



**WESTECH
SOLARTECHNIK**



Installation Instructions

WT-B 58

Enjoying Sunny Life



WESTECH SOLAR

Installation Instructions

Vacuum tube collector B58



Standards and specifications / Safety instructions



Observe the following specifications, regulations and guidelines for installation and operation!

Standards and specifications

Installation on roofs. Observe the accident prevention regulations (UVV)

- | | |
|-----------------|------------------------------------------------------|
| - ENV 1991, 2-3 | Snow loads |
| - ENV 1991, 2-4 | Wind loads |
| - DIN 18338 | Roofing and roof sealing tasks |
| - DIN 19339 | Plumbing tasks |
| - DIN 18451 | Scaffolding tasks |
| - BGV D 36 | Ladders and steps |
| - BGR 203 | Roofing tasks |
| - BGR 198 | Use of personal protective equipment against falling |

Connection of thermal solar systems

- | | |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| - EN 12976 | Thermal solar systems and components, pre-assembled systems (general applicable instructions for the planning and implementation are included) |
| - EN 12977 | Thermal solar systems and components custom-made systems (general applicable instructions for the planning and implementation are included) |

Installation and implementation of warm water heaters

- | | |
|-------------|------------------------------------------------|
| - EnEV | Insulation of pipelines |
| - DIN 18380 | Heating water and tap water heating systems |
| - DIN 18381 | Gas, water and waste water installation tasks |
| - DIN 18421 | Heat insulation tasks on heating installations |
| - AVB | Water |

Electrical connection

- | | |
|-------------|---------------------------------------------------------|
| - VDE 0100 | Installation of high voltage installations up to 1000 V |
| - VDE 0185 | Lightning protection systems |
| - ENV 61024 | Operation of high voltage installations up to 1000 V |
| - VDE 0105 | Cable and lines in buildings |

Technical Data B58

Collector	B58-10	B58-12	B58-15	B58-18
Number of tubes	10	12	15	18
Width (mm)	960	1120	1360	1600
Height (mm)	2000	2000	2000	2000
Gross area (m ²)	1.85	2.07	2.54	3.32
Aperture area (m ²)	0.94	1.28	1.41	1.70
Absorber area (m ²)	0.8	0.96	1.2	1.46
Collector contents (L)	1.0	1.2	1.5	1.8
Weight (Kg)	36	43	5	4

Collector	B58-20	B58-22	B58-24	B58-25
Number of tubes	10	22	24	25
Width (mm)	1760	1920	2080	2160
Height (mm)	2000	2000	2000	2000
Gross area (m ²)	3.32	3.76	3.98	.11
Aperture area (m ²)	1.88	2.07	2.25	2.35
Absorber area (m ²)	1.6	1.79	1.2	2.0
Collector contents (L)	2.0	2.2	2.4	2.5
Weight (Kg)	72	79	89	92

Collector	B58-30
Number of tubes	30
Width (mm)	2560
Height (mm)	2000
Gross area (m ²)	5.05
Aperture area (m ²)	2.80
Absorber area (m ²)	2.40
Collector contents (L)	3.0
Weight (Kg)	110

Frame	Stainless steel	Tube connection	22 mm copper
Collector	AL/CU/Glass	Operating pressure max	6 bar
Insulation	Rock wool		

Maximum operating pressure: 8 bar. Pressure drop at 100 l/h: 78 Pa

Snow and wind loading:

The snow loading conforms to EN12975 and is 2400 Pa.

The wind loading is 130 kmh.

Hail resistance up to 25 mm stone size

Inclination angle: minimum/20° maximum/90°

Supply and return lines

- | | | |
|---------------------------------|---|--------------------------------------------------------|
| Copper tube | - | Brazing (fluxless brazing in accordance with DIN 8513) |
| | - | Pressing |
| Stainless-steel corrugated tube | - | Simple screw assembly with high-temperature seals |

Recommendations:

Collector gross area	Copper tube	Stainless-steel corrugated tube
up to 10 m ²	18 mm	DN16
up to 22 m ²	22 mm	DN20
from 23 m ²	28 mm	DN25

Tube and heat insulation

Must exhibit the following characteristics:

- Momentary temperature resistance above 150°C (e.g. glass wool or natural rubber)
- UV and weather resistance externally
- Insulation thickness is tube diameter (minimum)
(related to a K-value of 0.04 W/mk)

Electrical connections, lightning protection and earthing

Electric installations must be carried out by an authorised electrician under consideration of the provisions of VED0100 and guidelines of the local EVU.

All metallic components of the solar system must be connected to the busbar of the primary equipotential bonding under consideration of the electrical and technical regulations.

If there is a lightning arrester, the collectors must be connected to it

Safety instructions

Attention! Do not charge solar systems by solar radiation!
Temperatures of more than 100°C can occur in the solar circuit, these could result in damage (no warranty claims).

To protect from frost, the system should be filled with appropriate heat transfer fluid.

Here, we recommend our solar fluid Westech LS ready-mix.

This provides frost protection down to - 28°C and, simultaneously, corrosion protection for all system components.

Recommended flow rate: 0.3 litre/min per m² gross collector area

Rule of thumb:

The supply temperature to the collector should be as high as possible, but not too high so that it attains more than 100°C when in operation.

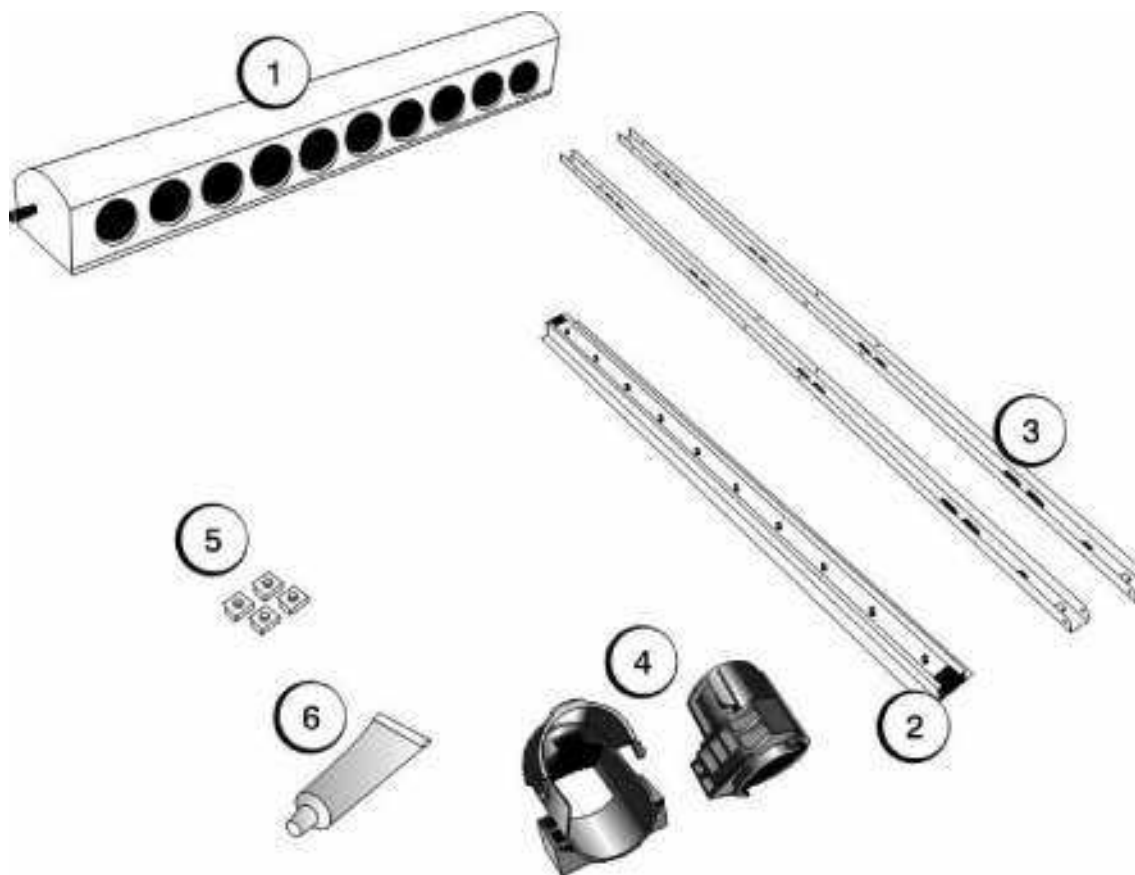
The flow rate must be set accordingly or programmed in the regulator for speed-controlled systems.

Installation of the collector

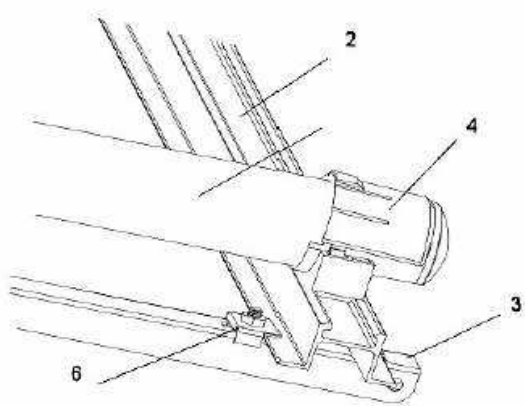
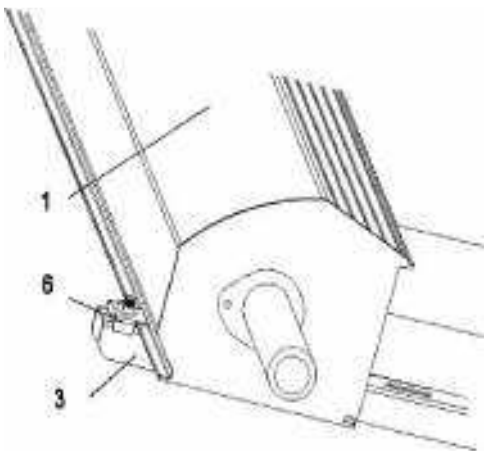
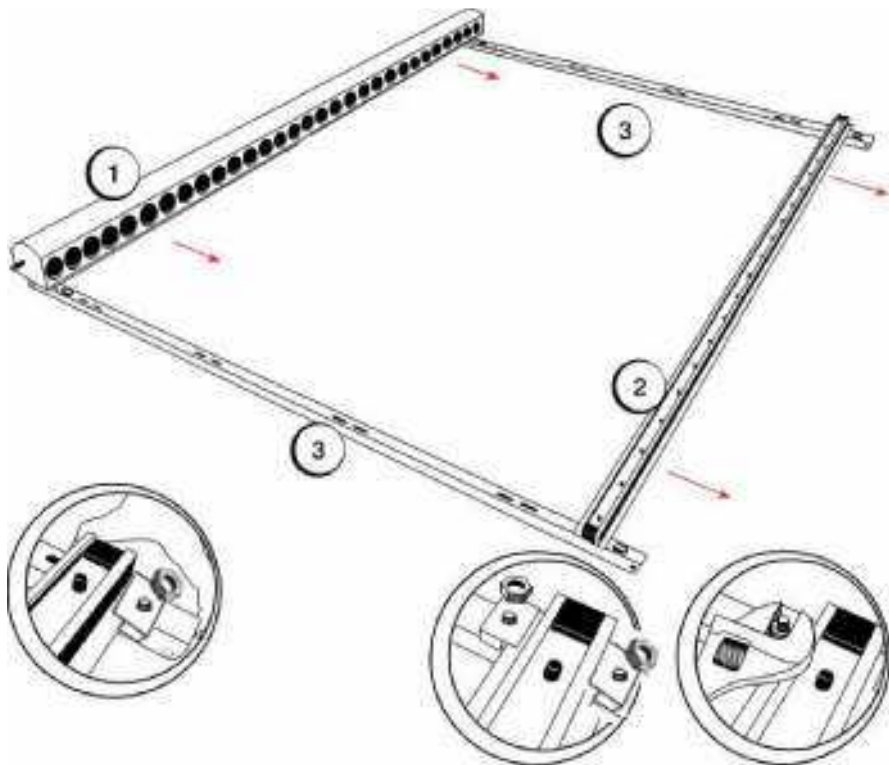
Our vacuum pipe collectors are supplied with the attachment systems as ordered by the customer. Either for installation on a tiled roof or flat roof. All constructions are designed for on-roof installation. Each collector is individually attached (installed individually). The frame for installation on a tiled roof is included as standard. Depending on the order, sloping roof elevation is included for a tiled roof to compensate for a roof with a dorsal angle. When ordering a flat roof elevation, a suitable elevation is included for all flat horizontal planes.

The installation kit for a collector 10 - 22 tubes consists of:

Collector box (1), subframe (2), collector profiles (3), tube brackets (4), installation screw set (5) and thermal compound (6).

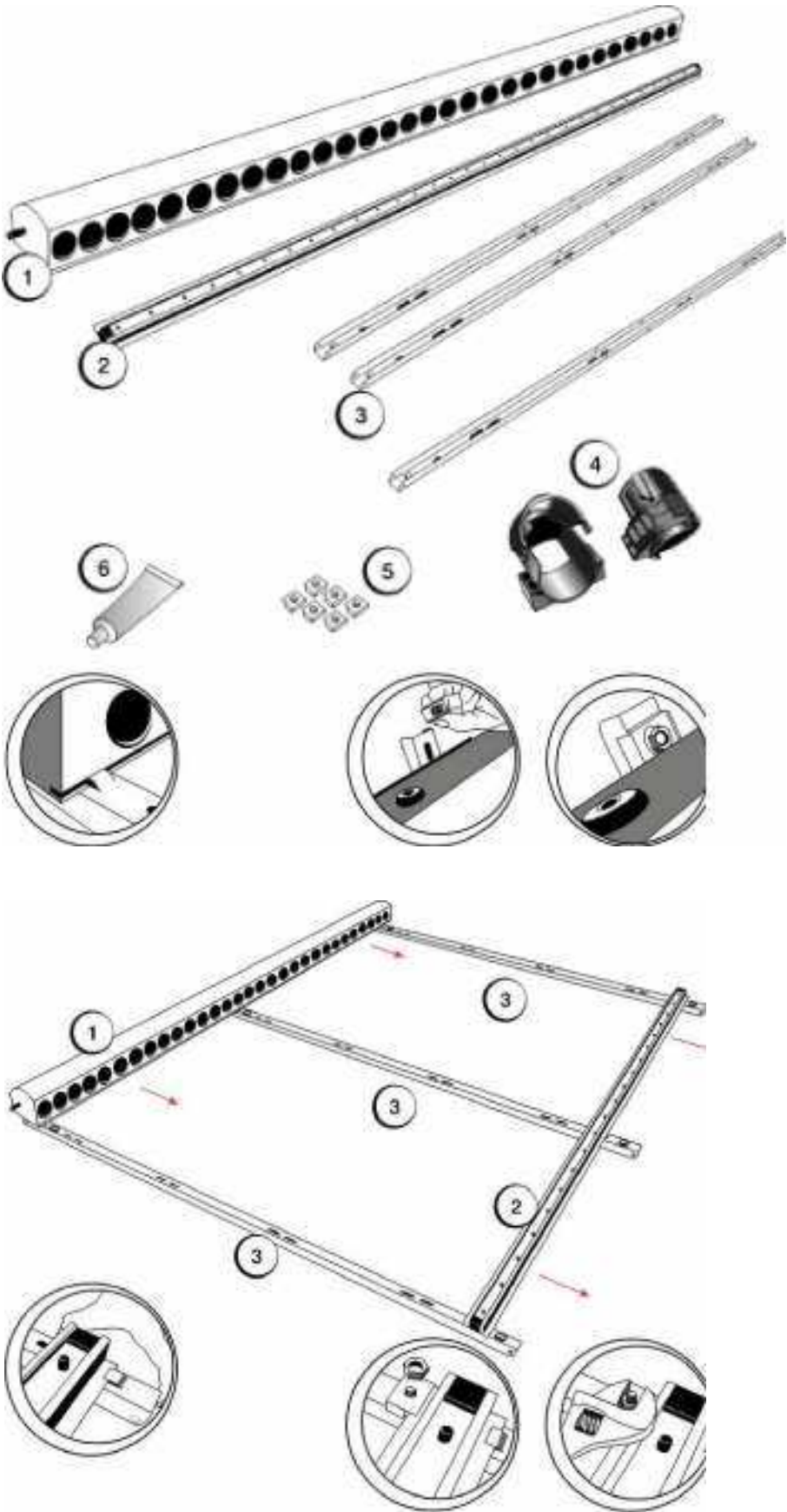


Collector installation, schematic drawing 10 - 22 tubes



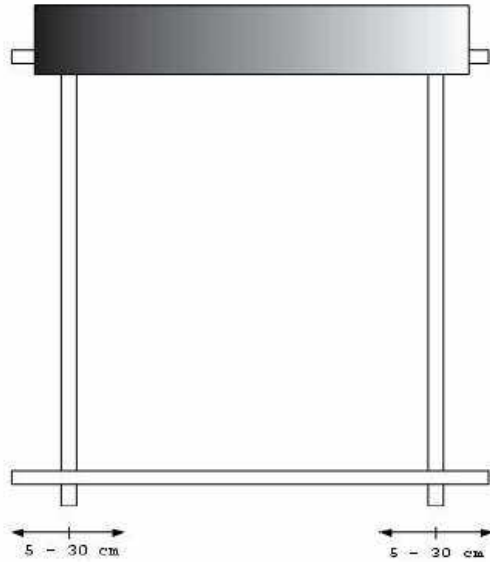
The installation kit for a collector 24 - 30 tubes consists of:

Collector box (1), subframe (2), collector profiles (3), tube brackets (4), installation screw set (5) and thermal compound (6).



Installation on a tiled roof

Using roof hooks, the collector can be attached to every tiled roof without additional attachment material. Thereby, the longitudinal sides of the collector are attached by screws directly onto the roof hooks.



Using this form of attachment, the roof hooks must be installed conforming to the collector frame and rafters.

Because the longitudinal frame can be moved sideways, it is very easy to align the collector frame in position on the rafters and install the roof hooks there.

Installation on a tiled roof



Installation of roof hooks

1. Determine the position of the roof hooks according to the longitudinal beam.

The vertical distance of the roof hooks is determined by the attachment holes in the longitudinal frame.

The horizontal distance of the roof hooks is determined by the nearest rafter to the end of the collector box.

2. Attach the roof hooks



The roof tile is pushed upwards. The web of the roof hook is placed in the furrow or flat plane of the roof tile. A minimum of 5 mm clearance should be maintained between the tile and web. If snow loading is anticipated, in particular for the tile seats, it is generally recommended to place a sheet metal seat, adapted to the shape of the tile, under each roof hook!

The roof hook is attached to the rafters using a minimum of 2 screws. Pre-drill 8 mm, approx. 2/3 of the overall length of the screw. Make sure that a minimum of 70 mm of the screw engages, if necessary, use longer screws! Lubricating the screws with grease prevents shearing-off when installing. As requested, the web of the roof hook can be secured with a rubber ring against water being forced up by a strong wind.



3. Clip in the capping tile

Depending on the shape of the roof tile, it may be necessary to grind it (use Flex with a small diamond grinding wheel!), so that the tile and roof hook closes again.

Installation on tile roof, step 12 - 16

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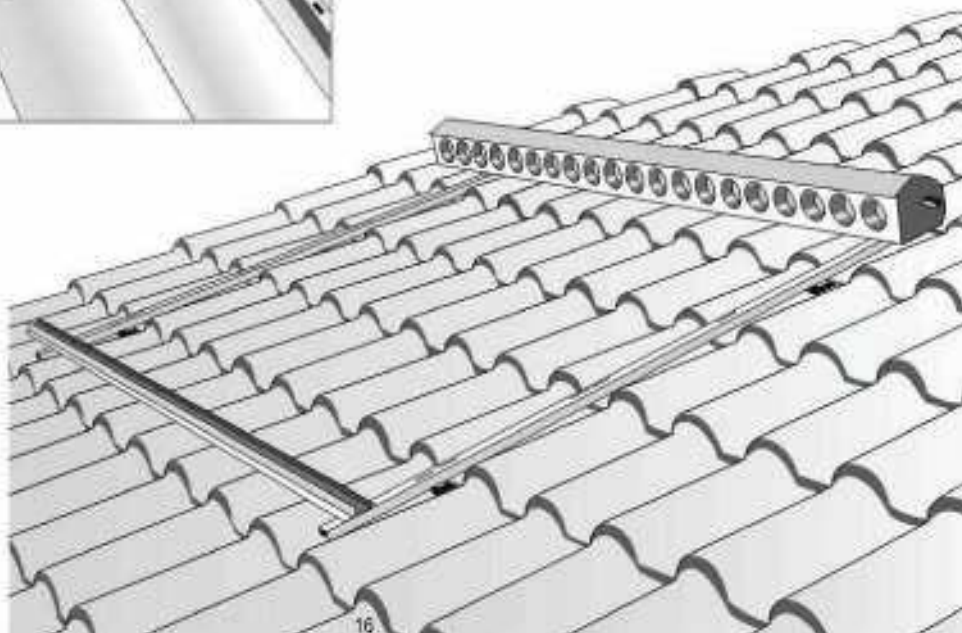
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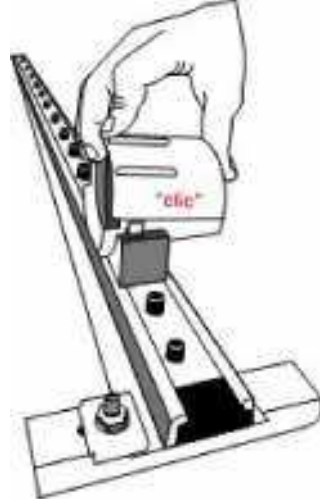
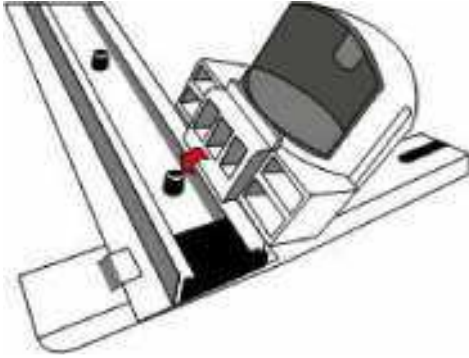
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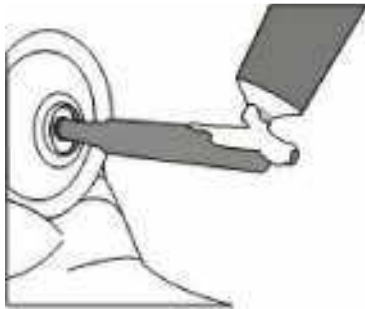
Installation of tube

After installation of the collector box, the tubes are installed

For this, press in the toe-clips into the subframe until they engage.



First, it is essential to apply thermal compound to the heat pipe.



Attention:

Before pushing in the tubes, pull out the heat pipe approximately 30 cm !
Push the heat pipe completely into the tube of the collector box. Push the tubes into the collector box. Thereby, the heat pipe is also pushed back into the tubes.

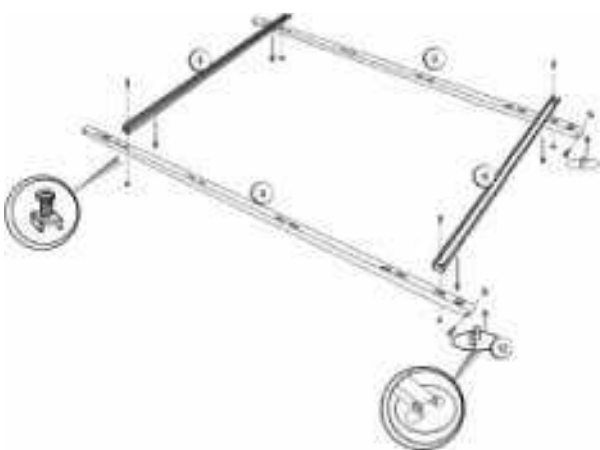
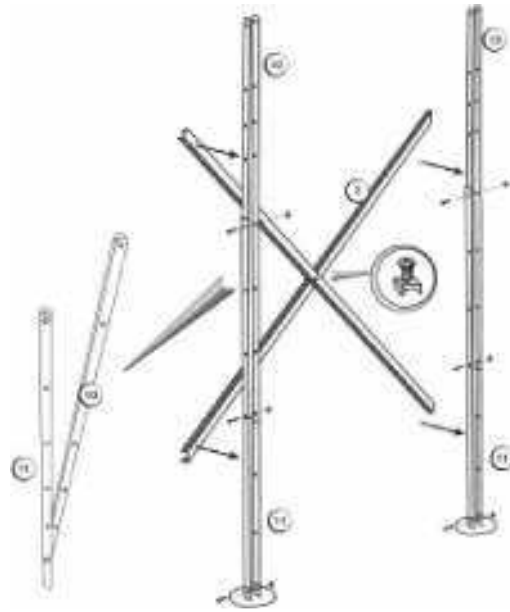


After pushing the tubes into the collector box, these are then inserted into the associated toe clip and the toe clip closed.

Repeat this procedure until all tubes are installed in the collector box.

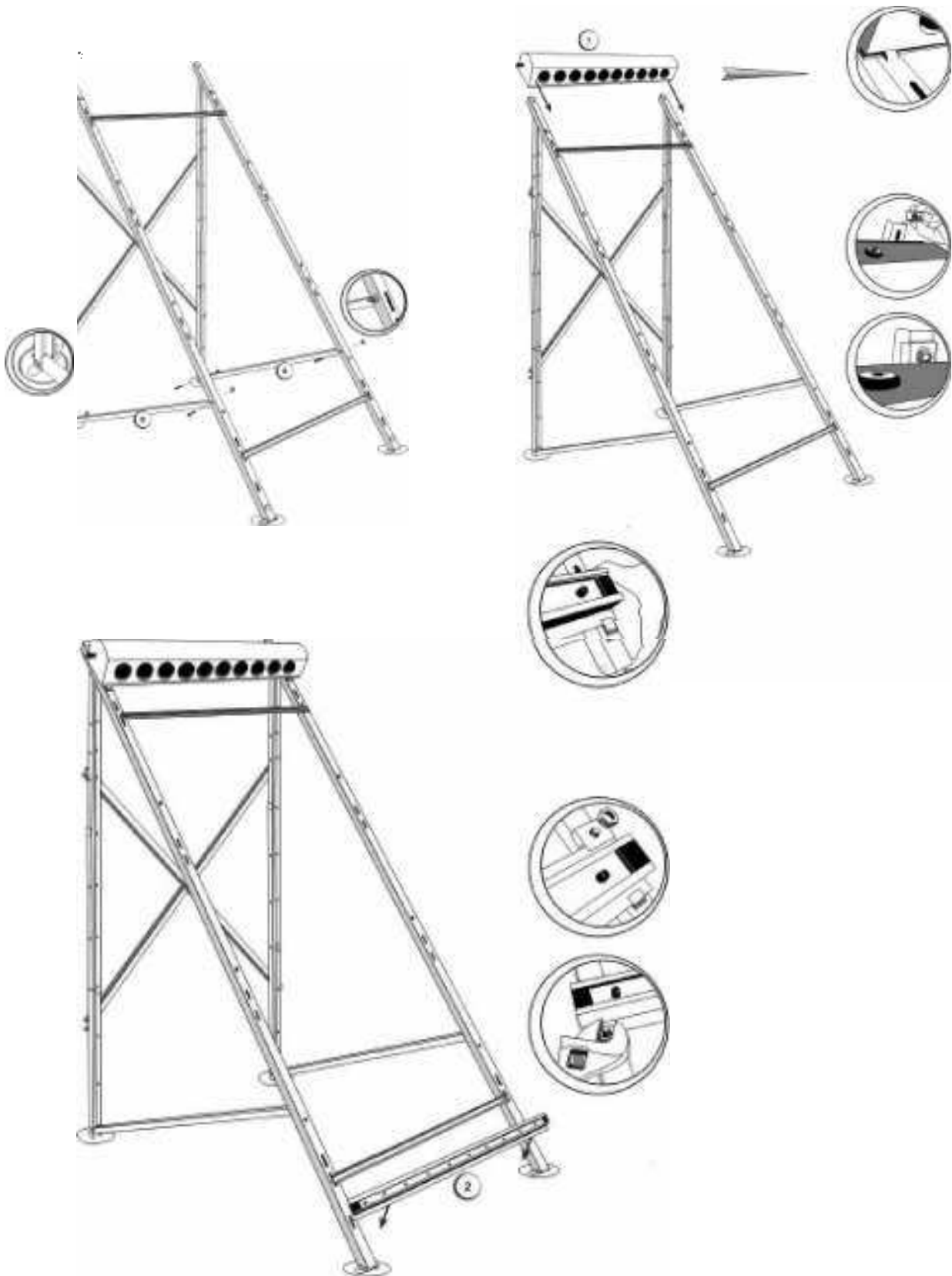
Assembly of the collector with flat roof installation

10 - 22 tubes



Assembly of the collector with flat roof installation

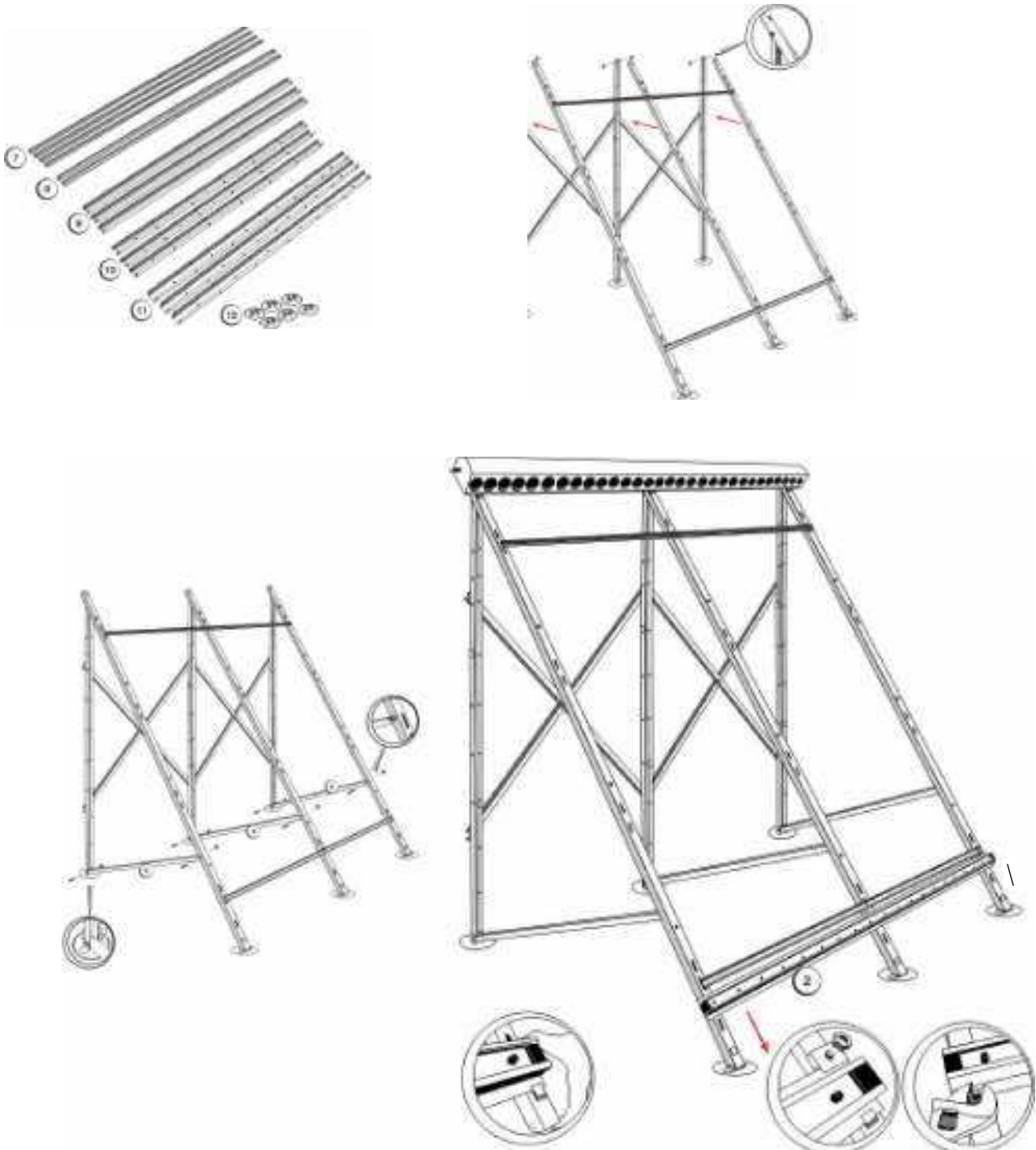
10 - 22 tubes



Assembly of the collector with flat roof installation

24-30 tubes

Assembly of the 24 and 30 tubes collector is similar to the 10 - 22 tube collectors. Here, an additional centre brace is installed.



Safety regulations

Before beginning with the installation, familiarise yourself with the following safety instructions. These are provided primarily for your own safety.

Before beginning the installation, carefully read the installation instructions and observe the safety instructions given.

If the snow load is greater, from Zone 4 and at installation locations over 600 m above sea level, observe the static regulations.

Before the tubes are installed and heated, the collectors must be hydraulically connected and the system filled with heat transfer fluid.

Working on the roof

When working on the roof, take suitable measures for accident protection.

To ensure safe installation of the solar components, observe the following points:

- Use fall arresting devices when installing the collectors.
- If using a lean-to ladder, adhere to the safety regulations.
- When working on corrugated sheet roofing, there is the danger of breaking through.
- Secure working areas on the steep roof.
- If an overhead line is routed over the roof, adhere to the safety distances to the lines.
- When working using an angle grinder, wear safety goggles and gloves.
- During installation and operation, tube collectors can attain a stagnation temperature of more than 220°C through incident light. There is a risk of burning on the supply and return. On sunny days, cover the collector during installation.
- Even in normal daylight, there is the possibility that fluid in the collector can vaporise. This vapour escapes from the collector connections. There is a risk of burning.

Before the installation tasks, make yourself familiar with the accident prevention regulations for construction work of your professional association or get instruction from suitable persons.

Caution glass

- Do not apply mechanical pressure on glass tubes. Risk of cuts on splinters of glass
- When installing flat collectors, wear gloves and safety goggles, in order to prevent damage and injuries.

ATTENTION:

Before commissioning, the system must be filled with a water/anti-freeze mixture. This is also necessary in summer. Due to the especially high-quality selective coating, temperature fluctuations in the minus range can occur at night that can result in destruction of the collector system!

Filling the solar system

After filling, the pressure should be 0.5 bar above the system pressure of the expansion vessels (visible on the type plate).

We recommend a system pressure of a minimum of 2.5 bar.

To fill and vent the solar system, it is recommended to use a purge and fill device from Westech-Solar.

Adjusting the pump

Manually adjust the pump on the solar regulator. Set the pump to power level II, now read off the volume flow on the flow measurement device.

As necessary, increase the pump level until the calculated volume flow is indicated (refer to Point, Adjust flow rate).

Tip: To save power, before reducing the volume flow, always reduce the pump level!

The regulating valve remains fully open.

Electrical connections

Installation of the electrics must be carried out by an authorised specialist, under adherence to the provisions of the VDE 0100 and guidelines of the local EVU.

Maintenance/Inspection

In order to maintain permanent operational readiness of your high quality Westech collector system, annual maintenance and check of the complete system must be carried out by a specialist company.

Minimum requirement for a correct check:

- Checking the anti-freeze agent and leak check, as well as flushing and cleaning the system using a purge pump
- Checking the security of the screwed fittings and installation kit
- Visual inspection of the collectors for signs of damage
- Pressure test of the expansion vessel and checking the safety equipment
- Checking all moving and electrical component and fittings
- Function check of the storage systems check for safety
- Local circumstances (hydraulics, electrics etc.) can necessitate carrying out further checks