

- 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)
- Single and double roman, plain tile, natural slate, and flat tiles with wooden substructures
- PV-panel landscape and portrait oriented

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

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.

For module positioning/fastening points please refer to manufacturers recommendations.

Please follow 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.

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

Installation notes

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

During the installation and in particular whilst working on the roof, ensure to work according to the relevant health and safety guidelines, safety guidelines and please follow the current rules and regulations for your 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, we recommend

you to consult specialists such as roofers or structural engineers where necessary.

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

Testing/certification:

- TÜV
- MCS012 (IK0197)

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:

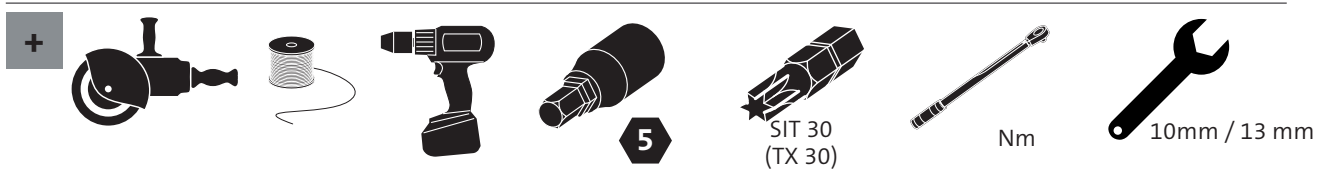
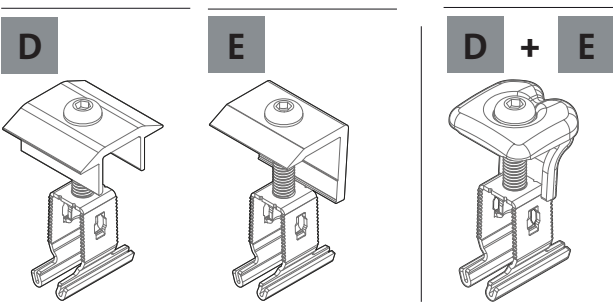
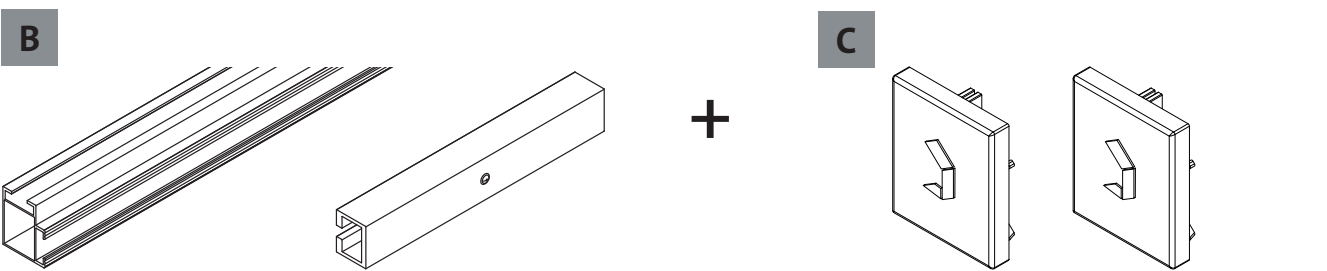
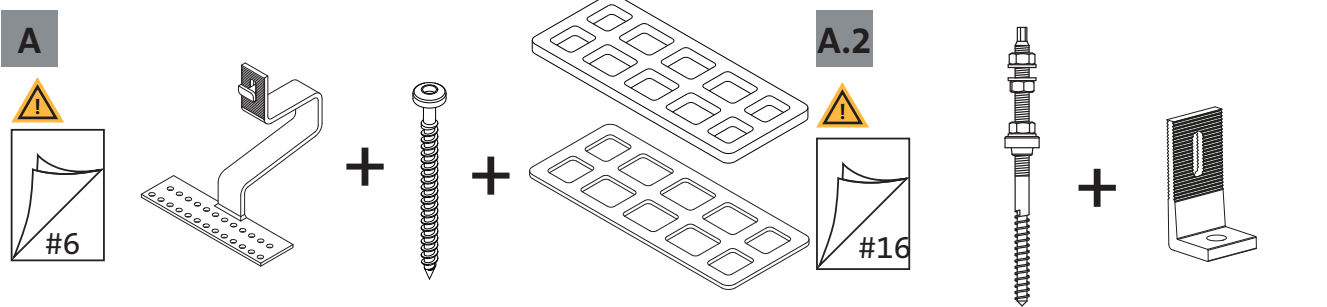
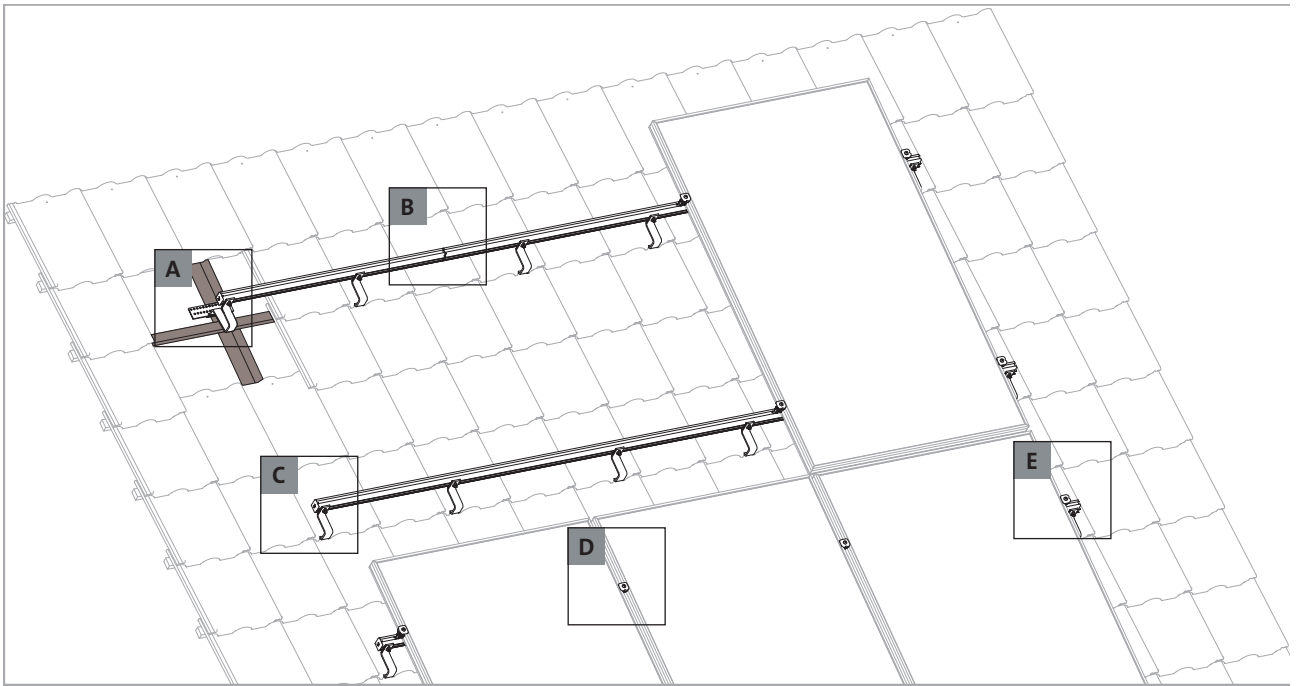
The warranty only applies if an original and complete Renusol system is used, with a layout designed by Renusol.

Renusol is not accountable for the roofs capability to maintain the introduced forces. Please check the roofs compatibility with a static engineer.



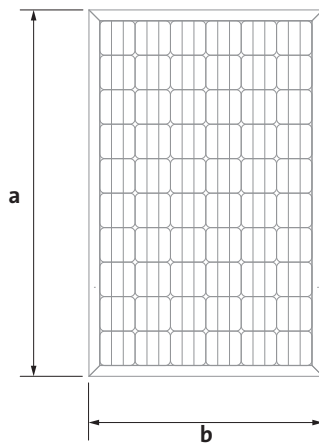
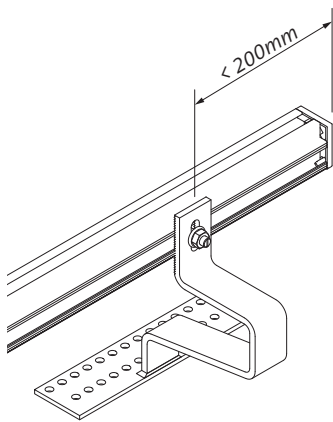
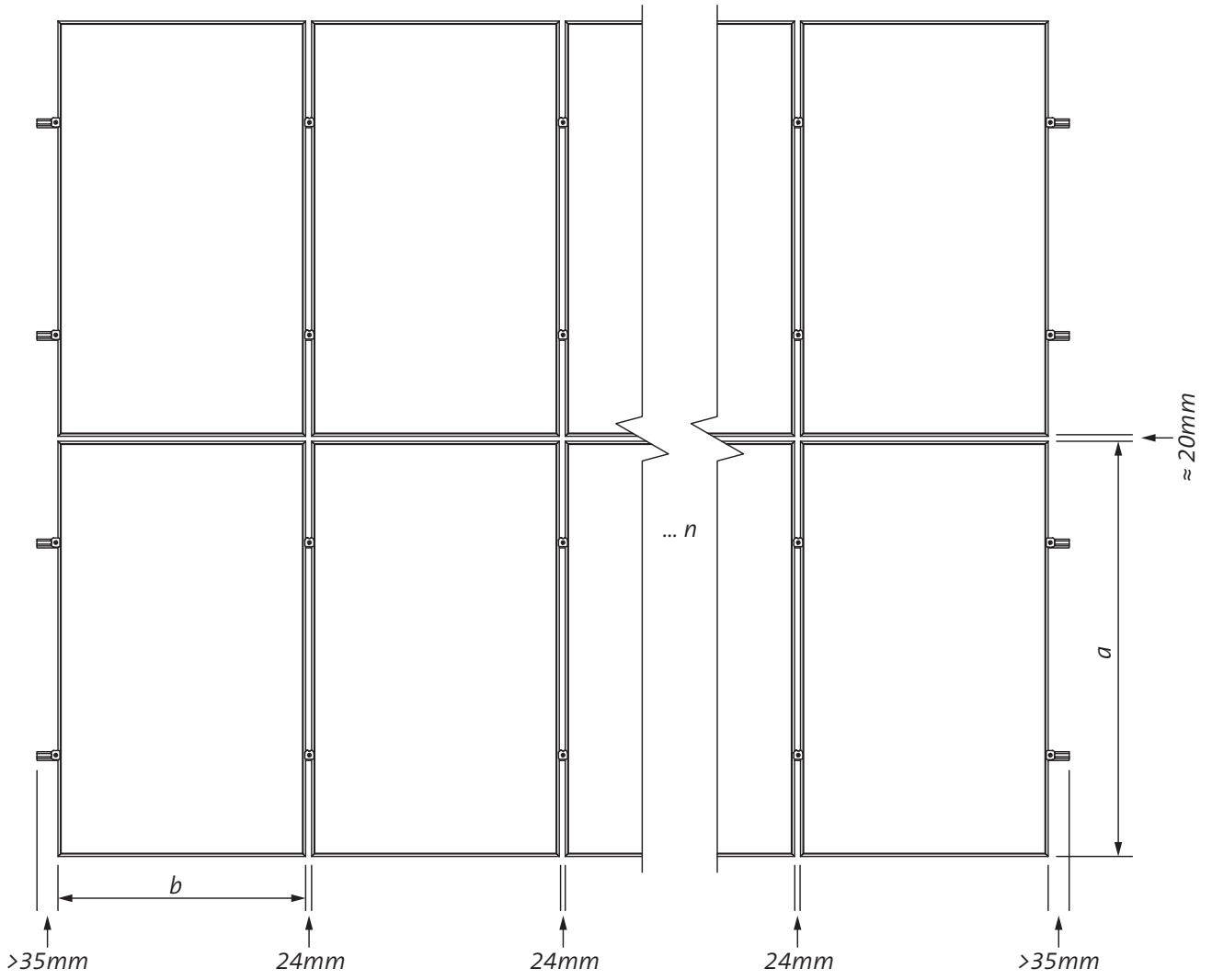
The structural stability of the PV-system must be verified before installation. The building must be able to support the additional weight safely.

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

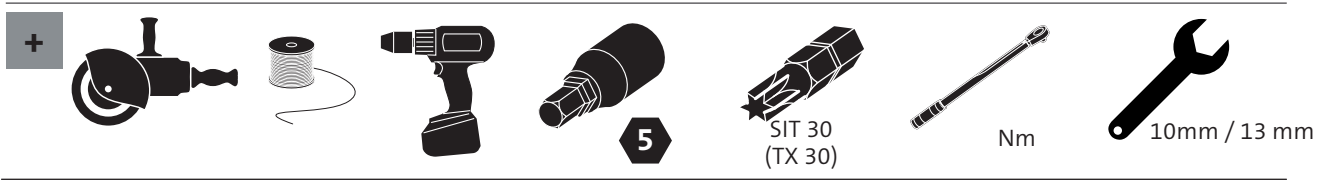
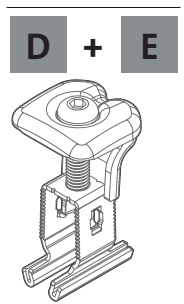
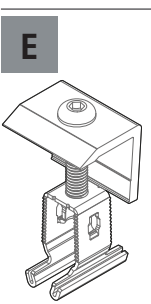
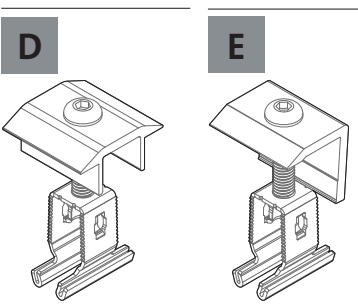
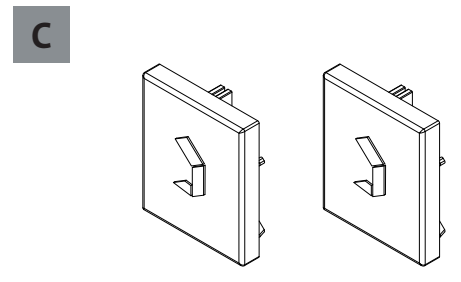
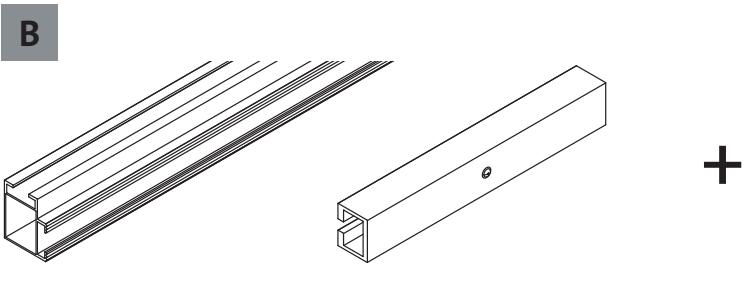
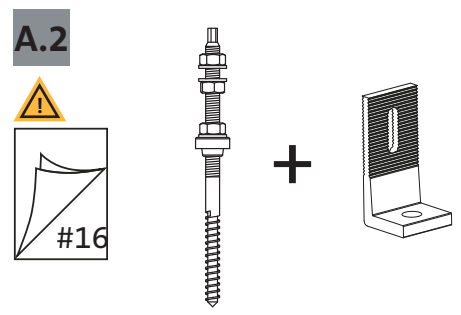
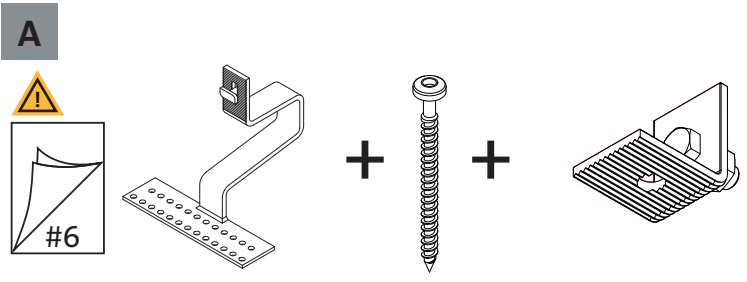


OVERVIEW SINGLE LAYER SYSTEM - VERTICAL ORIENTATION (PORTRAIT)

1. A

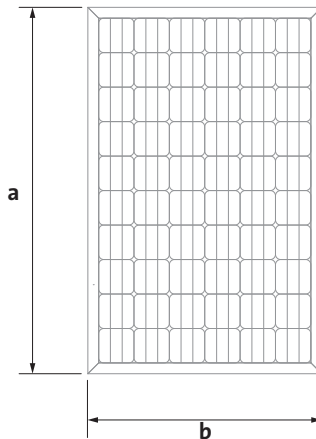
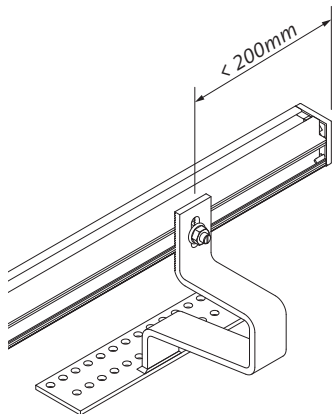
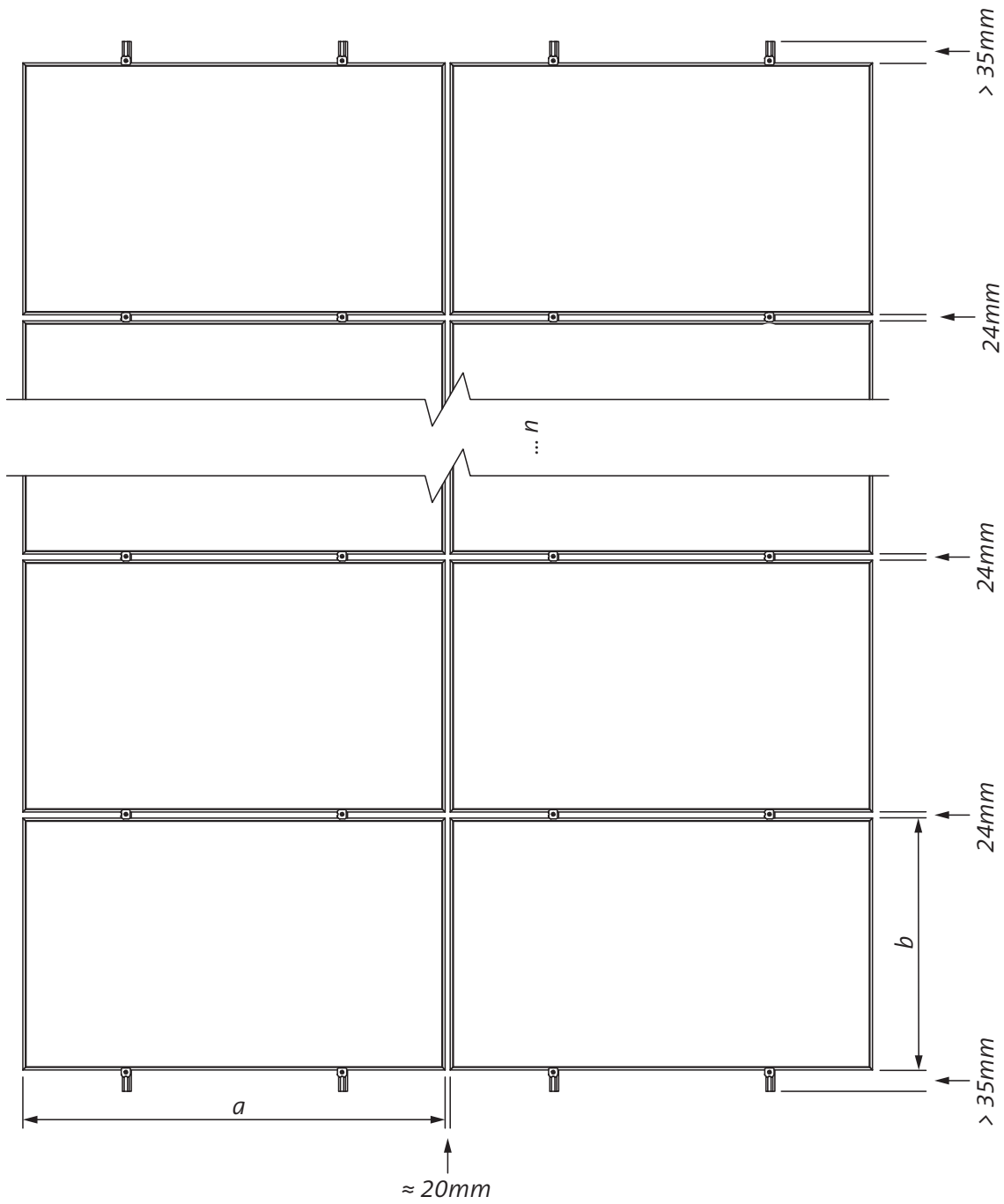


2.) SINGLE-LAYER SYSTEM – HORIZONTAL ORIENTATION (LANDSCAPE)



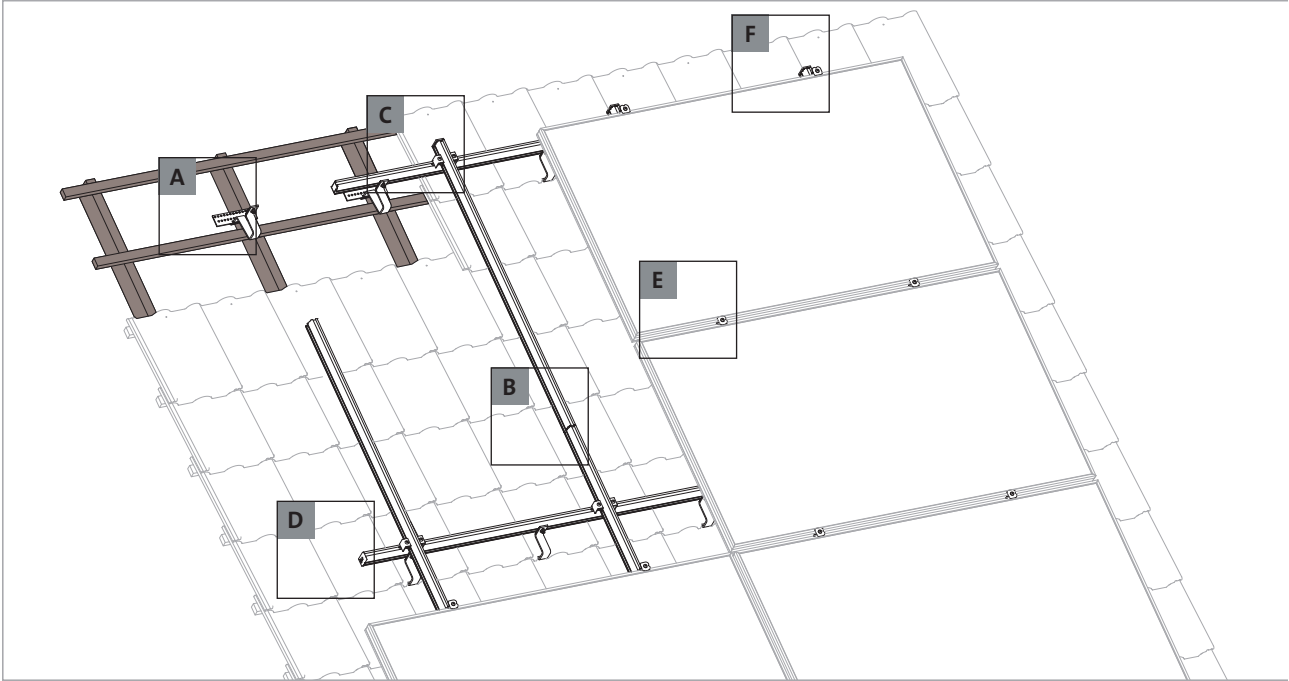
OVERVIEW SINGLE LAYER SYSTEM - HORIZONTAL ORIENTATION (LANDSCAPE)

2. A

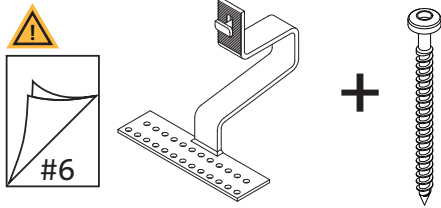


Note
Please ensure that clearance of rafters fits with fixing points of Modules. If not, use double layer system

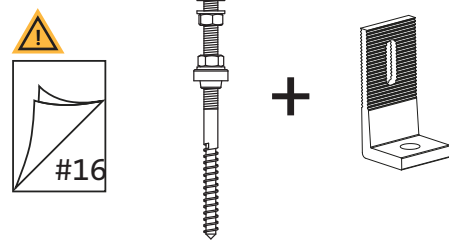
3.) DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)



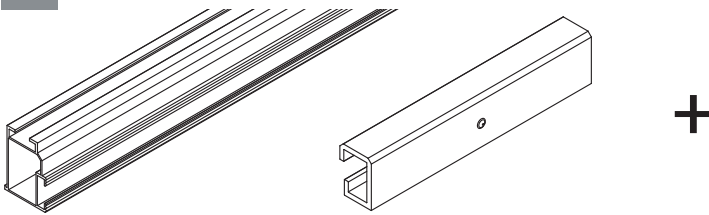
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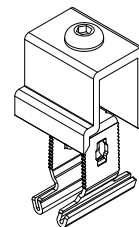
A.2



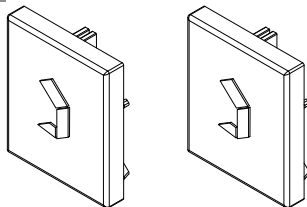
B



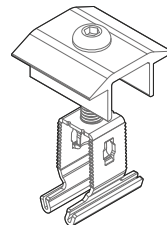
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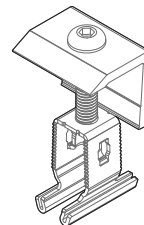
D



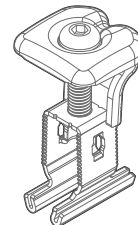
E



F



E + F

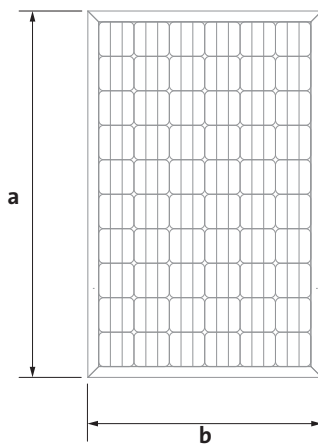
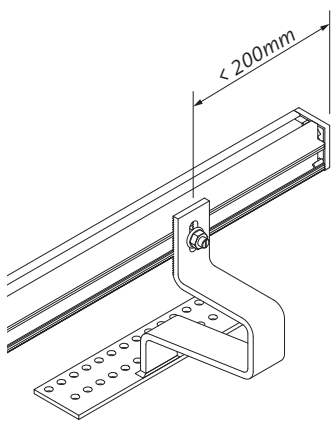
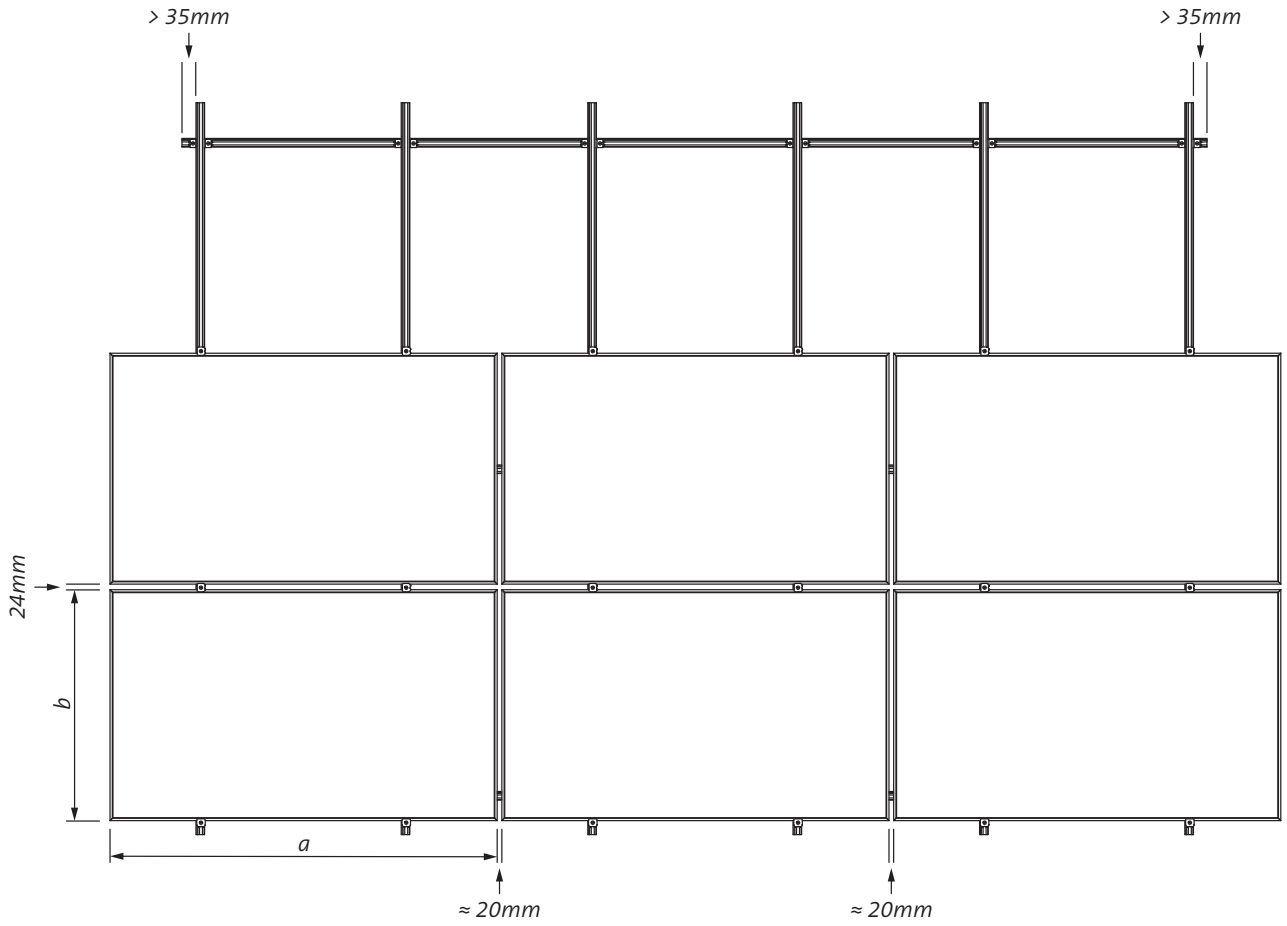


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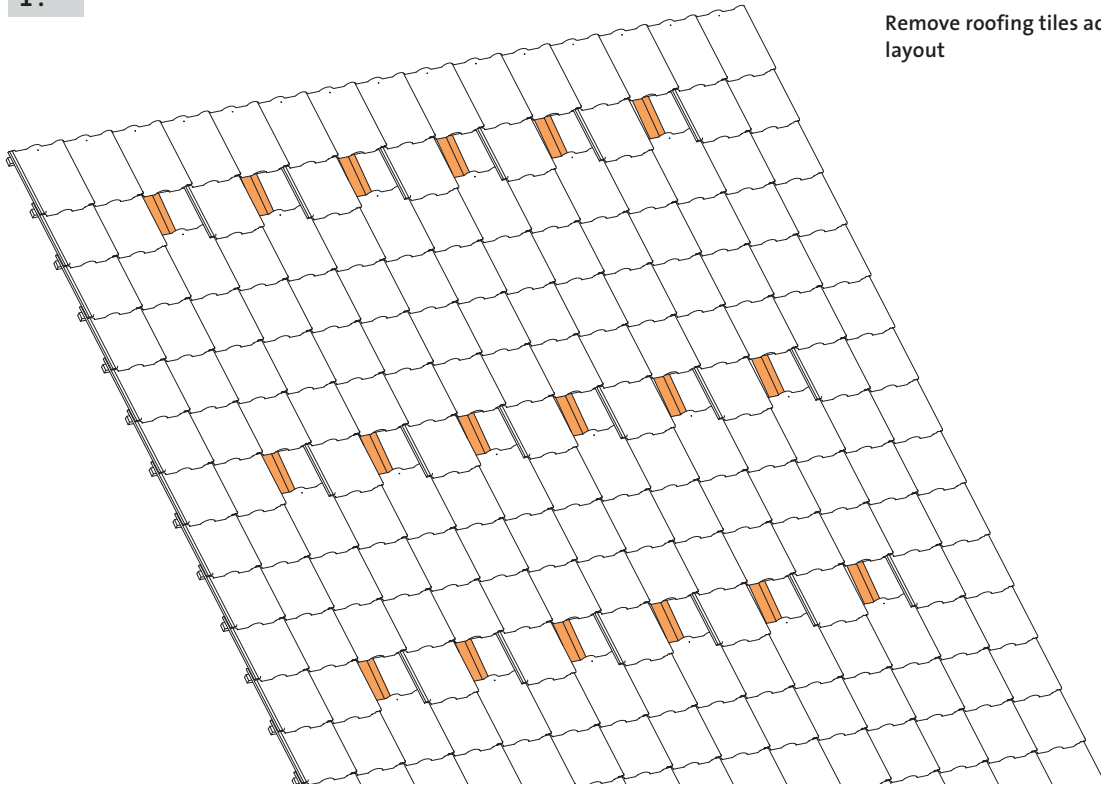
OVERVIEW DOUBLE LAYER SYSTEM - HORIZONTAL ORIENTATION (LANDSCAPE)

3. A



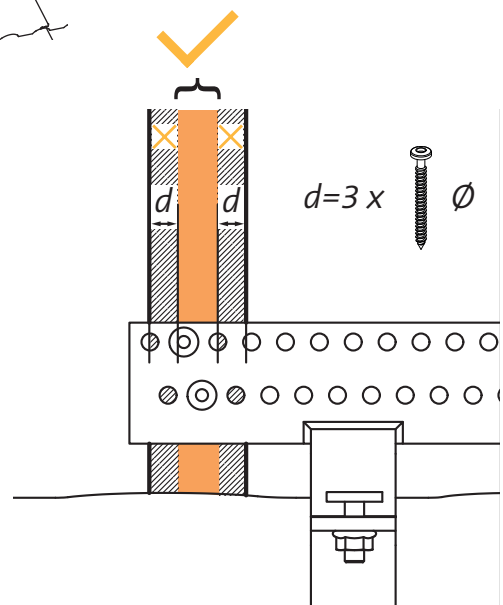
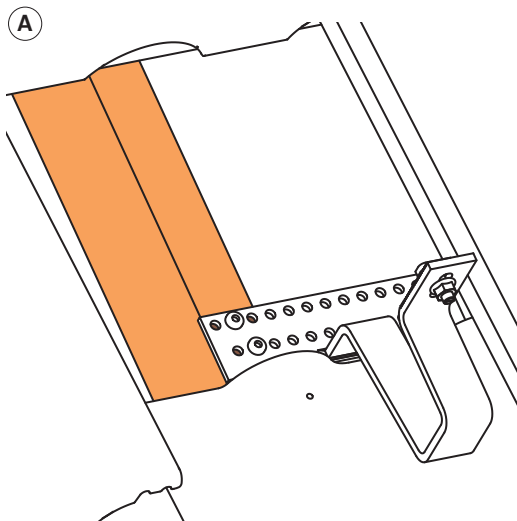
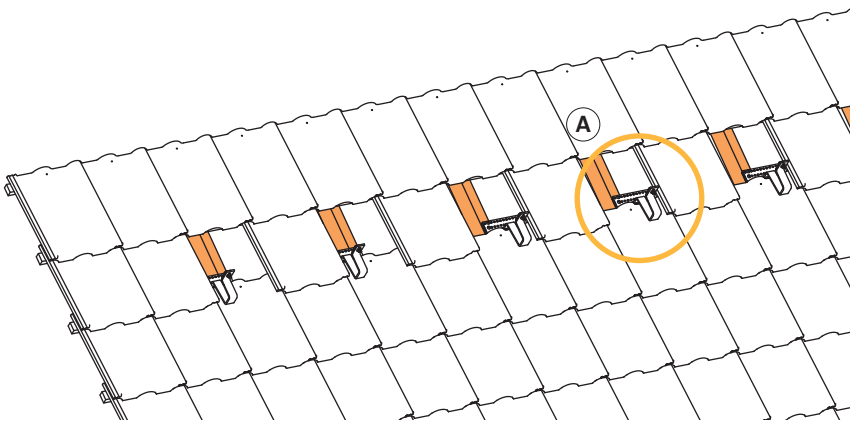
INSTALLING ROOF HOOKS

1.



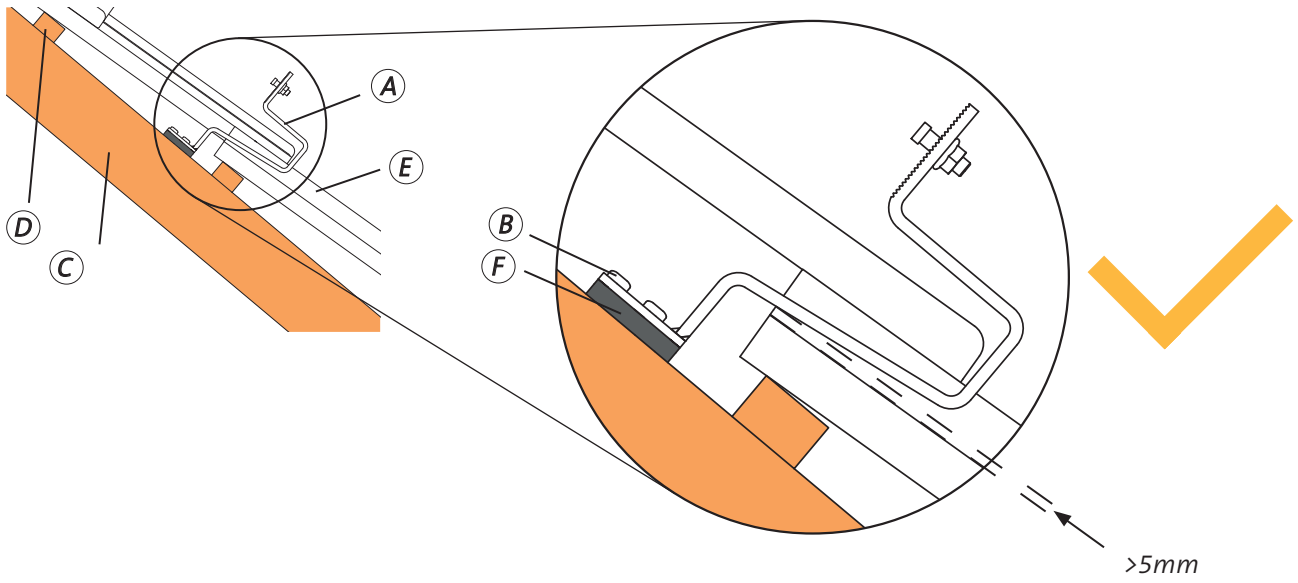
Remove roofing tiles according to your layout

2.

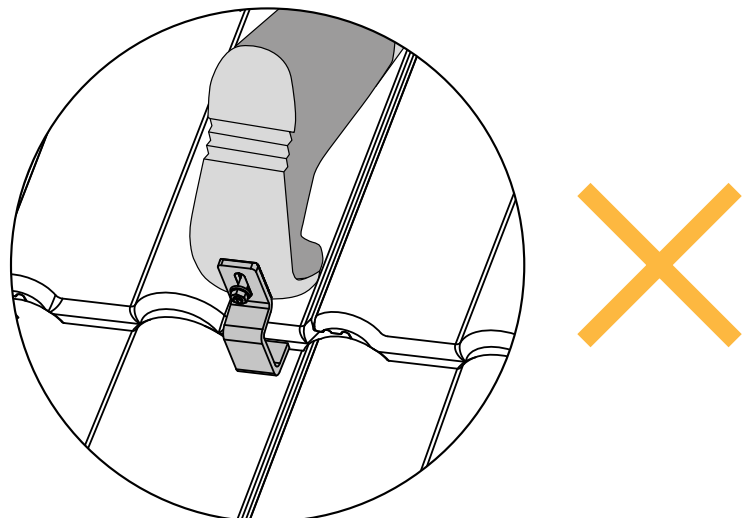
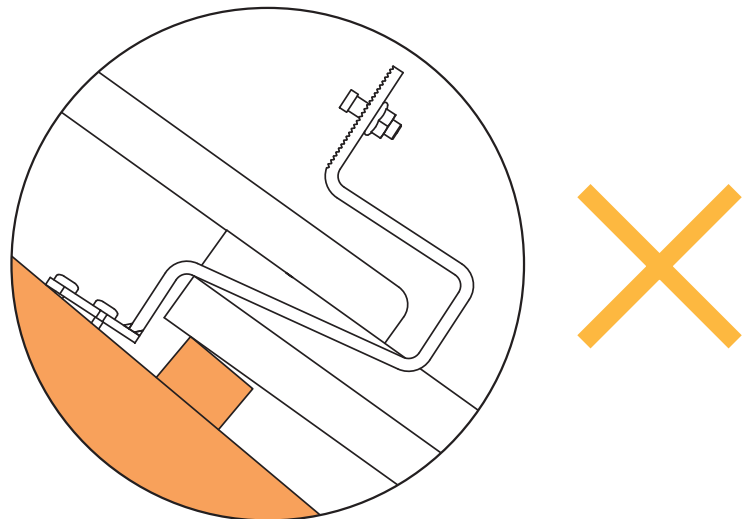


INSTALLING ROOF HOOKS DETAILS

3.

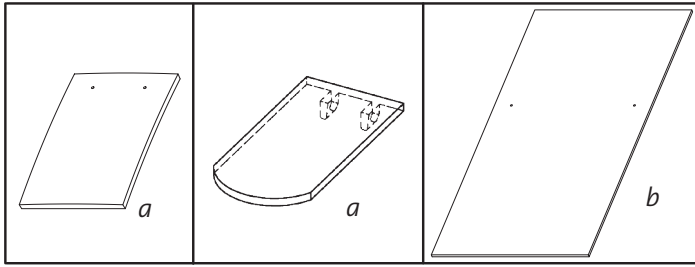


- A Roof hook
- B Wood screw
- C Rafters
- D Batten
- E Roof tile
- F Spacer plate (Packer)

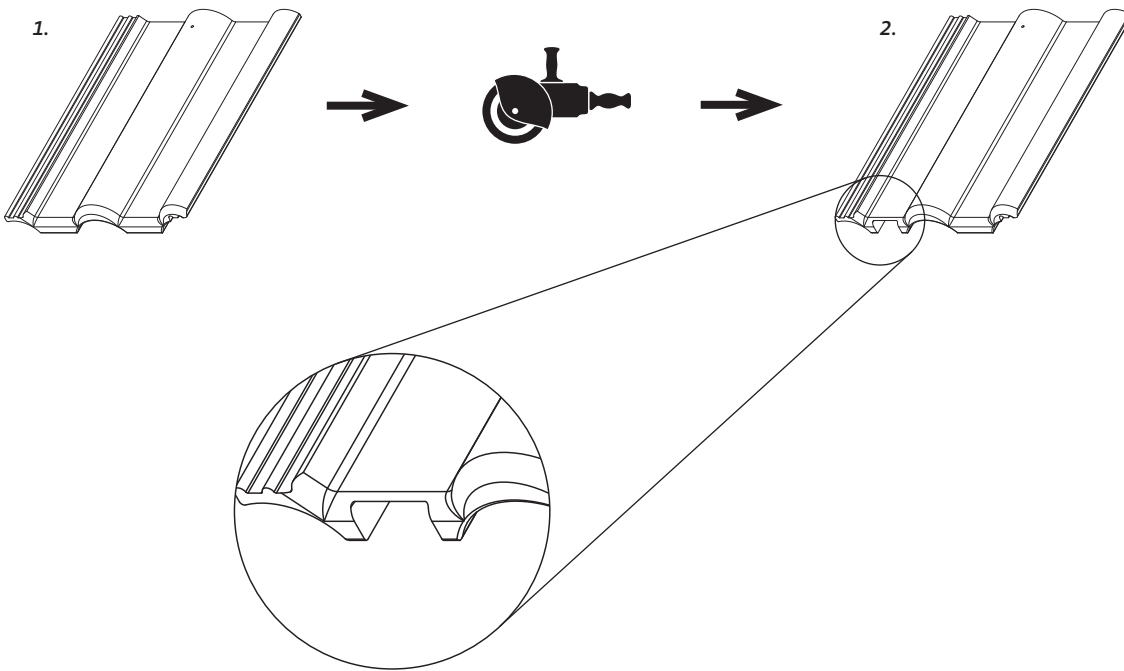


MODYFING TILES: INTERLOCKING TILES

4.

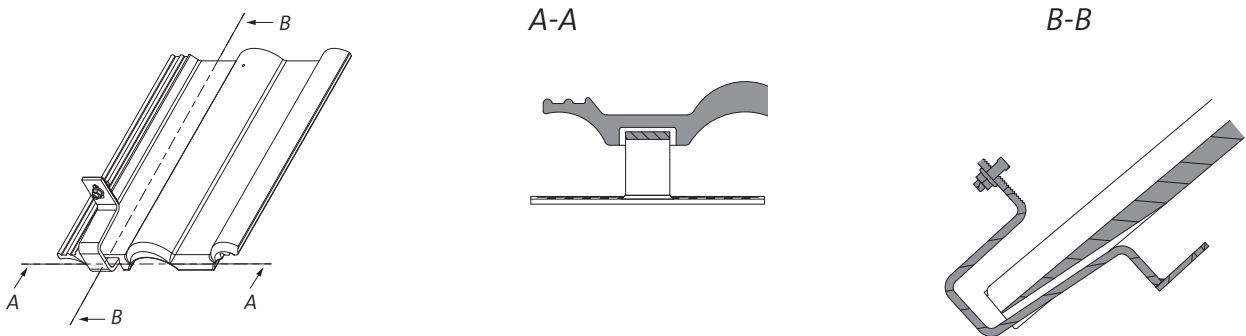


a Double Roman /
S-shaped roof tiles
b Modern Interlocking



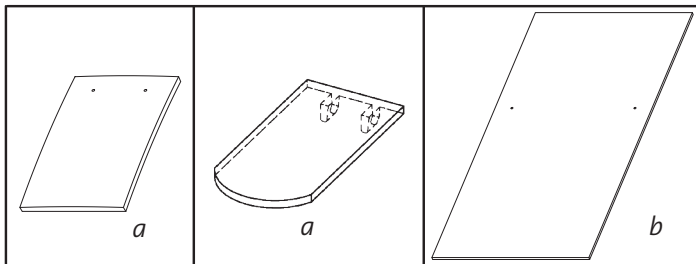
MODYFING TILES: INTERLOCKING TILES (DETAIL)

4.a



MODIFYING TILES: FLAT TILES (GENIUS SOLUTIONS)

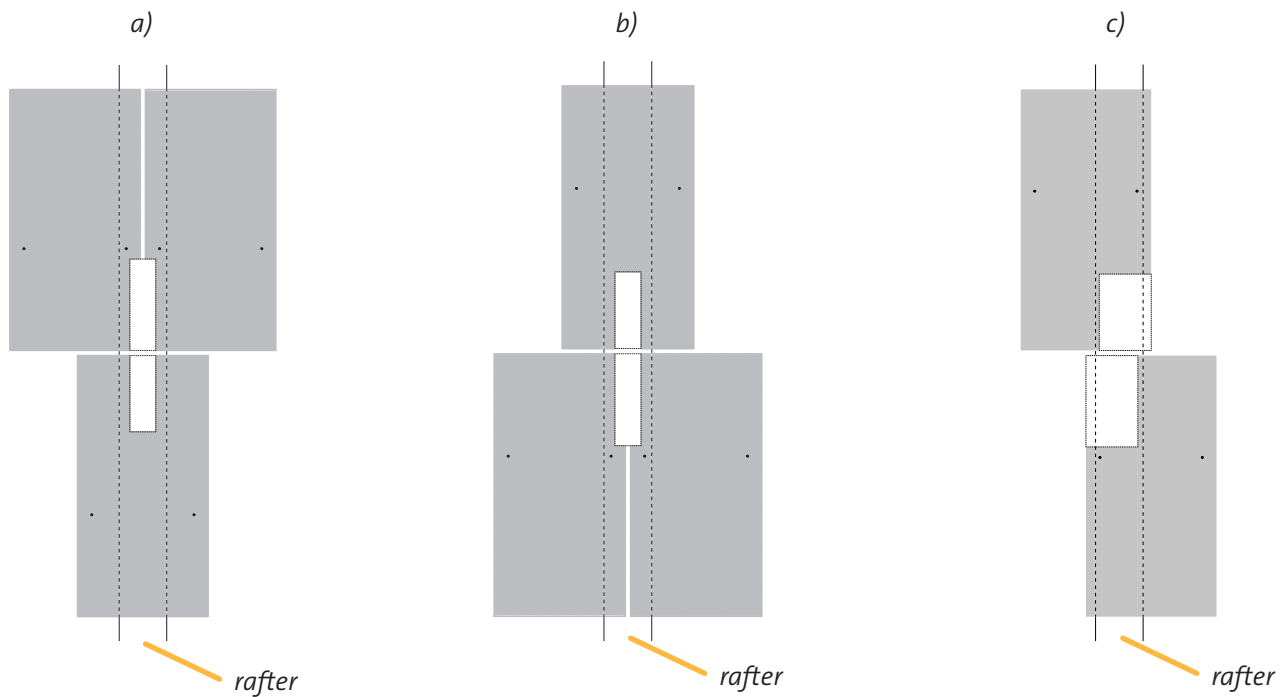
5.



a Plain Tile
b Slate Tile

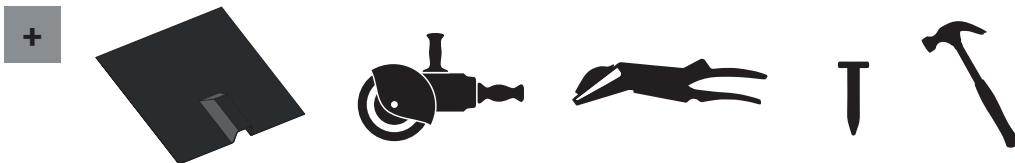
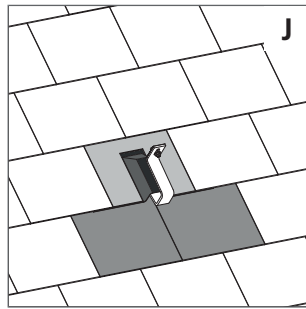
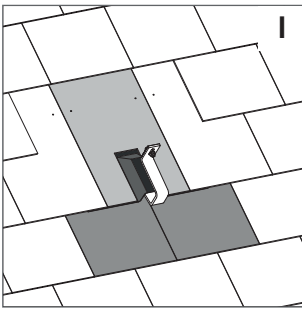
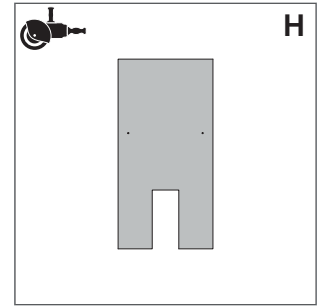
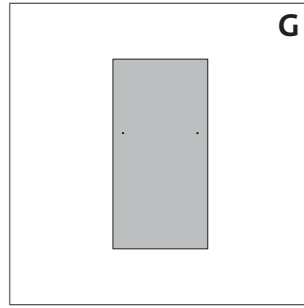
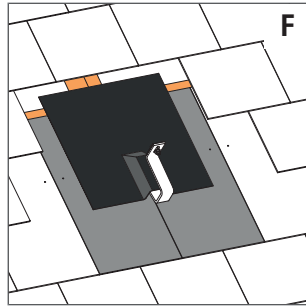
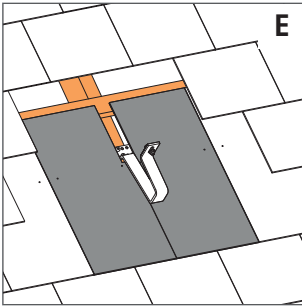
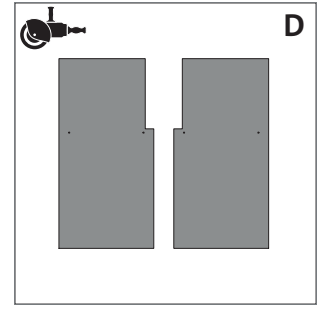
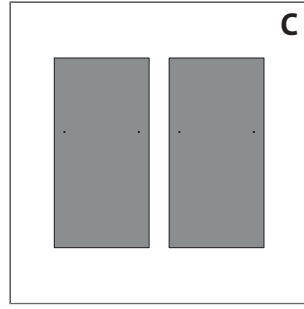
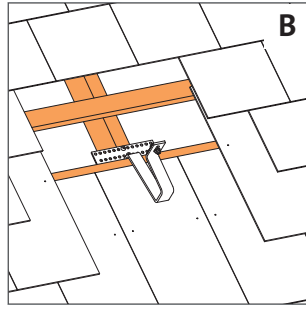
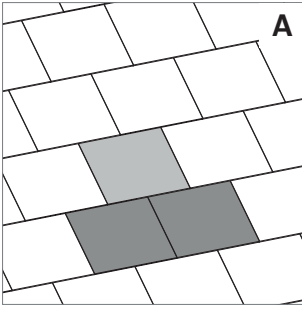
Modifying the tiles

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 the tiles are grooved, it will also be necessary to cut a recess into the top of the lower tile. Handling of three different positions:



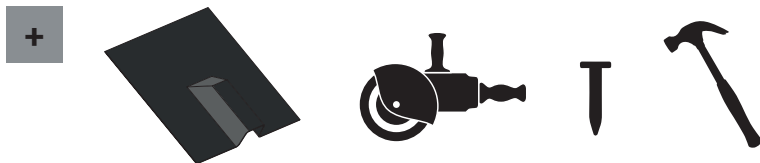
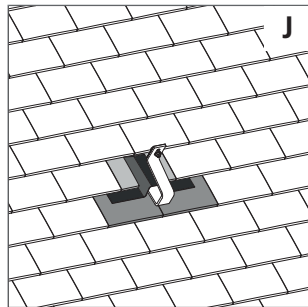
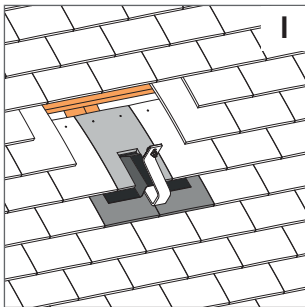
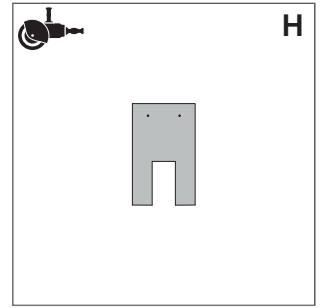
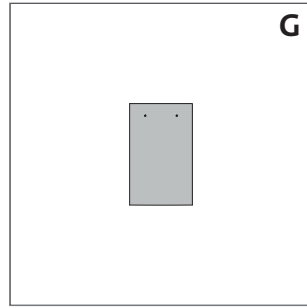
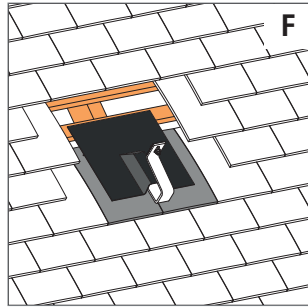
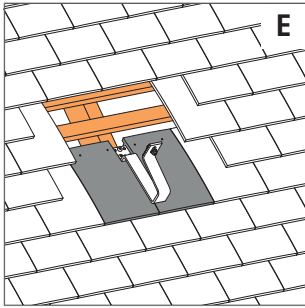
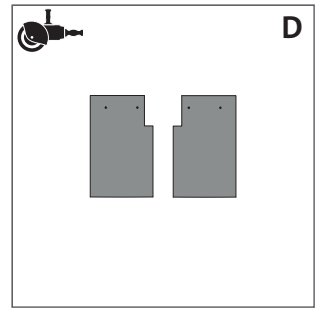
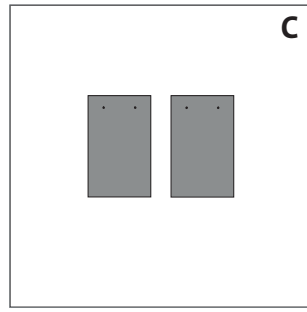
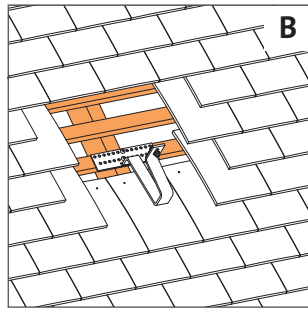
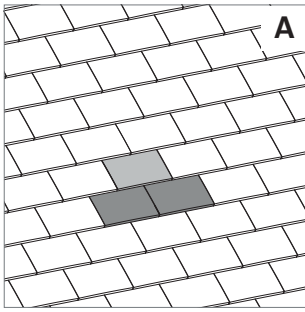
FLASHING SLATES WITH GENIUS SOLUTIONS (PLEASE REFER TO GENIUS SOLUTIONS)

6.



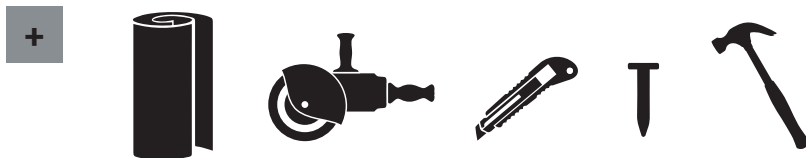
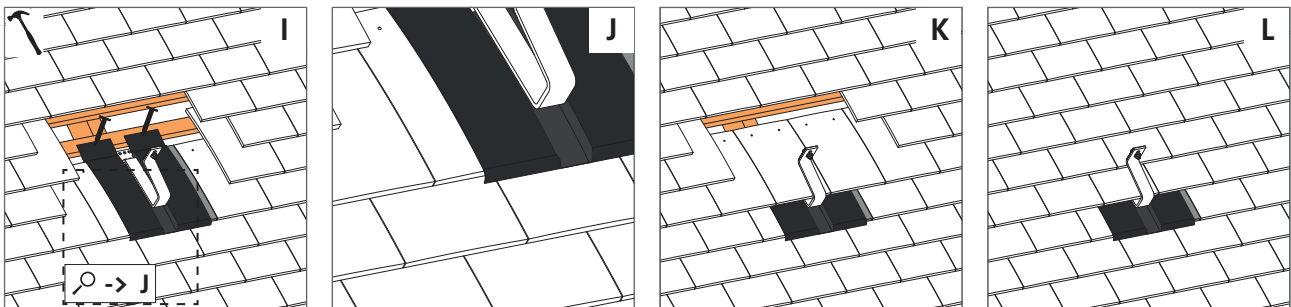
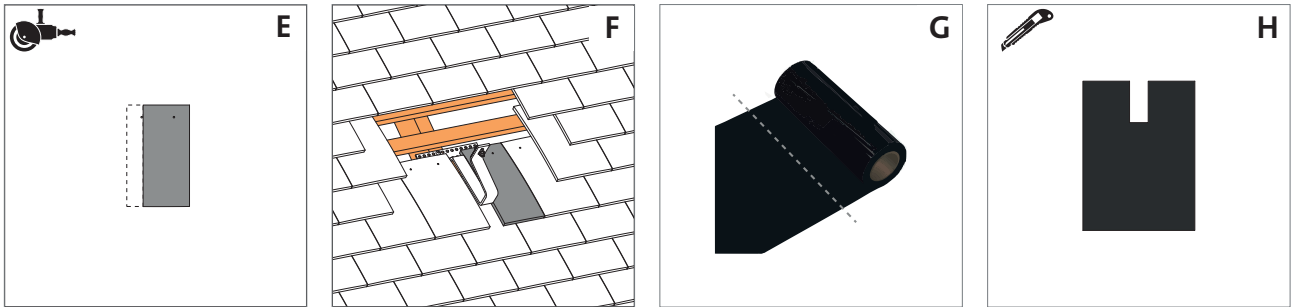
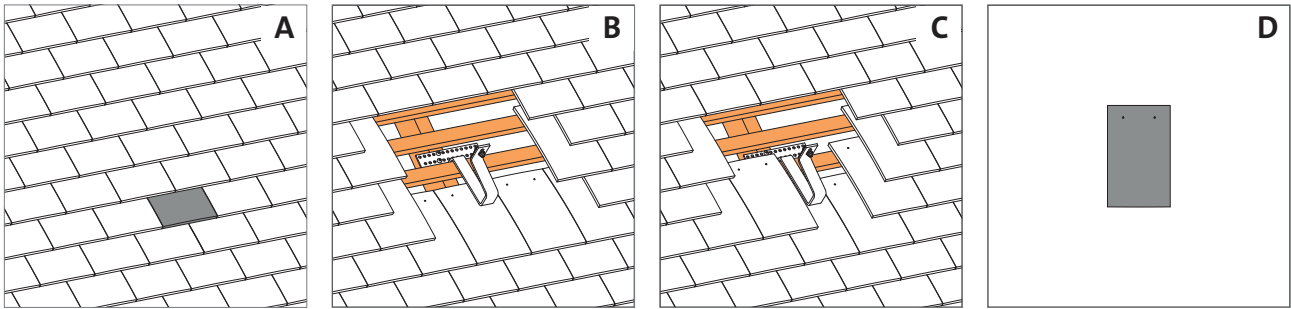
FLASHING PLAIN TILES WITH GENIUS SOLUTIONS (PLEASE REFER TO GENIUS SOLUTIONS)

7.

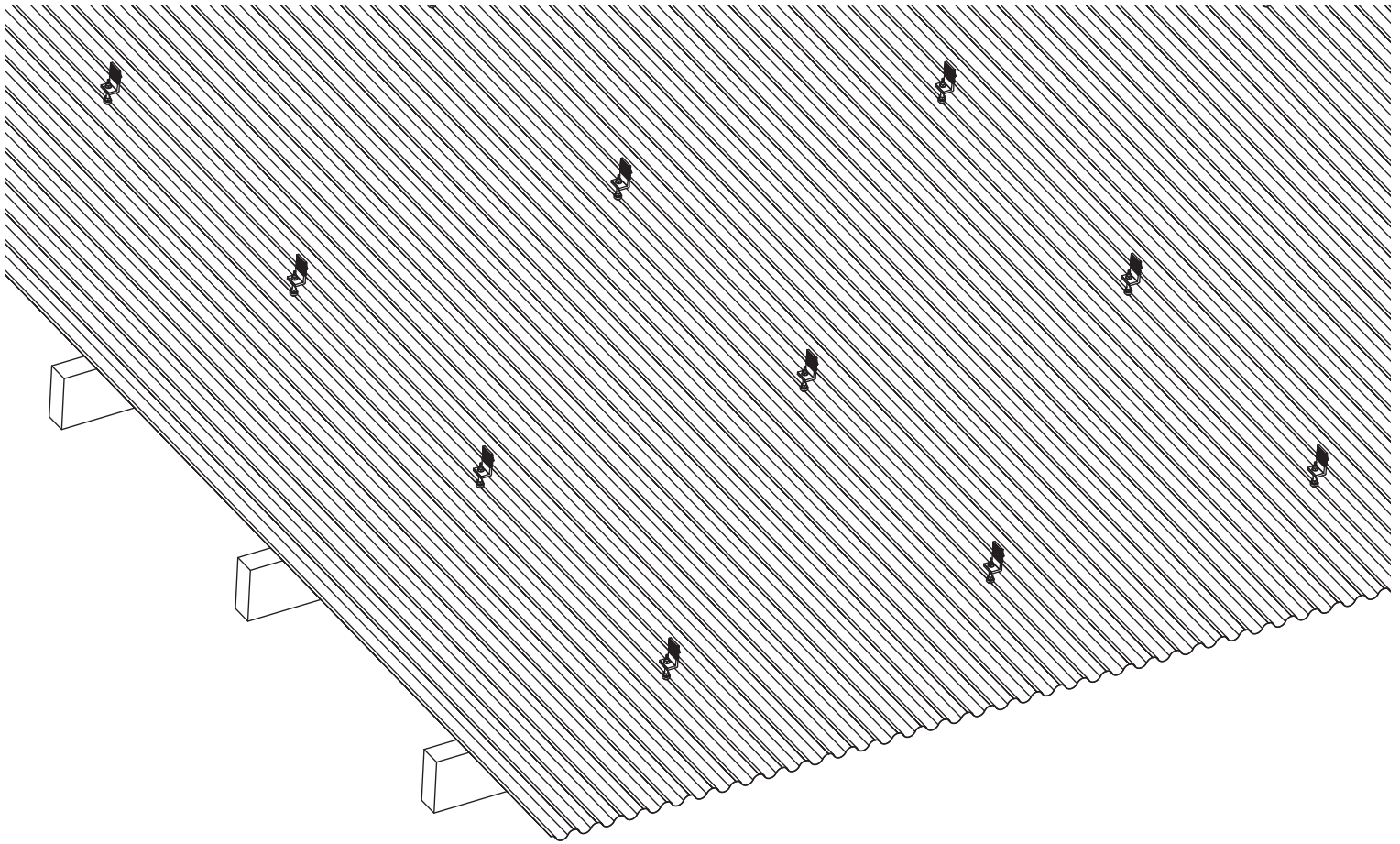
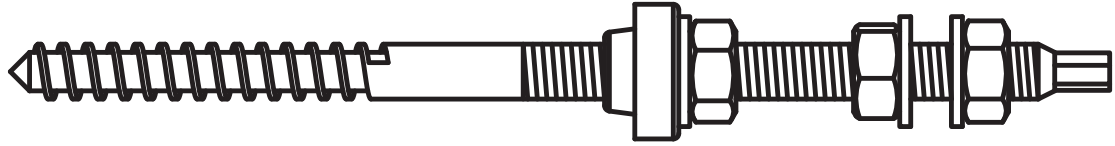


FLASHING PLAIN TILES WITH ADHESIVE (PLEASE REFER TO MANUFACTURERS INSTRUCTIONS)

8.

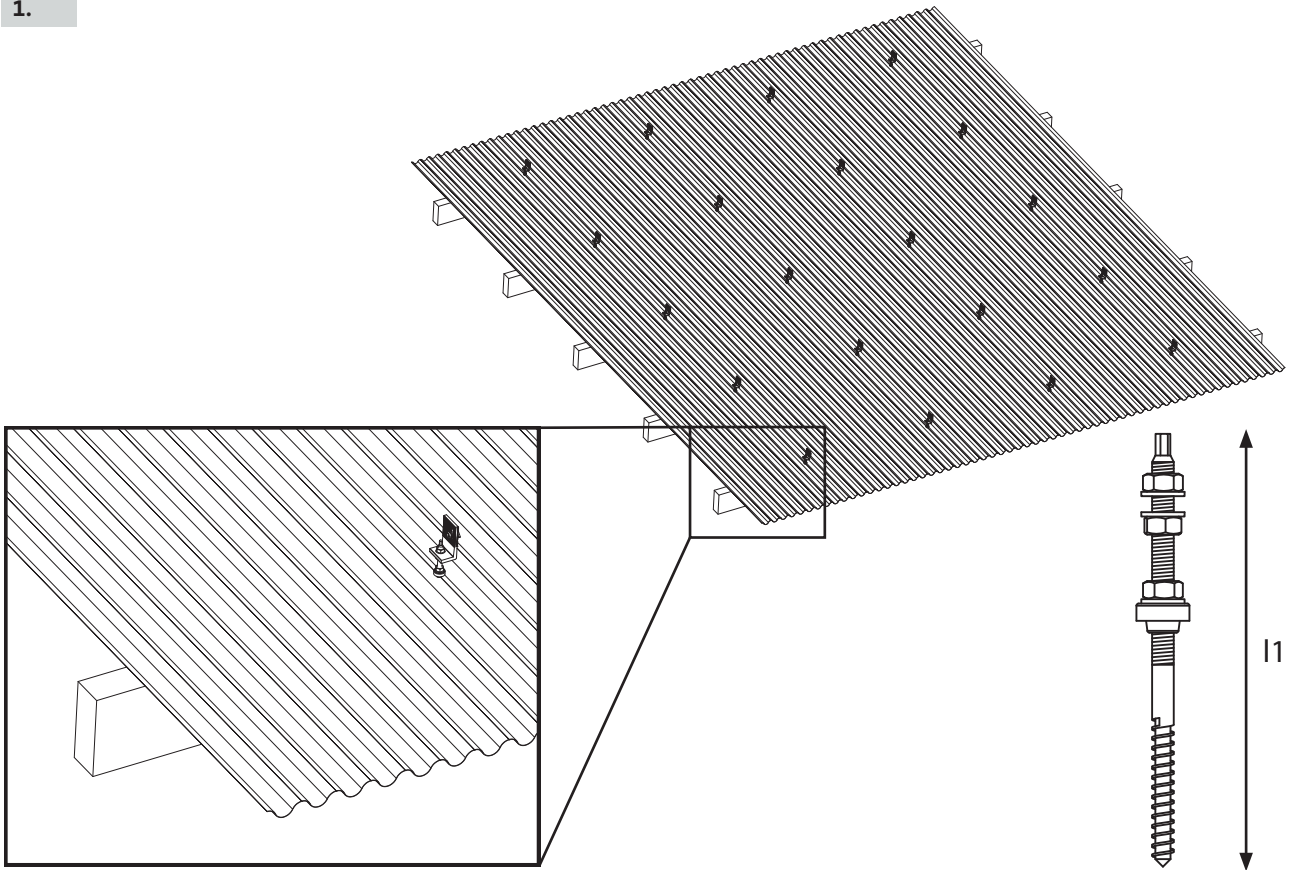


VS+ Hanger Bolt

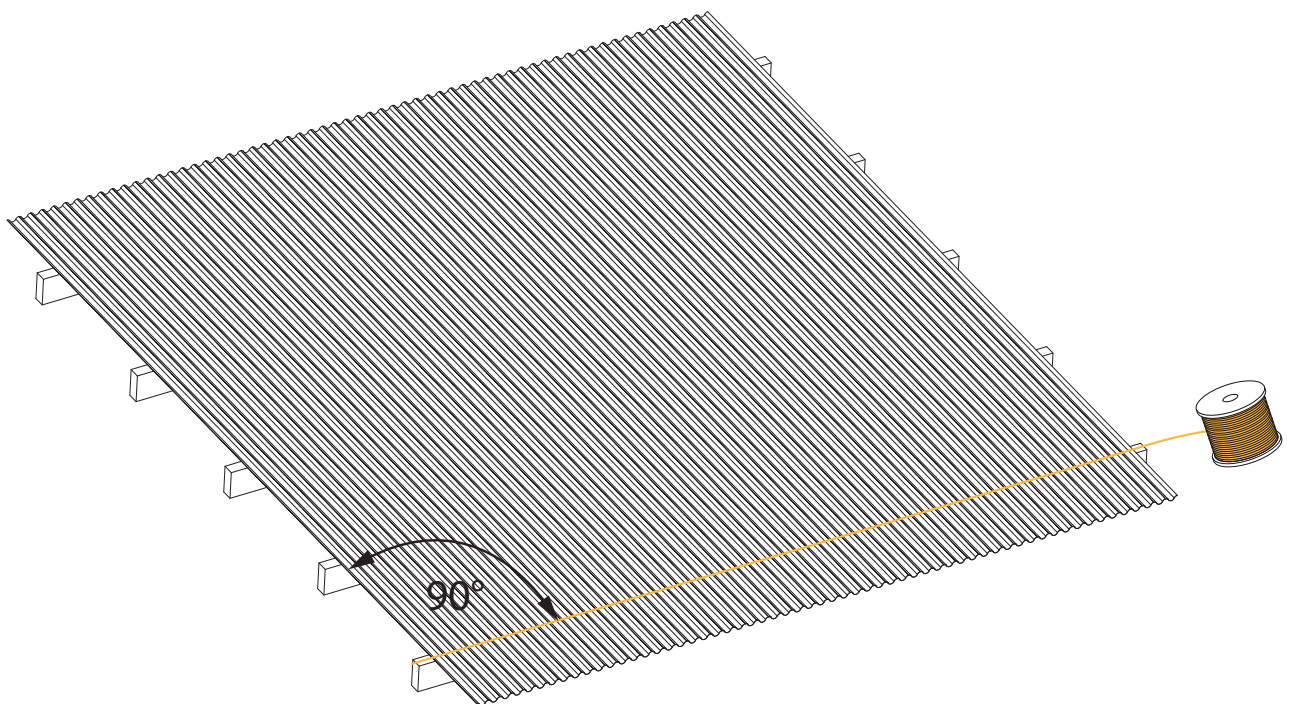


INSTALLING HANGER BOLT DETAIL

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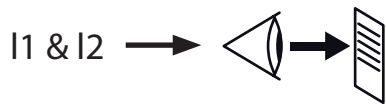
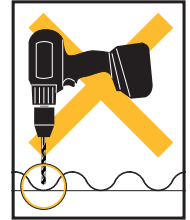
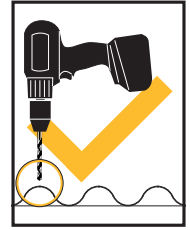
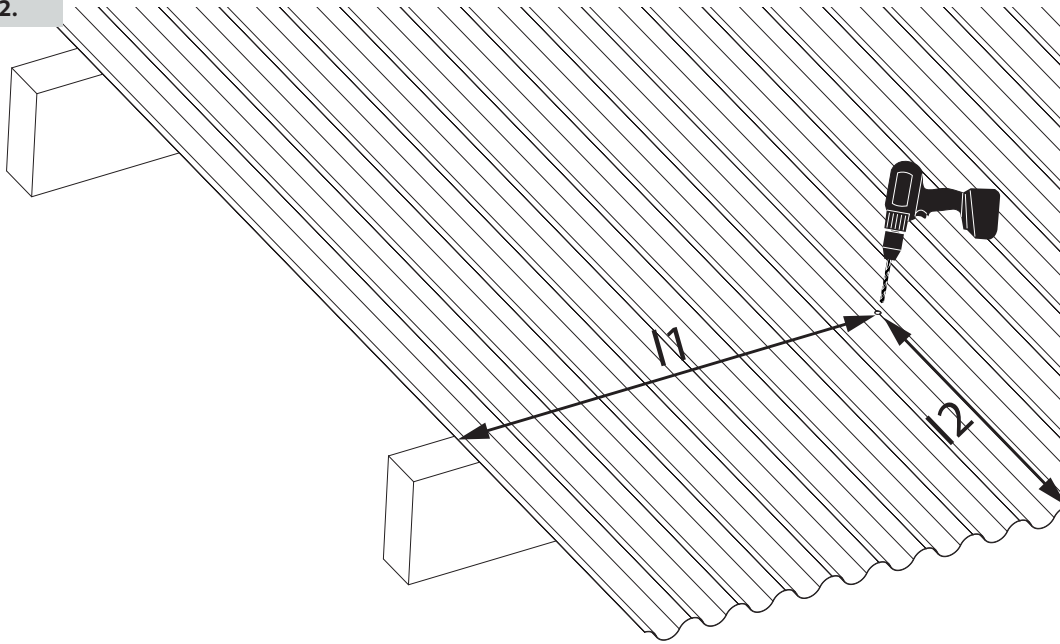


	l1			
M10	160 mm	200 mm	_____	_____
M12	250 mm	300 mm	350 mm	400 mm






INSTALLING HANGER BOLT DETAIL

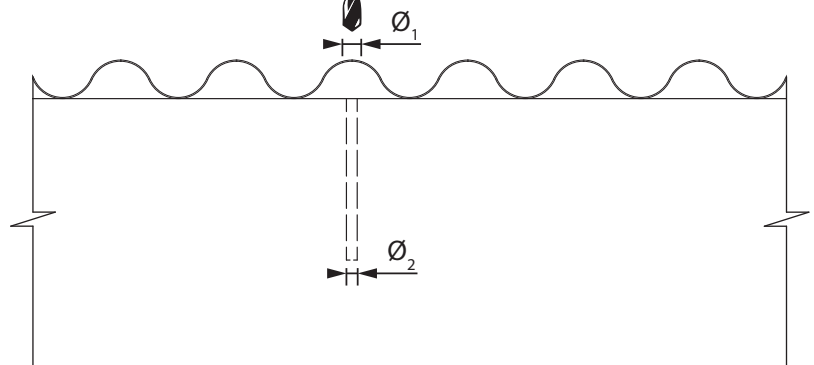
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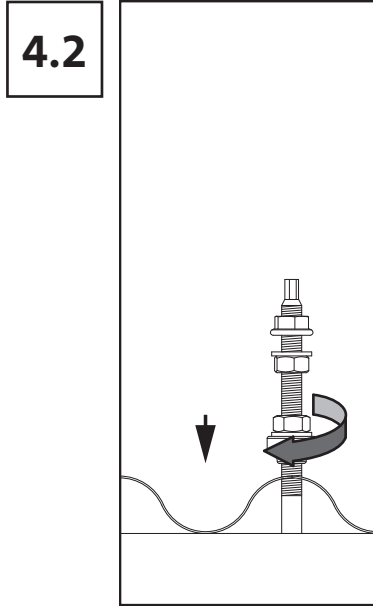
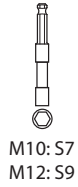
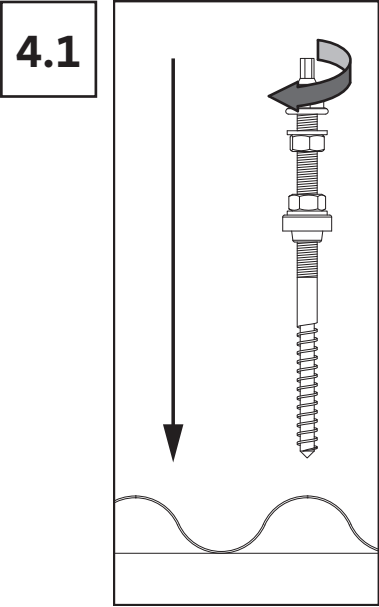
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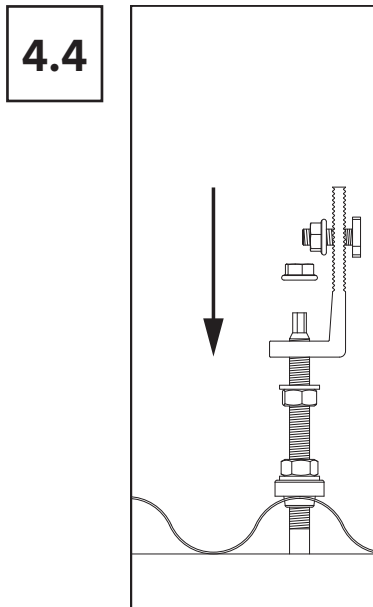
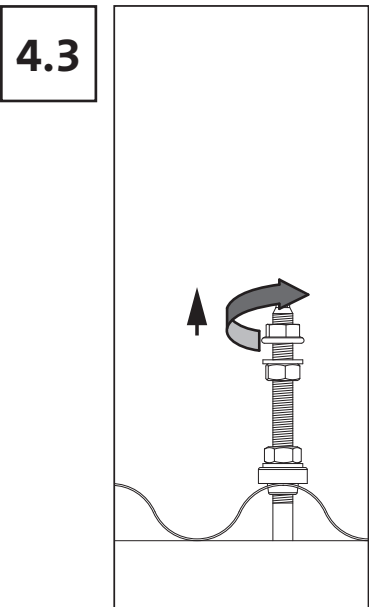
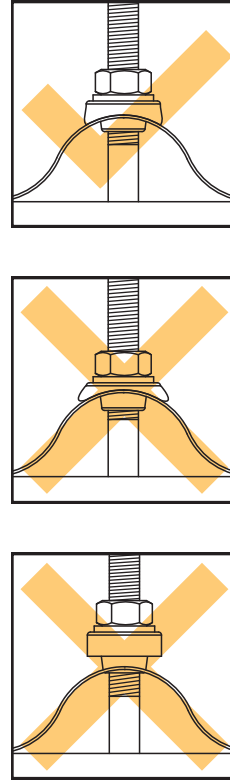
 Ø	M10	M12
 Ø ₁	14 mm	
 Ø ₂	7,0 mm	8,4 mm



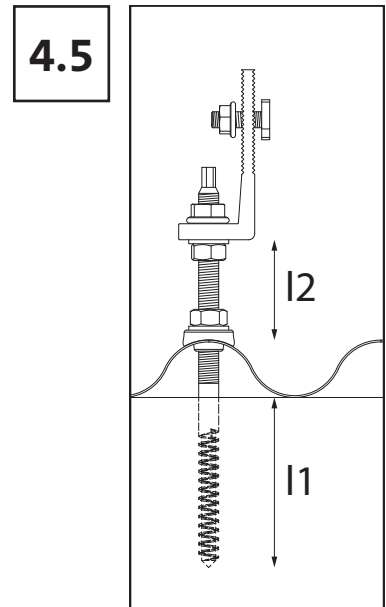
INSTALLING HANGER BOLT DETAIL



M10: SW17
M12: SW19

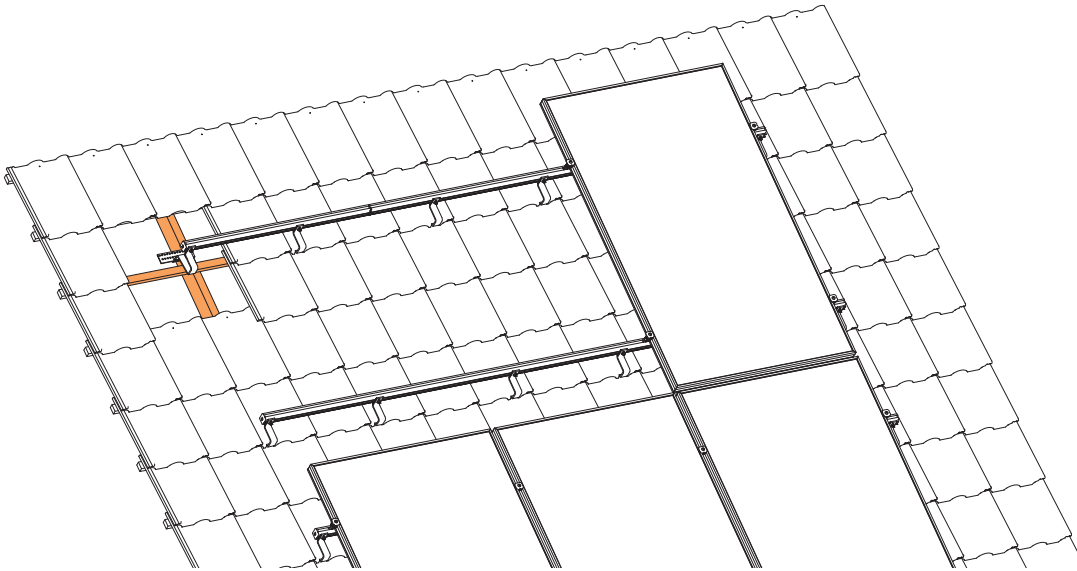


M10: SW17
M12: SW19

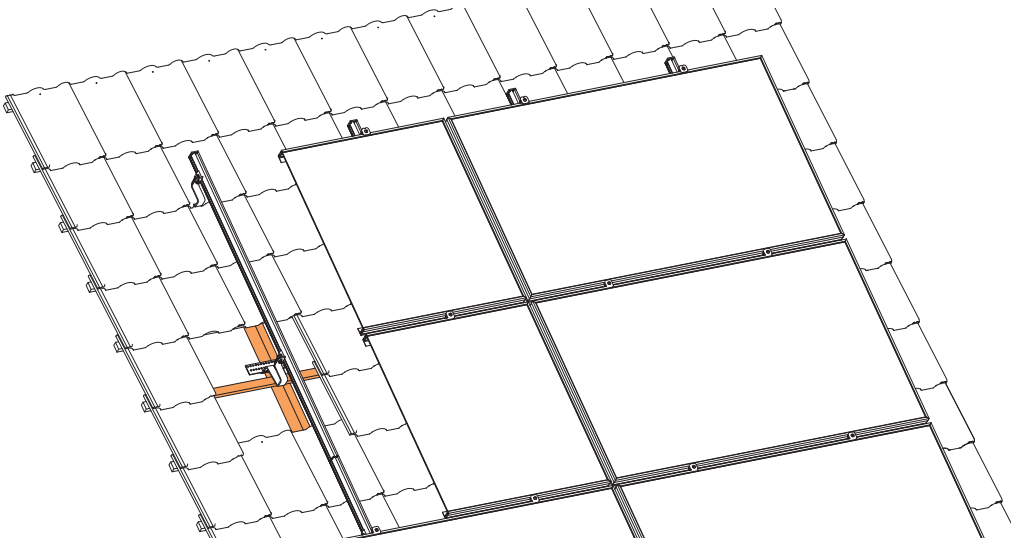


	M10	M12
L1	>40mm	>48mm
L2	<40 mm	

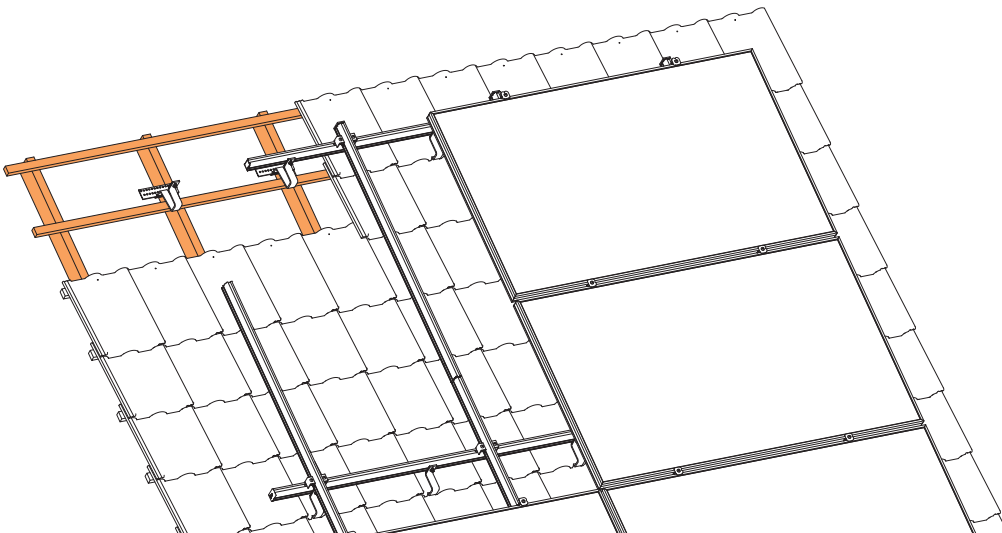
A) SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)



B) SINGLE-LAYER SYSTEM - HORIZONTAL ORIENTATION (LANDSCAPE)

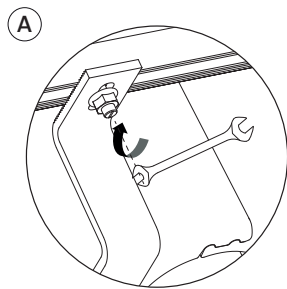
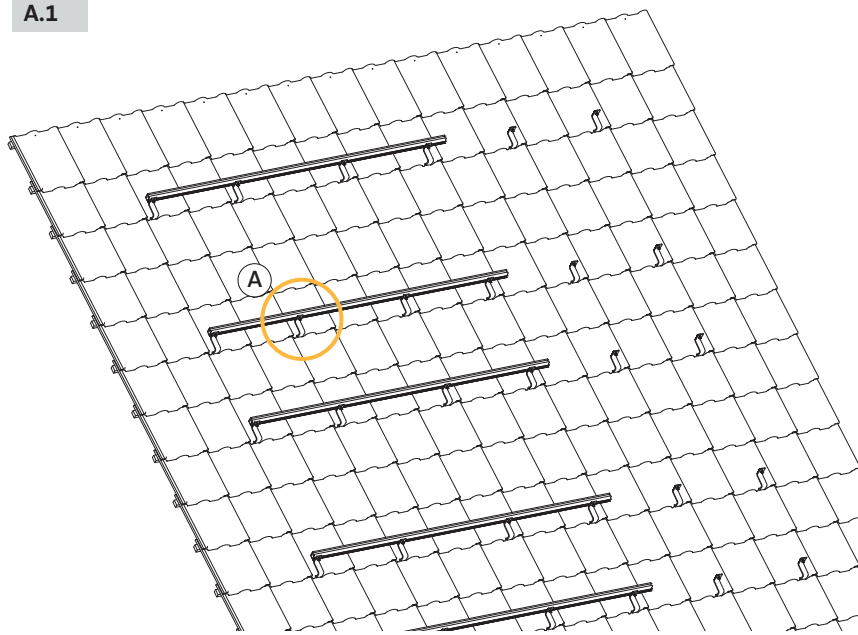


C) DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)

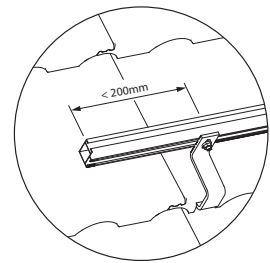
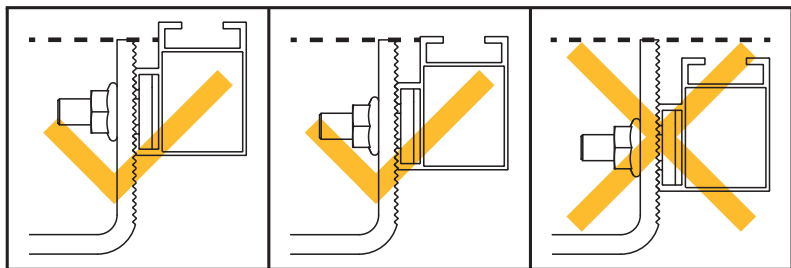


INSTALLING SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)

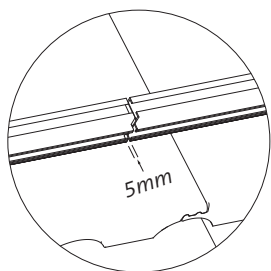
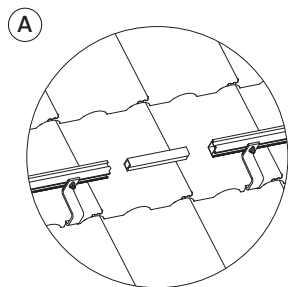
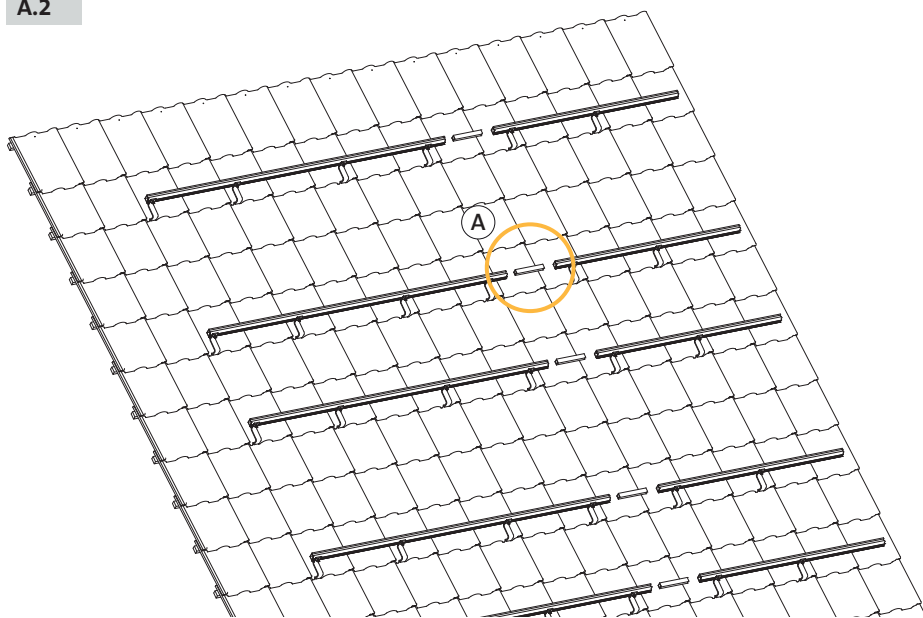
A.1

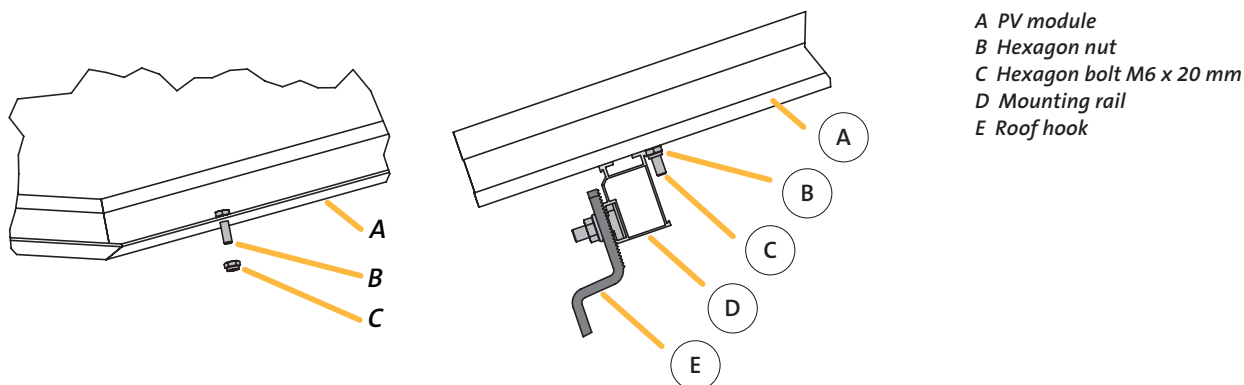


i15 Nm



A.2





EN | **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. 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.

DE | **Installation des Anti-Rutsch-Schutzes für die erste Modulreihe**
Vor der Installation sollten die Module der untersten Reihe mit rutschfestem Schutz versehen sein. Ziehen Sie dazu die M6 x20mm Schrauben (mit nach unten zeigender Welle/ Gewinde) mit M6 Muttern in den Modulbefestigungspunkten an. Platzieren Sie die Module der untersten Reihe, so dass der Rutschschutz anliegt und die Kante der niedrigsten Montageschiene (Abb. B) anschlägt.

Hinweis:

Der Anti-Rutsch-Schutz kann nur bei Modulen mit den entsprechenden Befestigungslöchern verwendet werden.

FR | **Installation de la protection antidérapante pour la première rangée de modules**
Avant l'installation, les modules de la rangée inférieure doivent être munis d'une protection antidérapante. Pour cela, serrer les vis M6 x 20 mm (arbre/filetage vers le bas) avec les écrous M6 dans les points de fixation du module. Placez les modules dans la rangée inférieure de façon à ce que la protection antidérapante soit en contact avec le bord du rail de montage le plus bas (Fig. B).

Remarque :

La protection antidérapante ne peut être utilisée qu'avec des modules munis des trous de fixation correspondants.

IT | **Installazione di una protezione antiscivolo per la prima fila di moduli**
Prima dell'installazione, i moduli della fila più bassa devono essere dotati di una protezione antiscivolo. Serrare le viti M6 x20mm (con l'albero/filetto rivolto verso il basso) con i dadi M6 nei punti di fissaggio del modulo. Collocare i moduli della fila più bassa in modo che la protezione antiscivolo sia a contatto in battuta con il bordo della guida alluminio di montaggio più bassa (Fig. B).

Nota di suggerimento:

La protezione antiscivolo può essere utilizzata solo con moduli con cornice dotati dei relativi fori di montaggio.

ES | **Instalación de los tornillos de protección antideslizamiento en la primera fila de módulos**
Antes del montaje, deben colocarse tornillos de protección antideslizamiento en los módulos de la fila inferior para evitar su deslizamiento. Para ello, coloque los tornillos M6 x 20mm (con el vástago/rosca hacia abajo) en los puntos de fijación de los módulos y apriételos con las tuercas M6. Coloque los módulos de la fila inferior de tal forma que el tornillo de protección antideslizamiento quede en contacto con el borde del carril de montaje inferior (fig. B).

Consejo:

Los tornillos de protección antideslizamiento sólo pueden utilizarse en módulos que tengan los correspondientes orificios de fijación.

NL | **Montage van de antislipbescherming voor de eerste rij zonnepanelen**
Voor de montage moeten de modules van de onderste rij worden voorzien van een antislipbescherming. Draai de M6 x20mm-bouten (met as / schroefdraad naar beneden) met de M6-moeren vast in de bevestigingspunten van de zonnepanelen. Plaats de zonnepanelen van de onderste rij zo dat de antislipbescherming tegen de rand van de onderste monterail aan komt te liggen (fig. B), zodat de rand slaat.

Tip:

De antislipbescherming mag alleen worden gebruikt bij zonnepanelen met de bijbehorende montagegaten.

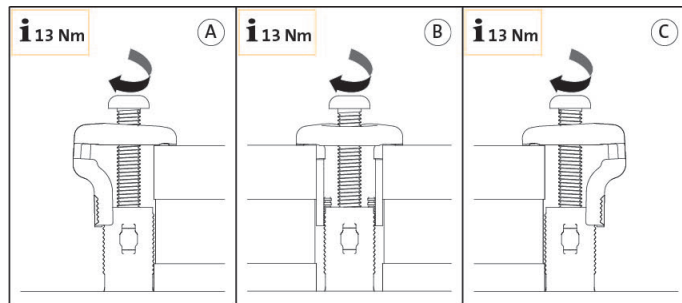
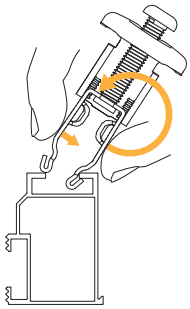
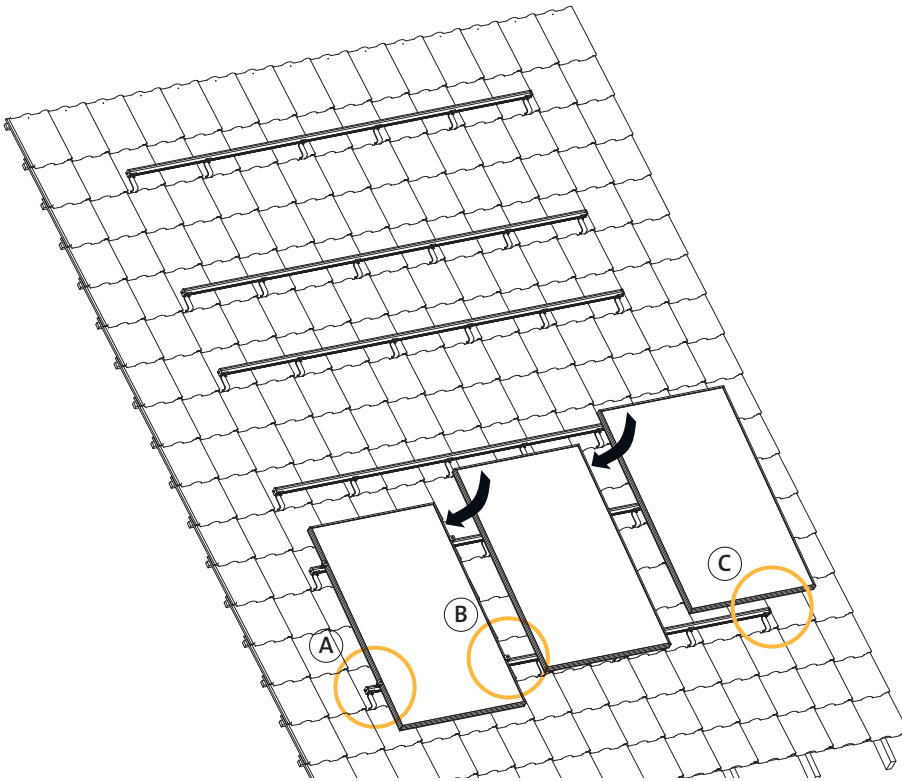
PL | **Montaż zabezpieczenia antypoślizgowego w pierwszym rzędzie modułów**
Przed montażem moduły w najniższym rzędzie powinny być wyposażone w zabezpieczenie antypoślizgowe. Dokręć śruby M6 x20 mm (z wałem/gwintem skierowanym ku dołowi) z nakrętkami M6 w punktach mocowania modułu. Moduły w najniższym rzędzie ustawiać tak, aby stykały się z zabezpieczeniem antypoślizgowym i zatrzasnęła się krawędź najniższej szyny montażowej (Rys. B).

Wskazówka:

Zabezpieczenie antypoślizgowe może być stosowane tylko z modułami z odpowiednimi otworami montażowymi.

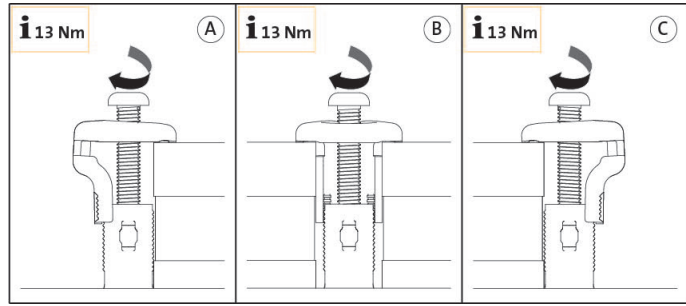
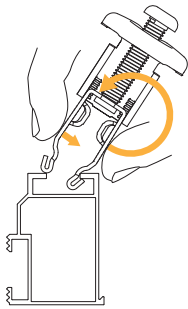
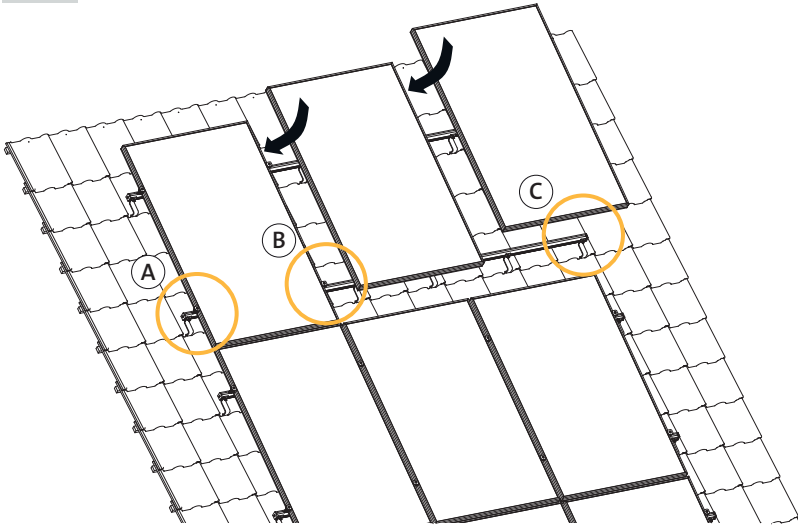
INSTALLING SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)

A.4

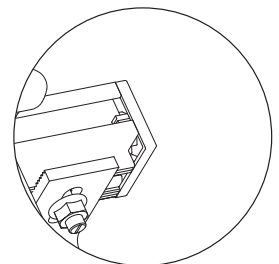
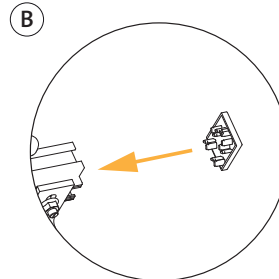
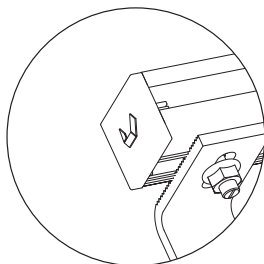
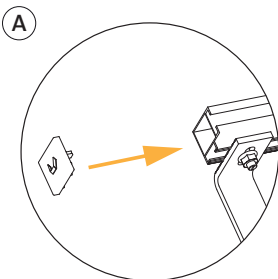
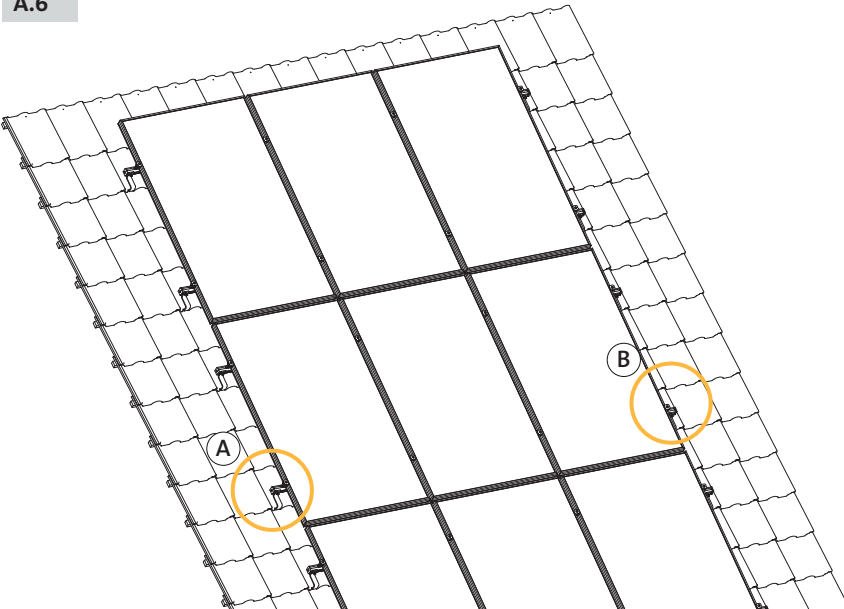


INSTALLING SINGLE-LAYER SYSTEM - VERTICAL MODULE ORIENTATION (PORTRAIT)

A.5

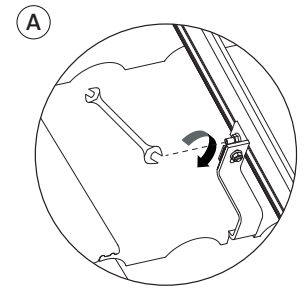
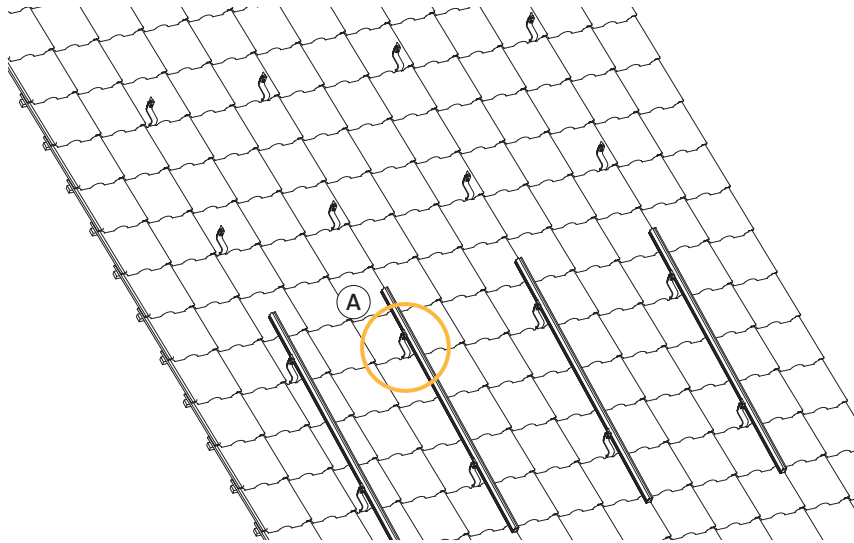


A.6

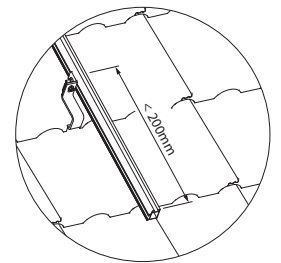
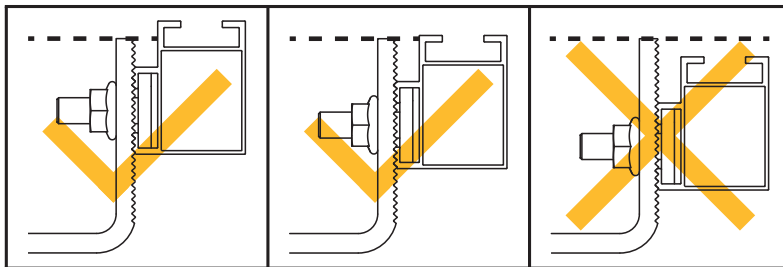


INSTALLING SINGLE-LAYER SYSTEM – HORIZONTAL ORIENTATION (LANDSCAPE)

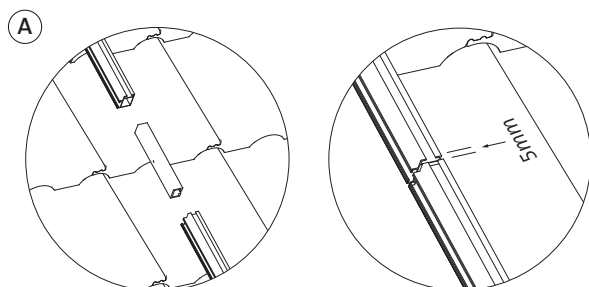
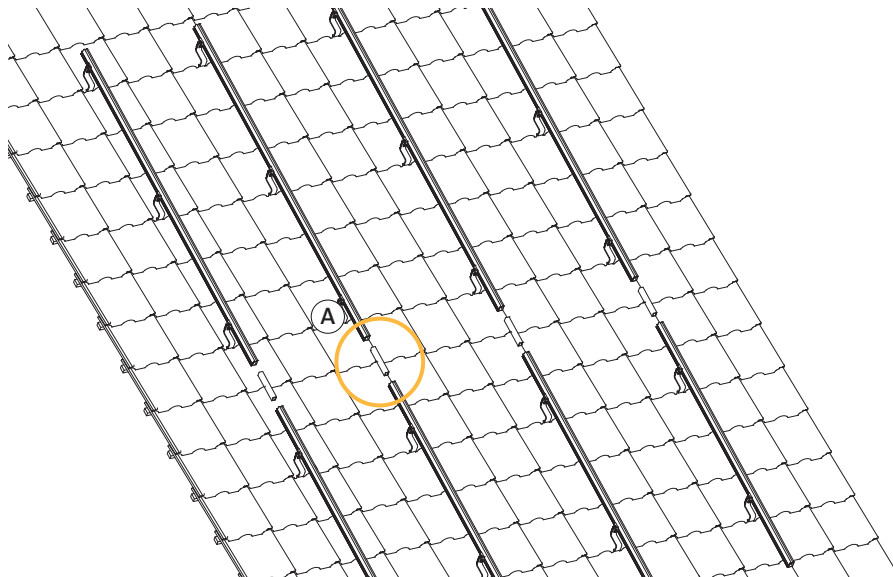
B.1



i15 Nm

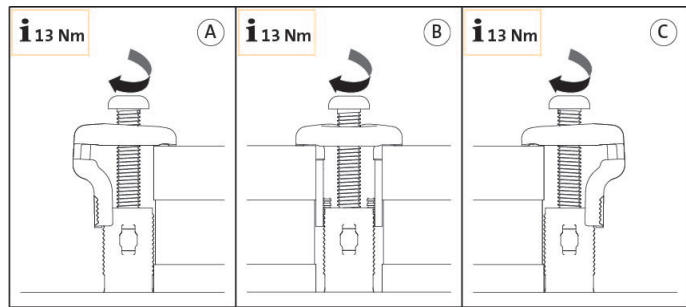
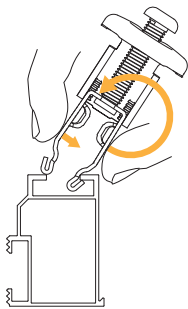
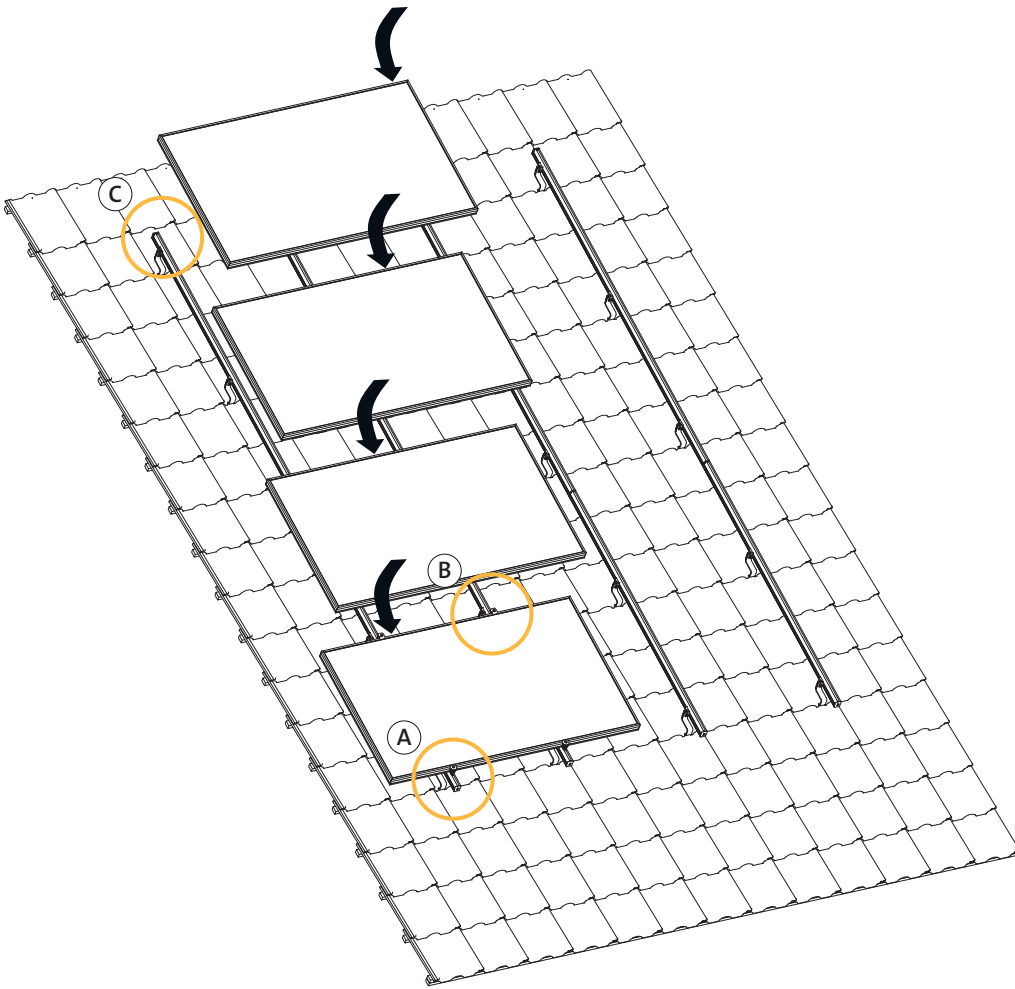


B.2



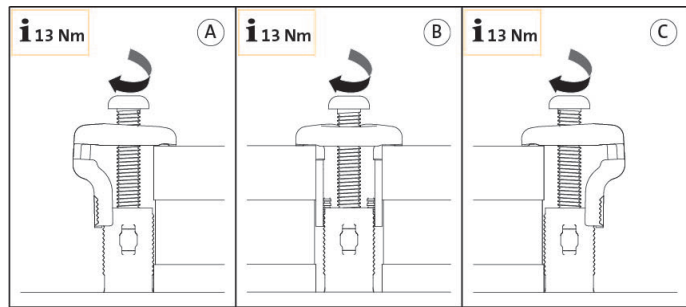
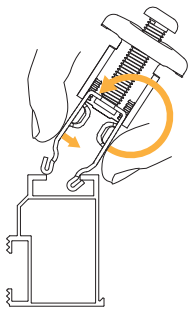
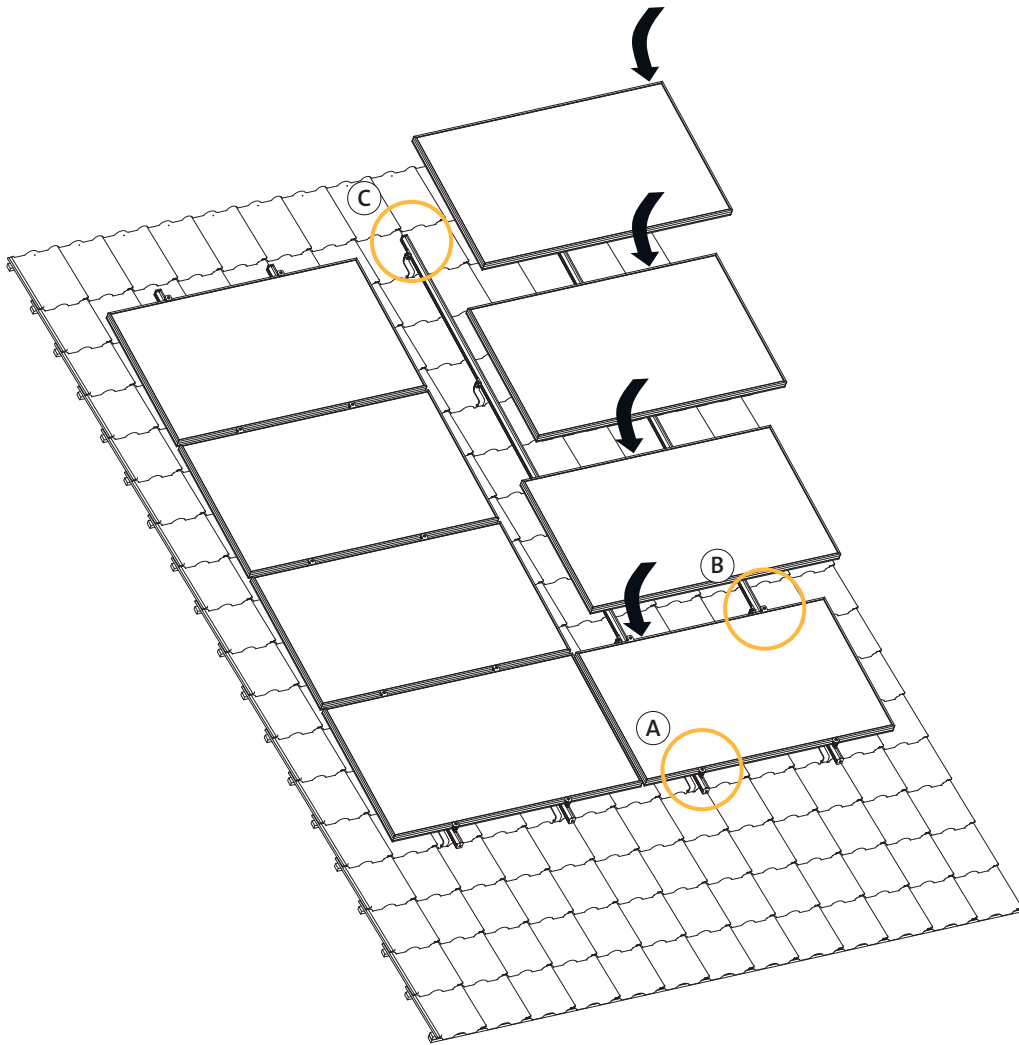
INSTALLING SINGLE-LAYER SYSTEM – HORIZONTAL ORIENTATION (LANDSCAPE)

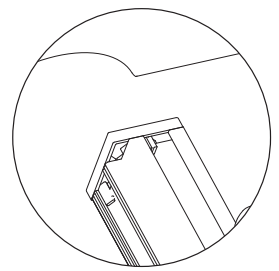
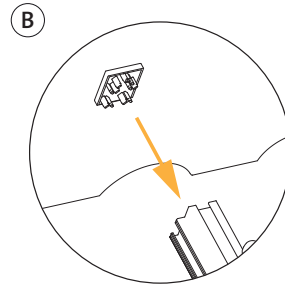
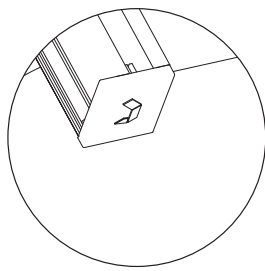
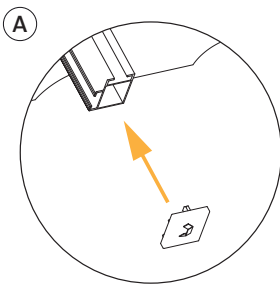
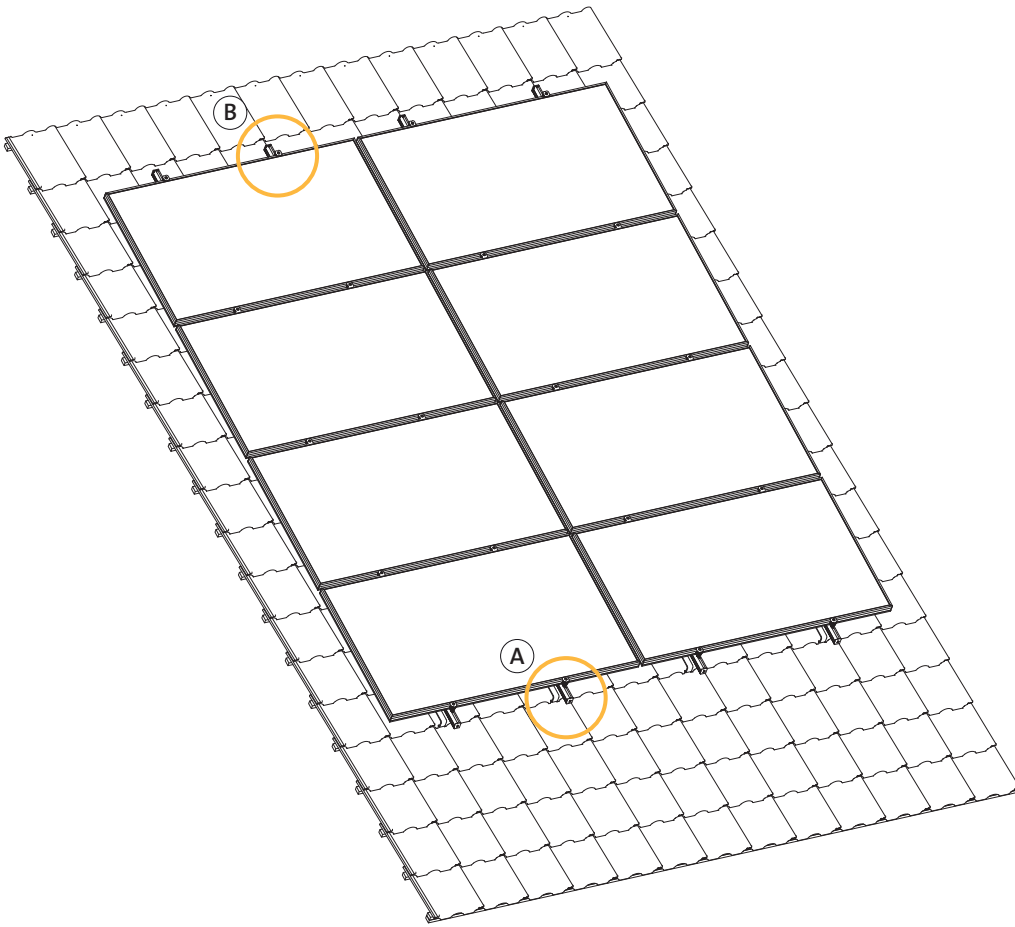
B.3



INSTALLING SINGLE-LAYER SYSTEM – HORIZONTAL ORIENTATION (LANDSCAPE)

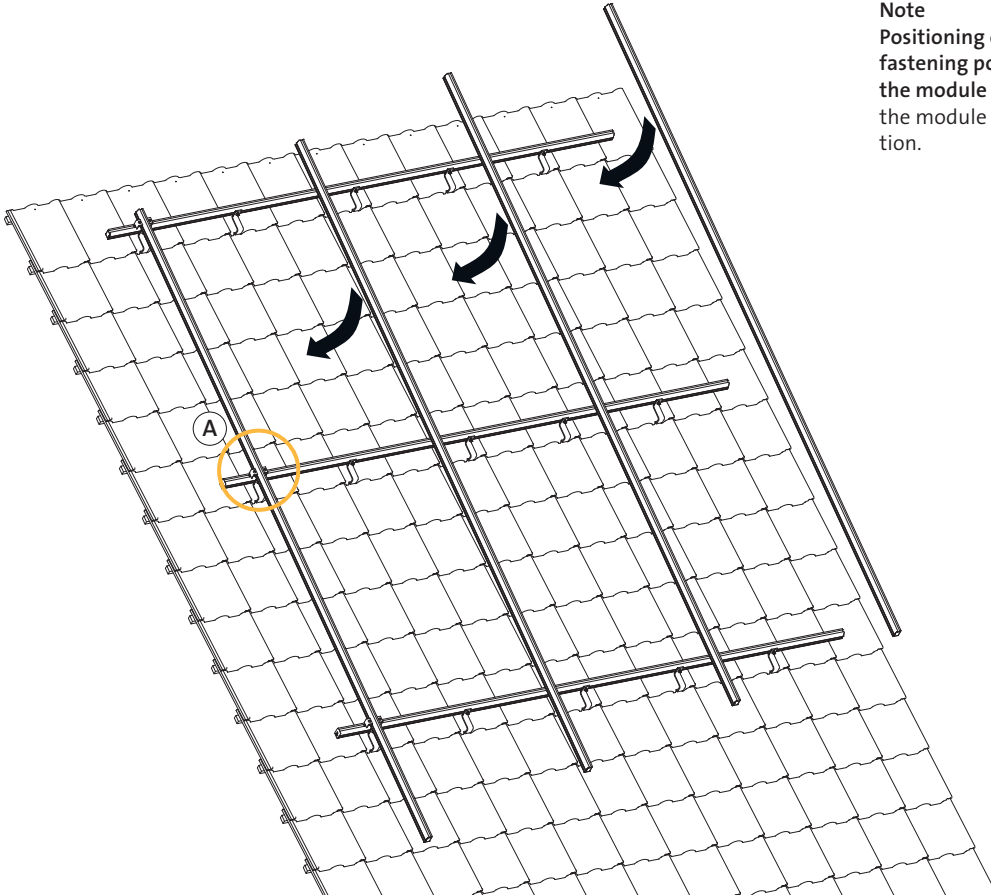
B.4



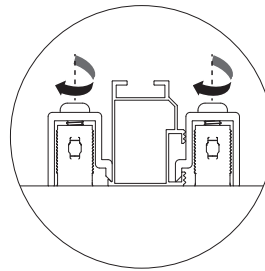
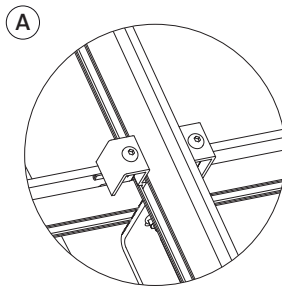
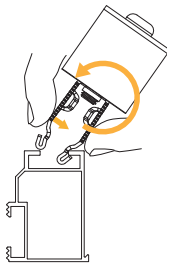


INSTALLING DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)

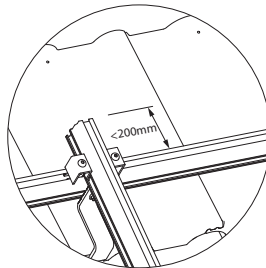
C.1



Note
Positioning of vertical mounting rails in the fastening points of the module, defined by the module manufacturer. Please refer to the module manufacturer's recommendation.

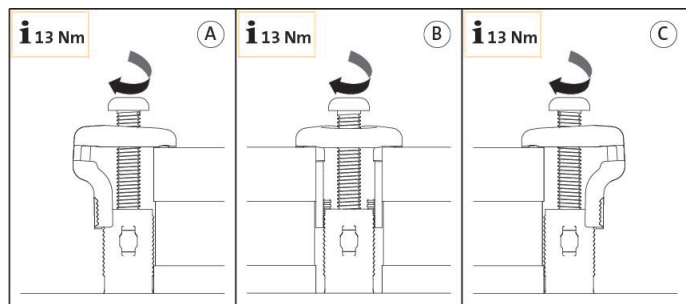
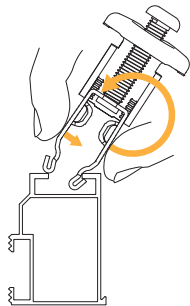
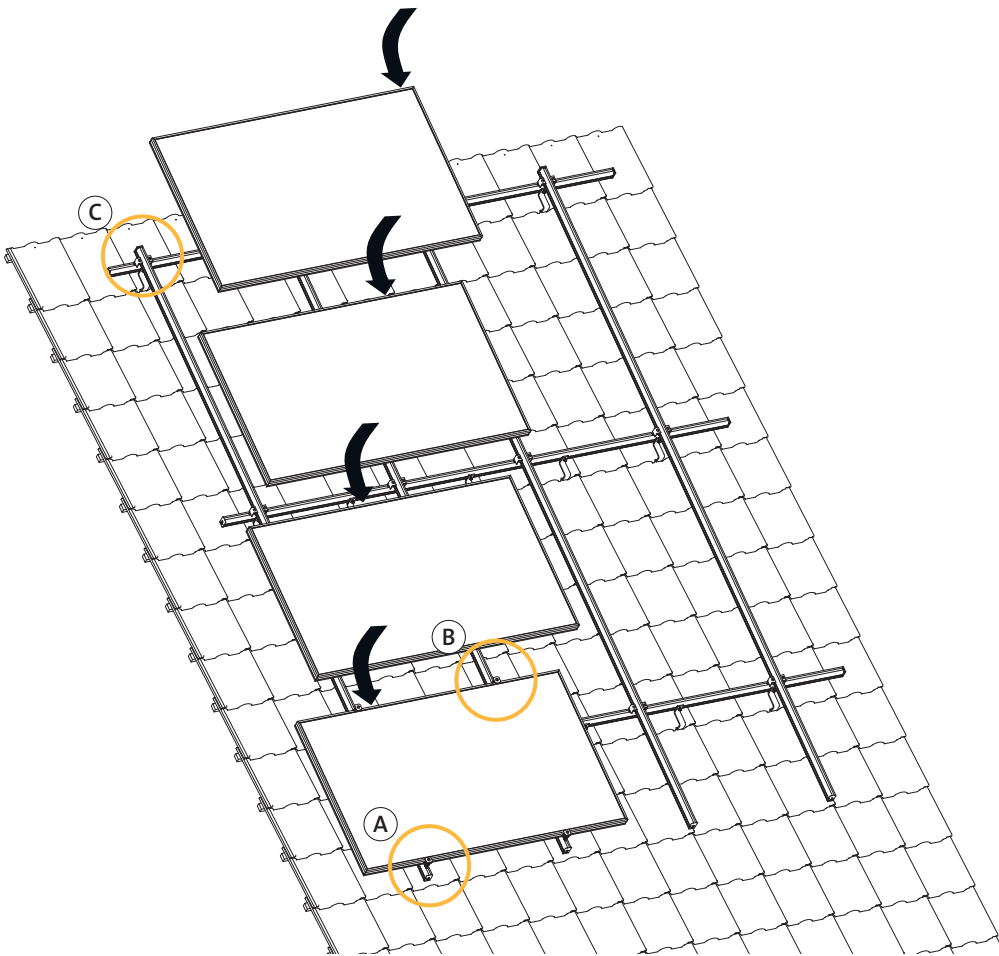


i15 Nm

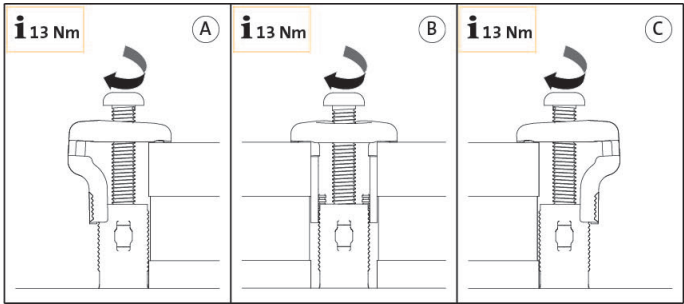
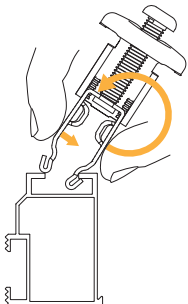
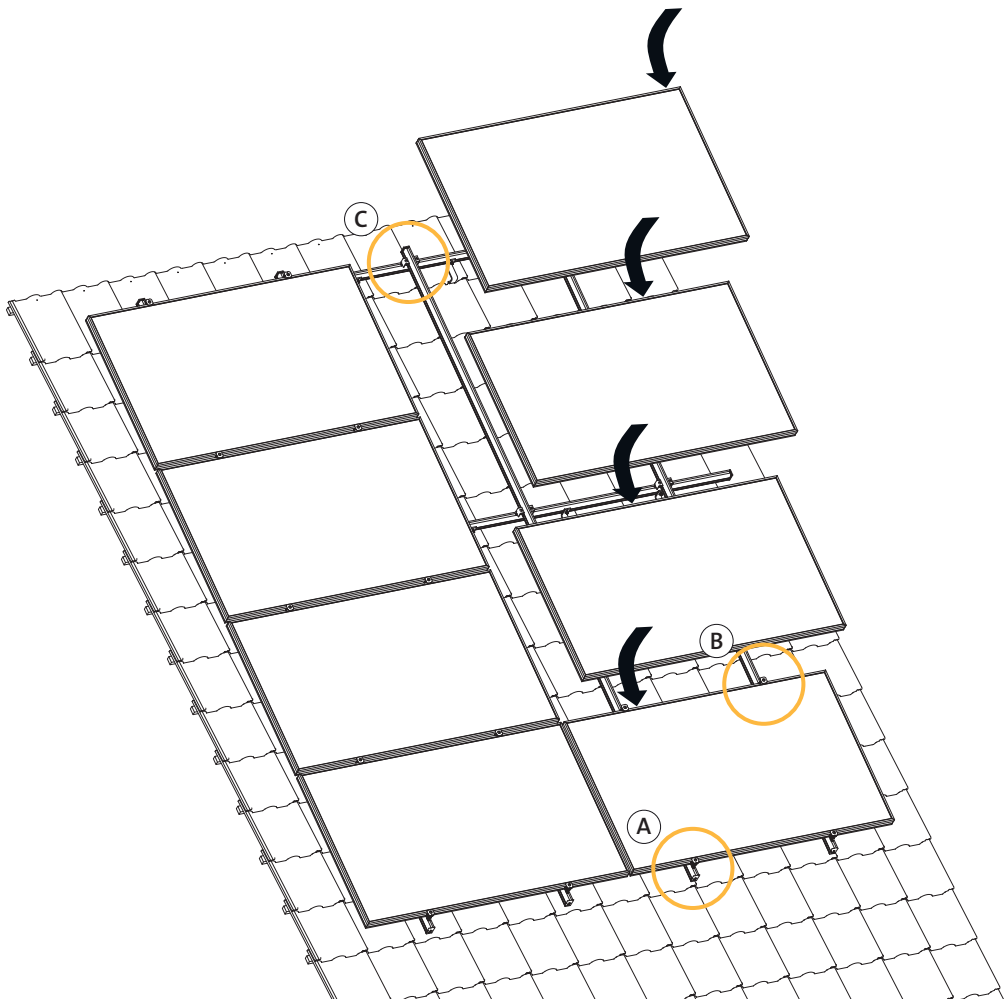


INSTALLING DOUBLE-LAYER SYSTEM - HORIZONTAL MODULE ORIENTATION (LANDSCAPE)

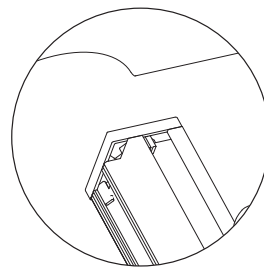
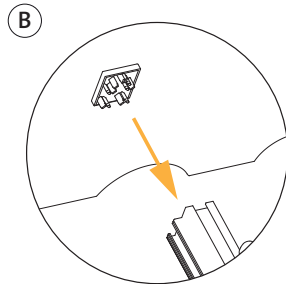
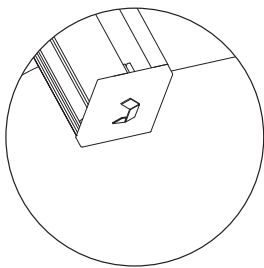
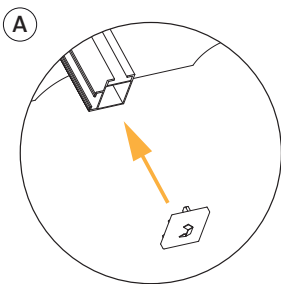
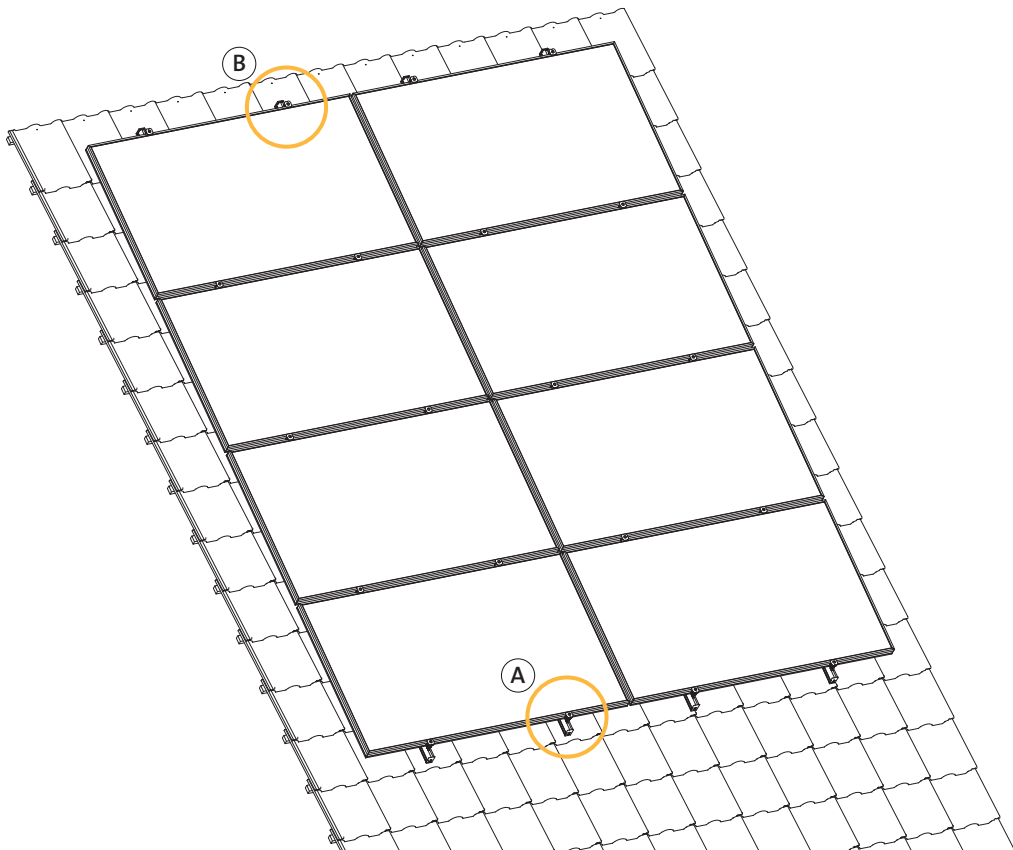
C.2



C.3



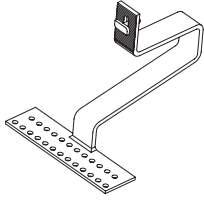
C.4



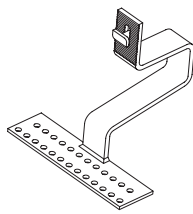
ROOF HOOKS FOR WOODEN SUBSTRUCTURES

9. A

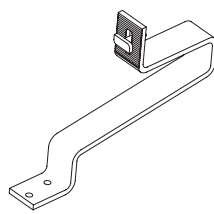
UK Roof hook,
Flexible



UK Roof hook,
Pantile

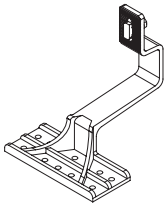


UK Roof hook,
Plain

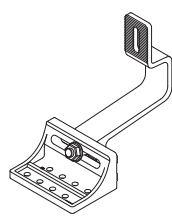


Hot dipped galvanized steel according to EN ISO 1461. Suitable for corrosion class C3.

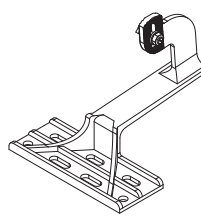
Roof hooks, aluminium



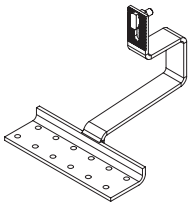
Roof hook,
aluminium, adjustable



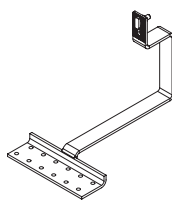
Roof hook,
aluminium, 90°



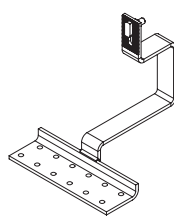
Roof hook,
Stainless steel TM



Roof hook, Stainless steel TR



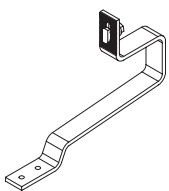
Roof hook, Stainless steel TP



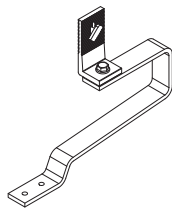
Country-specific roof hooks for Italy, Spain, and France

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

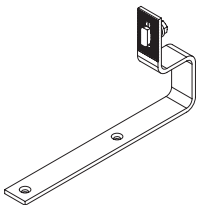
Plain tile roof hook



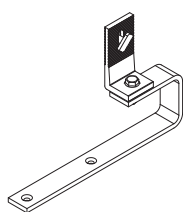
Plain tile roof hook,
90°



Slate roof hook



Slate roof hook, 90°

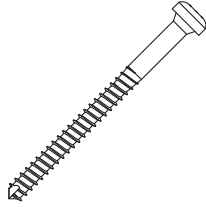


SCREWS

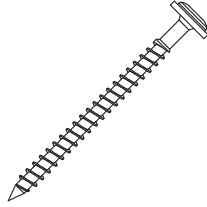
9. B

Screws for
wood substructures

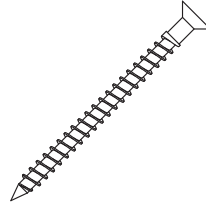
6 x 80



6 x 120
6 x 160
8 x 100



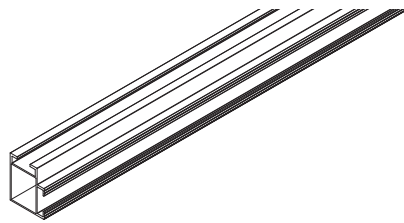
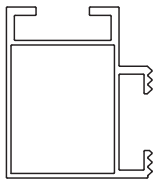
6 x 80



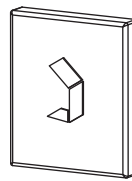
MOUNTING RAILS AND EQUIPMENT

9. C

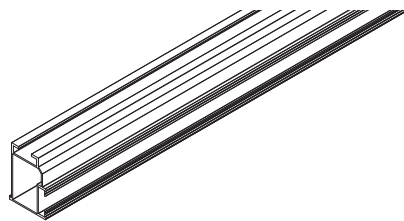
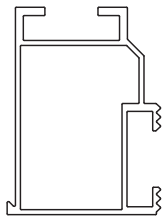
VS+ Mounting rail 41 x 35



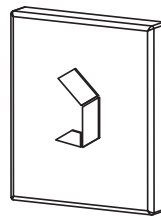
Cap VS+
Mounting rail 41 x 35



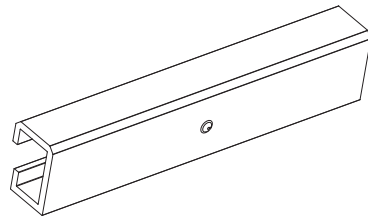
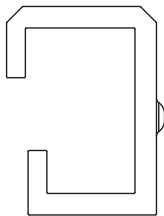
VS+ Mounting rail 50 x 37



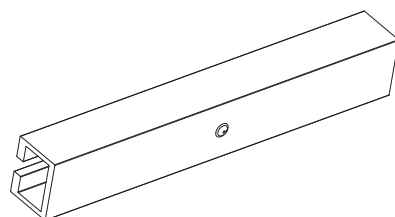
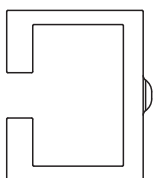
Cap VS+
Mounting rail 50 x 37



VS+ Rail connector 50 x 37



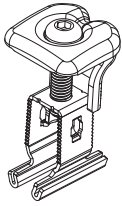
VS+ Rail connector 41 x 35



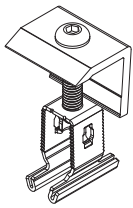
MODULE CLAMPS

9. D

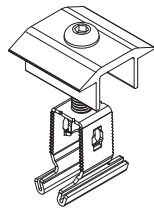
RS1 Middle/End clamp



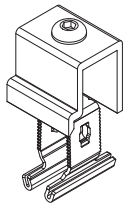
End clamp+



Middle clamp+



Cross rail connector+



HANGER BOLT/ SOLAR FASTENER

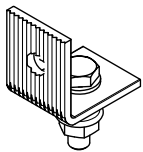
Solarfastener for Wooden Substructure



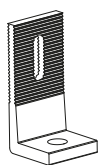
Solarfastener for Steel Substructure



BracketUK M8 (SET)



Bracket M10 or M12



Renusol GmbH
Piccoloministrasse 2
51063 Cologne
Germany

Sales department
Telephone: +49 221 788707-19
Fax: +49 221 788707-97
Email: sales-support@renusol.com

Telephone: +49 221 788707-0
Fax: +49 221 788707-99
Email: info@renusol.com
www.renusol.com

Application technicians
Telephone: +49 221 788707-29
Fax: +49 221 788707-98
Email: technical-support@renusol.com

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

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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.