

VAN DER VALK



Installation manual



ValkPro+ Max Landscape

Version: v1.4
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Disclaimer

This installation manual 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

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 the planning and execution of the installation, always take into account possible changing weather conditions, in particular strong winds or storms. Take the right measures and make sure that no situation can occur where solar panels have already been placed on the system, but other critical parts (such as ballast tiles, side or back plates) are still missing.
- 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.

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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 roof pitch should be less than 5 degrees for flat roof systems.
- 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.
- Bulging of the roof membrane should be prevented. This can lift the solar mounting system and can cause displacement of the mounting system or ballast. It is the installer's responsibility to prevent the roof membrane from bulging.
- 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 or corner zones of the roof is only allowed when 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 ValkPVplannerPro (calculation software), on the basis of which the required additional ballast or fixation points are automatically calculated. The edge and corner zone are automatically calculated by the ValkPVplannerPro, based on the roof height and building circumference, in accordance with the applicable regulations.

Dilatations

- The Maximum allowed dimensions of a coupled mounting system is a 40 x 40 meters. The maximum dimensions are based on the thermal expansion in case of a temperature difference (ΔT) of 70 degrees Celsius.
- The coupled mounting system can not be placed over a gutter or ridge. In case the mounting system is placed 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 ValkPVplannerPro or are available on request at Van der Valk Solar Systems.

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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 re-use or recycling. The systems only contain nut and bolt, screw and click connections, so no parts are glued or welded. All used materials are recyclable. Disposal of the components always in accordance with the locally applicable laws and regulations.

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System details

Placement conditions

In order to ensure a safe installation and use of the The ValkPro+ Max system, the following conditions must be respected:

- The inclination of the roof must be less than 5°.
- The roof can have a maximum height of 25 meters, in case the project has been calculated using the ValkPVplannerPro and is corresponding with the roof height in the project report. For installations on roofs higher than 25 meters, please contact Van der Valk Solar Systems.
- Check prior to installation if the roof membrane and/or insulation is suitable for the loads and thermal expansion of the PV-system. Ensure that the calculated point loads of the system as shown in the ValkPVplannerPro project report are compatible.
- In case the mounting system is to be placed on a roof with mechanically fixed roof membrane, the risk of the membrane bulging due to wind suction needs to be mitigated. The bulging can cause unwanted lifting of the mounting system or disposition of the ballast under extreme wind suction situations. It is the responsibility of the installer to prevent bulging of the roof membrane. This can be done by adding fixation points or placing additional weight (for example tiles) on the membrane in the edge zones of the roof and around the PV-system.
- After the ValkPro+ Max mounting system has been placed, it is of greatest importance to check if the ballast has been placed according to the ballast plan in the project report. Ballast tiles need to be neatly stacked in order to ensure the weight is properly supported by the tile carriers, ballast carriers and/or ballast wings.
- The coupled ValkPro+ Max system shall not be placed over a ridge or gutter. In these positions a dilatation is mandatory.
- In coastal areas the mounting system must be placed at a distance of at least 500 meters from open water, to prevent corrosion due to salt water spray. In case there is a building in between the open water and the roof, a distance of 250 meters can be applied.

Suitable panel dimensions:

- Width 1134 mm suitable for pitch 2500 mm
- Length 1700 - 1900 mm
1901 - 2100 mm
2101 - 2470 mm
- Frame height 30 or 35 mm

Installation recommendations for large projects

ValkPro+ Max Landscape is the perfect mounting system for large-scale installations with large panels. The system offers a good balance between pre-assembled parts and space savings in relation to transport and lifting activities.

When the steps of the installation are properly coordinated, a very rapid realization of the project is possible. Below is the sequence of steps applied by the most experienced installation teams:

1. Pre-assembly of the supporting feet on the roof carriers.
 - i. Use a large table at a convenient height for the worker(s) to make the pre-assembly fast and easy.
2. Positioning and alignment of roof carriers on the roof.
 - i. Use the adjustable alignment tool for the correct spacing between the roof carrier rows.
3. Placing ballast according to the ballast lay-out drawing.
4. Installation of cable management items and the cable system from inverters to relevant string array.
5. Mount solar modules on the ValkPro+ framework. ⚠
6. Install the back and side plates. ⚠



During the planning and execution of the installation, always take into account possible changing weather conditions, in particular strong winds or storms. Take the right measures and make sure that no situation can occur where solar panels have already been placed on the system, but other critical parts (such as ballast tiles, side or back plates) are still missing.

Required tools for installing ValkPro+ Max Landscape



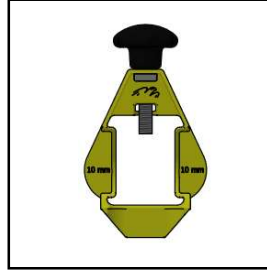
Cordless drill



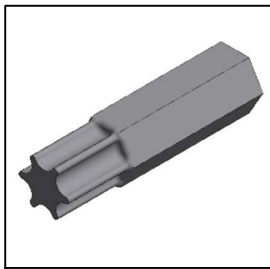
Disassembly key
(743000)



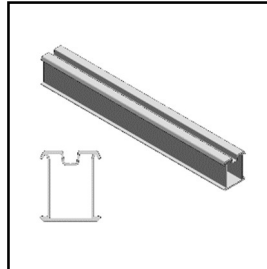
Socket 13mm
Wrench 13mm



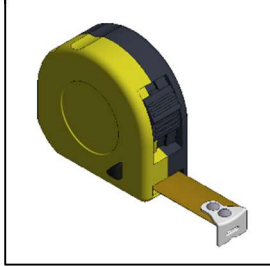
Positioner for panel alignment
(743221)



Torx bit T-30
(789530)



Profile for panel alignment
L=2320 mm
(701902320)

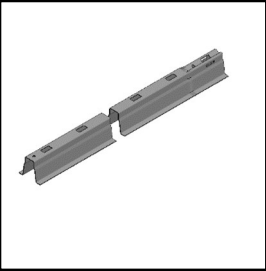

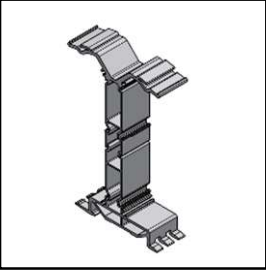
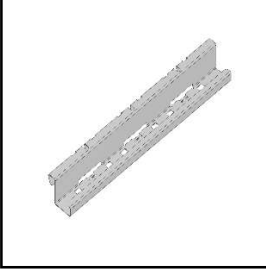
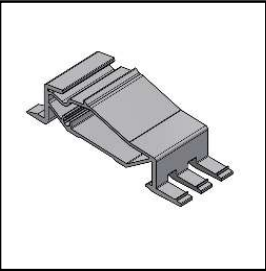

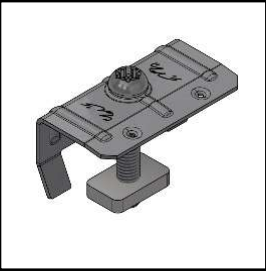
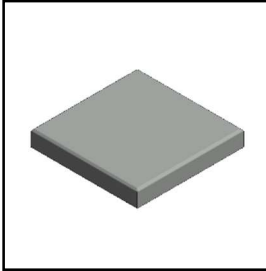

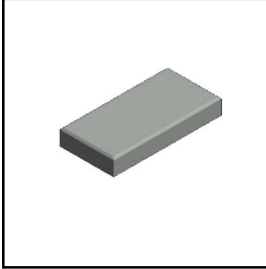
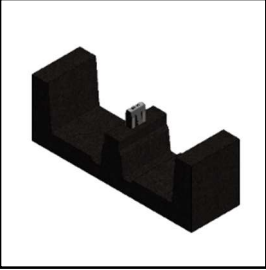


Measuring tape



Alignment key roof carriers
(739010)

Basic components for installing ValkPro+ Max Landscape [East-west]

	Roof carrier profile (741802500)		Connection profile L = 1350mm (741620)
	Back base (724654)		End profile L = 350mm (741615)
	Front base (724653)		Coupling set (774221)
	Panel clamp 30mm (721430) 35mm (721435)		Ballast tile 9 kg 300 x 300 x 45mm (7506303045)
	Cable and connector clamp (732025)		Ballast tile 4,5 kg 300 x 150 x 45mm (7506301545)
	Tile carrier For Bitumen / TPO / EPDM roofs (729622) For PVC roofs (729629)		

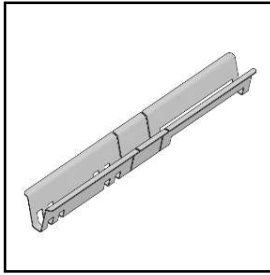
For the 'optional' components: see next page.

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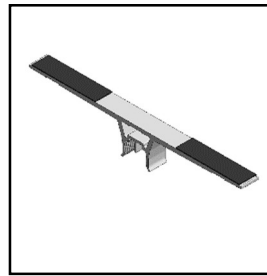
Optional components

The optional components can be used for specific situations and to further optimize the system.



Ballast carrier

742570 - [for panel width 1700-2100mm]
742571 - [for panel width 2101-2400mm]



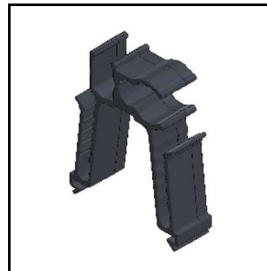
Ballast wing

(725150)



Ballast tray

742620 - [for panel width 900-1100mm]
742621 - [for panel width 1100-1300mm]
742622 - [for panel width 1300-1500mm]



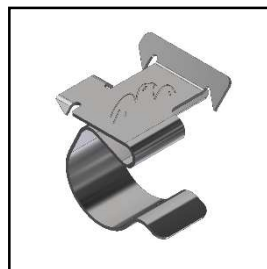
Multi-cable and connector clip for roof carrier

(732012)



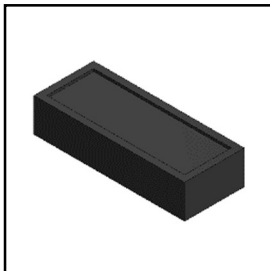
Load distributor

(729634)



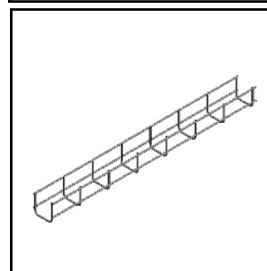
Connector clamp for panel frame

(738201)



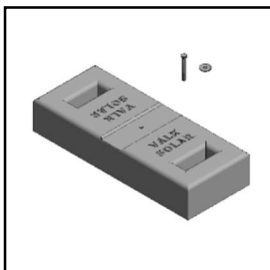
Elevation block for gravel roofs

(729627)



Cable basket
W=50mm H=60mm
L=3000mm

(76010050603000)



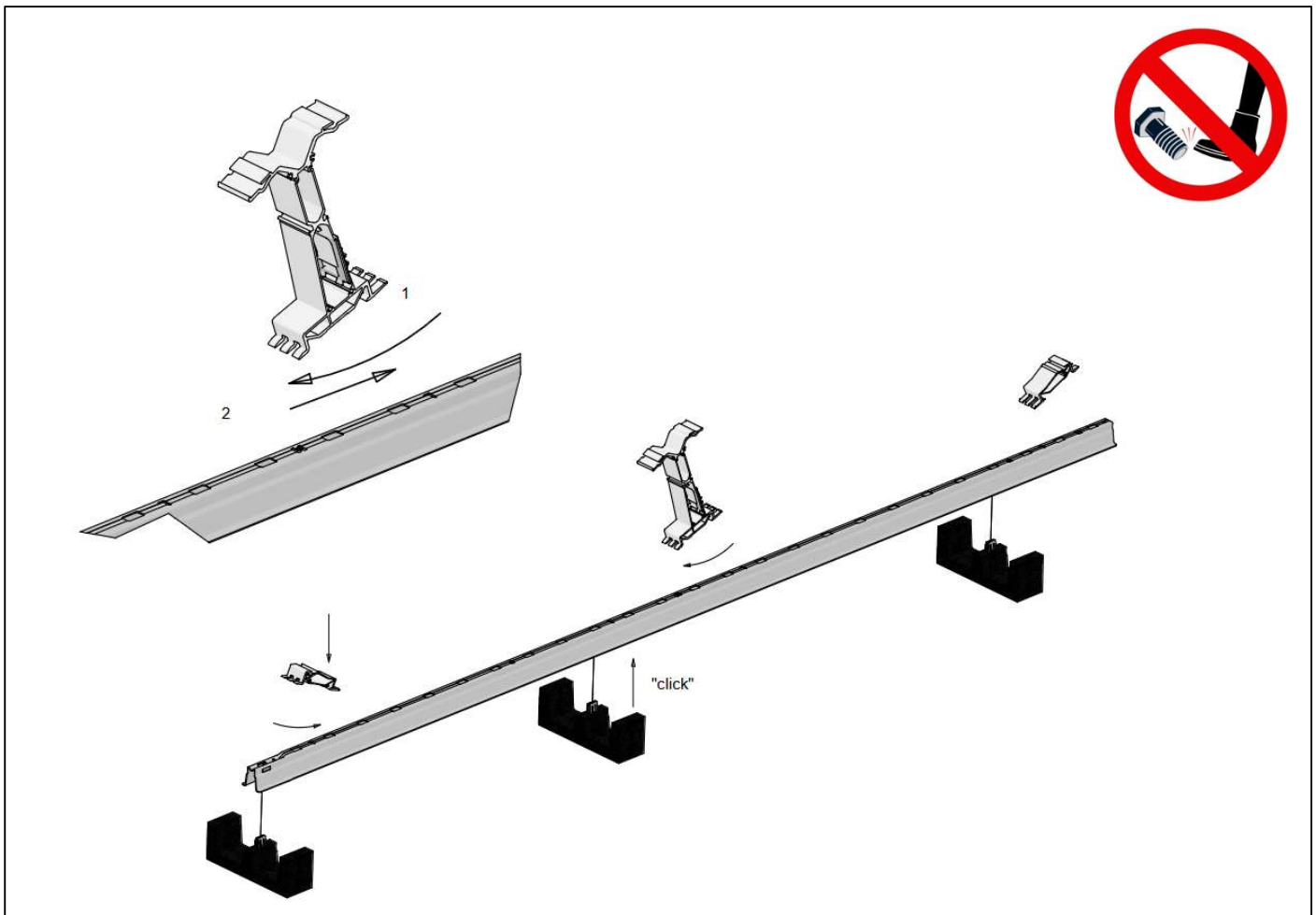
Concrete mass block

(750520)

Installing ValkPro+ Max on standard roofs

Pre-assembly of roof carriers sets

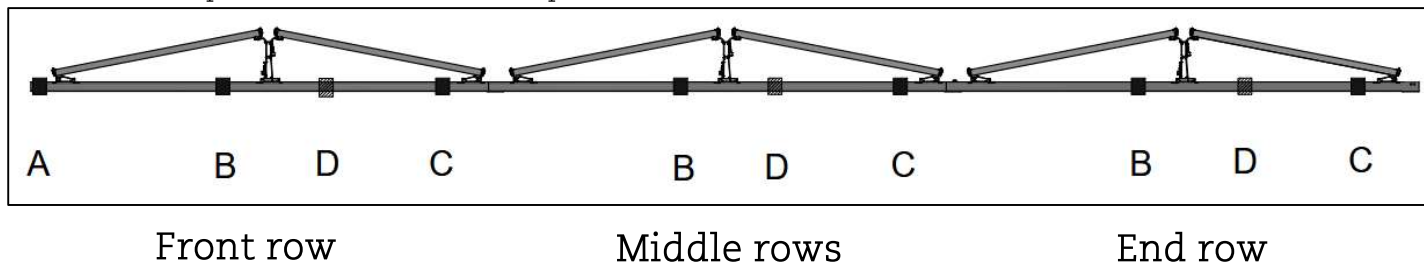
A fast and convenient way of installing can be best achieved by mounting the base parts and tile carriers on the roof carrier profiles, prior to placing the profiles on the roof. The back base (724654) should be placed in the position where the letter "M" is stamped on top of the roof carrier. The front base (724653) should be placed in the position where the letter "L" is stamped on top of the roof carrier profile. The rubber tile carriers (729622 or 729629) can be clicked into the roof carrier profile on various positions to support the frame. On the next page, the recommended positions are shown.



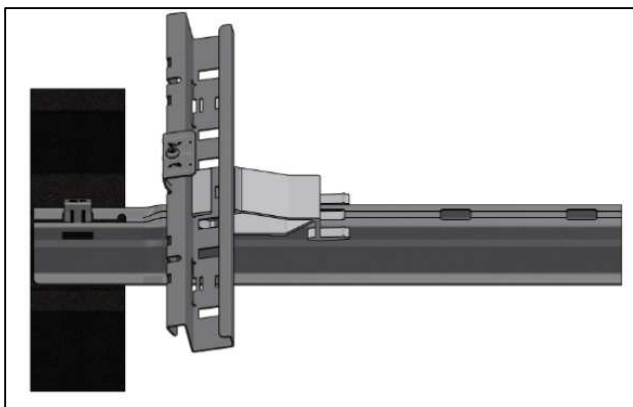
Tile carrier positions

Placing the tile carriers (729622 or 729629) in the correct positions into the roof carrier profile is important for the proper support of the system, the support for ballast tiles and spreading of loads on the roof surface. In case the tile carriers are mounted in the wrong position, the ballast cannot be supported correctly and may become unstable.

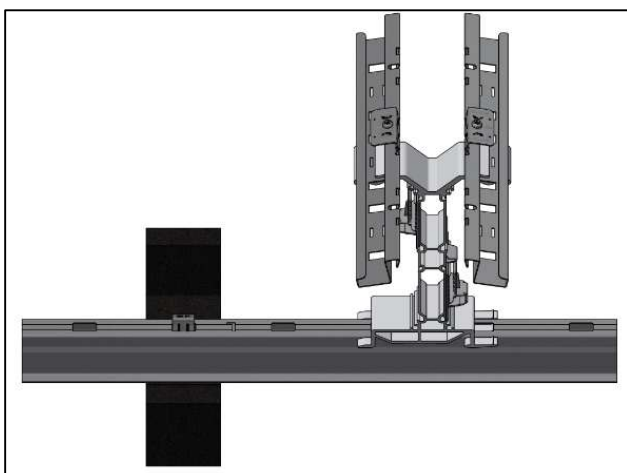
Below is an explanation of the correct positions for the tile carriers:



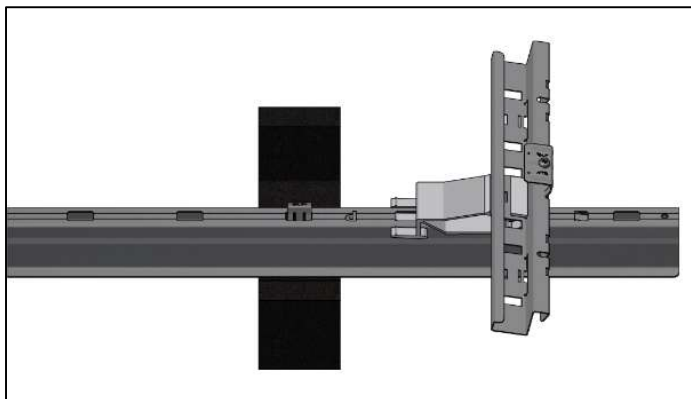
A: Position A provides extra support for the row of roof carriers at the beginning of the system. This is required to prevent the roof carriers from damaging the roof surface. The tile carrier is positioned in the first slot of the roof carrier.



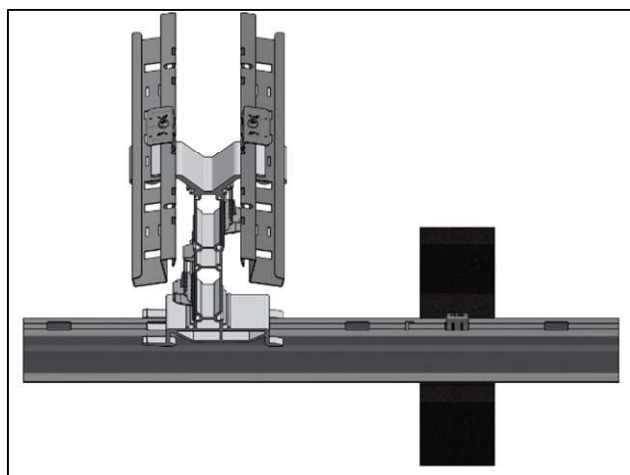
B: Position B is required when ballast is placed on the aluminium front foot. This is mandatory for the system. It is optional to place the tile carriers in position B for the other rows as well to spread the ballast more evenly. In the image below the correct position of the tile carrier is shown.



C: Position C is the “standard” tile carrier position, which is placed alternately in front of every aluminium back foot. In the image below the correct position of the tile carrier is shown.

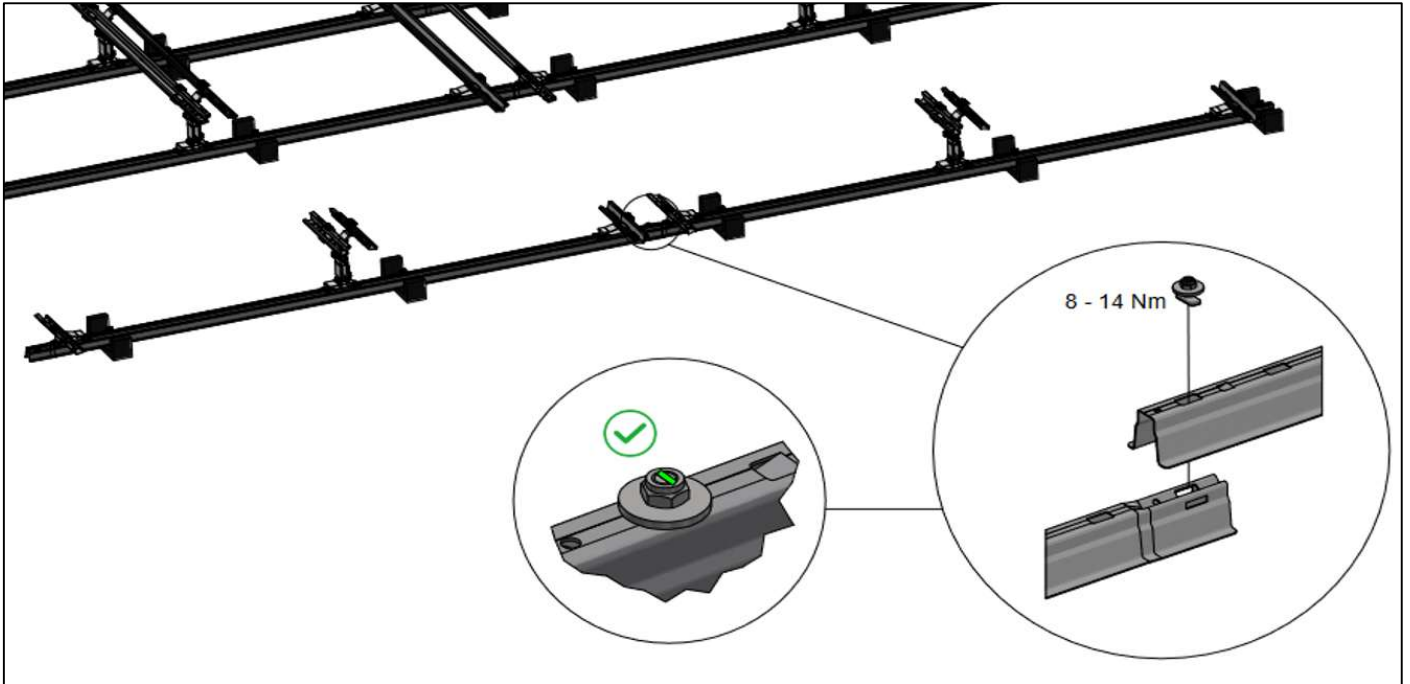


D: Position D is the “optional” tile carrier position, which is placed alternately in front of every aluminium back foot. In the image below the correct position of the tile carrier is shown.

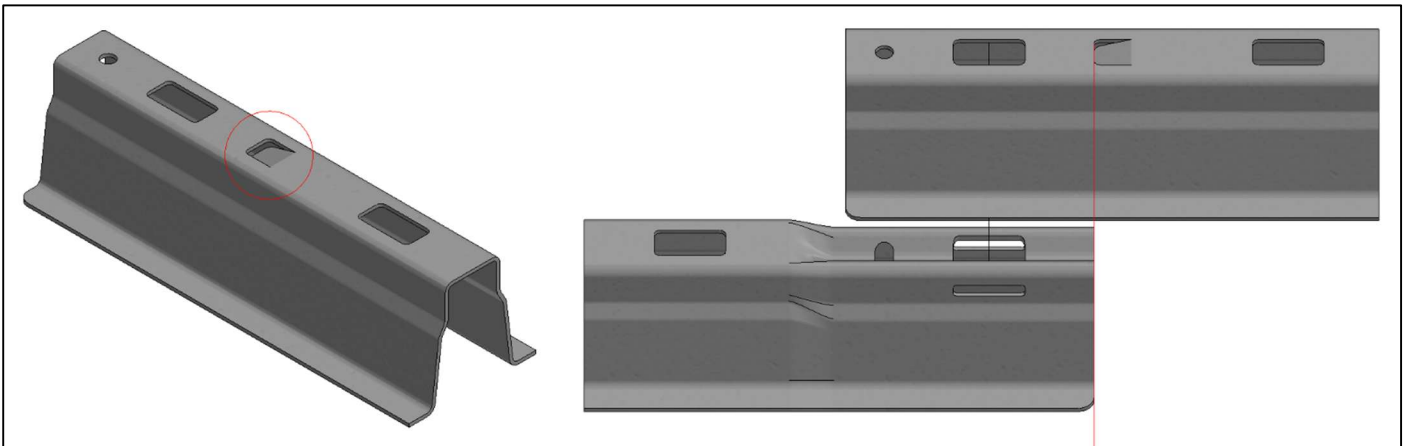


Alignment of roof carrier profiles

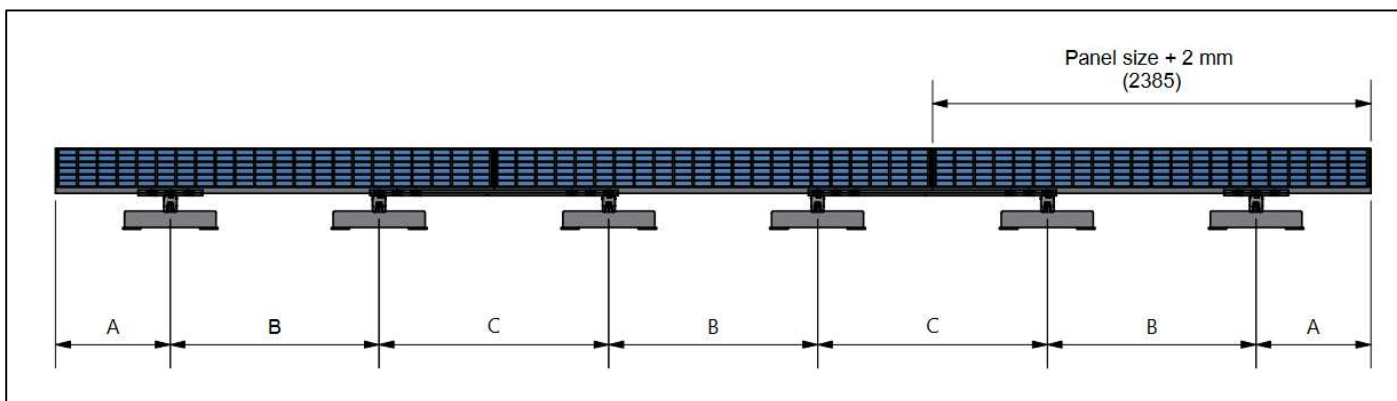
Position the roof carrier profiles in the desired layout or starting point. Connect the roof carrier profiles to each other by placing the end of the first roof carrier over the tapered end of the next profile. The roof carriers are then fixed together using the coupling set (774221).



The smooth side of each roof carrier profile has a lip that can be used as a stop for the tapered end of the next roof carrier profile for proper alignment.



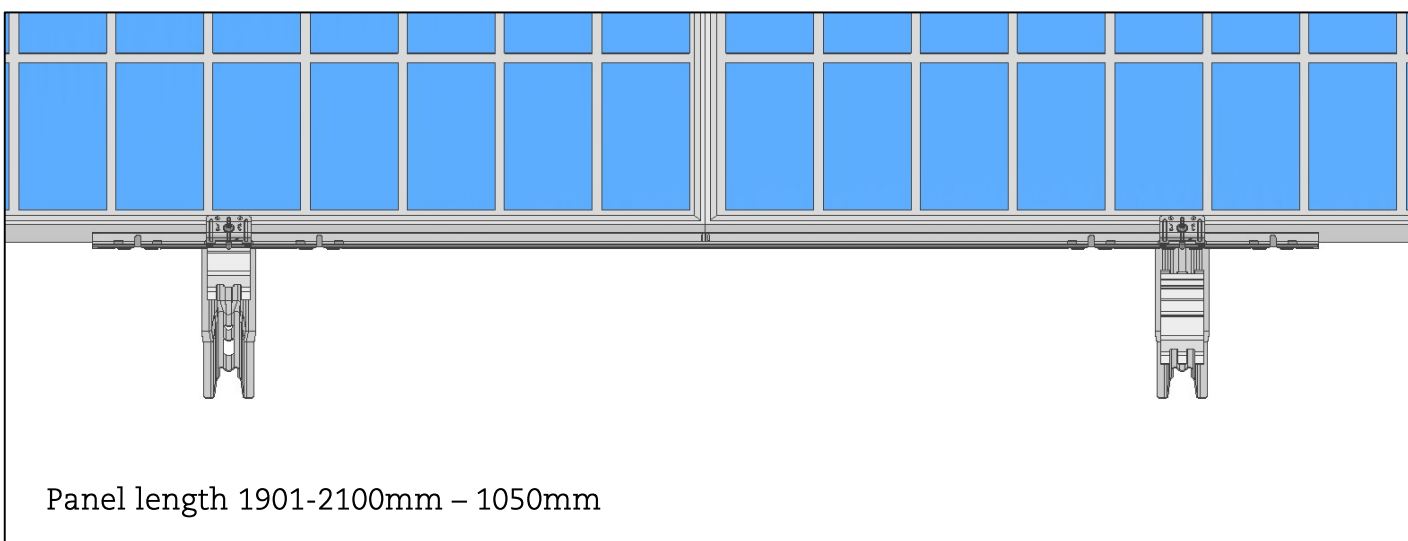
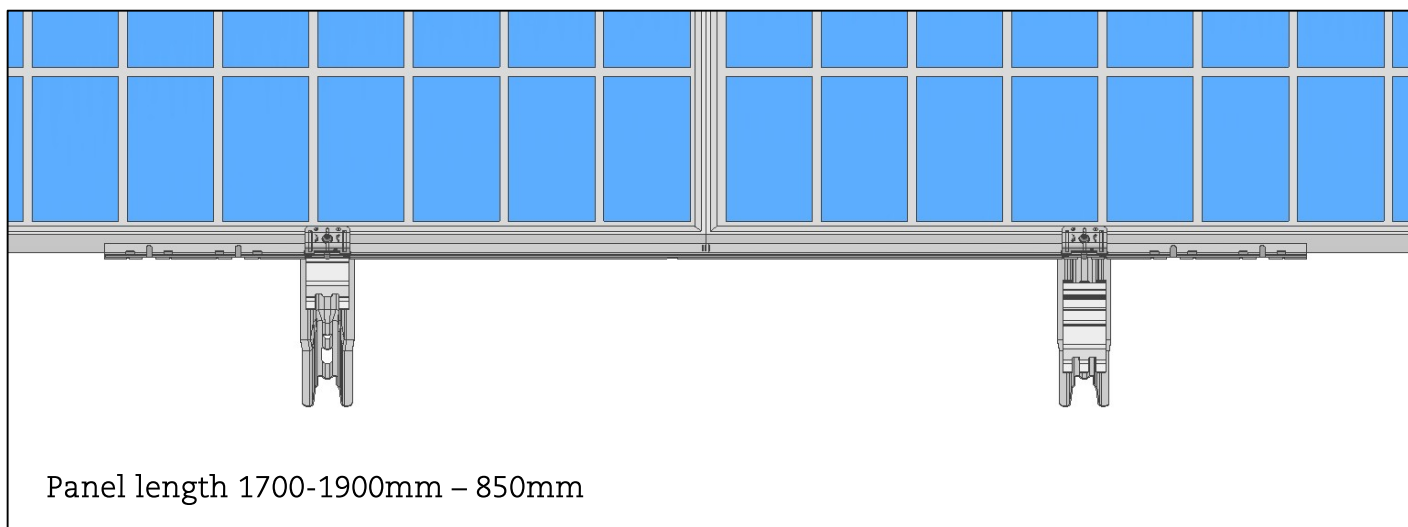
Alignment of the roof carriers is based on the connection profile and the panel length that is used. The required distance between profile rows is calculated by deducting the length of the connecting profile from the length of the panel. See the scheme below.

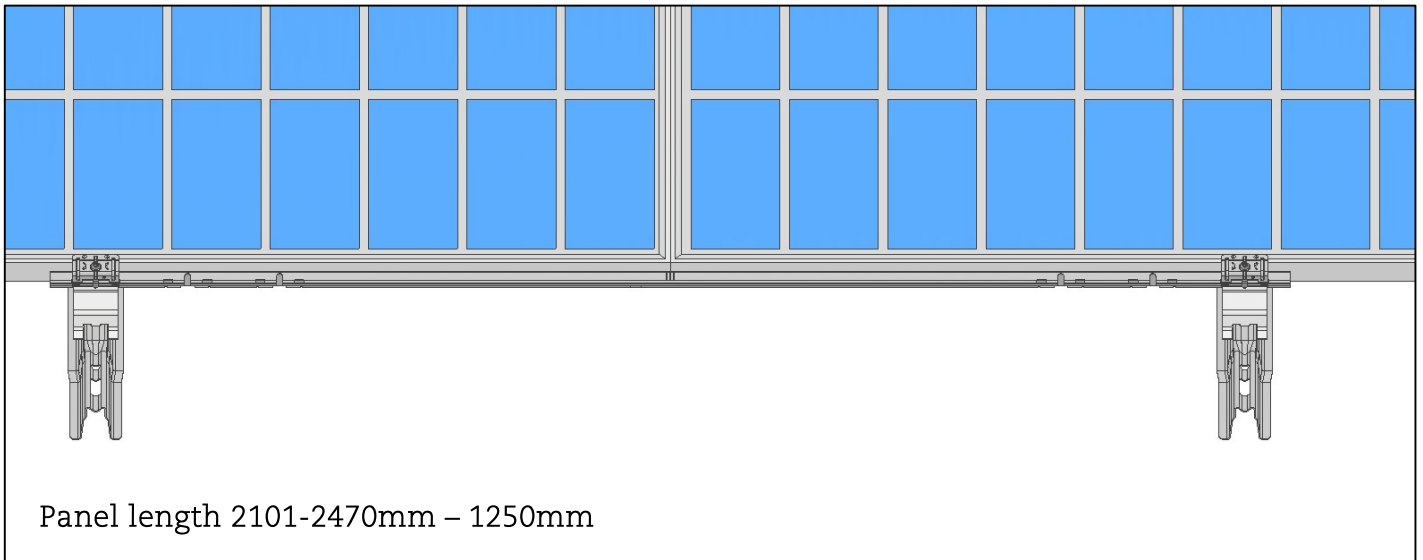


A: 0.5 x Pitch connection profile

B: Panel size + 2mm – Connection profile

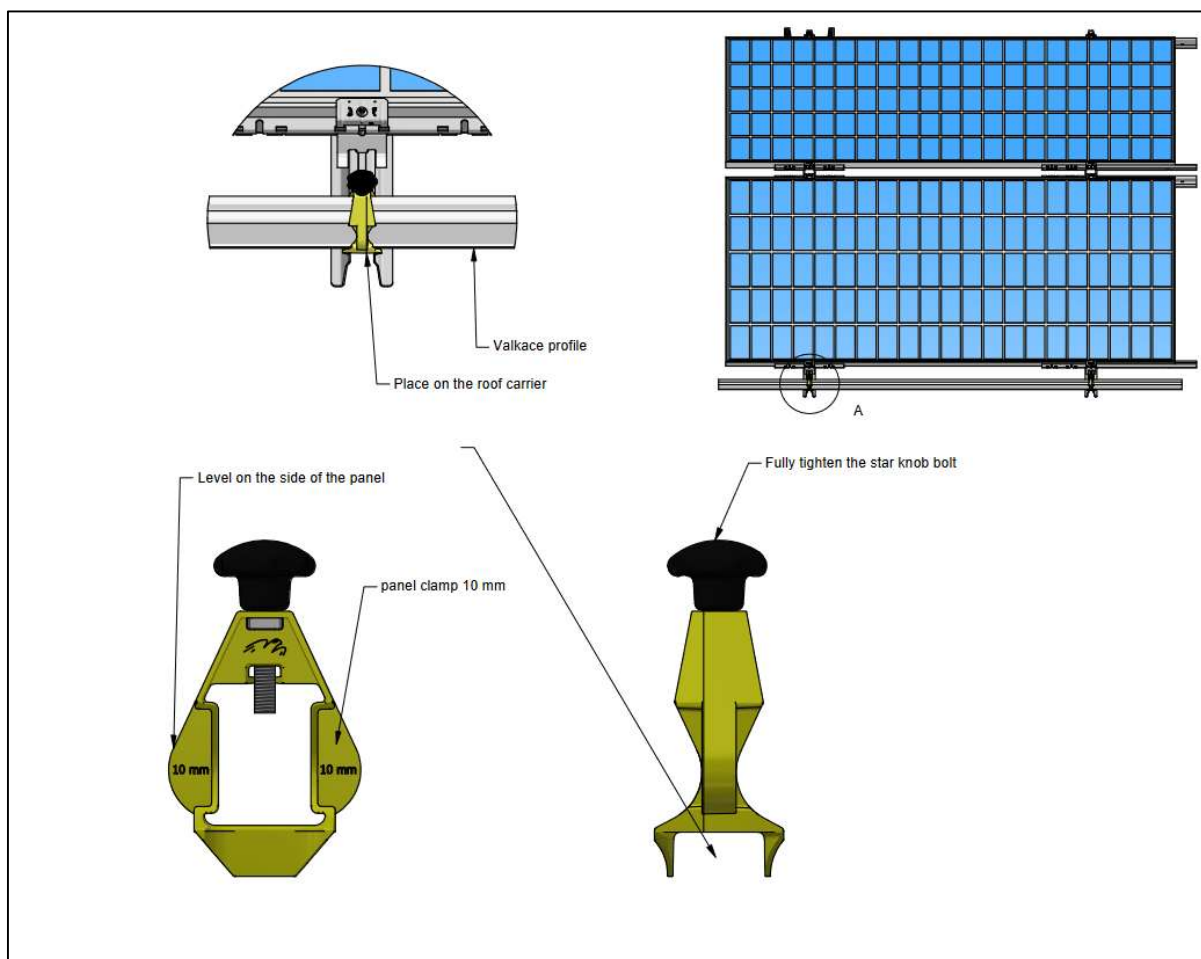
C: Distance of connection profile: 850; 1050; 1250mm

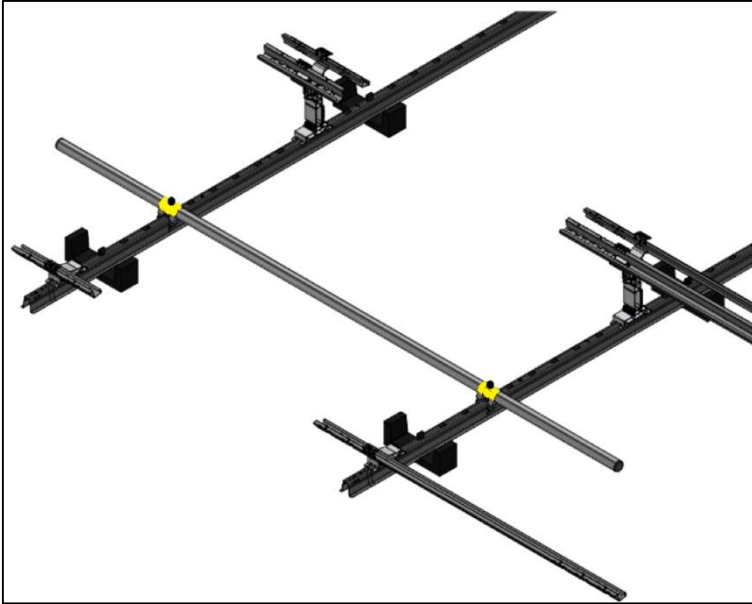




Tool ValkPro+ (743221 + 701904670)

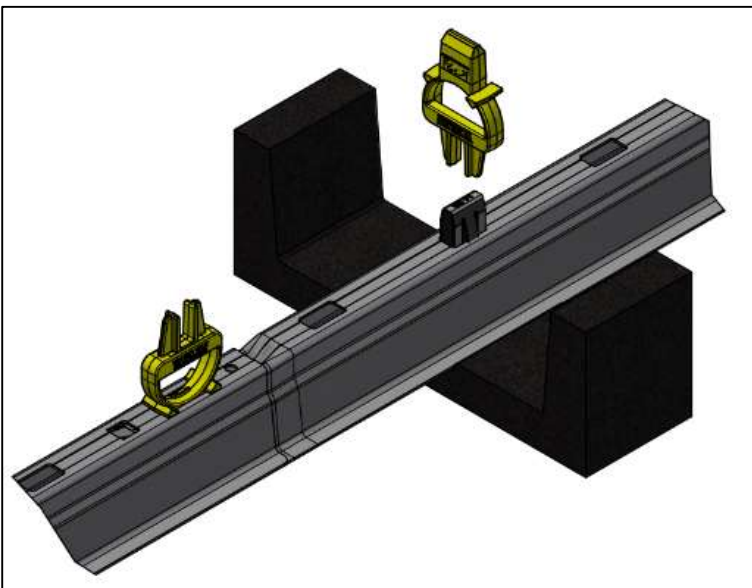
An alignment tool can be used to accurately place the roof carrier rows at the correct pitch. For these positioners (743221) can be used on a “ValkAce” profile (701904670). The positioners can be tightened on the profile to the correct pitch.





Alignment key for roof carrier profiles (739010)

The alignment key has two functions: 1) to align the overlapping slots of the roof carriers. 2) to push the metal clip of the tile carrier inwards, so that it can be removed in case it was clicked into the wrong slot. See image below for reference.



Dilatations

In order to handle the effects of thermal expansion and contraction of the ValkPro+ Max Landscape mounting system, the maximum size for a coupled system is 40 x 40 meters. At each side of the system a dilatation is required.

A coupled system must not be placed over a gutter or ridge: in these positions a dilatation is always required.

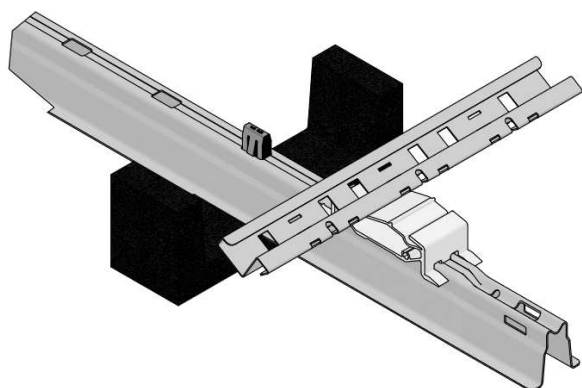
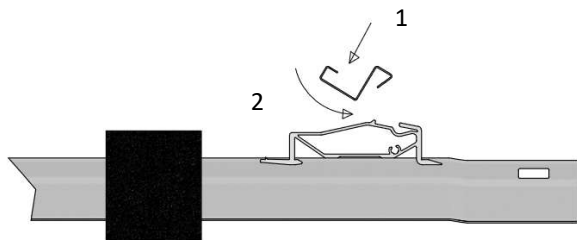
Placing connection and end profiles and clamps

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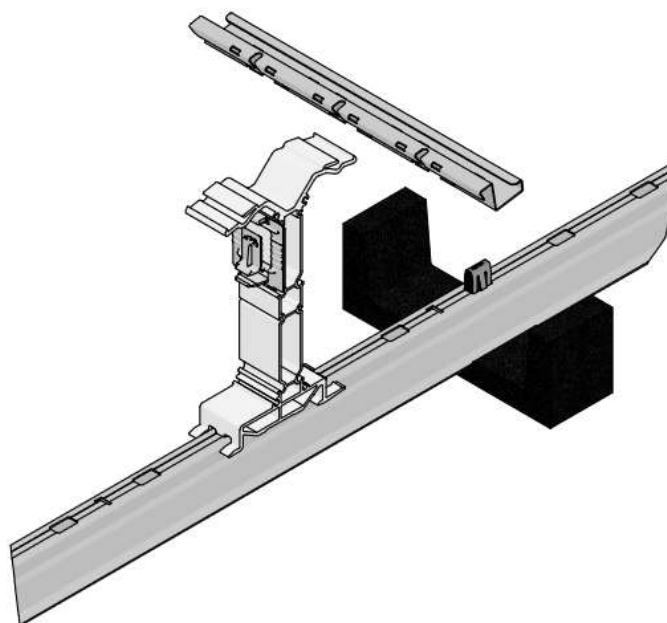
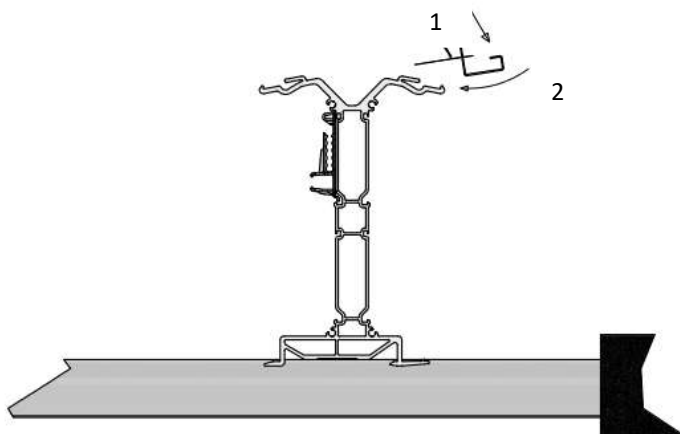


Connection and end profiles

Front base



Back base



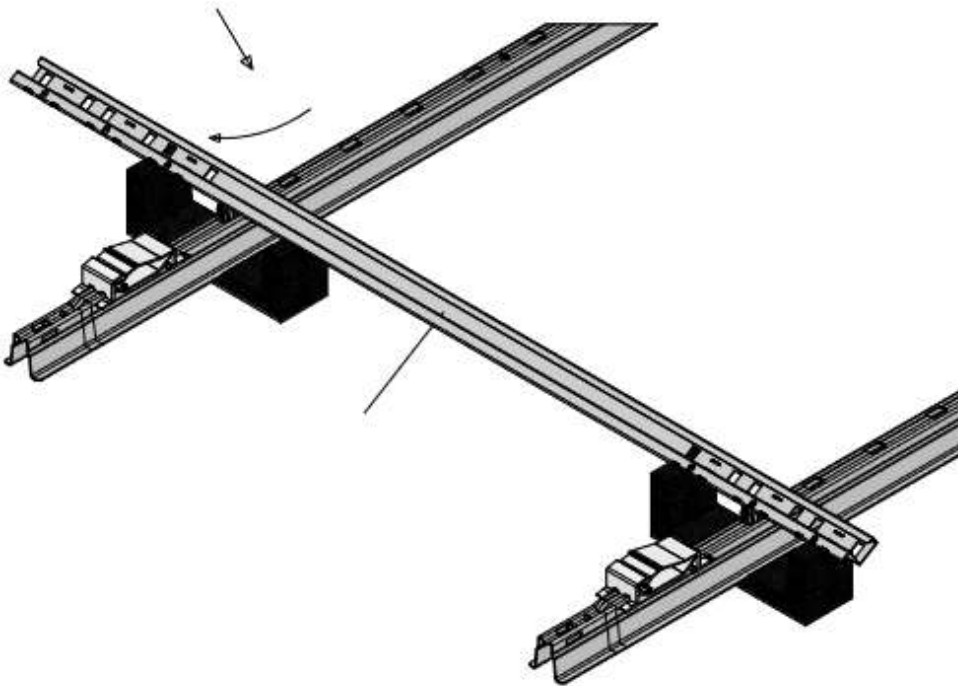
Beware that the end profiles (741615) are only placed at the side edges of the system. For the end profiles, the middle slot is used at all times.

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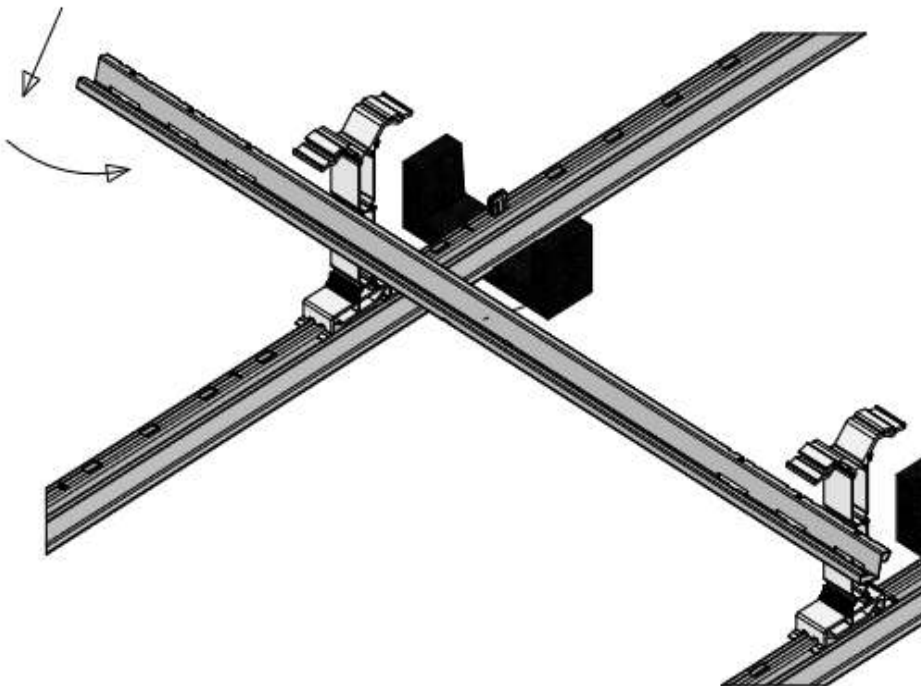


Connection profile (741620) has a length of 1350mm and is used to connect the frame of adjacent solar panels. Pages 14 and 15 can be used to determine which slot to use. The inner one for a pitch of 850mm, the middle one for a pitch of 1050mm and the outer one for a pitch of 1250mm.

Front base



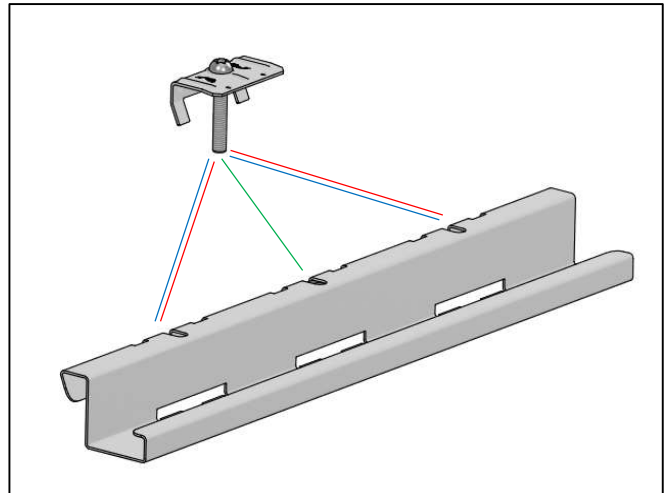
Back base



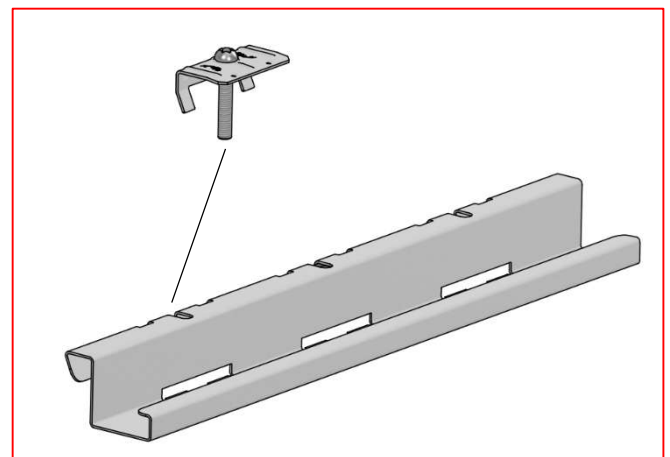
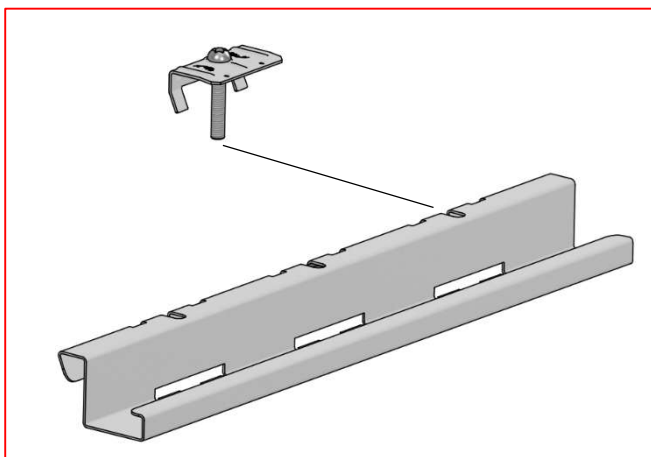
Panel Clamps

The panel clamp (721430/721435) can be placed in one of three spots based on the panel length, these three spots are divided as follows:

- **Red line / Blue line** 1700 - 1900 mm
- **Green line** 1901 - 2100 mm
- **Blue line / Red line** 2101 - 2470 mm

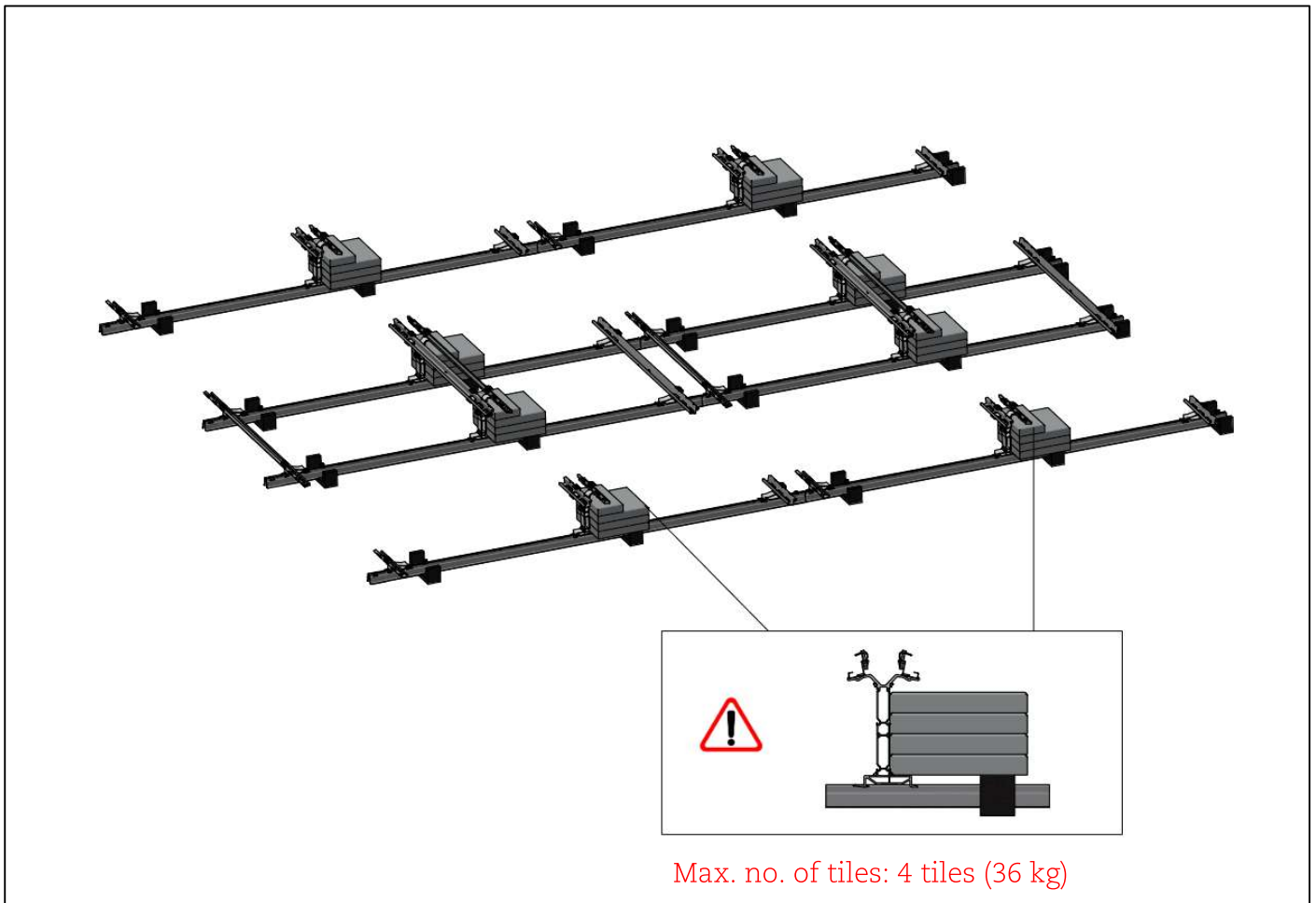


When the panel clamp is placed on the most left/right position, the other clamp will have to mirror that position. For example: if one clamp is placed on the most right position, the other clamp will be placed on the most left position.



Placing ballast tiles

The ballast tiles need to be properly supported by the frame. This can be achieved by placing one side of the tiles on the rubber tile carrier (729622 or 729629) and the other side on lip of the back base (724654). Check the Project Report or ballast drawing carefully to determine the required ballast weight for each solar panel.

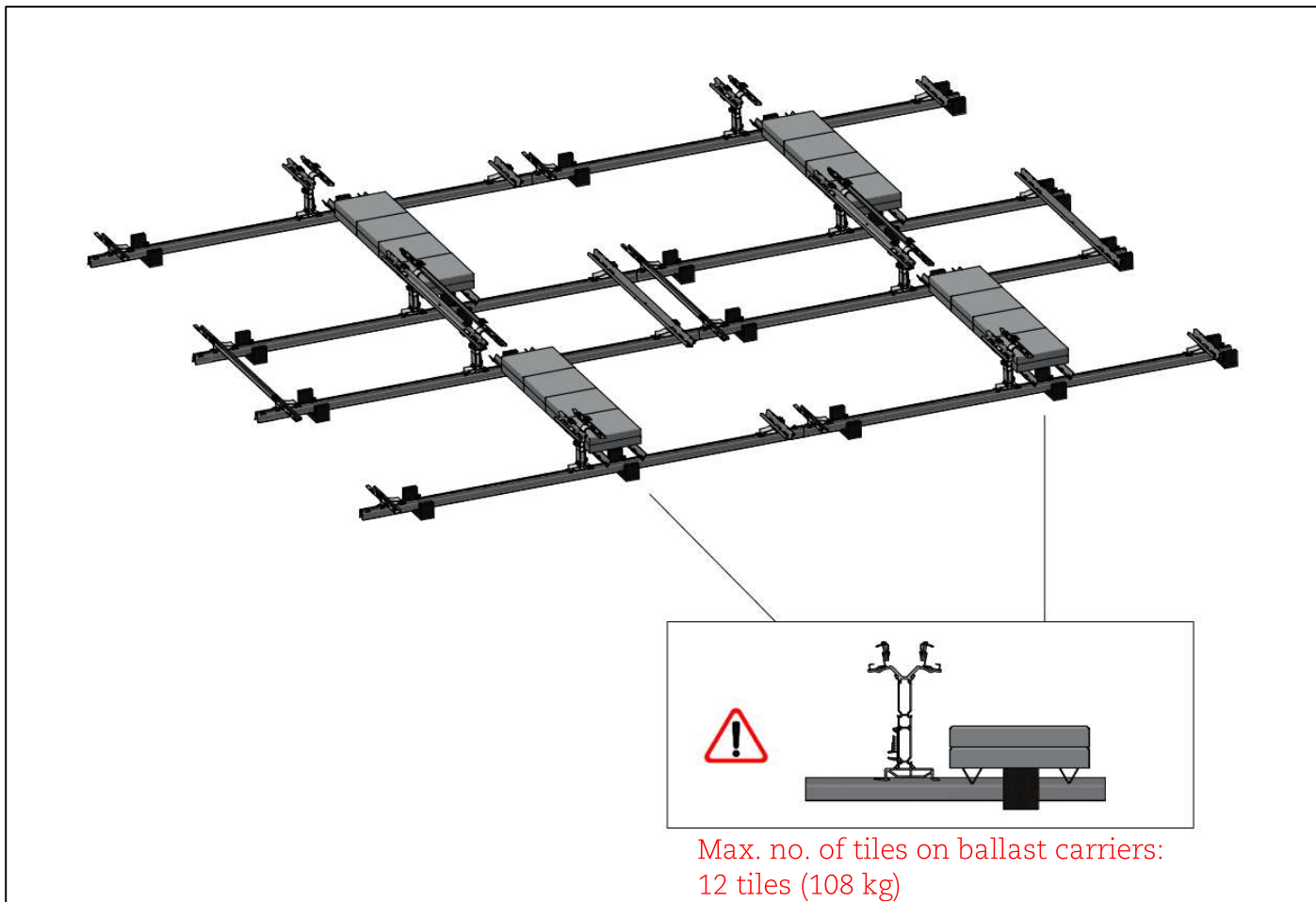


In case more tiles need to be placed then ballast carriers are to be used (742570 or 742571). See the next page for explanation.

Ballast carriers

In case the required ballast per ballast point is more than 4 tiles, ballast carriers (742570 or 742571) are to be used. The ballast carriers are placed on both sides of the rubber tile carrier. The tiles can then be placed on the ballast carriers. (see image).

It is also an option to add additional tile carriers or ballast wings (725150) to support the ballast tiles on the roof carriers, instead of using ballast carriers. However, ensure that the total amount of ballast placed under each panel is always in line with the ballast plan in the Project Report and project drawing.

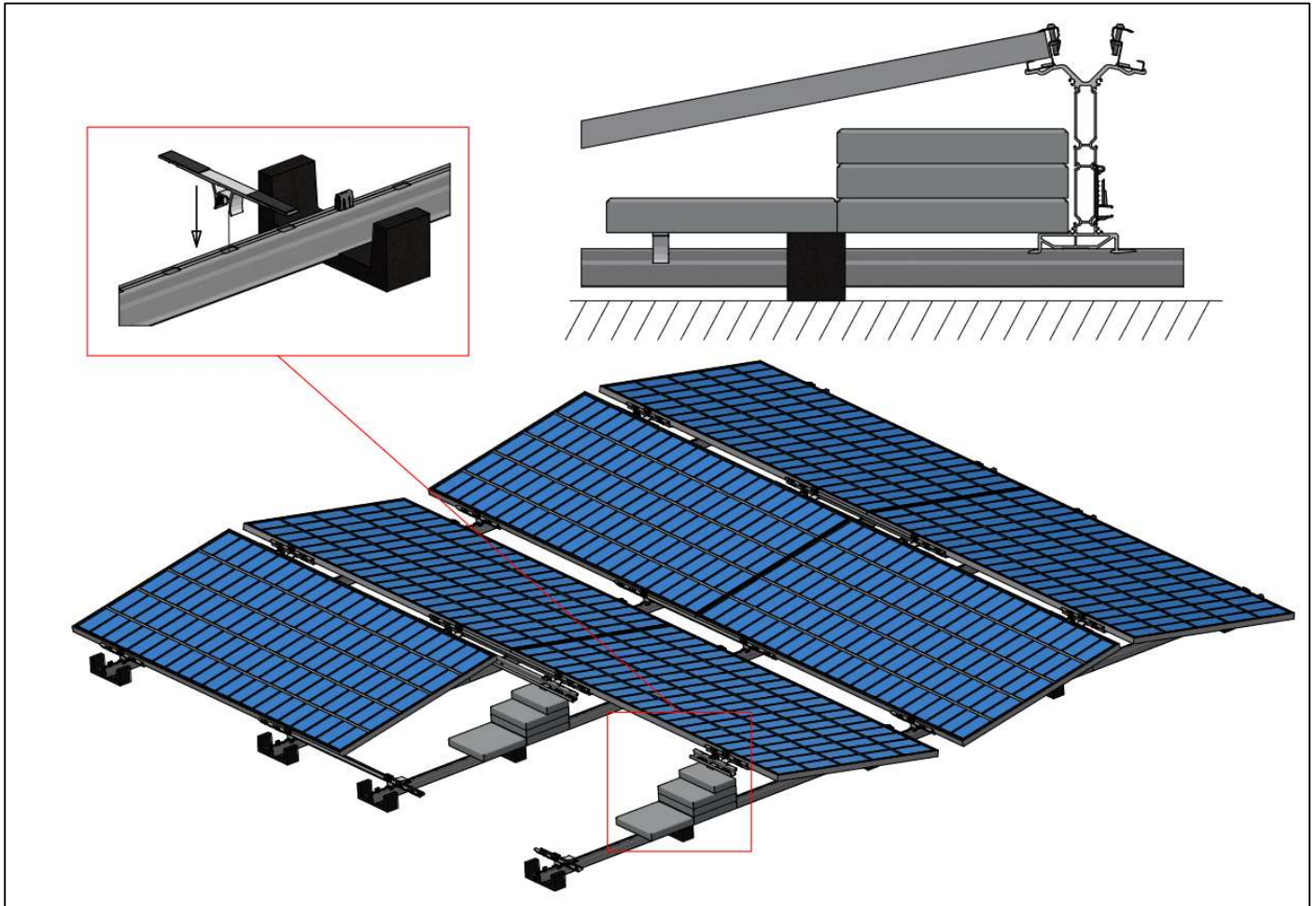


If the panel length is longer than 2400 mm, please contact Van der Valk Solar Systems for a suitable solution.

Ballast wings

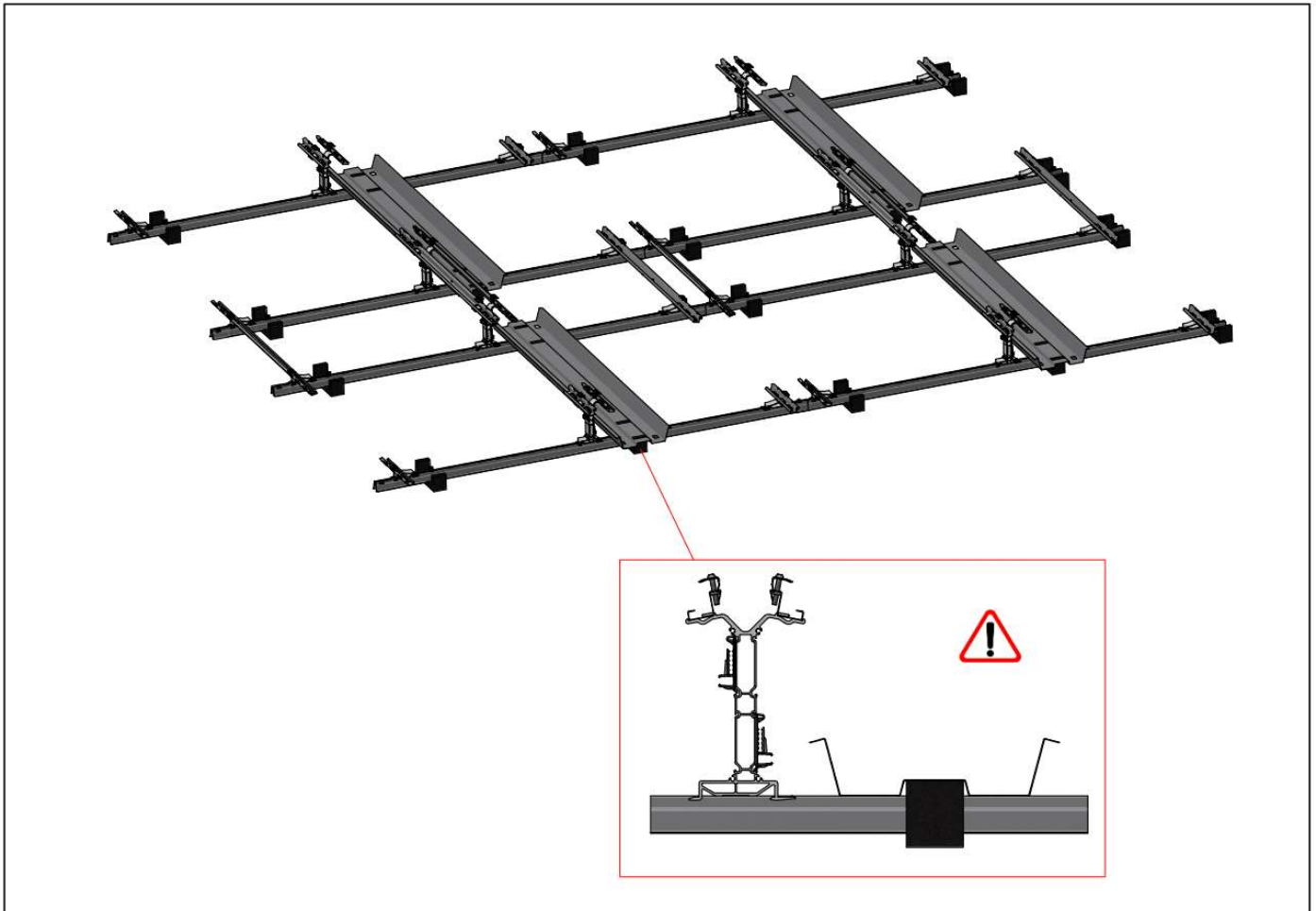
In case tile sizes are used for ballast that are different from the ValkPro+ standard, ballast carriers and ballast wings can be used. Ballast wings (725150) can provide additional support for the tiles and can be placed on any slot on the roof carrier.

The ballast wing is mounted by placing it over the roof carrier over a free slot and pushing it downwards.



Ballast trays

In case gravel (coming from the roof on which the system is placed) or pavers are used for ballast, ballast trays can be applied. The ballast trays are placed over the roof carriers. The slots in the ballast trays on one side will fit the rubber tile carriers so that the ballast trays cannot move. The other side of the ballast tray can be placed in the next ballast tray.



The Max load per tray in case it is filled to the Maximum with gravel (based on a gravel density of 1500 kg/m³):

Art. 742620 (1160 mm) – Max. 0,0165 m³

Art. 742621 (1360 mm) – Max. 0,0193 m³

Art. 742622 (1560 mm) – Max. 0,0222 m³

When using tiles or bricks the Maximum load per ballast tray can be 90 kg. The tiles and bricks cannot be stacked, so only 1 layer is permitted.



If the panel length is longer than 2400 mm, please contact Van der Valk Solar Systems for a suitable solution.

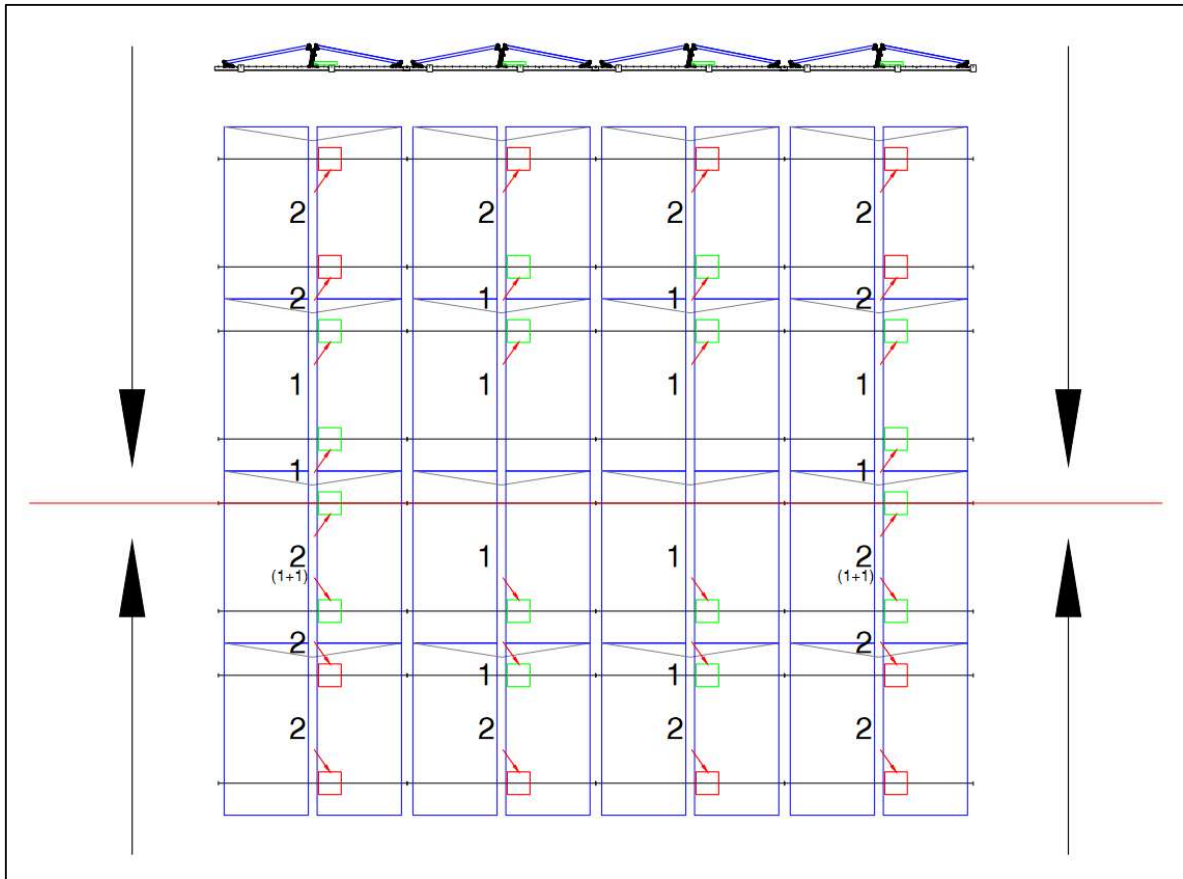
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Spreading ballast

The ballast is placed according to the ballast plan in the project report. The project report indicates the required ballast per panel. Without ballast carriers the ballast is to be divided over the ballast points under the individual panel. The next image shows how the ballast should be divided over the different ballast points.

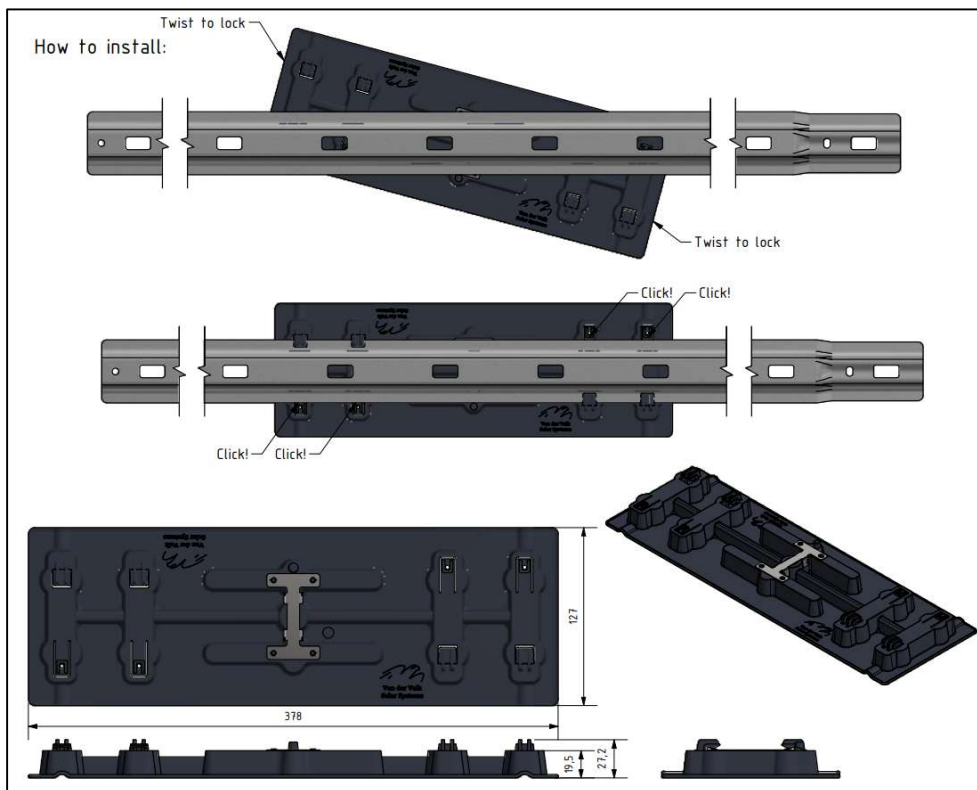
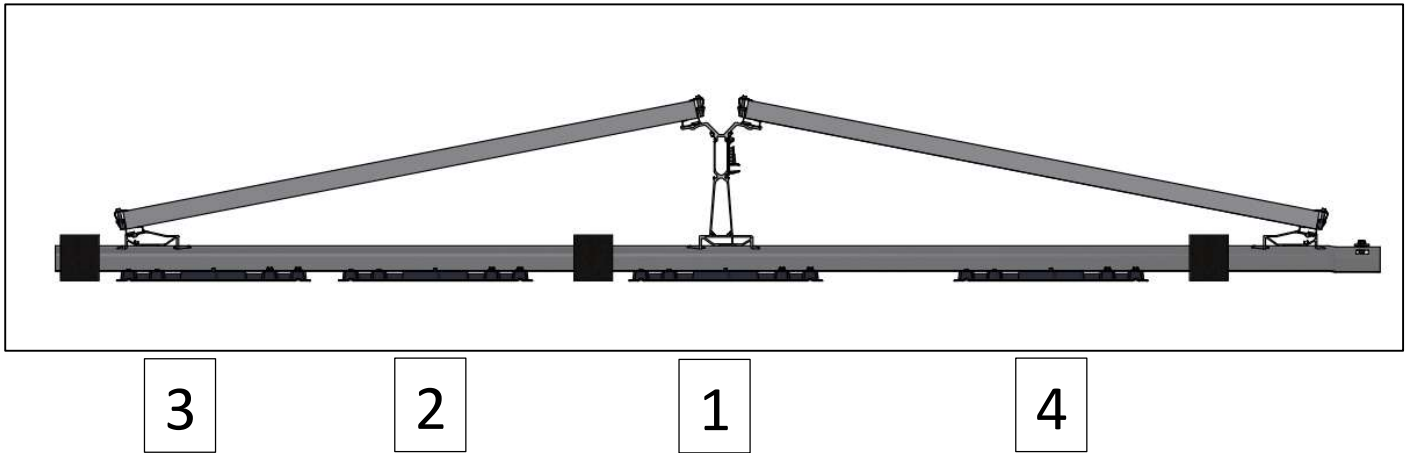
PLEASE NOTE! Image below is an example.



The required number of tiles is indicated per panel (same as the project report). The ballast is always placed starting from the outside toward the centre of the system. Therefore the middle row of the system doesn't have any ballast (see red line). If necessary there may be ballast placed on those foundation points as well.

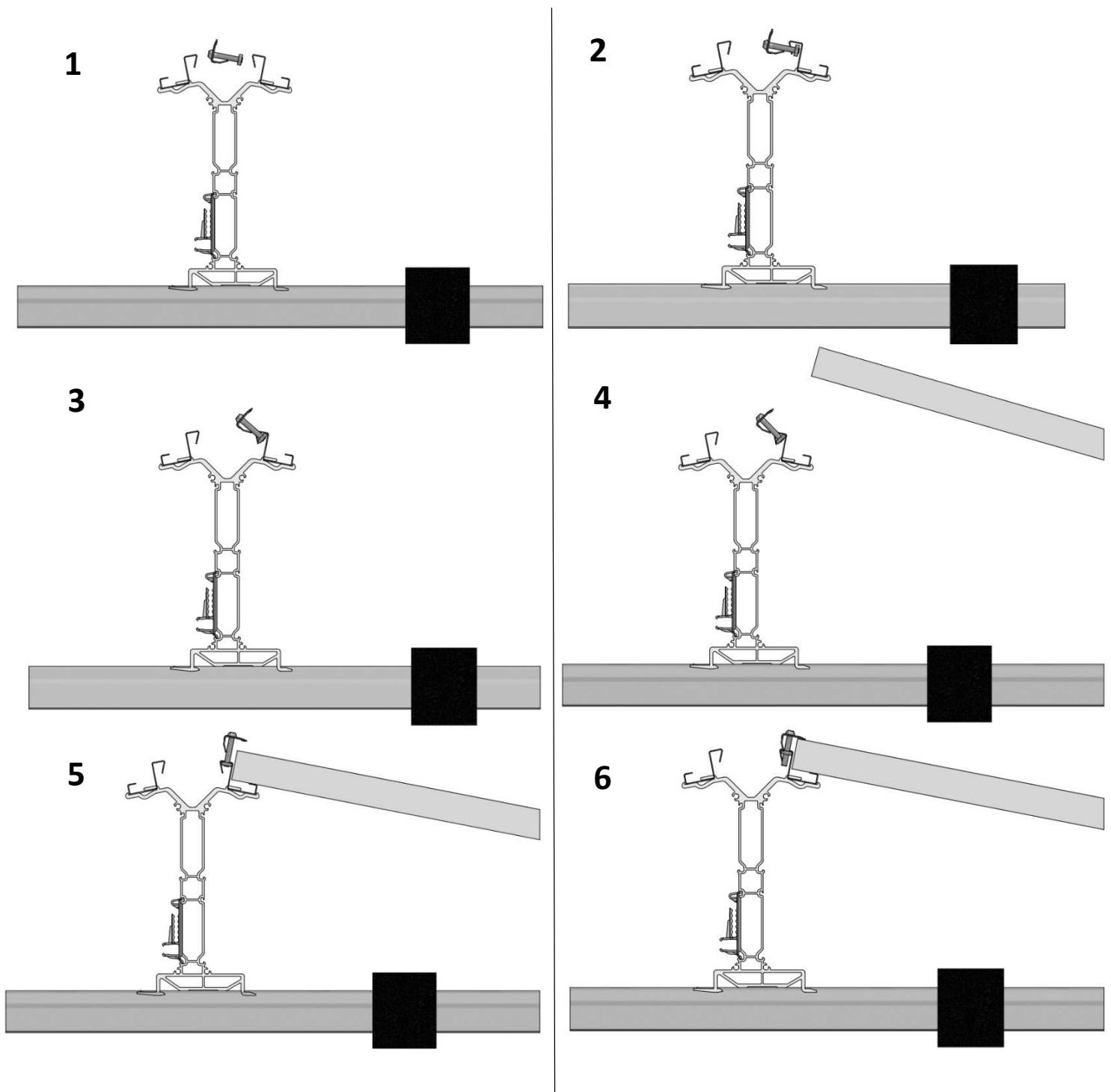
Load distributors

In order to reduce the point load of the ValkPro+ system on the roof, load distributors can be used. It is important that the load distributors are positioned correctly to have full effect. The numbers in the image below represent the best preferred positions for the load distributors when using 1, 2 or 3 pieces per panel. For more information, please refer to the datasheet that can be downloaded on the website.

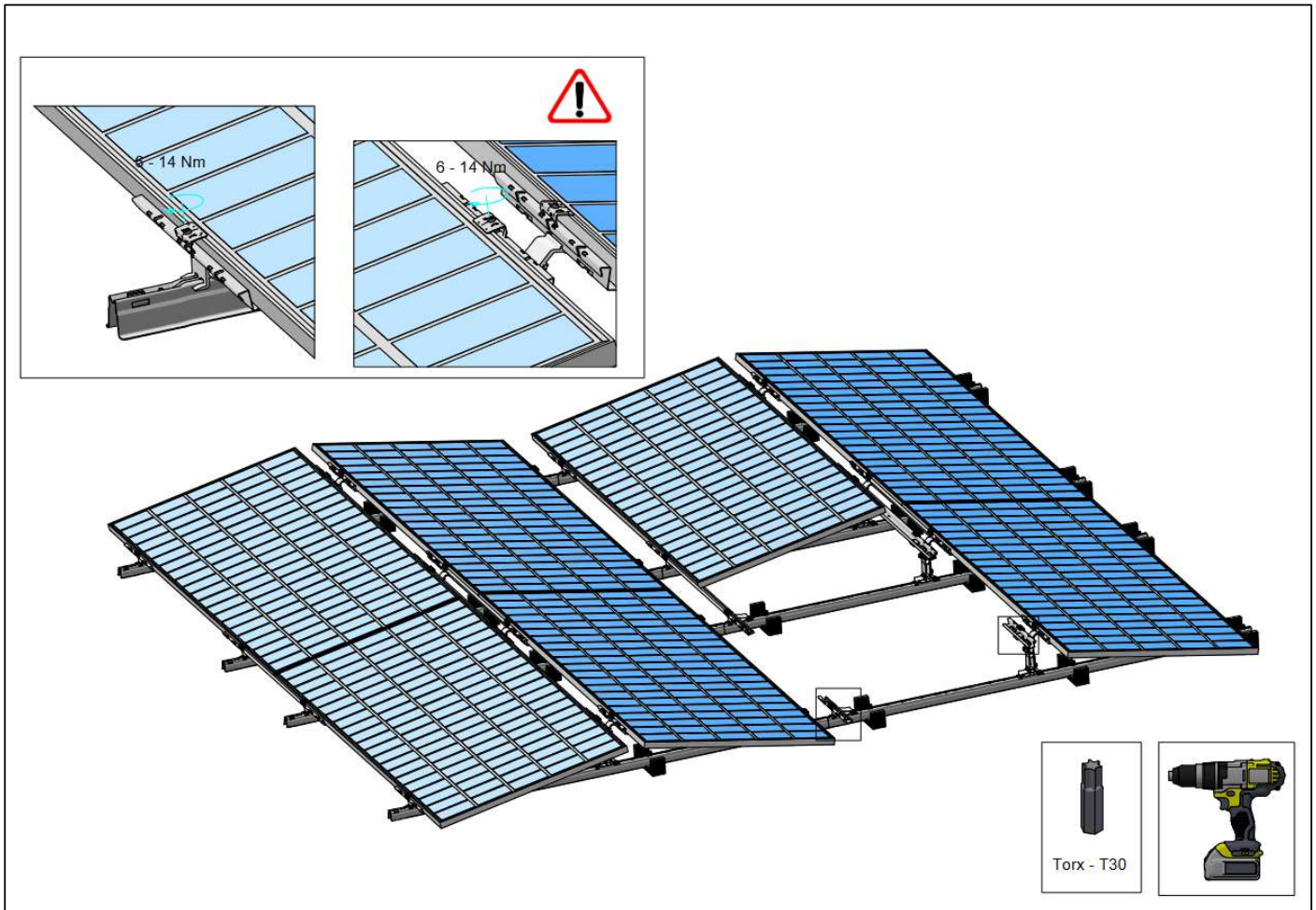


Placing solar panels

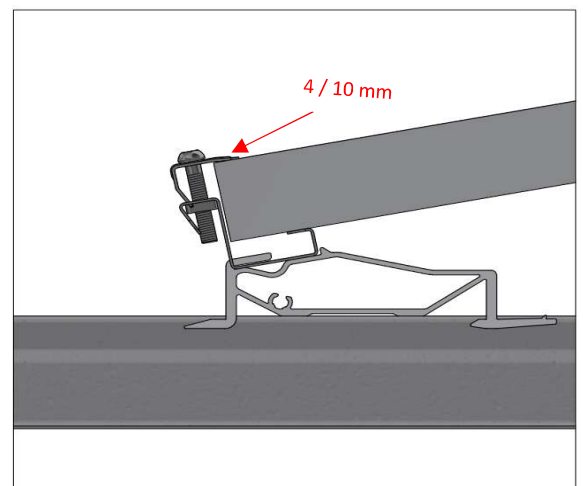
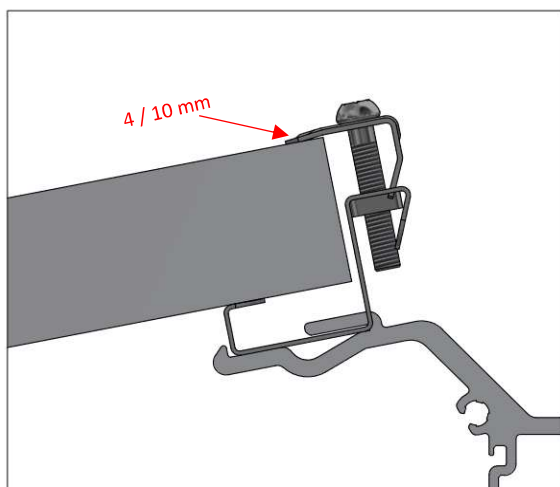
Mounting the panel clamp (721430/721435) can be done in a few easy steps (see image below)



Place the solar panels under the clamps and make sure ALL the panel clamps are securely fastened.



Make sure the top section of the end clamp is positioned in the correct height slot, aligned with the panel frame thickness, before fastening the clamp. Each clamp must have an overlap of at least 4 till 10 mm with the panel frame, in order to provide sufficient clamping force.

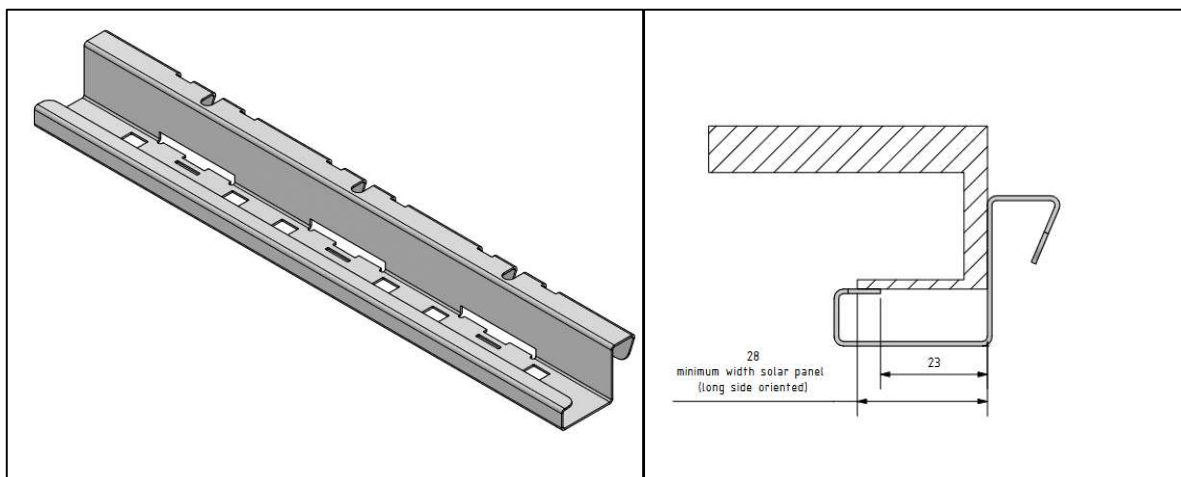


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The minimum width of the panel frame on the underside of the panel needs to be at least 28mm

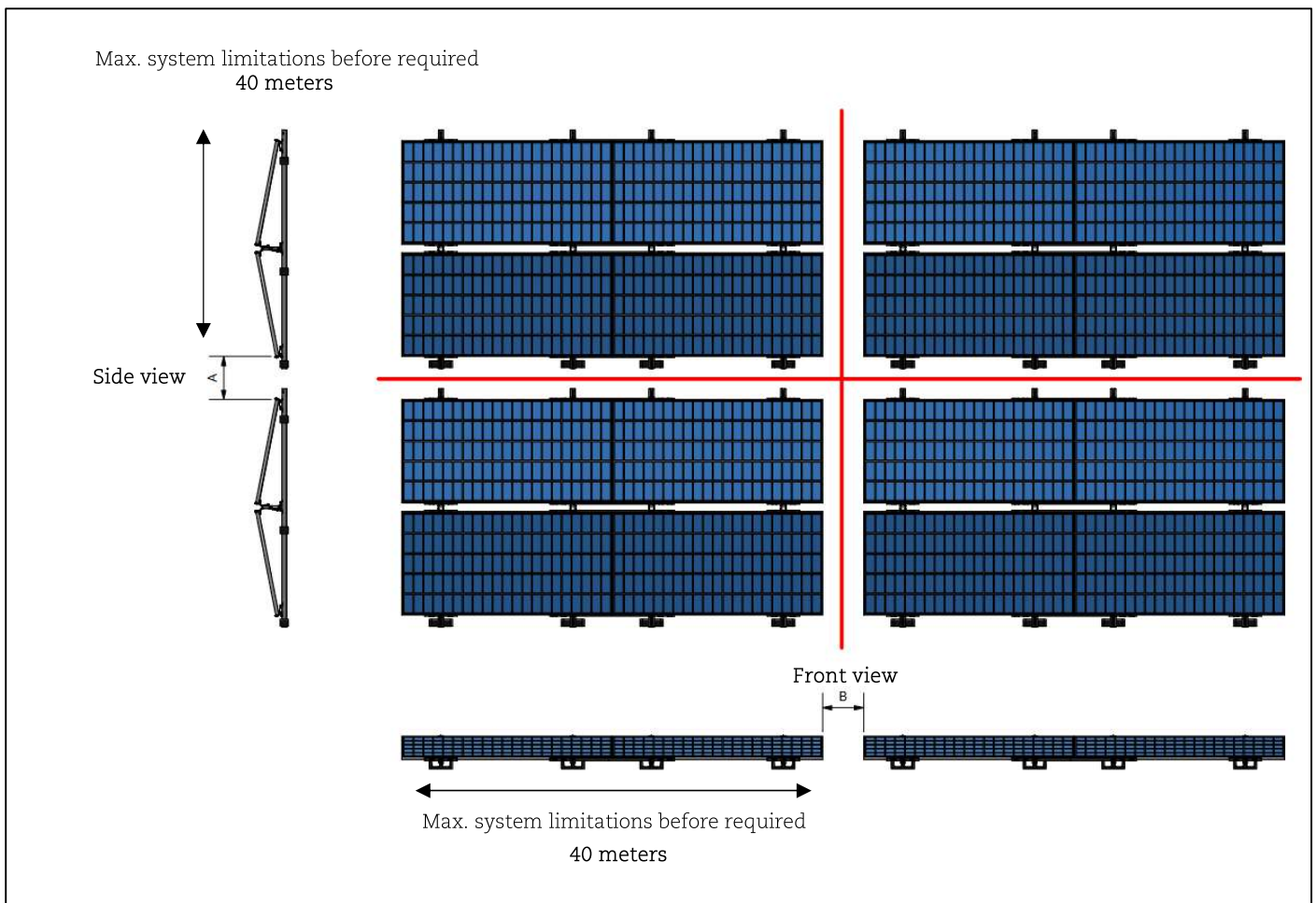


Dilatations

In order to handle the effects of thermal expansion and contraction of the ValkPro+ mounting system, the maximum length for a coupled system is 40 x 40 meters. At each of these length a dilatation in the system is required. Also in case the mounting system is placed over a gutter or roof, a dilatation is required.

When a system has a dilatation, the system is seen as two separate systems. However, if the gap between the systems is limited (see dimensions A and B), the outer panels of the adjacent systems can be calculated as “shielded panels”. Shielded panels require less ballast, compared to “exposed panels”.

The gaps between the systems for the dilatations are shown in the image below.



Dimension A (measured between the panels on the low side):
min. 170 mm and Max. 470 mm

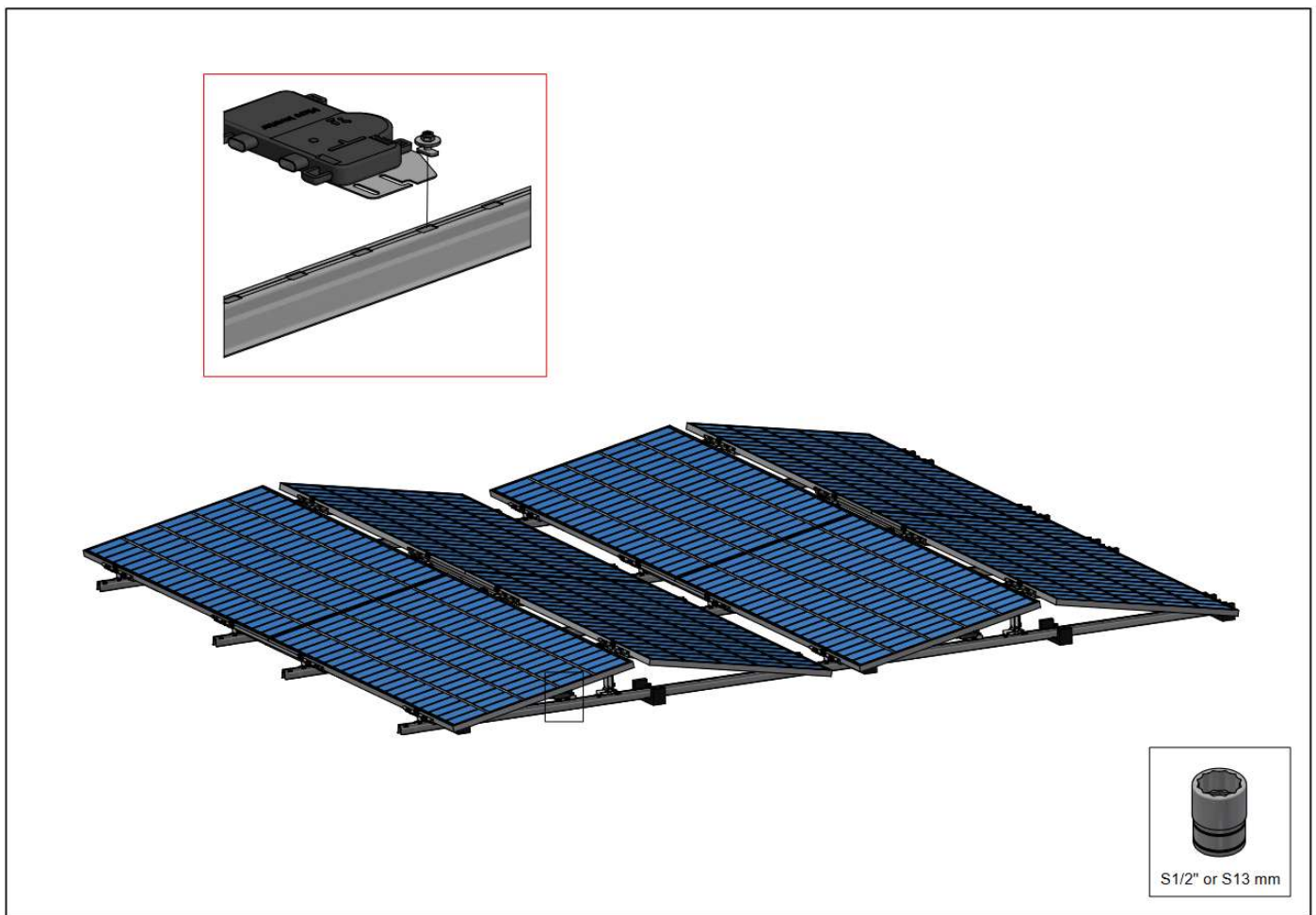
Dimension B (distance between the panels on the long side):
Min. 350 mm and Max. 500 mm

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Mounting micro inverter clamps

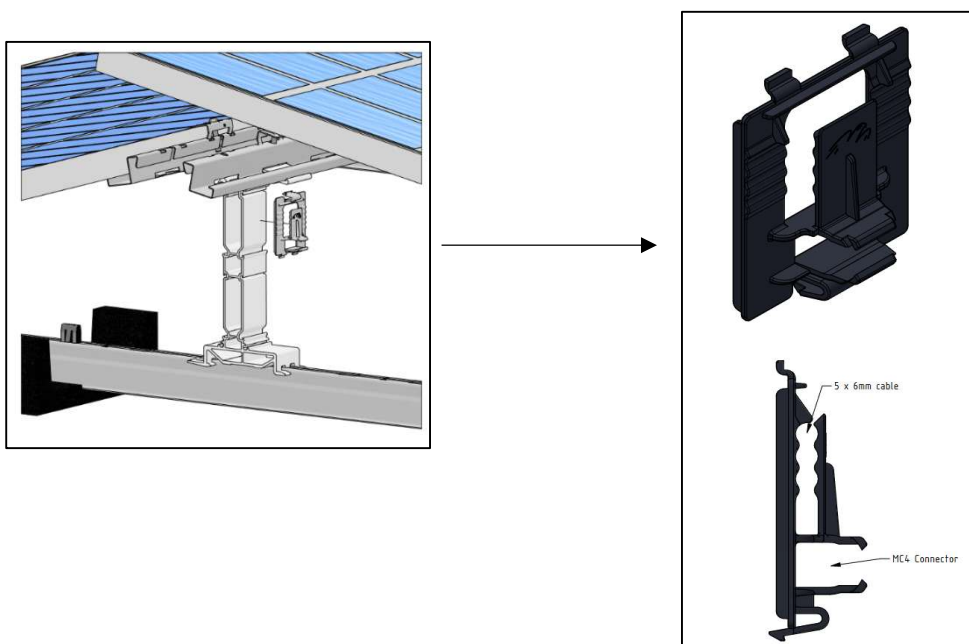
The micro inverters can be fastened to the roof carrier using the coupling sets (774221).



Cable Management

Cable clamp – back foot (732025)

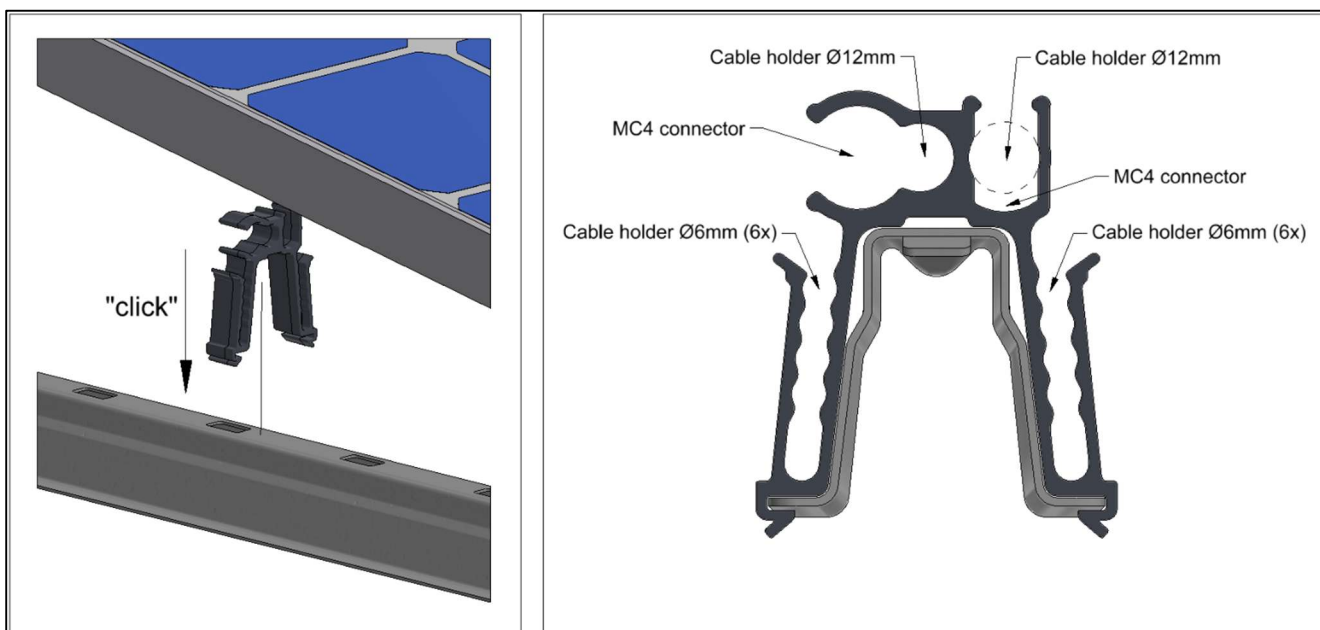
Cable clamp (732025) can be clicked onto the aluminium back feet of the system, and can hold multiple cables.



Multi-cable en connector clip (732012)

This clip can be placed over the roof carrier in any desired location. It has multiple options to hold various MC4 connectors and cables:

- 2 x MC4 connector holder
- 2 x Cable holder Ø12 mm (DC/AC)
- 12 x Cable holder Ø6 mm



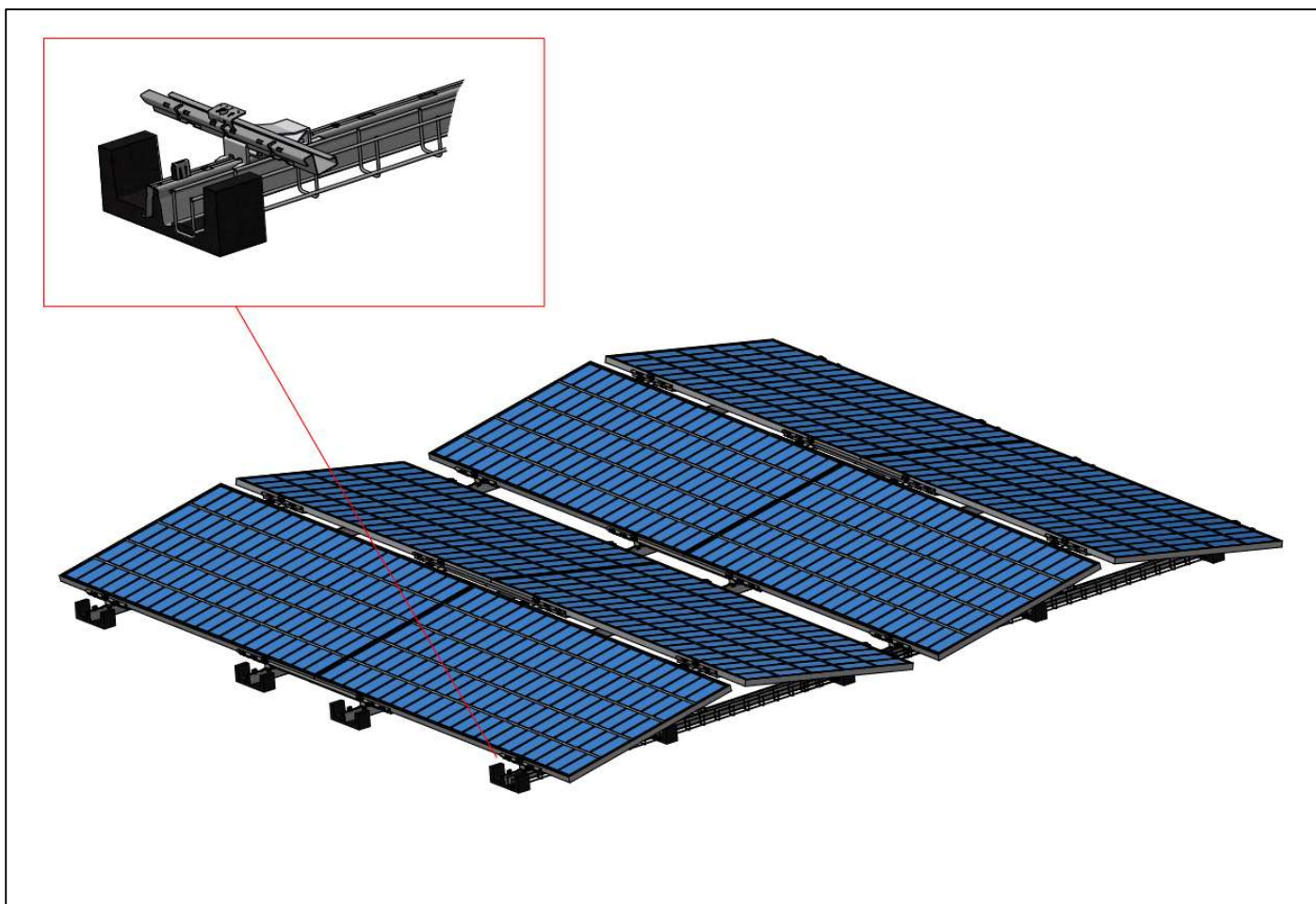
Cable basket integration

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Cable baskets can be perfectly integrated in the ValkPro+ system. Cable baskets with a special width of 50 mm and height of 60 mm (76010050603000) can be placed on both sides of the roof carrier and fit perfectly in the tile carriers.

Please note: in case ballast carriers are used, it is not possible to place the cable baskets in the inside position (under the solar panel) next to the roof carrier.

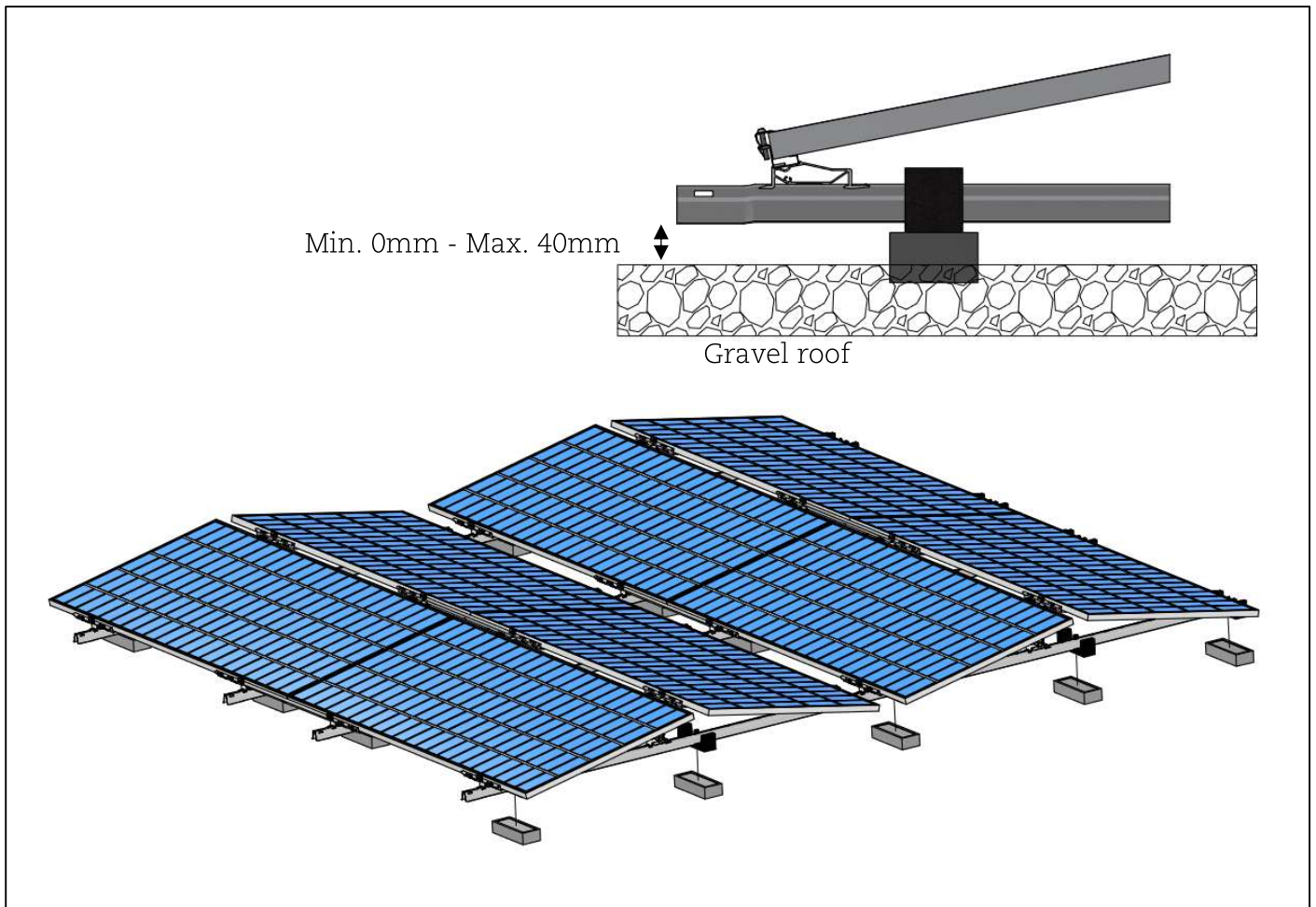


Installing ValkPro+ Max on other roof types and ground

The ValkPro+ Max Landscape system is suitable to be used on a range of roof coverings. In this section, the solutions for roof coverings that are different from membranes are described.

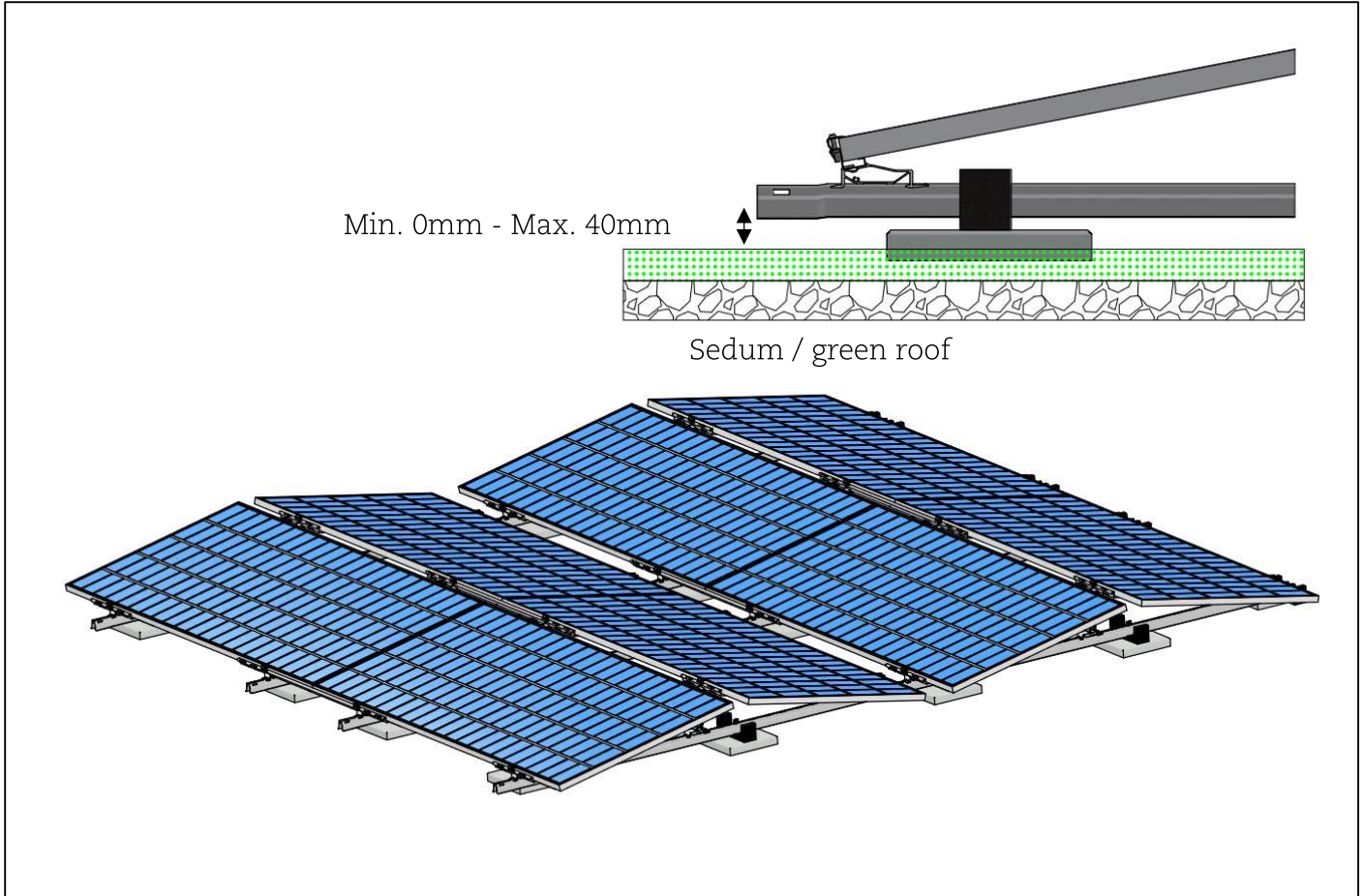
Gravel roofs

In case the roof has a top layer of gravel, the ValkPro+ system can be placed without the need to remove all the gravel from the roof. This can be done by using rubber elevation blocks (729627) that can be placed in between the gravel. Make sure the gap between the gravel and the underside of the roof carrier is always 0 - 40 mm.



Sedum / green roofs

For sedum / green roofs the recommendation is to place tiles (7506303045) in the sedum to create a flat support base for the tile carriers of the ValkPro+ system. The tiles under the system will distribute the point loads better and prevent the system from sinking into the vegetation. It is important to ensure the gap between the sedum and the underside of the roof carrier is always 0 - 40 mm.

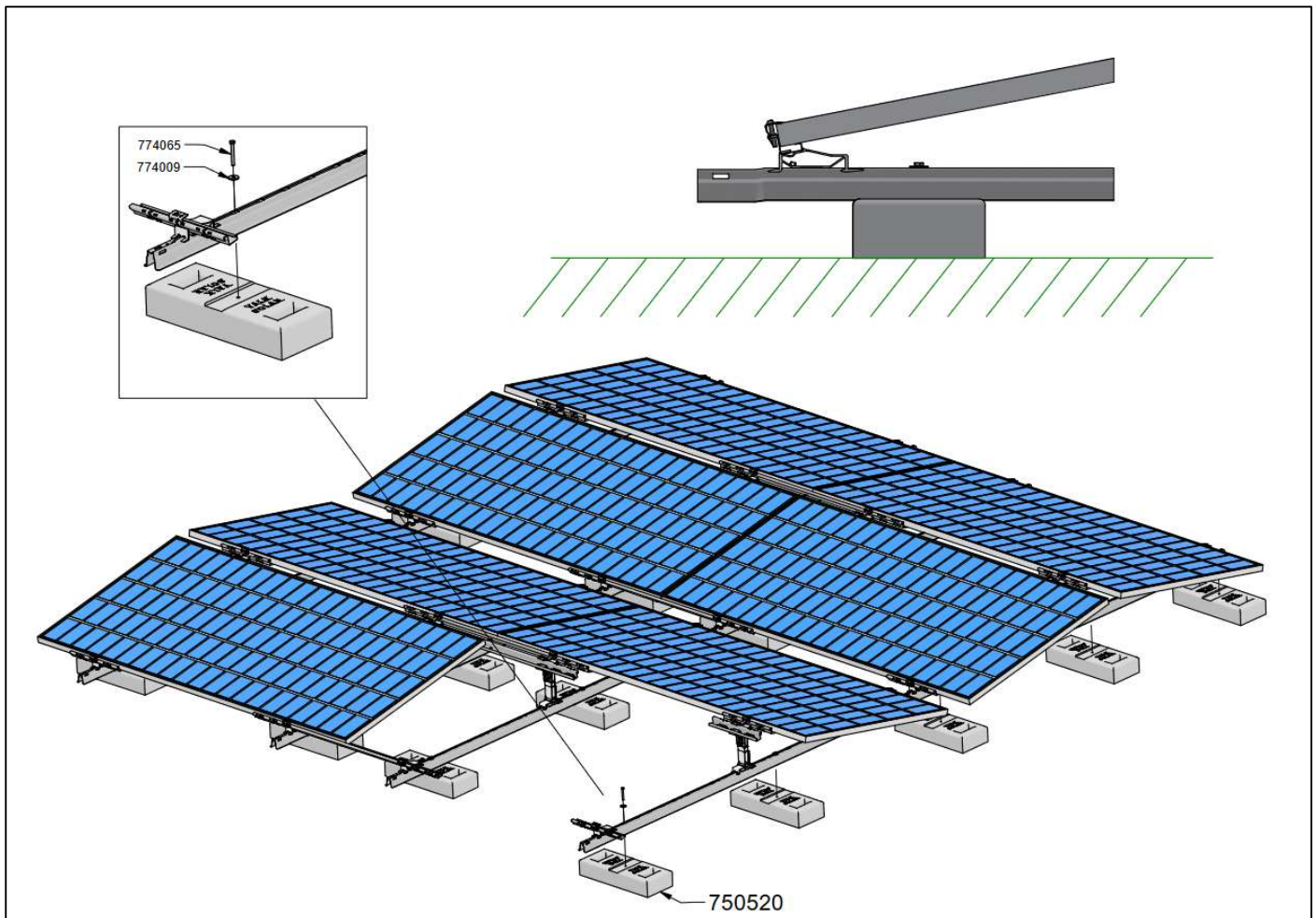


ValkPro+ as a field system

The Valkpro+ system is perfect to use on the ground as a “field system”, as long as the ground surface is flat, levelled out and can support the weight of the system. This can be realised in the following ways:

- By placing the system on a hard surface, such as pavement or concrete slabs (Stelcon)
- By placing the system in a field where a high quality rooting membrane is present under the system to prevent the spread of weeds. Gravel can be added under the system to protect the membrane from UV-light.

The system is mounted on top of concrete mass blocks (Art. 750520). The mass blocks are fixed to the roof carriers with a stainless steel bolt M8 x 65 mm and washer (Art. 774065 + 774009).

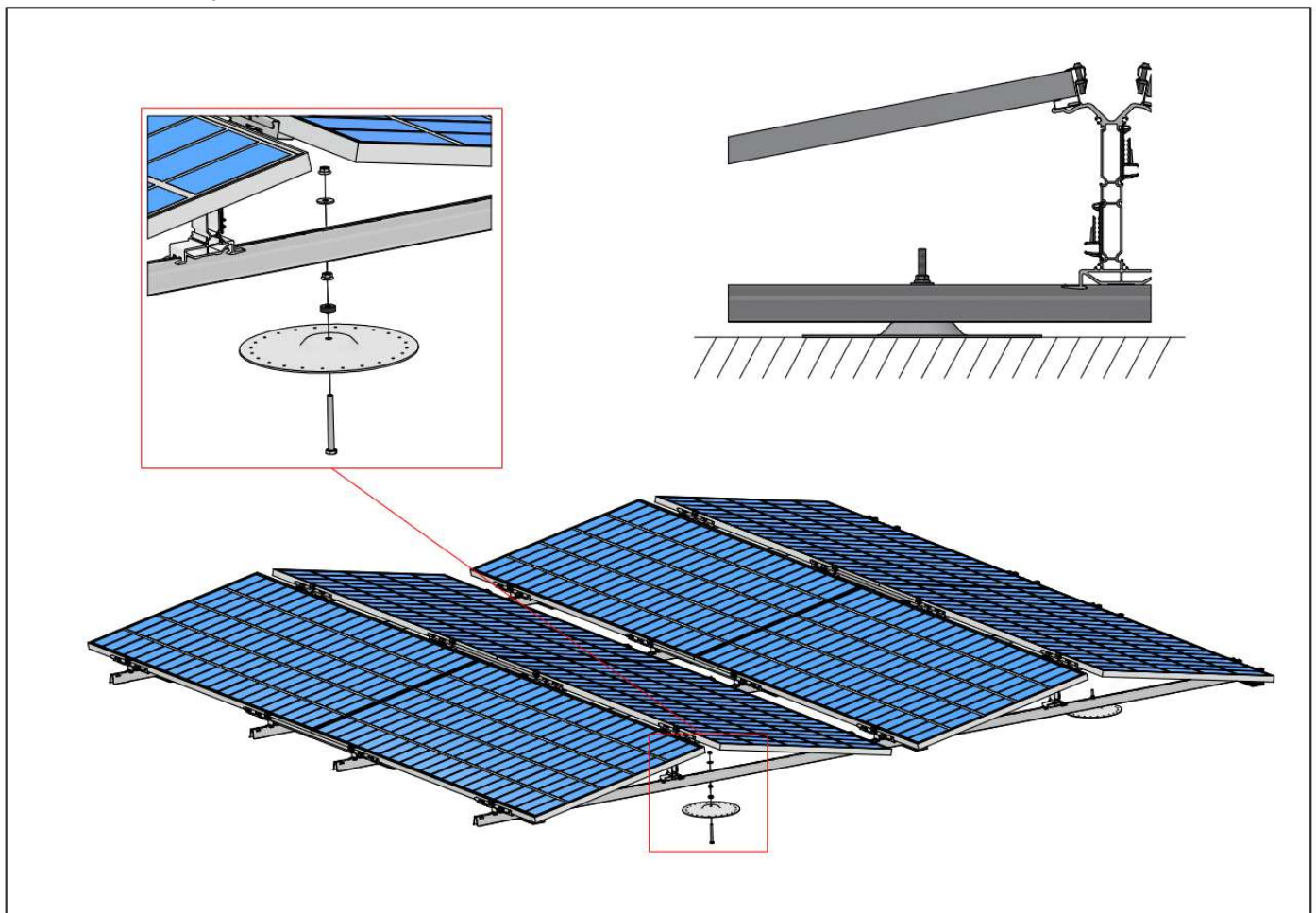


ValkSolarFix

The ValkPro+ system can be mechanical fixed to the roof. This can be done with the ValkSolarFix consoles. These consoles with height of 20mm match perfectly with the roof carriers of the ValkPro+ system. The ValkSolarFix offers various options for the fixation to the roof:

- Toggle anchors for wooden or steel roof structures.
- Concrete anchors for fixation in concrete roof structures
- Roof screws for fixation in wooden roof structures
- Roof screws for fixation in steel plate roof structures
- Roof screws for fixation in aerated concrete

For the detailed installation manuals and videos for ValkSolarFix, please refer to our website: www.valksolarsystems.com.



Roofs with Lightning Protection System (LPS)

When a PV-system is to be installed on a roof that has a Lightning Protection System (LPS) in place, there are important rules to follow:

Inform the customer of the PV-system prior to installation that additional information is required.

Always get in contact with the installer of the LPS and follow their guidelines. It could be that additional measures need to be taken and the existing LPS or the layout of the PV-system needs to be adapted.

Situation 1

In case the ValkPro+ MAX system is placed within the protection area of the LPS and the separation distance between the ValkPro+ MAX system and the LPS-system is kept ($s > 50$ cm): the substructure of the ValkPro+ MAX system and the LPS should not be connected. Only functional equipotential bonding of the PV-system is required, using 6 mm² Cu in accordance to EN 62305-3.

Situation 2

In case the PV-system is placed within the protection area of the LPS and the separation distance is not kept ($s < 50$ cm): the substructure of the PV-system and the LPS must be connected for lightning equipotential bonding, using 16 mm² Cu or 25 mm² Al.

Use approved clamps to make the connection between the LPS and the mounting structure of the PV-system. The mounting structure of the PV-system and combination with the clamps must meet the requirements in accordance to IEC 62561-1.

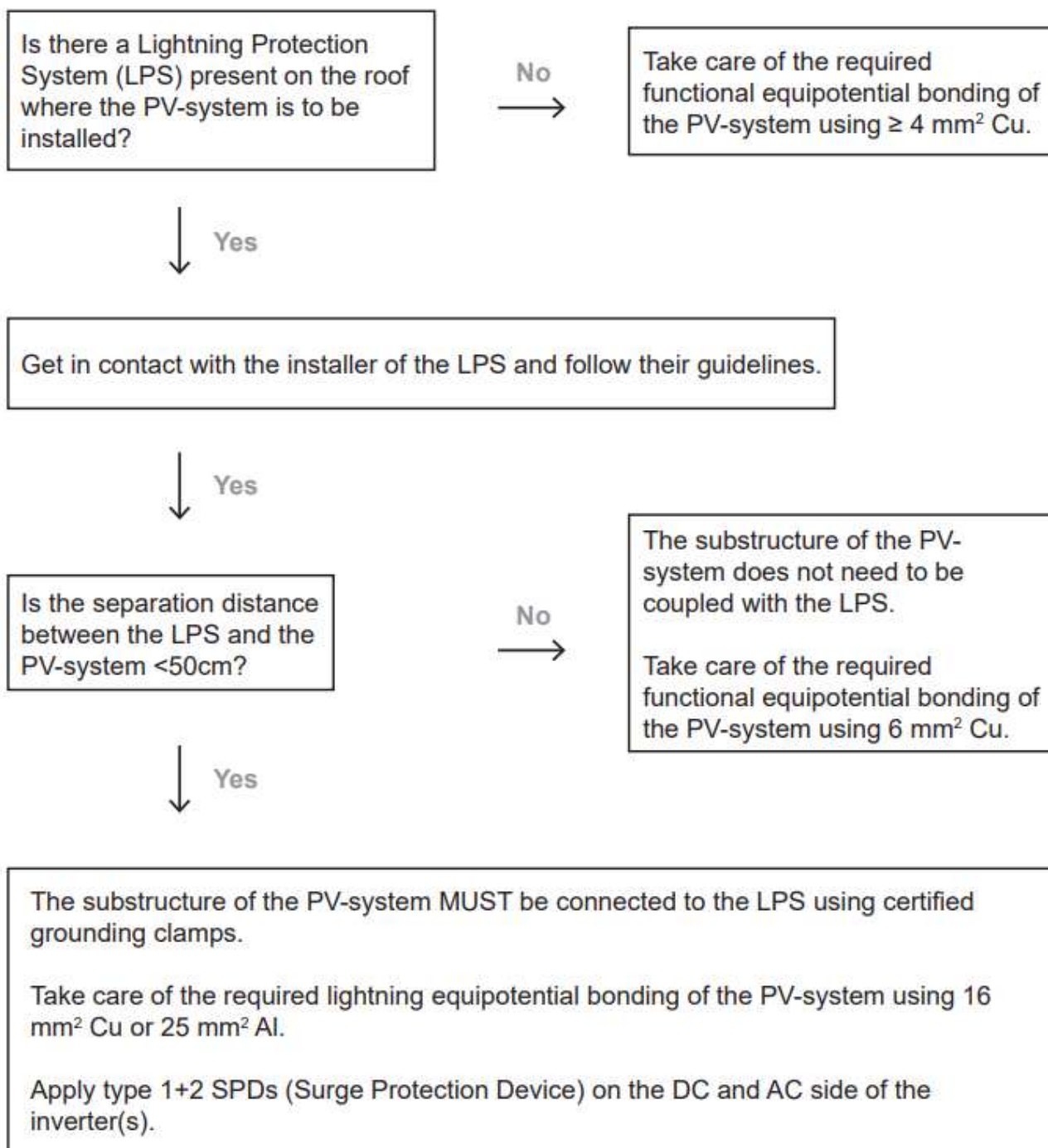
Apply type 1+2 SPDs (Surge Protection Device) on the DC and AC side of the inverter(s) in accordance to IEC 62305-3.

Standards

The information in this leaflet is based on the following international standards:

- IEC 60364 Electrical installations for buildings
- IEC 62305-3 Protection against lightning - Physical damage to structures and life hazard
- IEC 62305-4 Protection against lightning - Electrical and electronic systems within structures
- IEC 62561-1 Lightning Protection System Components (LPSC) - Part 1: Requirements for connection components

Decision scheme



Connecting the Lightning Protection System (LPS) to ValkPro+ MAX (Situation 2)

ValkPro+ MAX

The ValkPro+ mounting system has a unique base structure of steel roof carriers that are connected by bolts and nuts (no click connections). This is required to make the reliable framework as integrated part of the LPS.

Certification

DEHN has certified the ValkPro+ system in accordance to IEC62561-1. This guarantees that the assembly of the roof carriers and grounding clamps can withstand expected lightning partial currents based on LPL III (100 kA), provided that the system is properly installed in line with the guidelines in the installation manual of the ValkPro+ system from Van der Valk Solar Systems.

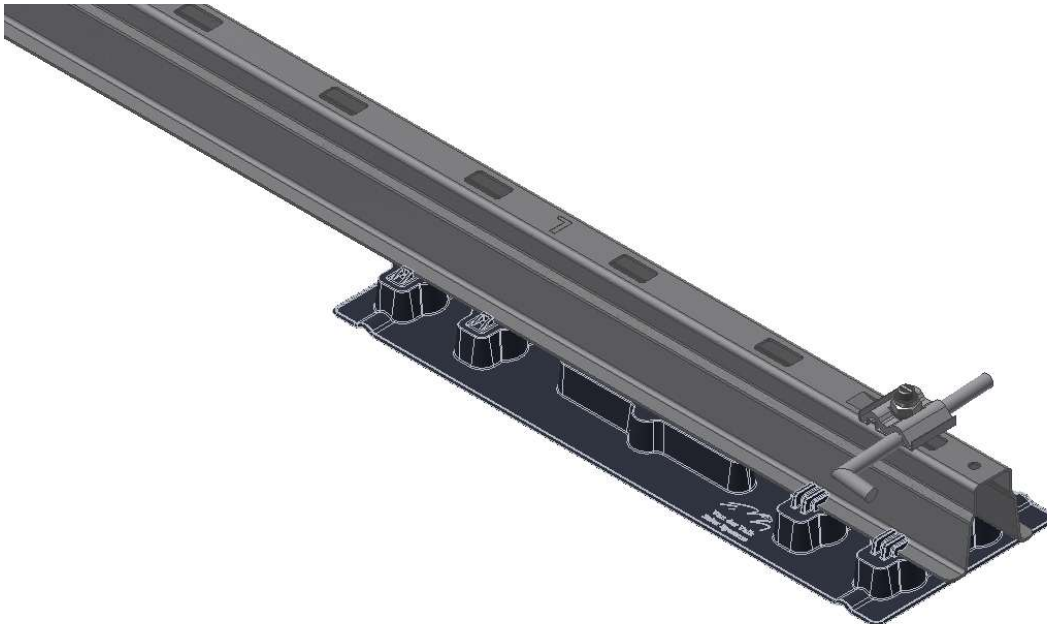
The full report is available upon request at Van der Valk Solar Systems.

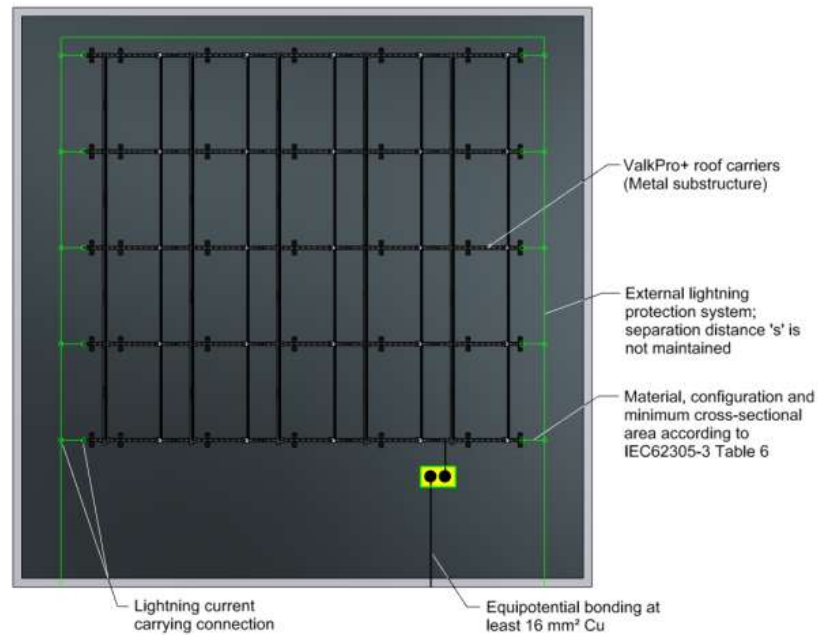
Installation

For the lightning equipotential bonding 16 mm² Cu or 25 mm² Al needs to be used, in combination with approved grounding clamps (DEHN) to make the connection to the ValkPro+ roof carriers. See image below. The clamps are available at Van der Valk Solar Systems under article number Art. 762805 (M10) / Art. 762806 (M8).

Each length of coupled roof carriers needs to be connected at both ends to the LPS. See image on next page.

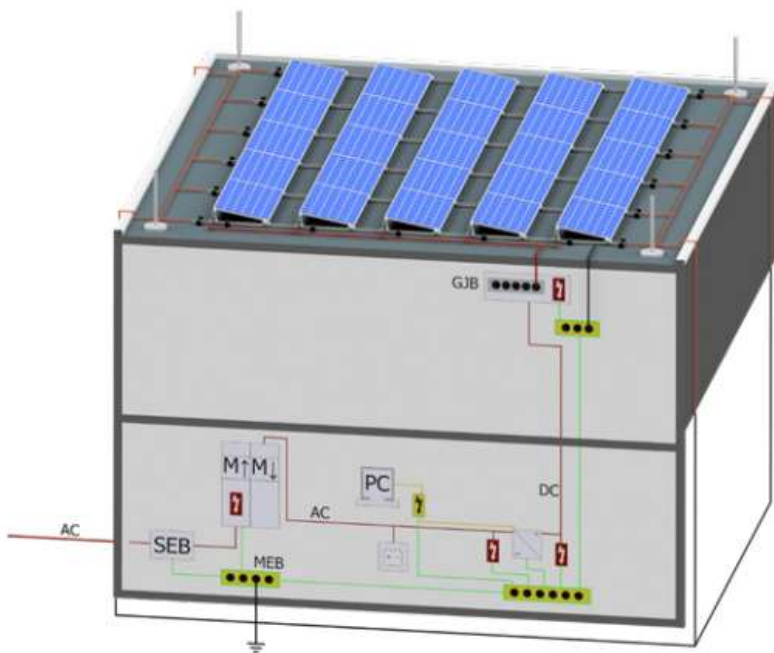
Please note: the clamp can be mounted using the last slot of the roof carrier. In this position, the rubber tile carrier has to be replaced for a load distributor for this reason. See image below.





Important!

When connecting the ValkPro+ roof carriers to the LPS, you are obliged to provide the PV inverter(s) on the DC and AC side with type 1+2 SPDs (Surge Protection Device) in accordance to IEC 62305-3 to prevent dangerous sparking and fire.



Reliable

With this tested equalization of the lightning partial currents between the LPS and ValkPro+ system and building grounding in combination with matching type 1+2 SPDs, you can be sure of a reliably functioning PV-system in the event of a lightning strike. For more information about ValkPro+, please contact Van der Valk Solar Systems or contact DEHN for information on lightning and surge protection.

Inspection and maintenance of ValkPro+ Max Landscape

The ValkPro+ mounting system requires little maintenance over time. It is recommended however to periodically inspect the mounting system for mechanical integrity, correct installation and potential changes in the surroundings.

Caution! When inspecting the PV mounting system on a roof where there is a risk of falling, then fall protection equipment (eg. harness or scaffolding) **MUST** be used at all times.

Checkpoints and measures

- Check the mounting system for any visible damage and replace any damaged part(s) if needed.
- Check if the ballast tiles are still correctly in place. Any ballast tiles that have been (re)moved from or fallen off the system should be put back in place.
- Check if all side and back plates are still in place and securely fastened. Any loose screws should be tightened.
- Check if the clamps for the solar panels are all in place and correctly fastened. Make sure each clamp has sufficient surface contact with the panel frame. Any clamps not correctly in place or loose, should be adjusted and fastened.
- Check if the steel roof carriers are nowhere in direct contact with the roof surface. Any position where the roof carrier is in direct contact with the roof surface requires an additional tile carrier or load distributor to be placed under the system.
- Check if no parts of the mounting system are in contact with water remaining on the roof for long periods. If this is the case, it is recommended to take measures to prevent water from collecting in positions where the mounting system is placed.
- Check if the electric cables and connectors are still correctly placed in the cable and connector clamps. Any loose cables, cables in contact with the roof surface or ballast tiles, need to be put back in the cable clamps. In case needed, additional clamps need to be placed.
- Check the surroundings for new high buildings or structures adjacent or close to the roof, that were not yet present when the ValkPro+ system was originally installed. In case the height of the new building structure is double the height of the roof on which the mounting system was installed, a new ballast plan needs to be made! Please contact Van der Valk Solar Systems for advice.

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 in the Netherlands consists of 35.000m² 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



Carports



Cable management

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