

# ESDEC

INNOVATIVE MOUNTING SYSTEMS

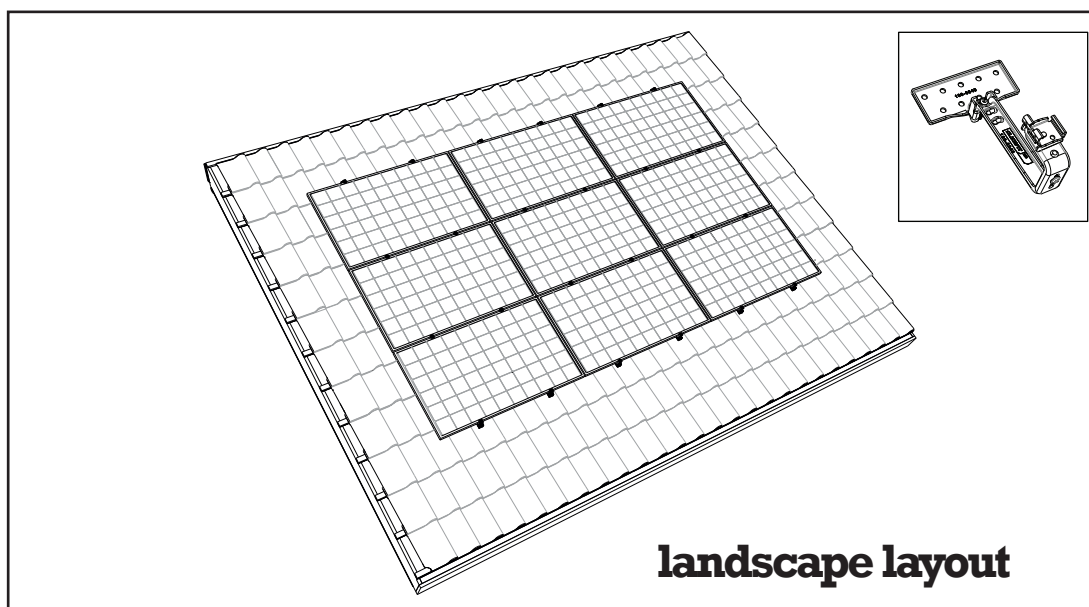
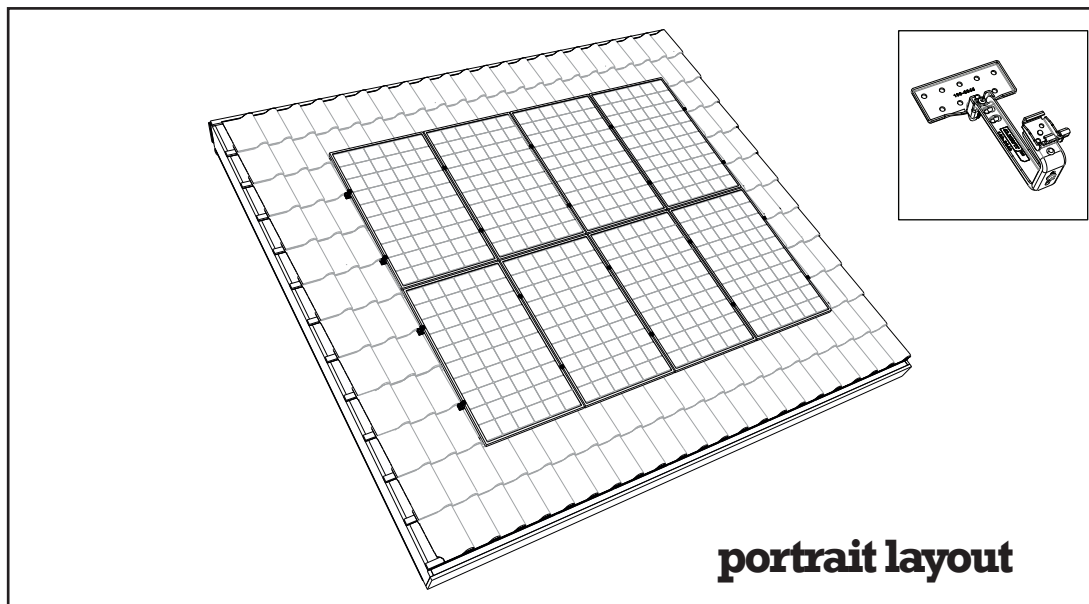
**CLICKFIT**

**EVO**

## MANUAL

MOUNTING SYSTEM WITH TRUSSHOOK FOR PITCHED ROOF WITH TILES

# EN



**ClickFit Evo mounting system with trusshook for solar panels, for pitched roofs with roof tiles**

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[www.esdec.com](http://www.esdec.com)

All our transactions and sales apply our Terms and Conditions which are filed with the Chamber of Commerce (08127728). These can be downloaded at [www.esdec.com](http://www.esdec.com)

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PLEASE SAVE THIS INSTALLATION MANUAL CAREFULLY FOR FUTURE USE!

We recommend that you contact your supplier for the duration and conditions relating to guarantees. We also refer you to our General Terms and Conditions of Sale and Delivery, which are available on request.

The manufacturer rejects all responsibility for damage or injuries caused by failure to meticulously follow this mounting manual and failure to exercise the usual caution during the transportation, mounting and use of the ClickFit Evo mounting system with truss-hook.

As a consequence of constant efforts to improve it may occur that a detail of the product deviates from what is described in this manual. For this reason, the instructions given serve only as a guideline for the installation of the product specified in this manual. This manual was created with great care, but the manufacturer cannot accept responsibility for any errors in this manual or their consequences.

All rights are reserved and nothing in this manual may be copied in any manner whatsoever.

# 1. Introduction

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This manual describes the installation of the ClickFit Evo mounting system with trusshook on a pitched roof with roof tiles (for solar panels in portrait and landscape layout).

Read the manual carefully so that you are aware of its entire contents. Follow the instructions in the manual meticulously. Always execute the actions in the correct sequence.

Store the manual in a safe and dry place. If you lose the manual you can request a new copy from Esdec B.V.

## 2. General installation conditions

### General

Failure to comply with the instructions in this document can result in the nullification of all guarantee and product liability claims.

The information, comments and recommendations in this document are binding and must be checked for completeness and current relevancy. Esdec BV reserves the right to alter this document without further announcement.

### Stability and condition of the roof

The roof must be in good condition and sufficiently strong to bear the weight of the solar panels and the additional materials, wind and snow loads. Check the stability of the roof and alter the roof/construction where necessary. If in doubt, use a construction firm. Ensure that the load reserve of the roof is not exceeded either completely or at specific points.

### Safety warnings

- Mounting the ClickFit Evo mounting system must always be executed by qualified technical personnel (minimum of 2 professionally qualified persons).
- The addition or omission of parts can have a detrimental effect on the function and is advised against in the strongest terms!
- The roof must be clean, dry, even and free of algae, etc. for placement of the solar panels.
- Avoid mounting if there is a strong wind and a wet roof surface.
- Always work on a pitched roof with a safety harness and safety nets and edge safety if necessary.
- Slide roof tiles upwards so that gaps are created in which you can place your feet. Attention!: Never stand in the gutter.
- Wear shoes with reinforced toecaps and strong anti-slip soles.
- Always wear the correct protective clothing when executing the work.
- Always use a lifting/hoisting installation when moving the material (solar panels, etc.).
- Always place a ladder on a strong and stable surface.
- Always place the ladder at an angle of approximately 75° and allow it to protrude above the edge of the roof.
- If possible, secure the top of the ladder with a rope or tensioning strap.
- Preferably work in accordance with the “working safely on roofs” manual.
- **Attention:** The trusshook must be placed against the roof batten!

### Range of application ClickFit Evo

- The maximum allowable wind load etc can be determined by the ClickFit EVO calculator in compliance with MIS 3002. The ClickFit EVO calculator can be found on our website [www.esdec.com](http://www.esdec.com) or can be requested through customer support.
- Solar panels of all brands and models with a frame height between 30 and 50 mm with a maximum size of 2.6 m<sup>2</sup> per solar panel. Check whether the chosen solar panel can withstand the forces, in the documentation of the supplier of the solar panels.
- Range of adjustable trusshook (tiling batten thickness + roof tile thickness): 37 - 62mm
- Maximum roof height: dependent on Eurocode guidelines and national additions. Use the calculator to calculate the possibilities for your project.
- Type roof covering: Sloping roof with roof tiles.
- Roof pitch: Between 10 - 60 degrees. **Note:** with a roof pitch lower than 20 degrees, check the specifications of the roof tile supplier. With a roof pitch of less than 20 degrees it is often necessary to take additional water-retaining measures, such as applying water-retaining foil under the roof tiles or grinding the roof tile at the hook.
- Use the calculator to ensure you select the right mounting system for the terrain category, snow load and wind zone applicable to your project.

### Edge zone

The distance from the solar panels to the roof ridge and the gutter must be a minimum of 30 cm, in consideration of the wind load.

The distance from the solar panels to the side of the roof must be a minimum of 30 cm. Solar panels may not be placed here either completely or partially.

## Standards, prescriptions and regulations

During the installation of the mounting system, it is important to adhere to the installation manual and the accompanying standards to prevent accidents. Pay special attention to (local) standards, regulations and legislation (among others):

- The Building Regulations 2010 (latest version)
- Health and Safety at Work etc Act 1974
- Health and Safety in Roof work - HSE
- Eurocodes 0 (EN 1990 - Structural Design)
- Eurocodes 1 (EN 1991 - Influences on structures)
- HD-IEC 60364 series - Electrical installations for low voltage
- EN-IEC 62305-2 - Protection lightning - Risk Management
- MIS 3002 – The solar PV standard
- MCS012 - Product Certification Scheme Requirements: Pitched Roof Installation Kits



## Removal and disassembly

Dispose of the product in compliance with local laws and regulations.

## Earthing and bonding

Our ClickFit EVO systems are VDE certified for corrosion and bonding. According to the electrical standard HD-IEC 60364 – chapter 712, functional bonding for inverter's isolation check is necessary.

In the Esdec ClickFit EVO Series functional bonding is achieved through the EVO universal module clamp for the module frames and EVO rails. The final functional bonding connection is made by proper mounting of a separate bonding cable onto the EVO rail and an adequate bonding connection with the inverter or earthing contact.

For detailed instructions on grounding and bonding, consult the electrical standard HD-IEC 60364 and any local regulations. Please, follow the instructions of the inverter's manual. This operation needs to be done by a certified electrician.

## Warranty

Warranty according to the terms and conditions of Esdec BV. These can be found on the website [www.esdec.com](http://www.esdec.com).

## Maintenance

The ClickFit EVO system is designed to be virtually maintenance-free. A few points need to be checked to ensure structural integrity and the function of the system.

The following points need to be checked on a yearly basis and after each storm with wind speeds >9Bft.:

- The reliability of all bolt, nuts, screw and clamp connections.

o Action: Tighten all bolts, nuts, screws and clamps where necessary according to the installation manual and report it to Esdec BV including photographs.

- Overall visual control of ClickFit EVO system (corrosion of components, etc).

o Action: Report it to Esdec BV including photographs.

## Liability

The manufacturer accepts no liability for damage or injury caused by not (strictly) adhering to the safety prescription and instructions contained in this manual, or by carelessness during installation of the product specified in this document and the eventual related accessories.

- Printing errors reserved



## 3. Product description

The ClickFit Evo mounting system consists of the patented adjustable trusshooks, mounting rails and the mounting materials necessary to mount the solar panels on a tiled roof in portrait or landscape layout. The trusshook has a rotatable click bracket that enables the mounting rails to be clicked onto the trusshook both horizontally and vertically. The ClickFit Evo mounting system for tiled roofs can be used for all roof tiles, regardless of their type.

### Roof fastening

The universal roofing tiles are fastened to the roof battens with a minimum of 2 teller head screws. Every trusshook has 9 mounting holes, which makes the position of the trusshook on the roof batten laterally adjustable. Differences in height in the roof can easily be bridged with the aid of the adjustable trusshook.

### Fastening the mounting rail

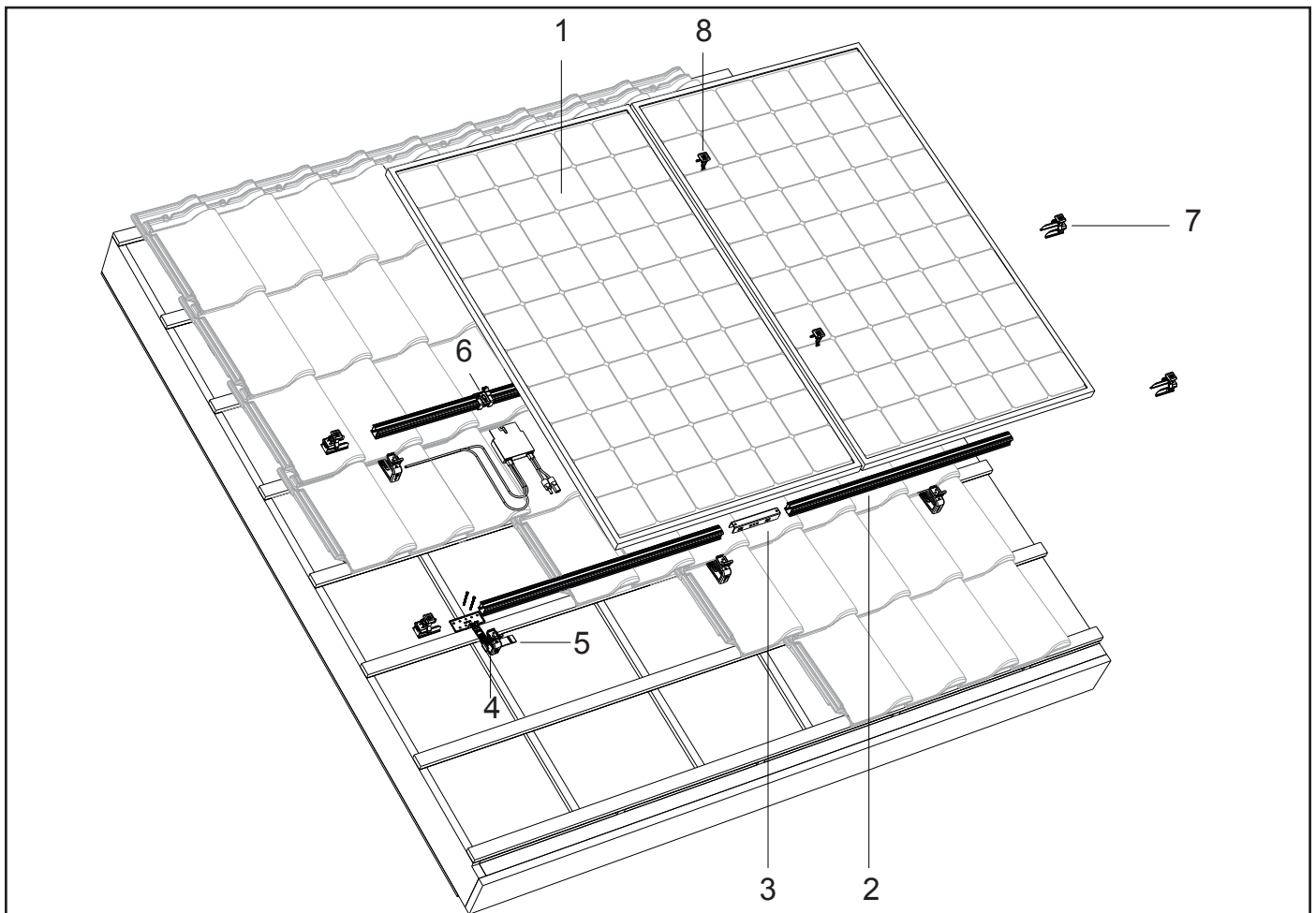
The mounting rail is fastened to the trusshooks by means of a click connection. No further materials or tools are required for this.

### Fastening the panels

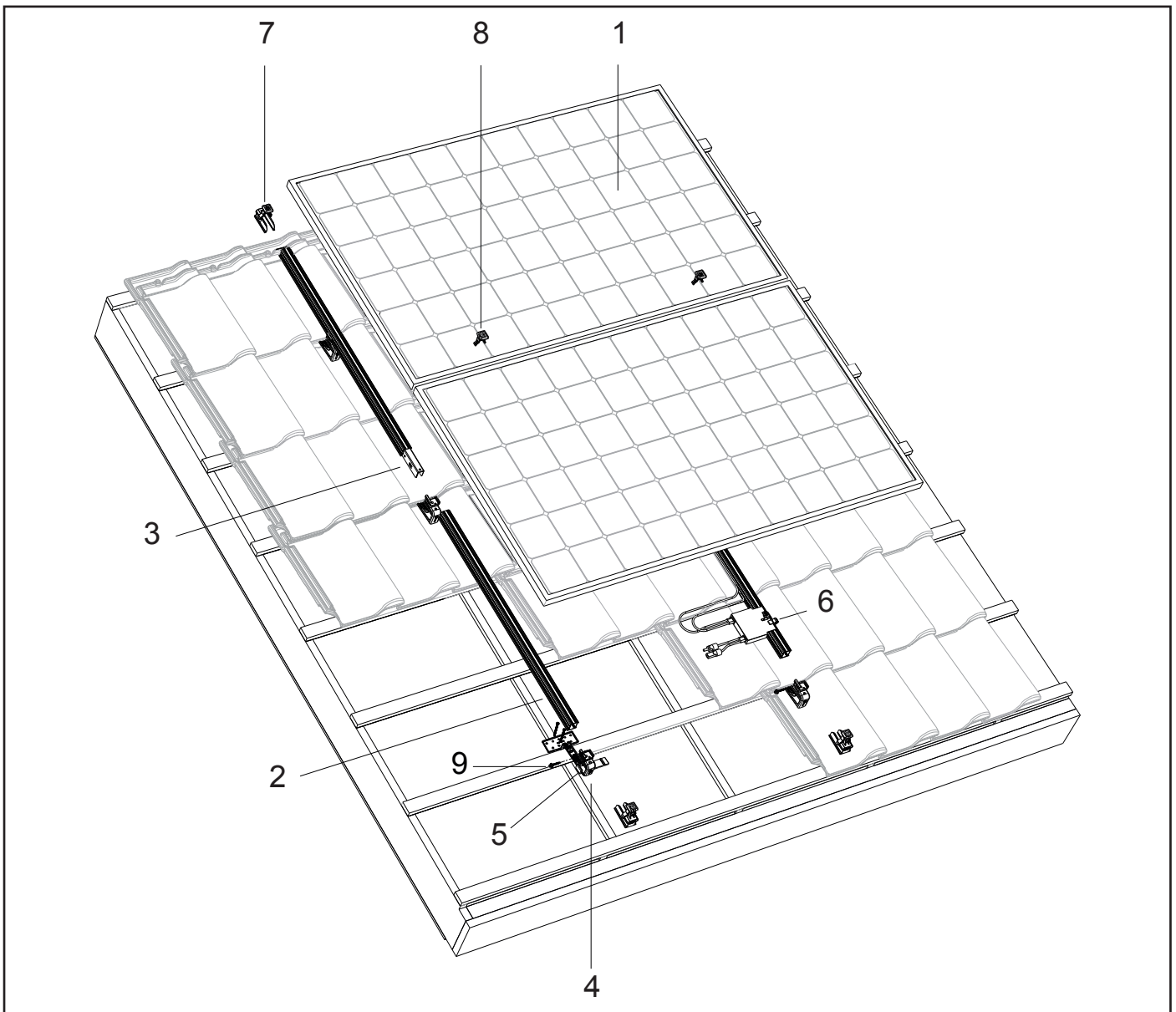
The solar panels are fastened to the mounting rails with the aid of the universal module clamps.

## 4. Parts overview

### 4.1 Exploded-view mounting system in portrait layout

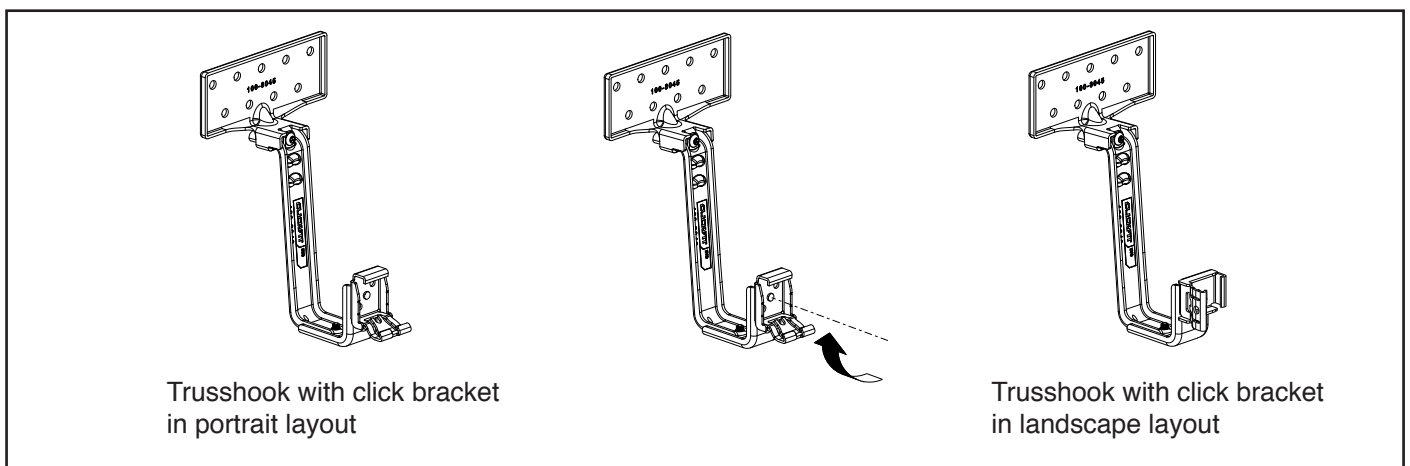


## 4.2 Exploded-view mounting system in landscape layout

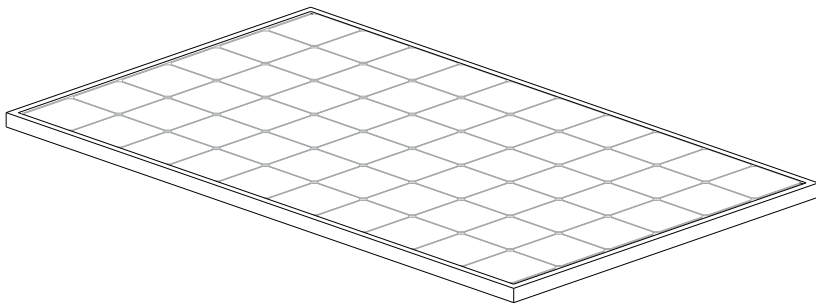


## 4.3 Trusshook for portrait or landscape layout

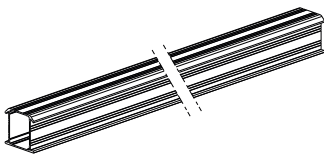
The trusshook has rotatable click bracket so that the mounting rail can be clicked onto the trusshook both vertically and horizontally. This allows the trusshook to be applied for both portrait and landscape layouts.



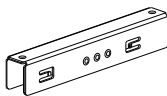
## 4.4 Parts list



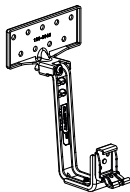
1. Solar panel



2. ClickFit Evo Mounting rail  
Article no: 100800\_ and 10081\_\_



3. ClickFit Evo Mounting rail connector  
Article no: 1008061



4. ClickFit Evo trusshook  
Article no: 1008045



5. ClickFit Evo EPDM roof hook spacer  
Article no: 1008063



6. ClickFit Evo Mounting rail cable clip optimizer ready  
Article no: 1008062



7. ClickFit Evo Mounting rail end cap grey  
Article no: 1008060

7B. ClickFit Evo Mounting rail end cap black  
Article no: 1008060-B



8. ClickFit Evo Universal module clamp grey  
Article no: 1008020

8B. ClickFit Evo Universal module clamp black  
Article no: 1008020-B



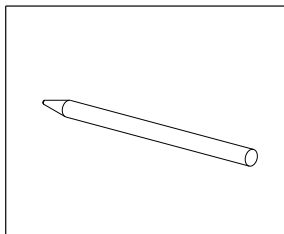
9. Self-drilling screw 6.3x42mm SW10/T30  
Article no: 1003016  
(for landscape)

# 5. Mounting preparation

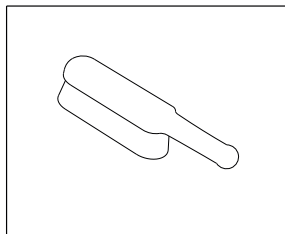
## 5.1 Checking tools and accessories

Here is a list of the required tools/aids:

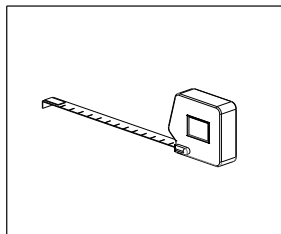
Marker / chalk



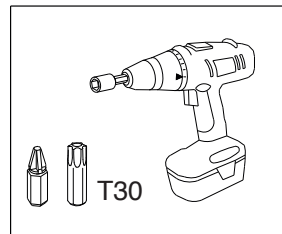
Brush



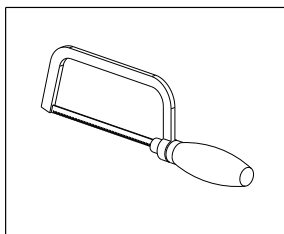
Tape measure



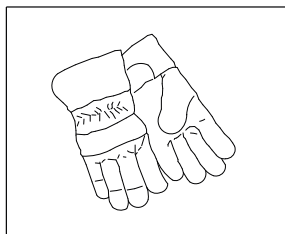
Battery-powered drill



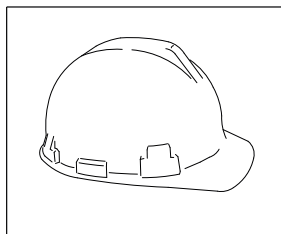
Metal saw



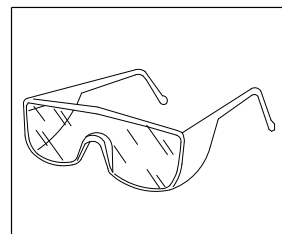
Safety gloves



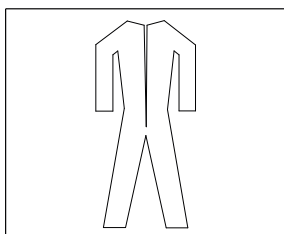
Safety helmet



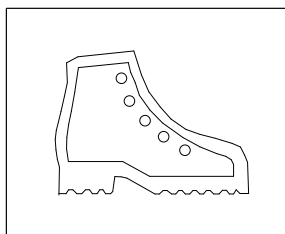
Safety glasses



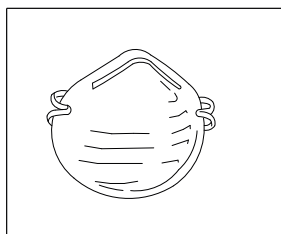
Safety clothing



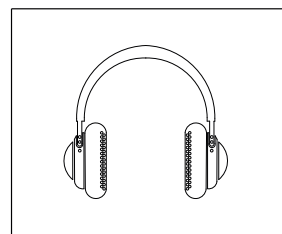
Safety shoes



Mouth mask



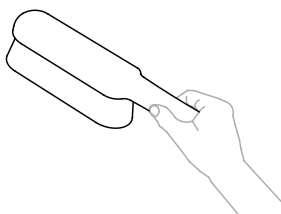
Hearing protection



Scaffold or stable safe ladder

## 5.2 Cleaning the roof

Clean the roof tiles on the pitched roof with a brush.  
Remove algae, moss, etc. to limit unevenness to a minimum during the installation!



### 5.3 Determining and measuring the position of the solar panels

When determining the position of the solar panels on the pitched roof it is very important to pay attention to the amount of sunlight received during the entire day and during the entire year. Place the panels on a roof surface that is not shaded. The shadows of a chimney, dormer window, trees and nearby buildings have a detrimental effect on the yield of the solar panels.

#### Measuring and marking

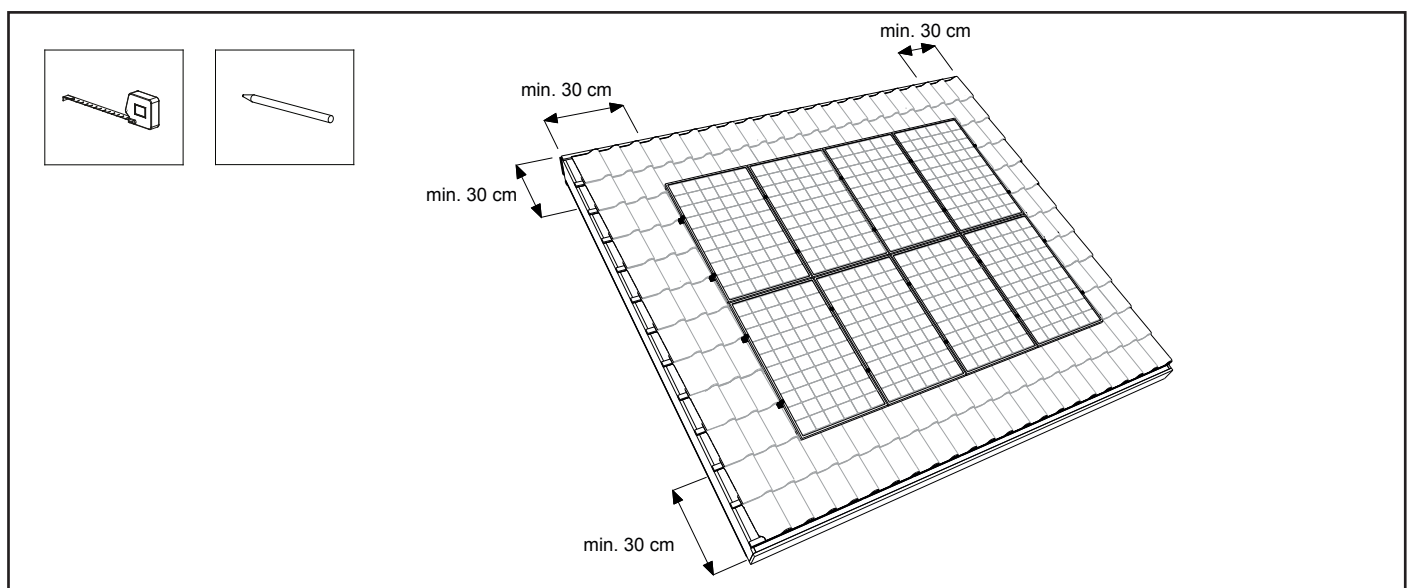
Ensure that a minimum of 30 cm is kept free all around the solar panels on the roof. This means 30 cm from the roof ridge and the gutter, and 30 cm from the sides in connection with turbulent wind loads.

Mark the contours of the panel field on the tiles with a marker pen or chalk.

#### Marking mounting rails and trusshooks for portrait layout:

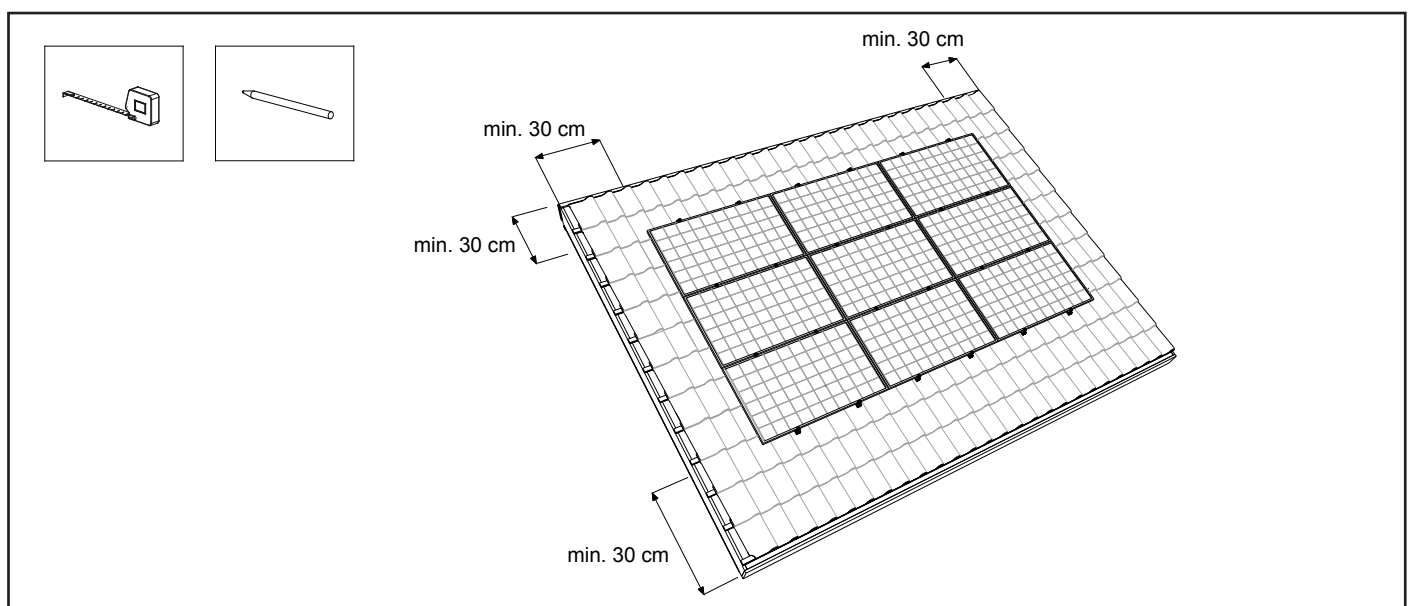
Mark the position of the mounting rails: on  $\frac{1}{4}$  of the top and bottom edges of the panel.

Now mark where the trusshooks must be placed. The trusshook distance depends on several variables (wind load, building height, location, condition of the roof, etc.). Follow the instructions given by the calculator with regard to the gaps between each trusshook. They are an important guide. The maximum lateral gap is 1.20 m.



#### Marking mounting rails and trusshooks for landscape layout:

Mark the lines for the mounting rail placement: on  $\frac{1}{4}$  of the panel side edges. Now mark where the trusshooks must be placed.



## 6. Installation of mounting system in portrait layout

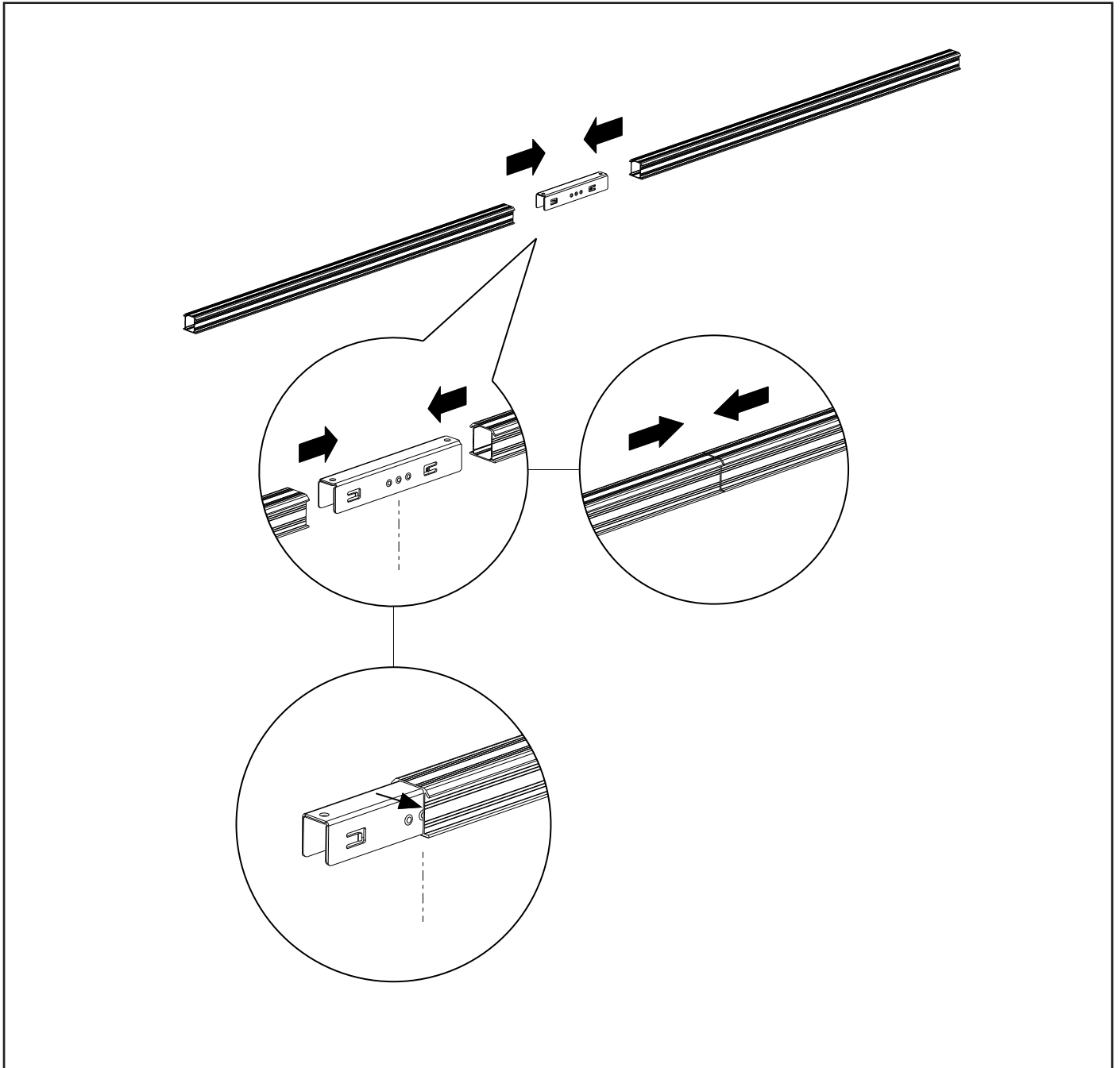
### 6.1 Pre-mounting the mounting rail connector

First determine the rail length required for the row of solar panels.

You can connect the mounting rails to each other with mounting rail connectors. There are small clamps with teeth on the mounting rail connector that grip the inside of the rail.

Slide the connector into the ends of the mounting rail. Slide the connector to the centre of the middle stud of the connector. Connect the number of rails to each other until the total required rail length is reached.

**Attention!** See appendix for restrictions and other details.



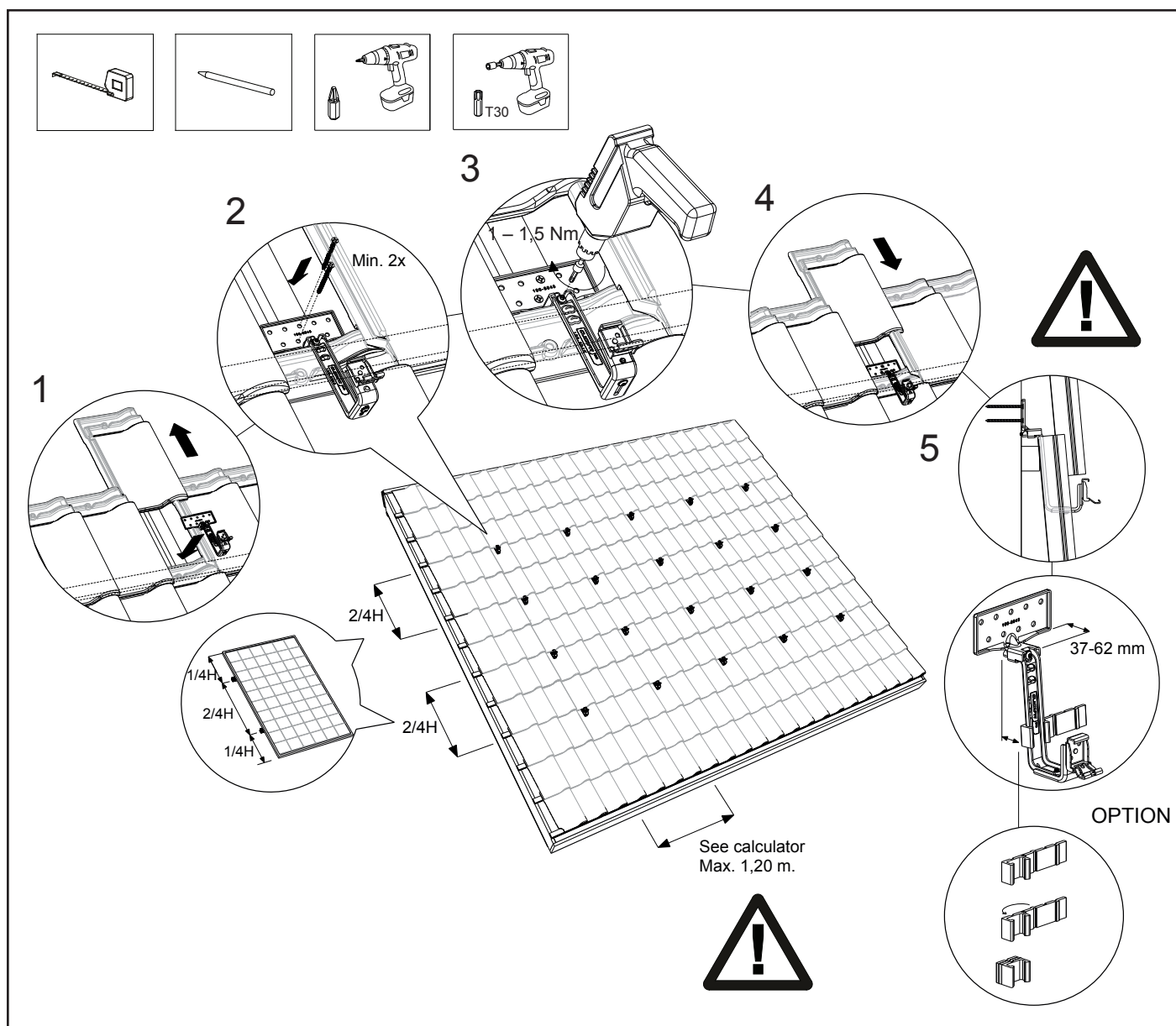


## 6.2 Fastening trusshooks

1. Slide the tile above the trusshook upwards, under the tile on top of it. Place the mounting flange of the trusshook on the roof batten, ensure that it connects correctly and pull the trusshook against the tile. Place the trusshook in the concave part (dip) of the underlying tile. The top adjustable part of the trusshook is a minimum of 37 mm and a maximum of 62 mm.
2. Fasten the trusshook with a minimum of 2 teller head screws 6x50/60 to the roof batten. **Attention!** These screws are not supplied.
3. Tighten the torx screw on the top of the trusshook firmly with a cordless screwdriver. **Attention!** The tightening moment of the screw connection is 1 – 1,5 Nm.
4. Slide the tile above the trusshook down again. With some roof tiles the top tile must be adapted to the trusshook with an angle grinder or a file so that the tiles close correctly again. \*
5. Follow the instructions given by the calculator with regard to the gaps between each trusshook. They are an important guide. The maximum lateral gap is 1.20 m. Divide the number of trusshooks produced by the calculation over possible roof battens, with a maximum span of 1.20 m. Ensure that the trusshooks are aligned with each other.

\*Option: For tiles with a high water retaining edge, the filling rubber can be placed under the trusshook so that it rests neatly on the tile. Fold the rubber to produce the desired thickness. The filling steps are 5,10 and 15 mm.

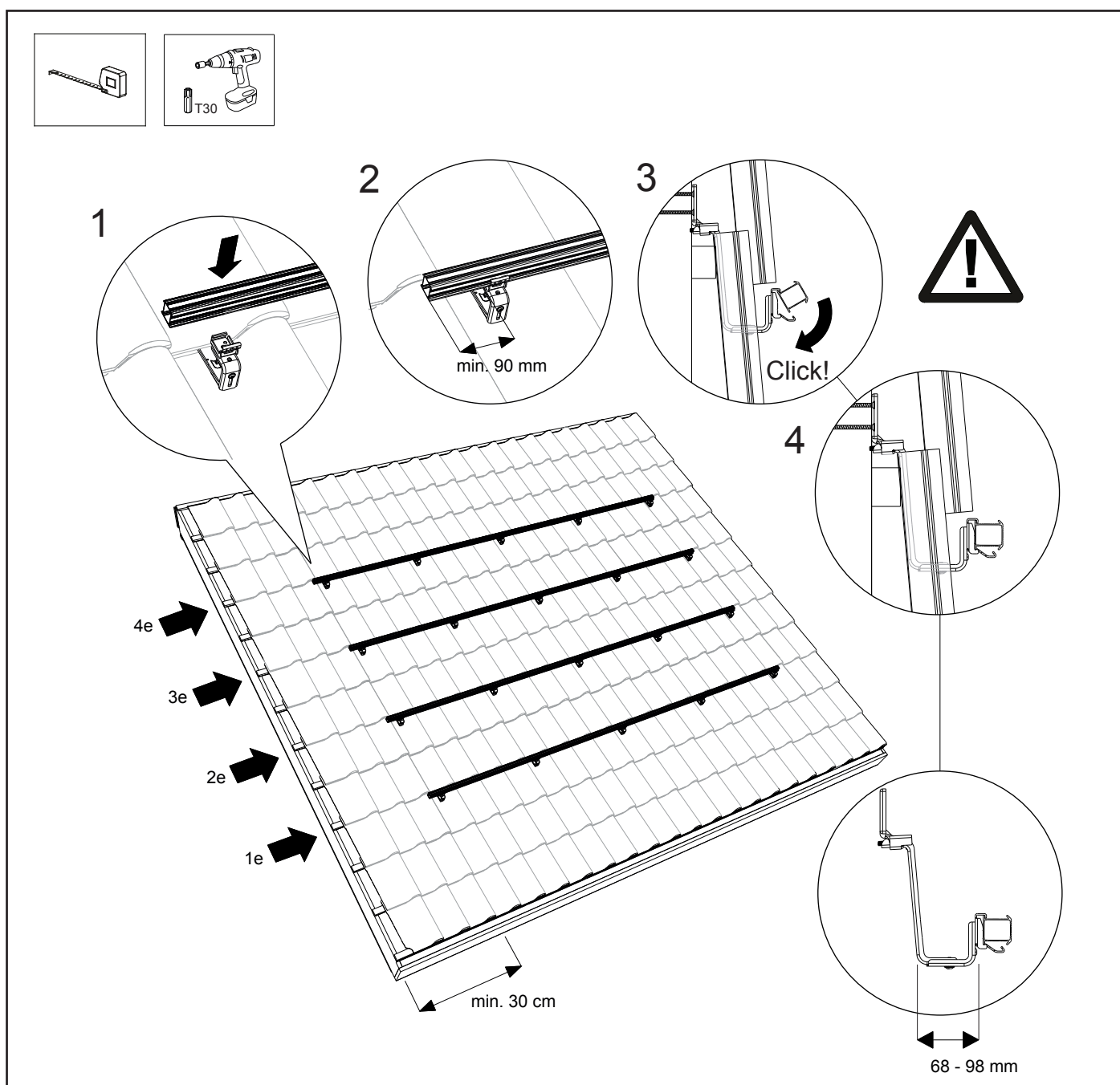
**Attention!** Ensure that the click bracket on every trusshook is in the correct position so that the mounting rail can be fastened to the trusshook horizontally (see chapter 5.3).



### 6.3 Fastening the mounting rail

1. Place the mounting rail in the installed trusshooks.
2. Ensure that the end of the mounting rail protrudes 90 - 250 mm from the last trusshook.
3. Now click the mounting rail onto the trusshooks. Ensure that it clicks on firmly.
4. Ensure that the mounting rail and the trusshooks are correctly aligned with each other and the mounting rail is positioned correctly on the trusshook. Ensure that the mounting rails are directly above each other in connection with the alignment of the solar panels!
5. The mounting rails can be aligned if necessary by means of the height adjustment on the trusshook. Slightly unscrew the torx screw on the underside of the trusshook. Adjust the desired height and tighten the torx screws again. **Attention!** The tightening moment of the screw connection is a minimum of 6 Nm.

**Attention!** See appendix for restrictions and other details.



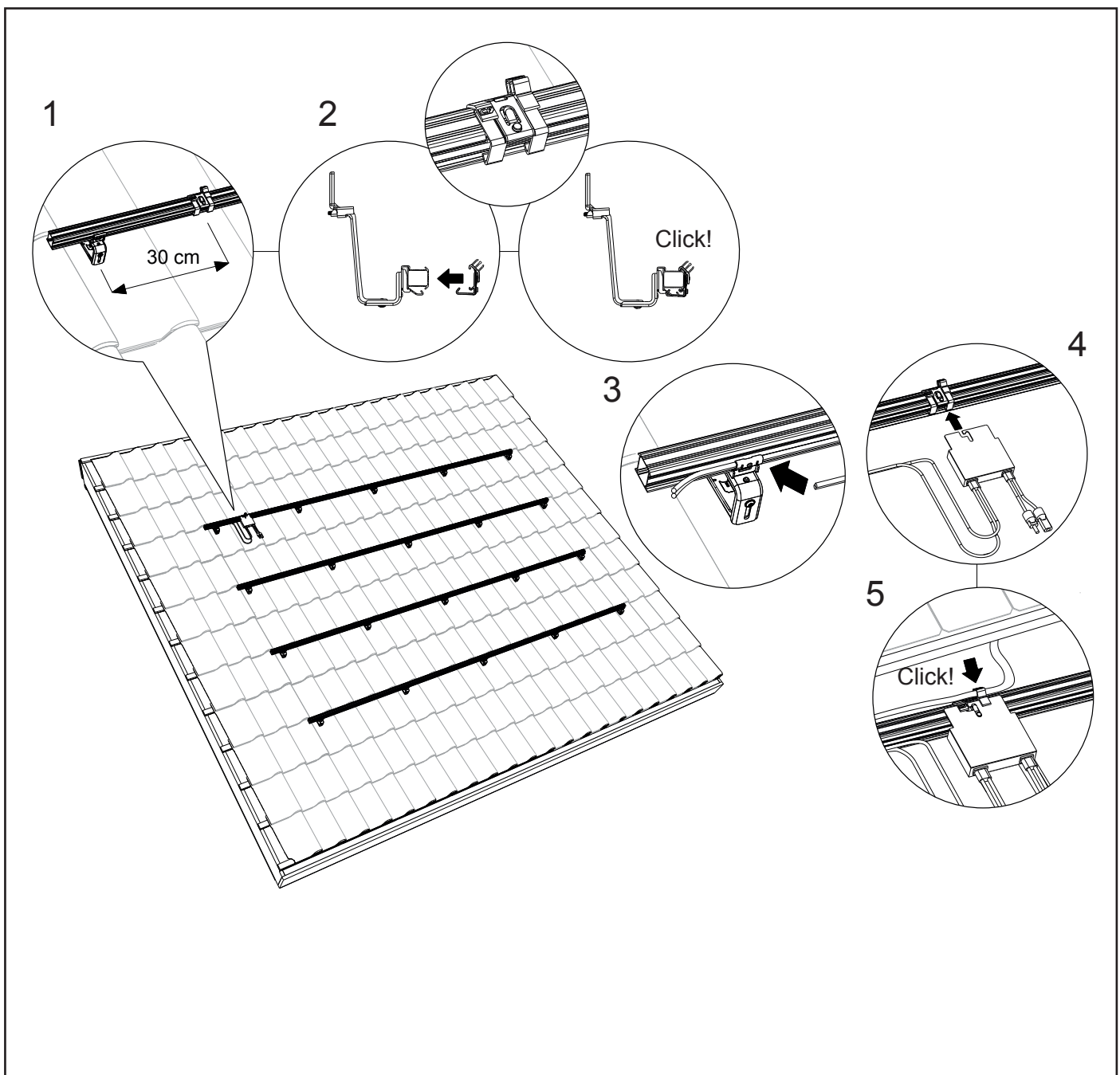
## 6.4 Mounting the mounting rail cable clip optimizer ready and optimizer (option)

1. Position the cable clip on the top mounting rail of a row. One cable clip is used per solar panel. The cable clips are under the middle of the panel. Place the cable clips approximately 1m from each other.
2. Click the cable clip onto the mounting rails.
3. Lead the cabling through the click bracket of the trusshook and the cable clip.

Optional:

4. Click the optional optimizer onto the cable clip.
5. Lead the cables of the optimizer through the cable clip.

**Attention!** See appendix for restrictions and other details.



## 6.5 Mounting 1st solar panel on the mounting rails

### Mounting aid (Option):

Click the mounting aid (2x) onto the frame on the back of the solar panel. Use the mounting holes at the top of the frame for this. Click the cables of the solar panel securely into the cable clamp on the mounting aid.

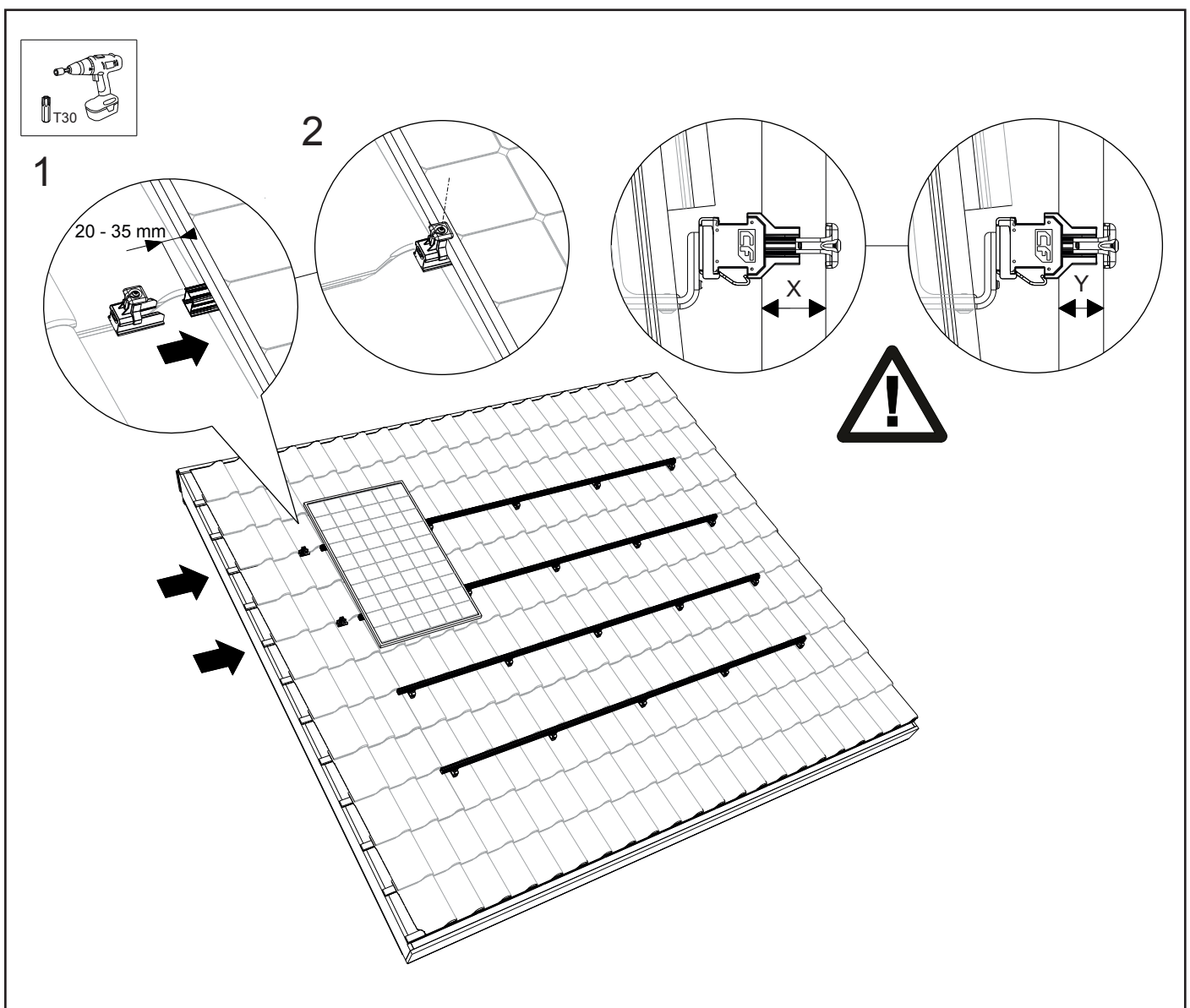
Hang the solar panel, including the mounting aid, on the mounting rail. Click the cables of the solar panel into the cable clip that has already been placed. Slide the first solar panel to the side of the mounting rail. Leave 20 - 35 mm of rail protruding visibly beside the solar panel.

Now slide the mounting rail end cap with universal module (end) clamp onto the mounting rail. Choose the correct recess so that the universal module (end) clip connects to the solar panel. Now tighten the universal module (end) clamp.

**Attention!** The tightening moment of the screw connection is 4.5 Nm.

**Attention!** The minimum panel thickness  $Y = 30$  mm and the maximum panel thickness  $X = 50$  mm.

**Attention!** See appendix for restrictions and other details.



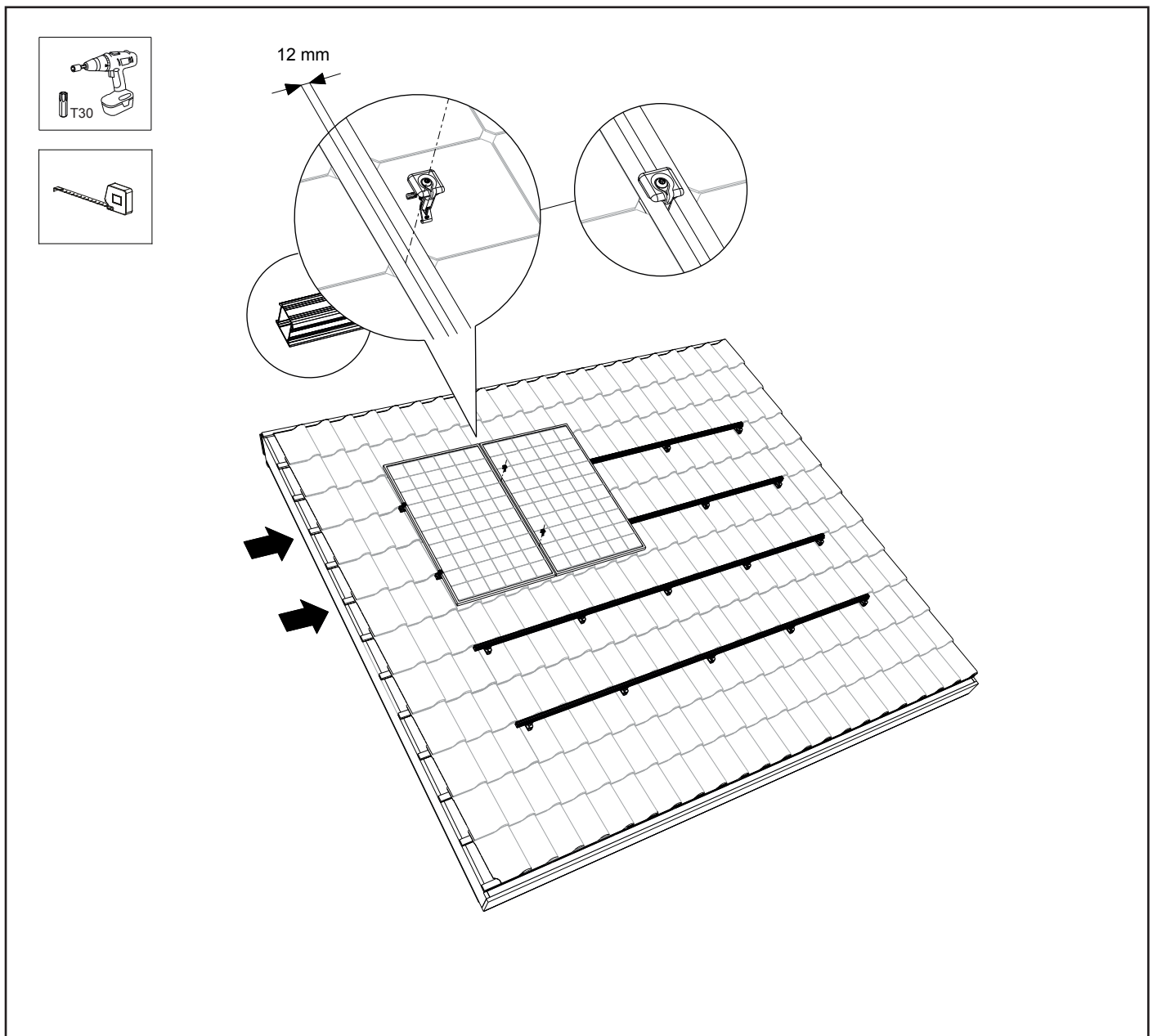
## 6.6 Mounting other solar panels on the mounting rails

Click the universal module clamps onto the mounting rails. Slide them against the first solar panel. Place the second solar panel on the mounting rail, click the cables of the solar panel securely into the cable clip and slide the solar panel to the first against the universal module clamp. Now tighten the universal module clamp screw.

**Attention!** The tightening moment of the screw connection is 4.5 Nm.

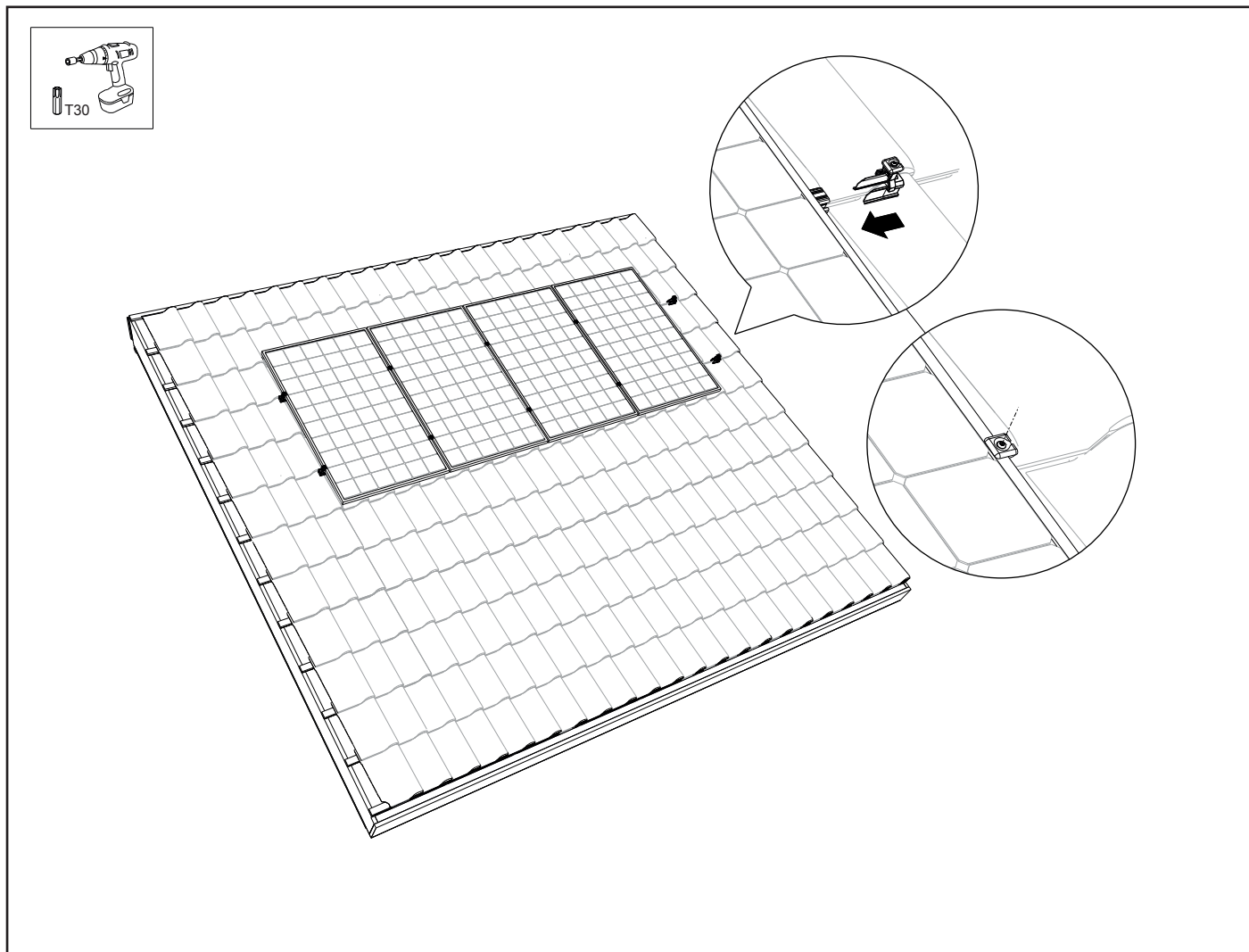
Ensure that the solar panels are lying completely straight before you tighten the torx screw! Repeat this with the remaining solar panels.

**Attention!** See appendices for restrictions and other details.



## 6.7 Completing the mounting of the 1st row of solar panels

1. Allow the mounting rail to protrude 20 - 35 mm from the edge of the solar panel. Slide the mounting rail end cap with universal module (end) clip onto the mounting rail. Attention! Choose the correct recess so that the end clip connects to the solar panel.
2. Now screw the end clip tight with the torx screw. **Attention!** The tightening moment of the screw connection is 4.5 Nm.

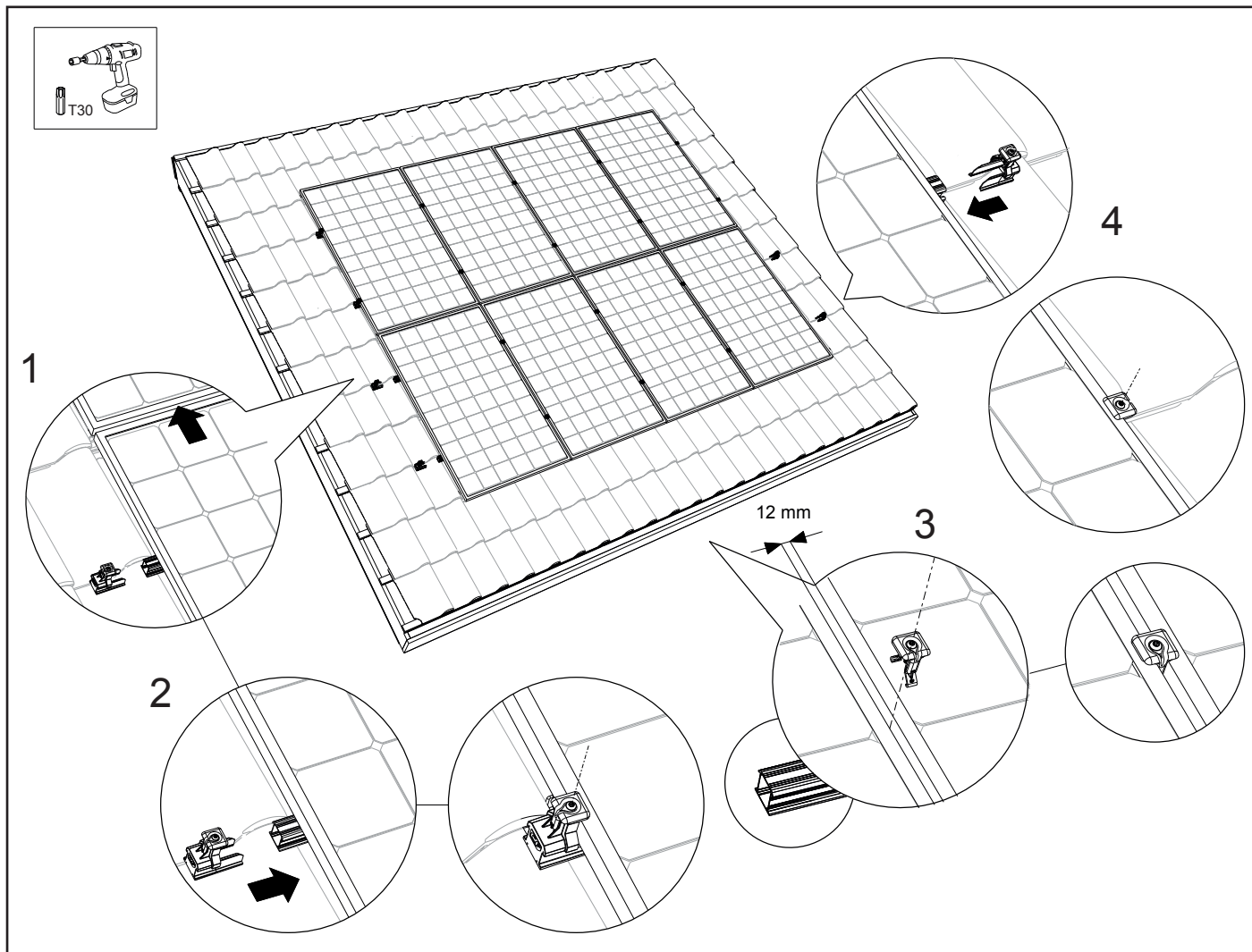




## 6.8 Completing the mounting of several rows under each other

1. To obtain an uninterrupted field of panels you slide the underlying solar panels against the row of solar panels above them.
2. Repeat the steps of chapter 6.5 - 6.7. The field of panels is now finished!

**Attention!** See appendix for restrictions and other details.



# 7. Installation of mounting system in landscape layout

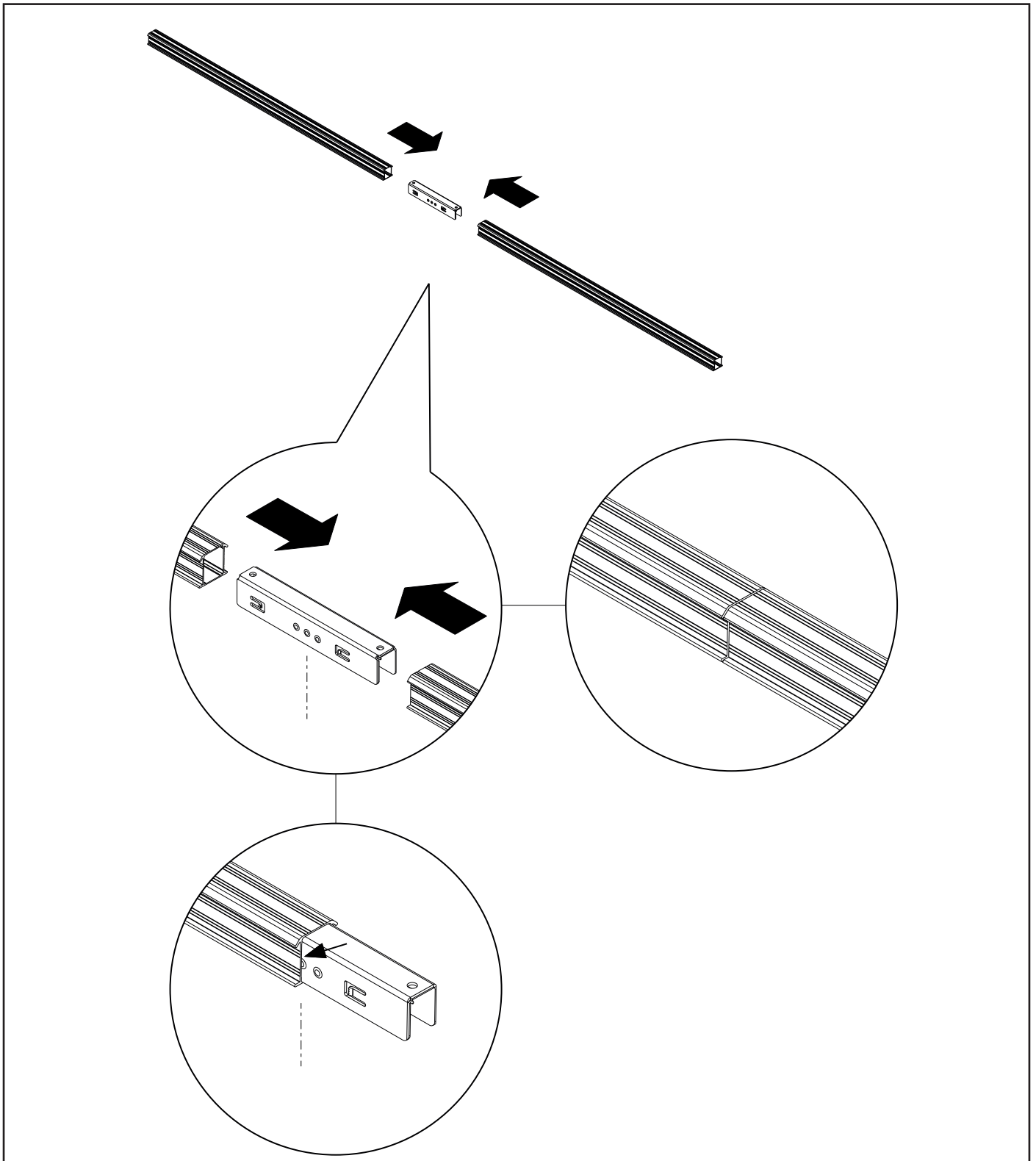
## 7.1 Pre-mounting the mounting rail connector

First determine the total rail length required for the solar panels under each other.

You can connect the mounting rails to each other with mounting rail connectors. The mounting rail connector has small clamps with teeth that grip the inside of the rail.

Slide the connector into the ends of the mounting rail. Slide the connector to the centre of the middle stud of the connector. Connect the number of rails together until the total rail length required is reached.

**Attention!** See appendix for restrictions and other details.

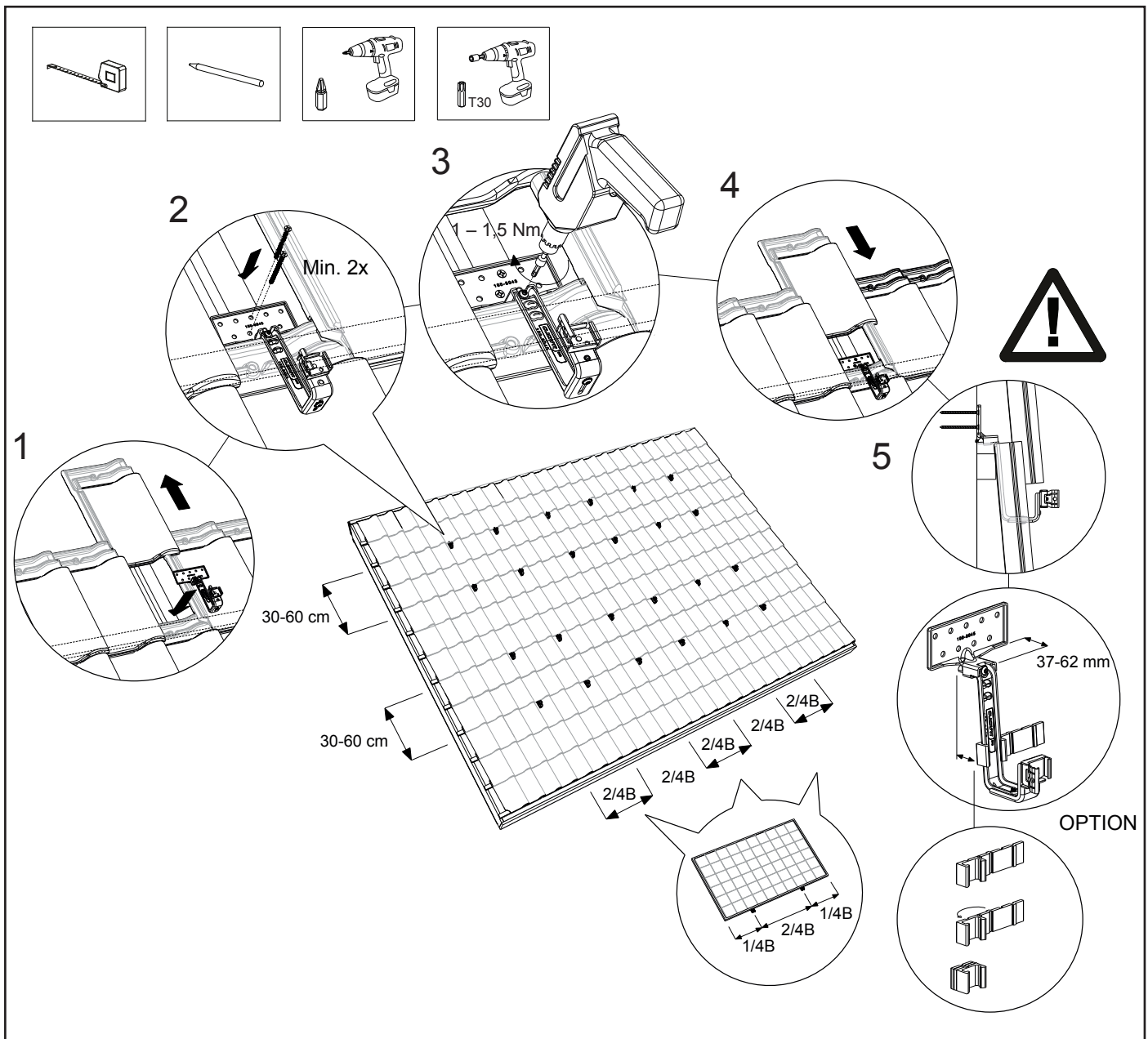


## 7.2 Fastening trusshooks

1. Slide the tile above the trusshook upwards, under the tile above it. Place the mounting flange of the trusshook on the roof batten, ensure that it connects correctly and pull the trusshook against the tile. Place the trusshook in the concave section (dip) of the underlying tile. The top adjustable part of the trusshook is a minimum of 37 mm and a maximum of 62 mm.
2. Fasten the trusshook with a minimum of 2 teller head screws 6x50/60 to the roof batten. **Attention!** These screws are not supplied.
3. Tighten the torx screw at the top of the trusshook firmly with a cordless screw driver. **Attention!** The tightening moment of the screw connection is 1 – 1,5 Nm.
4. Slide the tile above the trusshook down again. Some tiles must be adapted to the trusshook with an angle grinder or file so that the tiles close correctly again. \*
5. Follow the instructions of the calculator with regard to the gaps between each trusshook. They are an important guide. The maximum lateral gap is 1.20 m. divide the number of trusshooks produced by the calculation over the possible roof battens, with a maximum span of 1.20m. Ensure that the trusshooks are aligned with each other.

\*Option: For tiles with a high water retaining edge, the filling rubber can be placed under the trusshook so that the trusshook rests neatly on the tile. Fold the rubber to create the desired thickness. The filling steps are 5,10 and 15 mm.

**Attention!** Ensure that the click bracket on every trusshook is in the correct position so that the mounting rail can be fastened to the trusshook horizontally (see chapter 5.3).



### 7.3 Fastening the mounting rail

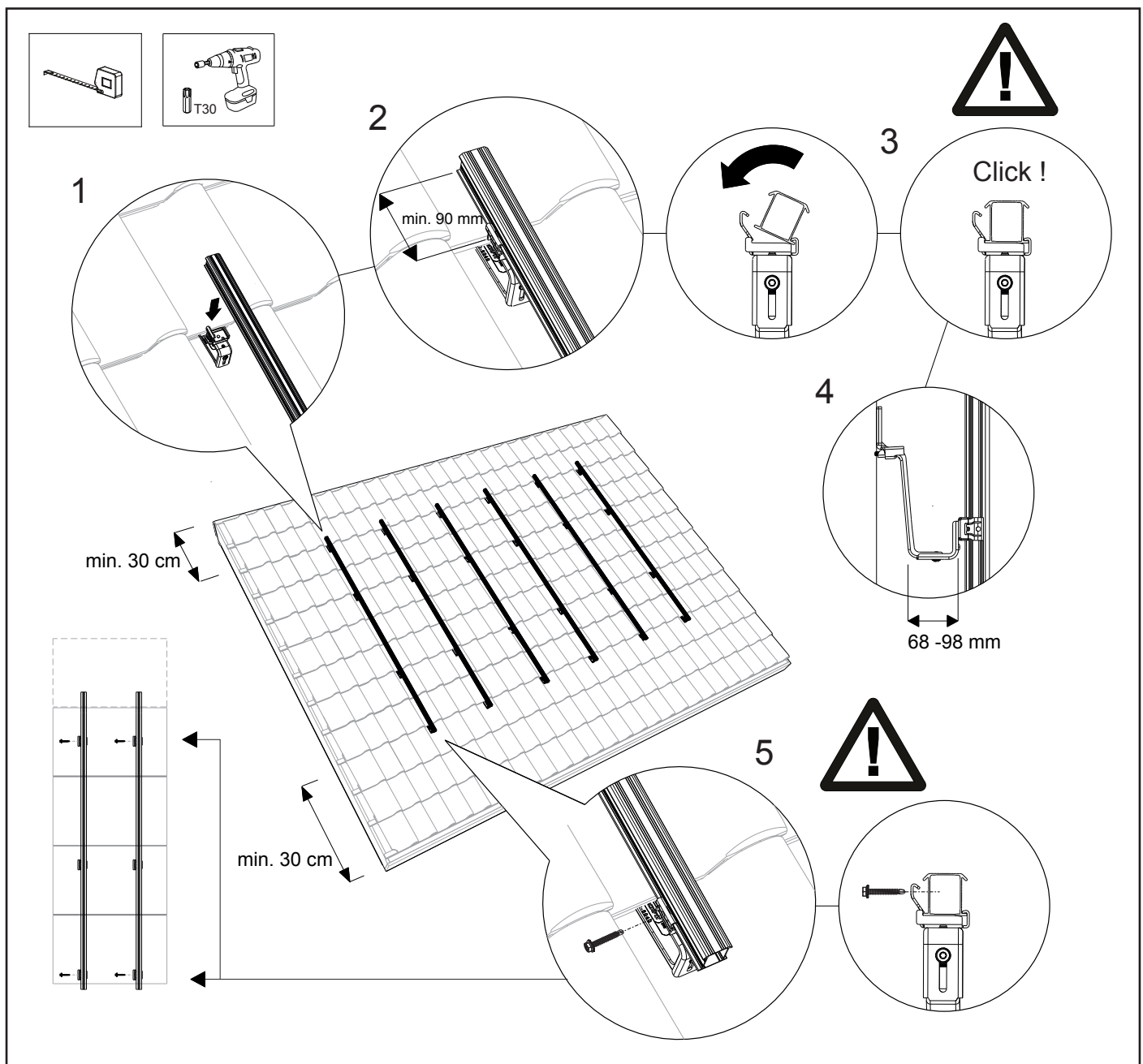
1. Place the mounting rail in the installed trusshooks.
2. Ensure that the end of the mounting rails protrudes 90 - 250 mm from the last trusshook.
3. Now click the mounting rail onto the trusshooks. Ensure that it is firmly clicked into place.
4. Ensure that the mounting rail and the trusshooks are correctly aligned with each other and that the mounting rail is positioned correctly on the trusshook. Ensure that the mounting rails are horizontally aligned with each other in connection with the alignment of the solar panels!

The mounting rails can be aligned by means of the height adjustment on the trusshook where necessary. Unscrew the torx screw on the underside of the trusshooks slightly. Set the desired height and retighten the torx screws. **Attention!** The tightening moment of the screw connection is a minimum of 6 Nm.

5. Secure the mounting rails with a self-drilling screw 6.3x42mm SW10/T30 to the bottom trusshook to prevent the rails from sliding down. **Attention!** Place this locking screw every three solar panels (above each other) and always start at the bottom trusshook.



**Attention!** See appendix for restrictions and other details.



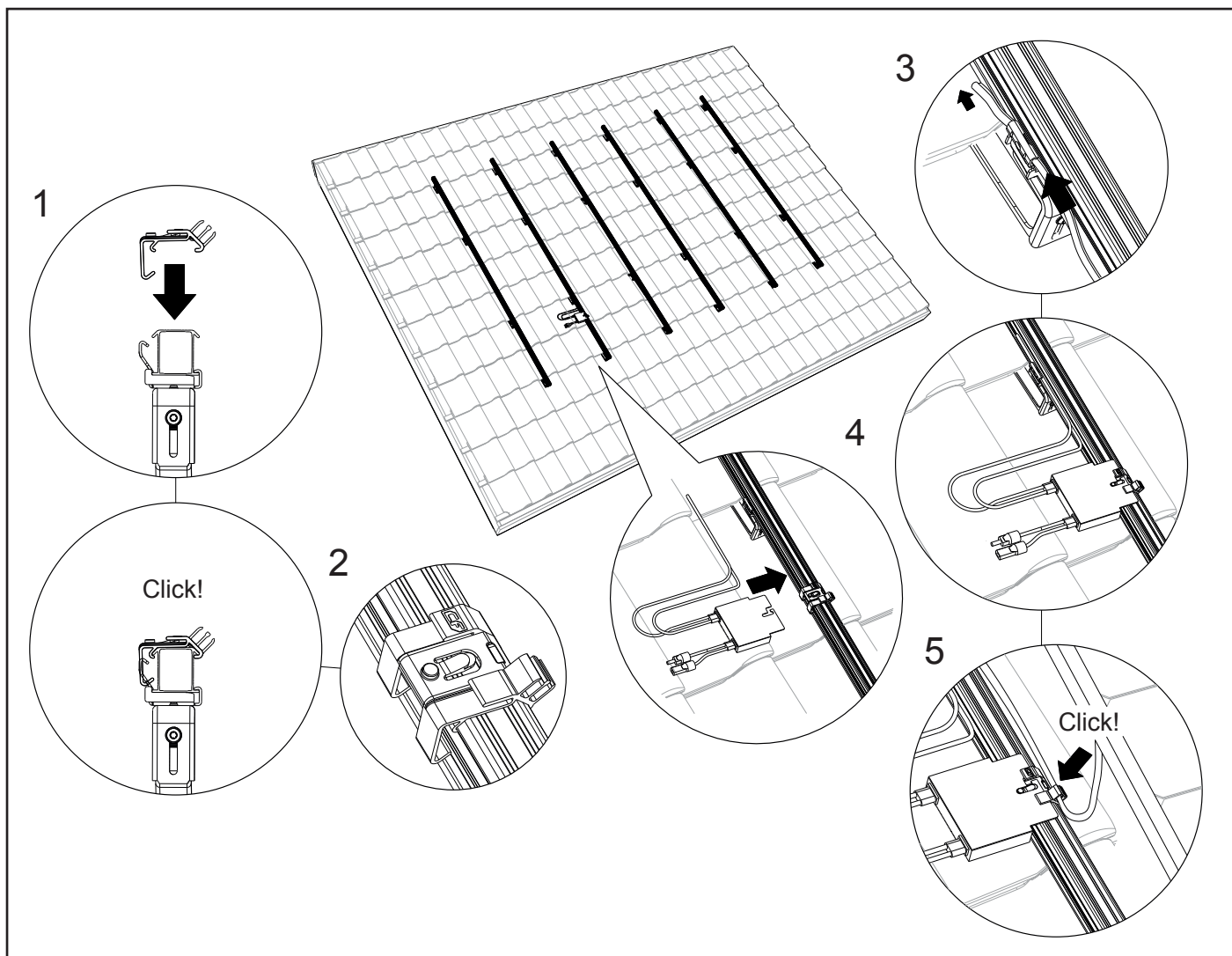
## 7.4 Mounting the mounting rail cable clip optimizer ready and optimizer (option)

1. Position the cable clip on the mounting rail of a row. One cable clip is used per solar panel. The cable clips are positioned under the centre of the panel. Place the cable clips approximately 1 m apart.
2. Click the cable clip onto the mounting rails.
3. Lead the cabling through the click bracket of the trusshook and the cable clip.

Optional:

4. Click the optional optimiser onto the cable clip.
5. Lead the cables of the optimiser through the cable clip.

**Attention!** See appendix for restrictions and other details.



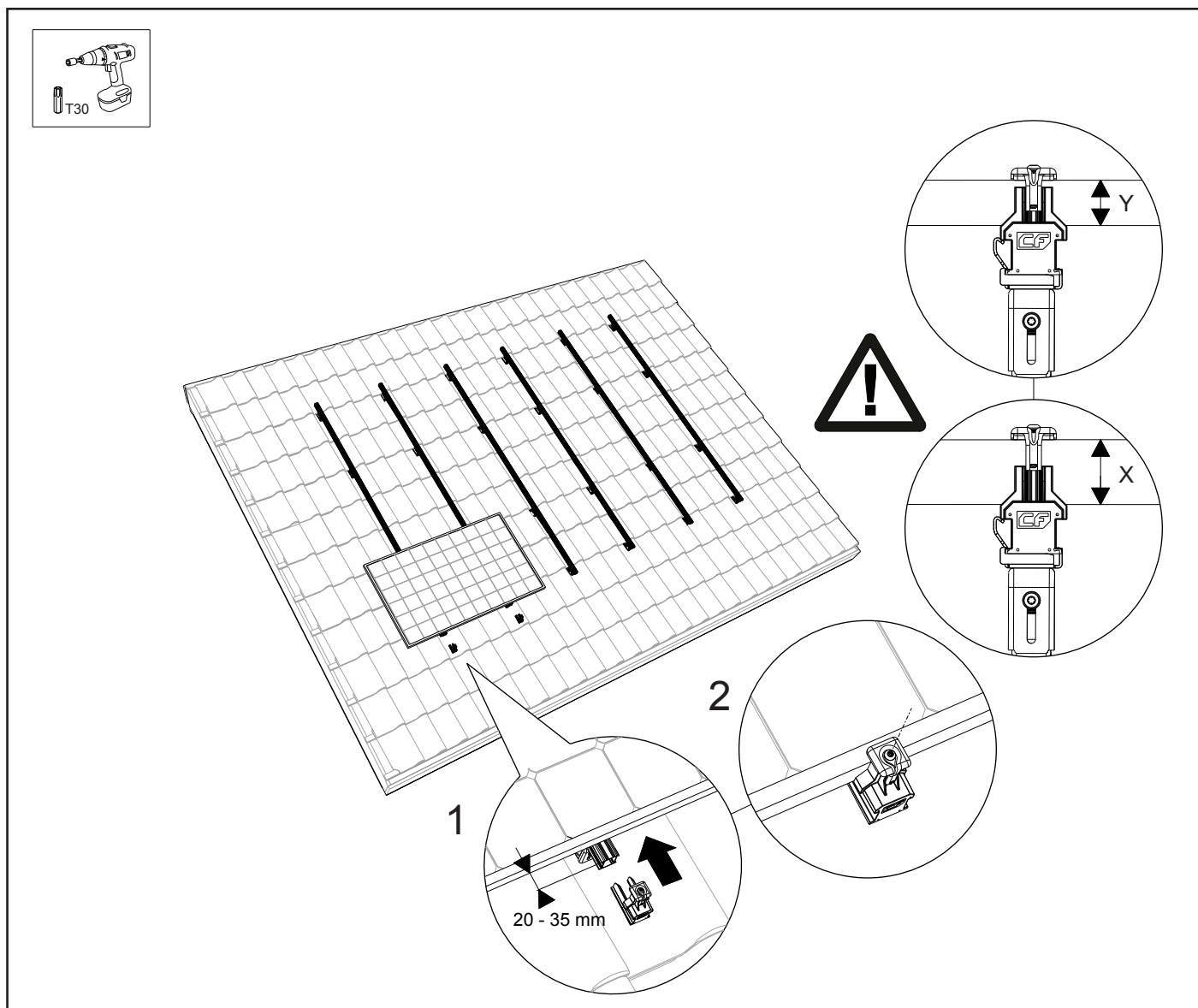
## 7.5 Mounting the 1st solar panel on a mounting rails

Hang the solar panel on the mounting rail. Click the cables of the solar panel into the cable clip that has been installed. Slide the first solar panel to the bottom of the mounting rail. Leave 20 - 35 mm of the rail protruding visibly under the solar panel.

Now slide the mounting rail end cap with universal module (end) clip onto the mounting rail. Choose the correct recess so that the universal module clamp connects with the solar panel. Now tighten the universal module (end) clip. **Attention!** The tightening moment of the screw connection is 4.5 Nm.

**Attention!** The minimum panel thickness  $Y = 30$  mm and the maximum panel thickness  $X = 50$  mm.

**Attention!** See appendix for restrictions and other details.





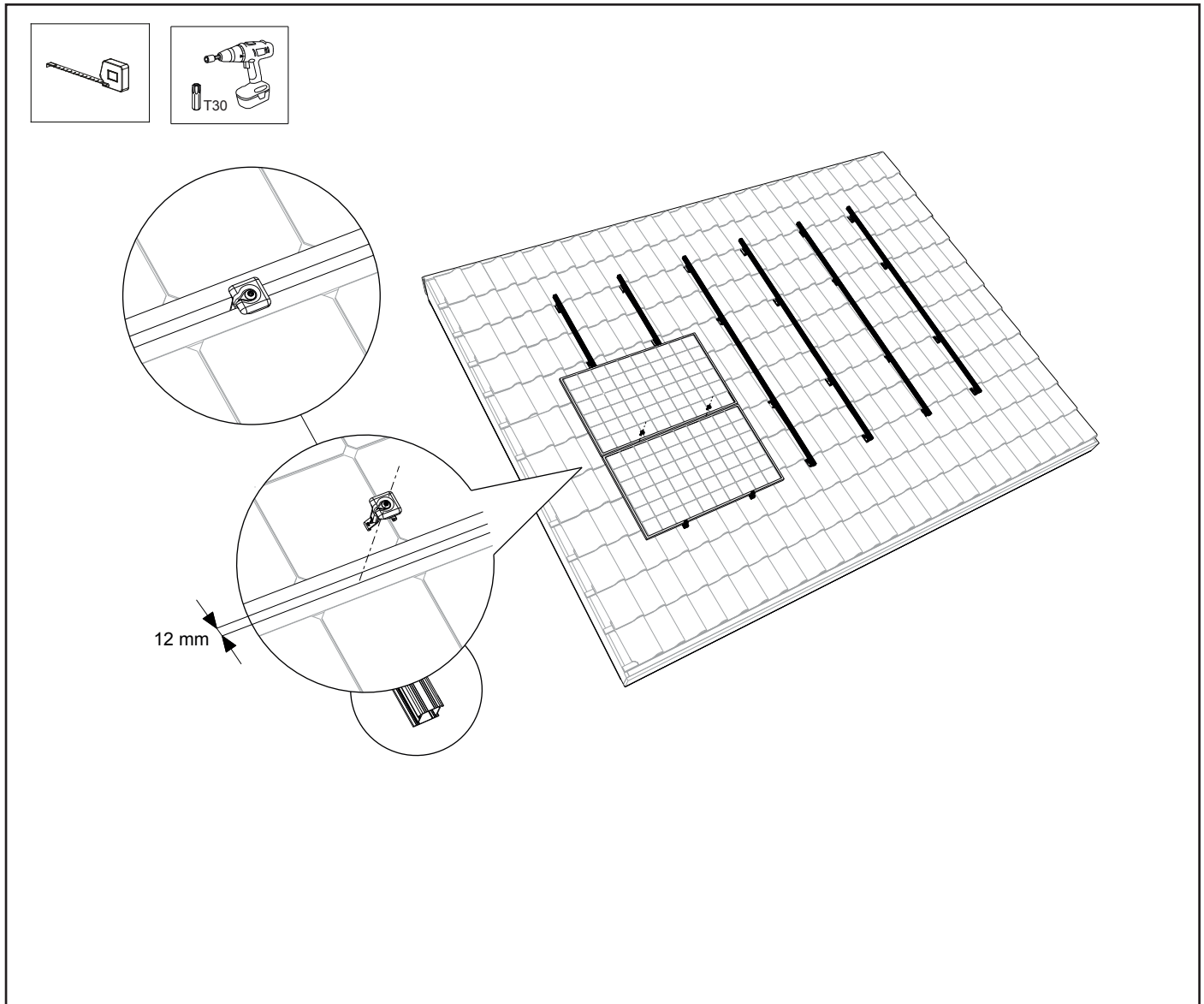
## 7.6 Mounting other solar panels on the rails

Click the universal module clamps onto the mounting rails. Slide them against the first solar panel. Place the second solar panel on the mounting rail, click the cables of the solar panel securely into the cable clip and slide the solar panel to the first against the universal module clamp. Now screw the universal module clamp tight.

**Attention!** The tightening moment of the screw connection is 4.5 Nm.

Ensure that the solar panels are lying straight before you tighten the torx screw! Repeat this with the remaining solar panels.

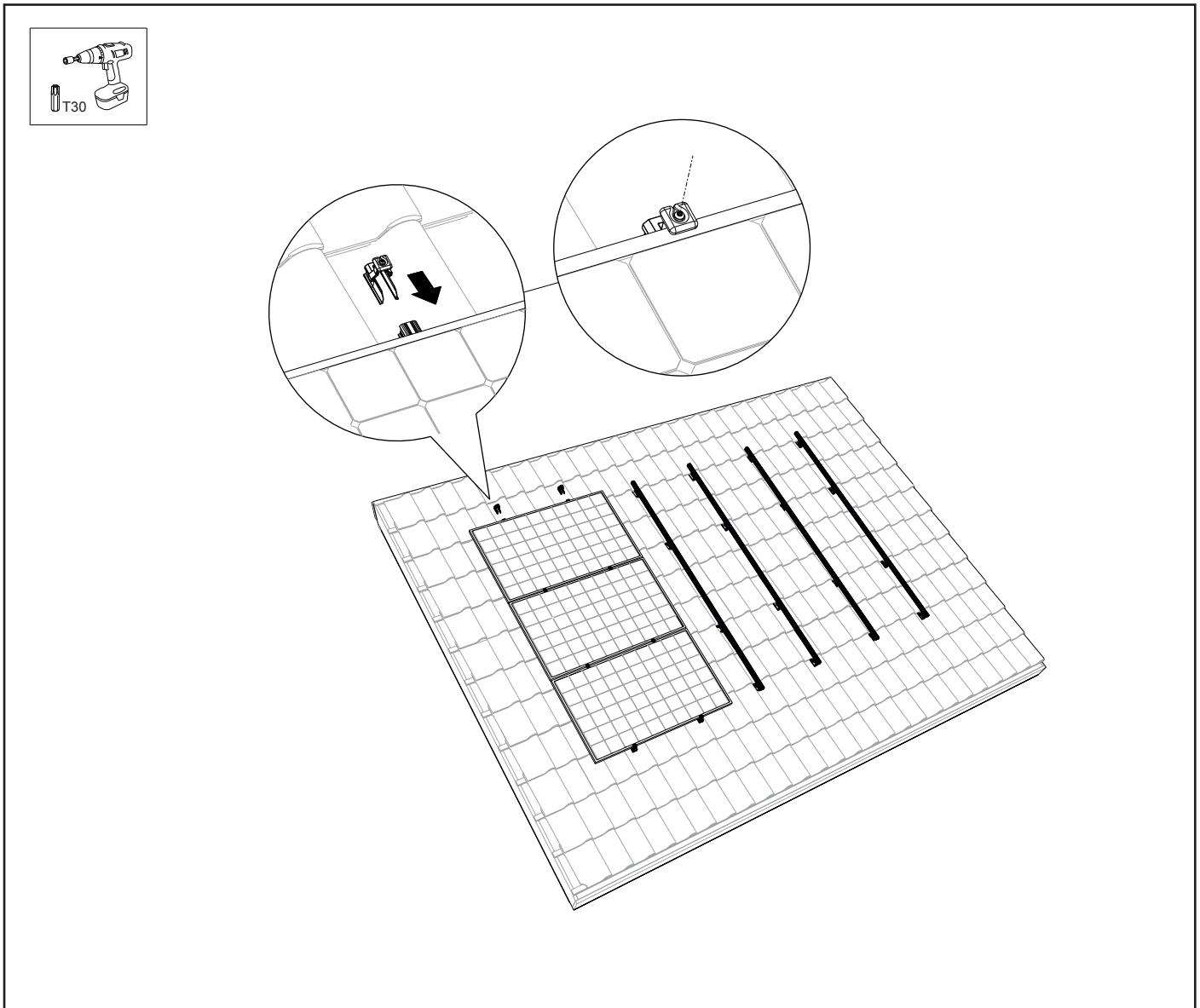
**Attention!** See appendix for restrictions and other details.



## 7.7 Completing the mounting of the 1st row of solar panels above each other

1. Allow the mounting rail to protrude 20 - 35 mm from the edge of the solar panel. Slide the mounting rail end cap with universal module (end) clip onto the mounting rail. **Attention!** Choose the correct recess so that the end clip connects with the solar panel.
2. Now screw the end clip firmly into position with the torx screw. **Attention!** The tightening moment of the screw connection is 4.5 Nm.

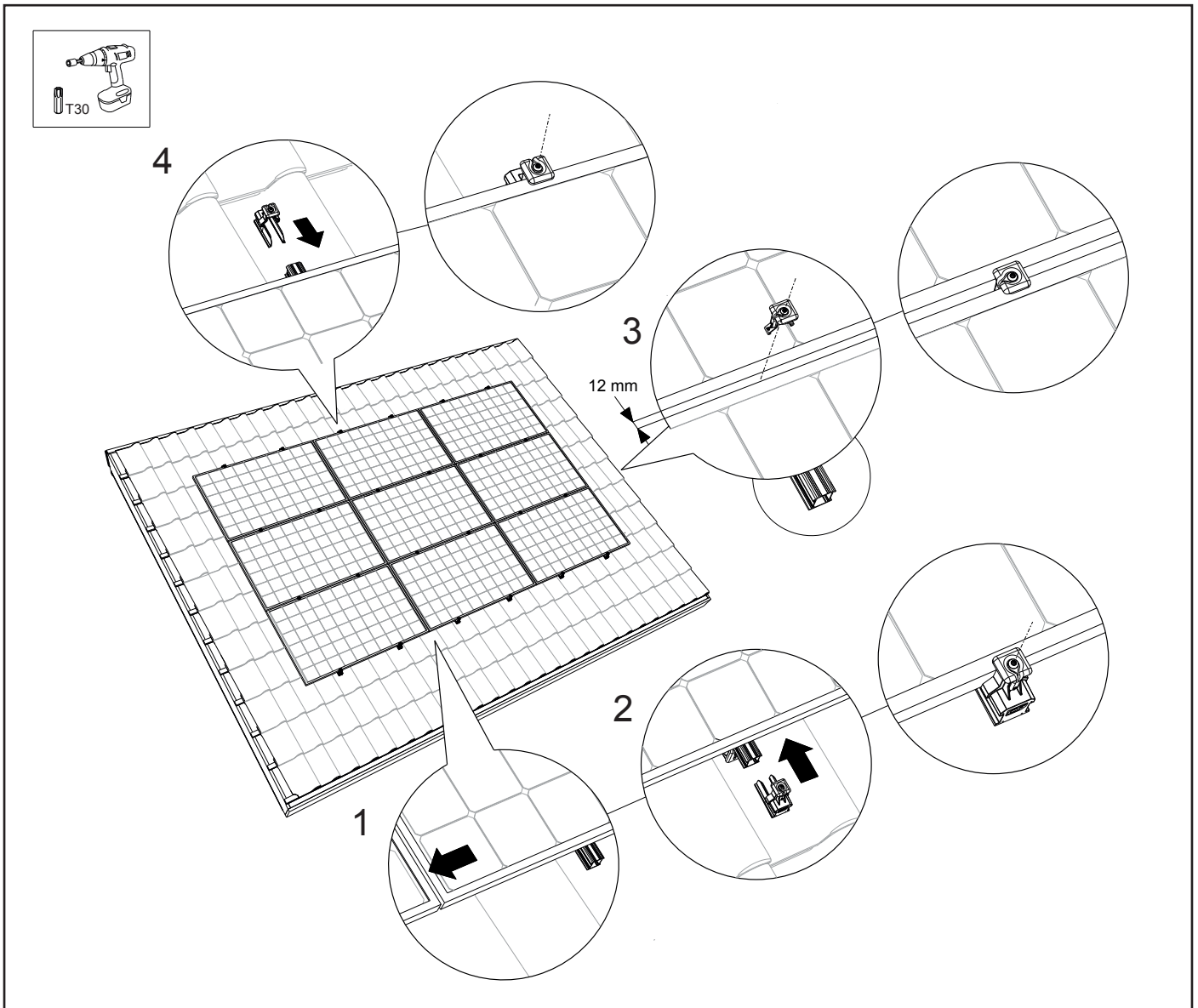
**Attention!** See appendix for restrictions and other details.



## 7.8 Completing the mounting of several rows next to each other

1. To obtain an uninterrupted field of solar panels you slide the adjacent solar panels against the row of solar panels.
2. Repeat the steps of chapter 7.5 - 7.7. The panel field is now finished!

**Attention!** See appendix for restrictions and other details.

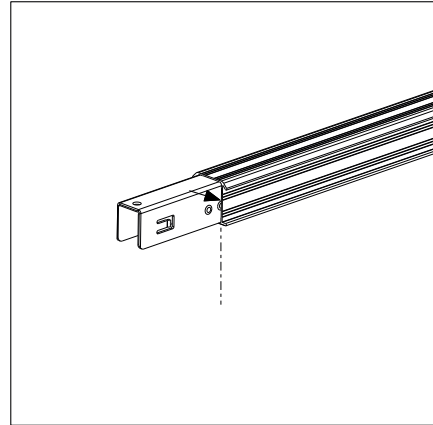


# 8. APPENDIX

## 8.1 Specifications for installation

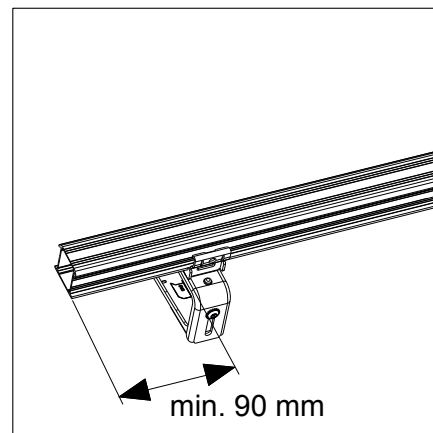
### 8.1 - 01

Slide the connector into the ends of the mounting rails. Slide the connector to the centre of the middle stud of the connector. This ensures that the connector is divided equally over the 2 rail ends.



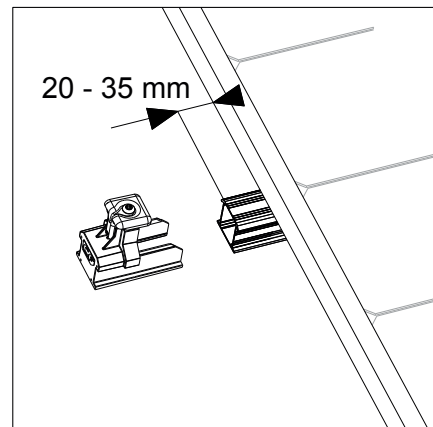
### 8.1 - 02

The first trusshook must be fitted a minimum of 90 mm from the end of the mounting rail. And a maximum of 250 mm.



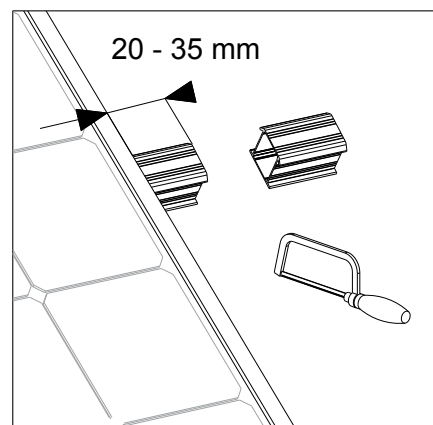
### 8.1 - 03

The mounting rails must protrude 20 - 35 mm from the edge of the solar panel.



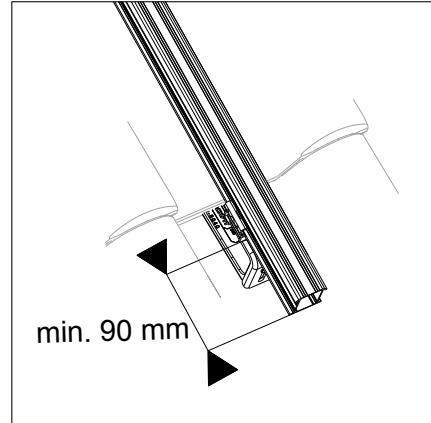
### 8.1 - 04

The mounting rails must protrude 20 - 35 mm from the edge of the solar panel. Saw the mounting rails to the correct length.



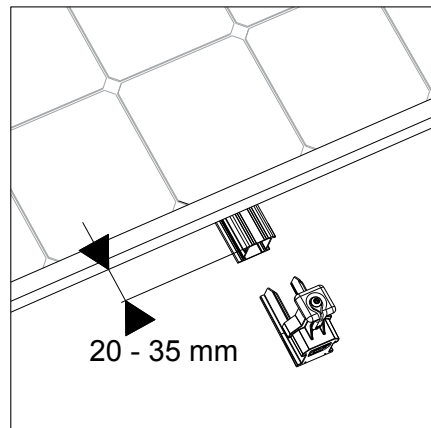
## 8.1 - 05

The trusshook must be mounted a minimum of 90 mm from the end of the mounting rail. And a maximum of 250 mm.



## 8.1 - 06

The mounting rails must protrude 20 - 35 mm from the edge of the solar panel.



## 8.2 Tightening moments

Screws for fastening trusshooks to battens (minimum of 2 screws per trusshook):

Screws for fastening trusshooks (= screw on the top of the trusshook):

Screws for height adjustment of trusshooks (= screw on the underside of the trusshook):

1 – 1,5 Nm  
minimum 6,0 Nm

Screws for fastening module clamps:

4,5 Nm