Assembly Instruction

to guarantee a technically correct installation of the HSF Ballast – Tank for photovoltaic power systems

Version East-West 2025/12

HUBER Solarfix GmbH

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Step by Step to Your Photovoltaic System

This manual instruction will assist you every step of the way through the preparation and installation process. You will find tips and ideas around the installation, clear and easy-to-follow instructions and suggestions for which tools you need.

We are available whenever you need us!

Our **HSF Ballast – Tank** is designed to be as uncomplicated as possible so that you can install everything quickly and easily. However, we are delighted to help you if needed. Whether you need help with transportation or want to outsource the complete assembly, we will gladly customise a suitable service package for you or refer you to one of our cooperation partners. Find more information on our website **www.huber-solarfix.de**

Before you start, this brochure gives you an overview of every step you must make during the installation. Please keep your tools at hand. After the construction is delivered, please ensure that all parts are supplied. The best way to check this is to compare the pallets with your order list. Your packing list and the drawing might help you.

A specialist should always carry out the electrical installation!

www.huber-solarfix.de

Montage-Video

Special features of the HSF Ballast – Tank

- Quick Installation due to the easy Plug-In System of the substructure
- Ballasting with water only
- Tool-free assembly of the substructure
- Extensive interconnection of the individual substructures using spacers
- Multiple cable fastenings (cable harnesses are concealed under the PV modules and are therefore not on the ground)
- Automatic filling system with fill level control
- No damage to the roof cladding when installed correctly
- Can be used with soft roof insulation due to the large contact surface
- Anti-slip mats can be attached to the substructure to level out unfavourable surfaces
- All **Huber Solarfix** components are 100% recyclable
- Made in Germany

Technical Data

Module Alignment	East / West
PV-Module Width	1,129 – 1,136 mm
PV-Module Height	29 - 31 mm
Module inclination	15°
Material	Plastic (HDPE)
Tare	approx. 7kg
Max. Total weight	approx. 47kg
Temperature resistant	-30°C to +80°C
Area of application	Flat roof, balcony power system for terraces and gardens
Permitted substrates for flat roofs	Bitumen, plastic film and greening
Height of building	Up to 25 m
Minimum distance to the edge of the roof	Min. 0.5 m
Permitted roof inclination	0° - 6° *

* With a roof inclination of 4° or more, the adapters must be fitted with our anti-slip system.

Statics and weighting plan

Before assembling, the client must examine whether the building and roof meet the additional static requirements of the **HSF Ballast – Tank** in horizontal and vertical loads. The Eurocode 3 standard (DIN EN 1993) must be observed.

The weighting plan is customised individually and can only be executed by trained personnel. For this purpose, a calculation programme is available to determine the weighting, which is based on a wind report and the system statics of a state-approved structural engineer.

If the structural engeneerinng of a system is carried out by the client himself, the construction and the dimensioning as well as the structural stability must be based on:

- EN 1991-1-1-3 Snowload (Eurocode 1)
- EN 1991-1-1-4 Windload (Eurocode 1)

The calculation must be carried out according to the latest state of civil engineering.

National and local construction regulations, standards and environmental protection regulations must be complied with.

Safety

Occupational safety and accident prevention regulations, corresponding standards, and the Regulations of the employers' liability insurance association must be obeyed!

- BGV A1 General accident prevention regulations
- BGV A3 Electric Systems and Resources
- BGV C22 Accident prevention regulation – Construction
- DIN 18338 Roofing work
- DIN 18451 scaffolding work

The following must be observed in particular:

- Safety clothing must be worn (hard hat, work shoes, safety goggles and gloves)
- When working on the roof, the regulations for working on the roof must be observed (use of fall protection, scaffolding with safety gear from an eaves height of 3 metres)
- The presence of two people is mandatory for the entire installation process in order to ensure rapid assistance in the event of an accident
- A roofer must carry out any work required on the roof
- AC/DC cabling must be carried out by an electrician in accordance with DIN VDE 0100 Part 712 - Erection of low-voltage systems

System Assembly HSF Ballast – Tank

Before construction the **HSF Ballast – Tank**, the roof must be cleaned, and snow and ice must be removed. Furthermore, ensure that the roof insulation meets the standards of DIN 18531.

- In the case of bituminous roof waterproofing, the substructure must be used with anti-slip mats
- In the case of plastic foil, the substructure must be equipped with anti-slip mats with corresponding Clearance certificate
- For green roofs, a growth-inhibiting layer must be laid under each PV field

Attention: In the case of a severely uneven roof structure, the Tanks may be resting on the roof cladding. Already existing anti-slip mats can be coupled with another one. If necessary, individual anti-slip mats are available from us upon request.

The film manufacturer must approve the film's compatibility with the anti-slip mat to prevent embrittlement of the roof cladding.

Fleece mats are not permitted as base material and are used at the customer's risk!

The installation instructions of the PV module manufacturer must be observed to ensure that the module is only fixed in the authorized areas.

Attention: Conductor loops must be avoided when laying cables under the PV modules.

The following standards must also be considered:

- VDS 2023 Electrical installations in buildings with predominantly combustible building materials - Guideline for damage prevention.
- DIN 4102 Fire reaction of building materials and components
- DIN 1860 Drainage system for buildings and properties

In case of a violation of our Installation and Safety Instructions, as well as the installation or extension of components from other manufacturers, **Huber Solarfix GmbH** reserves the right to disclaim liability.

The substructure is dismantled in the reverse order of the installation steps.

Tool requirements

The following provides a list of basic tools required. The assembly instructions for each product describe the tools that should be used. Safety goggles must be worn when using electrical appliances.

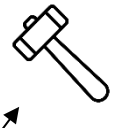
Screwdriver

with
drill 6mmØ
&
Torx Bit - T30

Protective gloves

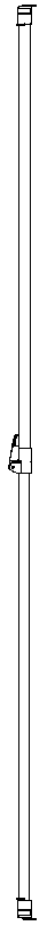
EN388-protection
class min. 4431

Plastic or Rubber mallet



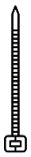
Diagonal Cutter

Monting Rod



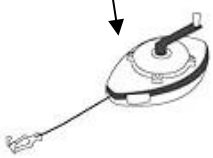
Zip Ties

UV-resistant



Measuring Stick & Pen

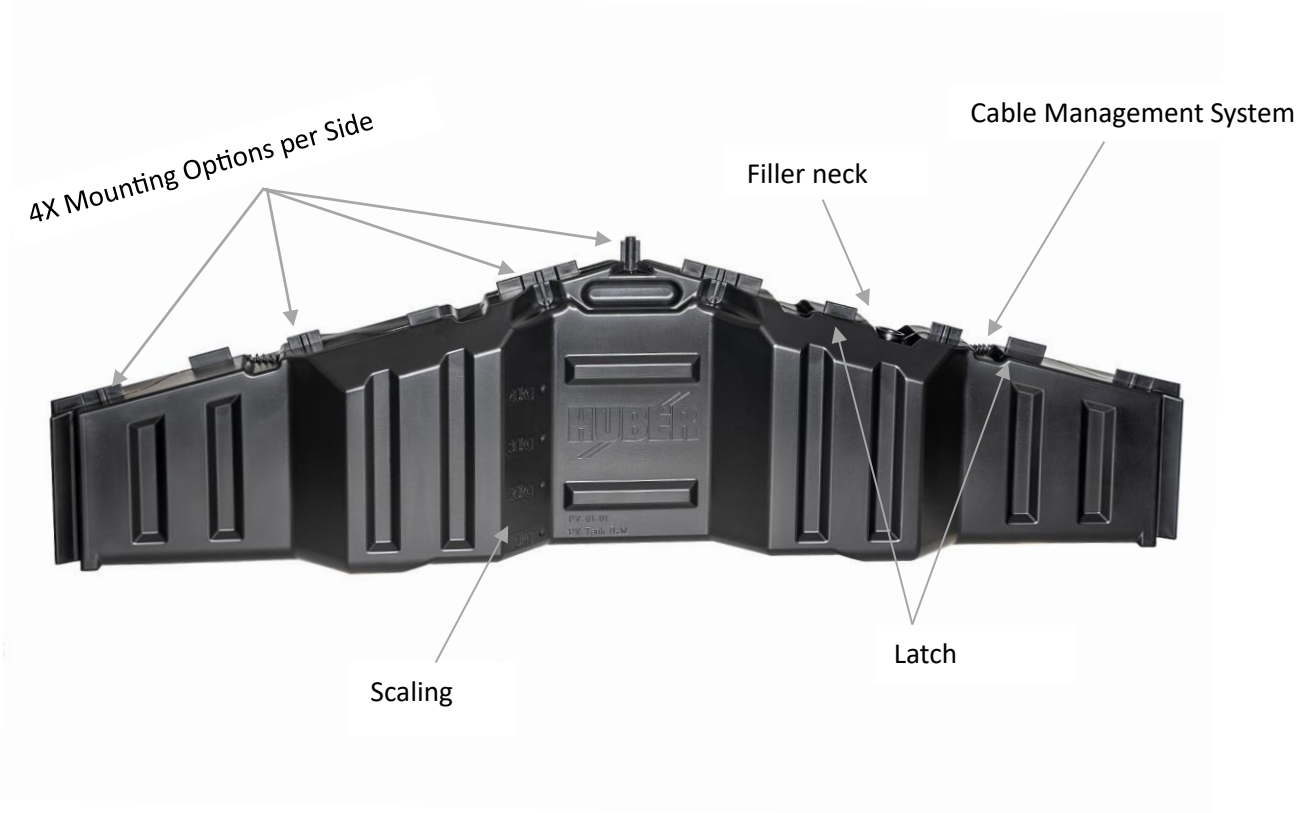
Water Hose



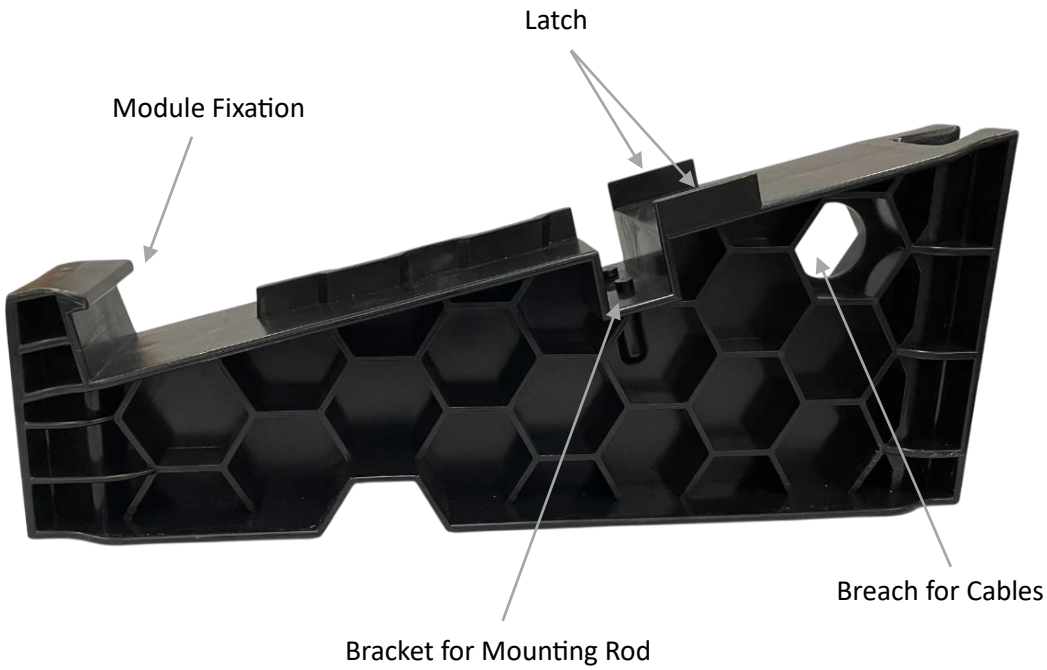
Chalk Line/Mason's Lacing Cord

Components

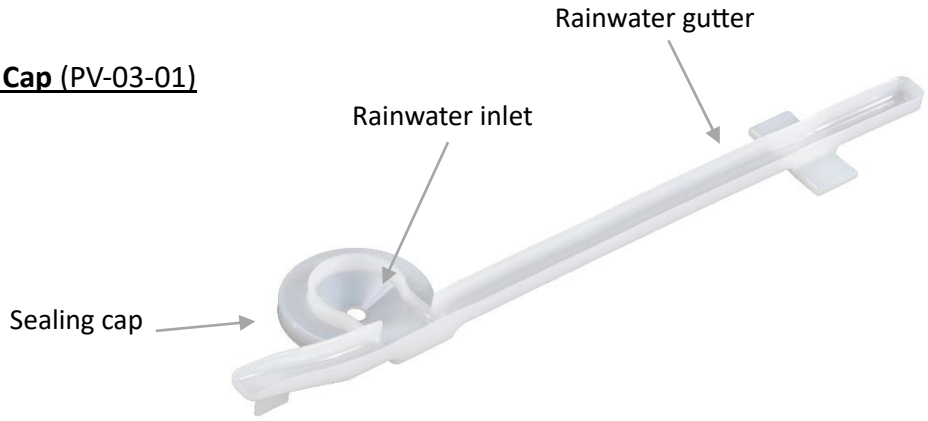
Tank-E-W (PV-01-01)



Adapter (PV-02-01)



Funnel Cap (PV-03-01)



Clamping system-up (PV-15-01)

Grounding clamp (PV-15-04)

Clamping system center (PV-16-01)

Intermediate piece-narrow (PV-06-01)

Intermediate piece-large (PV-06-02)

Assembly instructions

1.(Optional)

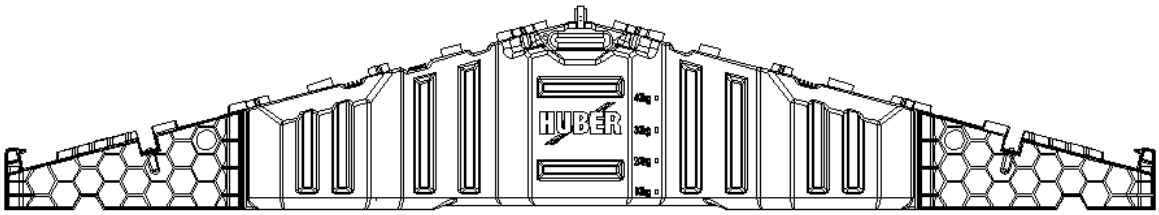
The self-adhesive side of the anti-slip mat is stuck to the bottom of the adapter.

2.

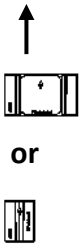
One adapter per side is required.

The tank is pressed down from above until it aligns with the adapters.

3.



The intermediate piece, with or without maintenance gear, must then be pressed into the adapter for the next module row.



Attention: The arrow on the intermediate piece must point upwards.

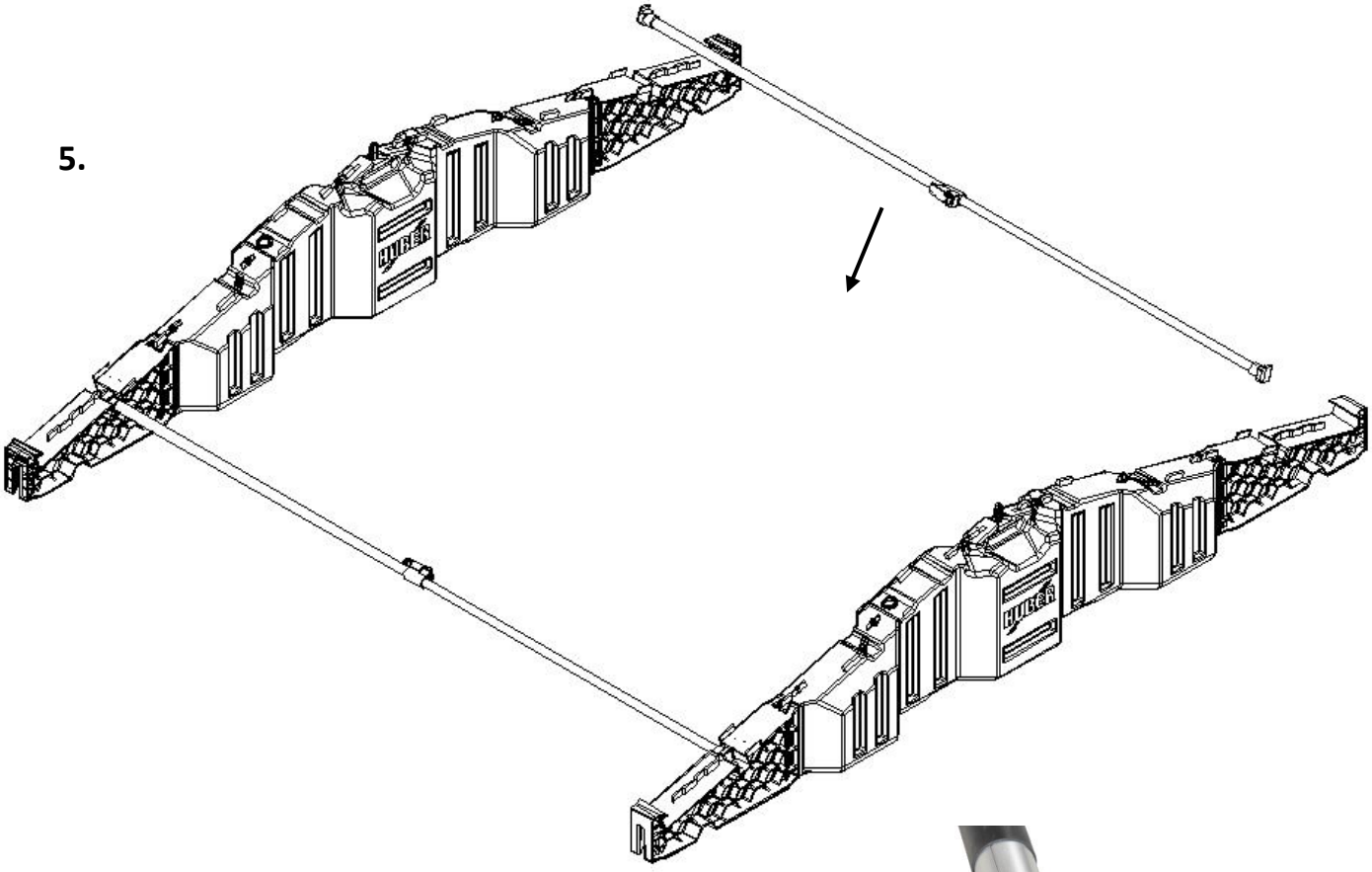
Without maintenance gear

With maintenance gear

4.

The length of the mounting rod is leveled with a PV module.

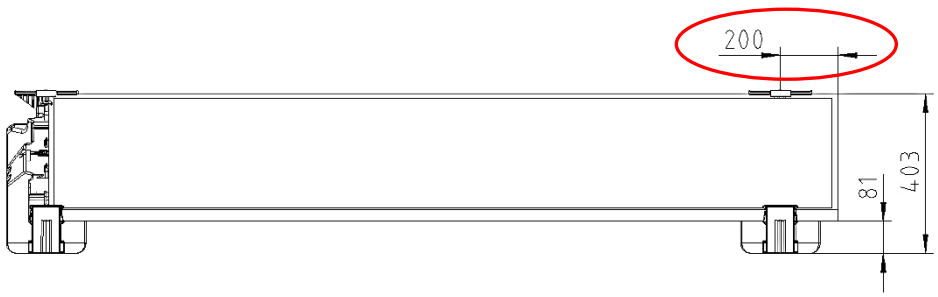
5.



Use the mounting rods to align the **HUBER Solarfix**- substructure and position it.

Attention!

The tank at the beginning and end of each row must be shifted inwards by 200 mm (protection of the tanks and optimum fastening)



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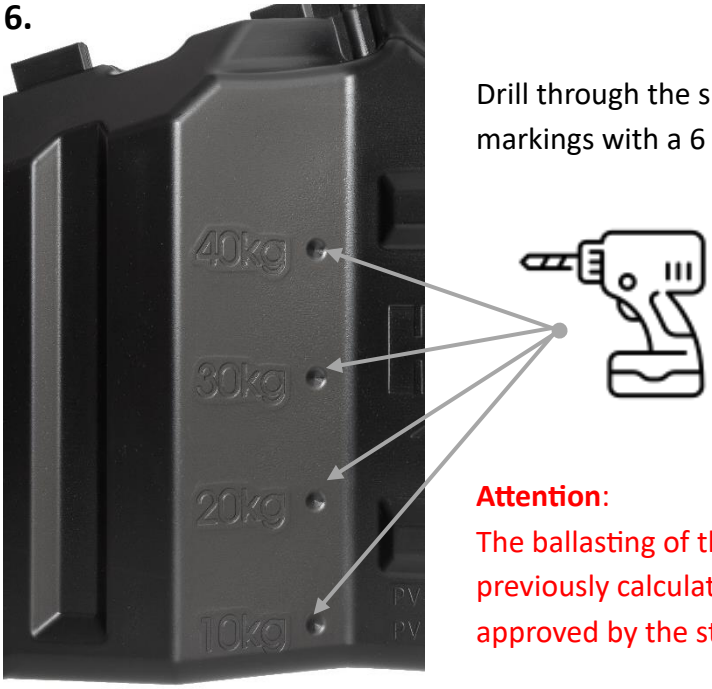
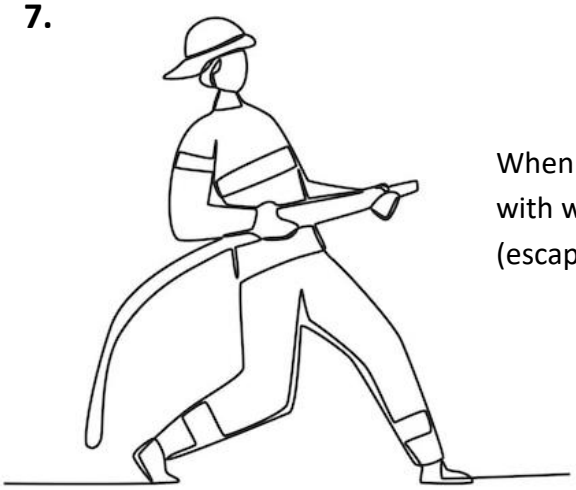


Drill through the specified ballasting at the respective markings with a 6 mm drill.

Attention:
The ballasting of the tanks is carried out according to a previously calculated weighting plan and must be approved by the structural engineer.

7.

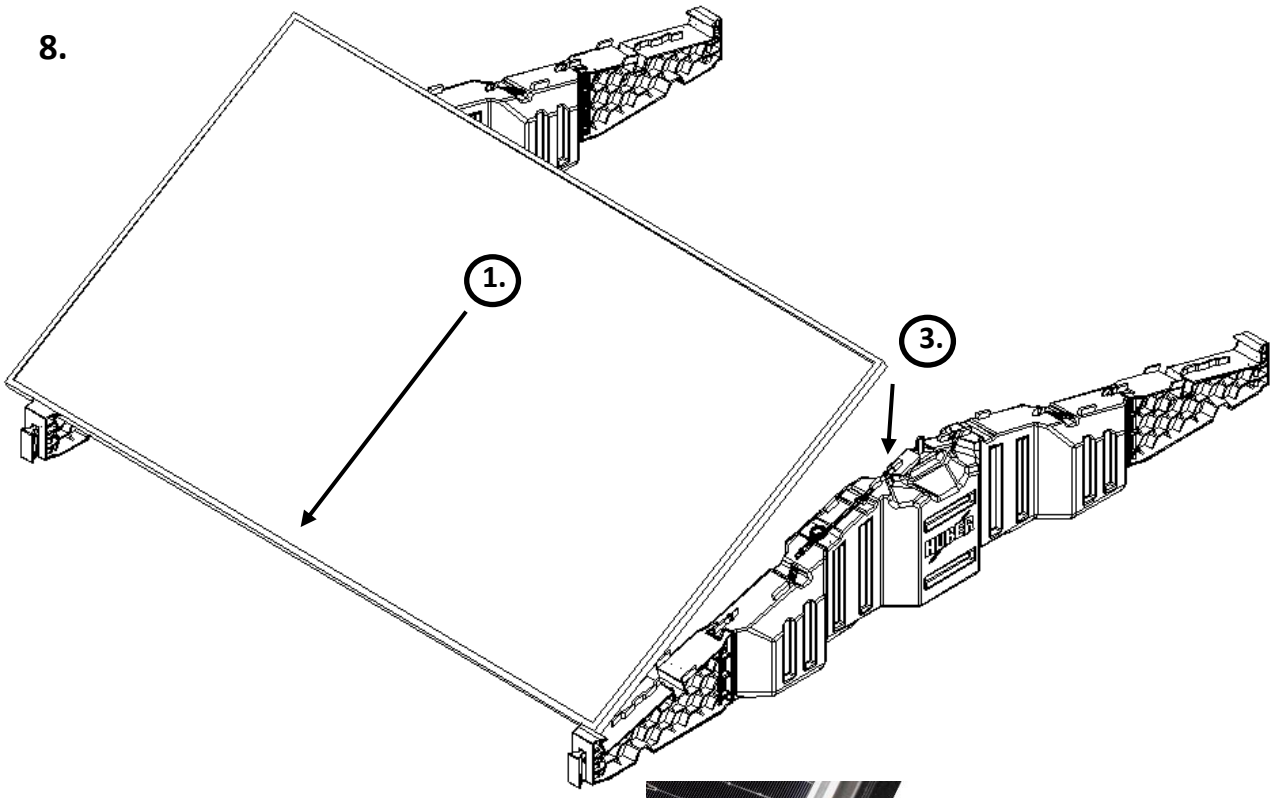


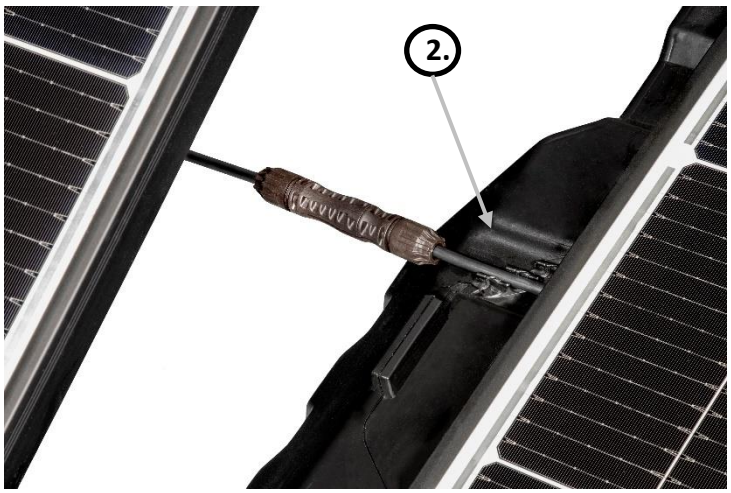
When the tank has been properly drilled, it can be filled with water. The tank is full when the water overflows (escapes!) during drilling.

8.

Once the tank has been filled, the funnel cap is fitted to the filler neck.

8.





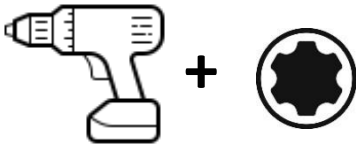
1. Slide the PV module into the module fixings of the adapter

2. Press the cable from the PV module firmly into the cable management device of the tank

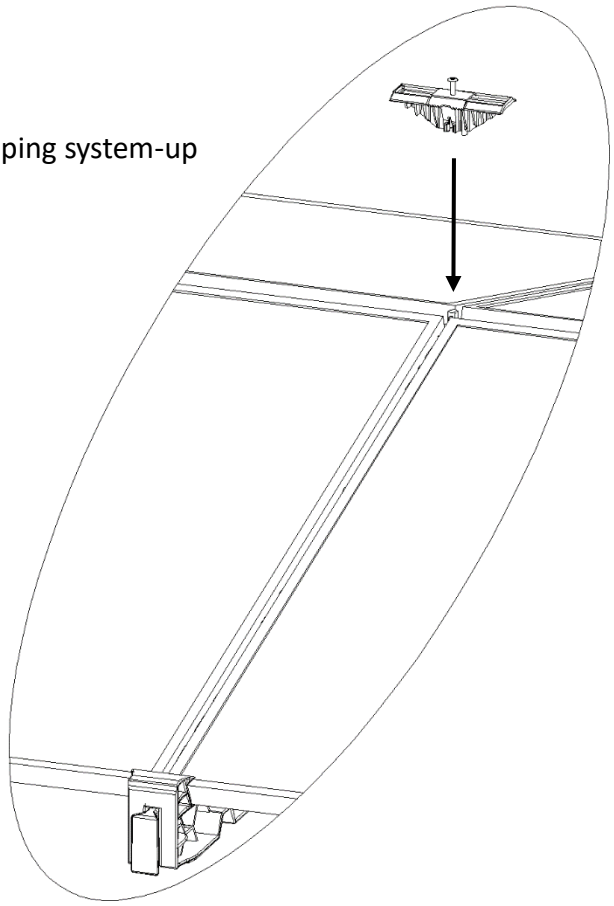
3. Lower the PV module

9.

When all PV modules are installed in the row, the clamping system-up is fastened at the top with the stainless steel screw.

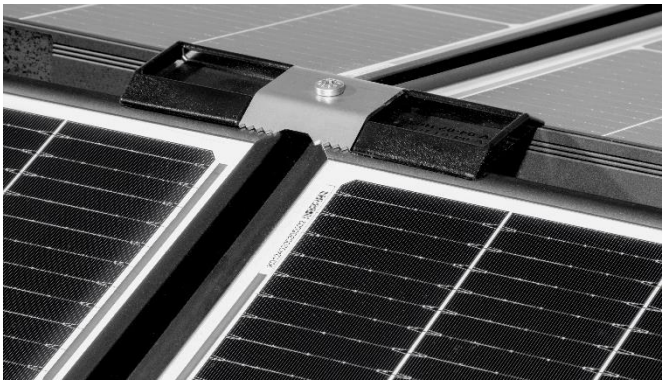


TORX – Bit
30T

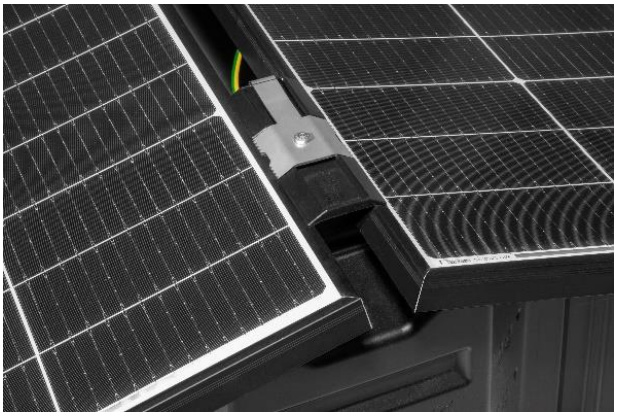


Attention!

The screws are tightened to a torque of 12 Nm.



An optional grounding clamp can also be installed on each row.

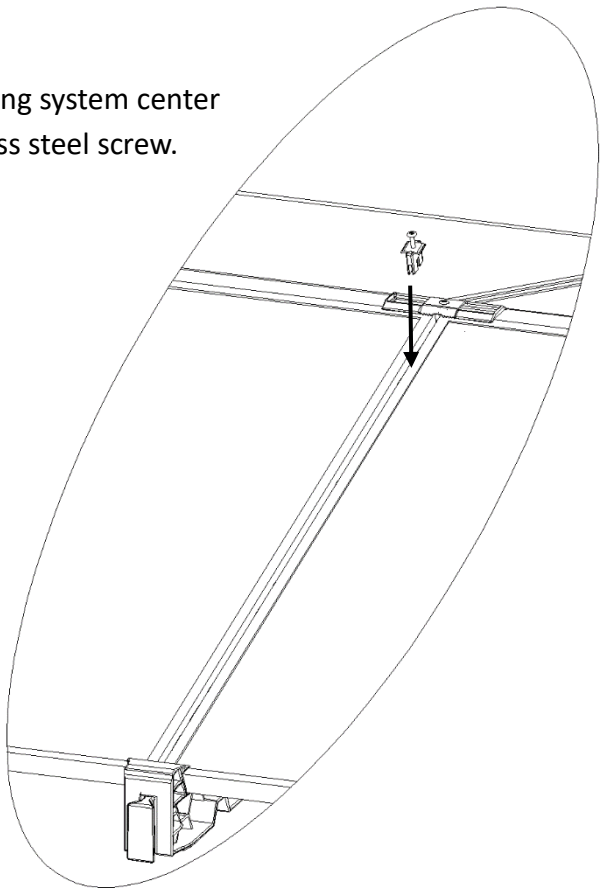


10. (Optional)

When the clamping system up is mounted, the clamping system center is attached between the PV modules using the stainless steel screw.

+

TORX – Bit
30T



Attention!

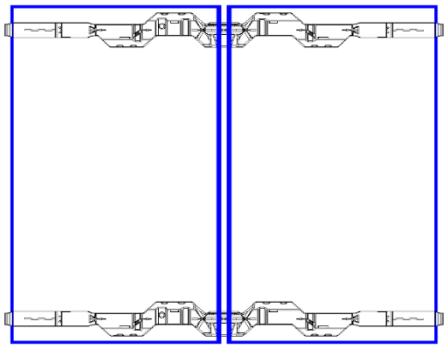
The screws are tightened to a torque of 12 Nm.

Variations for a setup

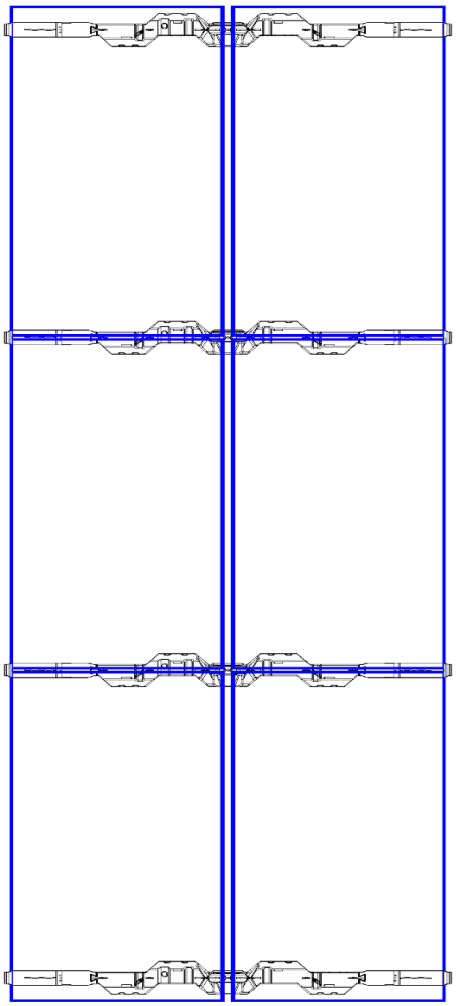
Important: All assembly variants must be at a distance of 40cm around any other fire source.

Standard Construction

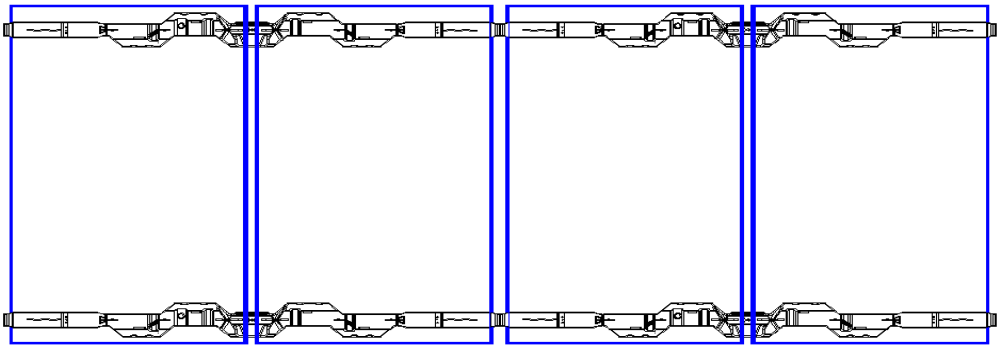
- **Version Single**

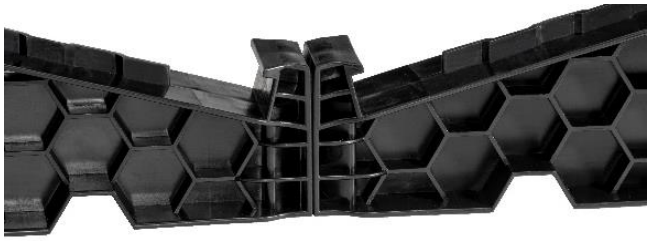


- **Version Row**

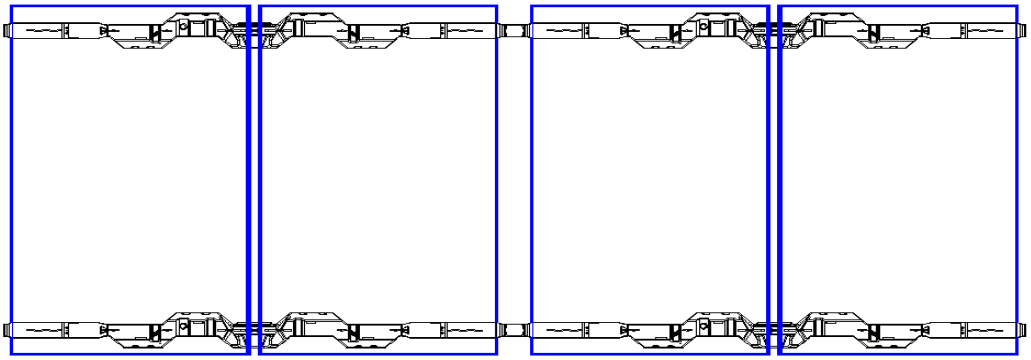


- **Version close connection**

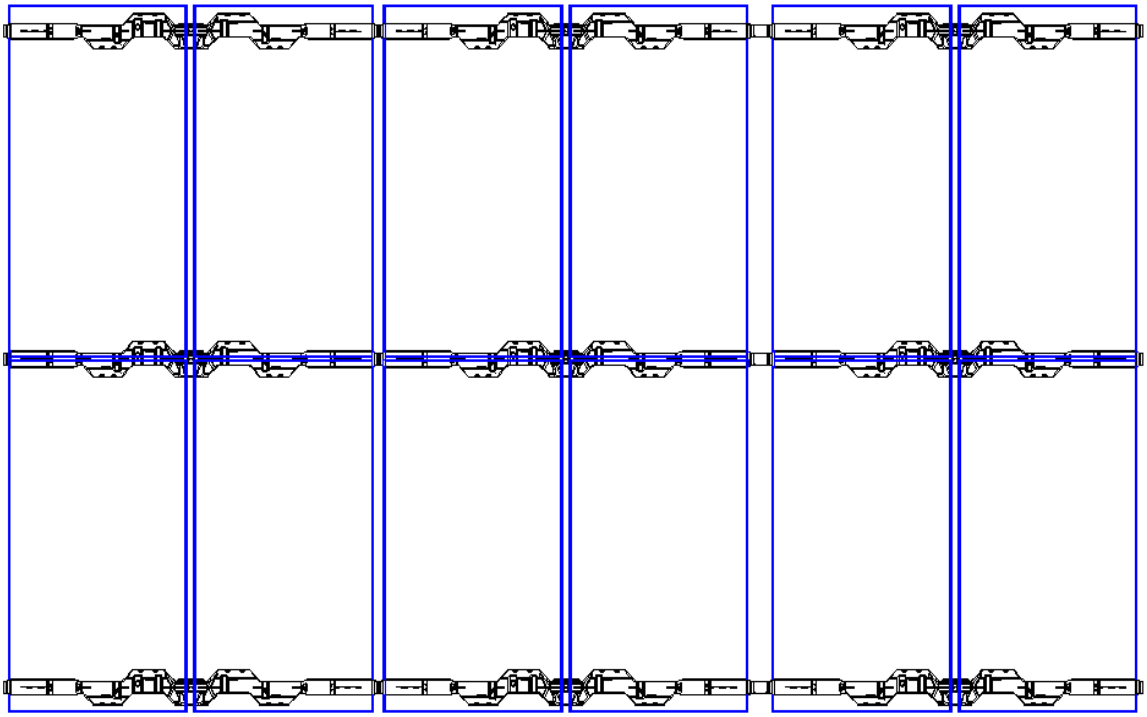




- **Version wide connection (maintenance walk)**

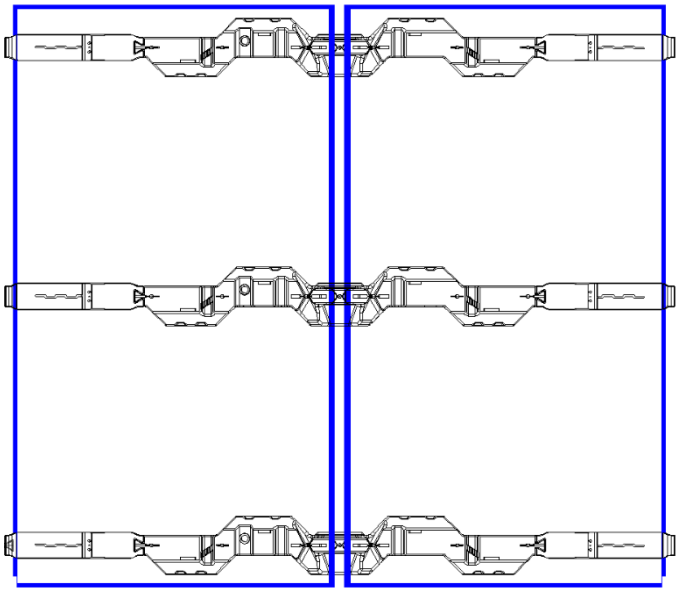


- **Version Combined**



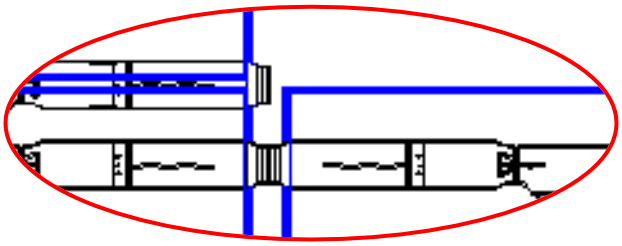
Alternative structure

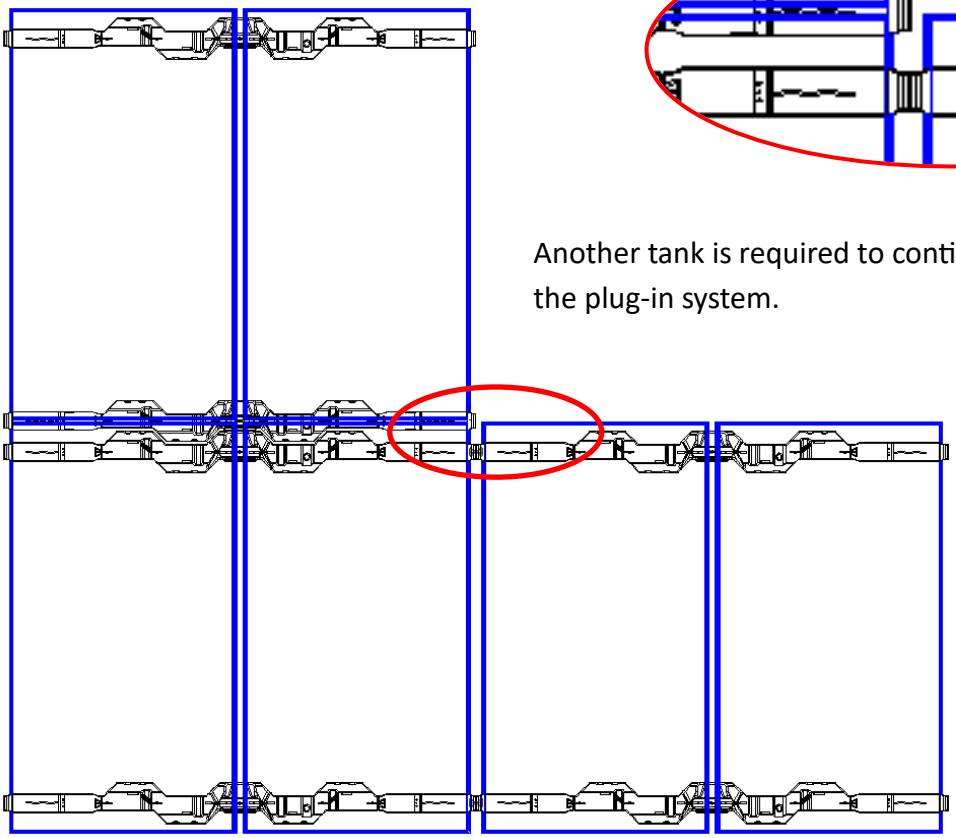
- **Version with high wind and snow load**



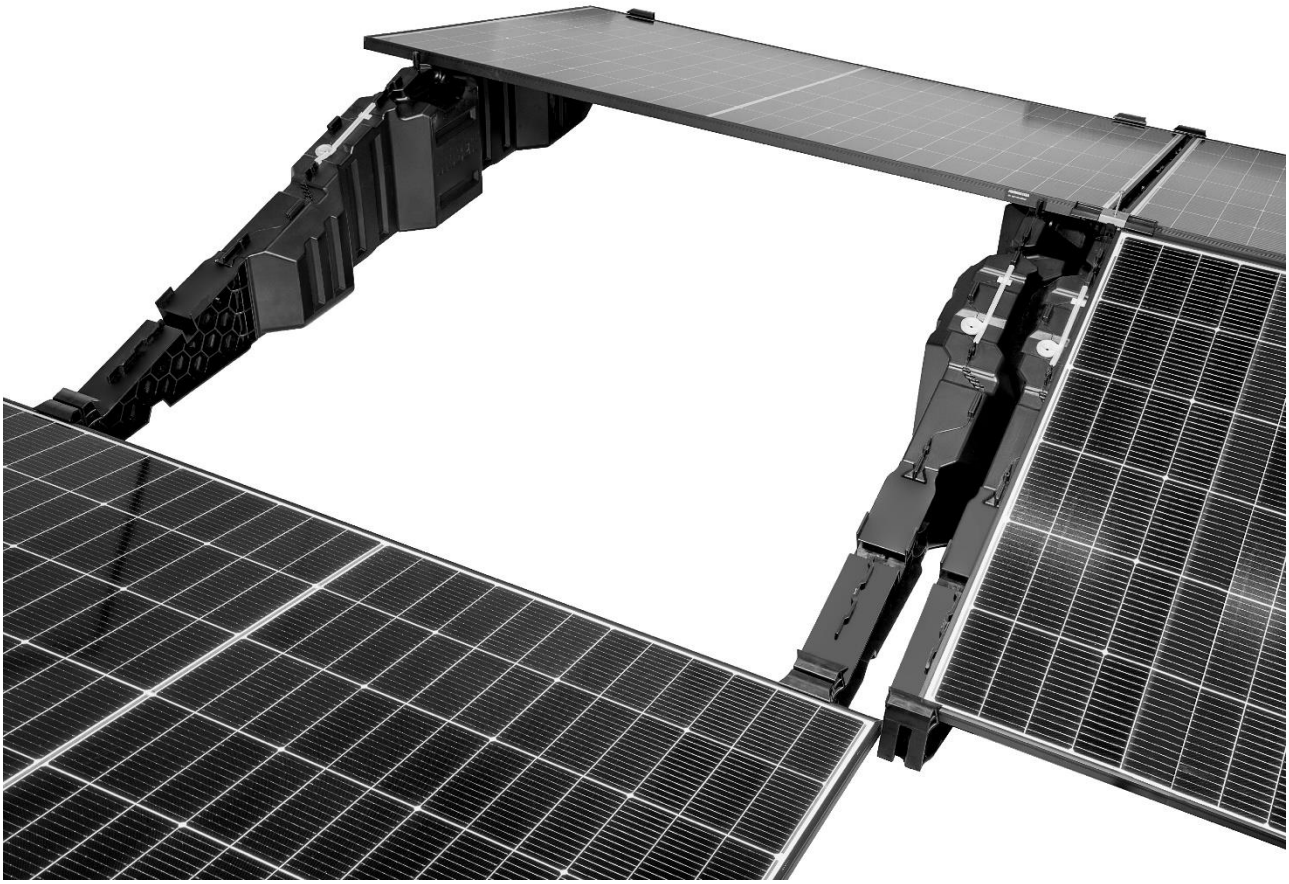
An additional tank is required to ensure a snow load of max. 6kN/m2.

- **Version with different start or end**





Another tank is required to continue the plug-in system.



Earthing/Potential Equalisation

Before commissioning, the system must be connected to the building's potential equalisation system. All modules within a module row are connected to each other via interlocking stainless steel terminals. Depending on the situation on the roof, parts of the system may need to be connected to external lightning protection.

For rooftop PV systems without a lightning protection system, a foundation earth electrode in accordance with DIN 18014 must be installed for new buildings in Germany.

Lightning current carrying capability

A certified lightning protection specialist must plan the lightning protection of a PV system or the underlying building. Lightning current carrying capacity is used for connections, terminals, etc. that must actively discharge lightning currents as part of the lightning protection system. Each of these components must be tested and certified separately.

Roof-mounted systems with a lightning protection system must also fulfil the requirements of VDE 0185-305-3 (IEC/EN 62305-3)

Maintenance

In addition to the specified electrotechnical inspections of the entire PV system, annual and event-dependent (e.g. severe storms, hail, etc.) maintenance of the substructure must be carried out considering the points in the maintenance plan. Points that are not in order must be repaired to avoid further damage and maintain the warranty.

Important: If it becomes necessary to clean the PV modules, this must be done without chemical cleaning agents, using only clear water.

Maintenance plan

Component	Number	Maintenance note	
Tank-E-W	PV-01-01	Visual inspection (damage)	1Xannually
Adapter	PV-02-01	Visual inspection module fixation	1Xannually
Cap-Funnel	PV-03-01	Remove contamination	1Xannually
Funnel-up	PV-04-01	Remove contamination	1Xannually
Anti-slip mat	PV-13-01	Visual inspection of the position of the anti-slip mats	1Xannually