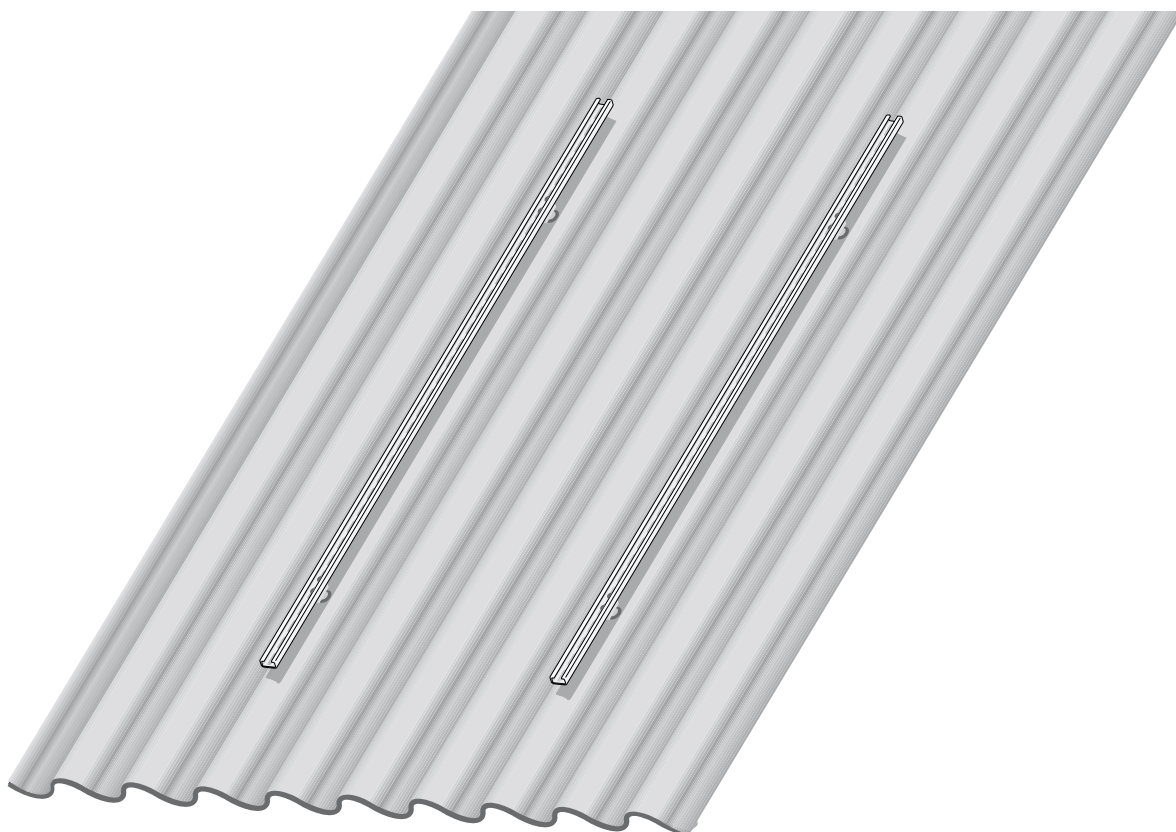


Installation instructions

**Installation set for fixing
vacuum tube collectors
to corrugated roof tops**



To these instructions

These installation instructions contain important information for the safe and correct installation of the installation set to a corrugated roof.

These technical documents should be retained in a safe place. These may also be inspected at the manufacturer's premises.

These installation instructions are a supplement to the installation instructions for each collector type.

- Observe the installation instructions for each type of collector.
- Hand these installation instructions to the customer.

Subject to technical modifications.

Constant development may lead to minor deviations of illustrations, functional steps and specifications from those described/shown.

Updating your documentation

Please let us know if you would like to make suggestions to improve our documentation or if you have noticed any errors.

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1 General

These installation instructions describe the installation of the special headless studs and the vertical profile rails for fitting your collectors to a corrugated roof. These replace the roof hooks from the collectors standard delivery pack.

These installation instructions are a supplement to the installation instructions for the installation of each type of collector on roof tops.

Always observe the safety and general instructions from the respective installation instructions..



USER NOTE

Observe any standards and guidelines applicable to the installation and operation of this system, as may apply in your country.

1.1 Correct use

This installation supplements the standard installation system for roof top mounting and is designed to accept solar heating collectors (vertical and horizontal versions), which are to be installed on pitched roofs with a slope of 5° to 60°.

Conditions of use

Mount the installation set only on roofs with sufficient strength. If necessary, ask a structural engineer or roofing contractor for guidance.

- Make yourself familiar with the on-site conditions and local regulations before commencing the installation.



USER NOTE

Never use this installation set to install other roof-top equipment. This equipment is exclusively designed for the safe fixing of solar collectors.



USER NOTE

Only use OEM components and replace any faulty parts immediately.

1.2 Please observe these safety instructions



WARNING!

DANGER TO LIFE

through a fall or falling parts.

- Take appropriate action to prevent accidents when working on roofs.
- Whilst working on the roof take all necessary precautions against a possible fall.
- Always wear your personal protective clothing and safety equipment.
- After completing the installation, always check the secure positioning of the installed set and that of the collectors.



WARNING!

DANGER TO LIFE

through breathing in asbestos fibres.

- Work on materials containing asbestos must only be carried out by specialists or individuals, who have been trained in the appropriate methods of operation.
- During the installation, wear a face mask protection class P 2.
- Avoid creating dust by wetting the area to be drilled with low-surface-tension water (e. g. washing-up liquid solution).

2 Standard delivery

- Check before commencing the installation that all listed components have been delivered.

Installation set for one flat collector (Fig. 1)

Item 1:	Allen screws, M8 × 16	8 ×
Item 2:	M8 washers	8 ×
Item 3:	Support blocks	4 ×
Item 4:	Nuts, M12	4 ×
Item 5:	M12 washers	4 ×
Item 6:	Seal washers	4 ×
Item 7:	Special headless studs	4 ×
Item 8:	M8 self-locking nuts	4 ×
Item 9:	Allen screws, M8 × 50	4 ×
Item 10:	Channel rails	2 ×

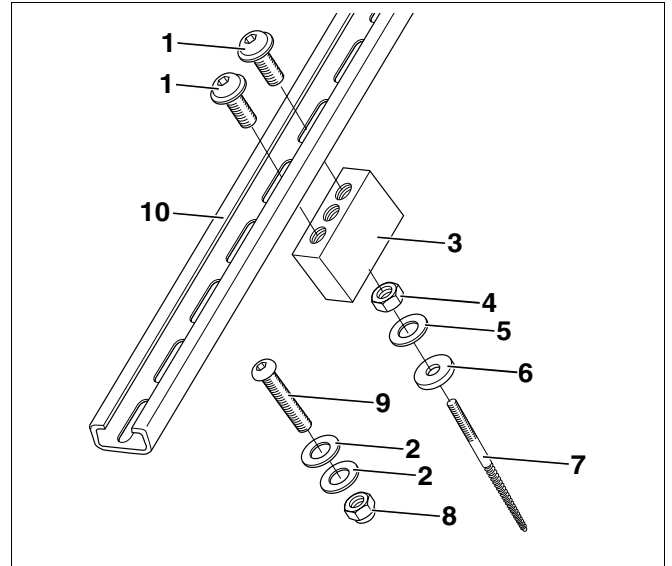


Fig. 1 Standard delivery - installation set for flat collectors

Installation set for one vacuum tube collector (Fig. 2)

Item 1:	Allen screws, M8 × 16	8 ×
Item 2:	M8 washers	8 ×
Item 3:	Support blocks	4 ×
Item 4:	Nuts, M12	4 ×
Item 5:	M12 washers	4 ×
Item 6:	Seal washers	4 ×
Item 7:	Special headless studs	4 ×



USER NOTE

For vacuum tube collectors, the profile rails and fixing kit for interconnecting the profile rails are part of the set for roof top installation.



USER NOTE

Items 1 – 7 and the profile rails replace the roof hooks in the standard delivery pack.

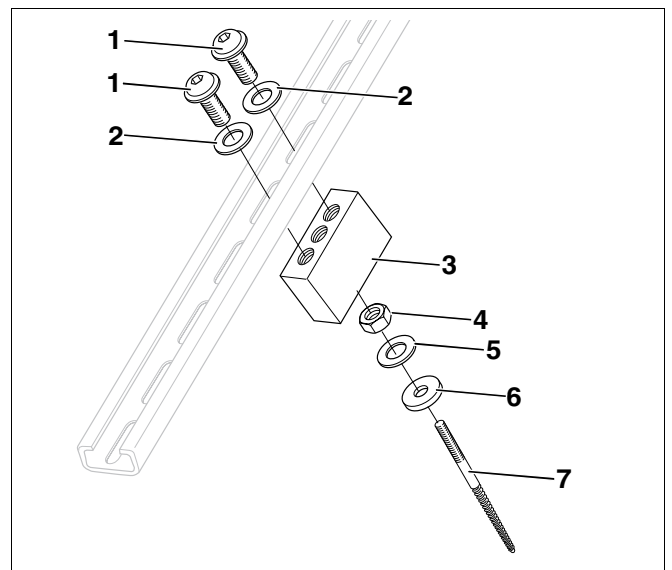


Fig. 2 Standard delivery - installation set for vacuum tube collectors

3 Fitting the installation set



WARNING!

DANGER TO LIFE

Whilst working on the roof take all necessary precautions against a possible fall.



WARNING!

DANGER OF INJURY

Working on roofs can lead to injuries through falls or falling components/tools.

- Take appropriate action to prevent accidents when working on roofs.
- Always wear your personal protective clothing and safety equipment.

3.1 Tools required

- battery-driven screwdriver
- tape measure
- wood drill bit, Ø 6 mm (drill bit length, see Page 8)
- metal drill bit, Ø 13 mm
- spanner AF 13, 15 and 19

3.2 Taking measurements



USER NOTE

Carefully determine the location of the collector array on the roof, and note the correct collector orientation.

Allow sufficient roof space for the different forms of installation (horizontal, vertical).

- For dimensions, see the installation instructions of the respective collector.

3.3 Determining the position of the profile rails

Each profile rail is secured with two special headless studs. For the approx. centres between profile rails see table 1.



USER NOTE

Basically, the actual spacings between the special headless studs on corrugated roofs are determined by the corrugations (x, z – Fig. 3).



USER NOTE

Centres x and z should always be approximately centre w (Fig. 3).



SYSTEM DAMAGE

through weak substructure.

CAUTION!

- Check, whether a strong substructure is available. To secure the special headless studs, timbers of at least 40 × 40 mm are required.
- Fit additional timbers, if required, to be able to maintain the dimension shown in the tables.

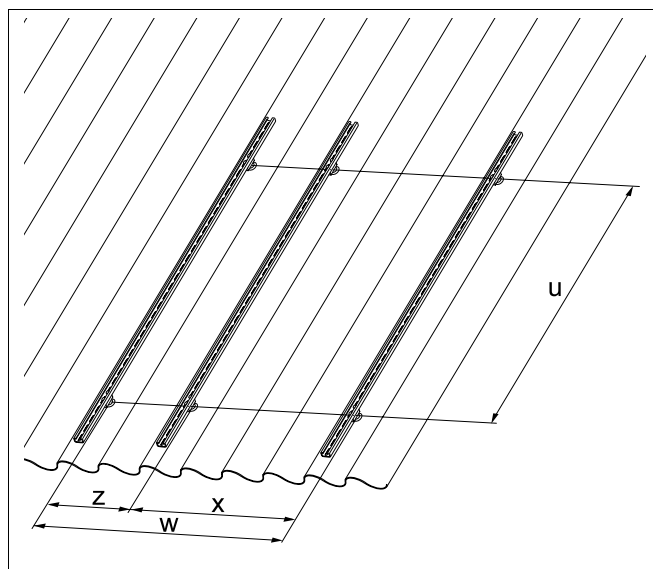


Fig. 3 Profile rail centres

Type of collector	Centre x (Centres between two profile rails of one collector)	Centre z (Centres between the profile rails of adjacent collectors)	Centre w (Total of centres x and z)	Centre u (Centres between headless studs)
SKN ¹ and SKS ² vertical	approx. 700 mm	approx. 470 mm	approx. 1 170 mm	1320 – 1800 mm
SKN ¹ and SKS ² horizontal	approx. 1 400 mm	approx. 755 mm	approx. 2 155 mm	650-920 mm
Vacuum tube collectors	3	3	3	1700 – 2100 mm

Tab. 1 Profile rail or headless stud centres

1 Collector with hose nipple connections.

2 Collector with screw-type connections.

3 See the installation instructions "Vacuum tube collectors – installation on roof tops".

3.4 Installing the special headless studs



NOTES FOR USERS

Drill at an angle of precisely 90° with the wood drill bit through the roof substructure, in order to obtain a level support surface between the support block and the profile rail. To do this it is recommended that you create a drill guide or drilling template.

- Take a timber of approx. 0.50 – 1.00 m. Drill a vertical hole right through (Ø 6 mm) the timber (Fig. 4).

- You determine the drill bit length for the required wood bit acc. to the following calculation:

	90 mm
Height of corrugation	+
Height of drilling template	+
<hr/>	
Required wood drill bit length from the drill chuck (Ø 6 mm)	=



BUILDING DAMAGE

through leaks.

CAUTION!

- Never drill through the valley of corrugations.

- Dimension the collector array. Mark out the holes to be drilled using a pen (Table 1, Page 7).
- Drill through the corrugated roof (Ø 13 mm) using a metal drill bit (Fig. 4). Do not drill into the timber below.
- Position the drilling template flush with the through hole above the hole in the roof.
- Insert a wood drill bit (Ø 6 mm) through the drilling template and drill vertically into the substructure (timber).
- Pre-install the special headless studs in accordance with Fig. 5. During the assembly, observe the sequence of individual components.
- Turn the support block (Fig. 5, **Item 5**) onto the headless special stud until it bottoms out (Fig. 5, **Item 1**).

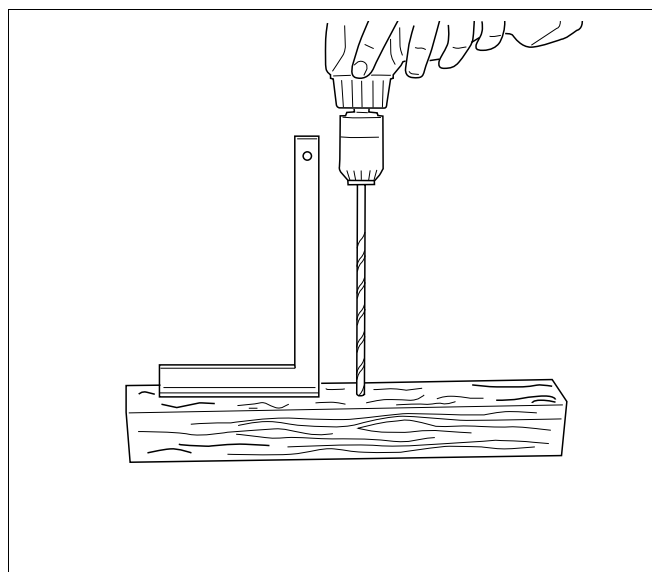


Fig. 4 Create a drilling template

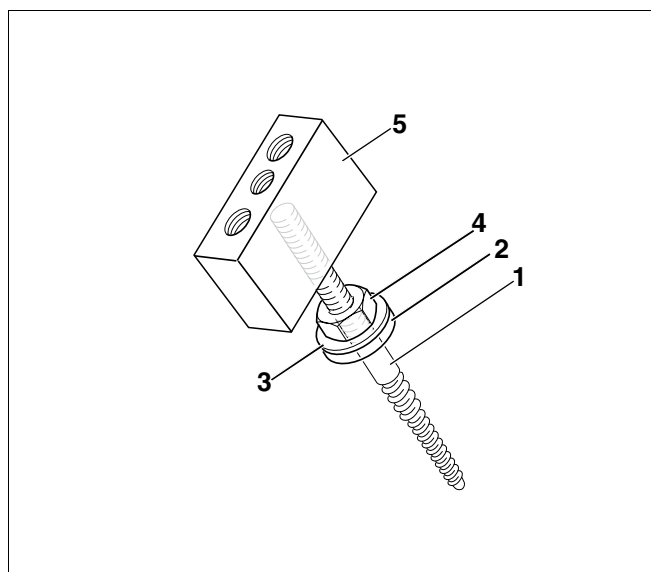


Fig. 5 Installation sequence for the special headless studs

Item 1: Headless studs

Item 2: Seal washer

Item 3: M12 washer

Item 4: M12 nut

Item 5: Support block

- Secure the pre-assembled special headless studs on the roof using an AF15 spanner.
- Turn the special headless studs in, until dimension B (see Table 2 and Fig. 7) has been achieved.



USER NOTE

- When turning the special headless studs in, please note that dimension B (Table 2 and Fig. 7) is identical for all headless studs.

- Tighten the nut (Fig. 7, **Item 2**), until the seal washer (Fig. 7, **Item 3**) fully touches the roof. This seals the drilled hole.



USER NOTE

- The support block must be turned onto the headless stud until it bottoms out.

Height of corrugation - dimension A	Dimension B
35 mm	70 mm
40 mm	65 mm
45 mm	60 mm
50 mm	55 mm
55 mm	50 mm
60 mm	45 mm

Tab. 2 Installation dimensions – corrugated roof.
Dimensions subject to the height of the corrugations.

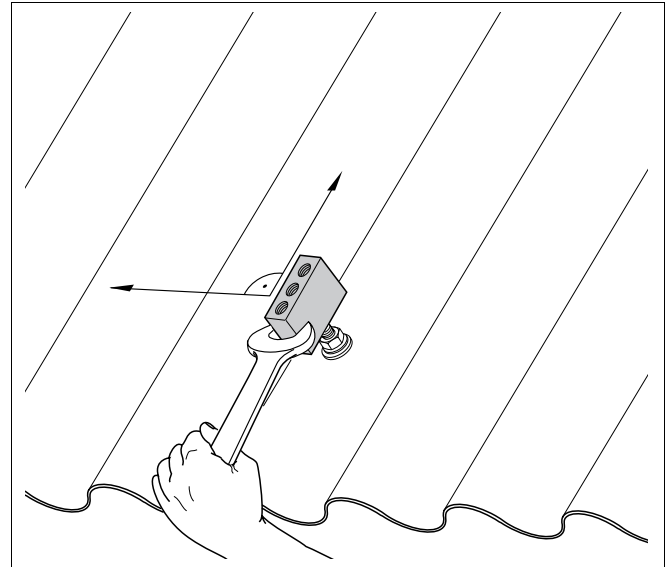


Fig. 6 Mount the special headless studs onto the roof

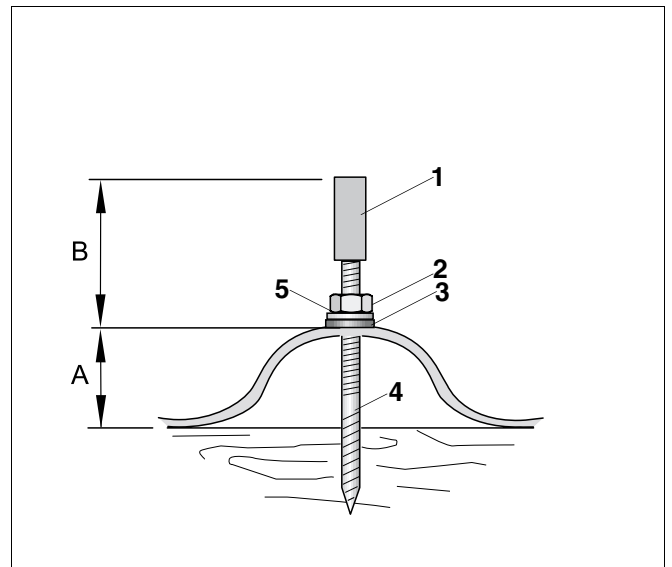


Fig. 7 Headless stud mounted on a corrugated roof

Item 1: Support block

Item 2: M12 nut

Item 3: Seal washer

Item 4: Headless stud

Item 5: M12 washer

3.5 Installing the vertical profile rails

- Position the vertical profile rails (Fig. 8, **Item 2**) onto the support blocks (Fig. 8, **Item 1**) and position them as centrally as possible.

The following slots may **not** be used as fixing holes, as they are designed for the later installation of the horizontal profile rails:

Type of collector	Slot viewed from below	Slot viewed from the top
SKN ¹ and SKS ² vertical	2. Slot	–
SKN ¹ and SKS ² horizontal	3. Slot	1st and 2nd slot
Vacuum tube collectors	–	–

Tab. 3 Slots, which may not be used to install the profile rails

1 Collector with hose nipple connections.

2 Collector with screw-type connections.

- Secure each vertical profile rail with two Allen screws each (Fig. 8, **Item 4**).

For flat collectors:



USER NOTE

- Do not use washers with flat collectors.

For vacuum tube collectors:



USER NOTE

- Utilise both outer tapped holes in the support blocks and use M8 washers (Fig. 8, **Item 3**).



USER NOTE

The profile rails should not hang through for reasons of differences in the level of roof rafters.

- Use a plumb line to check levels.
Underlay the profile rails at the support blocks, if required.

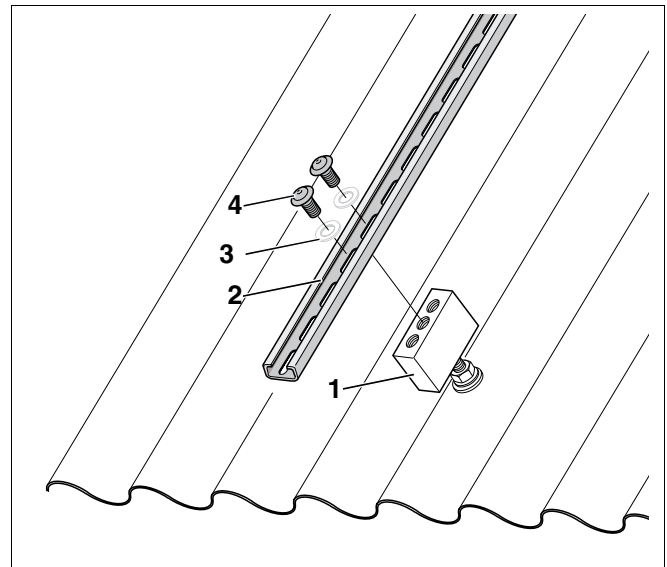


Fig. 8 Install the vertical profile rail (here: vacuum tube collectors)

Item 1: Support block

Item 2: Profile rail

Item 3: M8 washers
(Use only for vacuum tube collectors)

Item 4: Allen screws, M8 x 16

3.6 Installing the horizontal profile rails

Vacuum tube collectors

- Install the horizontal profile rails in accordance with the installation instructions – on roof tops.

Flat collectors

- Determine the centres between the horizontal profile rails. For dimensions and the standard installation position at the slots, see the following table (Tab. 4).



USER NOTE

The distance between the horizontal profile rail and the support block must not be greater than 205 mm (centre-to-centre) (Fig. 9).

Type of collector	Installation of the lower horizontal profile rail	Centres between horizontal profile rails
SKN ¹ vertical	in the 2nd slot of the vertical profile rail	1 650 – 1 690 mm
SKS ² vertical	in the 2nd slot of the vertical profile rail	1 540 – 1 580 mm
SKN ¹ horizontal	in the 3rd slot of the vertical profile rail	687-693 mm
SKS ² horizontal	in the 3rd slot of the vertical profile rail	622-628 mm

Tab. 4 Centres between horizontal profile rails for flat collectors

- 1 Collector with hose nipple connections.
- 2 Collector with screw-type connections.

- Secure the horizontal profile rails with the Allen screws, M8 × 50 and two M8 washers to the vertical profile rails (Fig. 9).

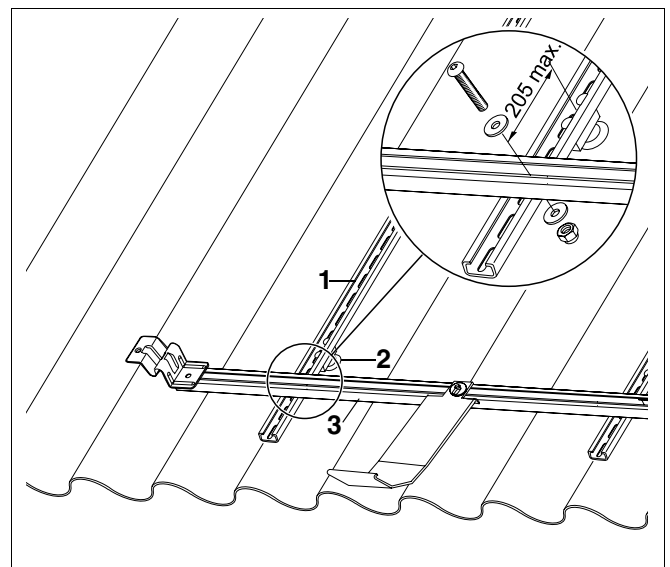


Fig. 9 Secure the horizontal profile rails

Item 1: vertical profile rail

Item 2: Support block

Item 3: horizontal profile rail

3.7 Notes regarding venting and further installation steps

3.7.1 Install the air vent valve (accessory)

For roofs with only a slight slope (e.g. 5°), the vent pipe under the roof cannot be routed with an incline from the collector to the air vent valve.

- On roofs with a very shallow inclination, fit the air vent valve directly to the collector.
- Important, the air vent valve must be installed vertically.
- Ensure that the solar hose is not kinked. If necessary, insert a brass elbow with a $\frac{3}{4}$ " female/male thread into the lower connection of the air pot. This is where the hose nipple, which is part of the basic pipework set, will then be installed.

3.7.2 Collector installation

- Install the collectors in accordance with the technical documentation supplied with each collector.