ESDEC

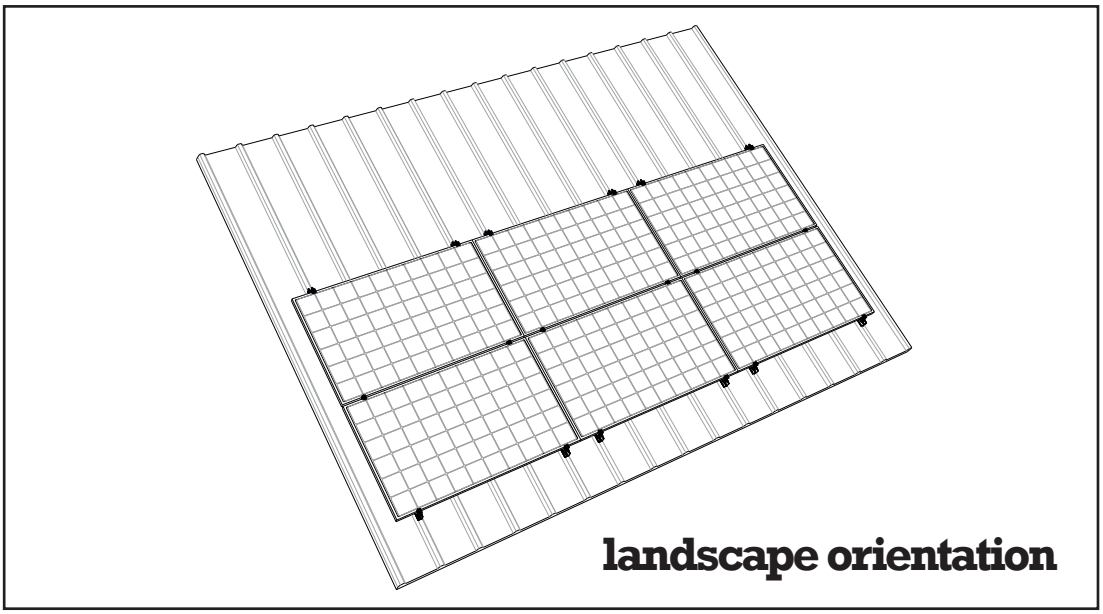
INNOVATIVE **MOUNTING SYSTEMS**

CLICKFIT EVO

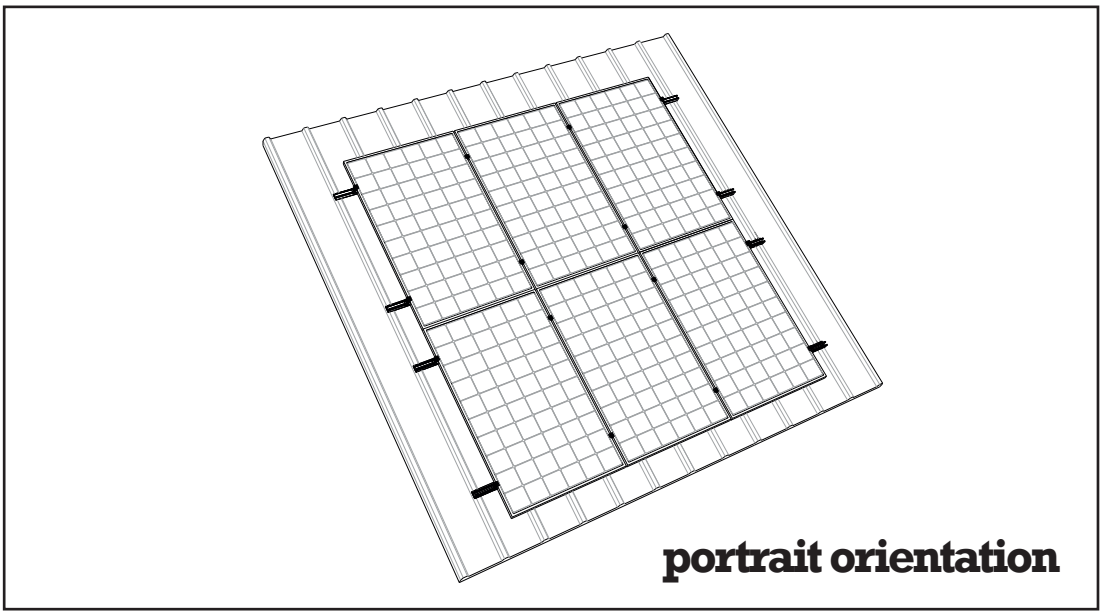
MANUAL

EN

MOUNTING SYSTEM FOR STEEL ROOFING



landscape orientation



portrait orientation

Mounting system for solar panels on trapezoidal steel roofing and corrugated steel roofing

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CLICKFIT FLATFIX

CONTENTS

THIS MOUNTING MANUAL SHOULD BE KEPT FOR FUTURE USE!
For the warranty period and terms, we recommend you contact your supplier. In addition, we would like to refer to our General Terms of Sale and Delivery, which are available upon request.
The manufacturer cannot be held liable for damage or injury resulting from a failure to comply with this mounting manual and a lack of general carefulness during transport, assembly and use of the mounting system. As a result of our constant desire to improve, it is possible that the product differs from what is described in this manual in certain details. For this reason, the instructions only serve as an installation guideline for the product described in this manual. This manual was compiled with the utmost care, but the manufacturer cannot be held liable for any mistakes in this manual or the results of these.

1. Introduction

This manual covers the installation of our mounting system for trapezoidal steel roofing and corrugated steel roofing (for solar panels in landscape and portrait orientation).
Carefully read the manual, so you are fully familiar with its contents. Carefully follow the instructions in the manual. Always perform actions in the right order.
Keep the manual in a safe and dry place. If the manual is lost, a new copy can be downloaded from www.esdec.com.

2. General installation conditions

General

A failure to comply with the regulations stated in this document may cause all warranty and product liability claims to become void.
The information, comments, and recommendations in this document are legally binding and users should check if they are complete and up to date. Esdec BV reserves the right to adjust this document without prior notice.

Stability and condition of the roof

The roof should be in good condition and should have sufficient strength to bear the weight of the solar panels including any additional materials, wind, and snow load. Check the stability of the roof and adjust the roof/construction if necessary. Always consult a contractor in case of doubt. Make sure the reserve load capacity of the roof is not exceeded anywhere.

Safety warnings

- The assembly of the mounting system should be performed by qualified technical personnel (at least 2 skilled people).
- Adding or omitting parts can negatively impact the functionality and is strongly discouraged!
- Before placing the solar panels, the roof should be dry, clean, level and free of algae etc.
- Avoid assembly with strong winds or a slippery roof surface.
- On a sloping roof, always work with fall protection and, if necessary, with safety nets and edge protection.
- Note!: Never stand in the gutter.
- Wear shoes with reinforced toecaps and strong anti-slip soles.
- Always wear the appropriate protective clothing when performing work.
- Always use a lifting aid/lift installation when moving materials (solar panels etc.).
- Always place ladders on a sturdy, stable surface.
- Always place the ladder at an angle of about 75º and make sure it extends about 1 metre above the edge of the roof.
- If possible, secure the ladder at the top using a rope or lashing strap.
- Preferably comply with the manual “working safely on rooftops”.

Scope of application

- Solar panels of all brands and models with a frame height between 30 and 50 mm and a maximum size of about 2 x 1 m (± 2m2) per solar panel.
- Wind zones 1 to 3, terrain category II and III. (NEN 1991-1-4).
- Roof height (3 - 15 m) If your roof is higher, you should contact your supplier.
- Roofing type: Steel sheet
- Screws at minimum steel thickness: 0,5 mm, Rivets / blind rivets at steel thickness < 0.5 mm
- Roof slope: Between 15 - 60 degrees (35 degrees is optimal)

Edge zone

The distance between the solar panels and the ridge and gutter should be at least 30 cm due to the wind load.
The distance between the solar panels and the edge of the roof should be at least 30 cm. No solar panels can be placed in this zone, either partially or completely.

Standards, regulations and legislation

During the installation of the mounting system, it is important to adhere to the mounting manual and the accompanying standards to prevent accidents. Pay special attention to the following norms, regulations and legislation:

- Building Decree
- PBM Personal Protective Equipment
- KEMA Inspection of Electrotechnical Equipment
- DIN 1055 Design loads for buildings
- DIN 18299 General rules for all construction sectors.
- DIN 18451 Scaffolds

Removal and dismantling

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

Warranty

Warranty according to the terms of warranty and the terms and conditions of Esdec BV. These can be found on the website www.esdec.com

Liability

The manufacturer shall not be held liable for any damage or injury caused by a failure to (strictly) comply with the safety regulations and instructions in this manual or due to carelessness during the installation of the product described in this document and any accessories.

- printing errors reserved

3. Product description

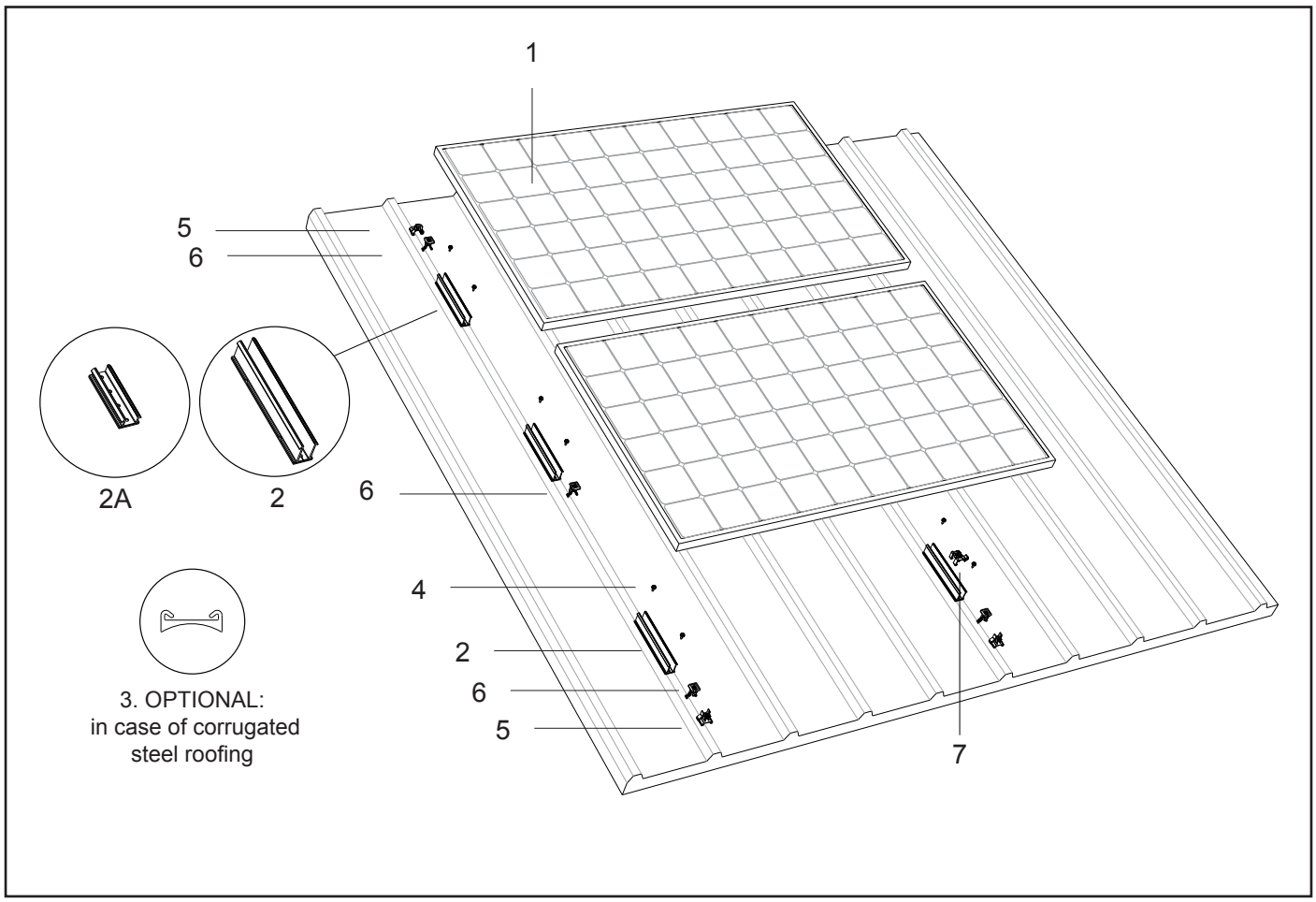
The mounting system is made of mounting profiles and the required mounting materials to mount the solar panels in landscape or portrait orientation on the trapezoidal or corrugated steel roof.
The mounting system for steel sheet roofing can be used for all steel roofs, including the common corrugated or trapezoidal steel roofs. (The sheet steel thickness should be at least 0.4 mm.)

Roof attachment
The mounting profiles are attached to the steel sheet using self-tapping screws or blind rivets. **Note!** There are two options: a high (Optimizer ready) or low (Basic) mounting profile. In this manual, the high mounting profile is shown by default. The height of the mounting profile does not have any consequences for the required parts, with the exception of the optional cable clip optimizer ready and optimizer. These can only be used for the high mounting profile. The high mounting profiles have a notch that functions as a point of reference when aligning the profiles.
Because the mounting profiles are not attached to the rafters or purlins, the position of the solar panels on the roof can be selected freely.
The mounting profiles have EPDM sealing tape at the bottom, which serves as a water barrier. In case of corrugated steel roofs, the mounting profiles are provided with an optional EPDM adapter profile.

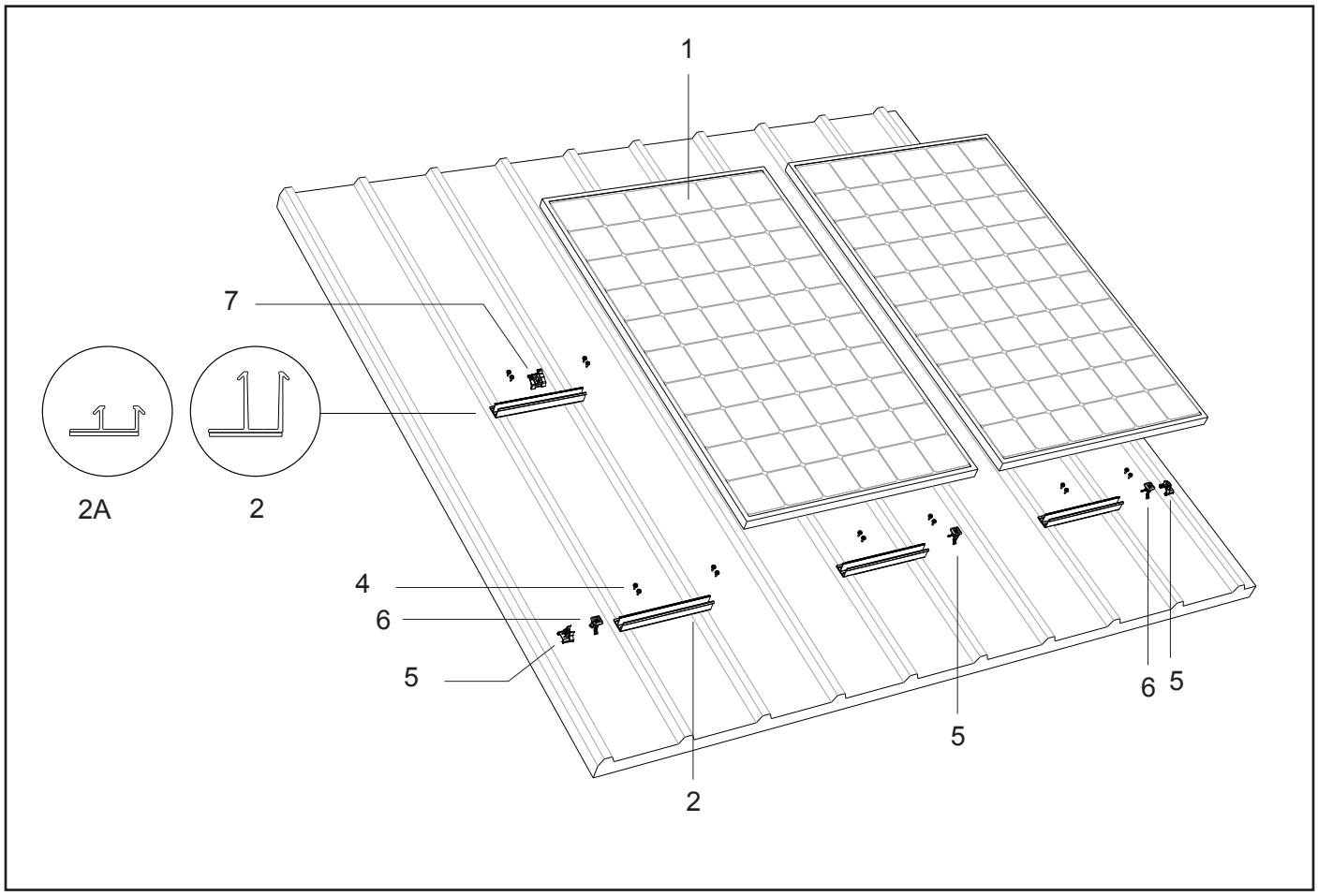
Attachment of the panels
The solar panels are attached to the mounting profiles using universal module clamps.

4. Parts overview

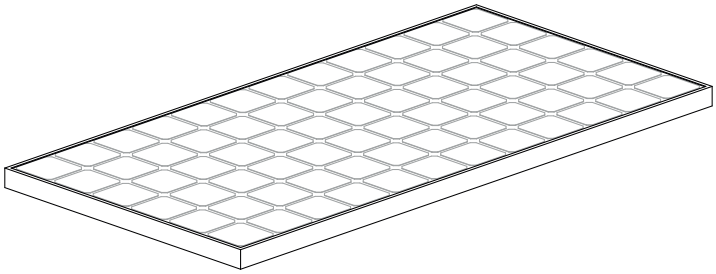
4.1 Exploded view mounting system in landscape orientation



4.2 Exploded view mounting system in portrait orientation



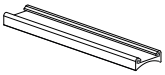
4.3 Parts list mounting system in portrait orientation



1. Solar panel

2. Mounting profile steel roof ‘Optimizer ready’ landscape
Product no.: 100-8050

2A. Mounting profile steel roof ‘Basic’ landscape
Product no.: 100-8048



3. EPDM adapter profile corrugated steel roof ‘Optimizer ready’ landscape
Product no.: 100-8082
*optional

3A. EPDM adapter profile corrugated steel roof ‘Basic’ landscape
Product no.: 100-8081
*optional

4. Self-tapping screw 6.0x25mm
Torx 30
Product no.: 100-8080

5. End clamp support grey
Product no.: 100-8065

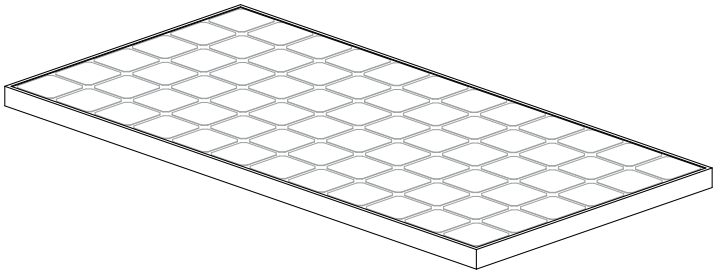
5B. End clamp support black
Product no.: 100-8065-B

6. Module Clamp Universal grey
Product no.: 100-8020

6B. Module Clamp Universal black
Product no.: 100-8020-B

7. Mounting rail cable clip ‘Optimizer ready’
Product no.: 100-8062
*optional

4.4 Parts list mounting system in portrait orientation



1. Solar panel

2. Mounting profile steel roof ‘Optimizer ready’ portrait
Product no.: 100-8052

2A. Mounting profile steel roof ‘Basic’ portrait
Product no.: 100-8049

4. Self-tapping screw 6.0x25mm
Torx 30
Product no.: 100-8080

5. End clamp support grey
Product no.:100-8065

5B. End clamp support black
Product no.: 100-8065-B

6. Module Clamp Universal grey
Product no.: 100-8020

6B. Module Clamp Universal black
Product no.: 100-8020-B

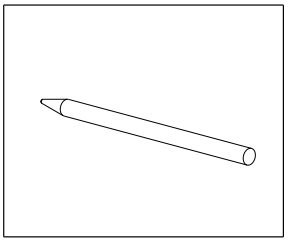
7. Mounting rail cable clip ‘Optimizer ready’
Product no.: 100-8062
*optional

5. Mounting preparations

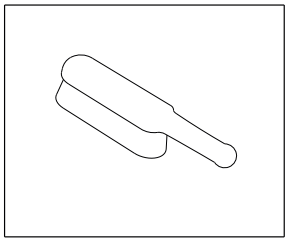
5.1 Tools and accessories check

The following is a list of the required tools / aids:

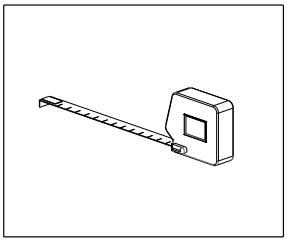
Marker / crayon



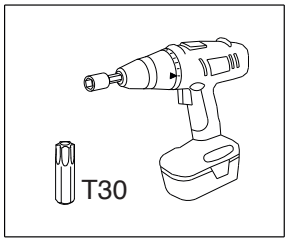
Brush



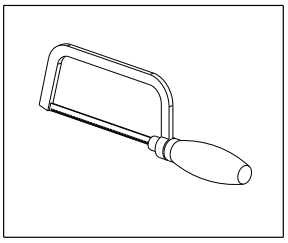
Tape measure



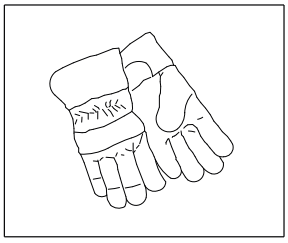
Battery drill



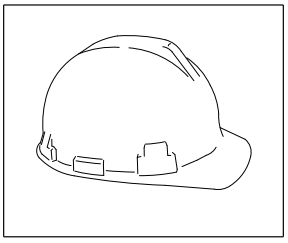
Metal saw



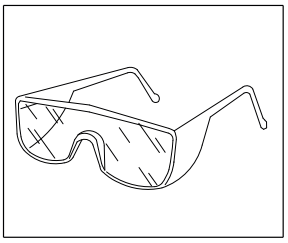
Safety gloves



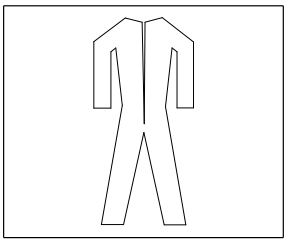
Safety helmet



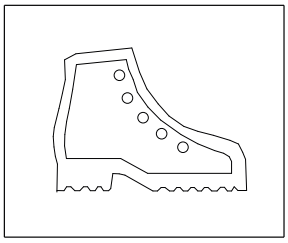
Safety glasses



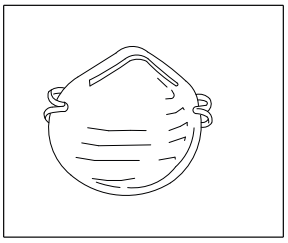
Safety clothing



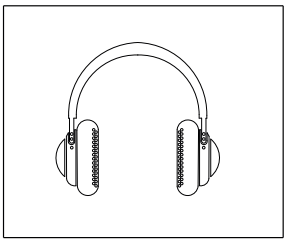
Safety clothing



Face mask



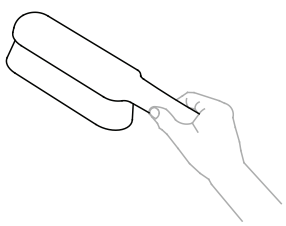
Hearing protection



Scaffold or stable,
safe ladder

5.2 Cleaning the roof

Clean the steel roof sheets with a brush.
Remove algae, moss etc. to reduce unevenness during the installation to a minimum!



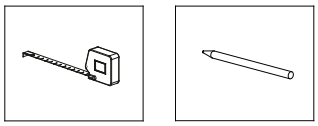
5.3 Determining and measuring position of solar panels

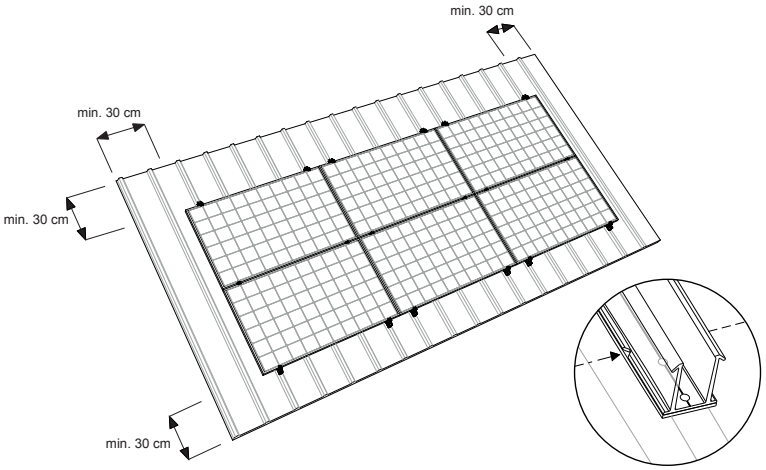
When determining the position of the solar panels on the sloped roof, it is very important to pay attention to the position of the sun during the day and the entire year. Place the panels on a roof surface that has a minimum amount of shade. Shade from a chimney, dormer, tree or adjacent building negatively impacts the yield of the solar panels. We strongly recommend using the optimizer here.

Measuring and demarcating

In order to place the solar panel (in landscape or portrait orientation) you need a space of about 160x80 cm or 160x100cm or 200x100cm per panel. (depending on the type of solar panel)
Make sure there is a space of at least 30 cm around the solar panels on the roof. This means 30 cm away from the ridge and gutter and 30 cm away from the sides because of turbulent wind load.
Mark the contours of the panels and the field on the steel sheets with a marker or crayon.

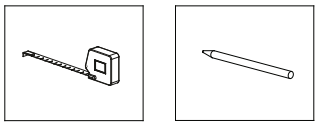
Demarcation for landscape orientation:
Mark the contours of the panels and the field on the steel sheets with a marker or crayon. Draw lines where the mounting profiles will be: (see chapter 6.1). The high mounting profiles have a notch, making it easy to align the profiles. (view Detail A in illustration below)
Follow the instructions of the calculator for the distance between the mounting profiles. These instructions prevail.

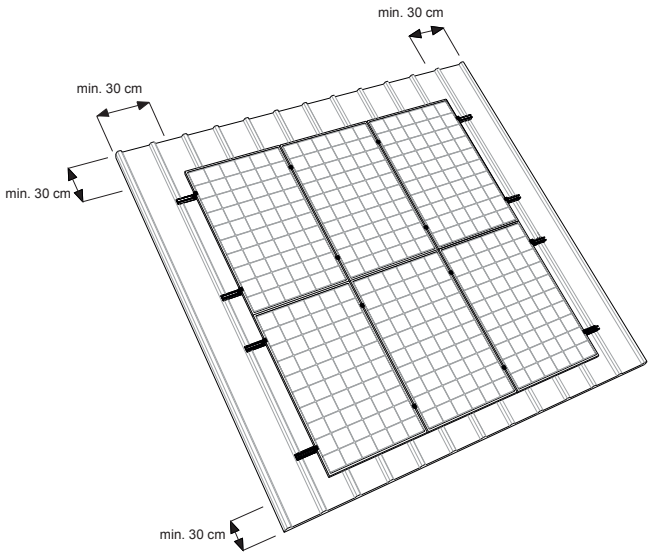




A Notch for alignment

Demarcation for portrait orientation:
Draw lines where the mounting profiles will be: (see chapter 7.1). Follow the instructions of the calculator for the distance between the mounting profiles. These instructions prevail.





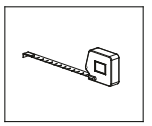
6. Parts list mounting system in landscape orientation

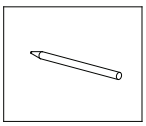
6.1 Positioning the mounting profiles

Note! In case of a corrugated steel roof, the mounting profile steel roof 'Optimizer ready or Basic' landscape should be equipped with an EPDM adapter profile on the bottom (see chapter 8.2 in the attachment).

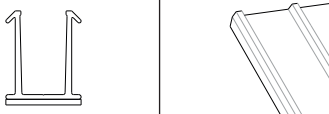
You can determine the position of the mounting profiles based on the location of the solar panels on the roof.
The mounting profiles should be positioned at distance B in the upwards direction of the steel roof. The mounting profiles should be positioned at distance A in the horizontal direction of the steel roof. Distribute the mounting profiles (per panel) widthways parallel to the line where the solar panels will be.

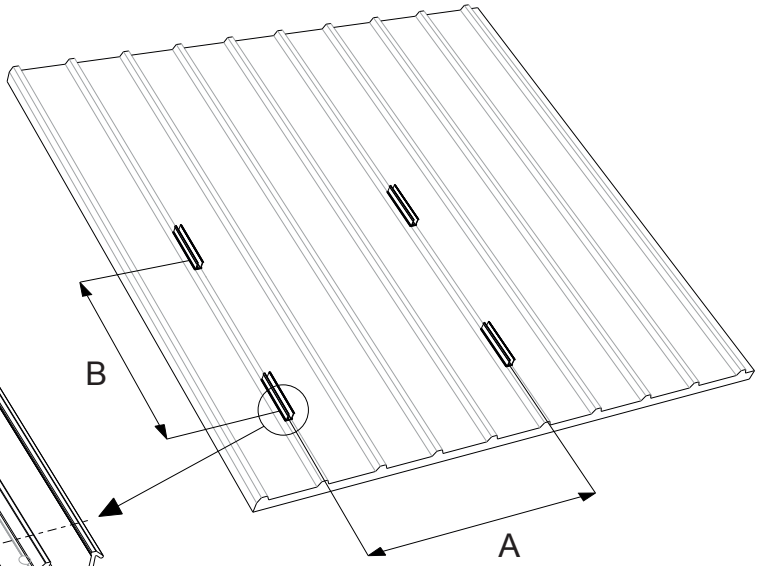
Note! Make sure the mounting profiles are separately aligned.
Note! The calculator prevails when it comes to the number of screws per mounting profile (see table in attachment).
Note! In the instruction, Mounting profile steel roof 'Optimizer ready' landscape is used.

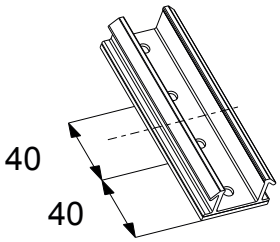


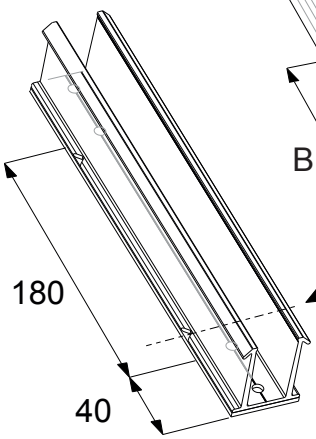


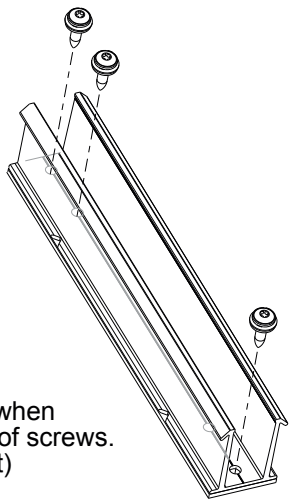
Basic Landscape	Optimizer ready Landscape
Product no.: 100-8048	Product no.: .100-8050

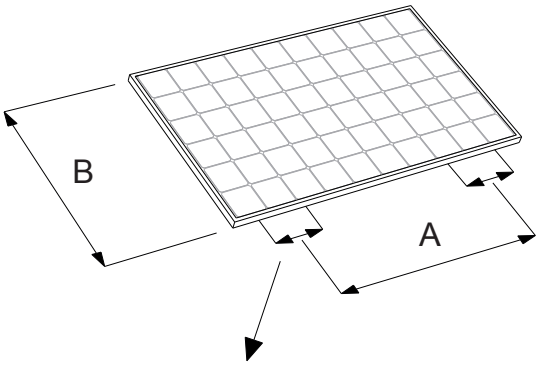










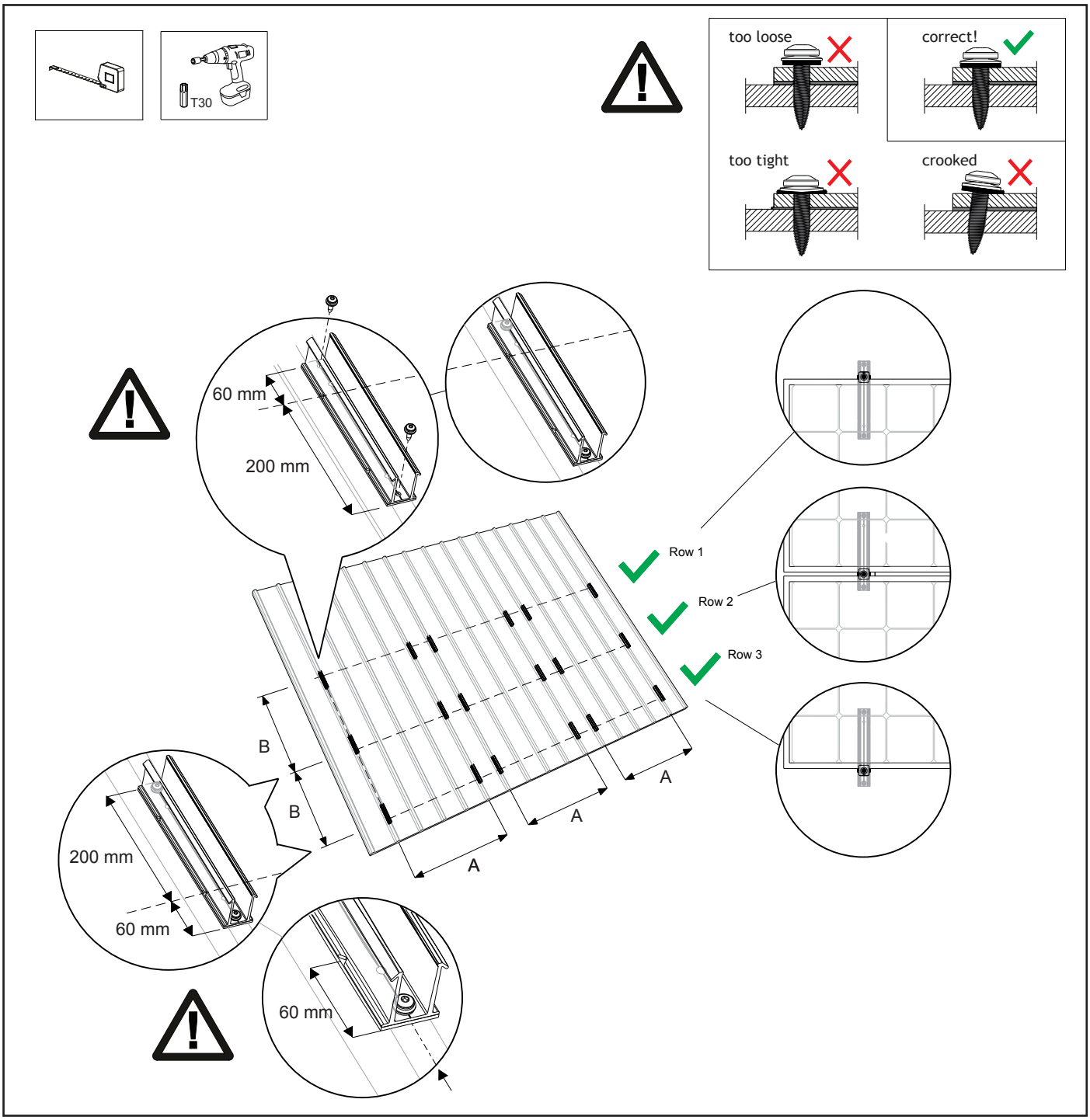


The calculator prevails when it comes to the number of screws. (see table in attachment)

Clamp range by module specified by manufacturer

6.2 Attaching the mounting profiles

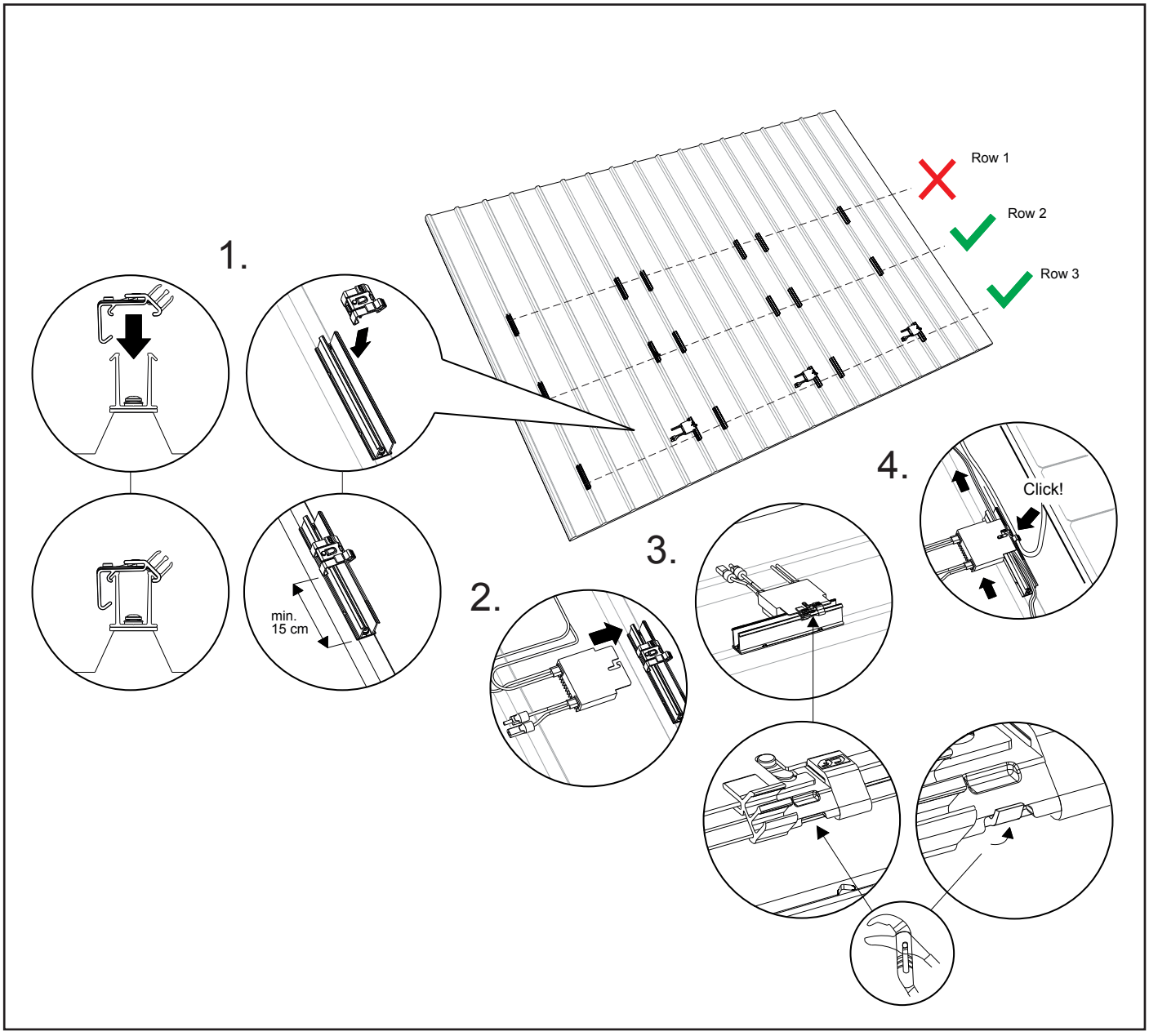
1. Mark the centre of the open part of the corrugated roof sheet and use a crayon or marker to demarcate the location of the mounting profiles in a clear line. Only the top row of mounting profiles should be mounted below the panel with the largest part of the mounting profile. Use the 2nd notch for the correct alignment with the panel rim. The low mounting profile should be symmetrically attached to the panel rim.
2. Place the mounting profiles along the line marked on the roof. Make sure the mounting profiles are placed parallel to the open part of the corrugated sheet. **Note!** Make sure the mounting profiles are separately aligned. Use the “notch” on the profile.
3. Screw the mounting profiles on the roof sheet using the self-tapping screw 6.0x25mm. Use a battery drill with Torx 30. **Note!** Make sure it is set to slipping clutch with a maximum torque of 3Nm to ensure the screw will catch properly. As soon as the rubber on the screw changes shape, the screw is attached and the roof is waterproof.
Note! The calculator prevails when it comes to the number of screws per mounting profile (see table in attachment).



6.3 Mounting the mounting rail cable clip optimizer ready and optimizer (optional)

Note! Do not attach cable clips and optimizers to the top row of mounting profiles, row 1. The cable clips and optimizers can only be connected to the rows that have the 200-mm side of the mounting profile at the top (above the universal module clamp). In this situation, this is rows 2 and 3.

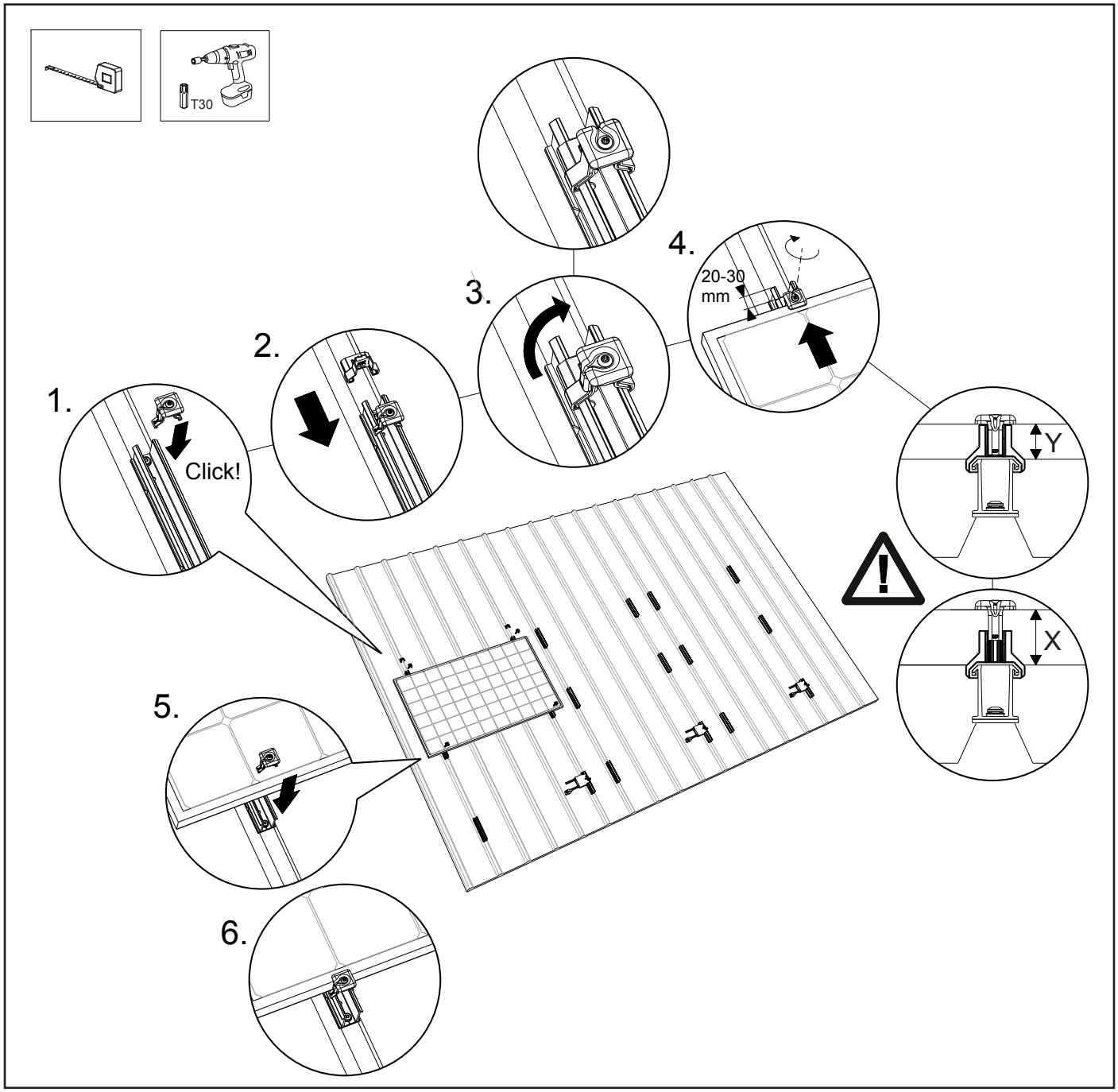
1. Click the cable clip onto the mounting rail, below the panel. One cable clip is used per solar panel.
Make sure the cable clip is placed at least 15 cm away from the end of the profile.
2. Click the optional optimizer onto the cable clip.
3. Secure the cable clip (including optimizer) to the mounting profile by slightly bending the profile rim using water pump pliers.
4. Click the cables into the cable clip. Other cable tracers can be placed in the rail and/or fixed to the rail.



6.4 Mounting 1st solar panel on mounting profiles

1. Click the universal module clamp onto the top two mounting profiles.
2. Slide the end clamp support onto the mounting profiles and slide the end clamp support over the universal module clamp.
3. Turn the lip of the universal module clamp to the back.
4. Place the first solar panel on the top four mounting profiles and slide these against the two end clamp supports.
Choose the right height to ensure the universal module clamp fits the solar panel.
Screw the module (end) clamps in place. Make sure the mounting profile extends 20 to 30 mm. **Note!** The torque for the screw connection is 4.5 Nm (max. 6.5 Nm).
5. Then click the universal module clamps onto the mounting profiles at the bottom of the solar panel. Choose the right height to ensure the universal module clamp fits the solar panel.
6. **Note!** Do not tighten these universal module clamps yet.

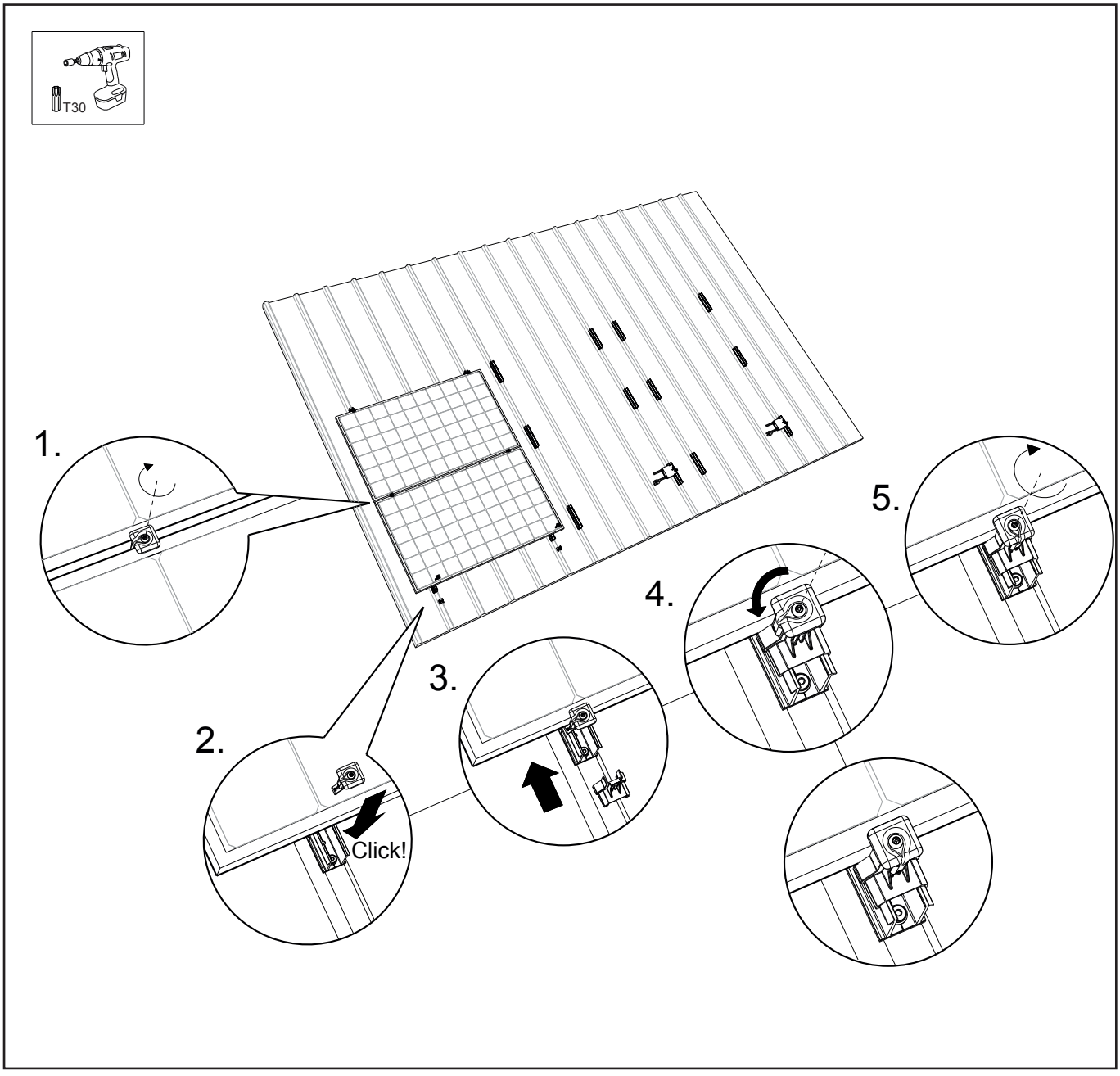
Note! The minimum panel thickness Y = 29 mm and the maximum panel thickness X = 50 mm



6.5 Mounting other solar panels on the mounting profiles

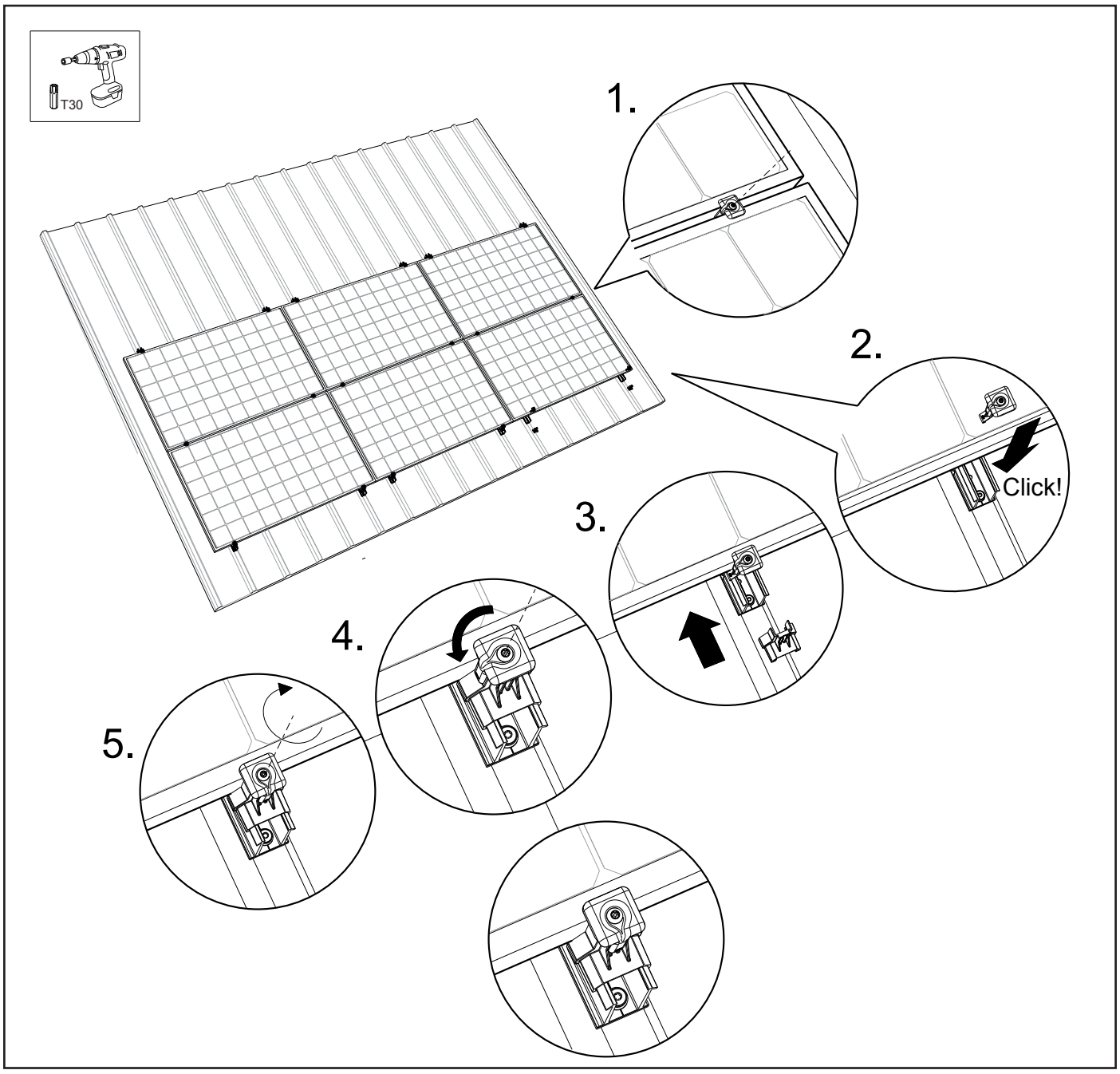
1. Slide the next solar panel between the mounting profiles and the universal module clamps. Afterwards, tighten the universal module clamps. **Note!** The torque for the screw connection is 4.5 Nm (max. 6.5 Nm). Repeat this step if there are more intermediate panels.
2. Click universal module clamps onto the bottom mounting profiles and slide these against the solar panel.
3. Slide the end clamp support onto the mounting profiles. Slide the end clamp support over the universal module, against the solar panel. Choose the right height to ensure the universal module clamp fits the solar panel.
4. Turn the lip of the universal module clamp to the back.
5. Screw the module (end) clamps in place. Make sure the mounting profile extends 20 to 30 mm. **Note!** The torque for the screw connection is 4.5 Nm (max. 6.5 Nm).

Note! Make sure the solar panels are straight before tightening the Torx screw!



6.6 Final assembly / multiple rows

1. In order to get a connected solar panel surface, slide the adjacent solar panels against the row of solar panels.
2. Repeat the steps from chapter 6.4 - 6.5. The solar panel field is now complete!



7. Installation mounting system in portrait orientation

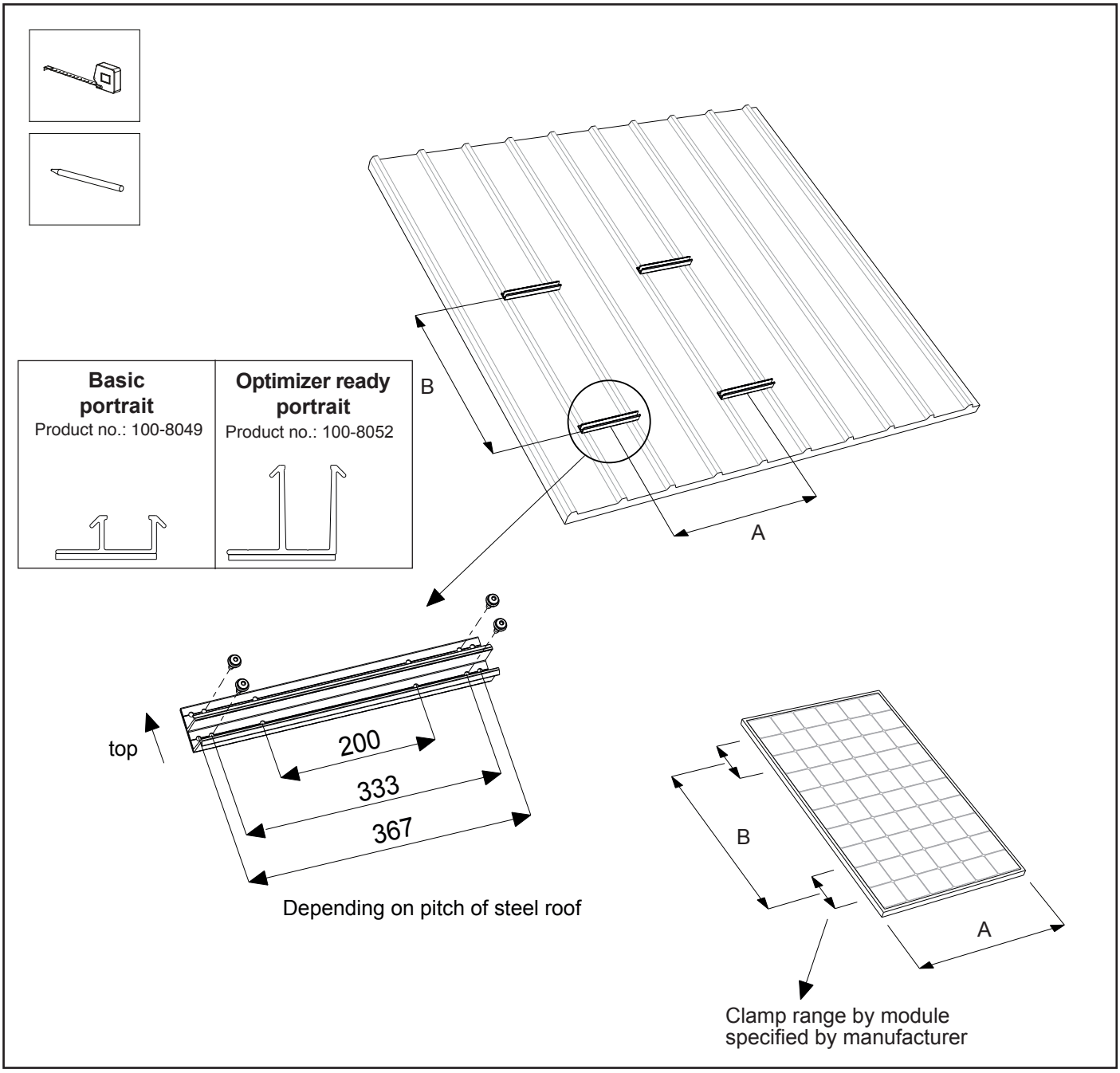
7.1 Positioning the mounting profiles

You can determine the position of the mounting profiles based on the location of the solar panels on the roof.
The mounting profiles should be positioned at distance A in the upwards direction of the steel roof.
Make sure the hole pattern of the mounting profile corresponds to the pitch of the centre of the open part of the corrugated sheet. Make sure the flange of the mounting profile is aimed upwards. Distribute the mounting profiles (per panel) widthways parallel to the line where the solar panels will be.
The mounting profiles should be positioned at distance B in the upwards direction of the steel roof.

Note! Make sure the mounting profiles are separately aligned.

Note! The calculator prevails when it comes to the number of mounting profiles (see table in attachment).

Note! In the instruction, Mounting profile steel roof 'Optimizer ready' portrait is applied.

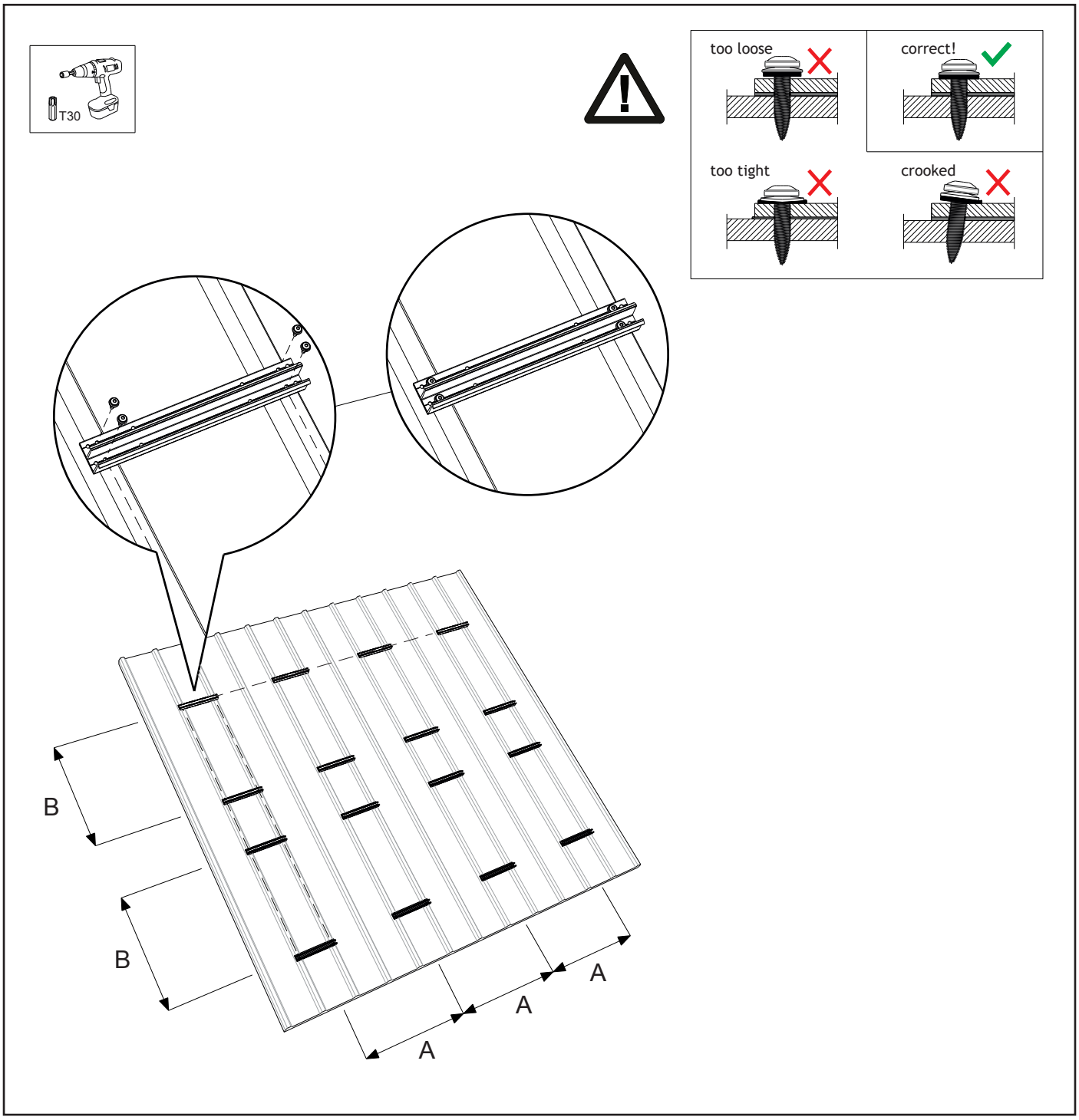


7.2 Attaching the mounting profiles

1. Mark the centre of the open part of the corrugated roof sheet and use a crayon or marker to demarcate the location of the mounting profiles in a clear line.
2. Place the mounting profiles along the line marked on the roof. Make sure the mounting profiles are perpendicular to the open part of the corrugated sheet. **Note!** Make sure the mounting profiles are separately aligned.
Make sure the hole pattern of the mounting profile corresponds to the pitch of the centre of the open part of the corrugated sheet.

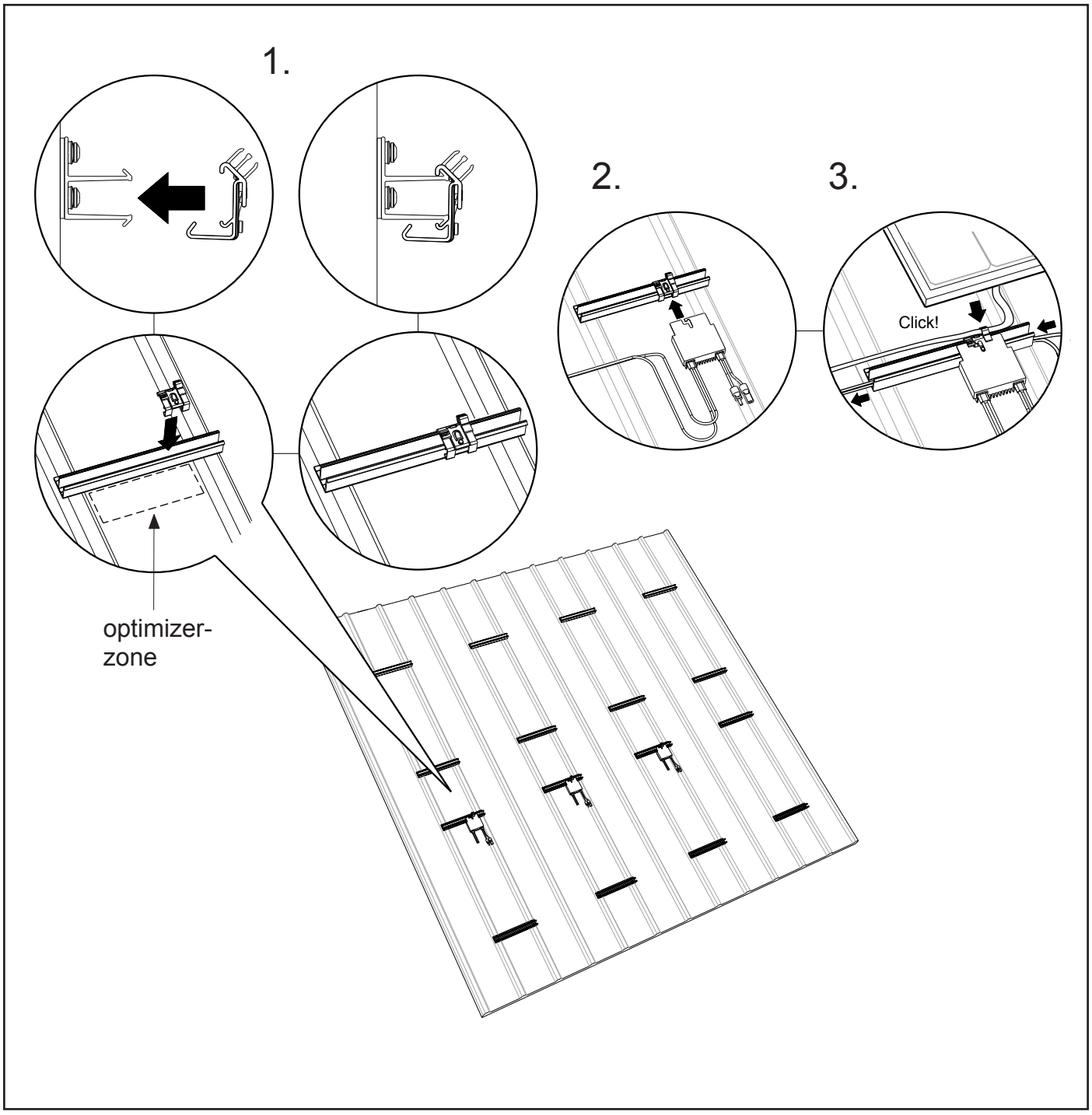
3. Screw the mounting profiles on the roof sheet using the self-tapping screw 6.0x25mm. Use a battery drill with Torx 30
Note! Make sure it is set to slipping clutch with a maximum torque of 3Nm to ensure the screw will catch properly. As soon as the rubber on the screw changes shape, the screw is attached and the roof is waterproof.

Note! The calculator prevails when it comes to the number of mounting profiles (see table in attachment).



7.3 Mounting the mounting rail cable clip optimizer ready and optimizer (optional)

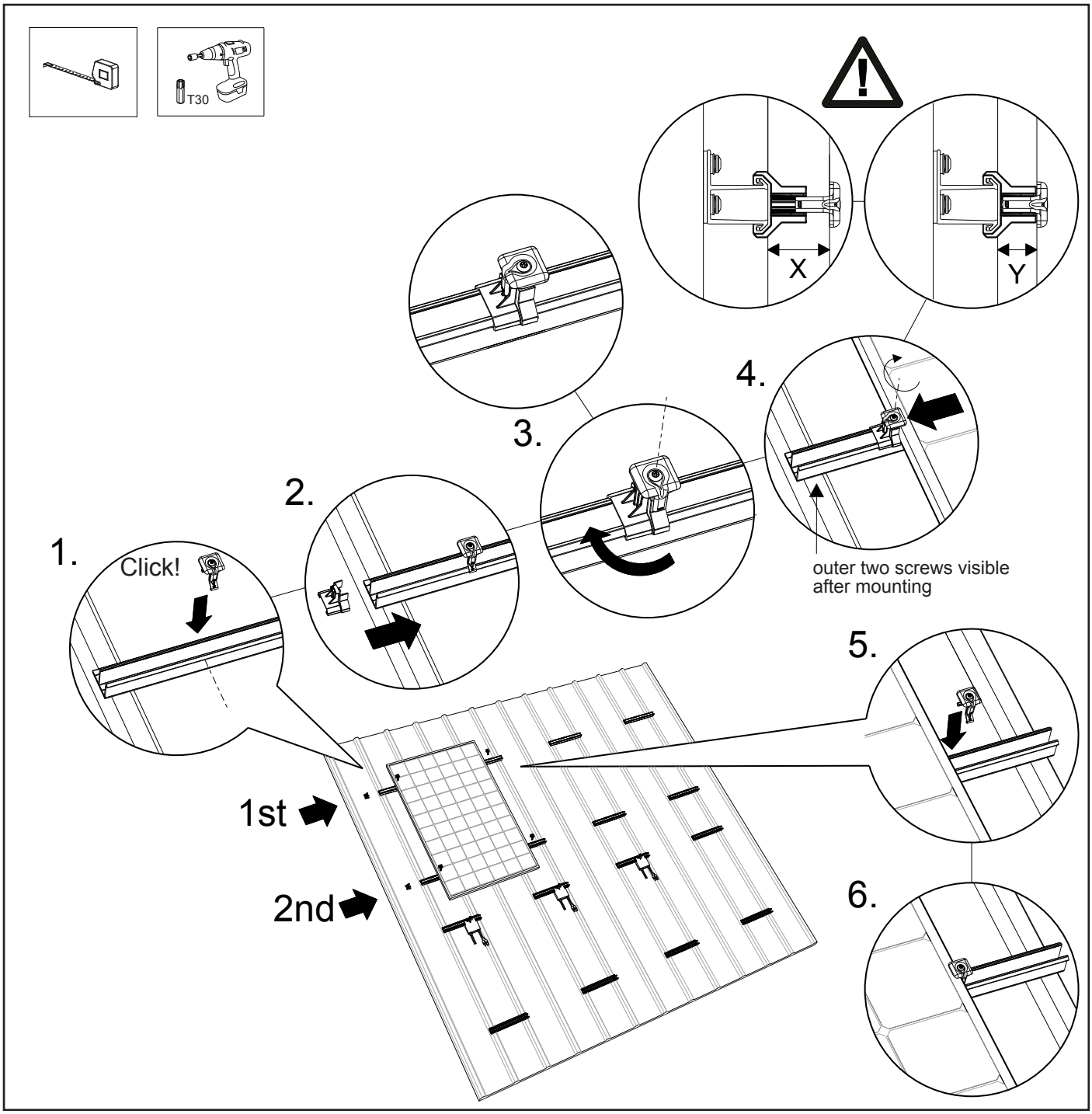
1. Click the cable clip onto the mounting rail, below the panel. One cable clip is used per solar panel.
Note! Make sure the cable clip is placed between the upwards open parts of the roof sheet. (See detail below, optimizer zone)
2. Click the optional optimizer onto the cable clip.
3. Click the cables into the cable clip. Other cable tracers can be placed in the rail and/or fixed to the rail.



7.4 Mounting 1st solar panel onto mounting profiles

1. Click the universal module clamp onto the top two left mounting profiles. Then slide them to the centre of the mounting profile.
2. Slide the end clamp support onto the mounting profiles and slide the end clamp support over the universal module clamp.
3. Turn the lip of the universal module clamp outwards.
4. Place the first solar panel on the top four mounting profiles and slide these against the two end clamp supports.
Choose the right height to ensure the universal module clamp fits the solar panel.
Screw the module (end) clamps in place.
Note! Make sure the mounting profile always extends so that the outer screws are still visible.
Note! The torque for the module clamp is 4.5 Nm (max. 6.5 Nm).
5. Then click the universal module clamps onto the mounting profiles on the other side of the solar panel. Choose the right height to ensure the universal module clamp fits the solar panel.
6. **Note!** Do not tighten these universal module clamps yet.

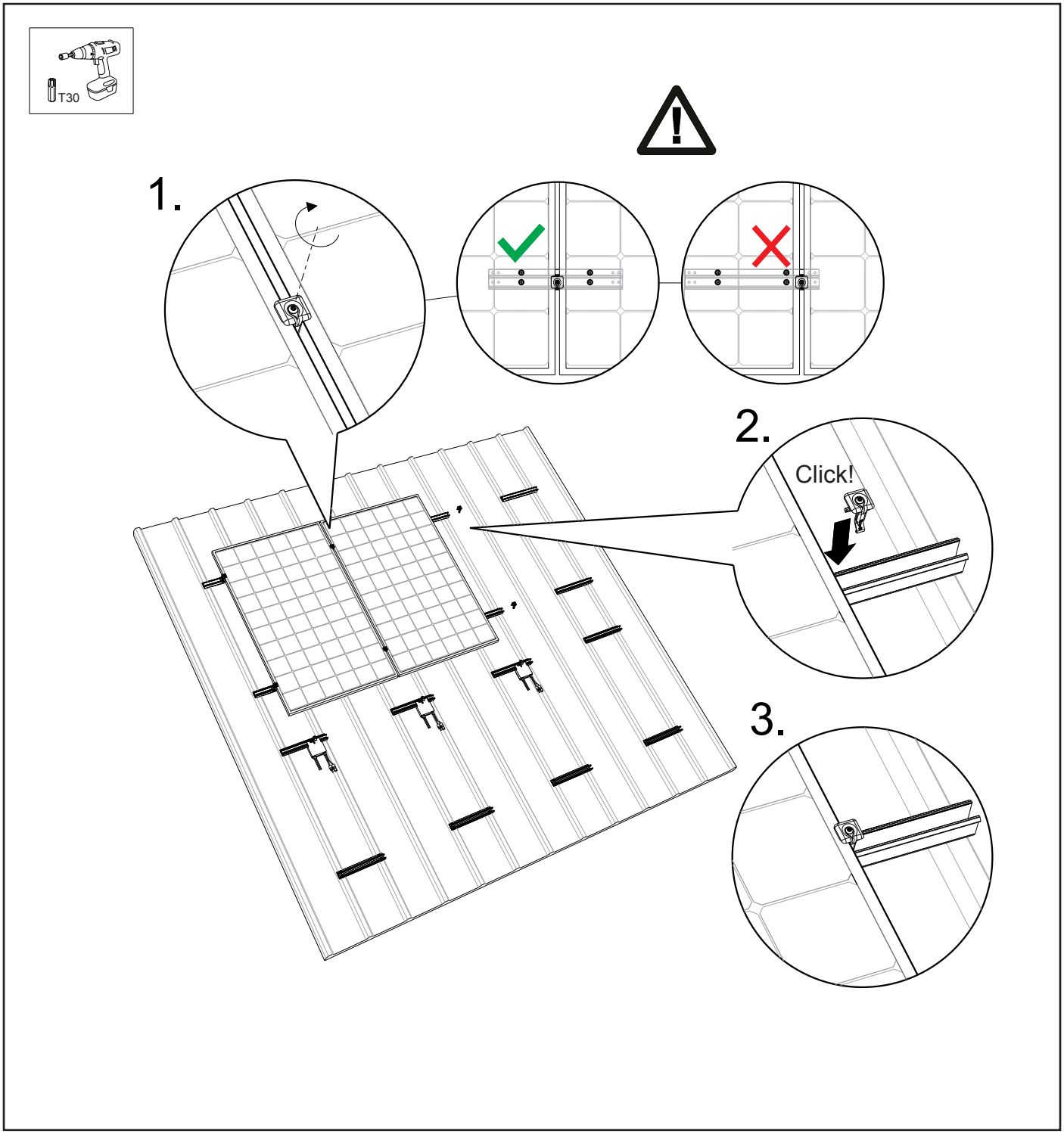
Note! The minimum panel thickness Y = 29 mm and the maximum panel thickness X = 50 mm



7.5 Mounting other solar panels on the mounting profiles

1. Slide the next solar panel between the mounting profiles and the universal module clamps.
Note! Make sure the module clamp is always between the screw locations. Screw the universal module clamps in place.
Note! The torque for the screw connection is 4.5 Nm (max. 6.5 Nm).
2. Then click the universal module clamps onto the mounting profile on the other side of the solar panel. Choose the right height to ensure the universal module clamp fits the solar panel.
3. **Note!** Do not tighten these universal module clamps yet.
Repeat this step if there are more intermediate panels.

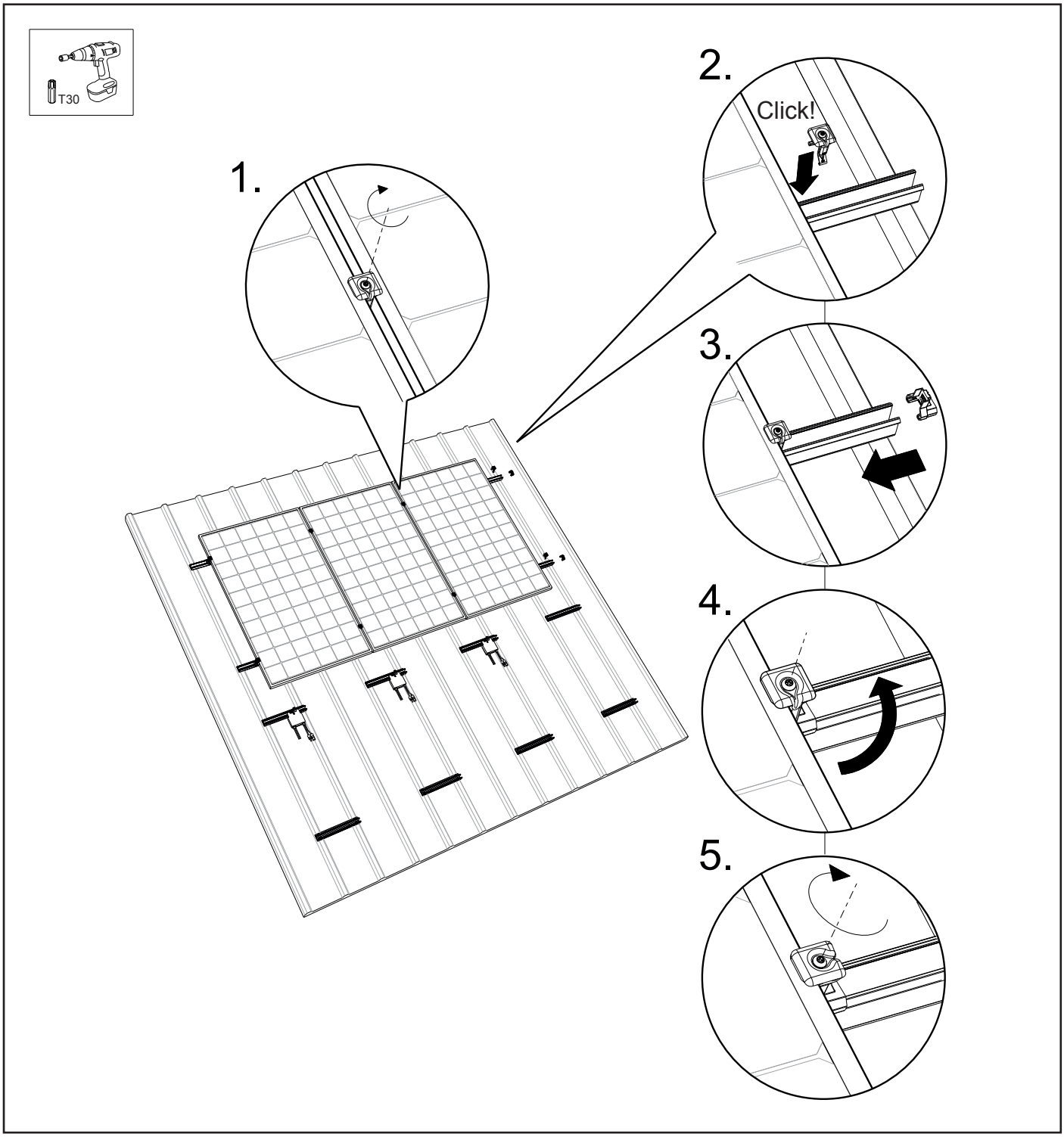
Note! Make sure the solar panels are straight before tightening the Torx screw! Repeat this for the remaining solar panels.



7.6 Final assembly 1st row of adjacent solar panels

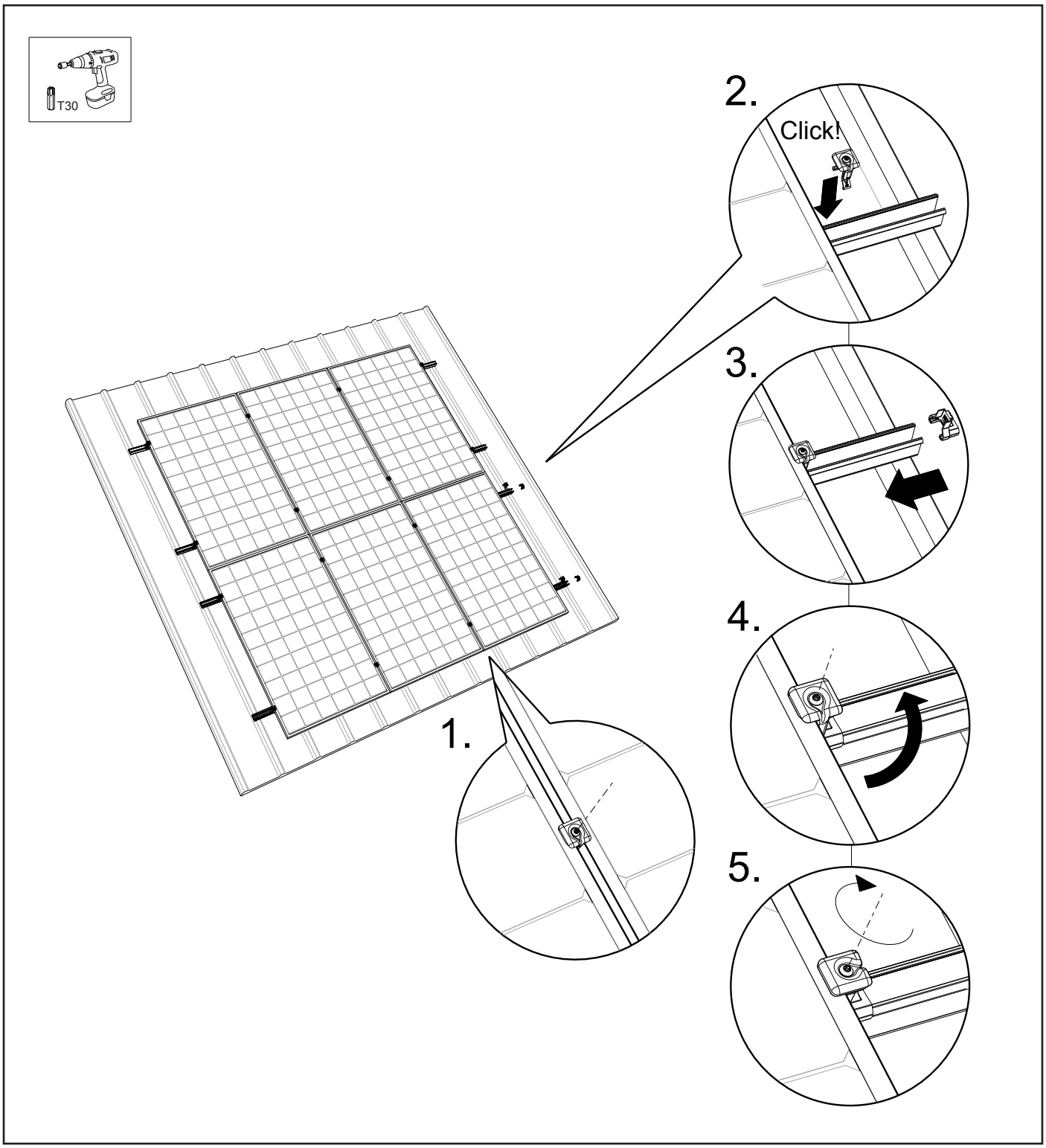
1. Slide the last solar panel in the row between the mounting profiles and the universal module clamps. Afterwards, tighten the universal module clamps. **Note!** The torque for the screw connection is 4.5 Nm (max. 6.5 Nm).
2. Click the universal module clamp onto the top two right mounting profiles. Then slide them towards the solar panel.
3. Slide the end clamp support onto the mounting profiles and slide the end clamp support over the universal module clamp against the solar panel. Choose the right height to ensure the universal module clamp fits the solar panel.
4. Turn the lip of the universal module clamp outwards.
5. Screw the module (end) clamps in place. **Note!** Make sure the mounting profile always extends so that outer screws are still visible. **Note!** The torque for the module clamp is 4.5 Nm (max. 6.5 Nm).

Note! Make sure the solar panels are straight before tightening the Torx screw!



7.7 Final assembly / multiple rows below each other

1. In order to get a connected solar panel surface, slide the solar panels below against the row of solar panels.
2. Repeat the steps from chapter 7.4 - 7.5 and finalise the solar panels according to step 1 - 5 below. The solar panel field is now complete!



8. ATTACHMENT

8.1 Table

General conditions: Wind zones 1 to 3, terrain category II and III. (NEN 1991-1-4)

Landscape

Maximum surface solar panels in m2	1,65		2,08	
Maximum height in m	9	15	9	15
Maximum wind load (thrust) in N/m2	980	1160	980	1160
Mounting profiles per single solar panel	4			
Screws per mounting profile	2	3	3	4

Portrait

Maximum surface solar panels in m2	1,65		2,08	
Maximum height in m	9	15	9	15
Maximum wind load (thrust) in N/m2	980	1160	980	1160
Mounting profiles per single solar panel	4	4	4	6
Screws per mounting profile	4			

8.2 Mounting the mounting profile optimizer ready to the adapter profile for corrugated steel roofing

Note! In case of a corrugated steel roof, the mounting profile steel roof 'Optimizer ready or Basic' landscape should be equipped with an EPDM adapter profile on the bottom. The EPDM adapter profile has an indentation at the bottom, allowing it to properly fit the corrugated steel roof.

Follow the steps below to mount the mounting profile onto the EPDM adapter profile.

1. Position the mounting profile above the EPDM adapter profile.
2. Slide the mounting profile to the side in the adapter profile.
3. Push the rubber rim (flap) around the profile edge.
4. The mounting profile is ready for mounting on the corrugated steel roof. (See chapter 6.1 Positioning the mounting profiles).