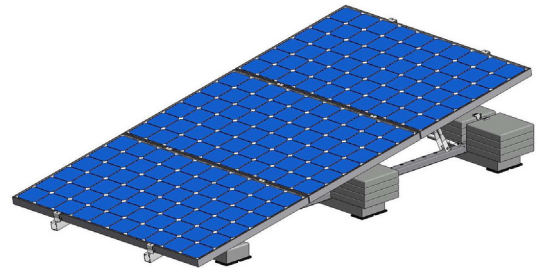


Congratulations on buying the ValkTriple® mounting system and on helping the environment by deciding to install solar panels.

The ValkTriple® mounting system is an universal mounting system that can be used to install 3 standard solar panels in a landscape set-up one above the other, with a tilt angle of 10°, on a flat roof with a height up to 10 m. The components supplied do not include the additional ballast required, which will be a number of standard size tiles (measuring 30 x 30 x 4.5 cm). The number of tiles required per position, per type of solar panel, per roof area and per building height is specified in the tables on the back of this document.



### Safety instructions

The ValkTriple® mounting system is installed on roofs and will be exposed to wind and snow. The building in question will be subject to a greater load as a result of the solar system. A design calculation must be used to establish whether or not the building in question will be able to withstand the extra load. Where necessary, modifications will need to be made.

When installing the ValkTriple® mounting system, the instructions provided in this user manual must be observed at all times.

Read this manual carefully and keep it in a safe place. Also follow the instructions stated in the manuals for the other system components that form part of the overall solar system.

All current structural, safety and building regulations must be observed.

Van der Valk Solar Systems B.V. will never be liable for any direct and/or indirect intangible or consequential loss ensuing from or connected to the failure to observe the instructions provided in this manual.

### Starting points

The following starting points apply for the ValkTriple® mounting system:

#### The standards applied

NEN-EN 1990	: Eurocode – Basis of structural design
NEN-EN 1991-1-4	: Eurocode 1: Actions on structures - Part 1-4: General actions – Wind actions
NVN7250	: Solar energy systems – Integration in roofs and facades – Constructional aspects
BS EN 1991-1-4	: British Standard


#### Type of solar panel

The ValkTriple® mounting system is a universal mounting system for solar panels. The following starting points apply:

Panel design	: Standard solar panels with an aluminium frame, with mounting holes for M6 bolts upwards.
Panel length	: Approx. 1650 mm or approx. 2000 mm
Panel width	: 980 -1000 mm
Thickness of the aluminium frame	: 28 - 50 mm
Panel weight	: Approx. 20 kg (length approx. 165 cm) or approx. 25 kg (length approx. 200 cm)

#### Types of roof


The ValkTriple® mounting system can be used to mount panels on flat roofs. The following starting points apply:

 Type of roof covering: bitumen, EPDM and concrete (for the ballast applicable per type of roof covering, see the tables on the back of this document).

Before installing the ValkTriple® mounting system, make sure that you carefully sweep the roof area. The ballast calculation for the ValkTriple® mounting system (see the back of the manual) only applies for flat roofs and roofs with a slight pitch of up to 5°. Above this roof pitch, the system should be attached to the roof securely.


#### Ballast

The ValkTriple® mounting system needs to be supported by ballast, to make sure that the system is unable to move, lift or tip over.

 See the back of this document for details of which ballast should be used for each type of solar panel, each region, each type of roof covering and for each building height (subject to a maximum of 10 m).

The number of tiles specified (30 x 30 x 4.5 cm) per position will be vital to ensure that the mounting system can be used safely. To achieve this, follow the instructions on the ballast required on the back of this document.

#### Position

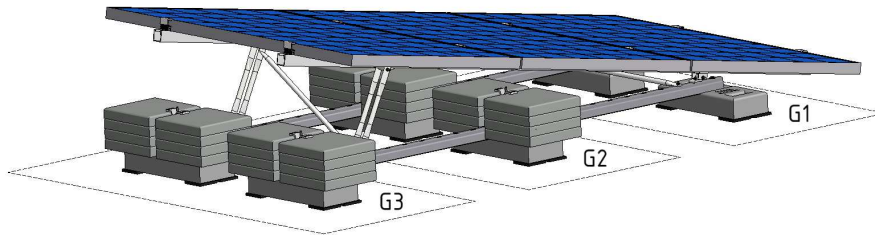
 Restrictions also apply for the position of the system on a roof. The solar panels must be installed at a certain distance from the edge of the roof. According to the current standard, NEN-EN 1991-1-4, this free edge zone is 1/5 of the height of the roof. So, if a roof is 6 metres high, a free edge zone of 120 cm will be necessary.

The **guarantee** provided is subject to the guarantee conditions stated in the general terms and conditions stipulated by Van der Valk Solar Systems BV. Our terms and conditions can be found on our website: [www.valksolarsystems.nl](http://www.valksolarsystems.nl)

The ValkTriple® mounting system is a product that has been produced by: Van der Valk Solar Systems B.V., Registered with the chamber of commerce for Haaglanden under number 27355116. Internet : [www.valksolarsystems.nl](http://www.valksolarsystems.nl)

Issue date: October 2013  
Version: VALK-USER-EN/GB-ValkTriple –Flat Roof-2013-09

# Ballast requirements



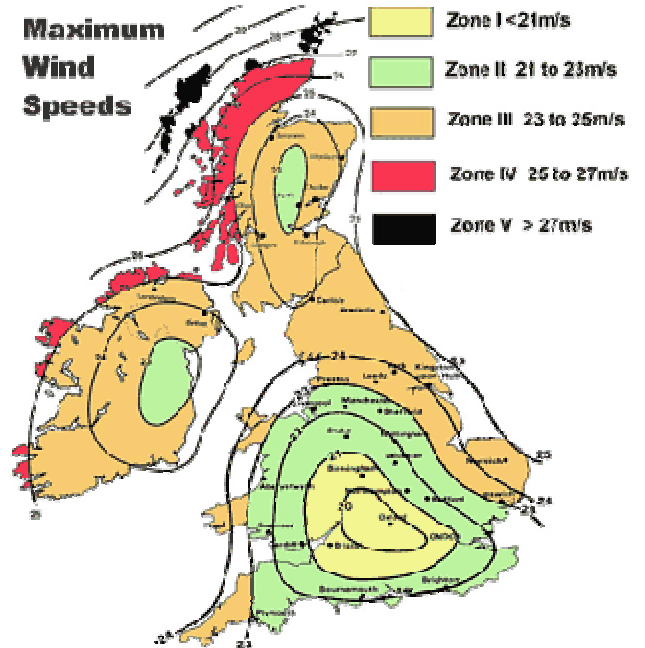
## General

The ValkTriple® mounting system must be weighted down by tiles, which will be placed at positions G2 and G3.

Start by choosing the wind area in which the system will be installed from the overview below.

Next, look at the table for the panel length in question. In this table, you will choose the relevant type of roof covering. Bitumen and EPDM have a higher skin friction and it will be possible to use less ballast for this type of roof covering. Next, choose the table for the wind area in question and the row for the building height applicable. This will show you the number of tiles necessary for positions G2 and G3.

## Maximum Wind Speeds



The number of tiles calculated in the tables below are based on standard tiles measuring 30 x 30 x 4.5 cm and weighing 9 kg. If you are using tiles with different dimensions and, because of this, a different weight, you will need to add tiles until you have reached the weight required.

## Selection table: Minimum number of tiles per position G2 and G3

Based on: tile dimensions 30 x 30 x 4,5 cm, tile weight 9 kg

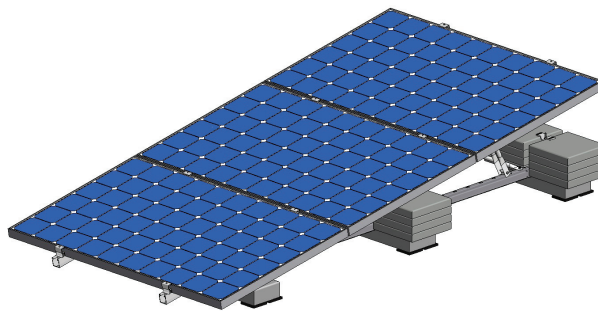
Category: Town (sites more than 1km inside town boundary - area where at least 15% of the surface is covered with buildings with an average height above 15m)

Distance to shoreline: >10km

Maximum height above sea level: <100m

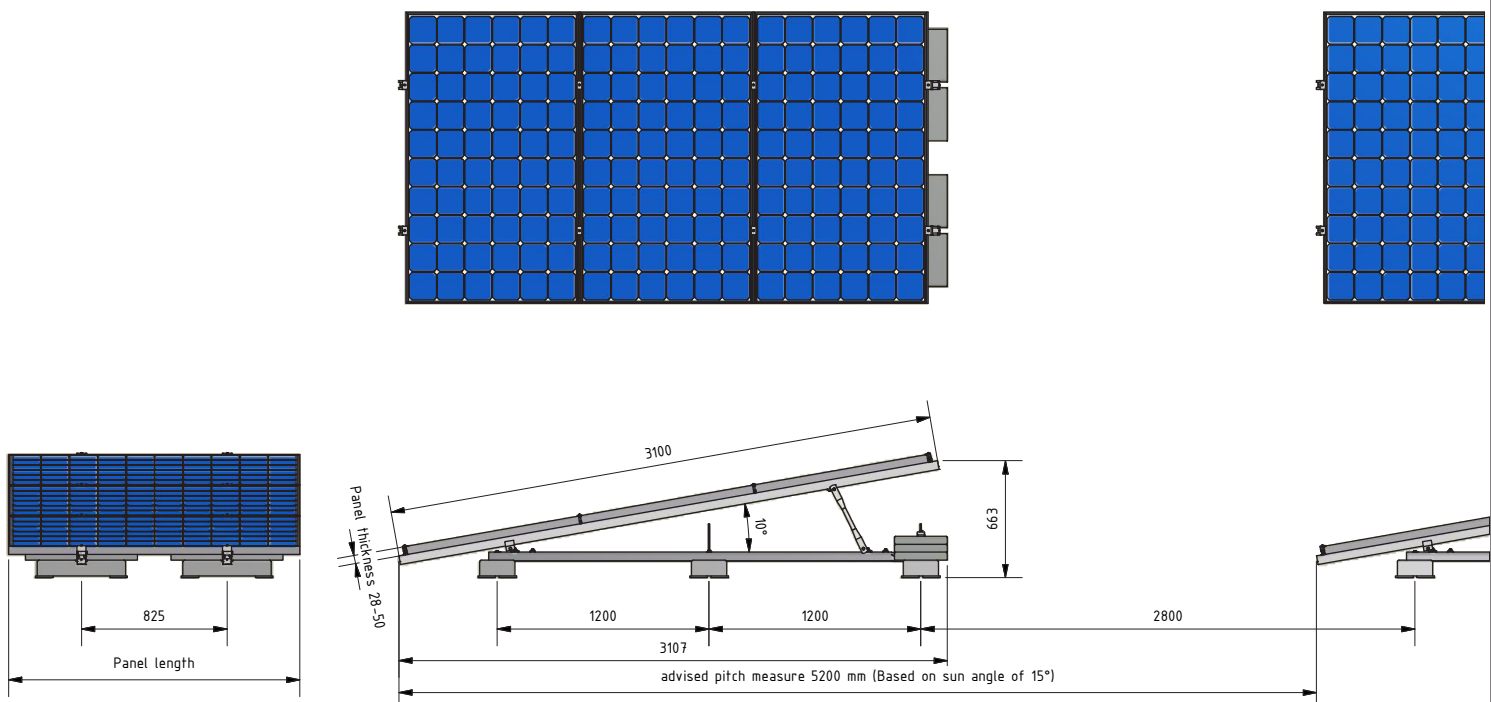
Wind speed	Heights	Panel height approx 165 cm (panel width 98 - 100 cm)				Panel height approx 200 cm (panel width 98 - 100 cm)			
		Bitumen + EPDM		Concrete		Bitumen + EPDM		Concrete	
		Position		Position		Position		Position	
		Zone G2	Zone G3	Zone G2	Zone G3	Zone G2	Zone G3	Zone G2	Zone G3
21,5 m/s	0 - 5 meter	0 tiles	12 tiles	0 tiles	12 tiles	2 tiles	16 tiles	2 tiles	16 tiles
	5 - 10 meter	4 tiles	16 tiles	6 tiles	16 tiles	12 tiles	16 tiles	14 tiles	16 tiles
22 m/s	0 - 5 meter	0 tiles	12 tiles	0 tiles	14 tiles	4 tiles	16 tiles	4 tiles	16 tiles
	5 - 10 meter	6 tiles	16 tiles	8 tiles	16 tiles	16 tiles	16 tiles	16 tiles	16 tiles
23 m/s	0 - 5 meter	0 tiles	16 tiles	0 tiles	16 tiles	8 tiles	16 tiles	8 tiles	16 tiles
	5 - 10 meter	10 tiles	16 tiles	12 tiles	16 tiles	X	X	X	X
24 m/s	0 - 5 meter	2 tiles	16 tiles	4 tiles	16 tiles	10 tiles	16 tiles	12 tiles	16 tiles
	5 - 10 meter	14 tiles	16 tiles	16 tiles	16 tiles	X	X	X	X

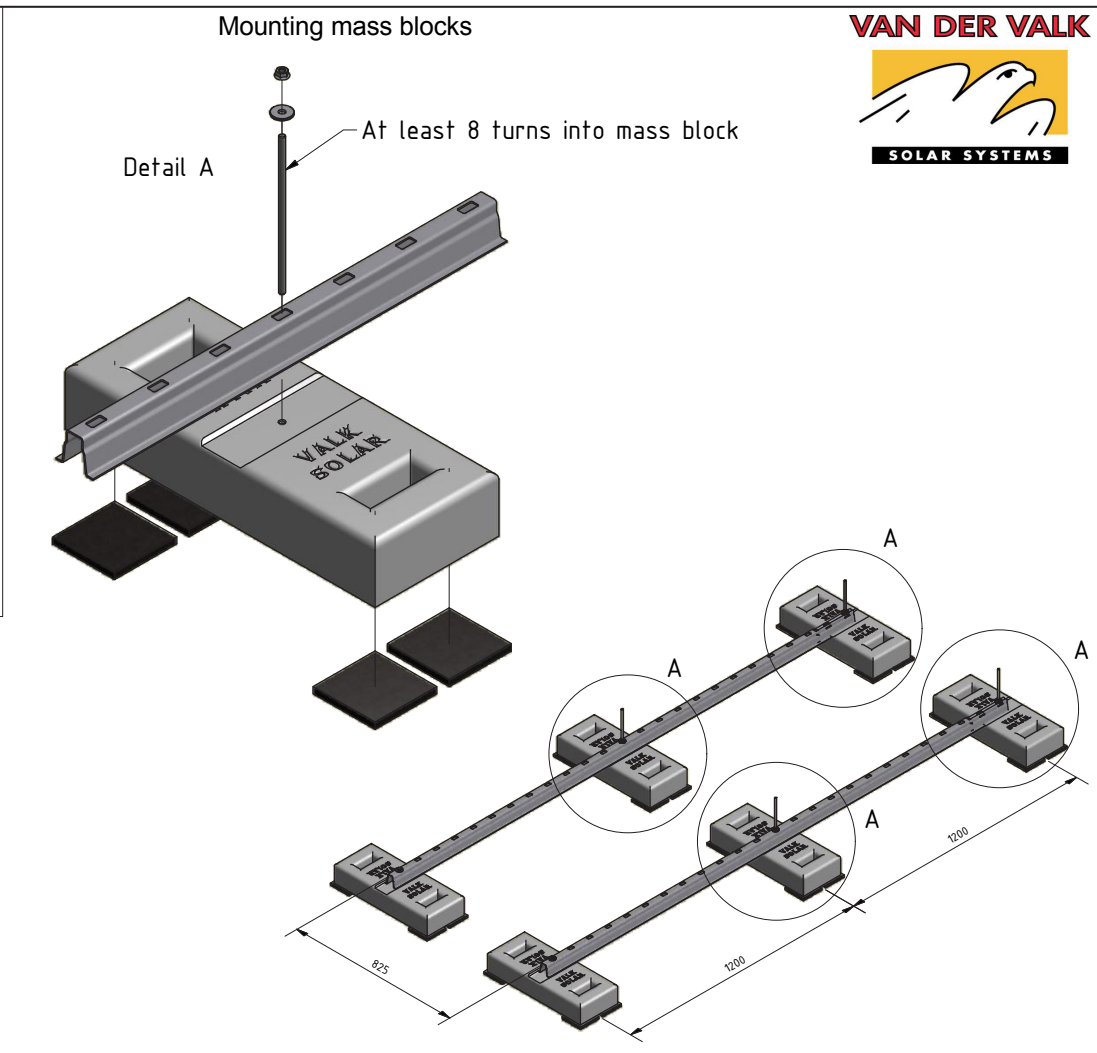
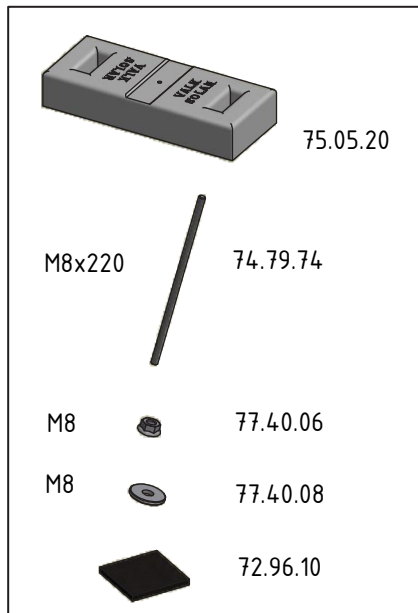
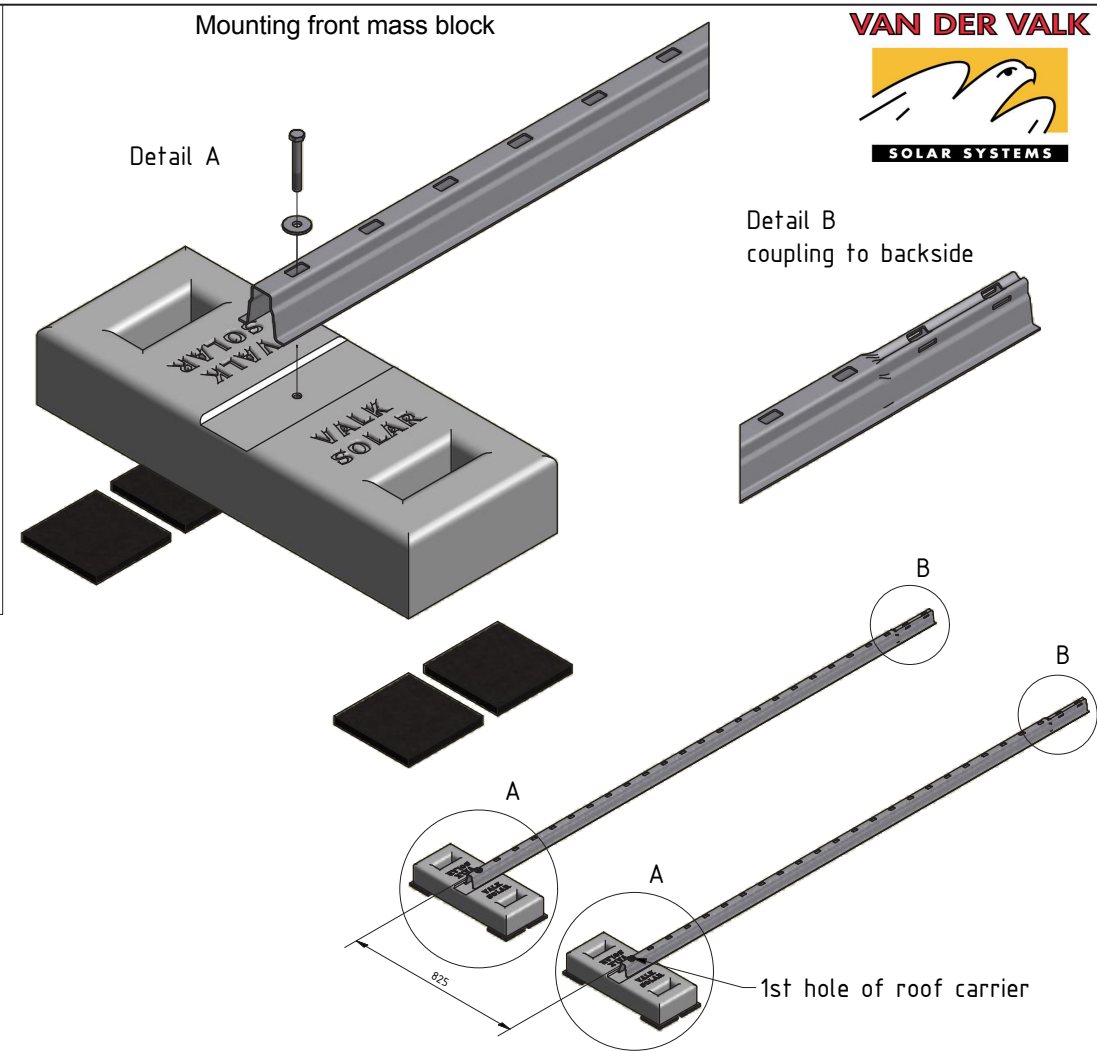
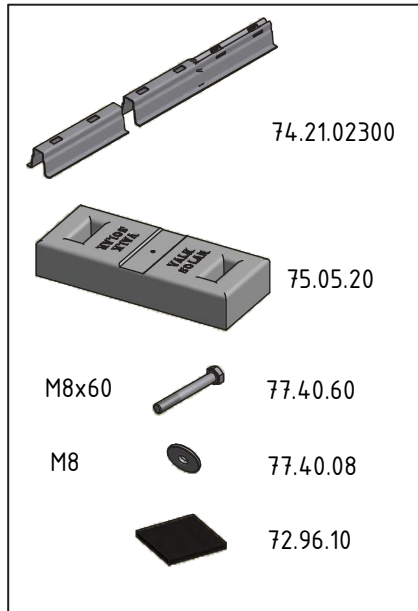
# Installation manual ValkTriple®

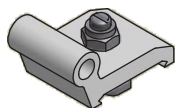


Version 02

## Measurements ValkTriple







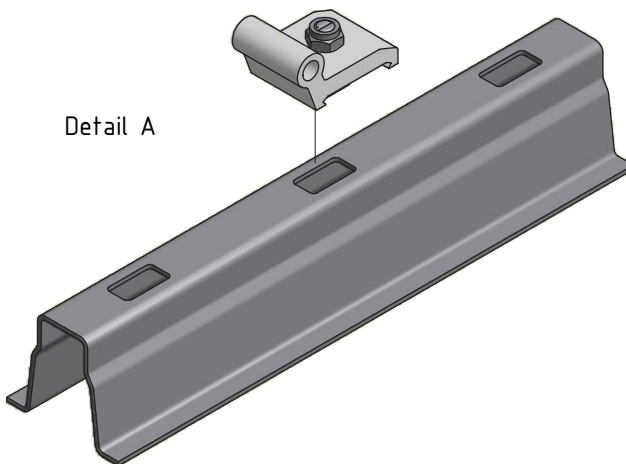
72.44.20

## Mounting A-frame connector

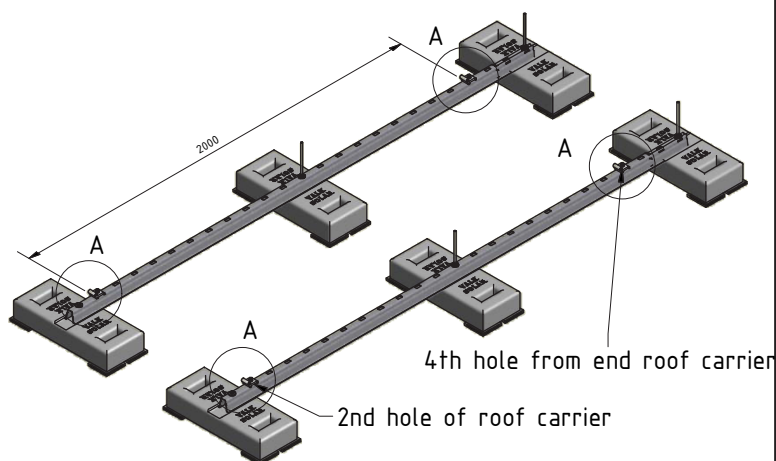
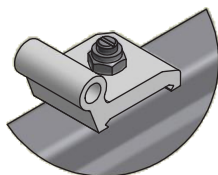
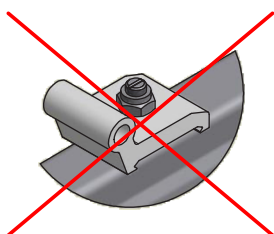
**VAN DER VALK**



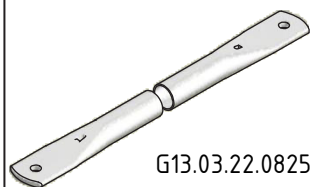
Detail A



The groove of the bolt corresponds with the orientation of bolt head



4



G13.03.22.0825.00.00

M8x20



77.42.20

M8



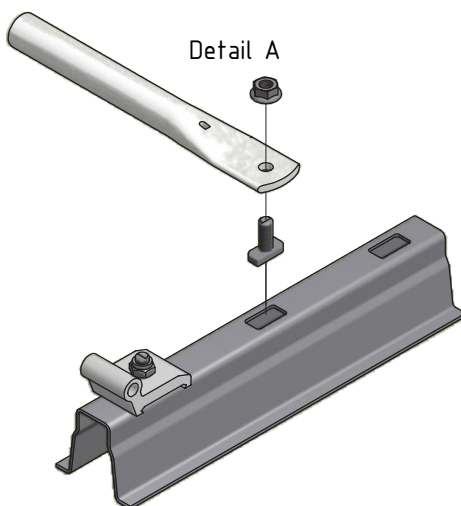
77.40.06

## Mounting push-rods

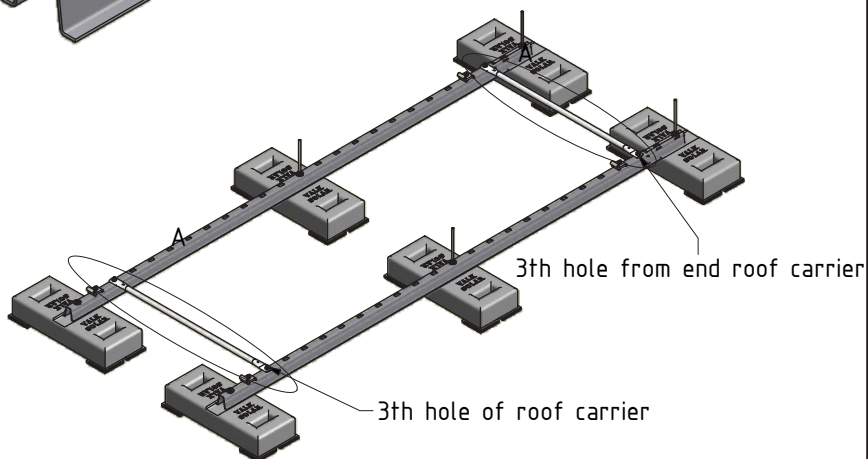
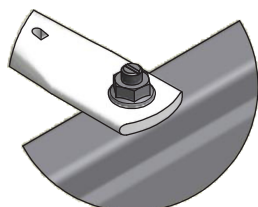
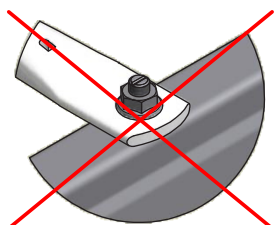
**VAN DER VALK**



Detail A



The groove of the bolt corresponds with the orientation of bolt head

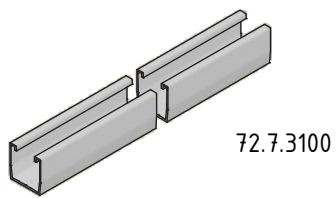


5

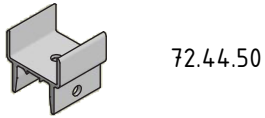


# Subassembly profile

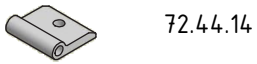
VAN DER VALK



72.7.3100



72.44.50



72.44.14



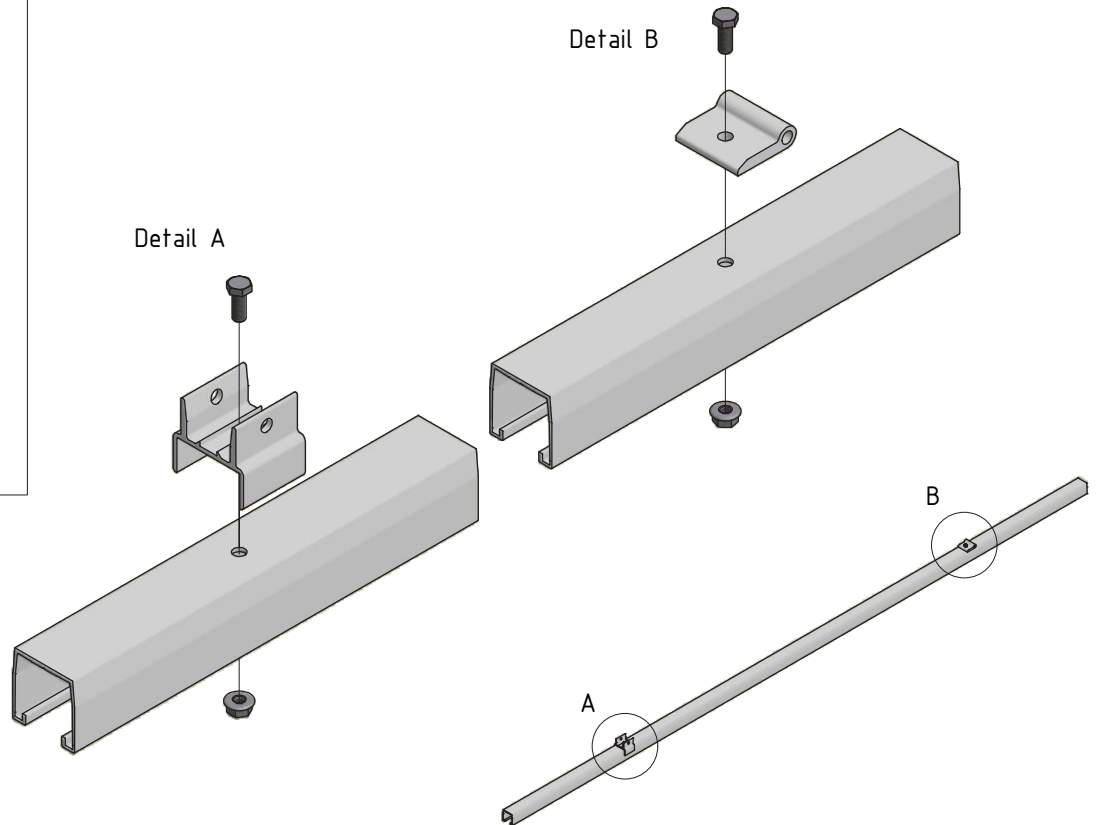
M8x20 77.40.20



M8 77.40.06

Detail A

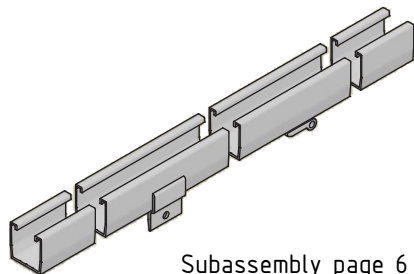
Detail B



6

# Mounting subassembly

VAN DER VALK



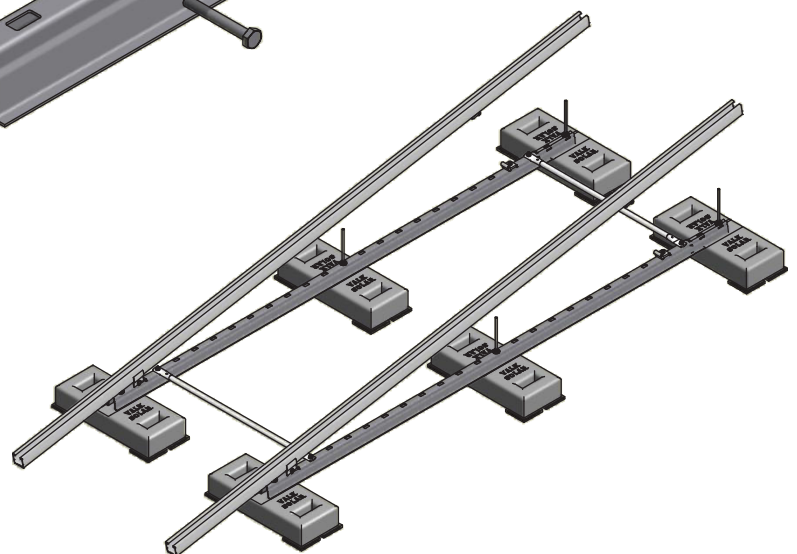
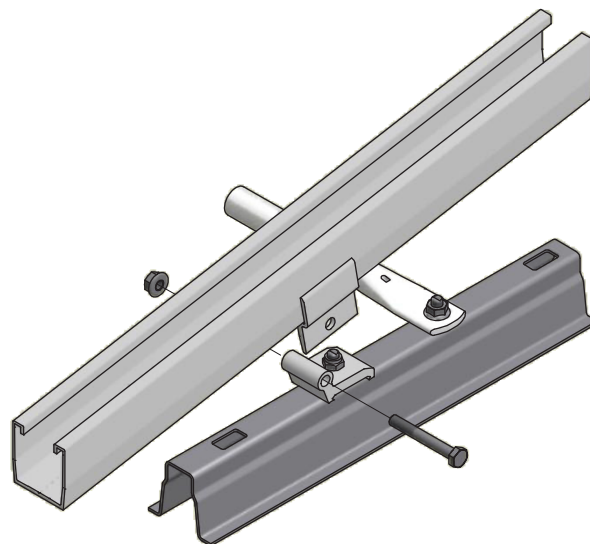
Subassembly page 6



M8x60 77.40.60



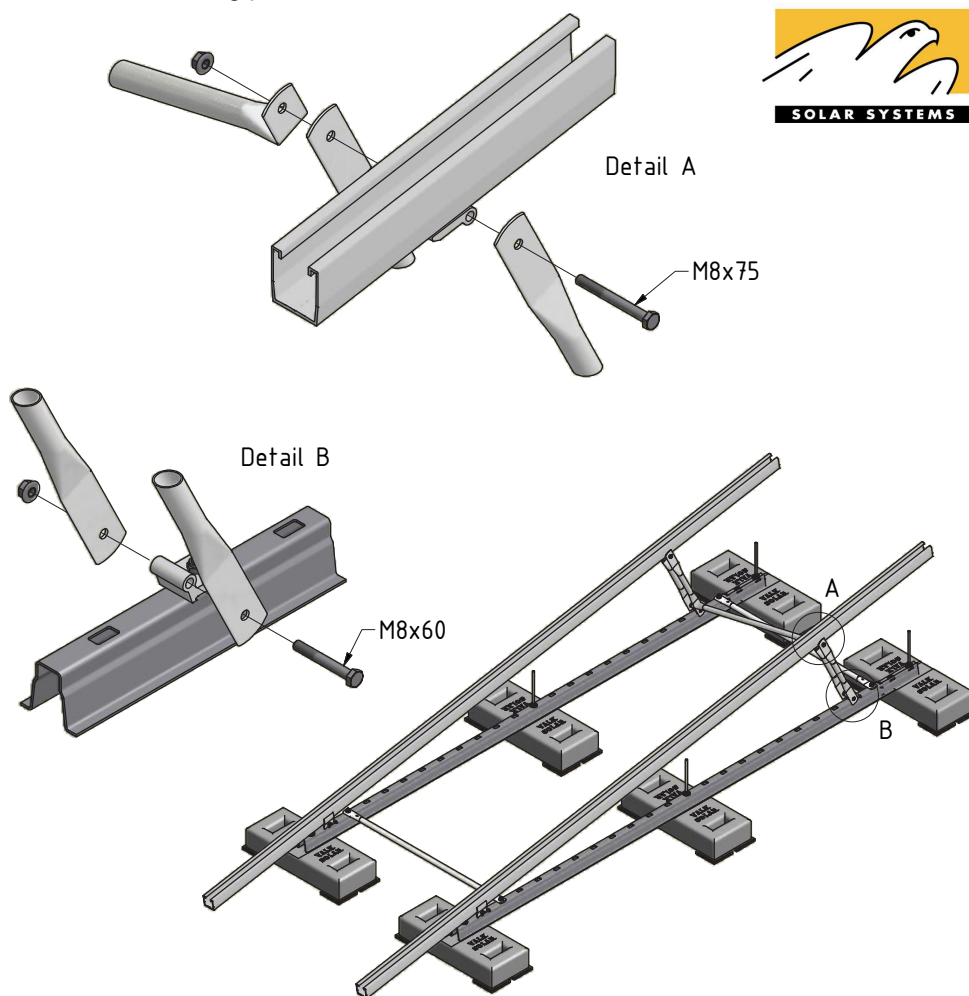
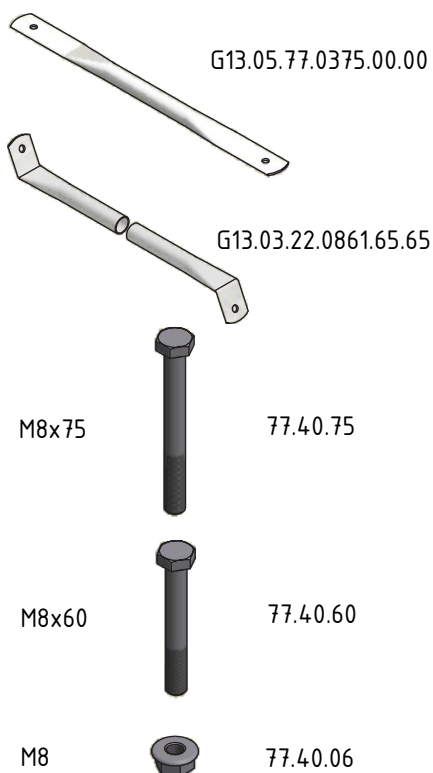
M8 77.40.06



7

## Mounting push-rods

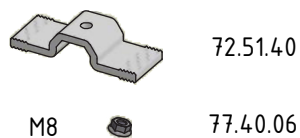
**VAN DER VALK**



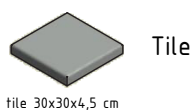
8

## Mounting tiles

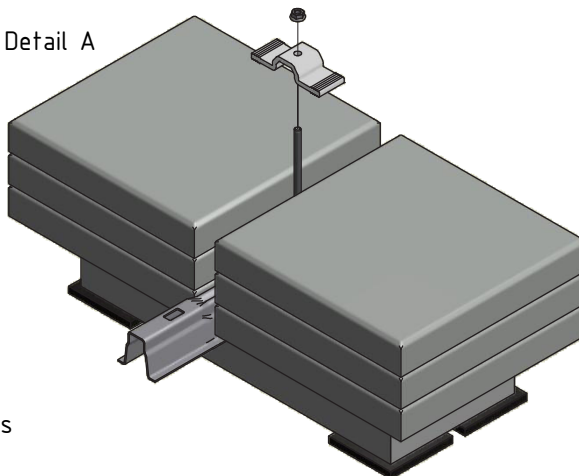
**VAN DER VALK**



Not included

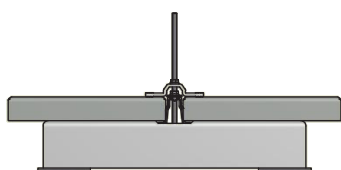


Detail A

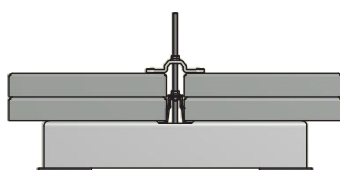


See table in user manual for number of tiles

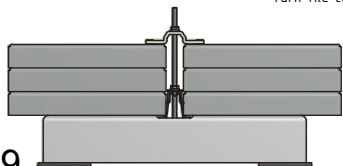
2 extra tiles



4 extra tiles

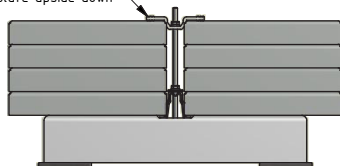


6 extra tiles

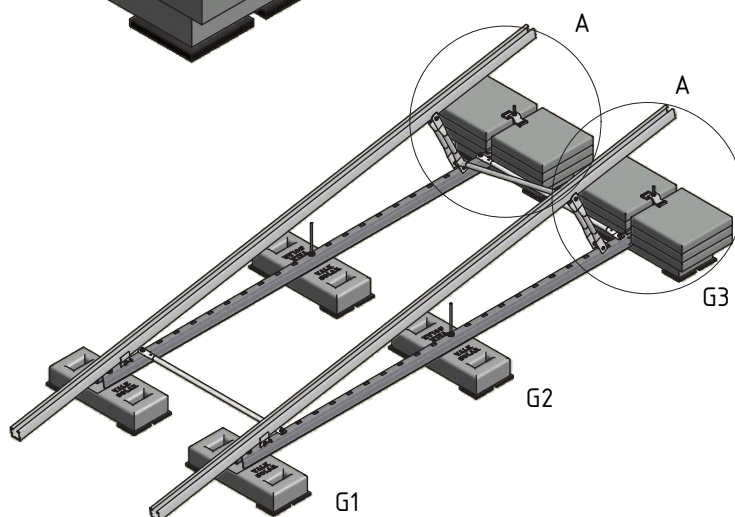


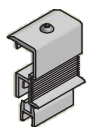
8 extra tiles

Turn tile clamp plate upside down



9





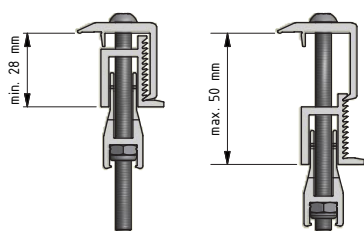
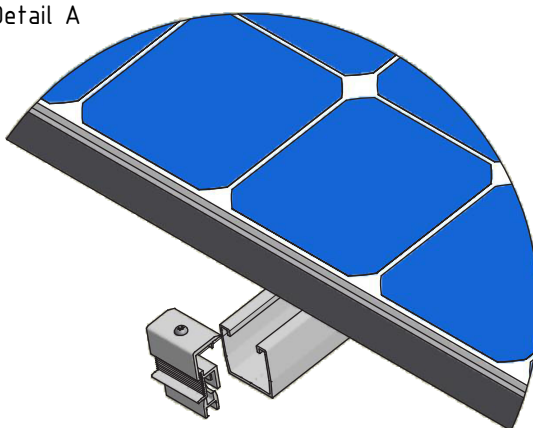
72.15.51

### Mounting end clamp

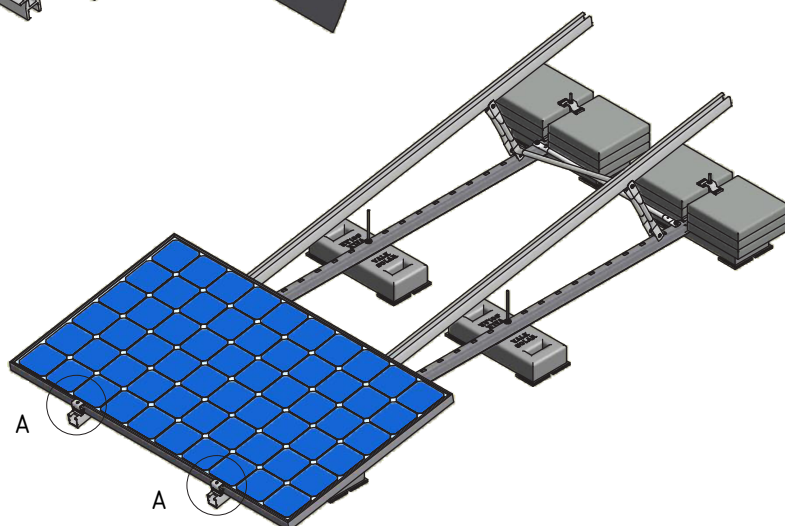
**VAN DER VALK**



Detail A



Mount the clamping plate (top) in the right groove, which corresponds to the thickness of the frame panel



10



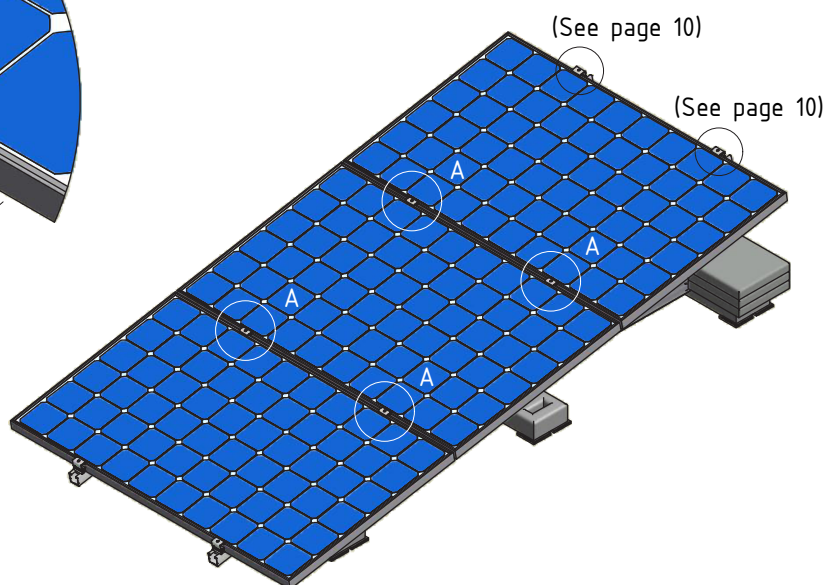
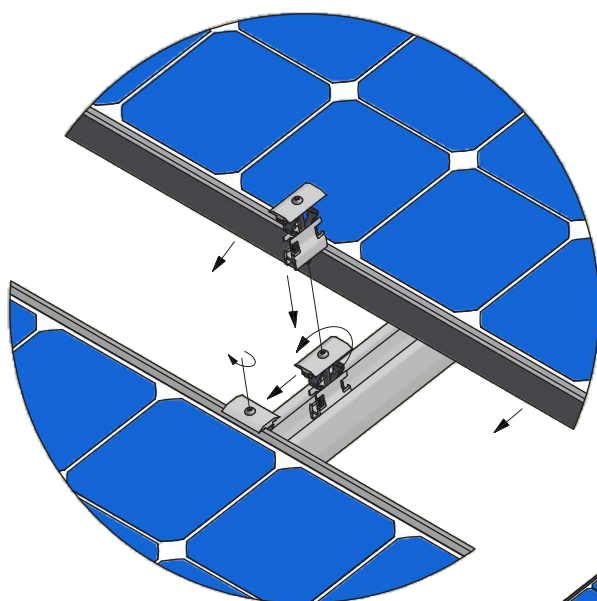
72.15.50

### Mounting panel clamp

**VAN DER VALK**



Detail A



11





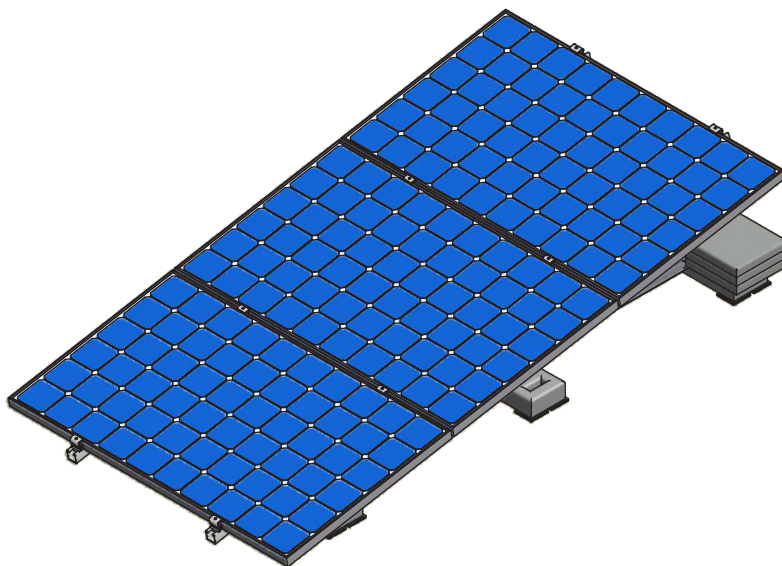
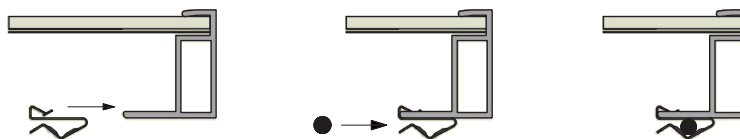
73.20.01  
max. cable  
diameter  $\varnothing$  9 mm

## Mounting DC cable clamp

**VAN DER VALK**



### Mount cable clamp on panel



**VAN DER VALK**



## Van der Valk Solar Systems

Van der Valk Solar Systems is a specialist company that is fully focused on developing and producing mounting systems for use with solar panels. To this end we work in close collaboration with Van der Valk Systemen, our sister company.

Van der Valk Systemen has been a well-known name in the field of moving systems and stationary components for the greenhouse horticultural sector and industry throughout the world since 1963. Van der Valk Systemen's high quality products have been individually developed from a scientific approach and produced with mathematical precision. They are made to be low-maintenance and to stand out thanks to their durability, reliability, functionality and ease of assembly.

Both Van der Valk Systemen and Van der Valk Solar Systems only introduce innovative products to the market. Our shared business complex consists of 20,000 m<sup>2</sup> of offices and production facilities, in which modern machinery and the latest technologies facilitate development, manufacturing and testing that is fast, flexible and precise.

**We develop and produce solar mounting systems for:**



Open fields   Pitched roofs   Flat roofs   Greenhouses   Water features



PLEASE CONTACT VAN DER VALK SOLAR SYSTEMS, YOUR INSTALLATION COMPANY OR PROJECT ORGANISATION FOR FULL INFORMATION.