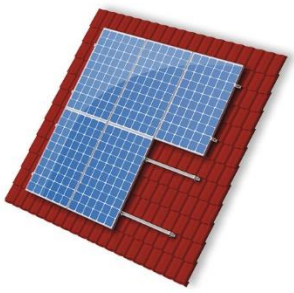
VAN DER VALK
SOLAR SYSTEMS

Installation manual



ValkAce

For tiles roofs UK

Version: v1.0.1
Date: 27-01-2023

Disclaimer

This installation manuals needs to be stored for future use. For project specific guidelines and recommendation it is required to use this document in conjunction with the "Project report" generated by the ValkPVplanner. The instructions provided in this Project Report must be strictly observed at all times.

The content of this installation manual has been carefully compiled. Van der Valk Solar Systems does not accept any liability for the correct use of this document. Van der Valk Solar Systems hold the right to update the content of this document without further notice. Please check the website of Van der Valk Solar Systems (www.valksolarsystems.com) for the most recent version of this document.

For the warranty conditions of your installation, please contact your supplier. Further we refer to our General Terms and Conditions, that are available upon request.

General installation guidelines ValkAce for tiled Roofs (UK)

General

- During installation of the solar mounting system, the instructions and safety precautions presented in this installation manual must be followed carefully. As also stated in the General terms and Conditions of sale and delivery of Van der Valk Solar Systems B.V., non-compliance with the installation guidelines in this document means that the customer can no longer invoke any warranty and Van der Valk is no longer liable for any form of damage.
- The information, comments and advice in this document are binding. Van der Valk Solar Systems reserves the right to update this document without further notice.

Safety

- The installation of the mounting system must be carried out by qualified technical personnel.
- Omitting parts may negatively affect performance and is therefore not allowed.
- Avoid carrying out installation work during bad weather conditions, especially in case of strong winds and a wet (slippery) roof surface.
- During installation work on the roof, always use fall protection and, if necessary, work with safety nets and roof edge protection.
- Always wear appropriate protective clothing and gloves when carrying out the installation work.
- Follow the guidelines in the publication "Health & safety in roof work".

Environmental factors

- High neighbouring buildings or objects, such as windmills, can affect the wind pressure. In these cases, advice should always be obtained from Van der Valk Solar Systems before installation can take place.
- If during the installation it is determined that the project data and/or environmental factors do not fully correspond to the project report, the project must always be re-calculated first.
- In coastal areas, the system should be placed at least 500 meters from open water to prevent accelerated corrosion by the action of salt water. When buildings are present between the open water and the roof, a minimum distance of 250 meters from open water may be maintained.

Standards and regulations

- For correct and safe installation and use of the solar mounting system, always observe the applicable standards and regulations:
- EN 1990: Basis of structural design
- EN 1991-1-3: General actions: snow loads
- EN 1991-1-4: General actions: wind loads
- IEC 60364: Electrical Installations for Buildings
- IEC 62305: Protection against lightnings
- EN 50110: Operation of electrical installations
- Working Conditions Act and Safe Working Conditions Regulation

Stability and condition of the roof and roof covering

- The condition of the roof must be checked upfront for sufficient strength to bear the weight of the mounting system including PV panels ballast and wind and snow loads. Make sure that the load reserve of the roof is not exceeded anywhere.
- Check the stability of the roof and adjust the roof/construction where necessary.
- Check prior to installation whether the roof covering and/or insulation is suitable for the pressure and thermal expansion of the solar mounting system. The maximum pressure is shown in the project report of the ValkPVplanner or can be requested at Van der Valk Solar Systems.
- Factors such as overhead cranes, seismic activity and others that affect the stability of the roof and/or building can affect the installed solar mounting system. Van der Valk Solar Systems does not take these factors into account, unless confirmed in writing.
- The roof surface on which the solar mounting system is to be installed must be clean, dry and flat.
- The roof height may not exceed 25 meters in case the project has been calculated in the ValkPVplanner must be corresponding to the roof height in the project report. For installations on roofs higher than 25 meters, Van der Valk Solar Systems should always be contacted in advance.

Roof zones

- When installing the solar mounting system, always take the applicable roof zones according to EN1991-1-4 into account. Placing solar panels in the edge zone of the roof (the distance measured from the roof edge, which is equal to 1/5 of the building height) is only possible if this has been explicitly taken into account in the calculation.
- It is possible to position panels in the edge zone of the roof in the ValkPVplanner (calculation software), on the basis of which the required additional ballast or fixation points are automatically calculated. This can only be done using “Satellite” or “White Map” design mode. The edge zone is automatically calculated by the ValkPVplanner, based on the roof height and building circumference, in accordance with the applicable regulations. In case the design mode “Simple mode” is used, the calculation always assumes that the solar panels are in the middle zone of the roof only.

Roof pitch

- The weathertightness of the ValkAce mounting system in combination with the roof tiles has been tested and approved according to MCS 012 at a minimum roof pitch of 30 degrees.

Dilatations

- The maximum allowed dimensions of a coupled mounting system is a 30 meters in the aluminium profile direction. The maximum dimensions are based on the thermal expansion in case of a maximum temperature difference (Delta T) of 70 degrees Celsius.
- The coupled mounting system must not be placed over a gutter or ridge. In the mounting system is place over a gutter or ridge, the system must be split (dilatation).

Solar panels

- It is the responsibility of the installer to determine in advance whether the selected solar panel is suitable for the mounting system in terms of dimensions and pressure loads. The calculated loads on the solar panel are shown in the project report of the ValkPVplanner or are available on request at Van der Valk Solar Systems.

Cable management

- In order to create a sound and durable electrical connection between the solar panels, it must be ensured that the cables from the junction box have sufficient length and thus do not cause any mechanical stress on the cable glands. Take into account thermal expansion and contraction of cables and the mounting system.
- Cables and connectors must be kept away from sharp and/or abrasive parts and the roof surface by using sufficient and appropriate cable clamps and cable baskets.

Disassembly and Removal

- Components of the solar mounting system can be easily and completely disassembled at the end of their service life and separated for recycling. The systems only contain nut and bolt, screw and click connections, so nothing is glued or welded. All materials are fully recyclable. Disposal of the components always in accordance with the locally applicable laws and regulations.

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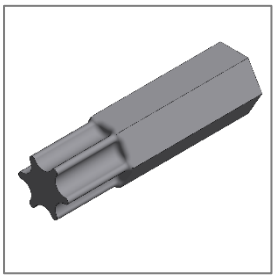
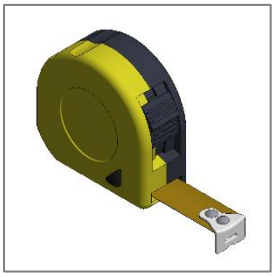
Required tools for installing ValkAce on pitched roofs with tiles

Cordless drill

Socket 13mm

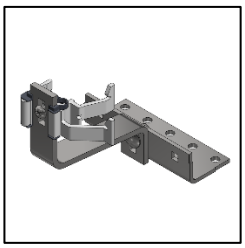


Torx bit T-30
(789530)

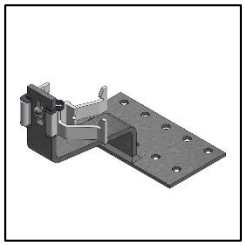


Measuring tape

Materials for installing ValkAce on pitched roofs with tiles

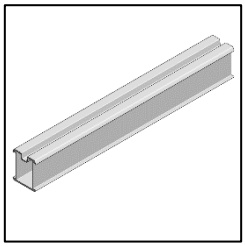


Strongline roof hook ValkAce
747506



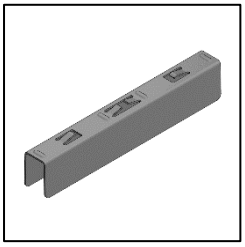
Strongline Heavy Duty ValkAce
747504

Ss torx-screw 5,5x58mm
773360

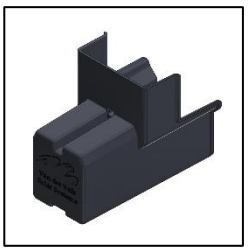


Aluminium ValkAce profile
(7019…..*)
*see table

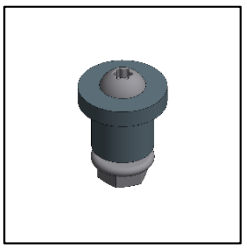
Profile length	Art no.
1210 mm	701901210
2350 mm	701902350
3500 mm	701903500
4650 mm	701904650
5800 mm	701905800



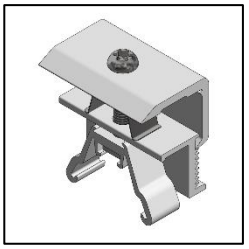
Coupling piece ValkAce profile
749502



Plastic end cap for ValkAce profile
739060

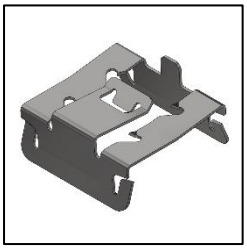


Plastic panel alignment pins
733020

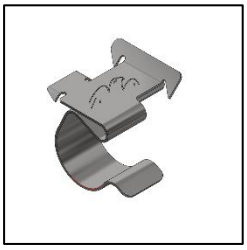


Aluminium end clamp ValkAce 25-40mm
721412 - Blank
721412ZW - Black

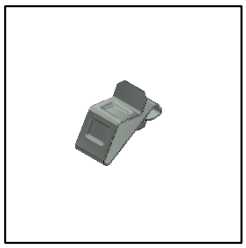
Aluminum mid clamp ValkAce 25-40mm
721410 - Blank
721410ZW - Black



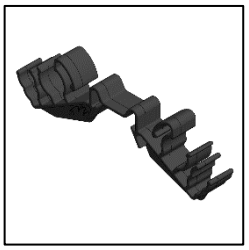
Optimizer clamp for ValkAce profile
739062



Ss. connector clamp
738201



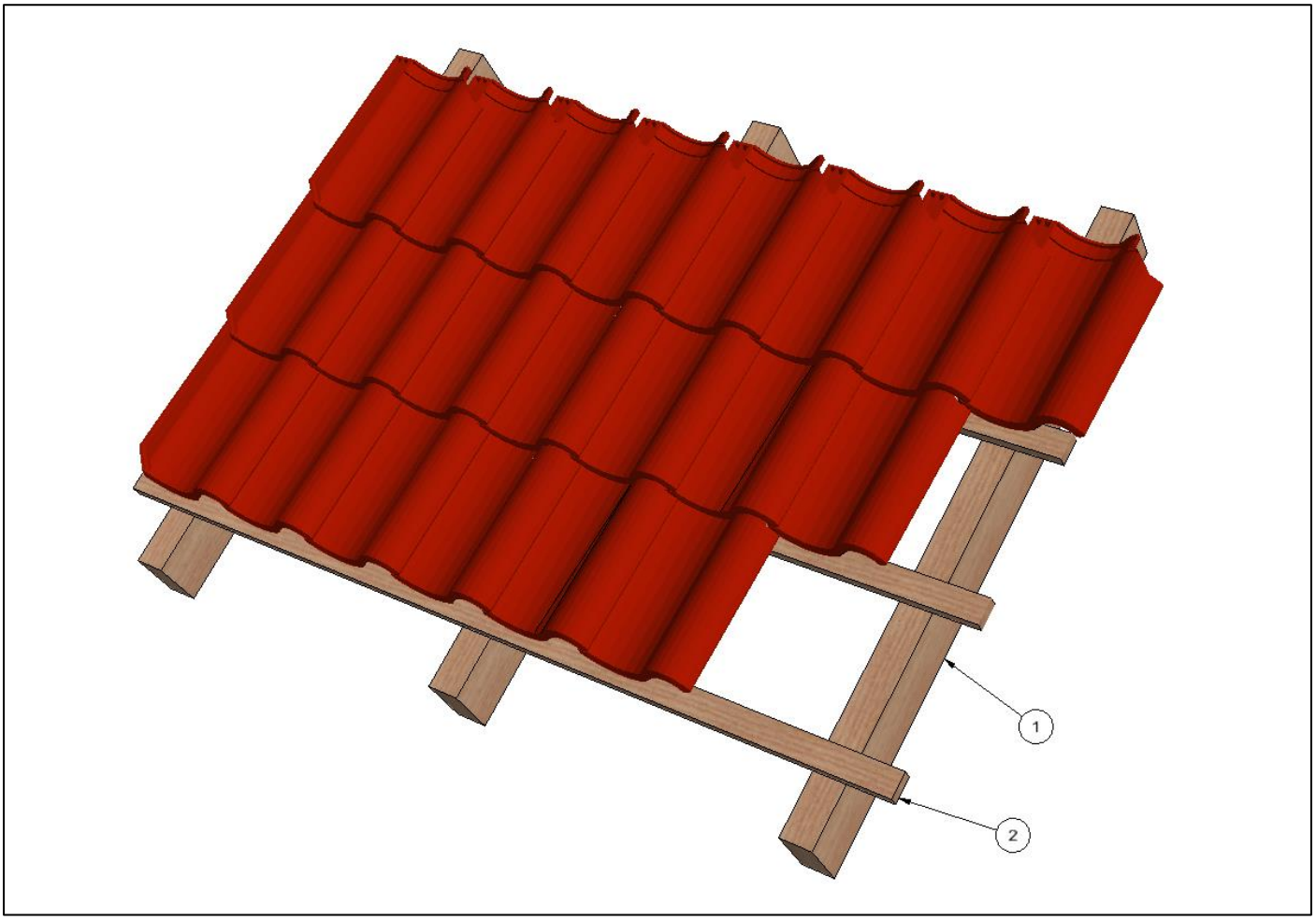
Ss. cable clamp small
732001



Plastic cable clip ValkAce
739061

Overview standard roof structure

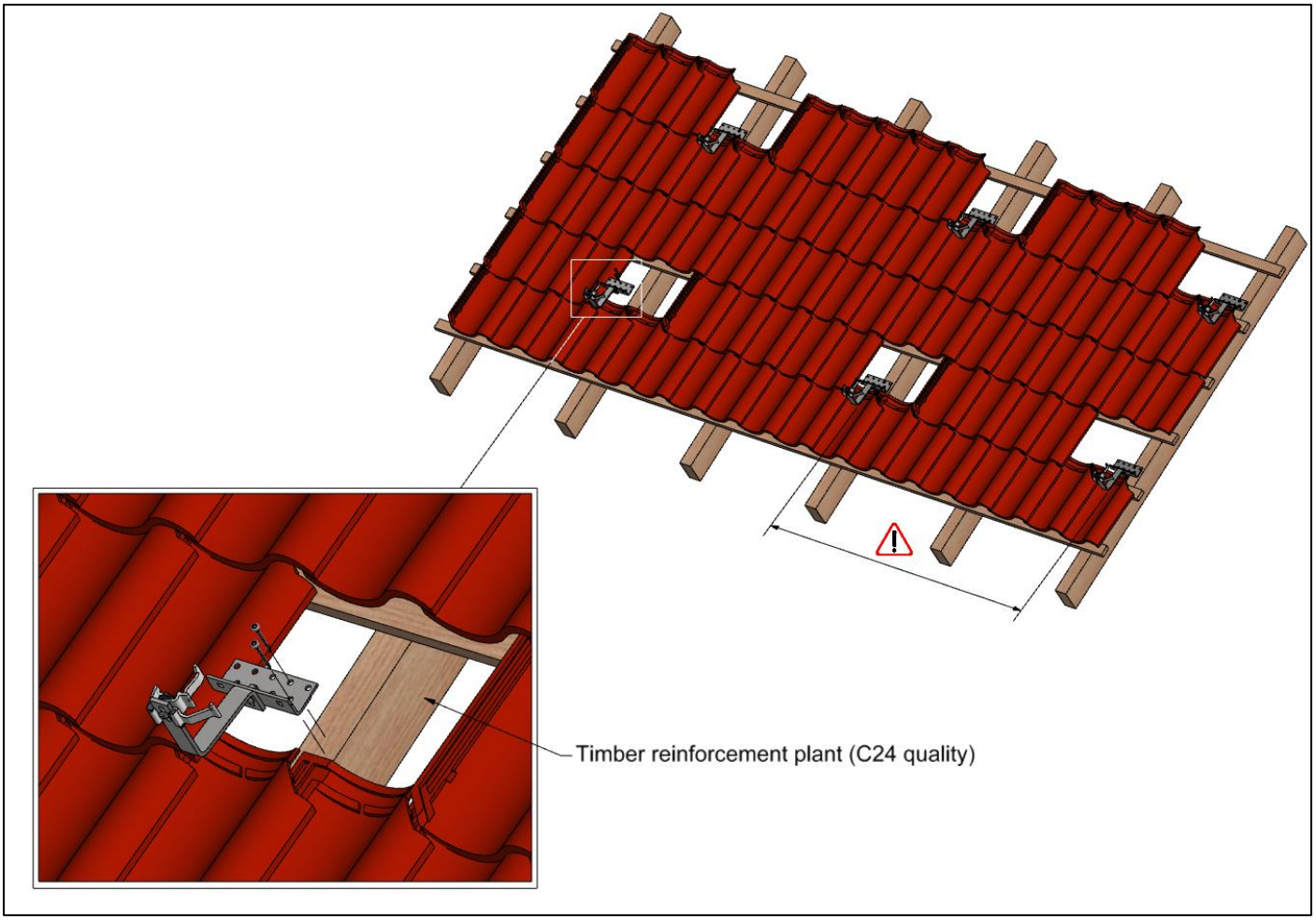
The ValkAce mounting system is to be mounted on a standard pitched roof with roof tiles. In this manual some parts of the roof structure are mentioned. In the image below, these parts are highlighted.



1) Rafters
   The rafters are holding the layers on the roof together. The rafters are fixed through the roof boarding into the purlins. On the rafters the battens are mounted.
2) Battens
   The battens are fixed on the rafters. The battens are used as support and fixation for the roof tiles.

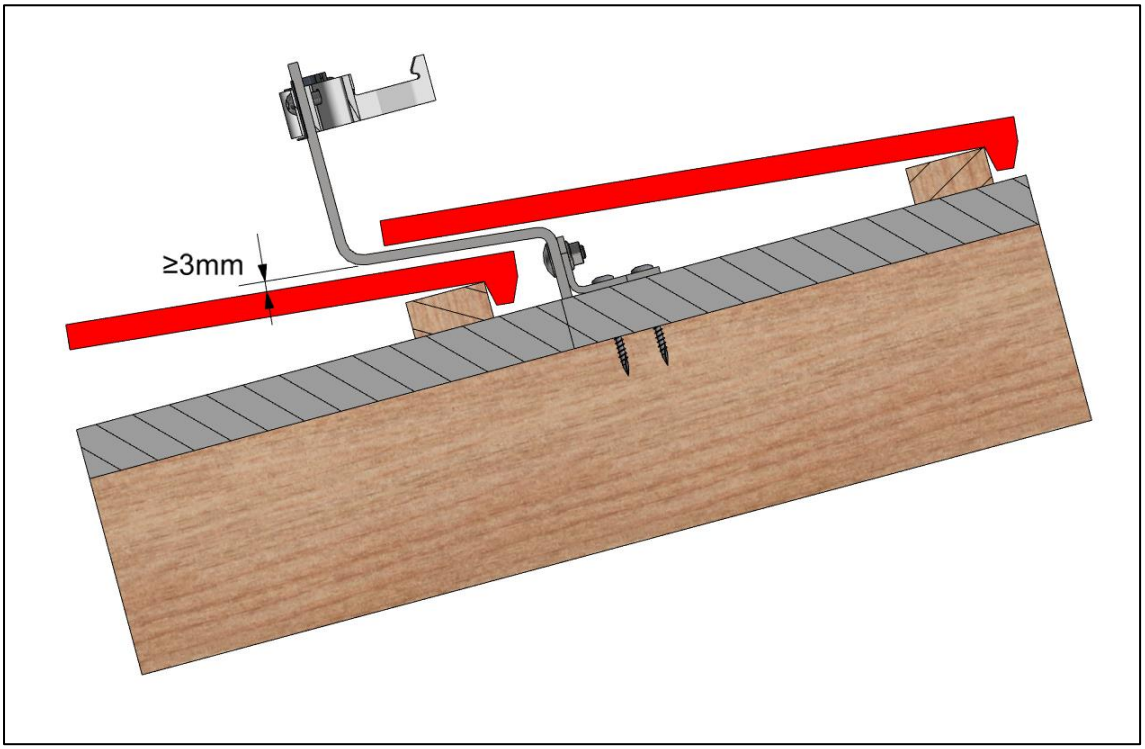
Mounting Strongline (Heavy Duty) roof hook ValkAce

The Strongline (Heavy Duty) roof hook ValkAce is mounted on the purlins of the roof. Use the holes of the mounting plate and the adjustable position of the hook to place the hook in the correct position. The Strongline (Heavy Duty) roof hook must be fixed with 2 screws at minimum.



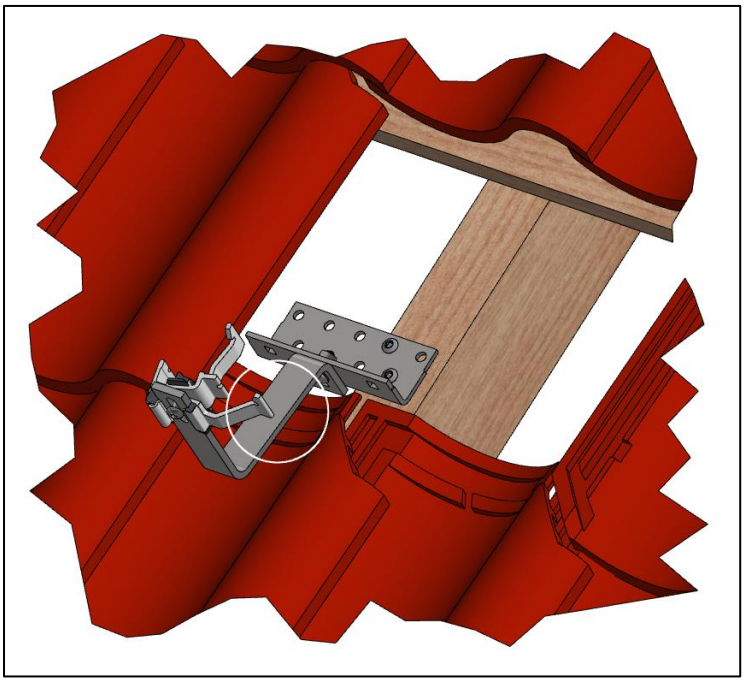
Check the ValkPVplanner project report for the required amount of roof hooks and maximum distance between the roof hooks.

It is important that the roof hooks have a 3mm clearance from the roof tile. This prevents the roof tile from breaking under heavy loads (see image below).



Cutting the roof tile

In case the 3mm clearance is not achieved with the mounting of the Strongline roof hook some of the roof tiles should be cut away. Use a grinding wheel to make the 3mm clearance for the roof hook by cutting away the top of the roof tile.

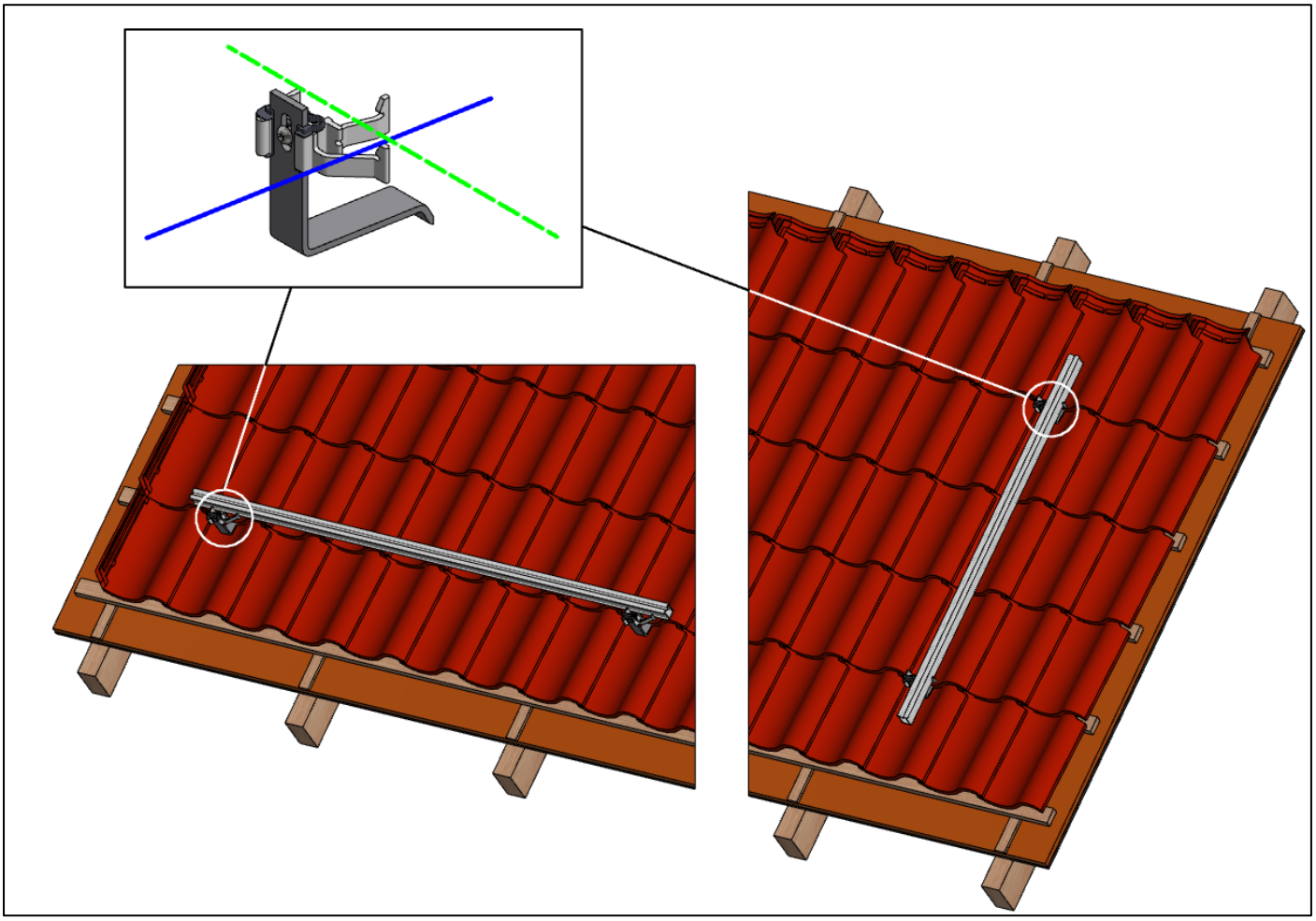


To maintain the weathertightness of the roof, it is important the roof hook does not increase the gap between the overlapping tiles. To prevent this, the underside of the overlapping tile that is in contact with the roof hook should be slightly cut away to provide room, in case this is required.

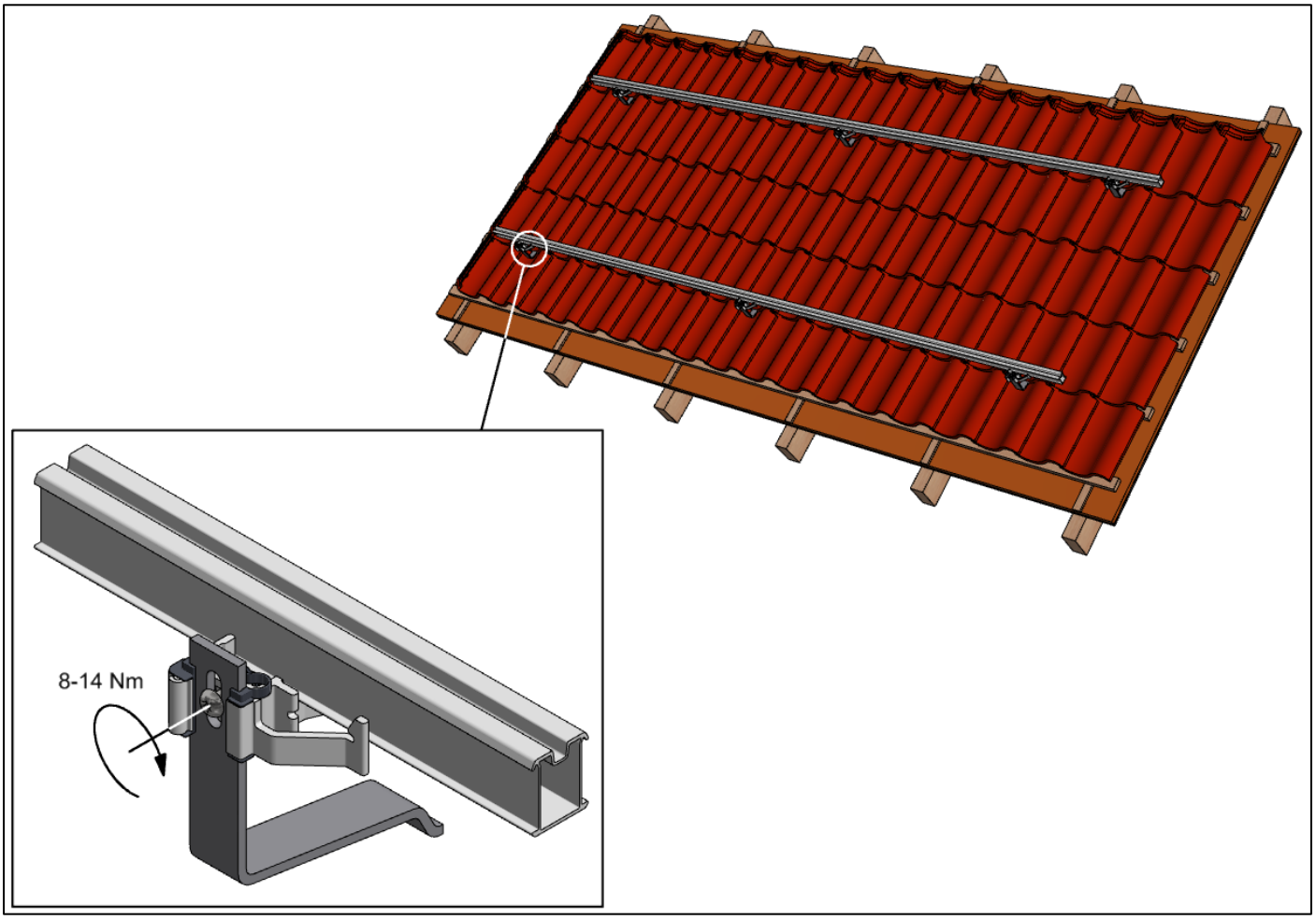
Mounting aluminium ValkAce profiles

Once the roof hooks are mounted the ValkAce profiles can be placed. The profiles are placed in the aluminium brackets of the roof hooks. It possible to place the profiles in horizontal or vertical direction. When the profile is in the right position it can be fixed in the bracket by tightening the bolt on the underside of the roof hook (use Torx T30).

Full line (Blue) - Vertically placed profile
Dashed line (Green) - Horizontally placed profile



Once the profile is properly aligned the bolts on the underside of the remaining roof hooks can be tightened (8-14 Nm). The profile is then fixed in the aluminium brackets.

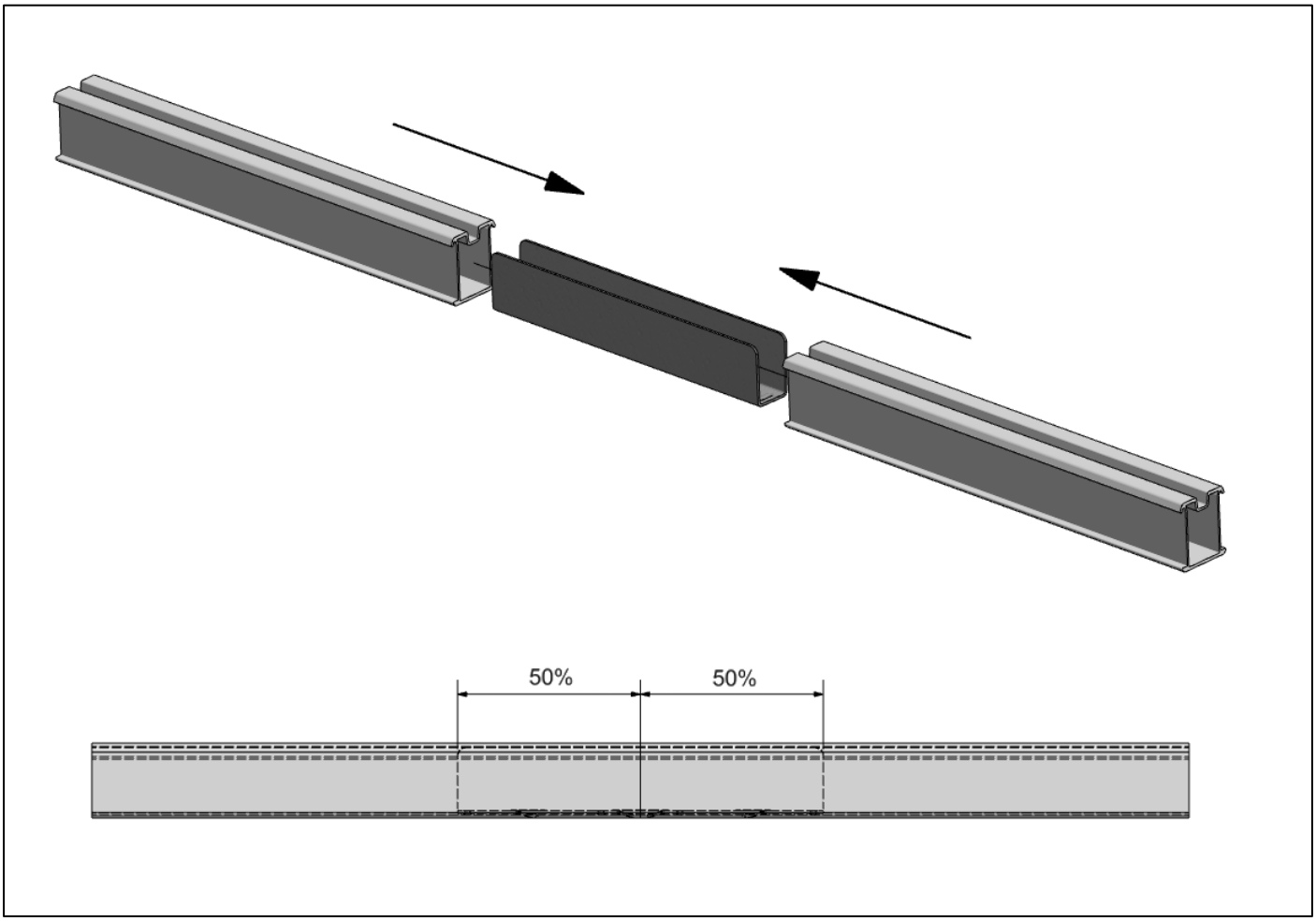


Dilatations

The coupled system has to be dilatated after certain measurements, this needs to be done because of the thermal expansion/contraction. For the aluminium profiles this measurement is 30 meters. The minimal dilatation distance between the profiles is 15 centimetre.

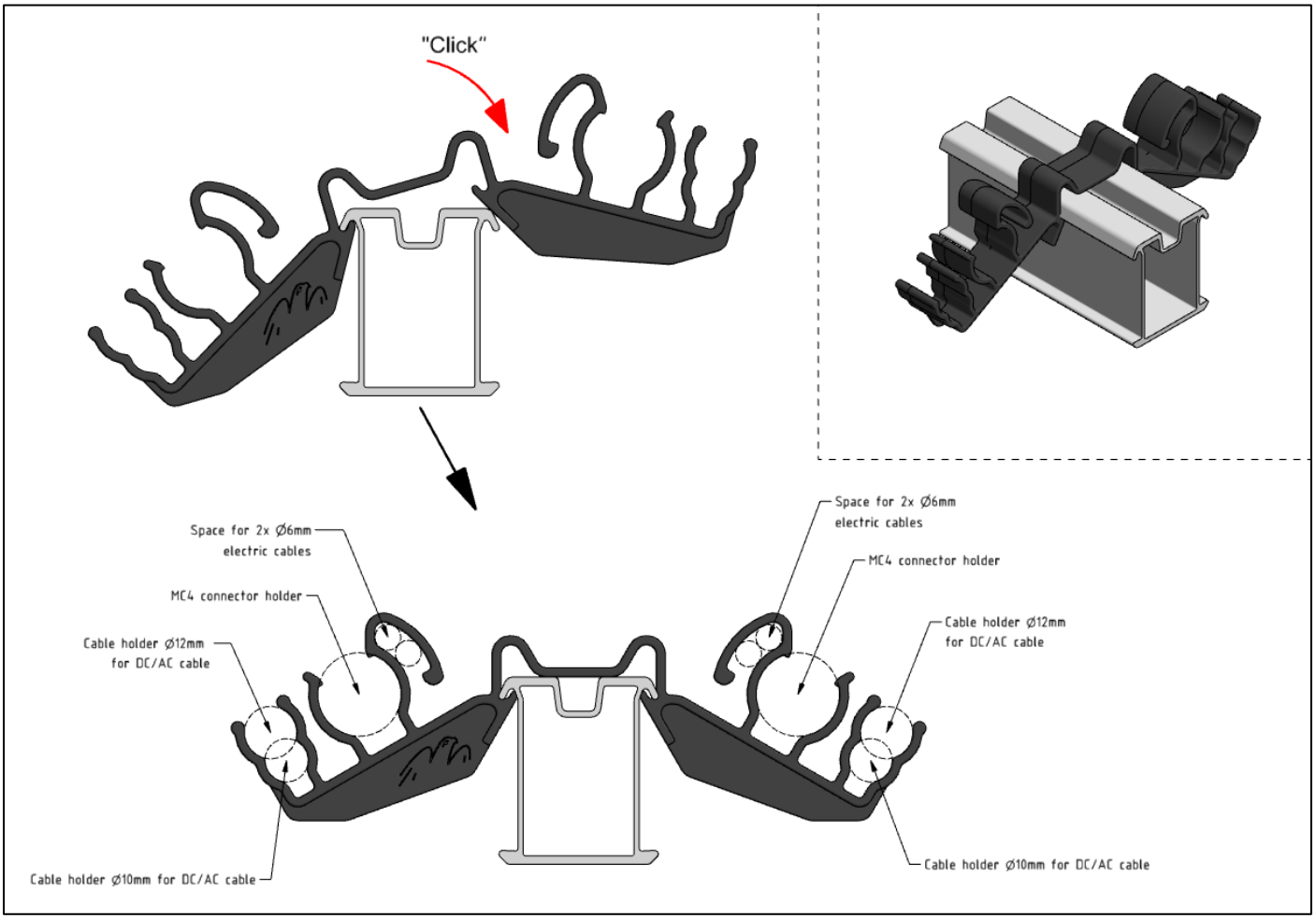
Coupling aluminium ValkAce profiles

The ValkAce profiles can be coupled using the steel coupling piece (749502). The coupling piece can be placed in both ends of the profiles to connect the profiles together. The coupling piece is provided with a stop at the bottom, so that the coupling piece is evenly distributed over both profiles for maximum strength.



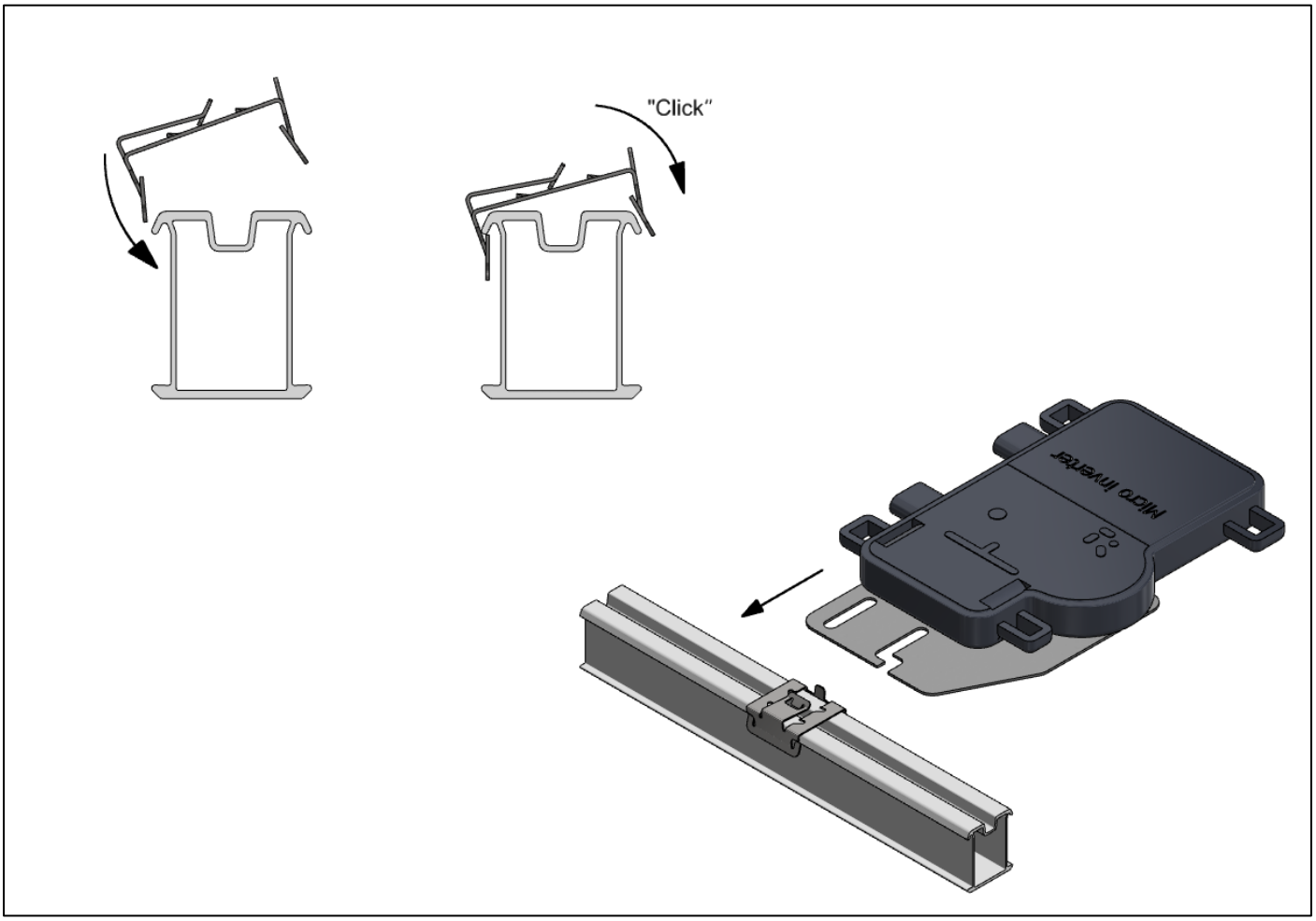
Mounting cable clips ValkAce

The special ValkAce cable mounting clip (739061) can be used for safe and neat fixing, guiding and hiding of cables and connectors. These can be easily attached to the ValkAce profile in any position.



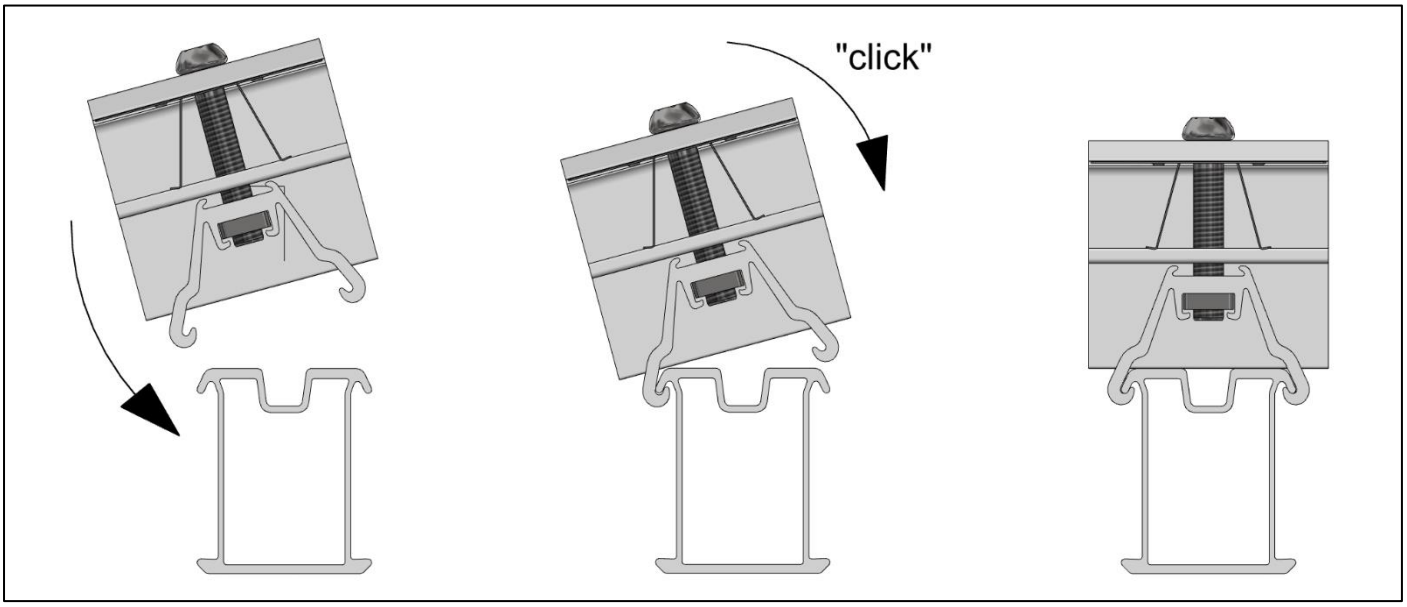
Mounting van micro inverters

Micro inverters can be quickly and easily attached to the profile by means of special stainless steel clips (739062). The clips can be clicked onto the profile, after which the mounting plate of the micro inverter can be slid under the clip.

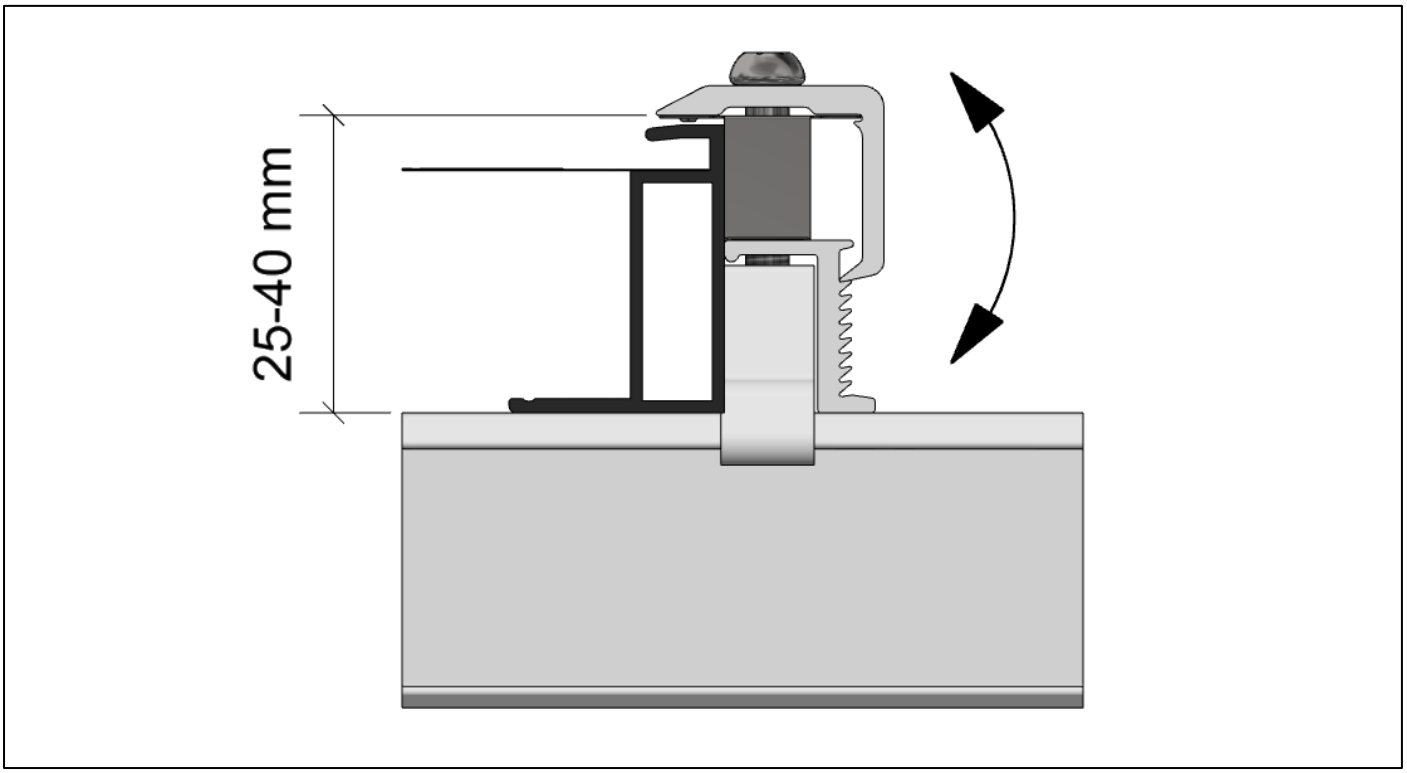


Mounting panel clamps (end) ValkAce

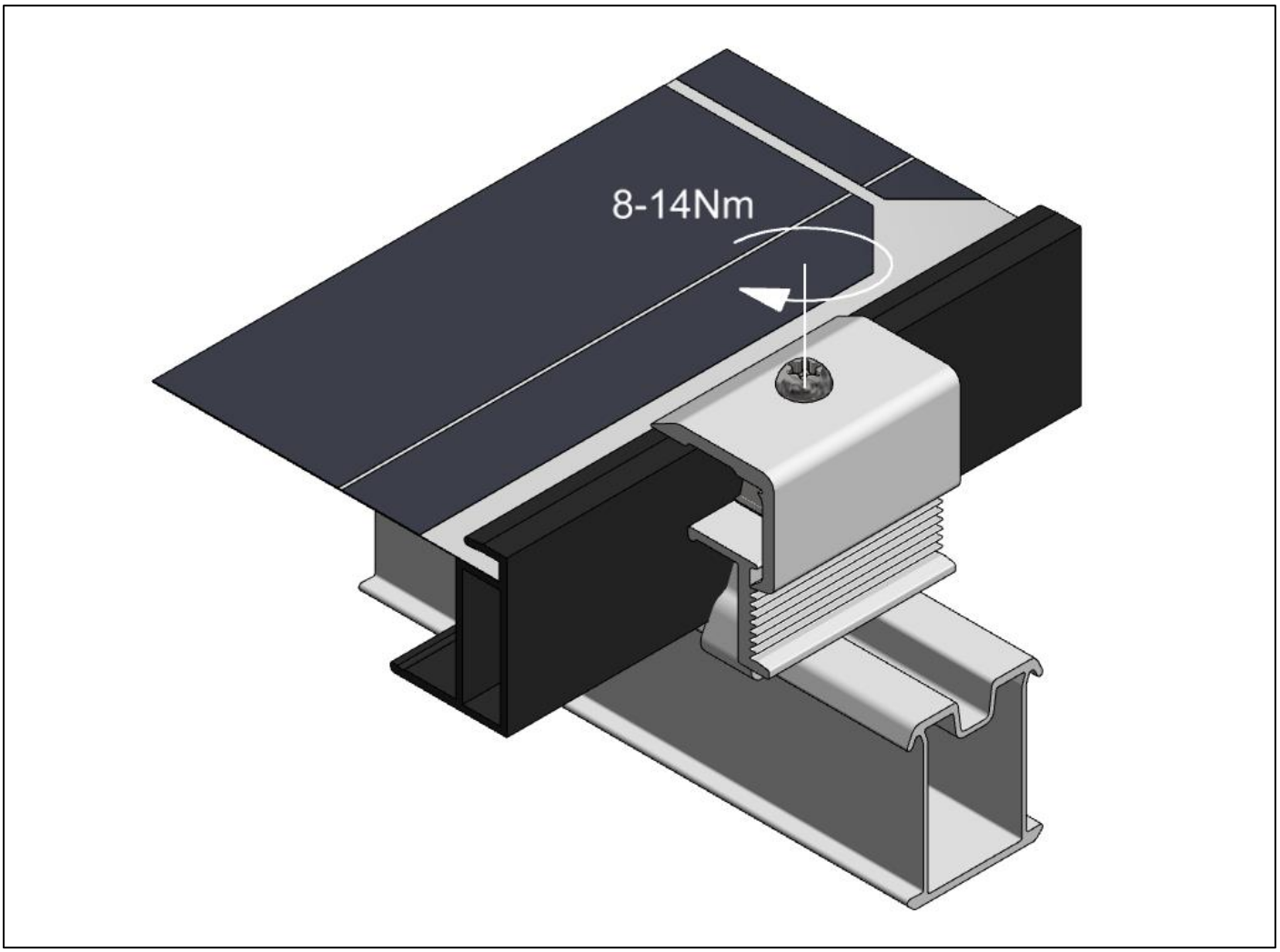
Each end of the panel row is fixed by the end clamps (721412). The end clamps can be easily clicked onto the profile. The end clamps have a range for the panel frame thickness of 25-40 mm.



Set the end clamp to the correct height by placing the top plate in the slot corresponding with the panel frame thickness. See image below.



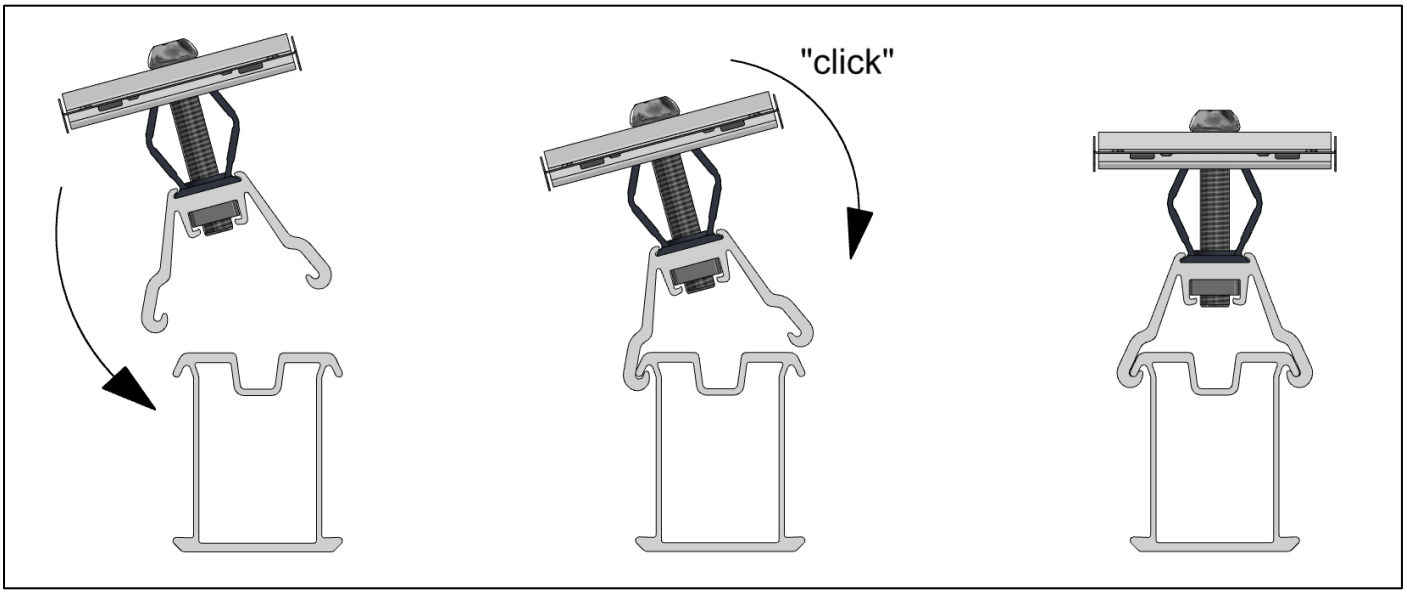
Fix the clamp with the bolt (Torx T30) at torque 8-14 Nm.



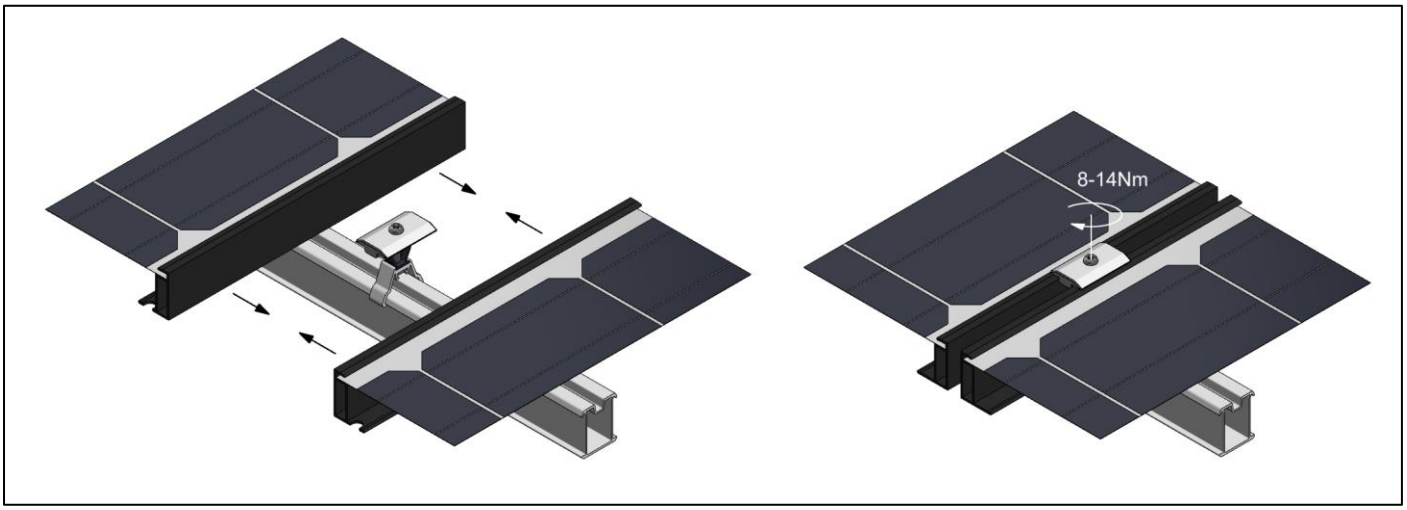
Mounting panel clamps (middle) ValkAce

The middle clamps are mounted the same way as the end clamps, only the height of the clamp is not set to a certain height.

Click the middle clamp onto the profile and place the panel frames against the clamp.

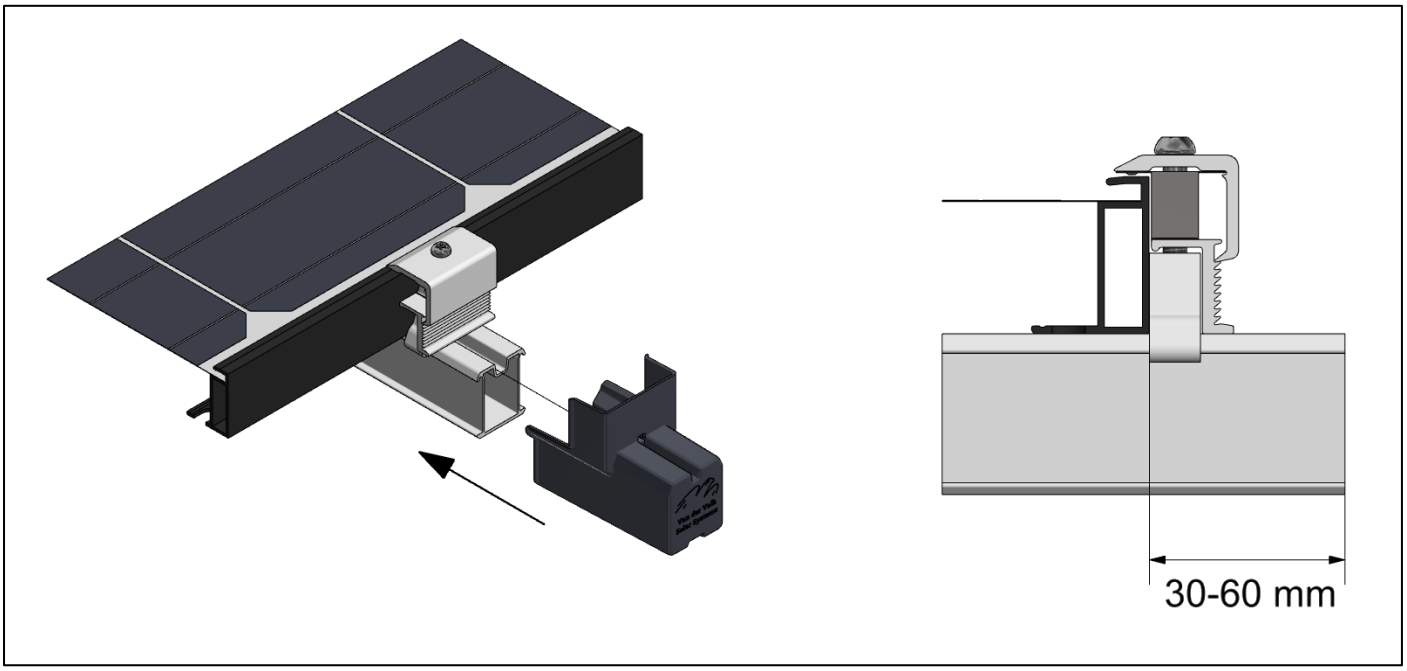


Once the panels and middle clamps are correctly in place, fix with the bolt (Torx T30) (torque 8-14 Nm)



Mounting end caps ValkAce

The end caps ValkAce (729505) are placed over the ends of the aluminium profiles. The end caps cover both the end of the profiles as the sides of end clamps. To mount the end caps properly the profile must have the correct length: the end of the profile must be 30-60mm measured from the side of the panel frame to the end of the profile.

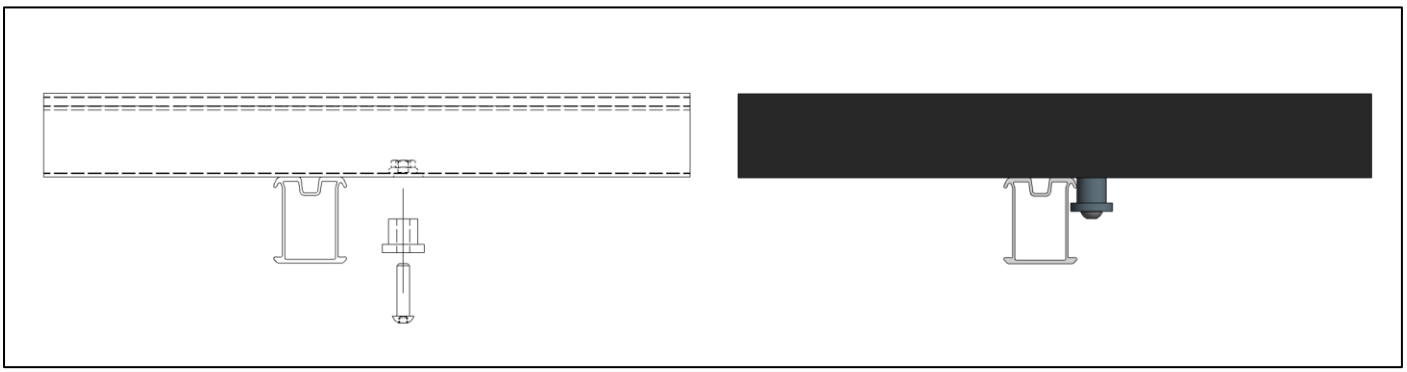


Mounting of additional components

Van der Valk Solar Systems for pitched roofs offers an extensive range of components that make installation and use easier and even better. A selection of these components are shown below.

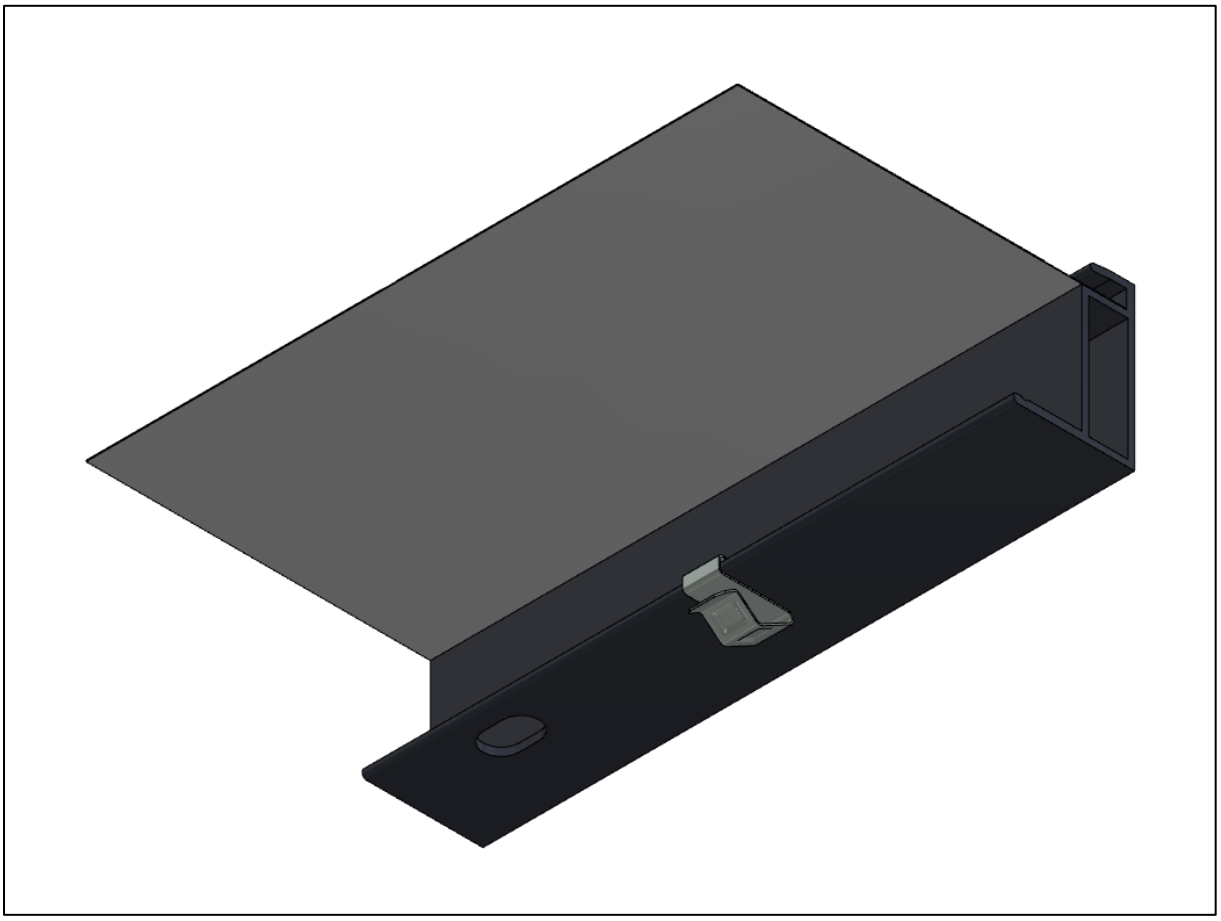
Panel alignment pin (733020)

The panel alignment pins can be used only for installations where the mounting profiles are placed in horizontal direction. The panel alignment pins are to be pre-mounted to the panel frame (two per panel). Once the alignment pins are in place, the solar panel can rest on the aluminium profile during installation. This ensures both hands are free to fasten the panel clamps, without the need to keep the panel in place at the same time.



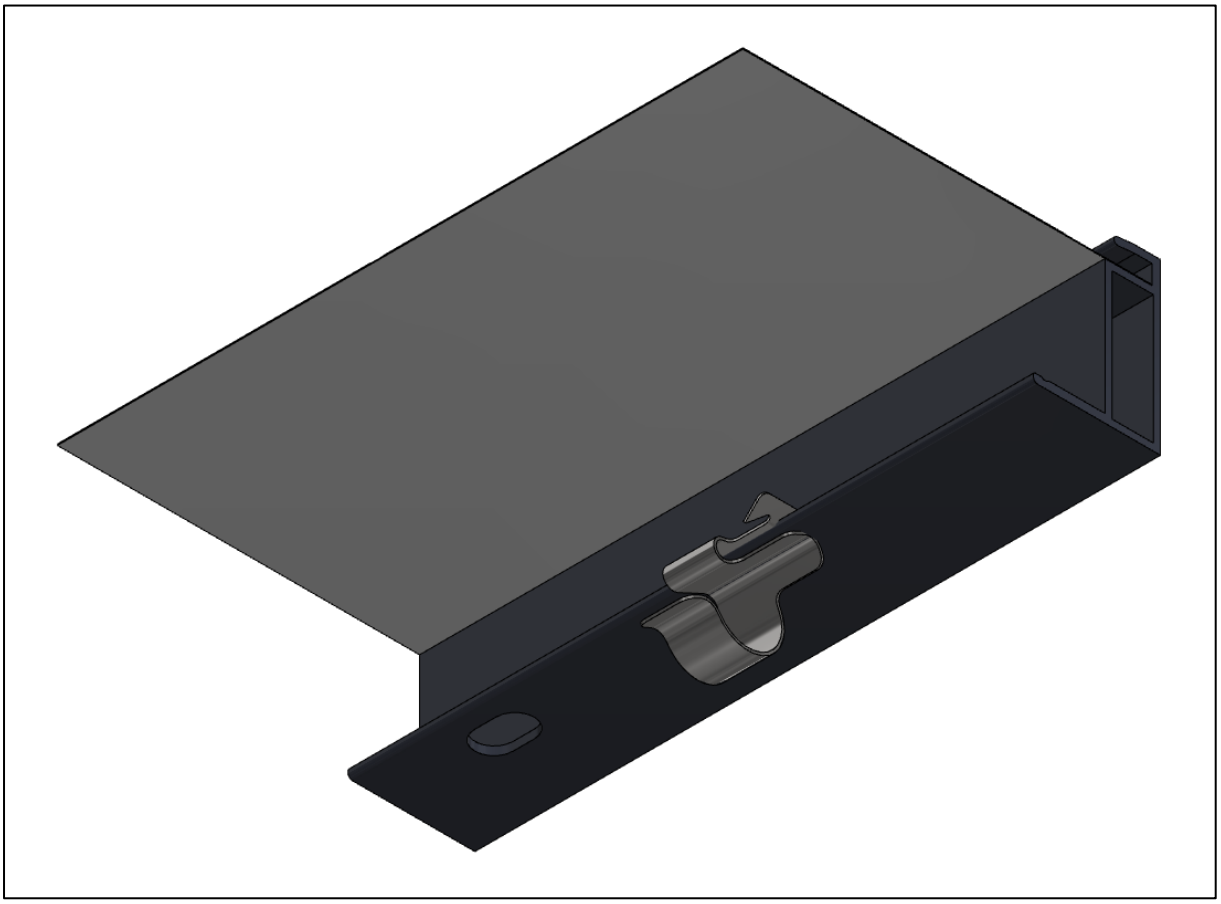
Ss. cable clamp small (732001)

This cable clamp can be mounted to frame on the underside of the solar panel. The cable clamp can hold 1 DC-cable.



Ss. connector clamp (738201)

This cable clamp can be mounted to frame on the underside of the solar panel. Unique about this clamp is that it can be mounted in two directions. This enables to hold the connector in the preferred direction for the cables. The connector clamp can hold one MC4 connector.



Van der Valk Solar Systems

Van der Valk Solar Systems is since 2009 one of the fastest growing companies in the solar industry and focuses entirely on the development and production of solar mounting systems for pitched roofs, flat roofs and open fields. Van der Valk Solar Systems also has an office and warehouse in the UK, offices in Sweden and Spain and is currently active in 13 countries.

Our mounting systems are developed and produced in our own factory in the Netherlands and stand out thanks to their broad area of application, the very short time in which they can be installed, and the high quality. They are developed according to the latest Eurocodes and therefore comply with the requirements defined for solar systems by banks and insurance companies.

Van der Valk Solar Systems is part of family-owned company Van der Valk Systemen, which has been a household name in the field of moving systems and mounting components since 1963.

Our shared industrial complex consists of 20,000m2 of offices and factory spaces. Here we use modern machinery and the latest technologies to quickly and accurately develop, manufacture, and test products and systems.

Solar mounting systems & cable management

Flat roofs

Pitched roofs

Ground mount

Cable management

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