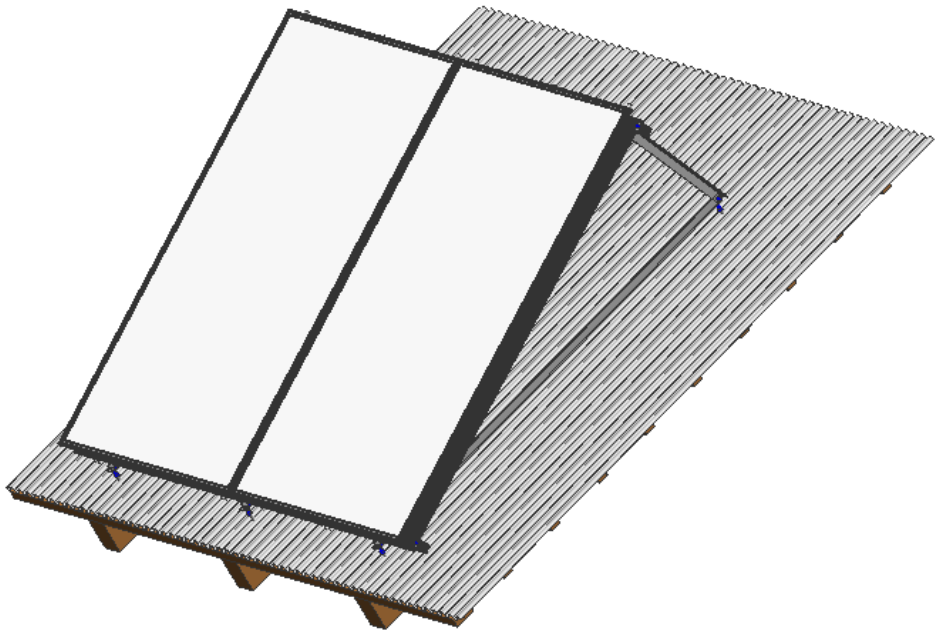
Mounting Instructions

for Aluminium Frame Collector AF24VE2

Bench screw attachment, rack-mounted 20° or 45° above roof level



Version V.01
20.03.2009
Product Code 1000194523

Contents

General Instructions

The assembly may only be executed by competent personnel. All country-specific standards, regulations and technical guidance, and in particular all safety rules for work on roofs, on ladders and on scaffolding must be observed. The mounting personnel must use hard hats, safety shoes, safety gloves and collective or personal protection equipment such as safety catch devices or harnesses.

The safety notices indicated above do not pretend to be exhaustive.

The **Solar System Contractor** is **responsible** for:

- Installing the system according to its scope of use
- Complying with all safety regulations and using appropriate protection equipment
- Observing the labour legislation
- Observing the rules for accident prevention
- Employing fully biodegradable antifreeze mixtures

The **user of the solar system** is **responsible** for:

- Operating the system according to its scope of use
- Performing a visual control of all system parts once a year
- Performing a visual control of the safety devices once a year
- Controlling the antifreeze mixture every 2 years
- Informing the insurance company concerned of the installation of the solar system

Special safety instructions

- **Overhead lines**

Contact with overhead lines may have lethal consequences. The voltaged parts thereof must either be insulated, or de-energised for the period of work on the roof.

- **Lightning protection**

Metal piping must be connected to the equipotential bonding bar.
The collectors (flashing kit) must be connected to the lightning protection system, if any.

Required mounting tools and materials

- Measuring tape
- Chalkline
- Cordless drill
- Reversible ratchet with socket 9 mm
- Metal drill bit 14 mm (stone drill bit 14 mm)
- Boarding auger bit 8 mm, wood drill bit 30 or 50 mm
- 2 open-ended spanners with ring ratchet 13 mm
- 2 open-ended spanners with ring ratchet 19 mm
- Sealing paste
- 2 pliers wrenches
- Leak detection spray
- Silicon roof passage
- If required, aeration roof tiles for piping
- Silicon
- Angle grinder with cut-off wheel for metal and concrete

Further points to be observed

- Before the collectors are mounted on the roof it must be verified, if the load bearing capacity of the roof structure complies with the requirements of the collector assembly.
  Restrictions of installation:
- Maximum wind velocity on location150 km/h
- Maximum building height 25 m above ground
  If only one of the above limit values does not comply, a **separate static proof** will be required.
- Roof pitch ranging from 20° to 70°
- All holes drilled into the roof covering/building shell in the course of the installation must be sealed water and airtight after all piping and wiring has been mounted!
- For safety reasons it is not permitted to fill the collectors during direct solar radiation!
- It is not possible to drain the solar collectors completely. For this reason, the pressure test may only be carried out with compressed air (9 bar) and using a foam generating agent (stop leak spray).

Transportation and storage

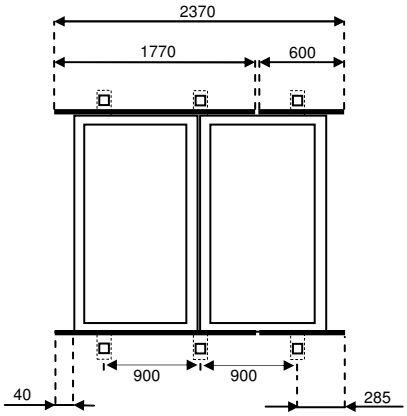
- The collectors supplied may only be stored outdoors for a short period. For storage, they must immediately be safely protected from precipitation with a tarpaulin.
- If the collectors are delivered in vertical packaging units, they must imperatively be secured against overturning!
- Each single collector may be crane-lifted to the roof by the carrying strap provided for this purpose.

  ATTENTION: Attach the collectors only one by one. In case of stronger wind the assembly must be interrupted immediately!

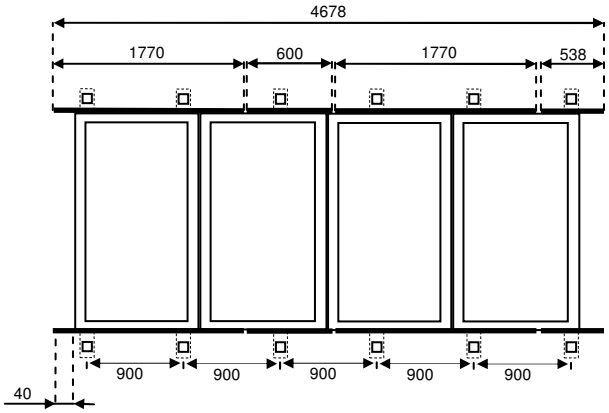
Technical alterations reserved.

Collector field dimensions (900 mm rafter interval)

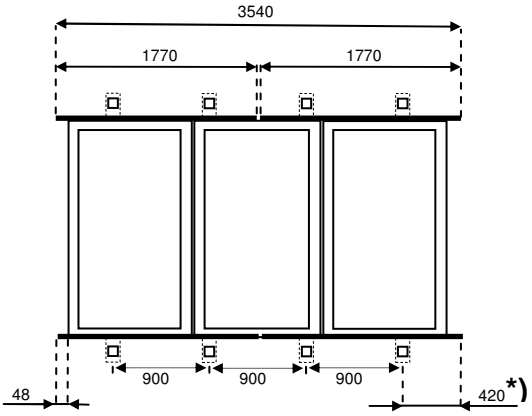
Collector dimensions: 2064 x 1154 (all indicated measures in mm)



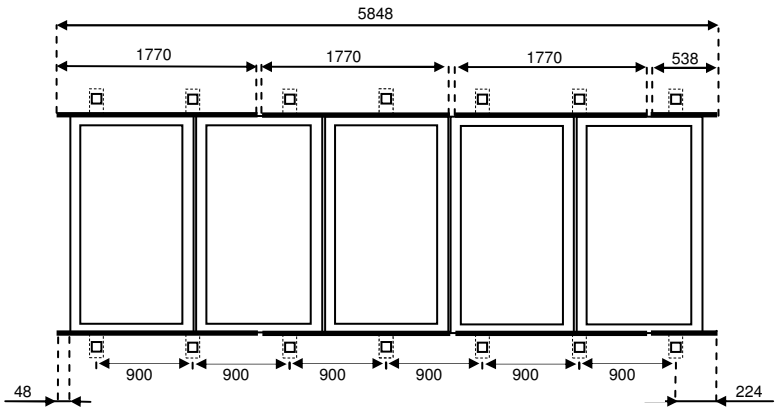
Basic set for 2 collectors



Basic set for 2 collectors
+ Extension set for 2 coll.



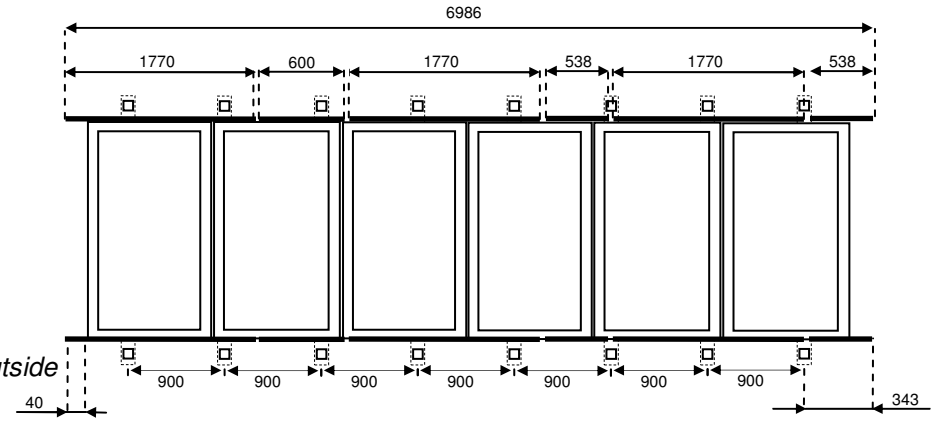
Basic set for 3 collectors



Basic set for 3 collectors
+ Extension set for 2 coll.

	Rafter
—	Aluminium rail Horizontal rail
▫	Bench Screw

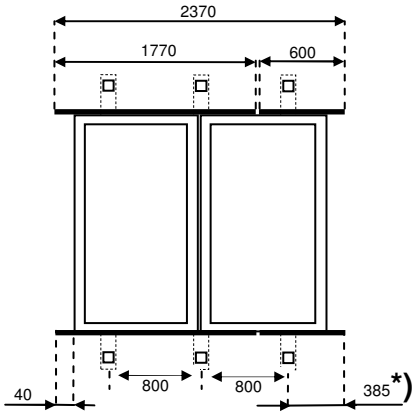
) The distance between the outside rafter and the end of the horizontal rail must not exceed a **maximum of 430 mm.*



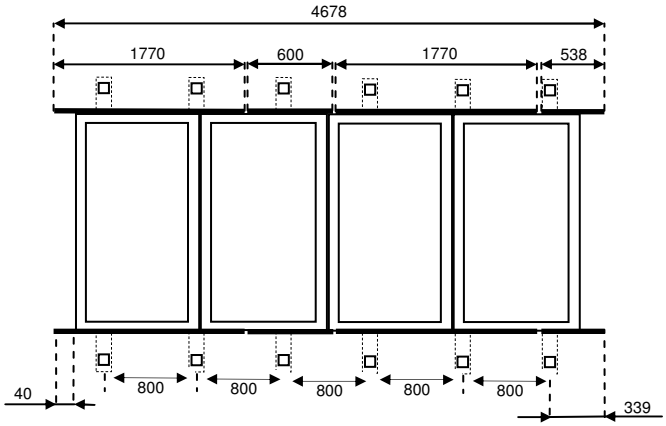
Basic set for 2 collectors
+ Extension set for 2 coll.
+ Extension set for 2 coll.

Collector field dimensions (800 mm rafter interval)

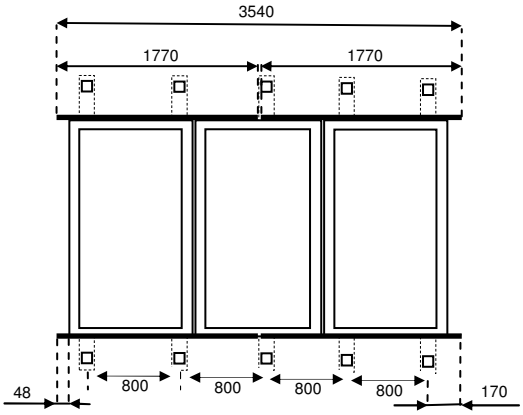
Collector dimension: 2064 x 1154 (all indicated measures in mm)



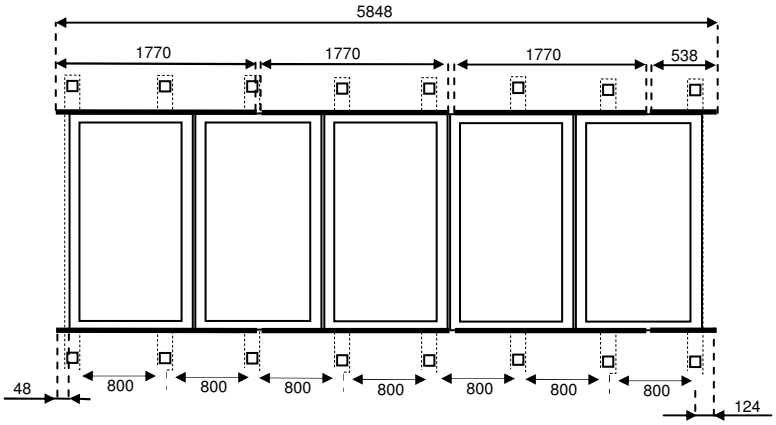
Basic set for 2 collectors



Basic set for 2 collectors
+ Extension set for 2 coll.

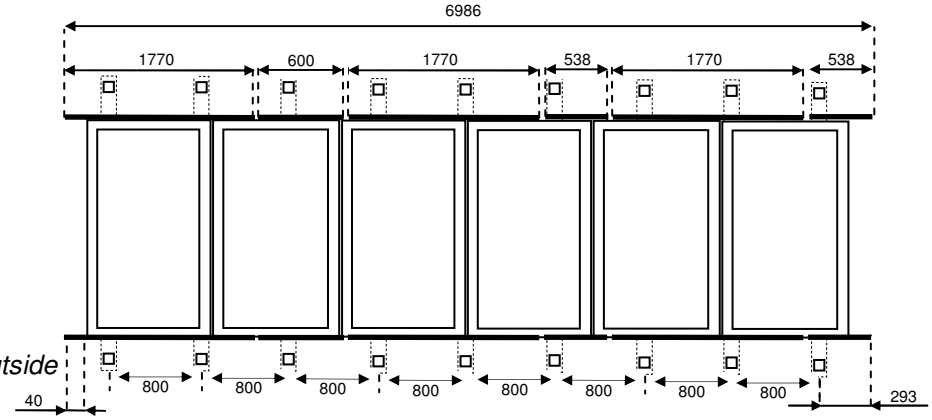


Basic set for 3 collectors
+ Mounting set for 1 Rafter



Basic set for 3 collectors
+ Extension set for 2 coll.
+ Mounting set for 1 Rafter

	Rafter
—	Aluminium rail Horizontal rail
▫	Bench Screw
must be ordered separately	



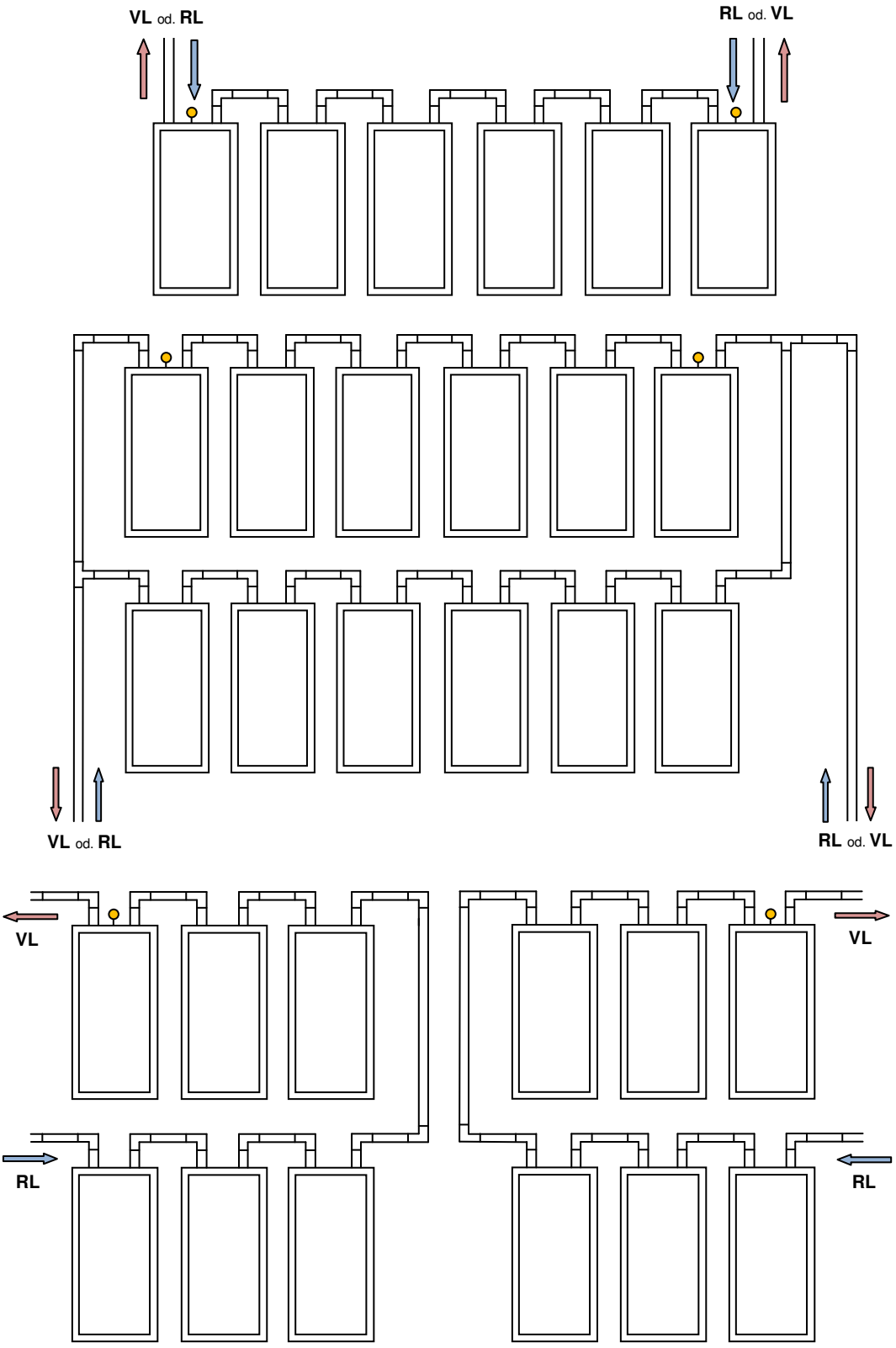
Basic set for 2 collectors
+ Extension set for 2 coll.
+ Extension set for 2 coll.
+ Mounting set for 1 Rafter

) The distance between the outside rafter and the end of the horizontal rail must not exceed a **maximum of 400 mm.*

Connection variants

(A maximum of 6 collectors may be connected in series)

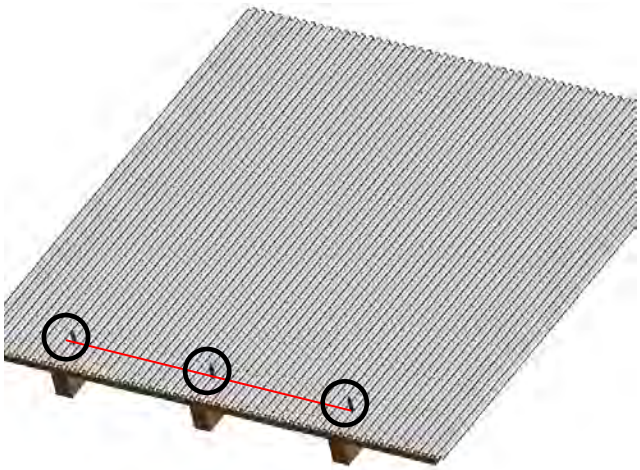
The collector probe (⚲) must be mounted to the collector with flow connection (VL). The probe cable must be sealed against water infiltration.



Montageanleitung Alurahmenkollektor AF24VE2

Alurahmenkollektor mit Stockschraubenbefestigung parallel

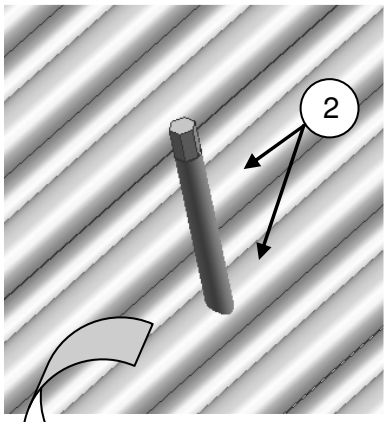
1)
Transfer the collector field dimensions to the roof. Take care of proper alignment and optimum appearance of the collector field, and avoid shading.



As for collector field dimensions, please refer to page 5-6.
(Mark the location of the drill holes with a chalkline).

Mount the lower bench screws at first.

2)
Drill through the roof covering at the intended positions with a **steel** or **stone drill bit Ø14**.

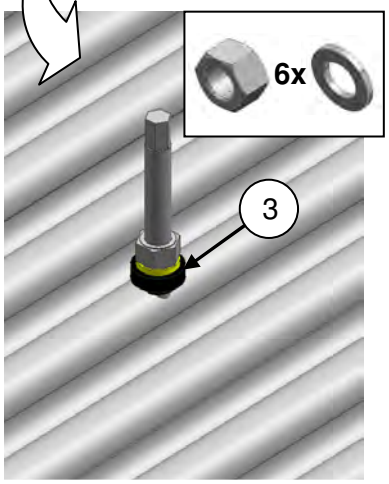


IMPORTANT: Corrugated roof panels may only be drilled at the **corrugation ridge (2)**. If necessary, the bench screw must be straightened with a ½“ steel tube.

Pre-drill the rafter at the intended place with a **wood drill bit Ø8**.

Drive the **bench screw M12x350** directly into the rafter with a cordless drill, or with a reversible ratchet provided with a 9 mm socket.

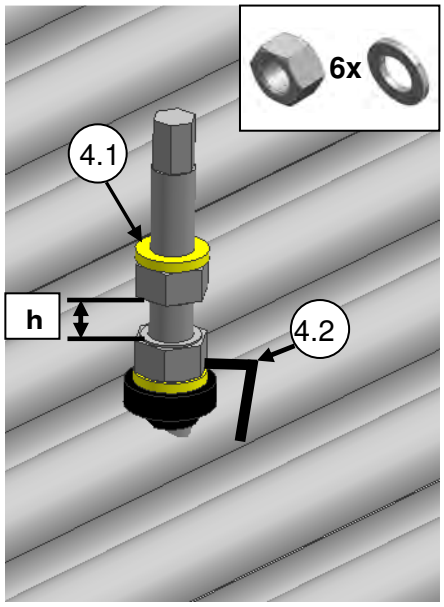
3)
Mount the **EPDM gasket** and the **washer**. Tighten the **M12 hexagon nut** firmly. **(3)**
Attention: Do not damage the roof covering.



4)
Place the **M12 hexagon nut** at the desired height **(h)** and fit the **washer (4.1)**

IMPORTANT: Apply a **silicon seam** above the bench screw for water discharge. **(4.2)**

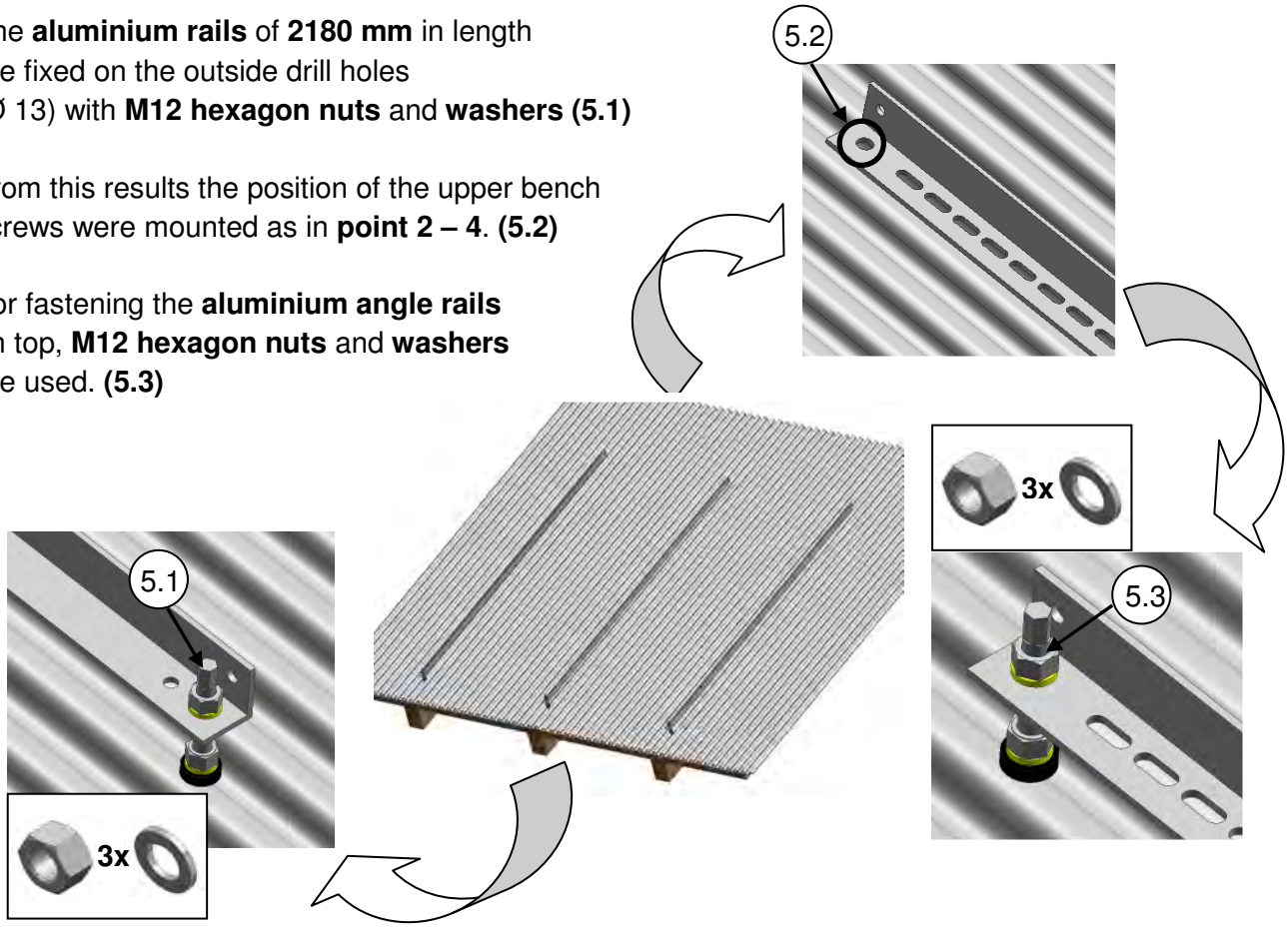
Fit the **adapter plate** and the **washer**, align and fix with a **M12 hexagon nut**. **(4.3)**



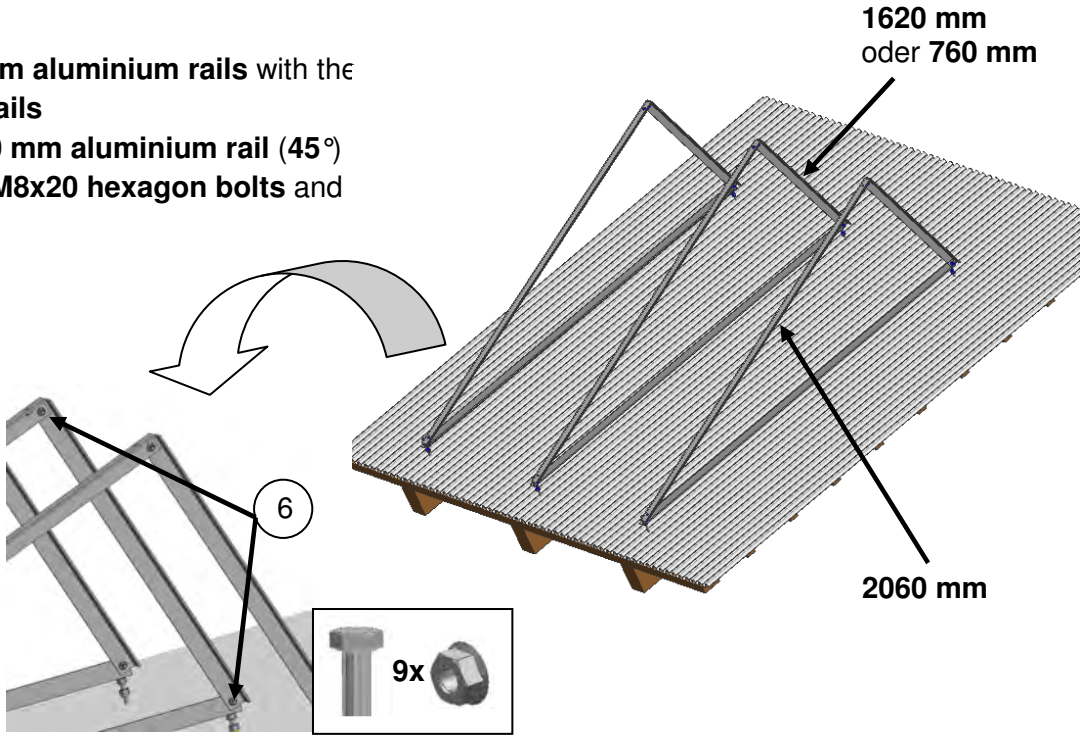
5)
The **aluminium rails** of **2180 mm** in length are fixed on the outside drill holes (Ø 13) with **M12 hexagon nuts** and **washers (5.1)**

From this results the position of the upper bench screws were mounted as in **point 2 – 4**. **(5.2)**

For fastening the **aluminium angle rails** on top, **M12 hexagon nuts** and **washers** are used. **(5.3)**



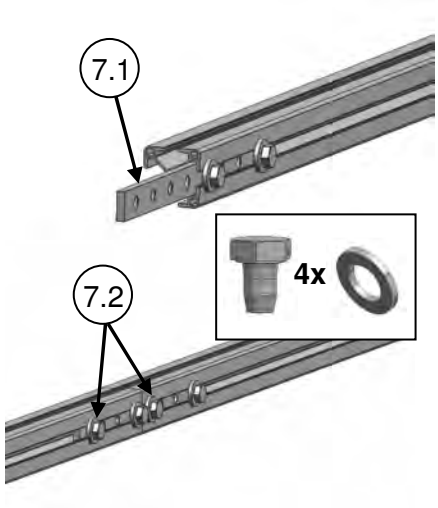
6)
Assemble the **2060 mm aluminium rails** with the 760 mm **aluminium rails**
(**20°**), or with the **1620 mm aluminium rail** (**45°**) and fasten with **3 off M8x20 hexagon bolts** and **serrated nuts** each.

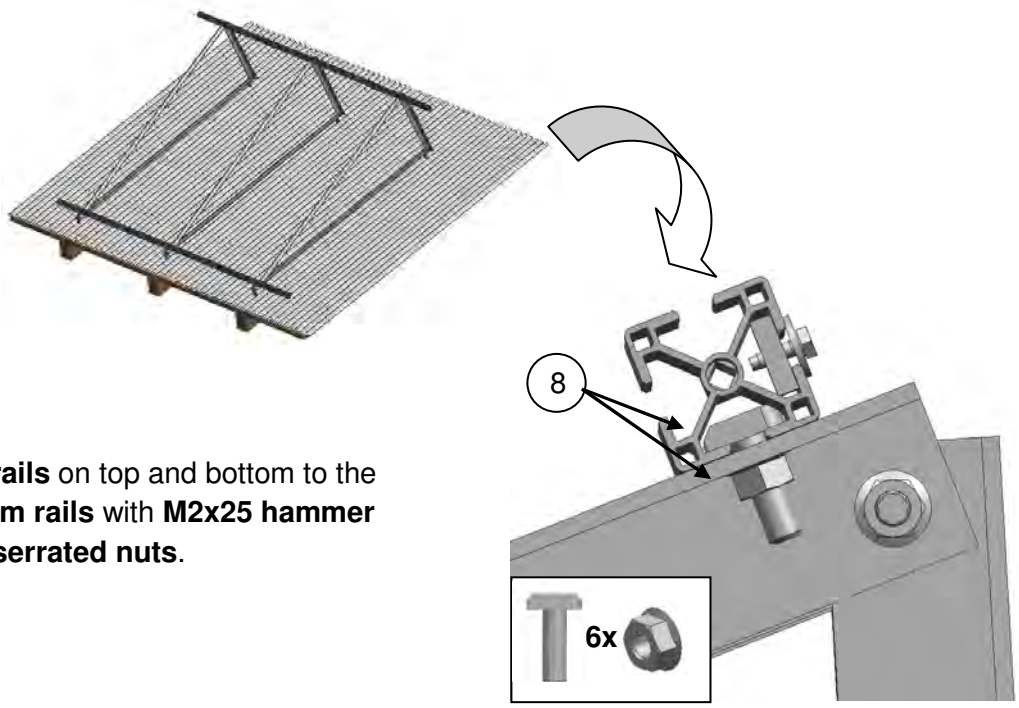


Mounting advise:
At first assemble the aluminium triangle and mount it as in point 5.

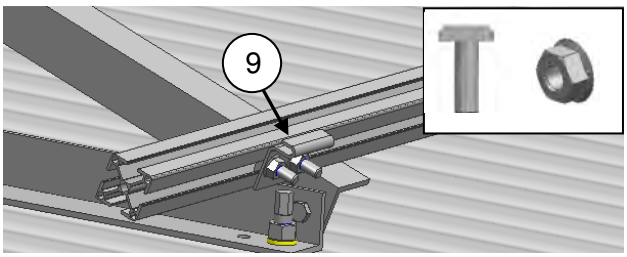
7)
Assemble the **horizontal rails** with the **horizontal rail connector (7.1)** according to collector field dimensions (page 5-6).

4 off M8x12 hexagon bolts
4 off washers (7.2)

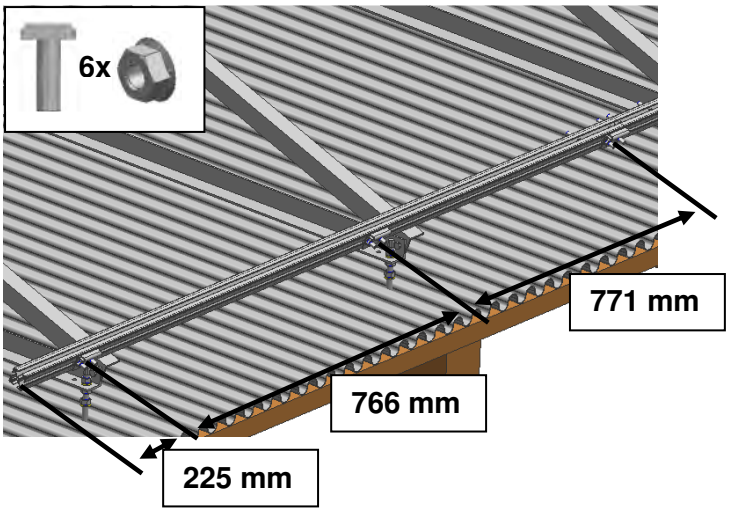




8)
Fix the **horizontal rails** on top and bottom to the **2060 mm aluminium rails** with **M2x25 hammer headed bolts** and **serrated nuts**.



9)
Fix the **lower fastening sheet** to the lower horizontal rail with **2 off M8x25 hammer headed bolts** and **serrated nuts** each.

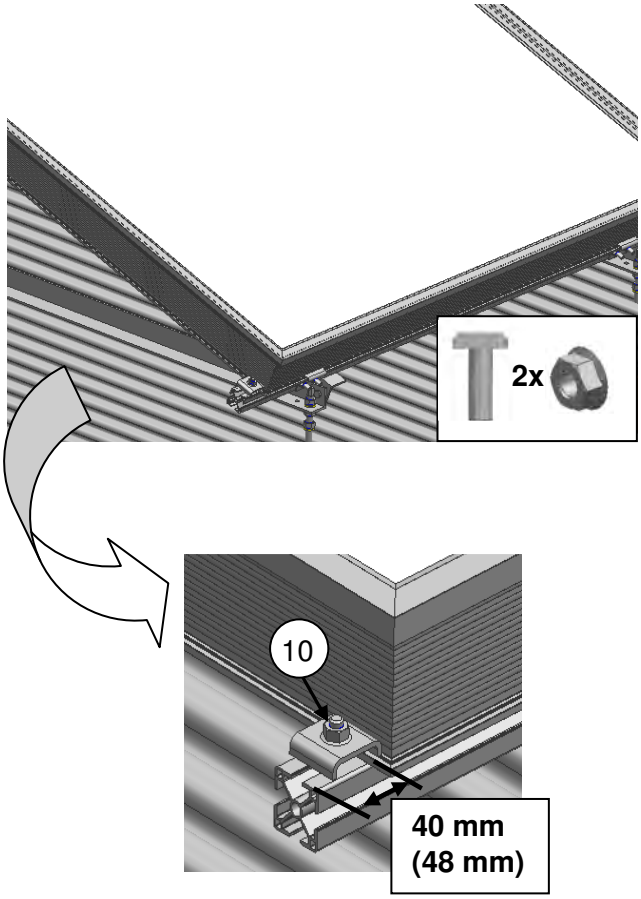


Each further **lower fastening sheet** is mounted to the horizontal rail at the appropriate distance (771mm).

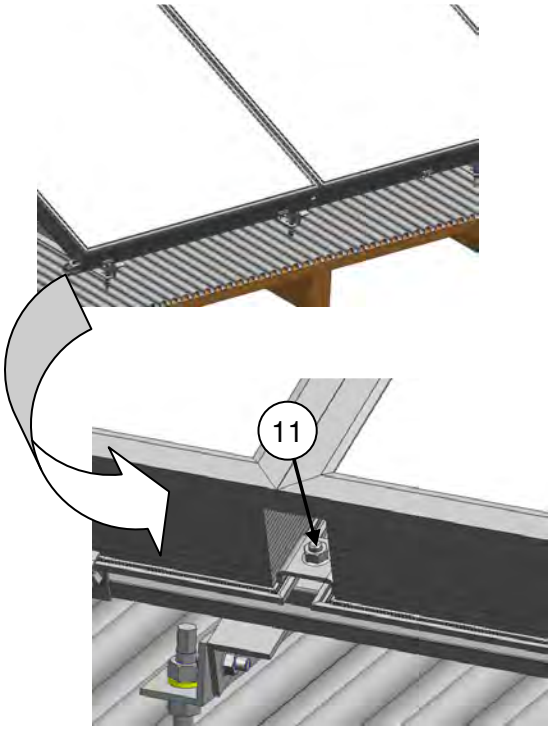
(1154 mm to the center of the next collector)

10)
Place the first collector on the horizontal rails, fit it into the **lower fastening sheet** and lock it with **2 fastening clamps** (top and bottom).

Now the clamps are fastened with **M8x25 hammer headed bolts** and **serrated nuts**.

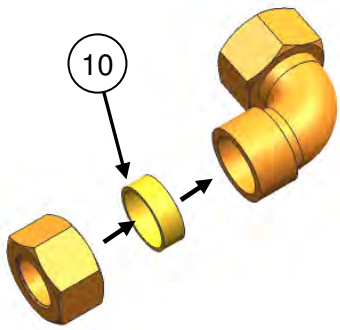


11)
All further collectors are placed flush with the first one,
and the **fastening clamps** are fixed top and bottom with **M8x25 hammer headed bolts** and **serrated nuts**.

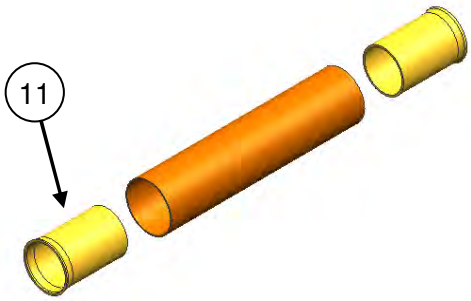


Hydraulic Connections

12)
Apply sealing paste to the **cutting ring.**

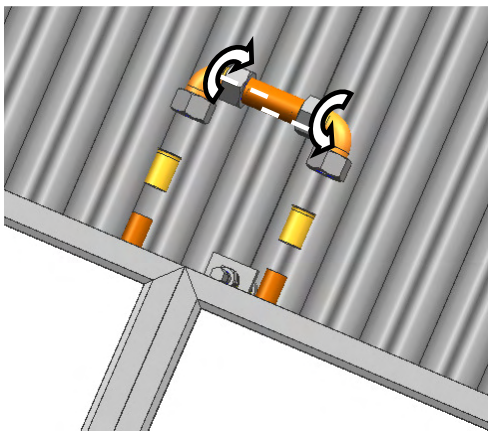


13)
Insert support sleeves into connecting pipe and collector header.



14)
Connect the collectors hydraulically. Snug-tighten the screwed connection, make a **mark** and then tighten with a complete turn.

ATTENTION: Do not tighten the clamping ring connection excessively.
Hold the pipe with a plier's wrench to prevent any twisting (damaging of header).



15)
Pass the flow and return piping of the solar system into the attic (hole Ø30 or Ø50 mm).

16)
Check the collector system for tightness with compressed air at a test pressure of **9 bar.**
All screwed connections are checked for tightness with a foam generating agent (stop leak spray).

The flow and return piping must be provided with appropriate insulation that must be protected against ultraviolet light, moisture, damaging by animals and by roof avalanches.

17)
The collector probe is slid into the probe pipe as far as the stop. Protect the probe cable from tensile loads (roof avalanches), seal it and protect it against damaging by animals.

ATTENTION: The collector probe must be slid **80 mm** into the hose. For checking, apply a mark on the probe cable.

ATTENTION: All holes drilled into the roof covering/building shell in the course of the installation must be sealed water and airtight after all piping and wiring has been mounted.

We wish you many hours of sunshine and a lot of pleasure with your new solar system!

Bench screw attachment, rack-mounted 20° or 45° above roof level