIENTATION (PORTRAIT)

1. A



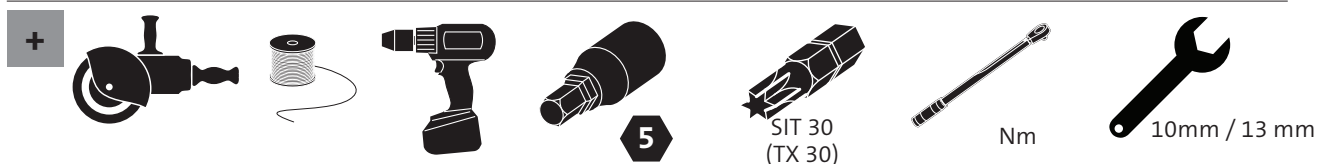
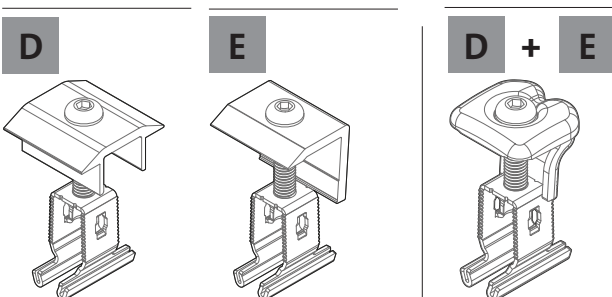
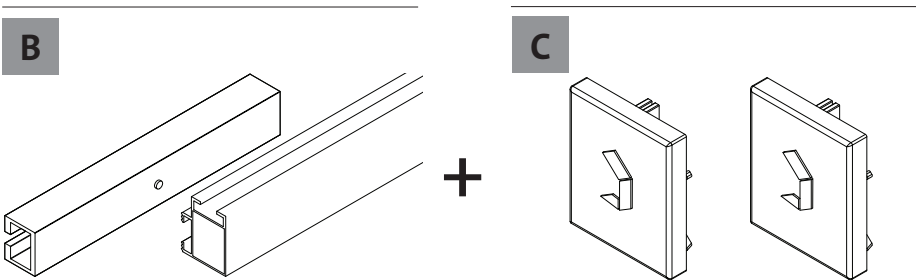
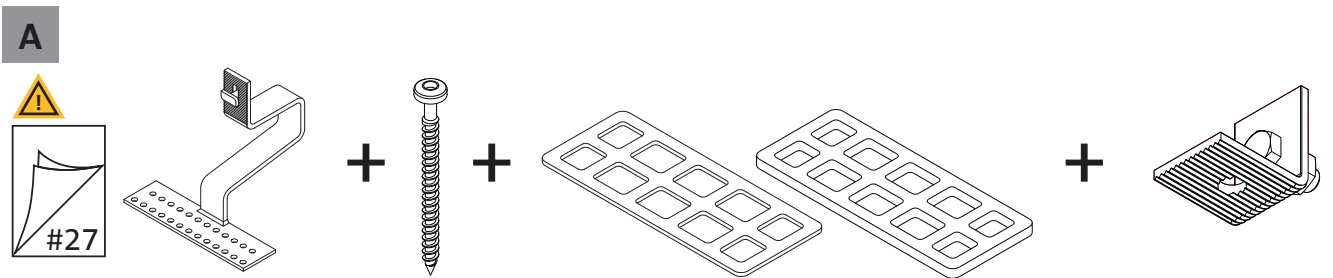
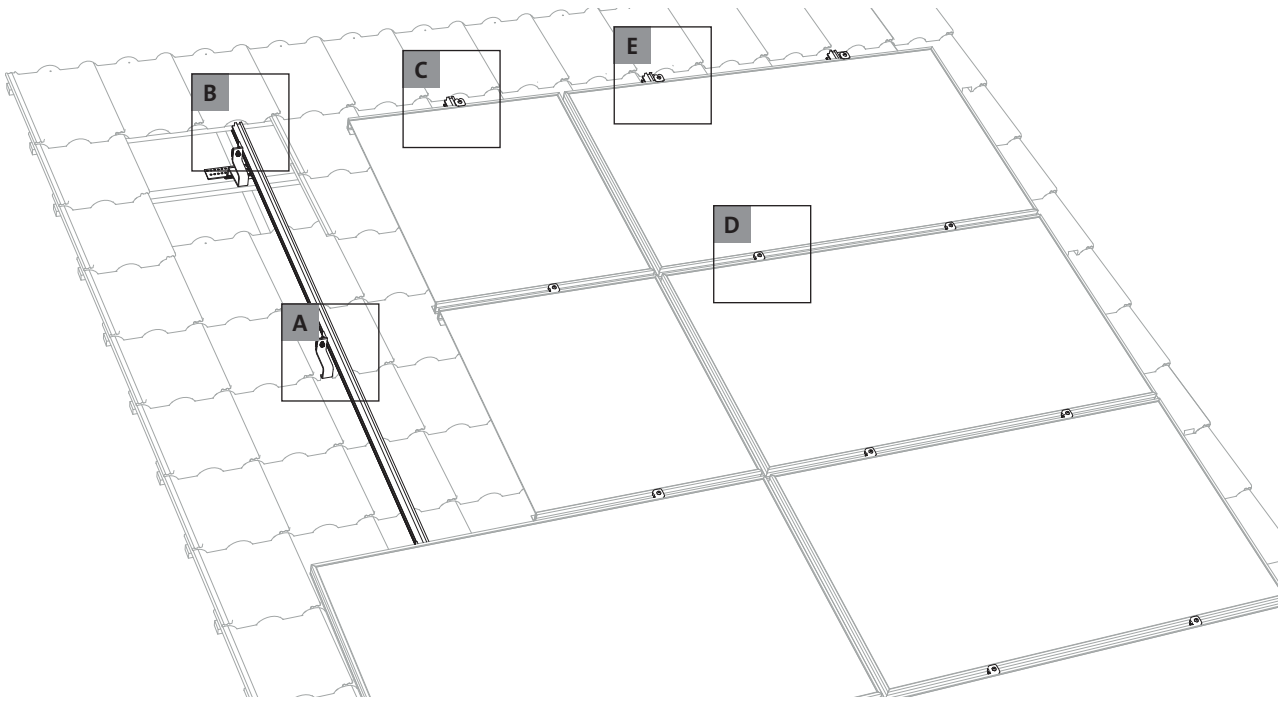
A



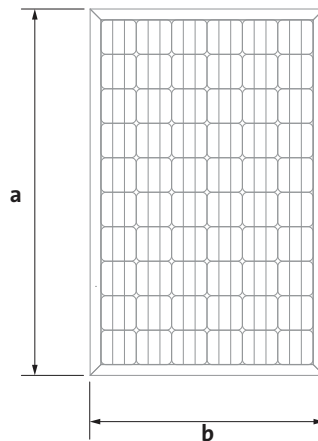
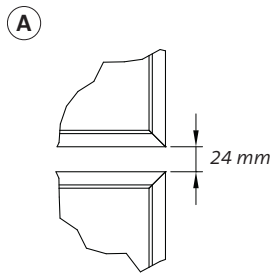
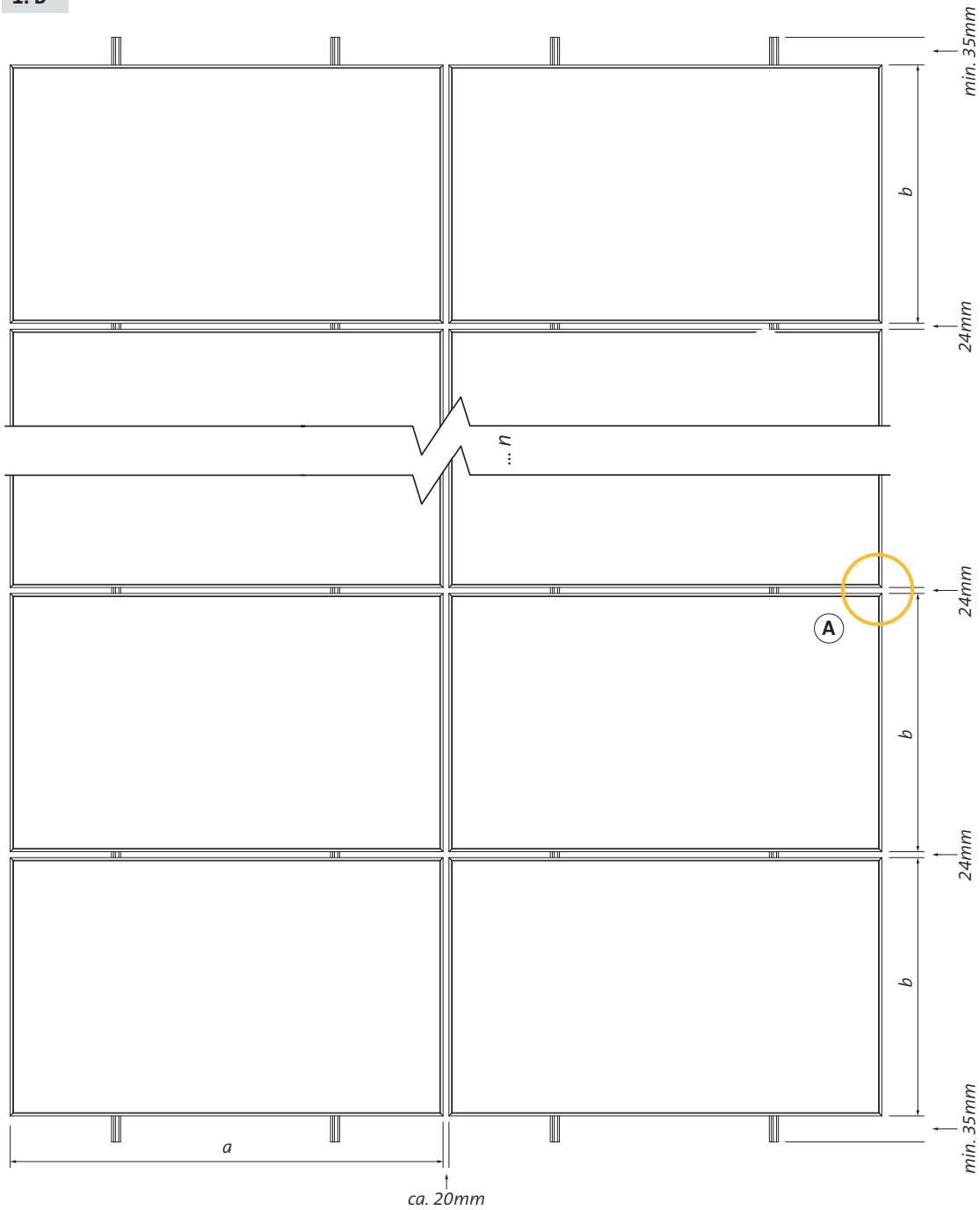
Note

For module positioning/fastening points please refer to manufacturers recommendations

Max. clearance of mounting rail from last roof connection = 200 mm



1. B

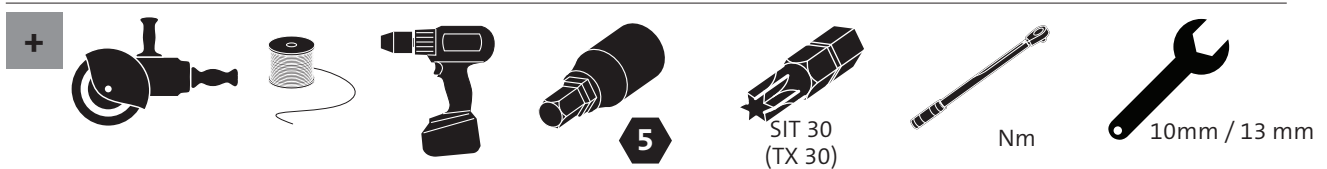
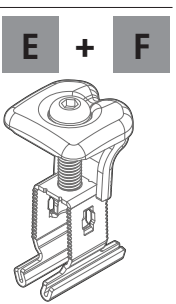
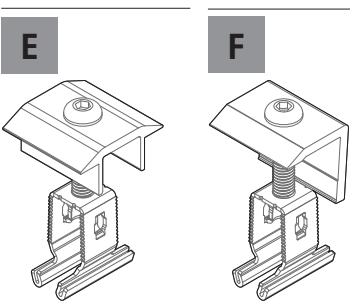
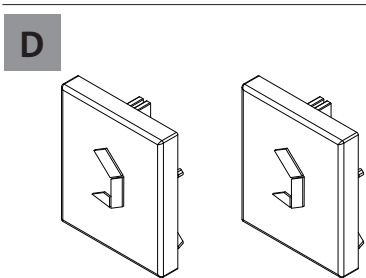
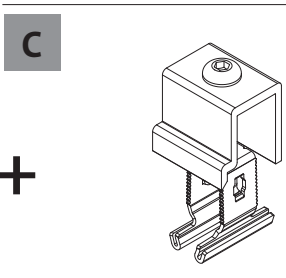
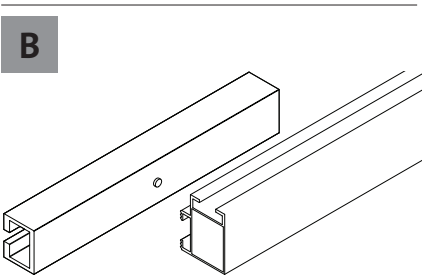
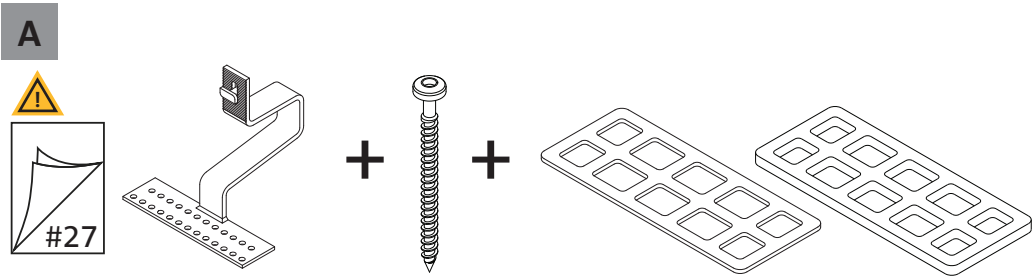
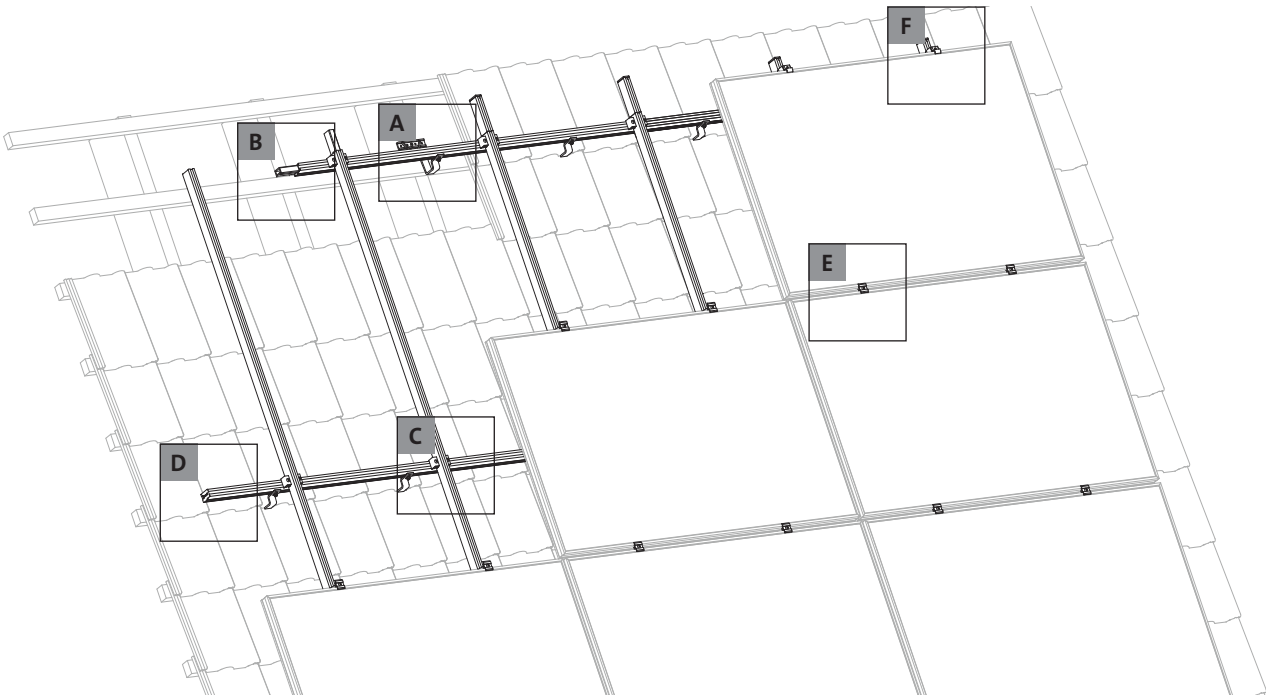


Note

Max. clearance of mounting rail from last fixation point = 200 mm
 Clearance between modules = 24 mm

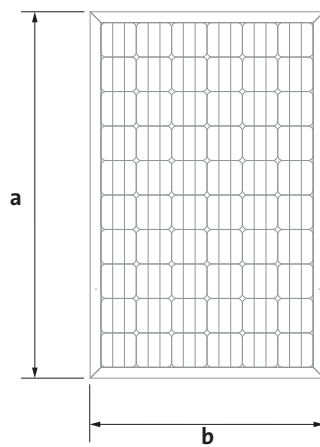
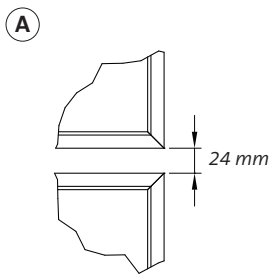
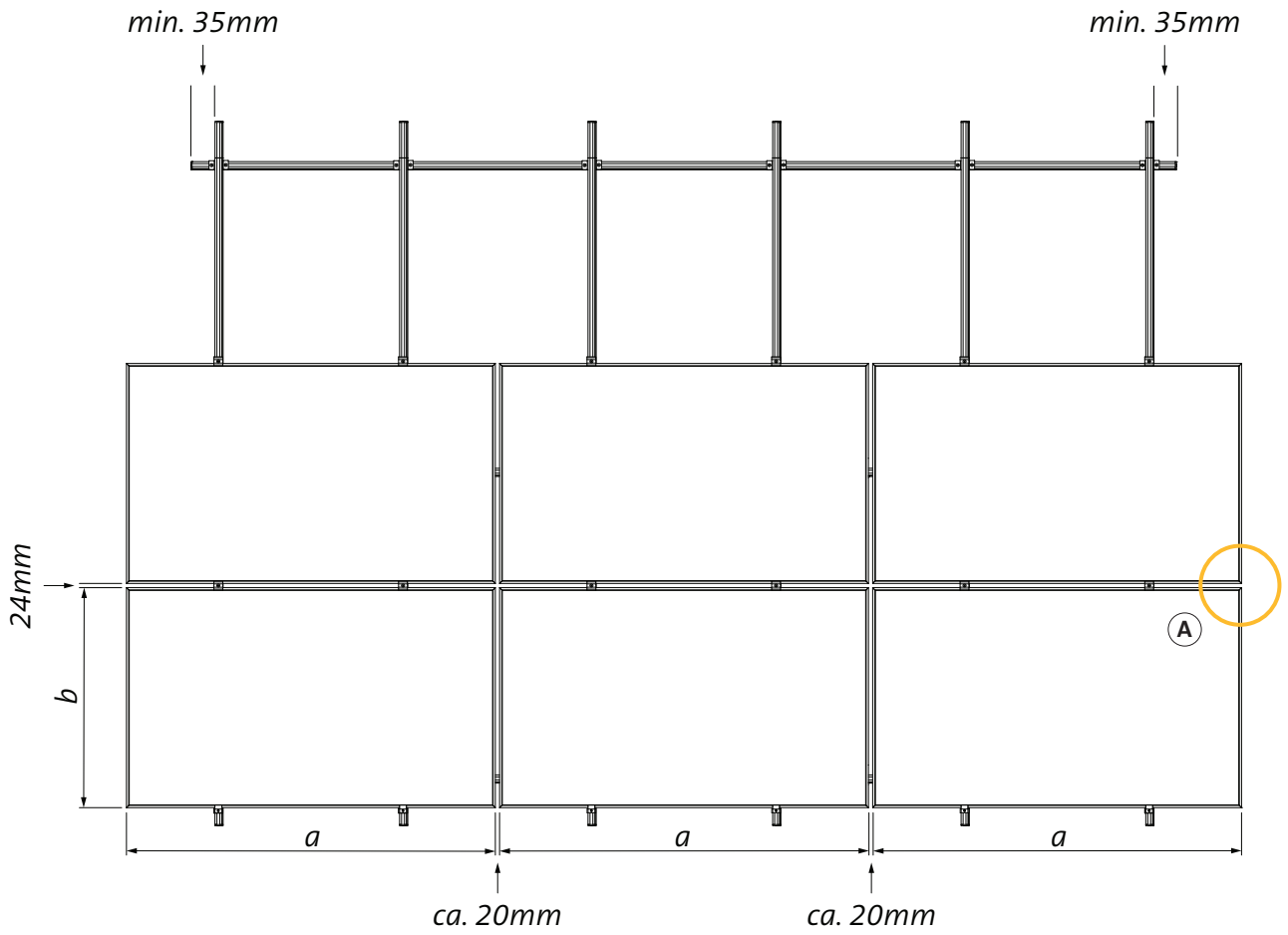
Please ensure that clearance of rafters fits with fixing points of Modules. If not, use double layer system

3.) DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)



OVERVIEW DOUBLE LAYER SYSTEM - HORIZONTAL ORIENTATION (LANDSCAPE)

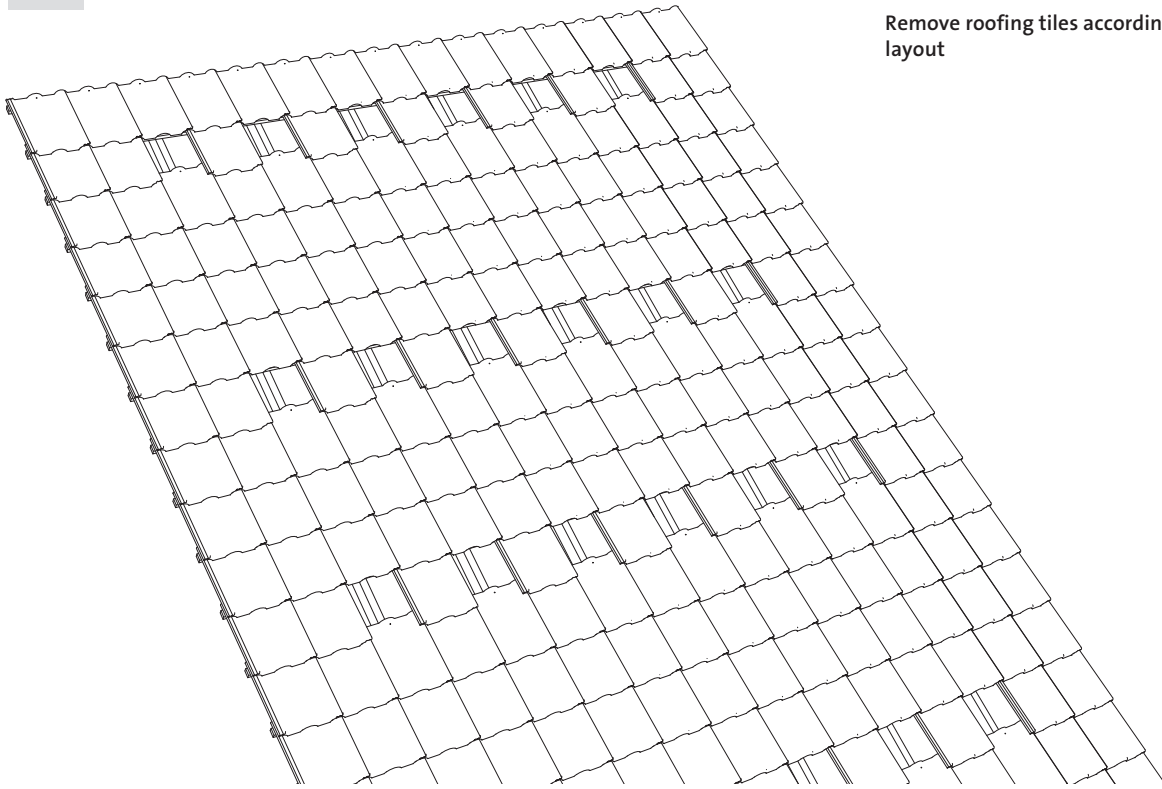
1. B



Note
Max. clearance of mounting rail
from last fixation point = 200 mm
Clearance between modules = 24
mm

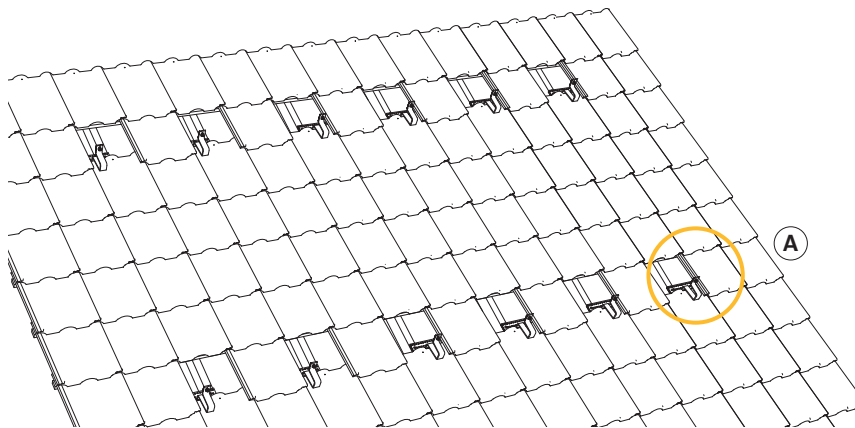
INSTALLING ROOF HOOKS

1.



Remove roofing tiles according to your layout

2.

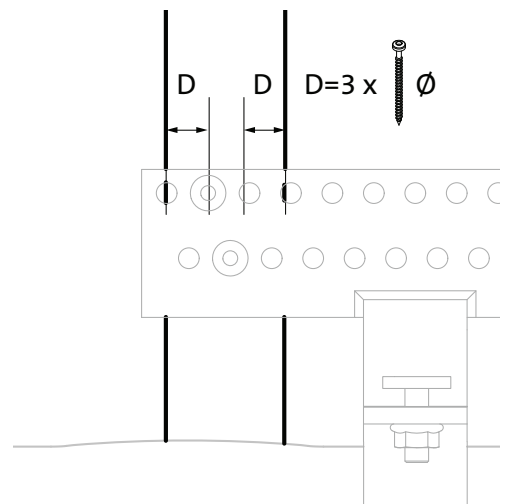
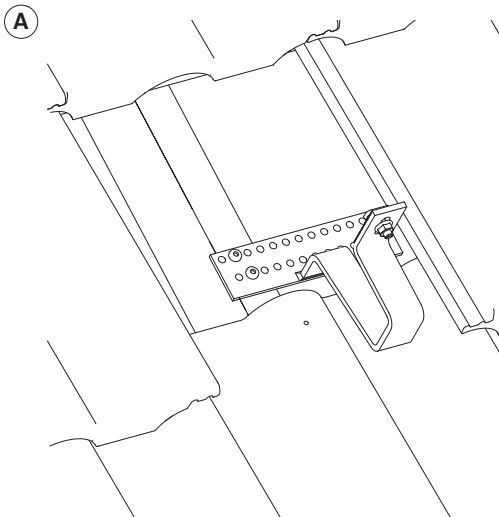


Installing the roof hooks

Fix the roof hooks to the rafters using appropriate number of wood screws (one in the lower and one in the upper groove) (fig. A). Pre Drill according to your local regulation.

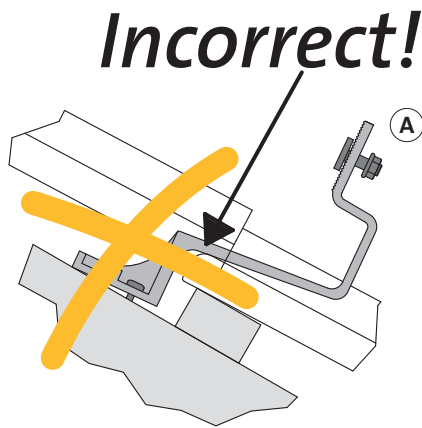
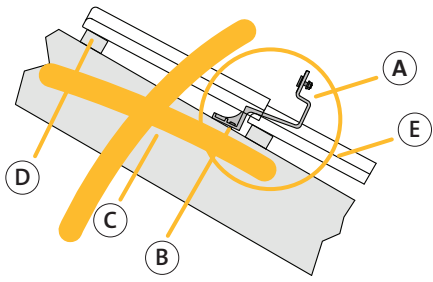
Minimal space between fixation point and edge of rafters is triple screw diameter.

Position the screws in the rafters center

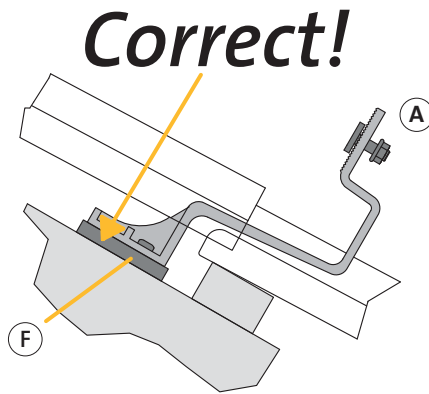
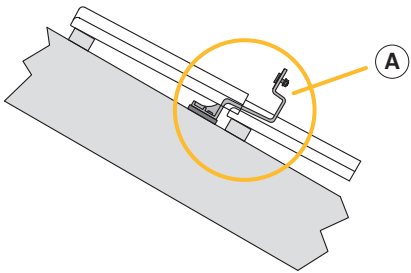


INSTALLING ROOF HOOKS DETAILS

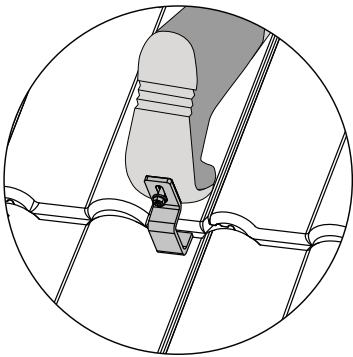
3.



Installing the roof hooks
Minimal distance between Roof hook and tile must be 5 mm. Use spacer plates to avoid contact with tile.

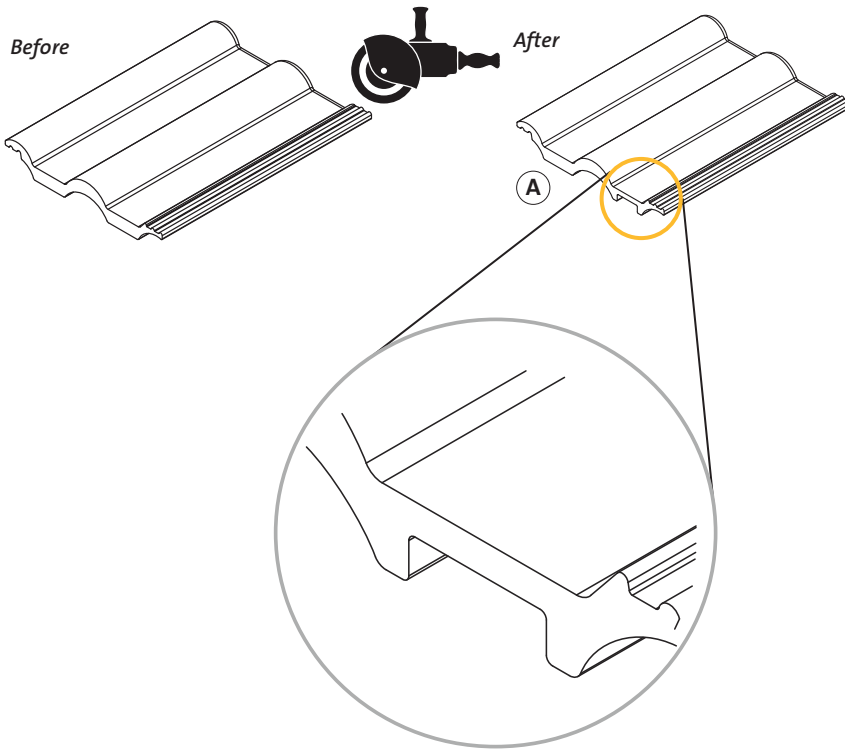


A Roof hook
B Wood screw
C Rafters
D Batten
E Roof tile
F Spacer plate (Packer)



MODYFING TILES, DOUBLE ROMAN AND MODERN INTERLOCKING

4.



Modifying the tiles

Use an angle grinder to cut a recess in the tile covering the roof hook at the point of insertion of the roof hook so that the tile lies flat (Fig. A).

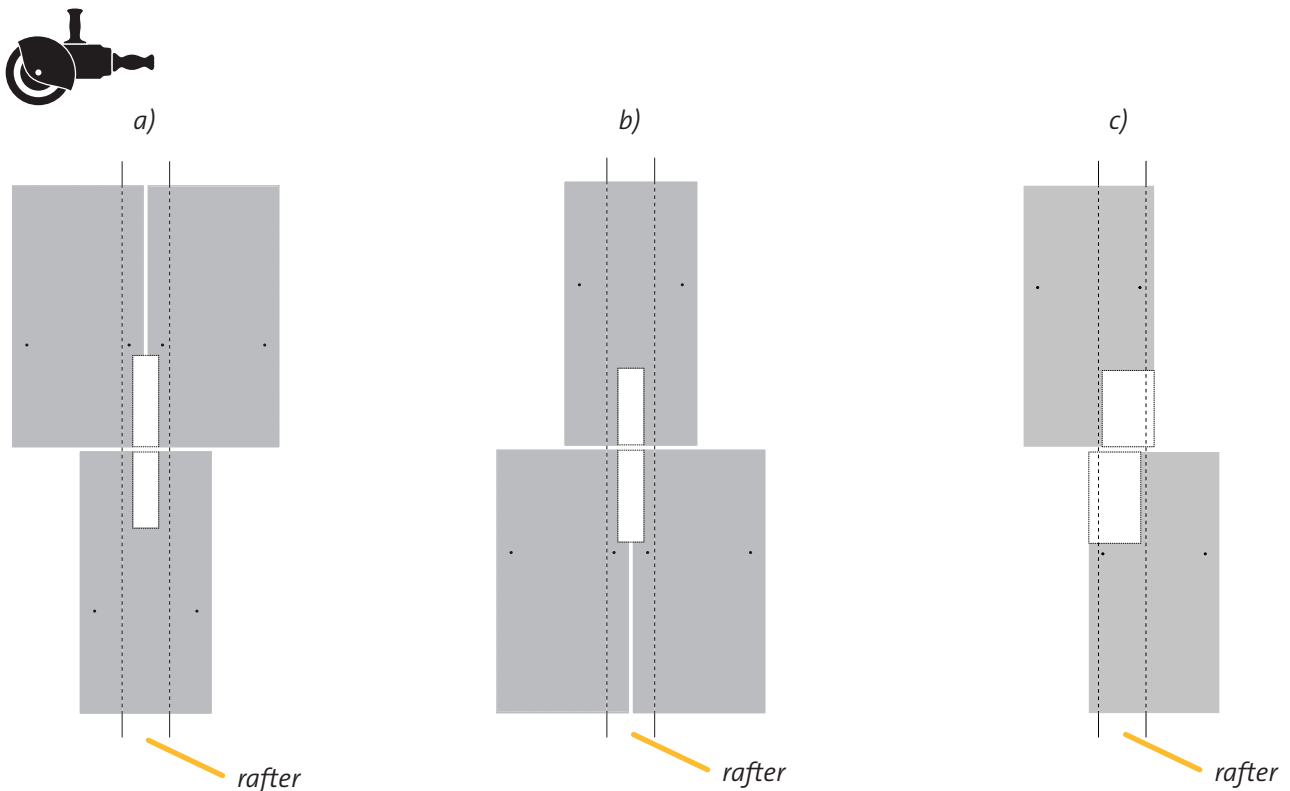
If grooved tiles are in place, it will also be necessary to cut a recess in the lower tile.

MODYFING TILES: PLAIN TILES AND NATURAL SLATE (GENIUS SOLUTIONS)

5.

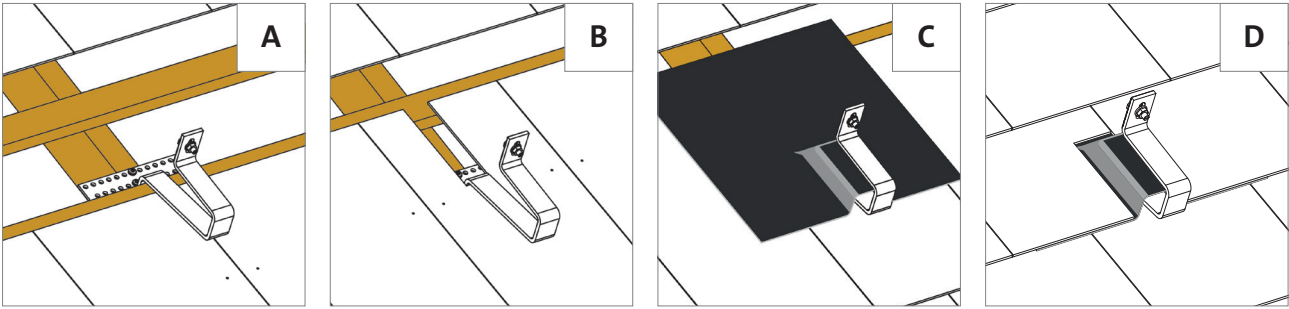
Modifying the tiles

Use an angle grinder or slate cutter to cut a recess in the tile covering the roof hook at the point of insertion of the roof hook so that the tile lies flat. If grooved tiles are in place, it will also be necessary to cut a recess in the lower tile. Handling of three different positions:



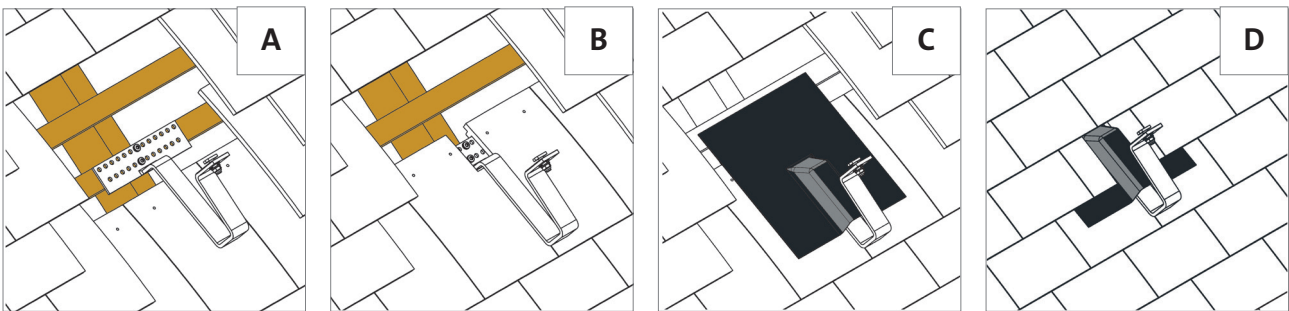
FLASHING NATURAL SLATE WITH GENIUS SOLUTIONS (PLEASE REFER TO GENIUS SOLUTIONS)

7.



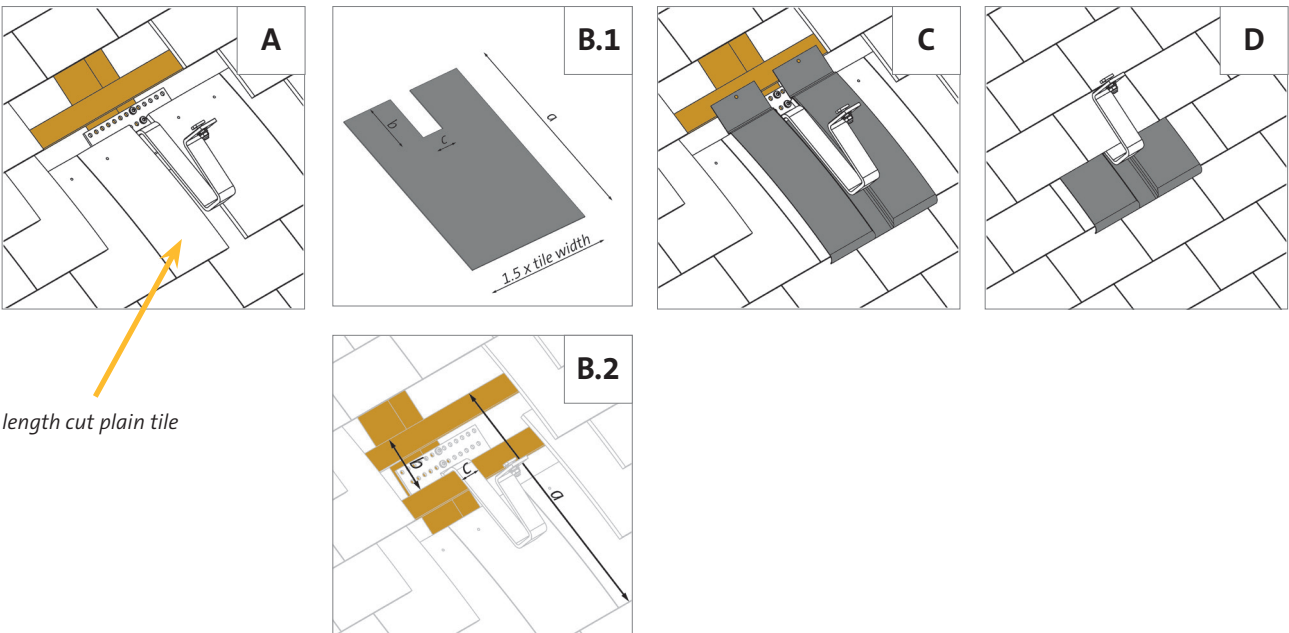
FLASHING PLAIN TILE WITH GENIUS SOLUTIONS (PLEASE REFER TO GENIUS SOLUTIONS)

8.

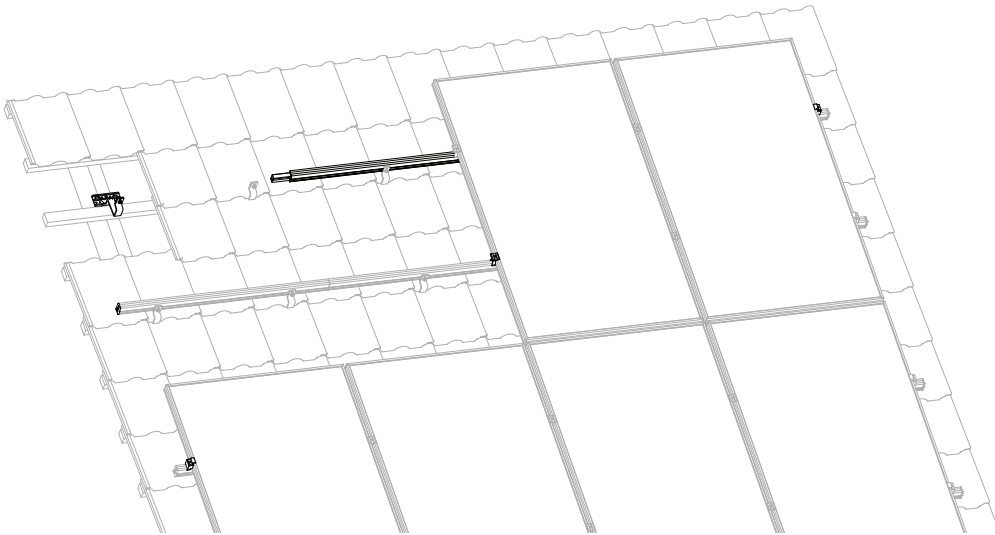


ADHESIVE FLASHING PLAIN TILE (PLEASE REFER TO MANUFACTURERS INSTRUCTIONS)

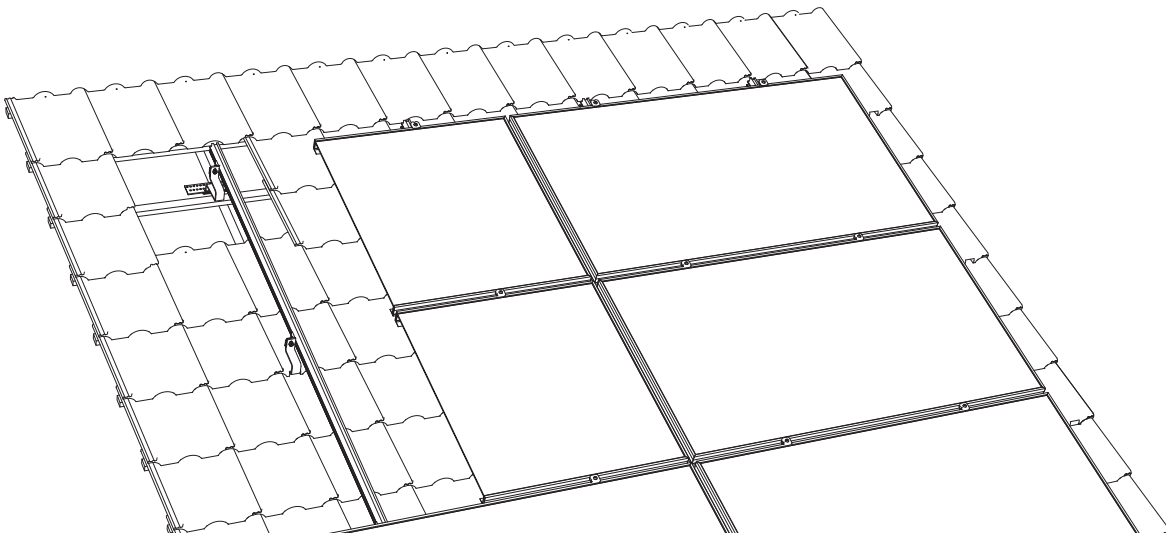
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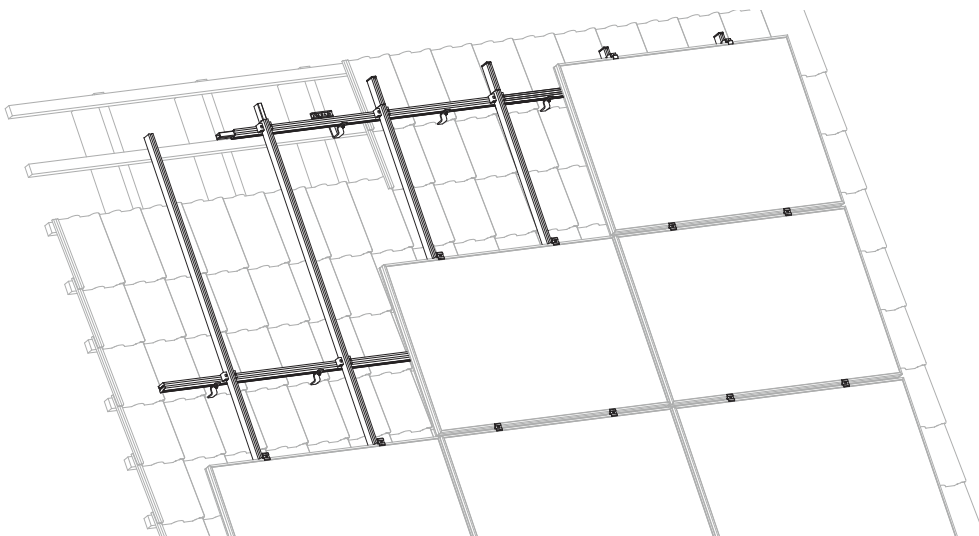
SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)



SINGLE-LAYER SYSTEM – HORIZONTAL ORIENTATION (LANDSCAPE)

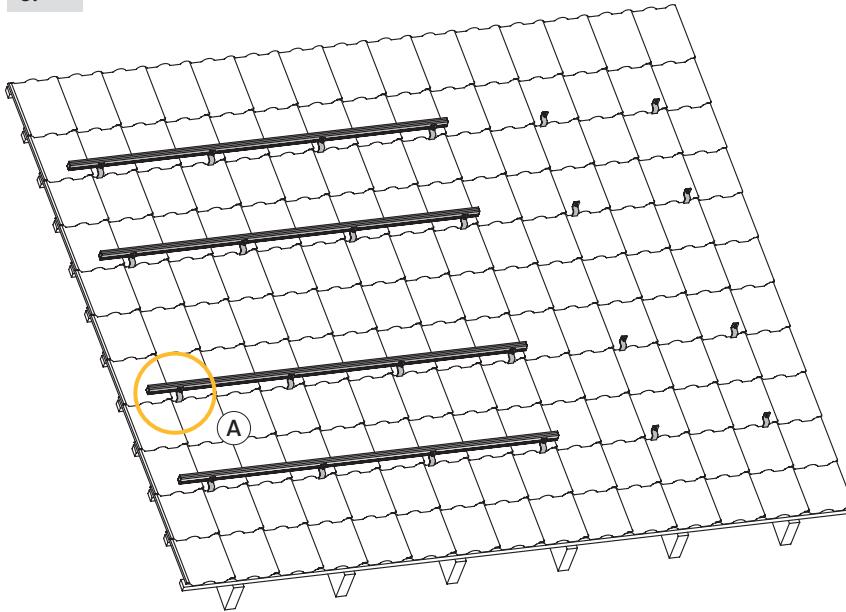


3.) DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)



INSTALLING SINGLE-LAYER SYSTEM – VERTICAL MODULE MOUNTING

6.



Installing the mounting rails

Fit the mounting rails to the roof hooks using the hammer head bolt and the self-locking nut (Fig. A).

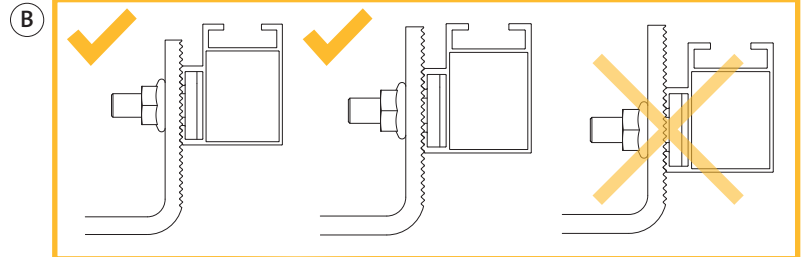
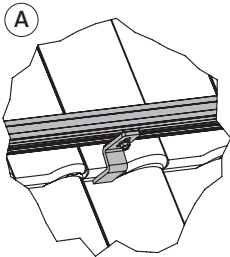
Important

Please ensure that the hammerhead bolts are in a vertical position in the rail channel after tightening.

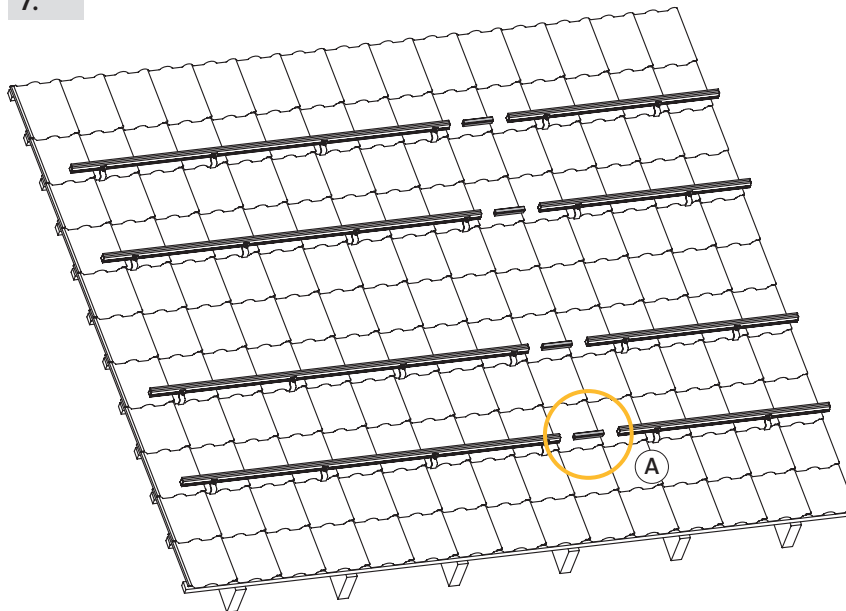
The slotted hole in the roof hook allows optimal adjustment of the rail height (Fig. B).

Aligning the mounting rails

Align the first mounting rails in a row with each other and with the roof covering using a plumb line. Then tighten the nut to secure the mounting rail to the roof hooks. Tightening torque 12–15 Nm.



7.

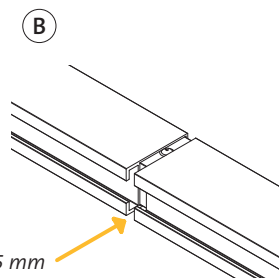
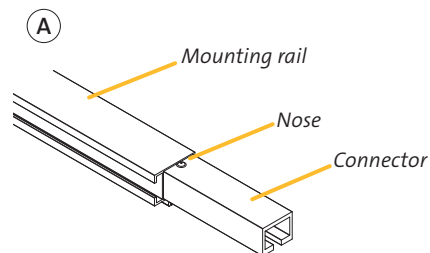
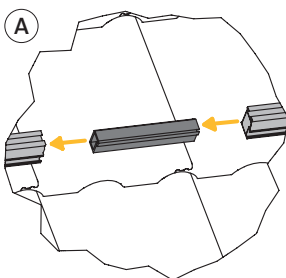


Join the mounting rails

Push the connector into the mounting rail until clamping is achieved. Now push the next rail onto the connector until it is also clamped by the nose. In order to compensate for the linear expansion, leave a gap of 5 mm between the mounting rails.

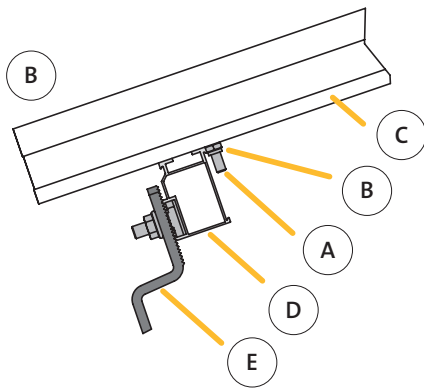
Important

In order to avoid thermal expansion, include a break every 12 metres when planning the PV system.



INSTALLING SINGLE-LAYER SYSTEM – VERTICAL MODULE MOUNTING

8. A



- A Hexagon bolt M6 x 20 mm
- B Hexagon nut
- C PV module
- D Mounting rail
- E Roof hook

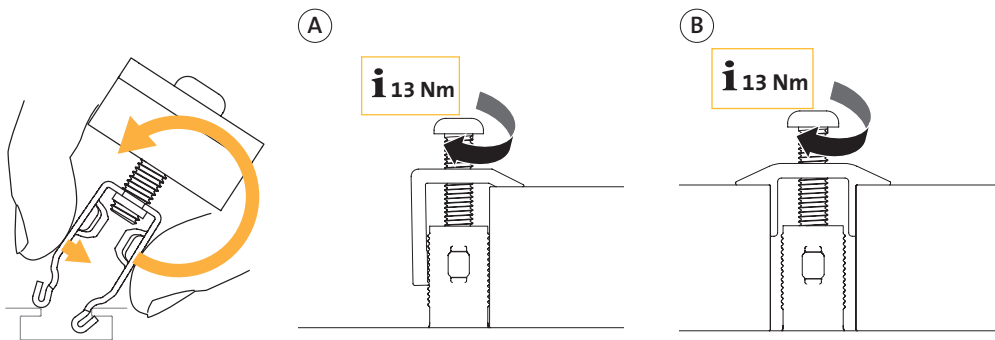
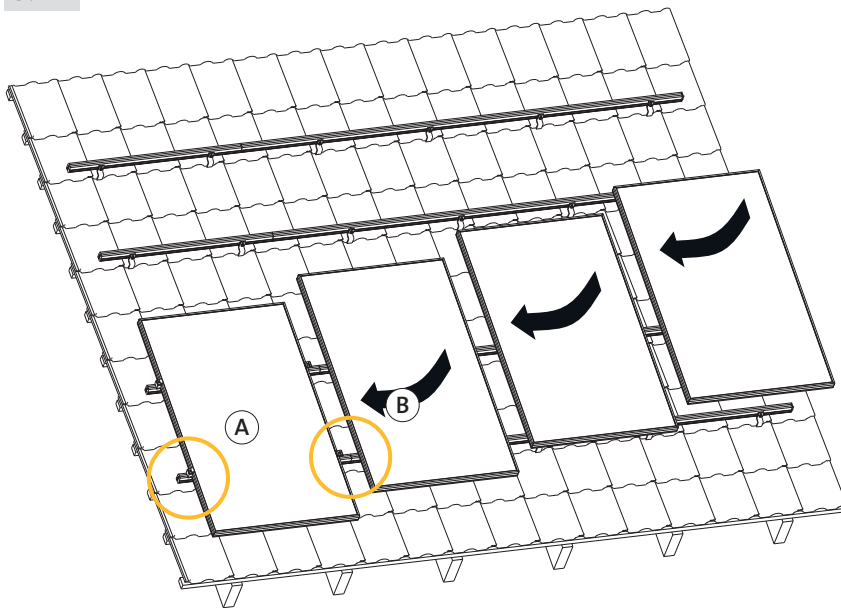
Installing the anti-slip protection for the first module row

Prior to installation, the modules in the lowest row should be fitted with anti-slip protection (only on a horizontal rail assembly). For this purpose, tighten the M6 x 20 mm screws (with the shaft pointing downwards) using M6 nuts in the module mounting points. Place the modules in the lowest row so that the anti-slip protection abuts the edge of the lowest mounting rail (Fig. B).

Note

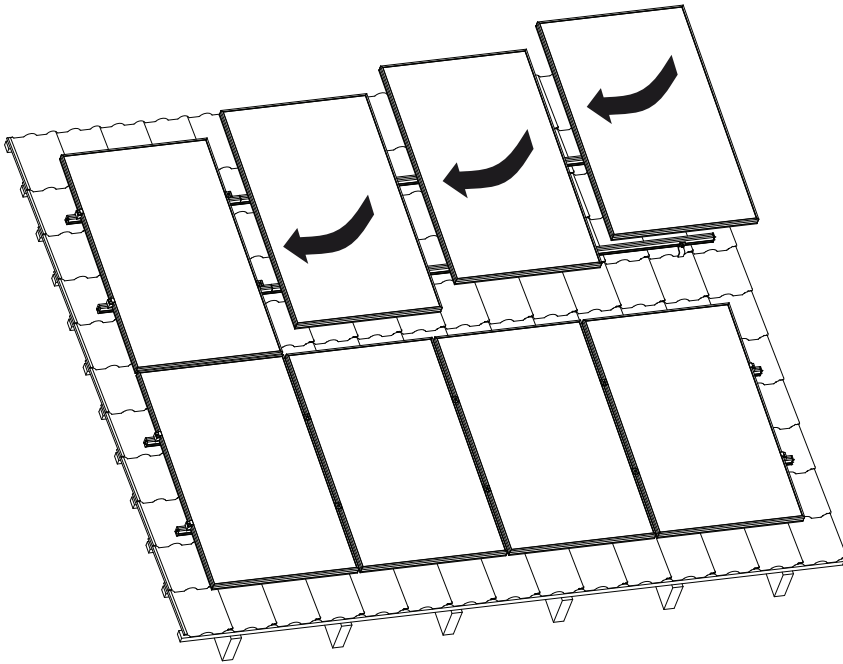
The anti-slip protection can only be used with modules with the corresponding mounting holes.

9. A



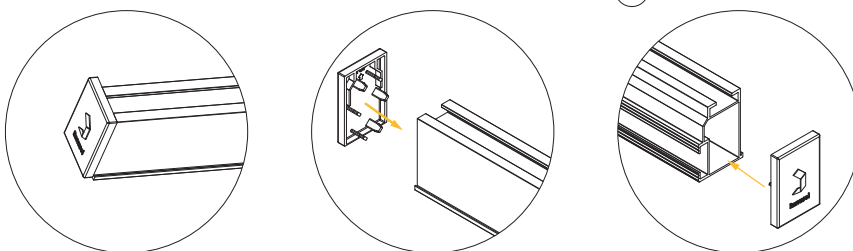
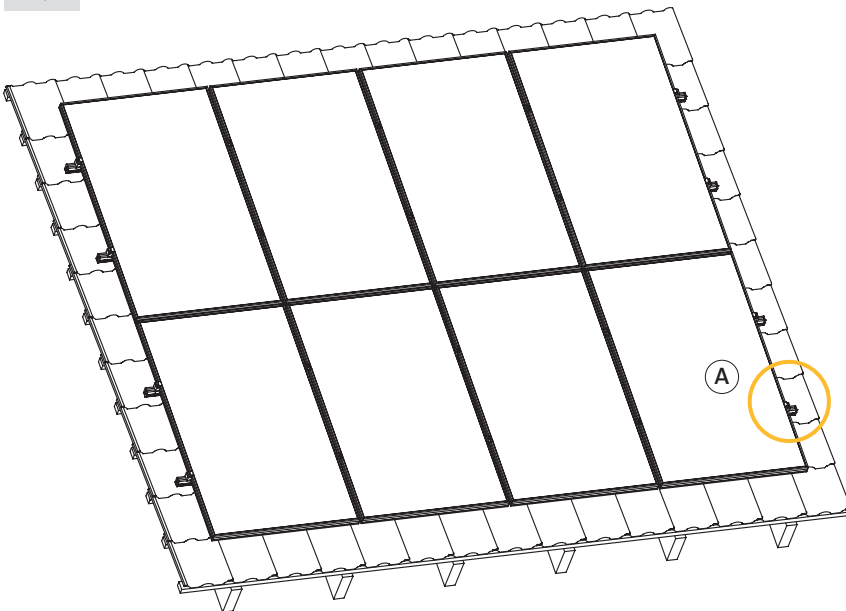
INSTALLING SINGLE-LAYER SYSTEM – VERTICAL MODULE MOUNTING

10. A

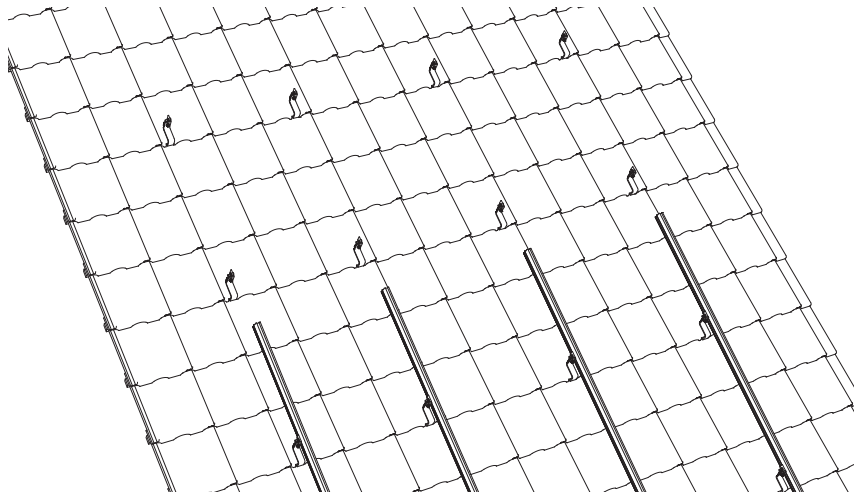


Installing the modules
Same procedure as per Step 9. A, Page 10.

11. A



8. A



Installing the mounting rails

Fit the mounting rails to the roof hooks using the hammer head bolt and the self-locking nut (Fig. A).

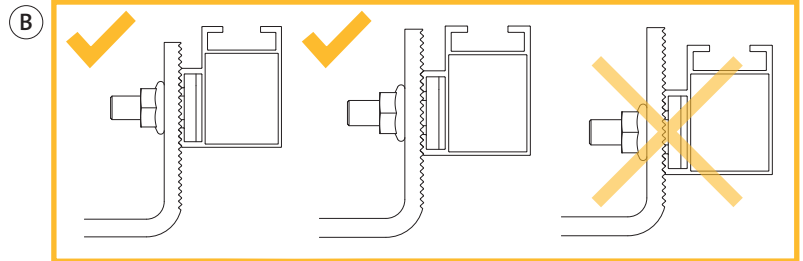
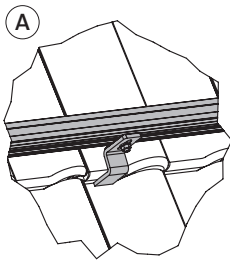
Important

Please ensure that the hammerhead bolts are in a vertical position in the rail channel after tightening.

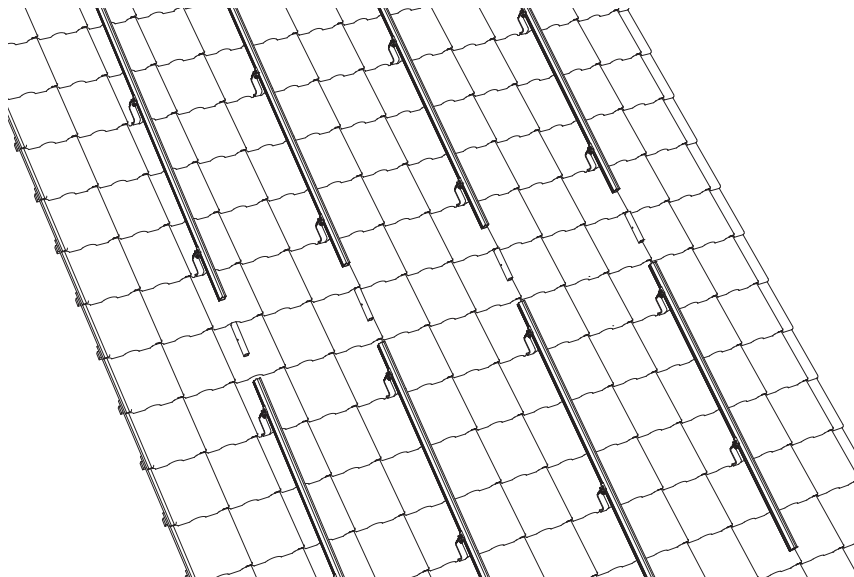
The slotted hole in the roof hook allows optimal adjustment of the rail height (Fig. B).

Aligning the mounting rails

Align the first mounting rails in a row with each other and with the roof covering using a plumb line. Then tighten the nut to secure the mounting rail to the roof hooks. Tightening torque 12–15 Nm.



11. A

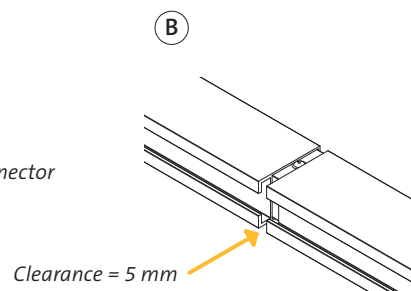
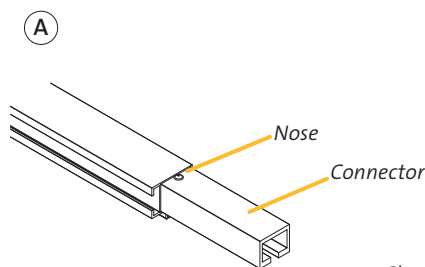
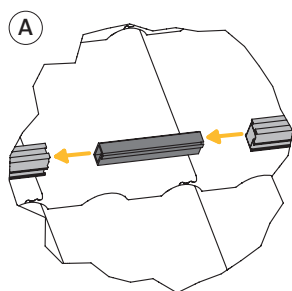


Join the mounting rails

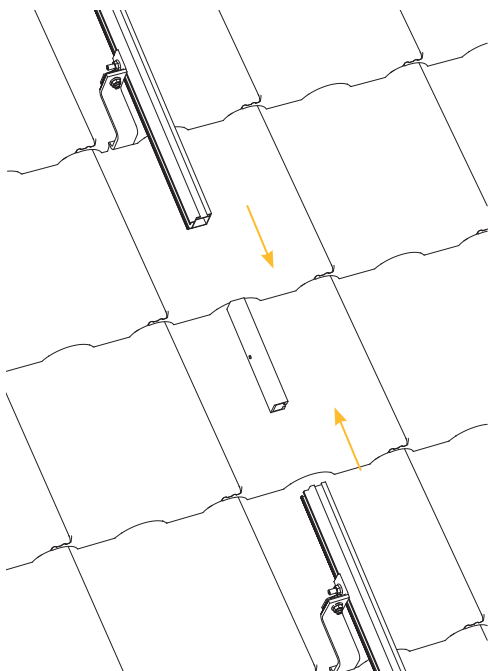
Push the connector into the mounting rail until clamping is achieved. Now push the next rail onto the connector until it is also clamped by the rivet. In order to compensate for the linear expansion, leave a gap of 5 mm between the mounting rails.

Important

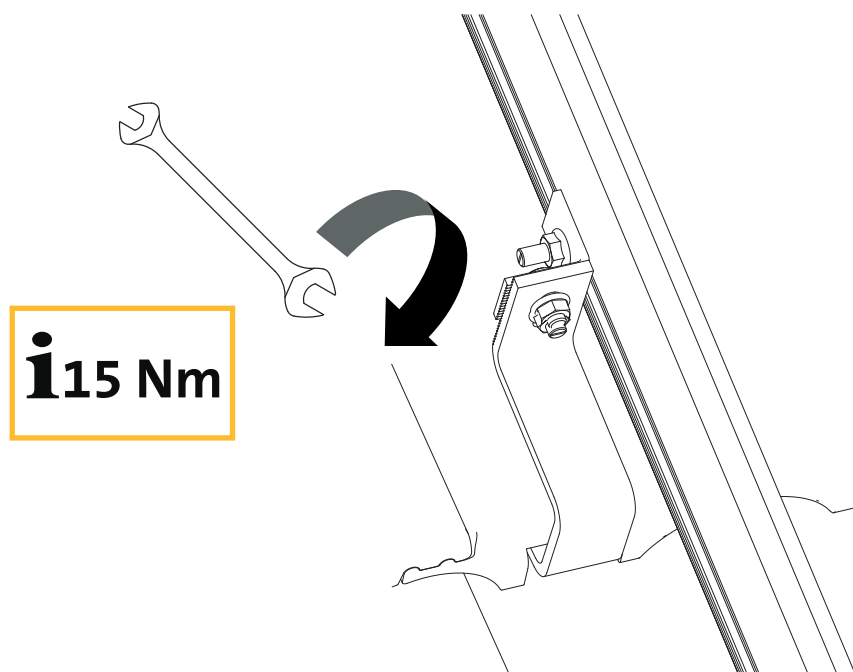
In order to absorb thermal expansion, include a break every 12 metres when planning the PV system.



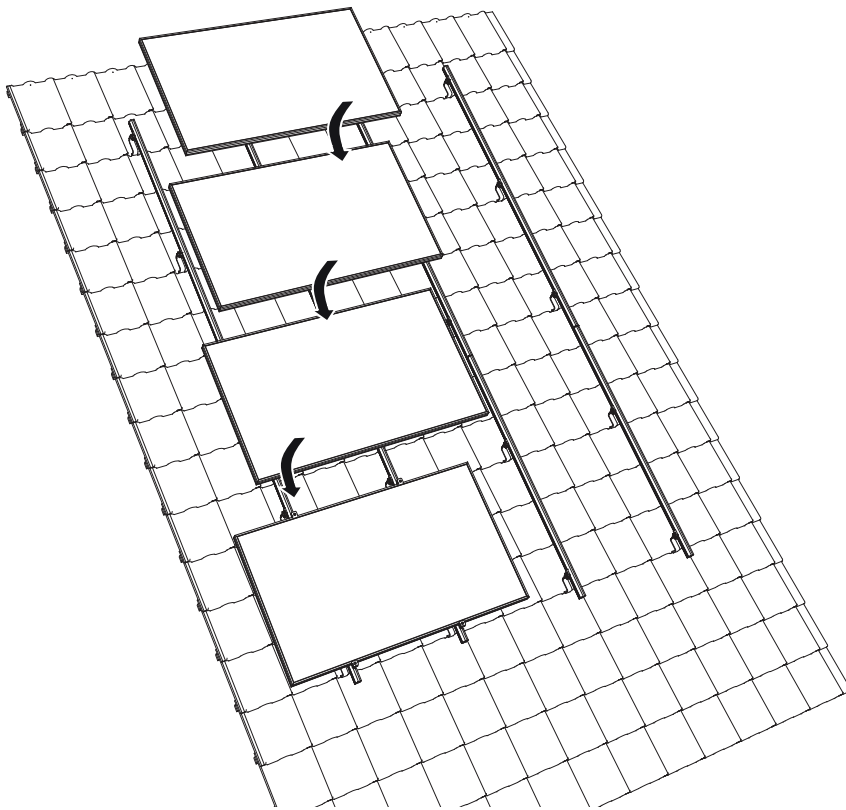
10. A



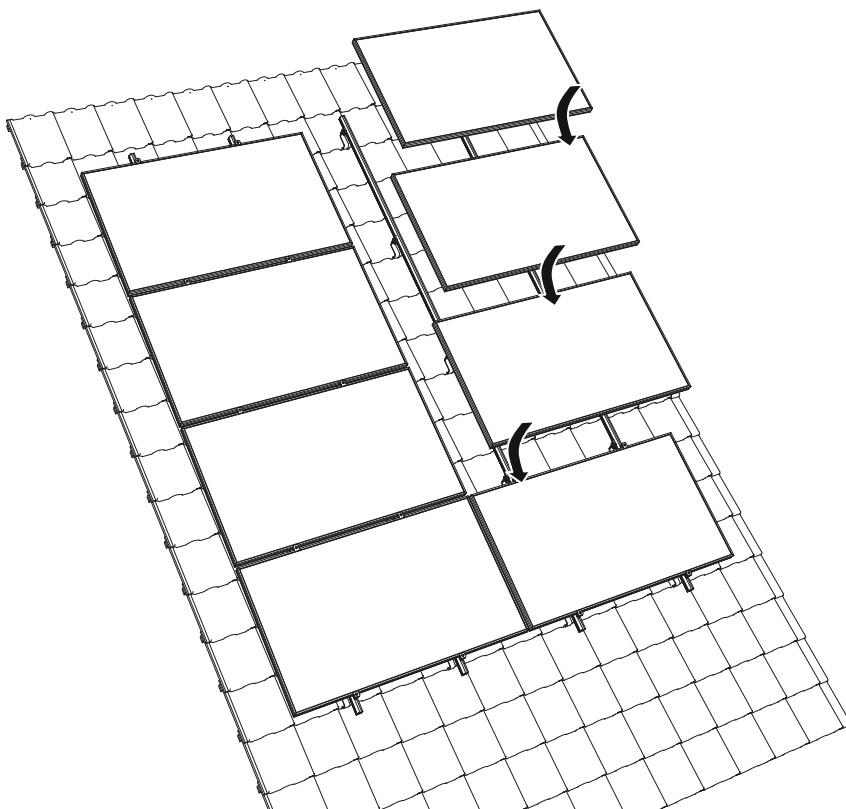
11. A



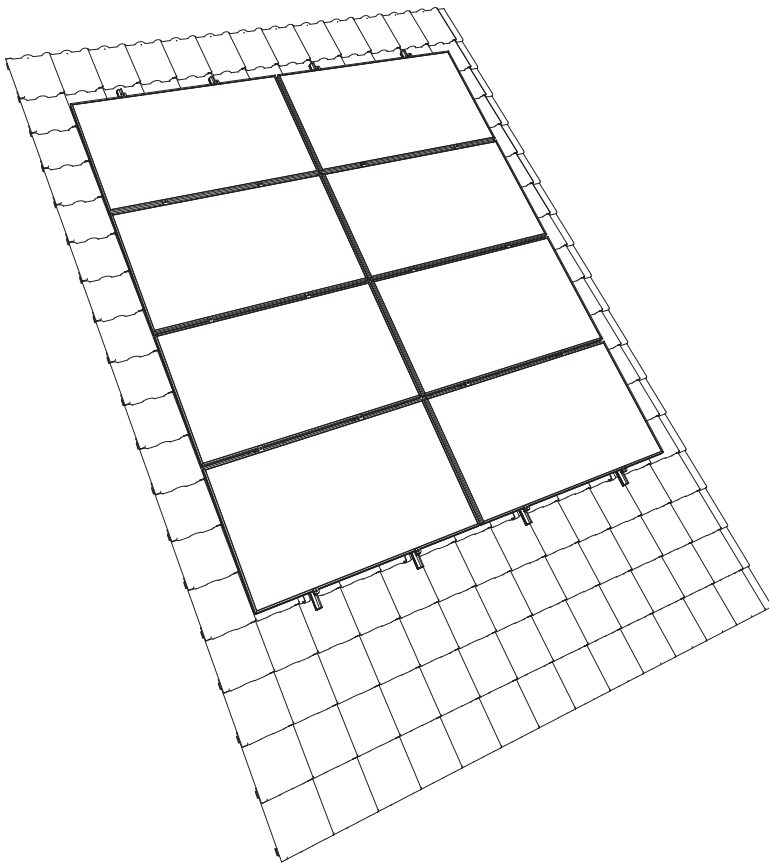
8. A



11. A

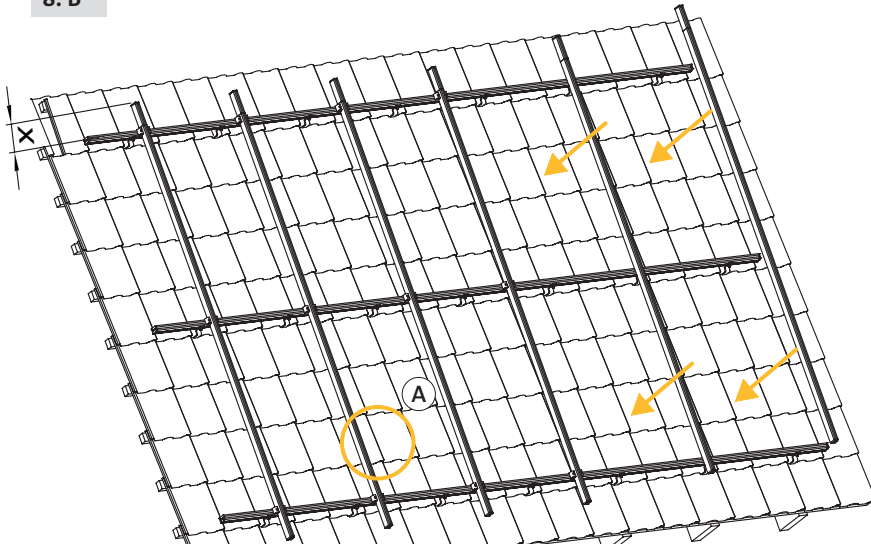


10. A



TWO-LAYER INSTALLATION – HORIZONTAL MODULE MOUNTING

8. B



Positioning and installing the vertical mounting rails

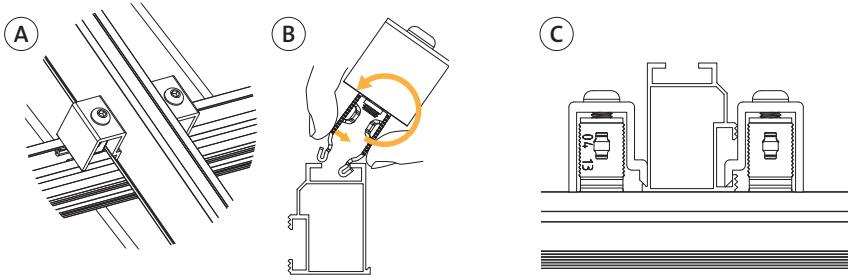
Positioning the vertical mounting rails

The correct position of the vertical mounting rails according to module manufacturers guidelines. Please refer to the module manufacturer's recommendation.

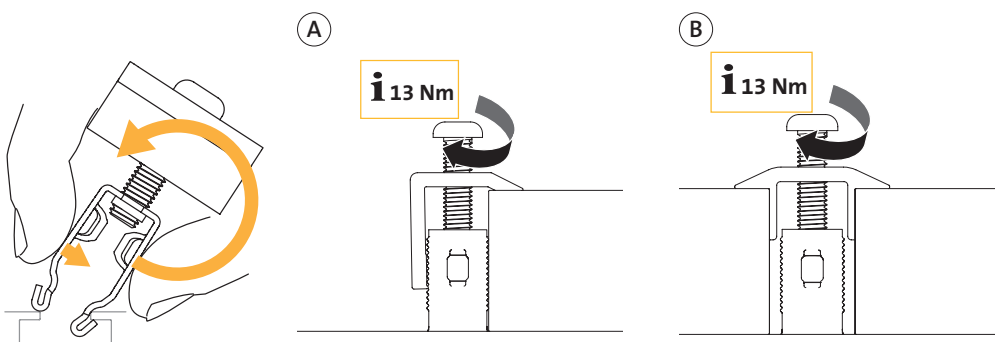
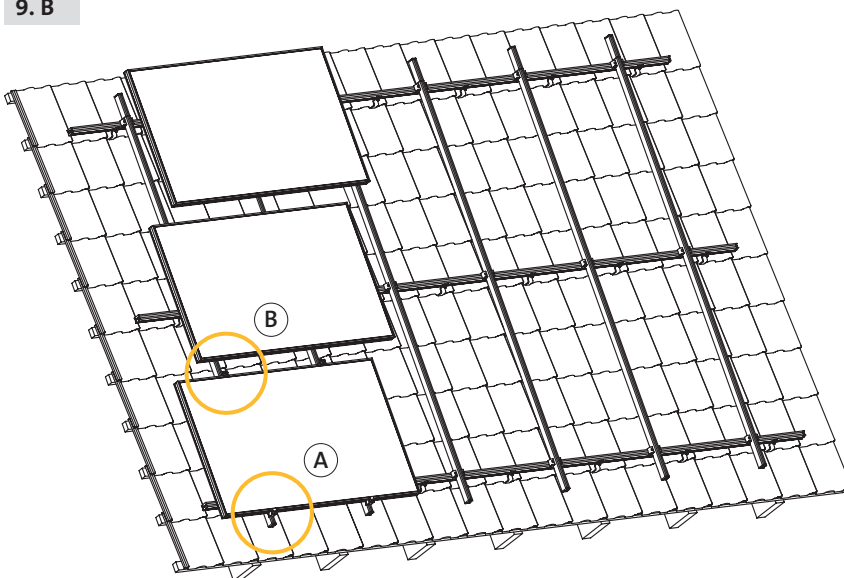
X = cantilever: max. 200 mm

Installing and aligning the vertical mounting rails

Snap the cross rail connectors into the mounting rails (horizontal) (Fig. B). Then position the mounting rail (vertical) on the mounting rail (horizontal) lightly tighten the screws of the cross rail connectors (Fig. C). Align the first mounting rail in one row with each other using a plumb line. Then tighten the cross rail connectors (recommended torque 12 - 15 Nm)

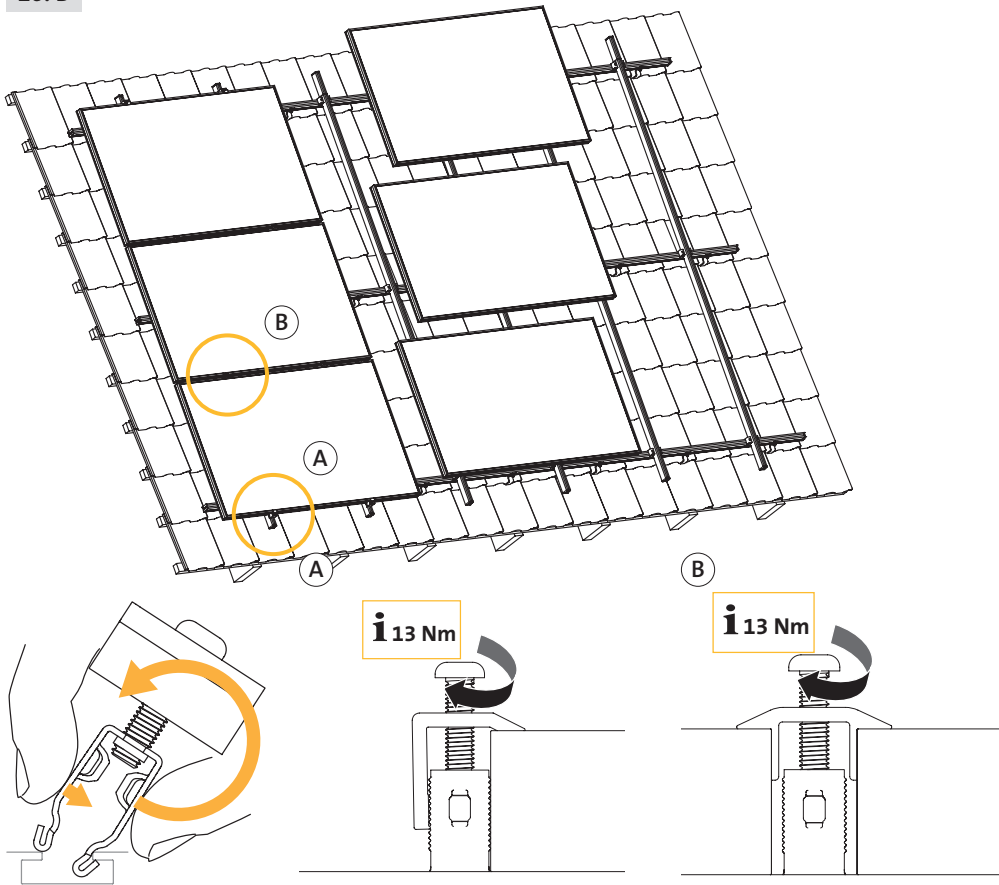


9. B

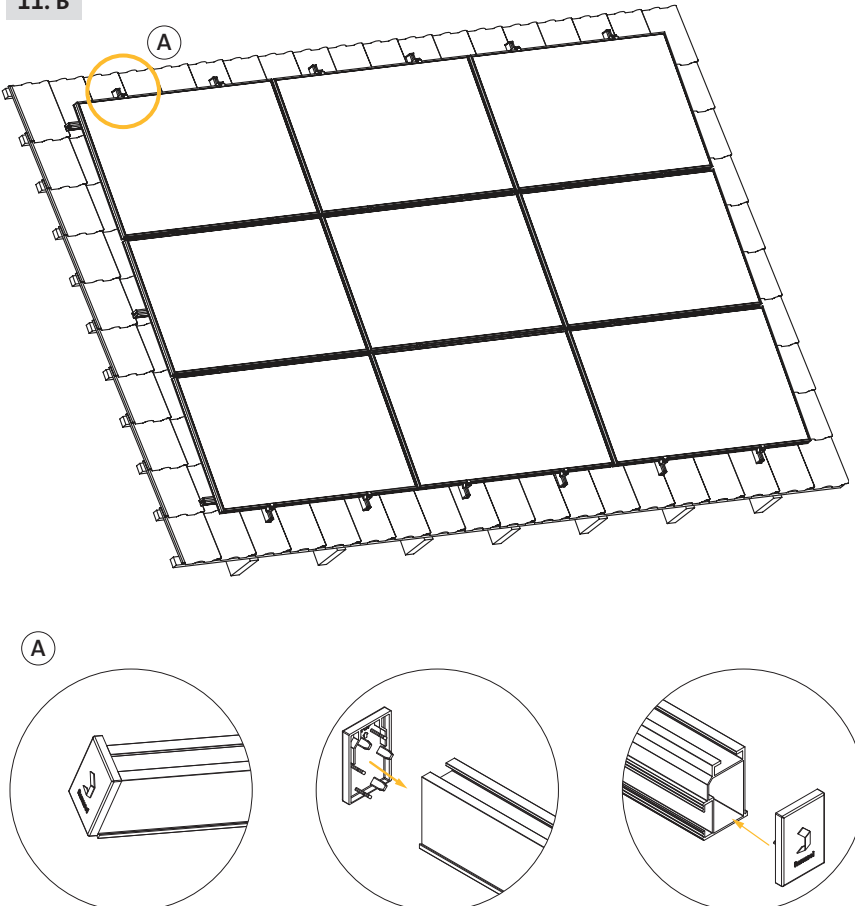


TWO-LAYER INSTALLATION – HORIZONTAL MODULE MOUNTING

10. B

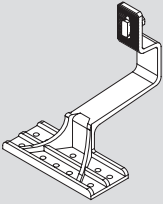
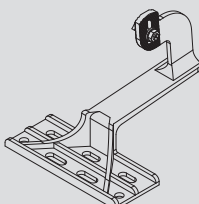
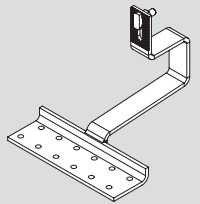
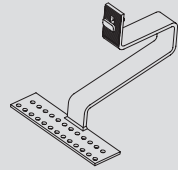
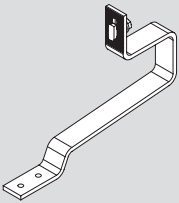
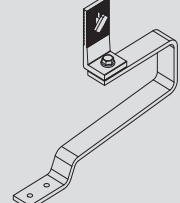
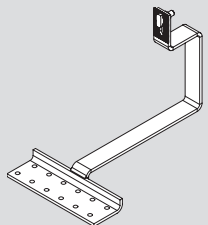
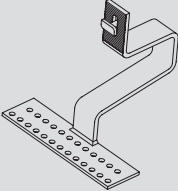
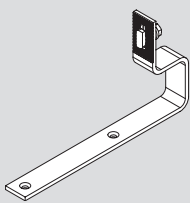
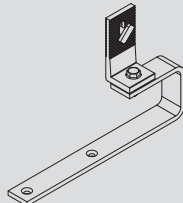
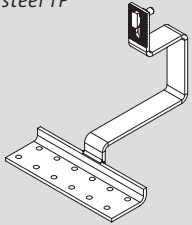
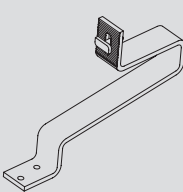
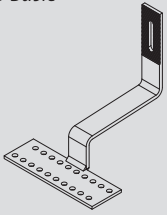


11. B



ROOF HOOKS FOR WOODEN SUBSTRUCTURES

13. A

<p>Roof hooks, aluminium</p> 	<p>Roof hook, aluminium, 90°</p> 	<p>Roof hook, Stainless steel TM*</p> 	<p>UK Roof hook, Flexible</p> 
<p>Plain tile roof hook</p> 	<p>Plain tile roof hook, 90°</p> 	<p>Roof hook, Stainless steel TR*</p> 	<p>UK Roof hook, Pantile</p> 
<p>Slate roof hook</p> 	<p>Slate roof hook, 90°</p> 	<p>Roof hook, Stainless steel TP*</p> 	<p>UK Roof hook, Plain</p> 
<p>Roof hook, Eco Basic</p> 			

Tile roofing with wooden sub-structures

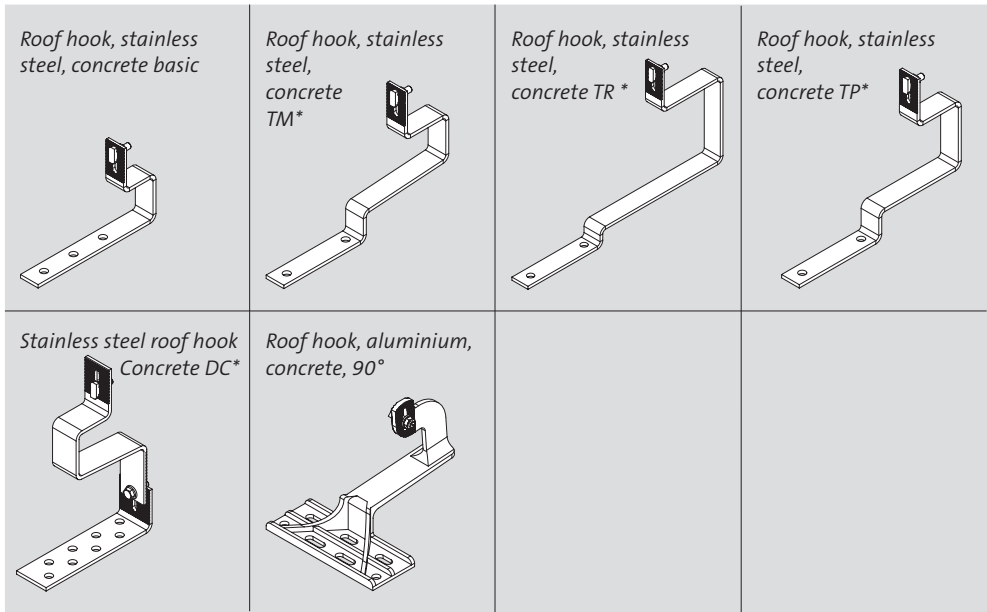
* Country-specific roof hooks for Italy, Spain, and France

Types of roof tiles
 TM = Tegola Marsigliese
 TR = Tegola Romana
 TP = Tegola Portoghese

Hot dipped galvanized steel according to EN ISO 1461. Suitable for corrosion class C3 (medium contamination or light chloride load) according to EN ISO 14713-1:2017. Not suitable in corrosion categories C4 and C5.

ROOF HOOKS FOR CONCRETE SUBSTRUCTURES

13. B

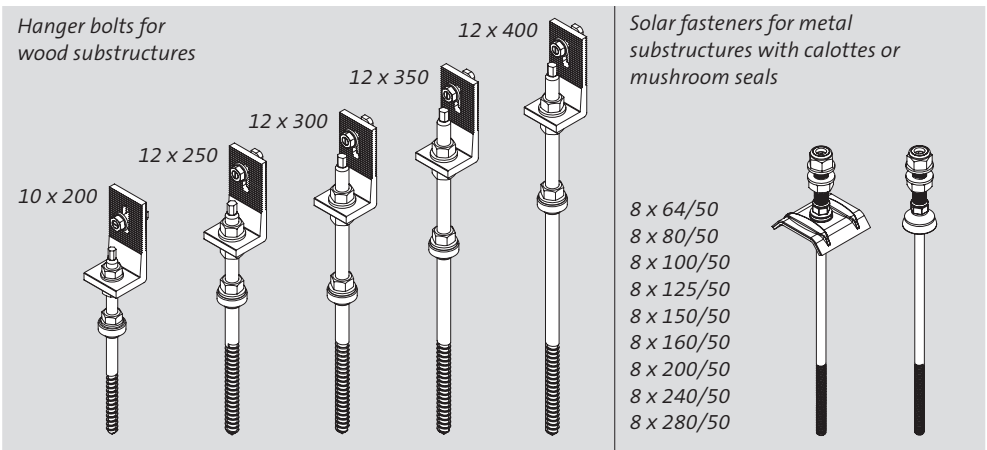


Tile roofing with concrete sub-structures

Types of roof tiles
 TM = Tegola Marsigliese
 TR = Tegola Romana
 TP = Tegola Portoghese
 DC = Doppio Coppo

ROOF ATTACHMENT FOR TRAPEZOIDAL AND CORRUGATED SHEET METAL ROOFS

13. C



Trapezoidal and corrugated sheet roofs

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GB | The images and texts in these instructions relate to the latest technology at the time of printing, subject to modifications.

FR | Les illustrations et textes sont conformes à l'état de la technique au moment de mise sous presse. Sous toutes réserves de modifications.

IT | Figure e testi corrispondono allo stato più attuale della tecnica al momento dell'ordine di stampa. Con riserva di modifiche.

ES | Las imágenes y los textos se corresponden al estado actual de la técnica en el momento de la impresión, reservado el derecho a las modificaciones.

NL | Afbeeldingen en teksten voldoen aan de actuele stand van de techniek op het moment van ter perse gaan. Wijzigingen voorbehouden.

DK | Afbildninger og tekster overholder den tekniske stand ved trykningen, der tages forbehold for ændringer.

SE | Bilder och texter motsvarar den nuvarande tekniska tillstånd vid tidpunkten för tryckning, med förbehåll för ändringar.

CZ | Vyobrazení a texty odpovídají aktuálnímu technickému stavu při odevzdání do tisku. Změny vyhrazeny.

PL | Ilustracje i teksty odpowiadają stanowi techniki aktualnemu w chwili oddania instrukcji do druku. Zastrzega się prawo do zmian.

LT | Spausdinami paveikslėliai ir tekstas atitinka naujausią technikos lygį. Pasilieka me teisę į pakeitimus.

HU | Az ábrák és a szövegek a nyomtatás időpontjában rendelkezésünkre álló legfrissebb műszaki ismereteknek felelnek meg; a módosítások jogát fenntartjuk.

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