

A photograph of a pitched roof with solar panels and roof tiles. The roof is covered with dark grey tiles. Several solar panels are mounted on the roof, and two silver chimneys are visible. The sky is clear blue.

# **Van der Valk Solar Systems B.V.**

**Manual:            Pitched roof - Roof tiles [Clamp]**

Version:    v1.0.1  
Date:        7-2-2020

**VAN DER VALK**



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## Disclaimer

The project report is the result of the use of the online calculation tool of Van der Valk Solar Systems B.V., called the "ValkPVplanner", which project report shows you specific information about your project such as, amongst other, a project drawing and ballast plan for flat roofs (the "Project Report"). This ValkPVplanner and the Project Report(s) derived from this ValkPVplanner are composed with the greatest possible care. Nonetheless, it is possible that some information might not be entirely correct as the results for each Project Report can be based on default values entered into this ValkPVplanner by you, which values always need to be checked and validated by you. The instructions provided in this Project Report must be strictly observed at all times, in addition to and in conjunction with the installation manual provided by us (the "Installation Manual"), and vice versa.

At all times all currently applicable structural, safety and building regulations must be observed when using the ValkPVplanner and/or Installation Manual. The building in question will be subject to a load as a result of the solar mounting system installed/mounted. Solar mounting systems installed on roofs will be exposed to wind and snow. Therefore, you are at all times responsible to obtain and use a design calculation to establish whether or not the building will be able to withstand the (extra) load at all times. Where necessary, modifications need to be made by you. Van der Valk will not accept any form of liability upon you not having obtained and used such a required design calculation.

Flat roof systems should either be attached to the roof or need to be supported by ballast, to make sure that the solar mounting system is unable to be lifted, tipped over or slide. The ballast specified in the Project Report will be vital to ensure that the mounting system can be used. Flat roofs with an angle above 5 degrees must always be attached to the roof itself.

The calculations in the ValkPVplanner do not take into account obstacles in the near surrounding such as, for example, high buildings, cliffs and mountains. Restrictions also apply for the position of the solar mounting system on a roof. The solar panels must be installed at a certain distance from the edge of the roof as shown in the respective Project Report and the Installation Manual.

The standard warranty for pitched roof, flat roof and ground mount systems is 10 years, which can be extended under certain conditions. The guarantee provided is subject to the guarantee conditions stated in the general terms and conditions stipulated by Van der Valk Solar Systems B.V. Our terms and conditions shall apply to all our products at all times and can be found on our website: [www.valksolarsystems.nl](http://www.valksolarsystems.nl)

Van der Valk Solar Systems B.V. does not accept any liability for any direct and/or indirect consequences of any act (or omission) ensuing from the information in or failure to observe the instructions provided in the Project Report and/or the Installation Manual and for possible incorrect results resulting from the use of this ValkPVplanner which was made available to you. The use of the ValkPVplanner, the derived Project Report and the Installation Manual will at all times be subject to Dutch law.

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## Please note

- This manual is not project specific.
- This manual is not legally binding.
- No right may be derived from this manual.
- Use this manual in combination with the ValkPVplanner project report.
- Check 'Datasheet Cable management' for cable suggestions.
- The system can be placed both in the middle zone and the edges/corners of the roof.
- De aluminium parts of the mounting system can be sharp at the edges, the use of safety gloves is recommended

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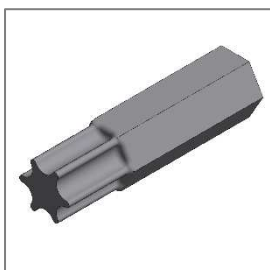
## Required tools for installing Pitched roof - Roof tiles [Clamp]



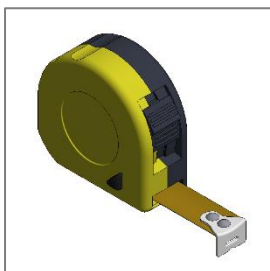
Cordless drill



Socket 13mm



Torx bit T-30  
(789530)

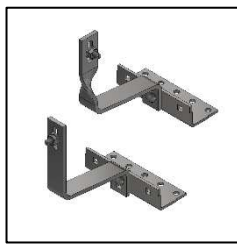


Measuring tape

## Materials for installing Pitched roof - Roof tiles [Clamp]



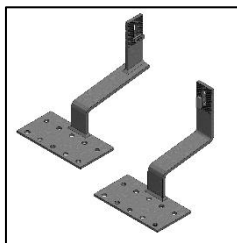
Smartline roof hook  
(747831) - standard  
(747832) - twist



Strongline roof hook  
(747844) - standard  
(747845) - twist



Construction wood 730mm  
(75400730)



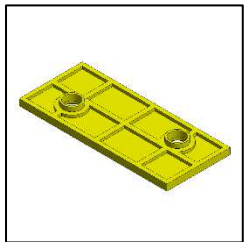
Strongline Heavy Duty roof  
hook  
(747838) - standard  
(747839) - twist



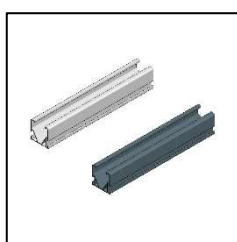
Ss torx-screw 5,5x38mm  
(773840)



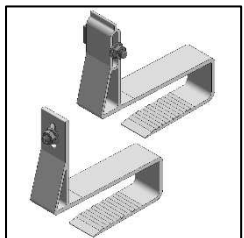
Ss torx-screw 5,5x58mm  
(773360)



Plastic shim 3mm for  
Smartline roof hook  
(739003)

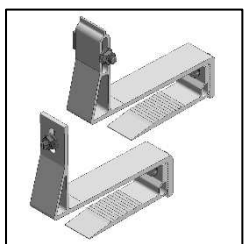


Aluminium side++ profile  
(7017....\*)  
\*see table

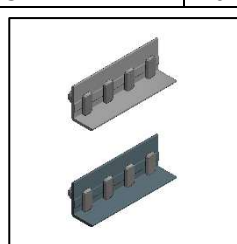


Fixed Slimline roof hook  
(729530) - standard  
(729531) - twist

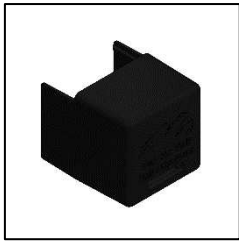
| Profile length | Art no. Blank profile | Art no. Black profile |
|----------------|-----------------------|-----------------------|
| 1086 mm        | 701701086             | 701701086ZW           |
| 2113 mm        | 701702113             | 701702113ZW           |
| 3140 mm        | 701703140             | 701703140ZW           |
| 4167 mm        | 701704167             | 701704167ZW           |
| 5194 mm        | 701705194             | 701705194ZW           |
| 6347 mm        | 701706347             | 701706347ZW           |



Adjustable Slimline roof hook  
(729540) - standard  
(729541) - twist



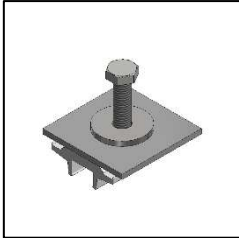
Coupling piece side++ profile  
(724863) - Blank  
(724863ZW) - Black



Plastic end cap for side++ profile  
(739052)



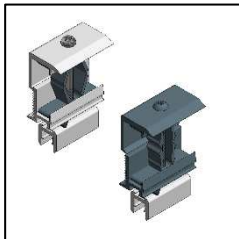
Ss cable clamp large  
(732005)



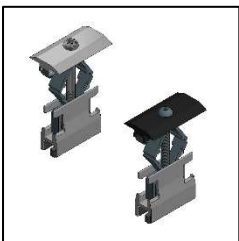
Optimizer clamp for side++  
profile  
(774223)



Plastic panel alignment pins  
(733020)



Aluminium end clamp 28-50mm  
(721552) - Blank  
(721552ZW) - Black



Aluminum mid clamp 28-50mm  
(721550) - Blank  
(721550ZW) - Black

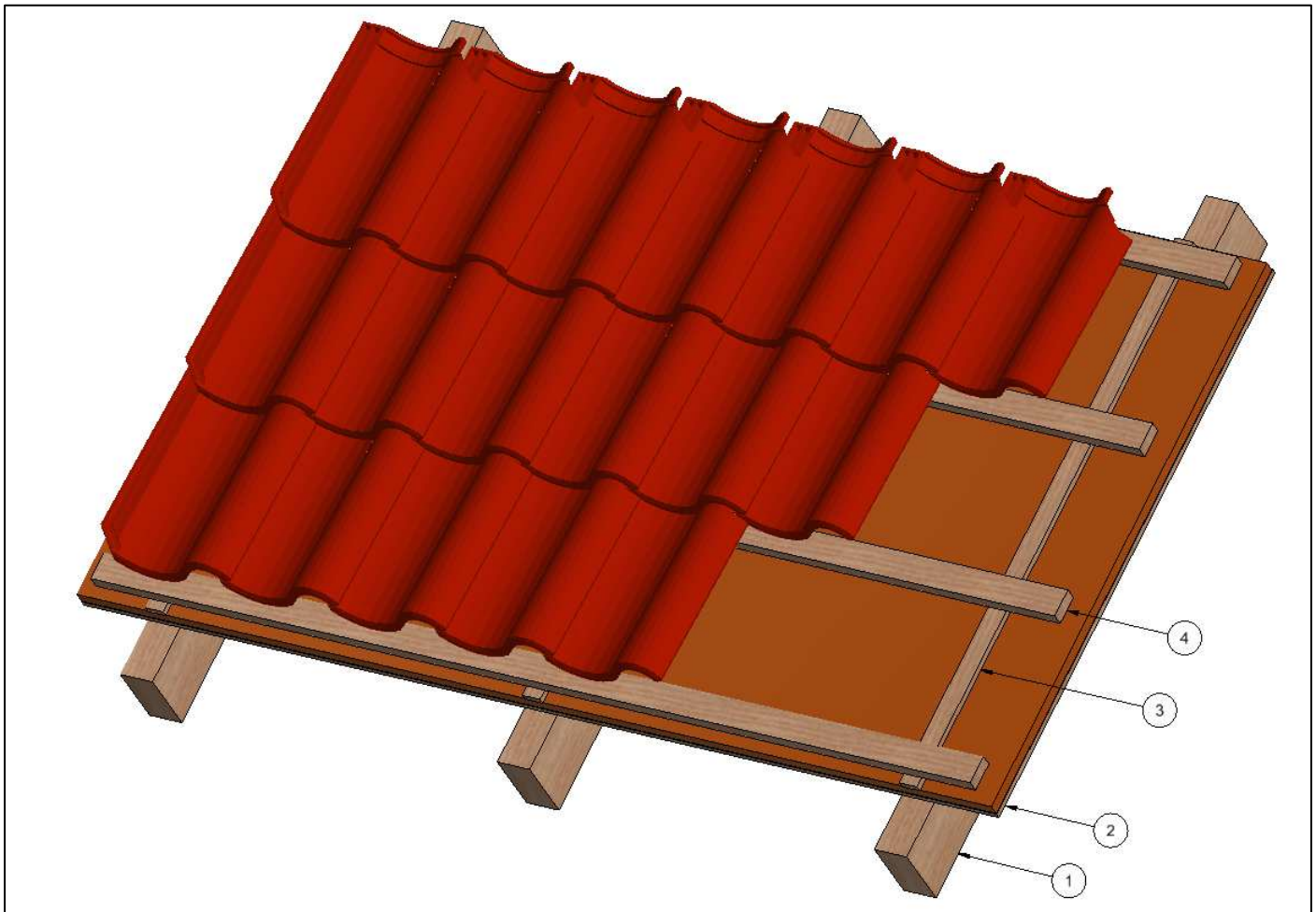


Ss cable clamp small  
(732001)

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## Overview standard roof structure

The mounting system in this manual will be mounted on a standard roof with roof tiles. In the manual some of the parts of the roof structure are mentioned. In the image down below you can find the names of each part that is being mentioned in the manual.

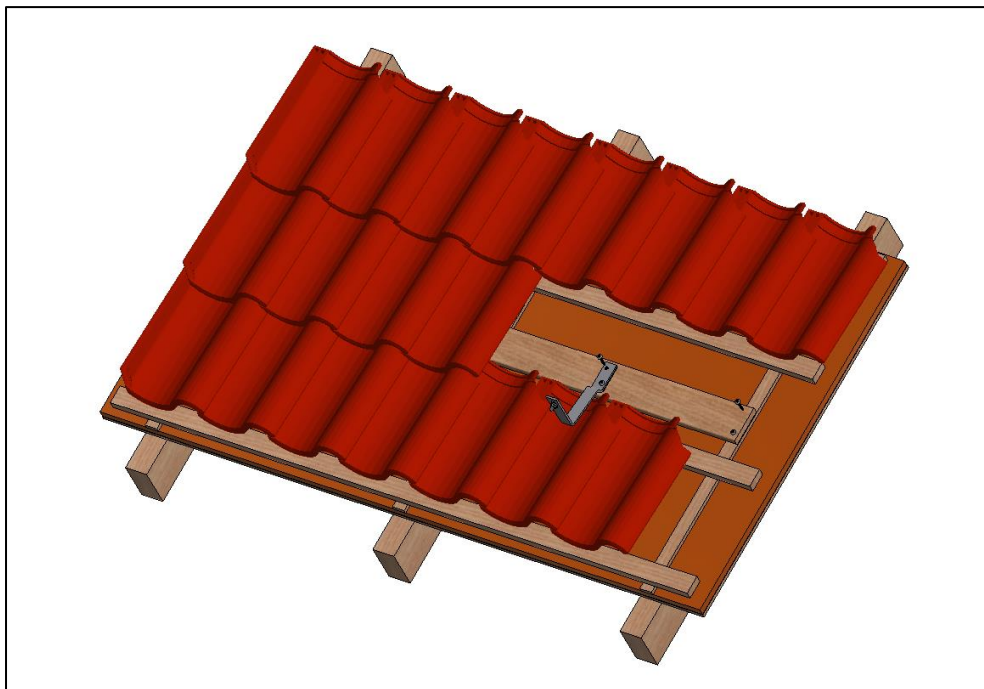


- 1) Purlins  
The purlins are the structural beams that supply the strength and shape of the building.
- 2) Roof boarding  
The roof boarding is the waterproof layer of the roof. Most of the times the roof boarding is also provided with insulation.
- 3) Rafters  
The rafters are connecting all other part of the roof together. The rafters are fixed through the roof boarding to the purlins. On the rafters the battens are mounted.
- 4) Battens  
The battens are fixed on the rafters. The battens are used as support for the roof tiles.

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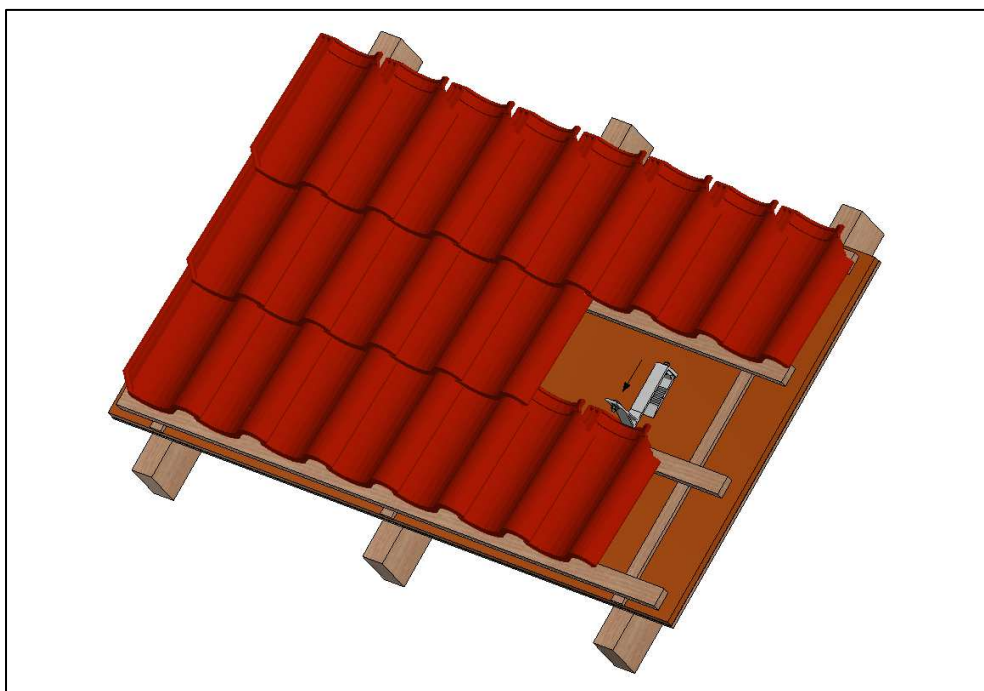
## Overview roof hooks

### Smartline roof hook



The smartline roof hook is used in combination with the wooden plank. The wooden plank is mounted on the purlins of the roof, the Smartline is then mounted on the plank.

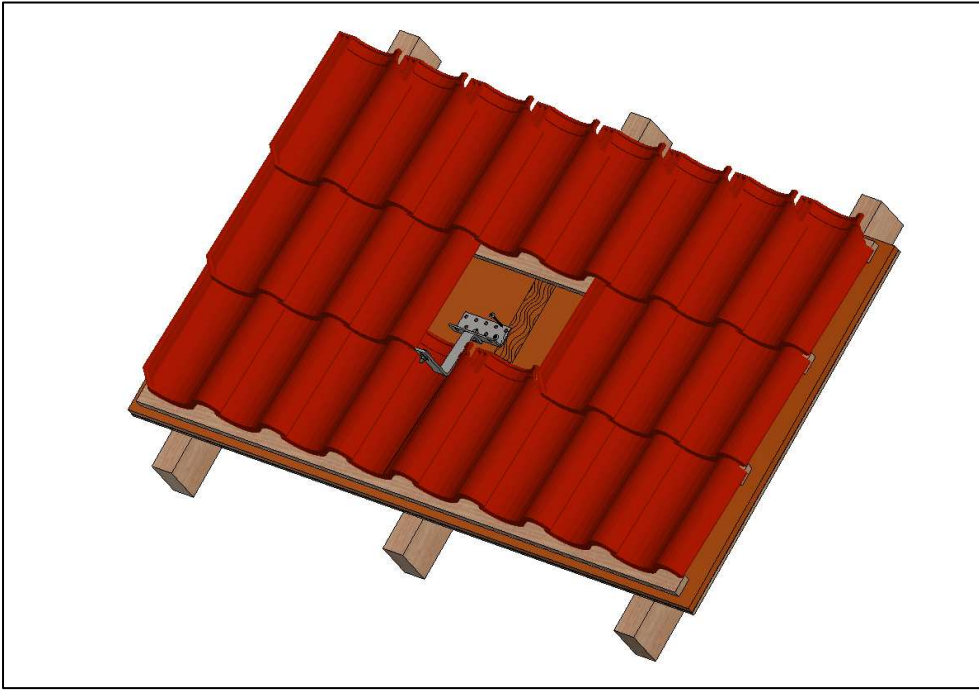
### Slimline roof hook



The Slimline roof hook is not fixed with screws. It is simply placed over the roof tile and rafters. Because the roof hook is not 'fixed' the mounting is much faster, but the strength in comparison to the other hooks is less.

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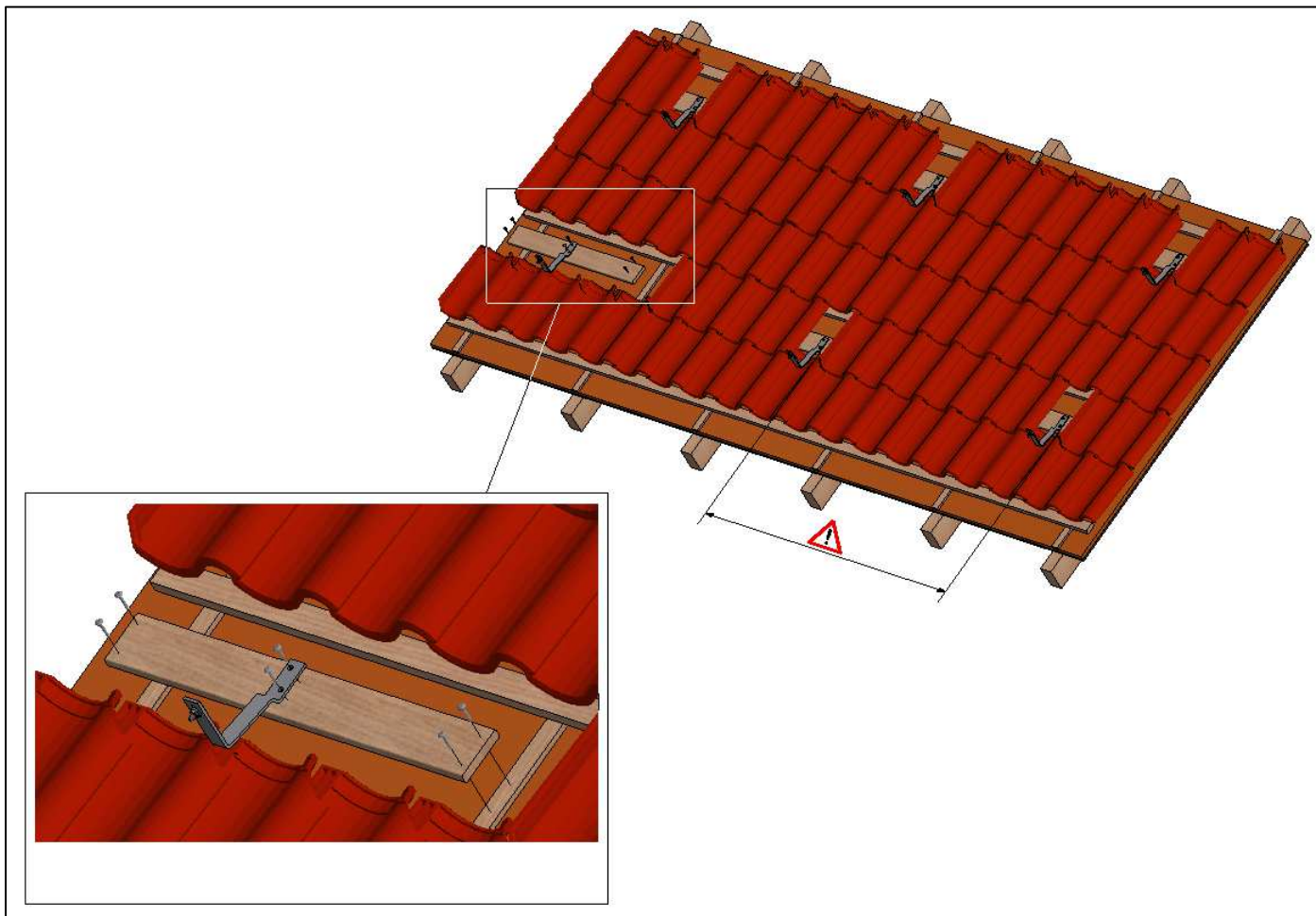
### Strongline (Heavy Duty) roof hook



The strongline roof hooks are fixed on the purlins of the roof. The mounting plate has multiple holes for the screws. The standard strongline hook has 3 adjustable options available.

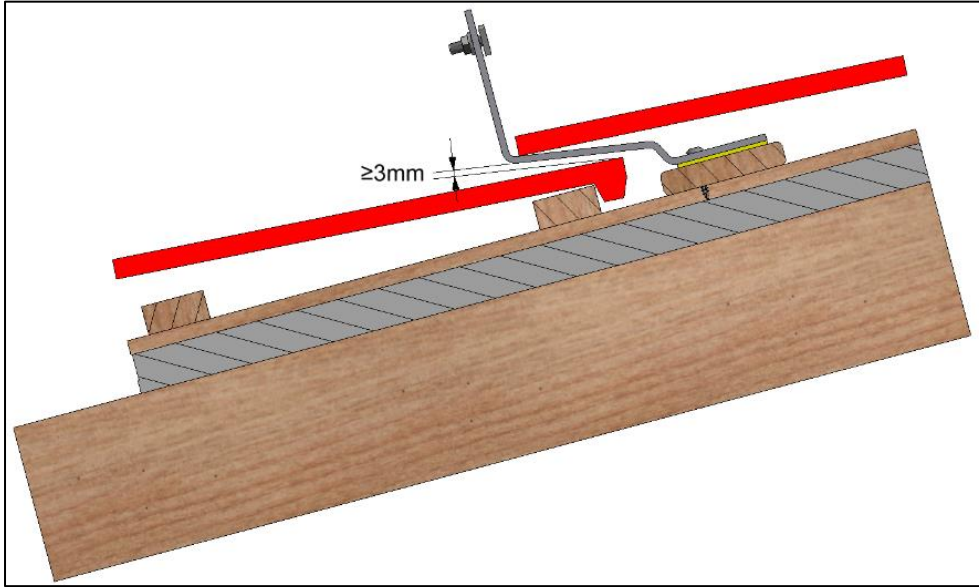
## Mounting Smartline roof hook

Fix the wooden planks over the rafters with at least 4 screws. The roof hook is placed on the wooden plank with the same screws. Make sure the roof hook are aligned properly so the profile can be mounted correct at all times.



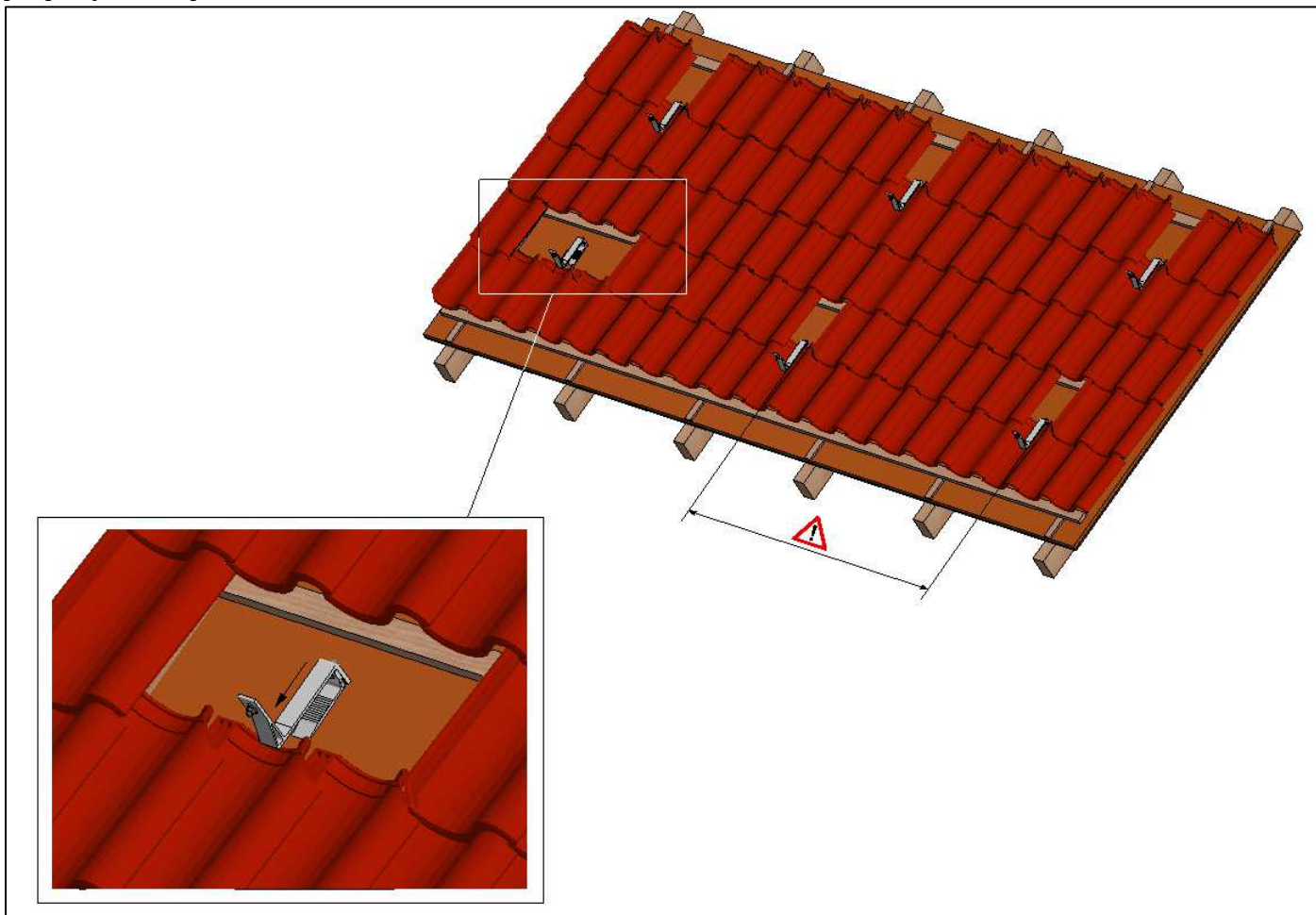
Check the outcome of the calculation for the maximum distance between the roof hooks and the required amount per profile.

It is important that the roof hooks have a 3mm clearance from the roof tile. If this is not the case the roof hook can be lifted by using the plastic yellow plates. (see image below)



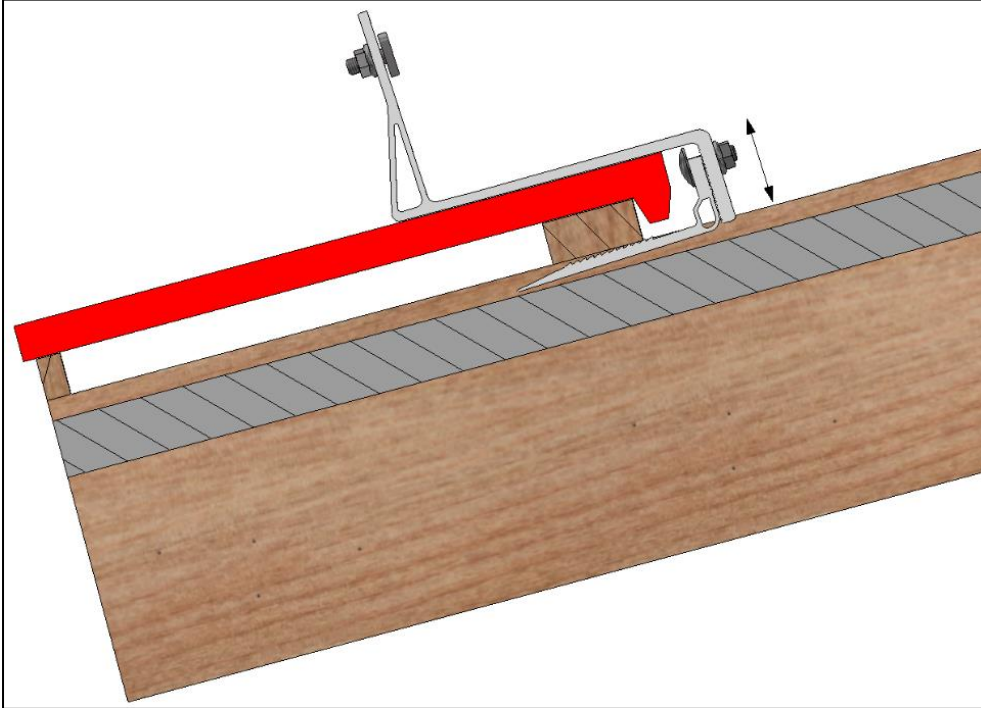
## Mounting Slimline roof hook

The Slimline roof hooks are placed over the roof tile and its battens. When using the adjustable hooks make sure the roof hook is set to the correct height (see image next page). Make sure the roof hook are aligned properly so the profile can be mounted correct at all times.



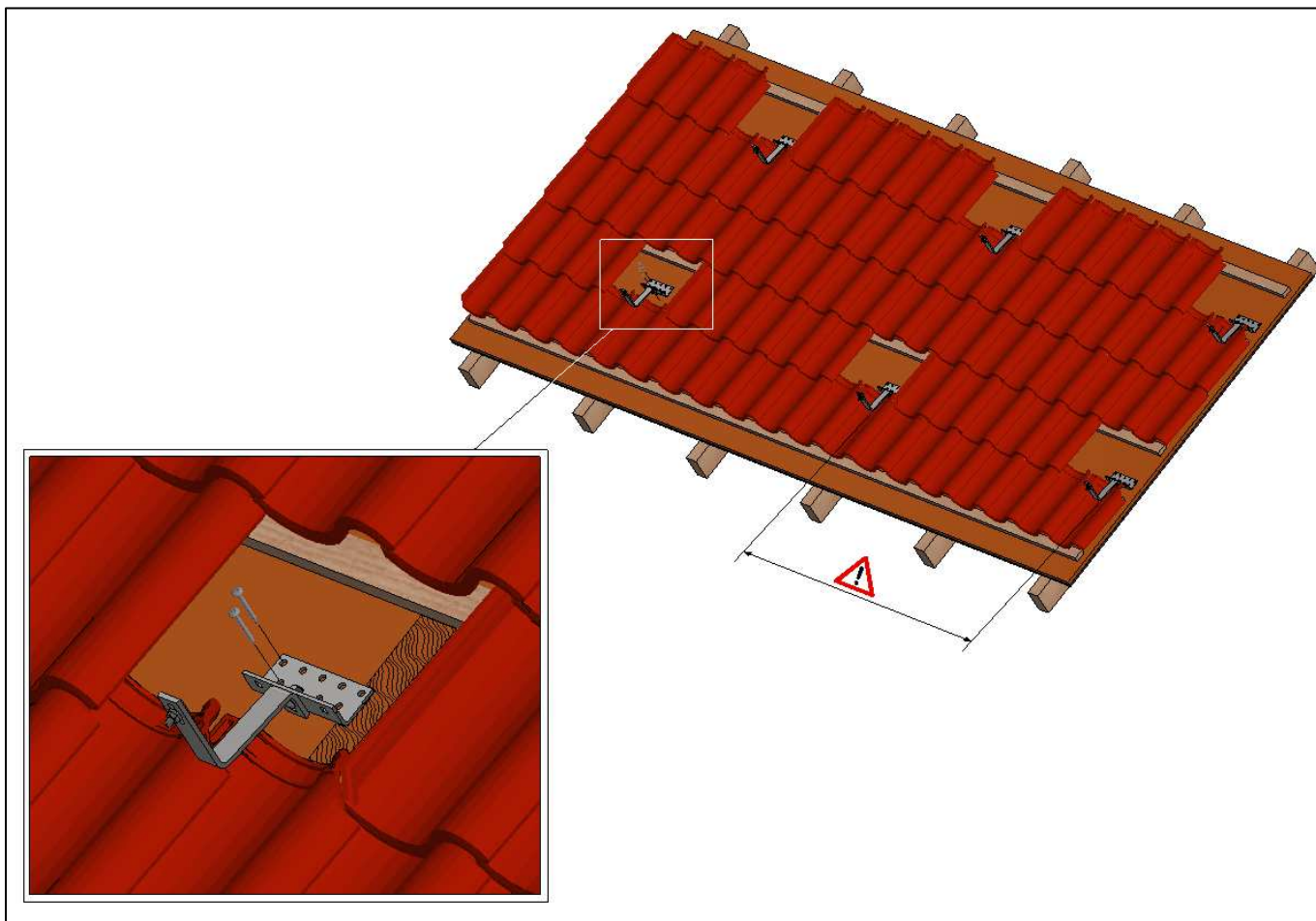
Check the outcome of the calculation for the maximum distance between the roof hooks and the required amount per profile.

The adjustable roof hook can be set changed to different dimensions. Make sure the roof hook cannot come of the battens easily, if it does lower the range of the roof hook.



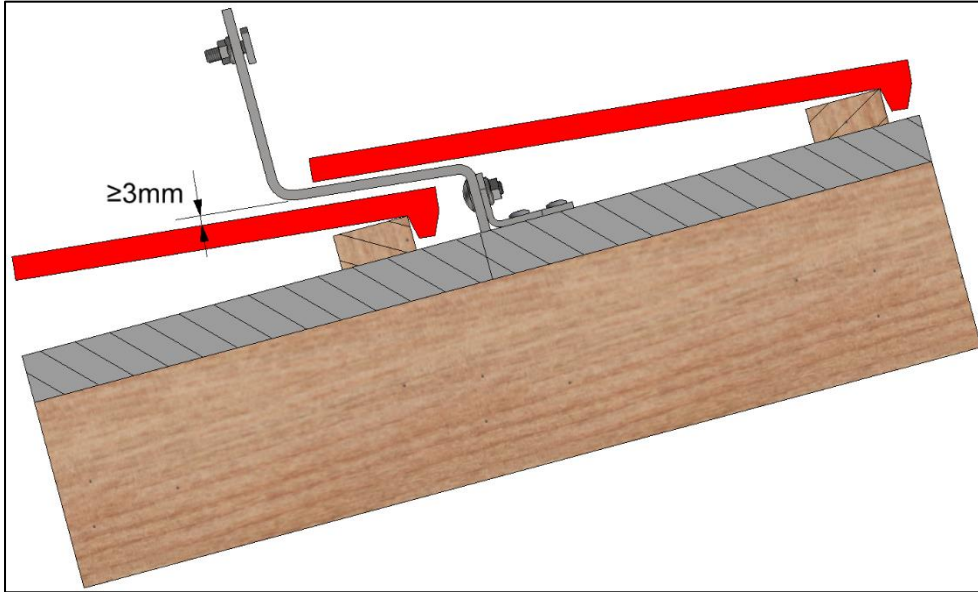
## Mounting Strongline (Heavy Duty) roof hook

The Strongline roof hook is mounted on the purlins of the roof. Use the multiple holes of the mounting plate and the adjustable position of the hook to place the hook in the correct location. The Strongline roof hook must at least be fixed with 2 screws. The mounting of the Heavy Duty roof hook is the same as the standard Strongline roof hook.



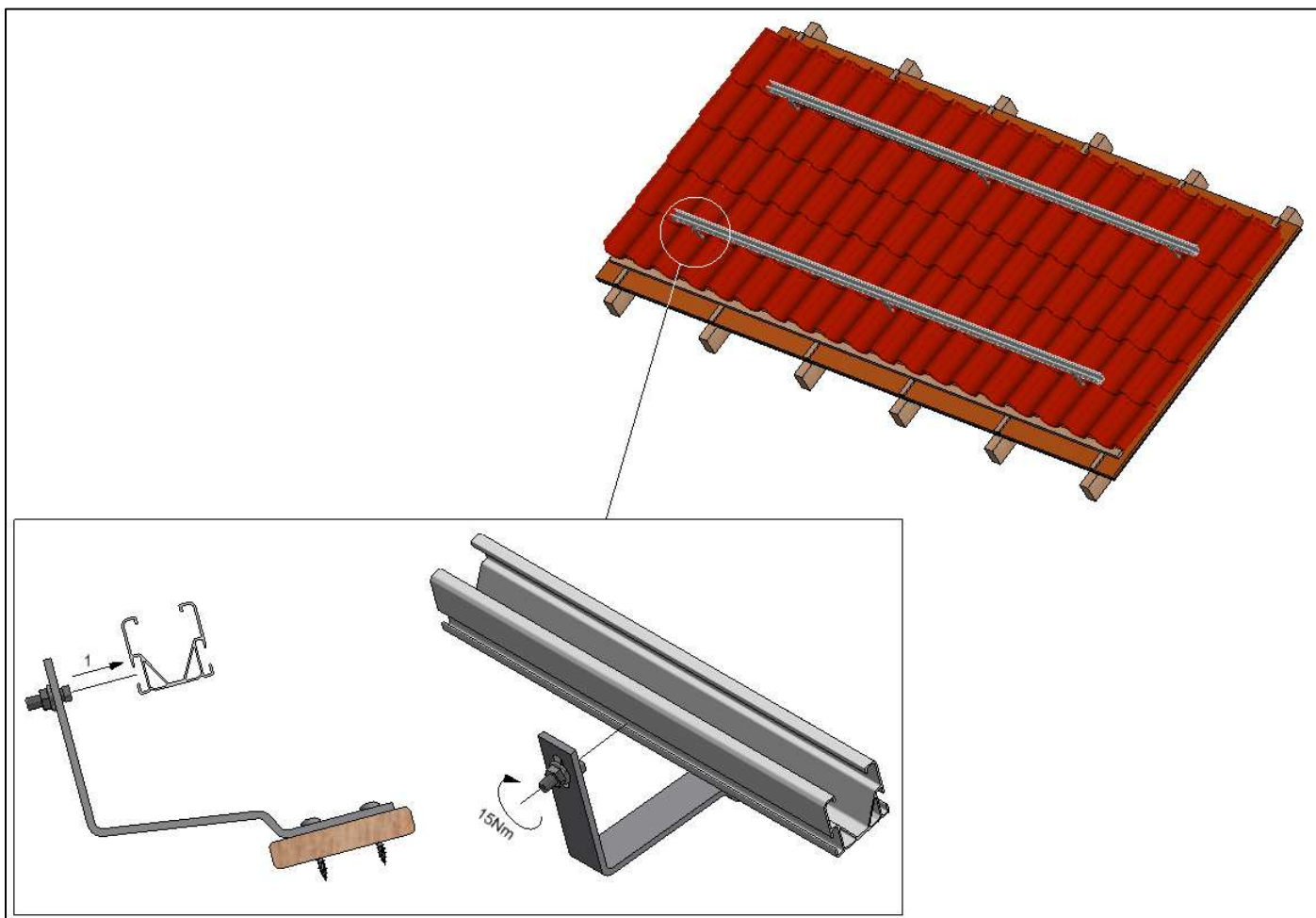
Check the outcome of the calculation for the maximum distance between the roof hooks and the required amount per profile.

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



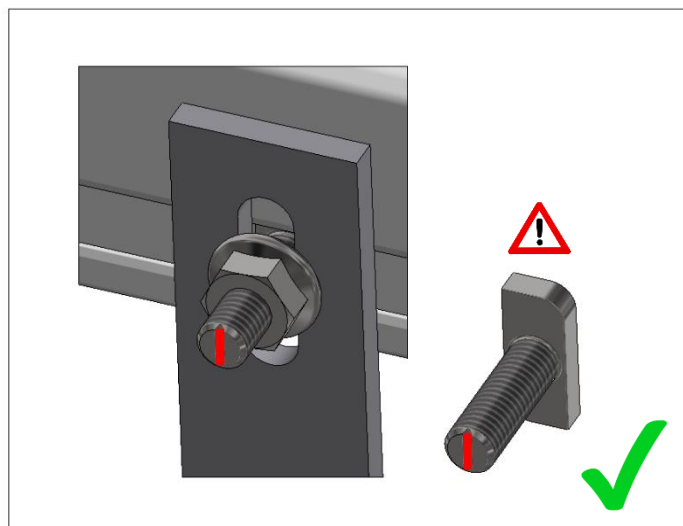
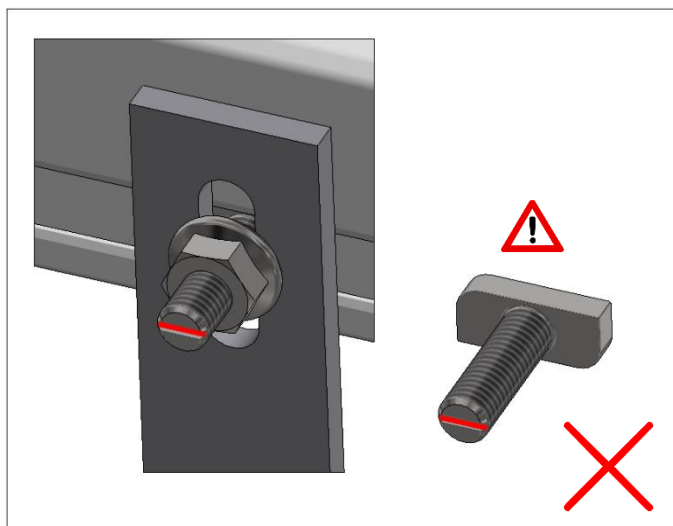
## Mounting aluminium profiles

The mounting of the aluminium profiles is for all roof hooks the same. For the rest of the manual the Smartline roof hook will be shown, the workflow when using a different hook will remain the same.



The aluminium profiles are mounted to the roof hooks with the hammerhead bolts. The hammerhead bolts are placed in the slots of the profiles. When all bolts are placed in the profile everything is fastened with the nut of the roof hook. (max. torque is 15Nm).

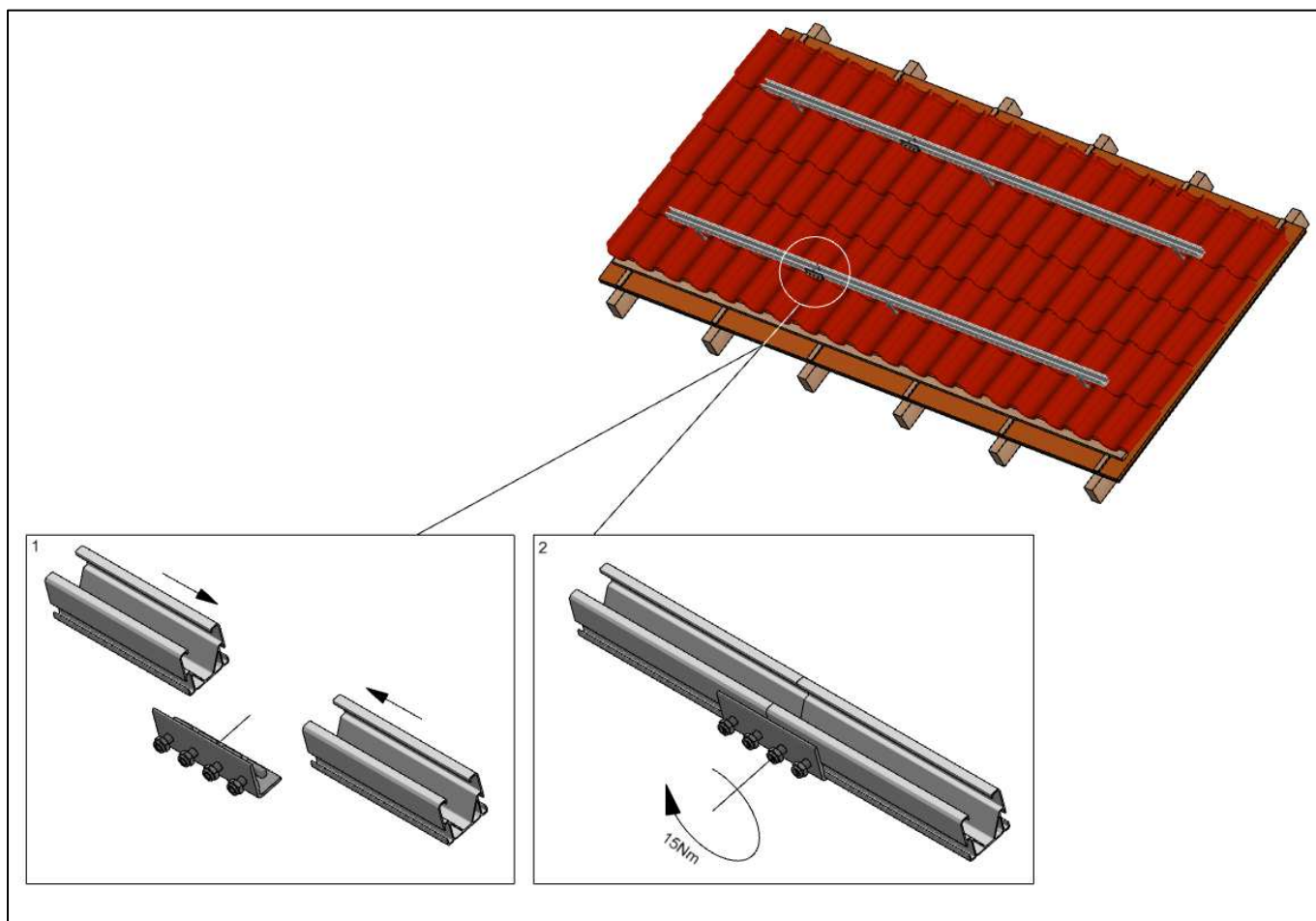
When fastening the bolt/nut of the roof hook it is important that the hammerhead bolt is correctly placed in the aluminium profile. If the hammerhead bolt is not in the profile properly the aluminium profile can come loose (see image below).



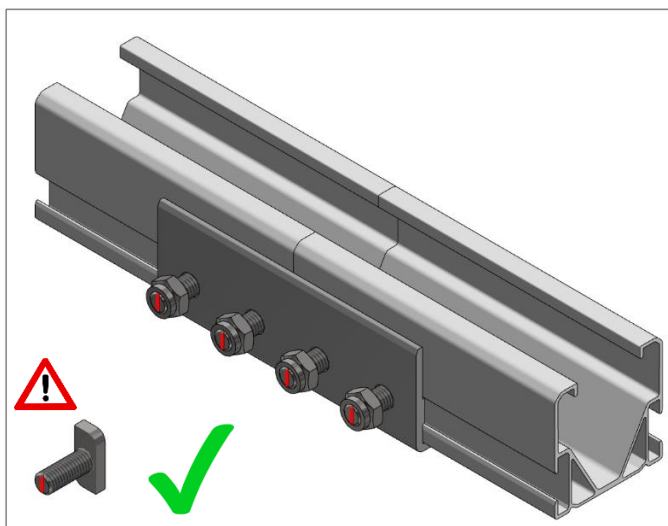
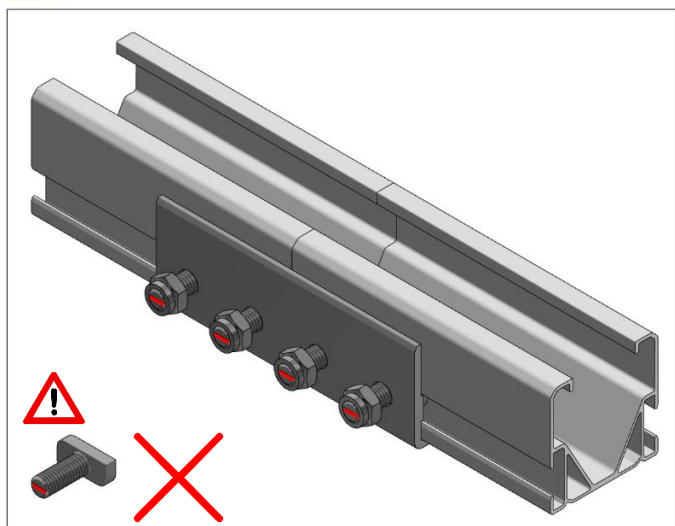
The groove on the hammerhead bolt corresponds with the orientation of the bolt head. Make sure the bolt is always mounted correctly.

## Coupling aluminium profiles

The aluminium profiles can be coupled together with the coupling pieces (724863). Each coupling piece has 4 hammerhead bolts, 2 for each end of the profile. Make sure all hammerhead bolts are in the profiles and fix the lock nuts when ready. (max. torque is 15 Nm)



When fastening the bolt/nut of the coupling it is important that the hammerhead bolts are correctly placed in the aluminium profile. If the hammerhead bolts are not in the profile properly the aluminium profile can come loose (see image below).



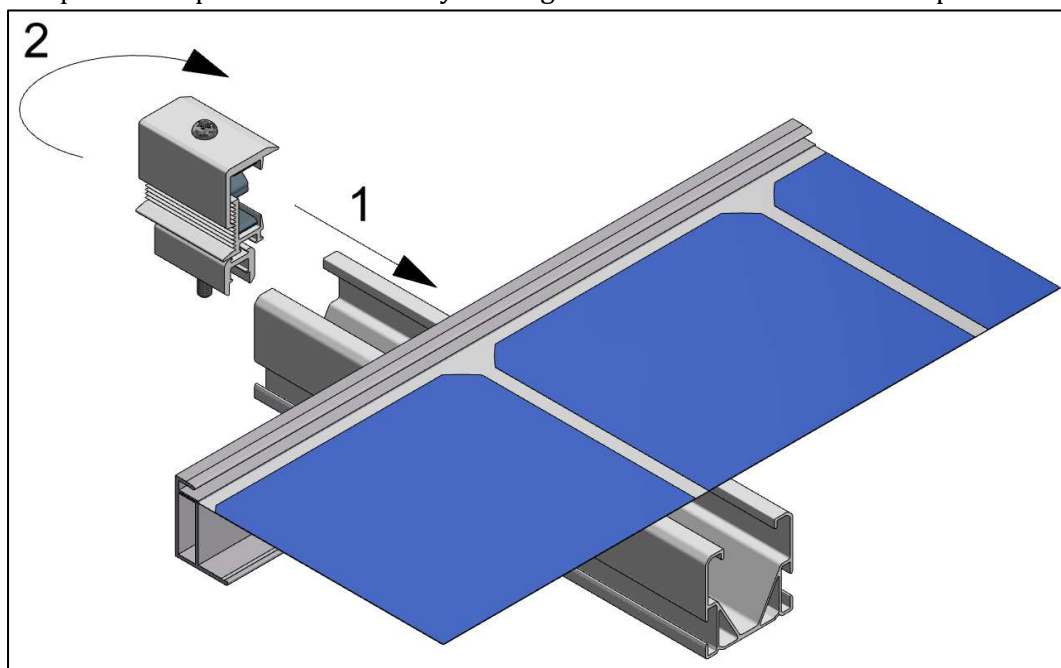
The groove on the hammerhead bolt corresponds with the orientation of the bolt head. Make sure the bolt is always mounted correctly.

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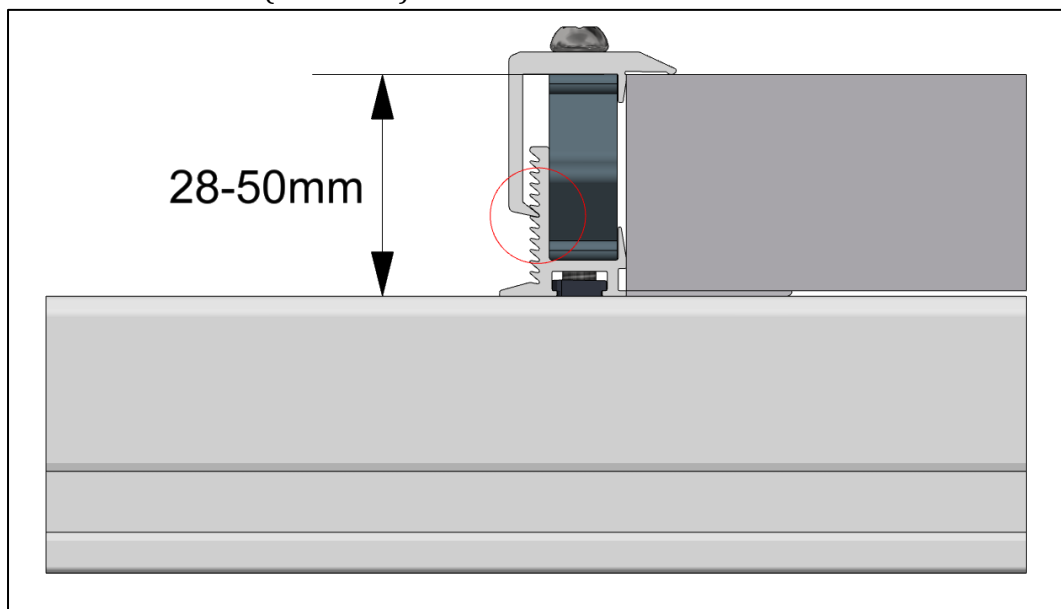
## Mounting end clamps

Each end of the panel row is fixed with the end clamps (721552). The end clamps have a range for the panel thickness from 28-50 mm.

The panel clamp can be mounted by turning it clockwise in the aluminium profile.

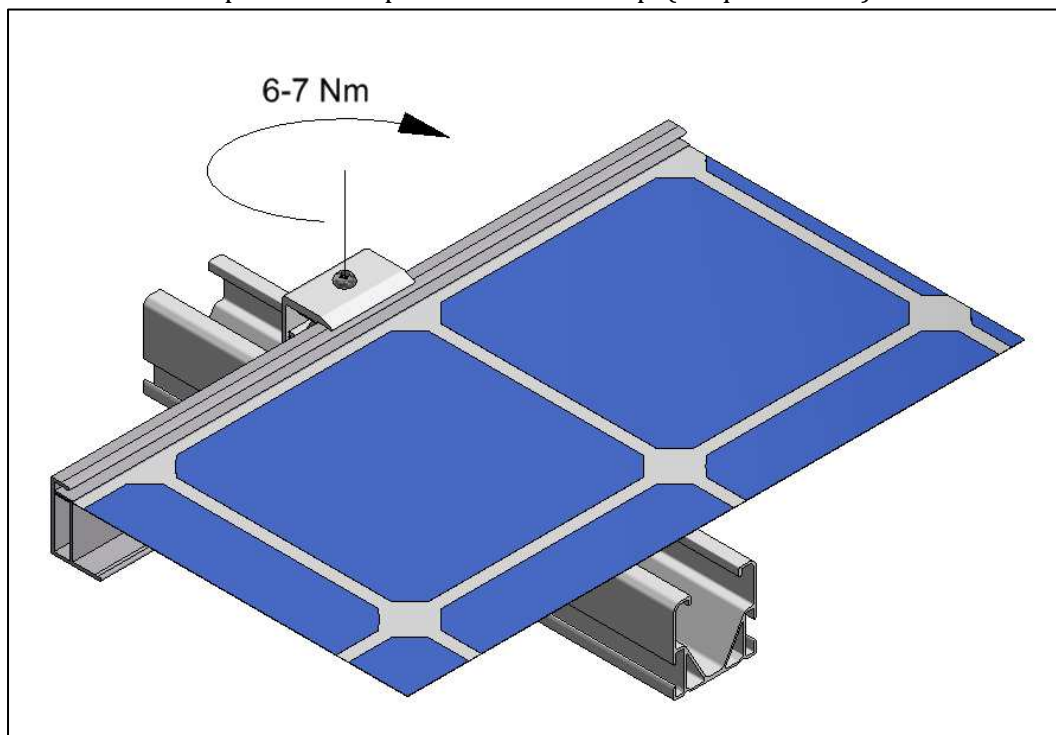


Once the end clamp is in the profile set the end clamp to the correct height. This is done by putting the top cap into one of the slots. (see below)



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Use the bolt on top of the clamp to fix the end clamp. (torque 6-7 Nm)

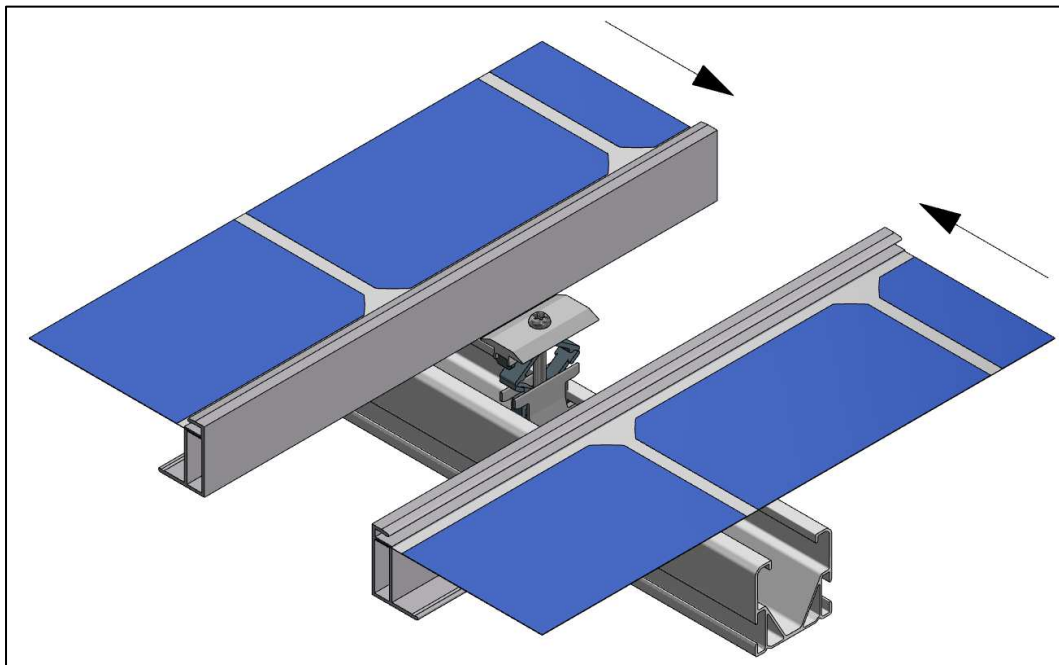


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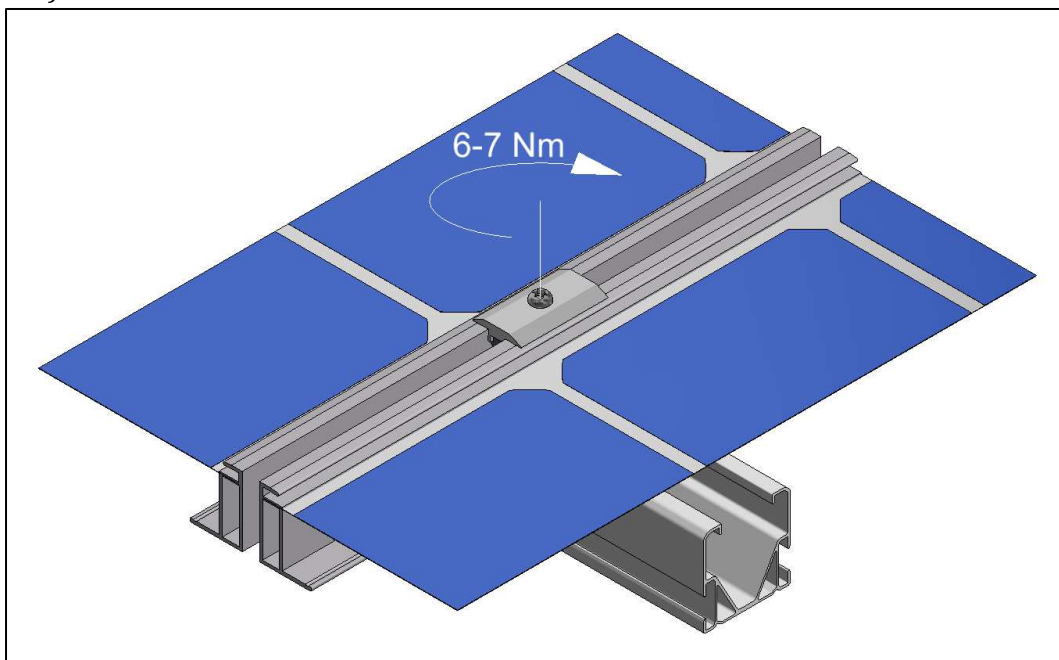
## Mounting panel clamps (middle)

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

Place the middle clamps in the profile and make sure the panels are pushed together. The panels have to be placed against the middle clamps until they can't go further.



Once the panels and middle clamps are in place they can be fixed with the bolt of the middle clamp. (torque 6-7 Nm)



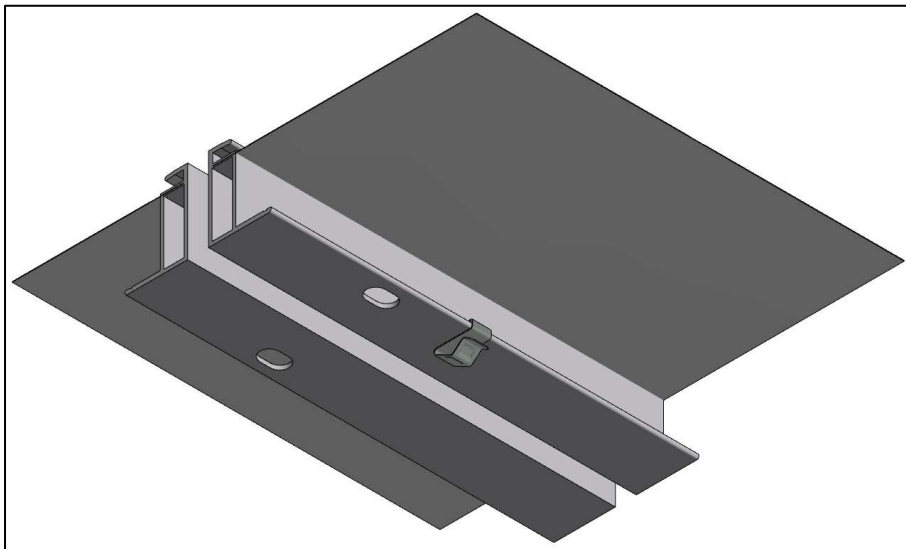
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## Cable clamps

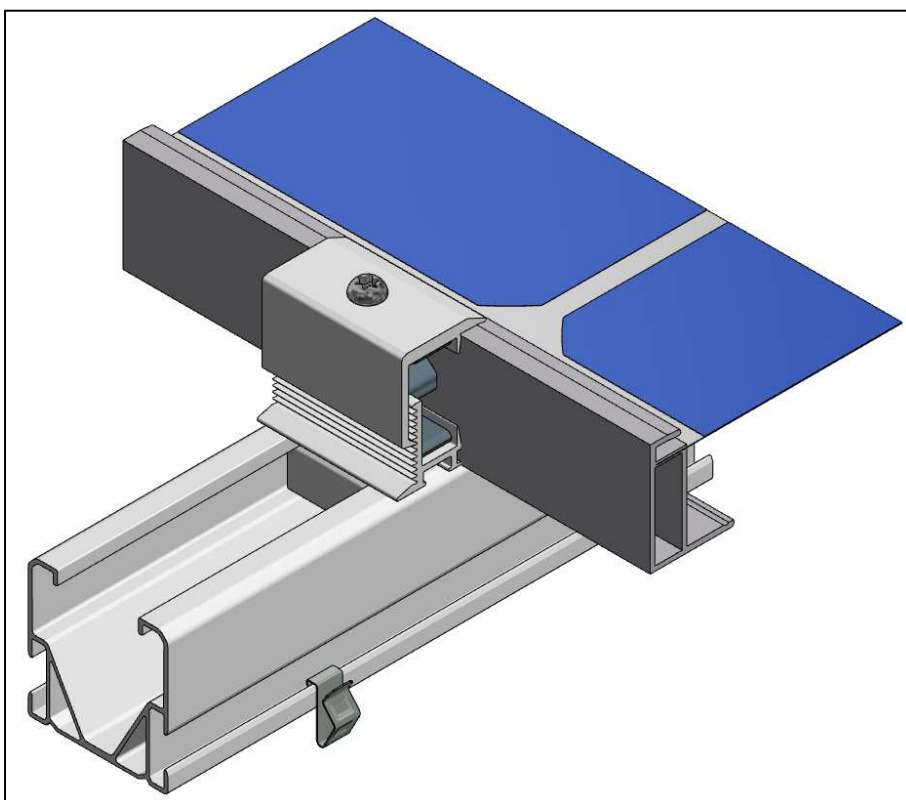
For the pitched roof clamp systems there are 2 types of cable clamps available (standard). These cable clamps can be helpful with your cable management.

### **Small cable clamp (732001)**

The small cable clamp can be mounted to the aluminium profile or the solar panel. The small cable clamp can fit 1 cable.



Cable clamp to panel frame

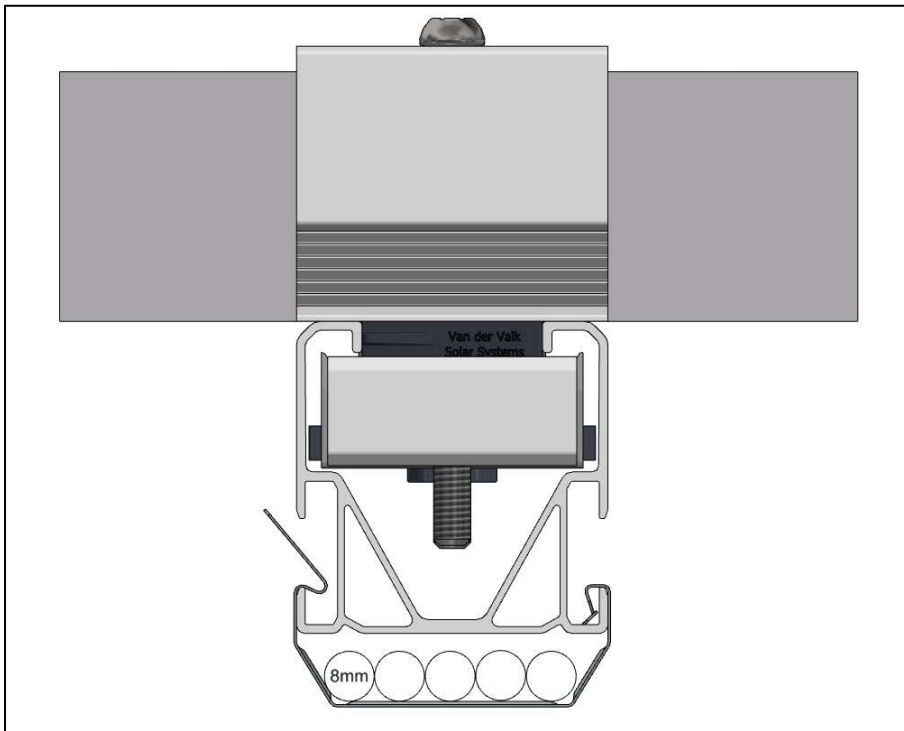


Cable clamp to aluminium profile

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### **Large cable clamp (732005)**

The large cable clamp can be placed on the aluminium profile. The larger cable clamp can hold multiple cables depending on the size.



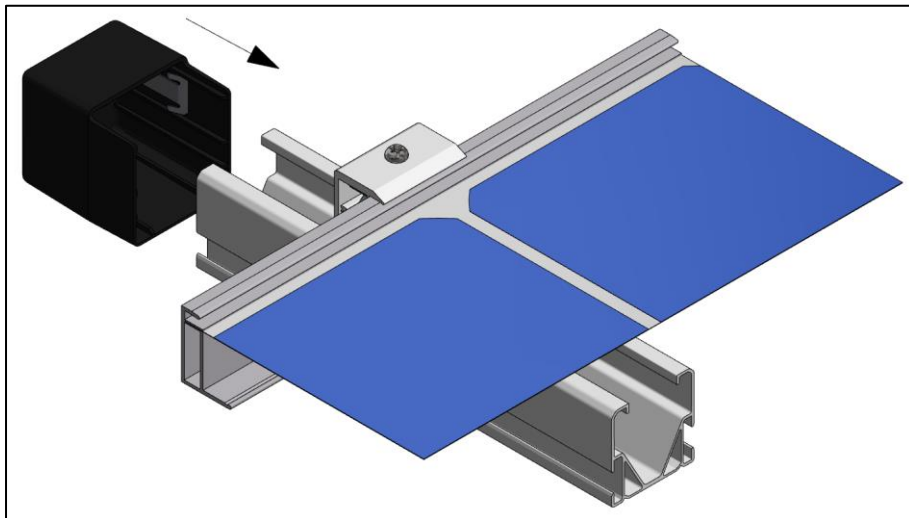
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## Mounting optional products

The pitched roof system has a variety of optional products that can be used to optimize the system. Down below is explained what each product does and how it should be mounted.

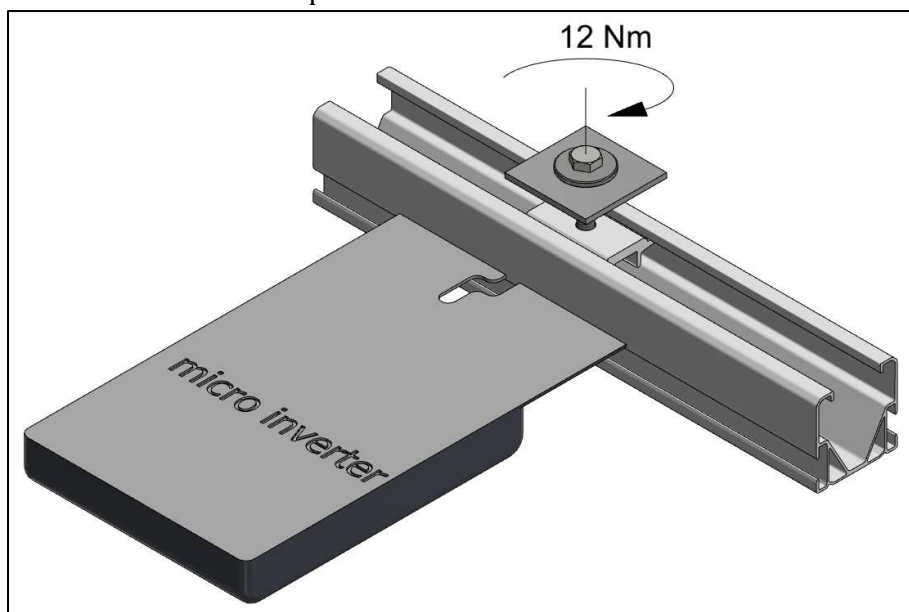
### **Black end cap (739052)**

The black end cap is used in the 'semi-black' or 'full-black' systems. The end caps are placed over the aluminium profiles. This gives the system a better appearance overall.



### **Micro inverter clamp (774223)**

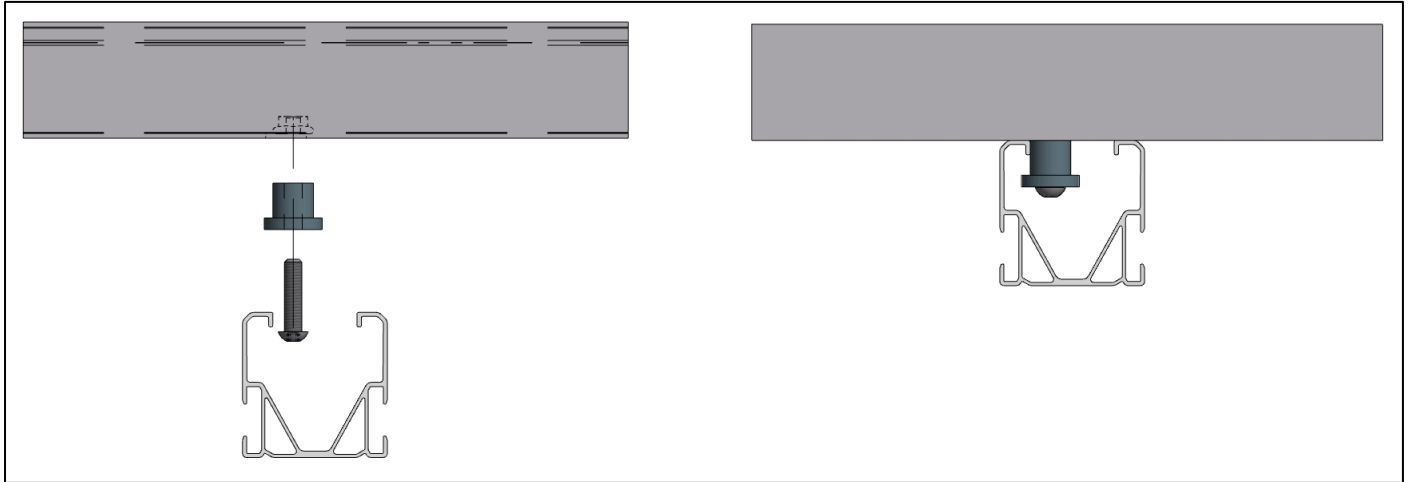
The micro inverter clamp is used to fix the micro inverter to the aluminium profile.



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### **Panel alignment pin (733020)**

The panel alignment pins can be mounted to the frame of the solar panel. Once the pins are fixed to the frame the panel can easily be hang to the aluminium profile. This gives the option to mount the panel clamps without being bothered by the alignment of the panel.



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## Van der Valk Solar Systems

Van der Valk Solar Systems is one of the fastest growing companies in the solar industry. It concentrates solely on developing and manufacturing solar panel mounting systems for pitched roofs, flat roofs and open fields. Van der Valk Solar Systems also has an office and warehouse located in the UK.

Our mounting systems are developed and manufactured in our own factory in the Netherlands and are distinguished by their versatile application, very fast mounting and top quality. They comply with the latest Eurocodes and thus meet the requirements set by banks and insurance companies for solar systems. Van der Valk Solar Systems works closely together with Van der Valk Systemen, which since 1963 has upheld an international reputation in the field of mobile systems and fixation components.

Our joint industrial complex includes 20,000 m<sup>2</sup> of offices and industrial buildings. By using modern machinery and the latest technology, products and systems can be developed, manufactured and tested quickly and precisely.



### Why choose Van der Valk Solar Systems?

- Innovative systems developed in compliance with applicable worldwide standards
- Fast and reliable deliveries thanks to modern machinery and large stocks
- System supplier since 1963
- Free software for project design and project calculation
- All systems applicable to any type of roof or surface
- Quick assembly thanks to premounting of essential components
- All systems available in portrait as well as landscape configuration
- Various systems also available as ready-to-use kits

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Developer and producer of solar mounting systems for:



Pitched roofs



Flat roofs



Open fields



Greenhouses



Water features

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