

# Installation instructions

for contractors



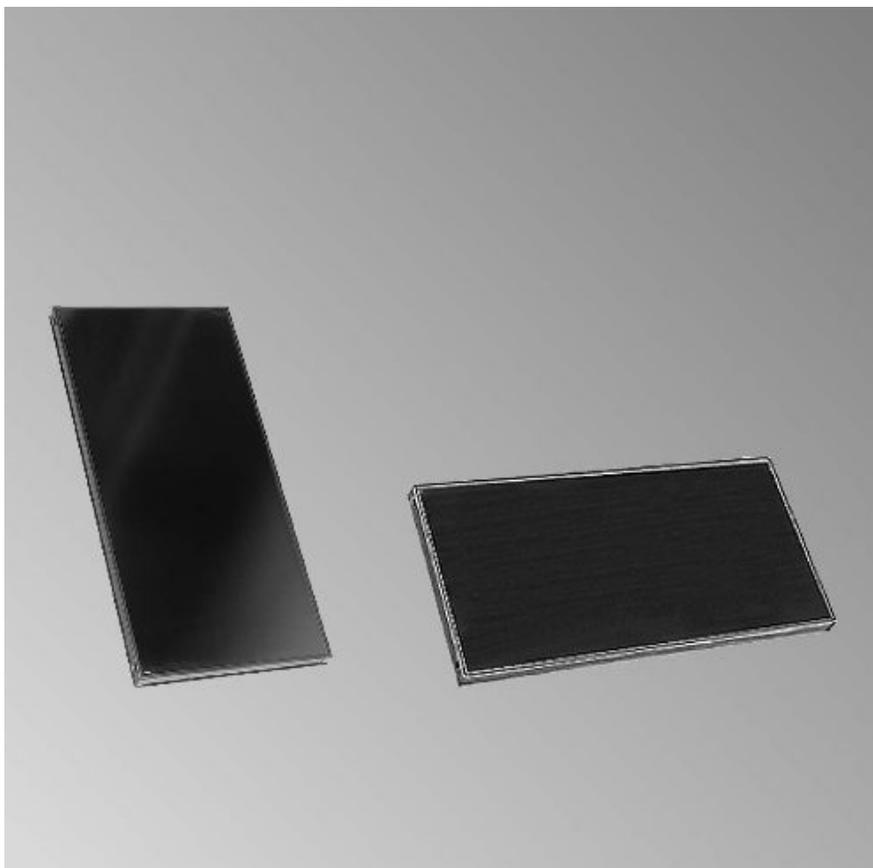
## Vitosol-F

### Type SV and SH

Flat-plate collector for flat roofs, freestanding installation and wall mounting



## VITOSOL-F



## Safety instructions



Please follow these safety instructions closely to prevent accidents and material losses.

### Safety instructions explained



#### Please note

This symbol warns against the risk of material losses and environmental pollution.

- the Code of Practice of relevant trade associations,
- all current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards.

### Note

*Details identified by the word "Note" contain additional information.*

### Target group

These instructions are exclusively designed for qualified personnel.

- Work on gas appliances must only be carried out by a qualified gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.

### Regulations

Observe the following when working on this system

- all legal instructions regarding the prevention of accidents,
- all legal instructions regarding environmental protection,

### Working on the system

- Isolate the system from the power supply and check that it is no longer 'live', e.g. by removing a separate fuse or by means of a mains isolator.
- Safeguard the system against unauthorised reconnection.
- When using gas as fuel, also close the main gas shut-off valve and safeguard against unauthorised reopening.

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## Preparing for installation

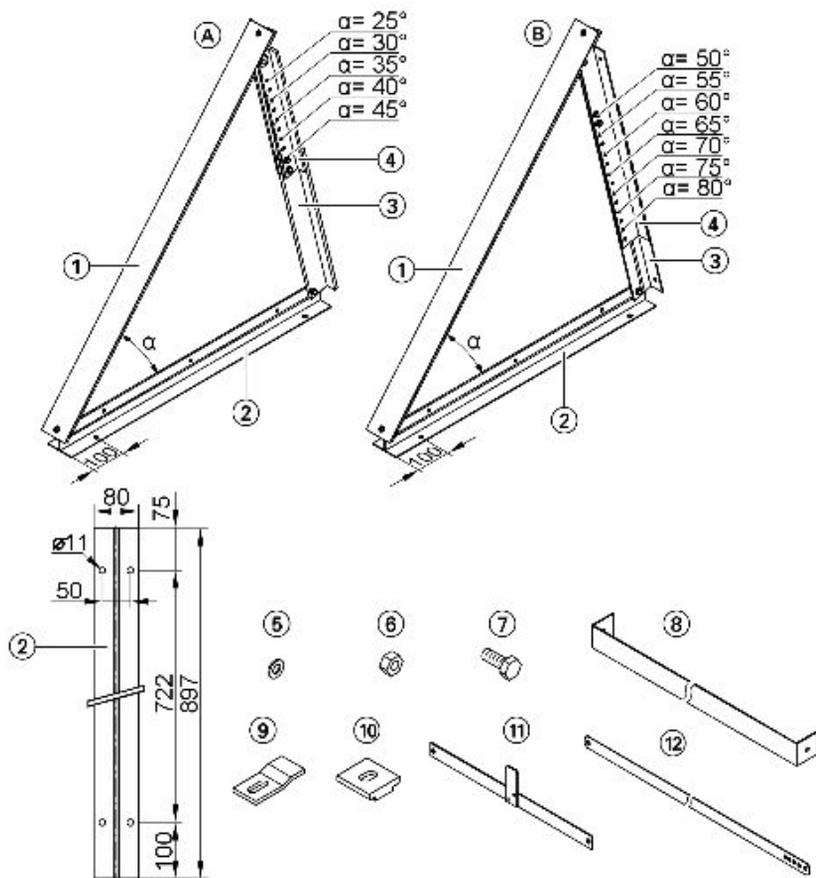
### Earthing and lightning protection of the solar heating system

Create an electrically conductive connection between the solar circuit pipework and in the lower part of the building in accordance with VDE [or local] regulations.

The connection of the collector system to a new or existing lightning protection system or the provision of local earthing must only be carried out by authorised trained personnel, who must take into account the conditions applicable on site.

## Installation on flat roofs or freestanding

### Component overview Vitosol-F, type SH



(A) Collector support, angle of inclination  $\alpha$  25 to 45°

(B) Collector support, angle of inclination  $\alpha$  50 to 80°

- (1) Collector support
- (2) Cross brace
- (3) Adjustable support, lower part
- (4) Adjustable support, upper part (2-part support)
- (5) Washer  $\varnothing$  8.4 mm

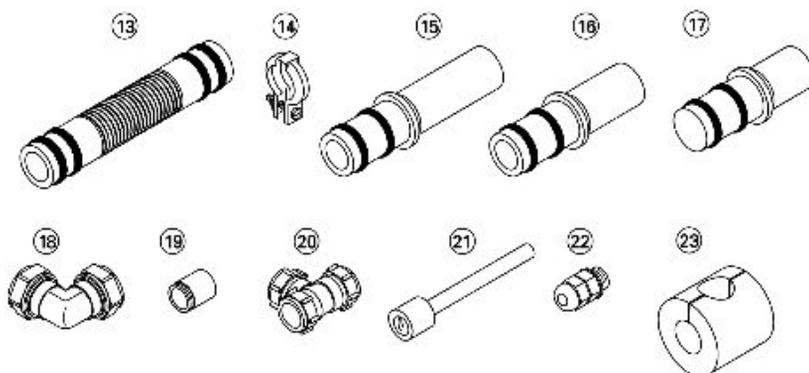
- (6) Hexagon nut M 8
- (7) Hexagon screw M 8 x 20
- (8) Support rail (only for roofs with gravel cover)
- (9) Retaining plate
- (10) Clamping bracket

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## Installation on flat roofs or freestanding (cont.)

- ⑪ Connecting brace
- ⑫ Connecting tie



### Accessories for one collector array

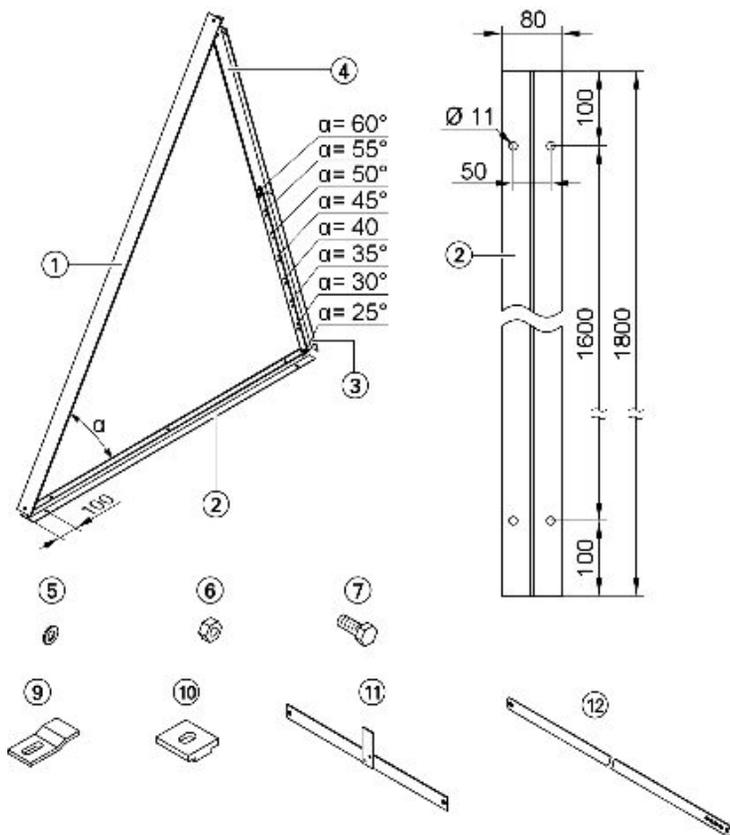
- ⑬ Connecting pipe
- Connection set, comprising:
- ⑭ Profile clip
  - ⑮ Connecting pipe (long)
  - ⑯ Connecting pipe (short)
  - ⑰ Plug
  - ⑱ Clamping ring fitting (elbow)  $\varnothing$  22 mm, 90°
  - ⑲ Support sleeve

### Accessories for one solar heating system

- Sensor well set, comprising:
- ⑲ Support sleeve
  - ⑳ Locking ring fitting (tee),  $\varnothing$  22 mm
  - ㉑ Sensor well
  - ㉒ Strain relief fitting
  - ㉓ Thermal insulation

## Installation on flat roofs or freestanding (cont.)

### Component overview Vitosol-F, type SV



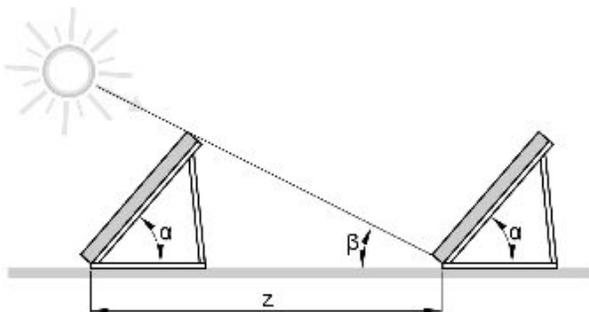
- |   |                          |
|---|--------------------------|
| ① Collector support                               | ⑥ Hexagon nut M 8        |
| ② Cross brace                                     | ⑦ Hexagon screw M 8 x 20 |
| ③ Adjustable support, lower part                  | ⑧ Retaining plate        |
| ④ Adjustable support, upper part (2-part support) | ⑨ Clamping bracket       |
| ⑤ Washer $\varnothing$ 8.4 mm                     | ⑩ Connecting brace       |
|   | ⑪ Connecting tie         |

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## Installation on flat roofs or freestanding (cont.)

### Determining the collector row distance "z"

When installing several collectors in series, maintain a distance of z to prevent undesirable shading.



z Collector row distance

$\alpha$  Collector angle of inclination

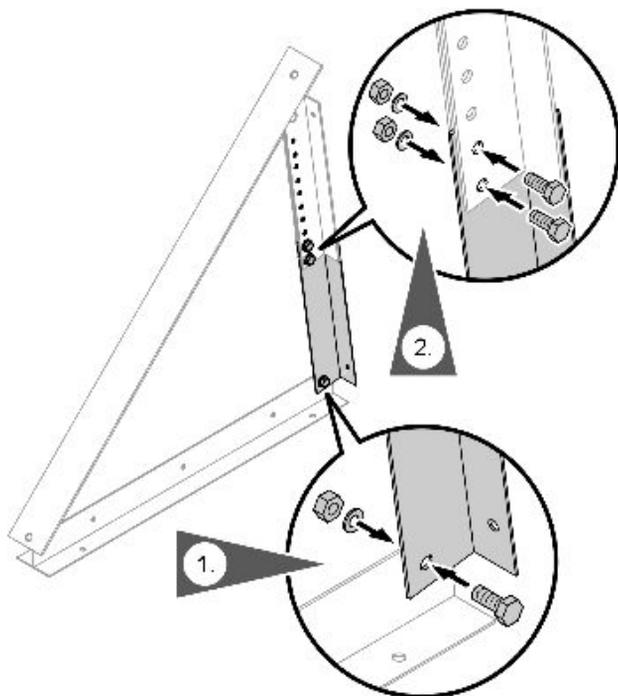
$\beta$  Angle of the sun

Angle of inclination $\alpha$	Clearance between collector rows z in mm	
	Type SV	Type SH
Flensburg		
25°	6890	3060
35°	8370	8370
45°	9600	4260
50°	10100	4490
60°	10890	4830
Kassel		
25°	5830	2590
35°	6940	3100
45°	7840	3480
50°	8190	3640
60°	8720	3870
Munich		
25°	5160	2290
35°	6030	2680
45°	6710	2980
50°	6980	3100
60°	7350	3260

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## Installation on flat roofs or freestanding (cont.)

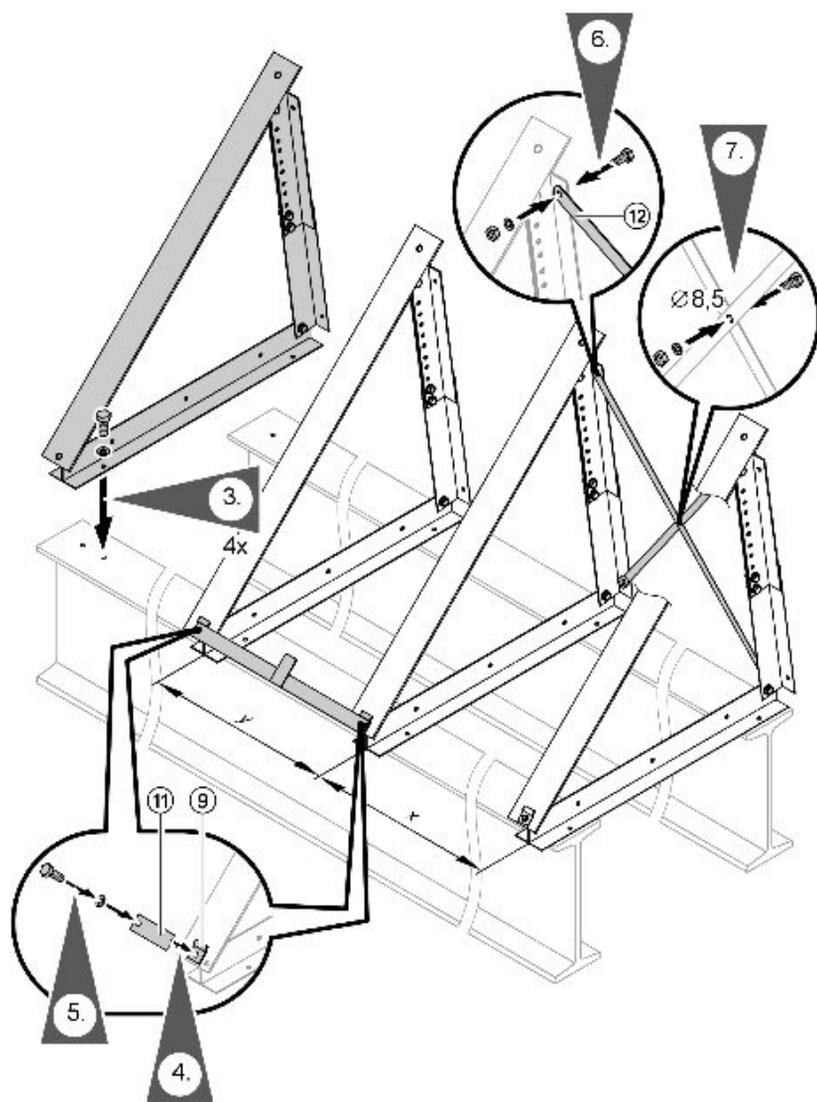
### Fitting the collector supports and adjusting the angle of inclination $\alpha$



1. Secure the adjustable support with the cross brace.
2. Secure the upper and lower adjustable supports in accordance with the required angle of inclination (see page 7 and 5).

## Installation on flat roofs or freestanding (cont.)

### Installation on substructures

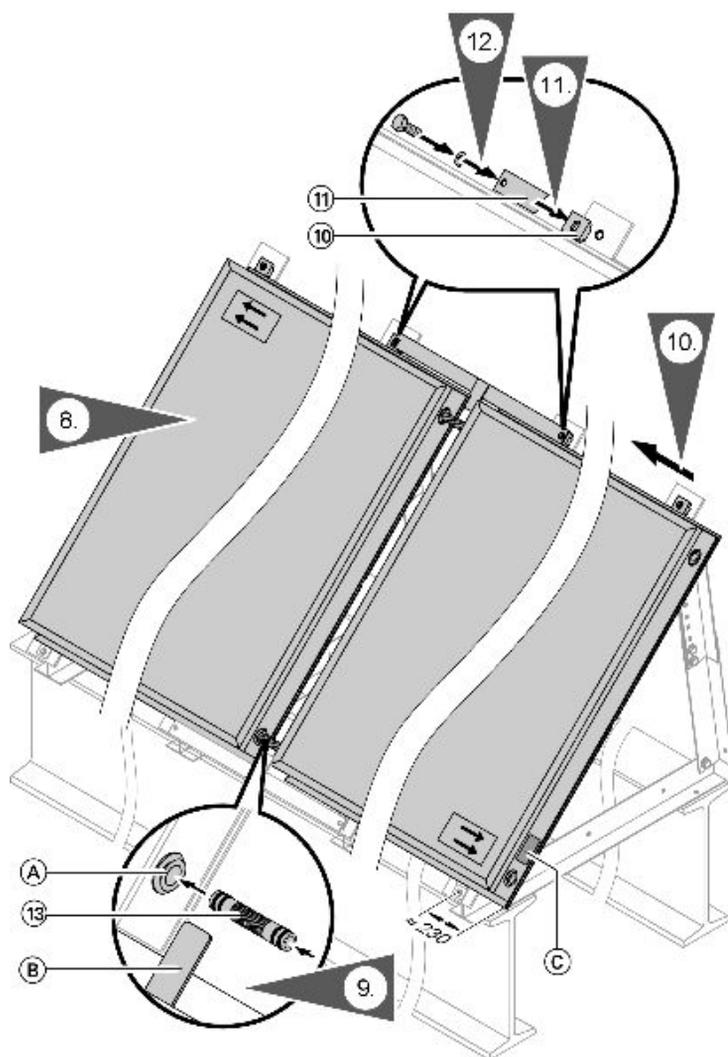


## Installation on flat roofs or freestanding (cont.)

Type	x	mm	y	mm
SV		595		481
SH		1920		481

1. Observe the max. load and distance from the edge of the roof for the on-site substructure in accordance with DIN 1055.
2. Install the on-site substructure at a right angle and horizontally level to the collector orientation.
3. Secure the cross brace (use as drilling template) onto the substructure.
4. Secure retaining plates to the **bottom** of all collector supports; do not yet tighten the screws.
5. Secure the connecting brace onto the retaining plates between the second and third, the fourth and fifth supports etc. Tighten all screws.
6. Secure two connecting ties diagonally side by side to the adjustable supports, respectively for between 1 and 6 collectors.
7. Drill  $\varnothing$  8.5 mm holes into the connecting ties and secure the ties. 

## Installation on flat roofs or freestanding (cont.)



Ⓐ Collector connection

Ⓑ Spacer lip

Ⓒ Type plate

## Installation on flat roofs or freestanding (cont.)

8. Position the first collector into the retaining plates and push right up to the spacer lip of the connecting brace.

Centre the distance when fitting only a single collector.

### **Note**

*The side with the type plate **must** be on the **outside** of the first and last collector.*

*Secure the pipework on only one collector **opposite** the side with the type plate.*

9. **!** **Please note**  
Interconnecting pipes should not show any signs of damage.  
Lubricate all plug-in connectors (O-rings) found on the collectors **only** with the special grease supplied with the connection set.

Insert the interconnecting pipes as far as possible into the collector connections.

10. Carefully push the next collector up to the spacer lip and insert the interconnecting pipes as far as possible.

11. Click clamping brackets into the collector edge at the **top** of all supports.

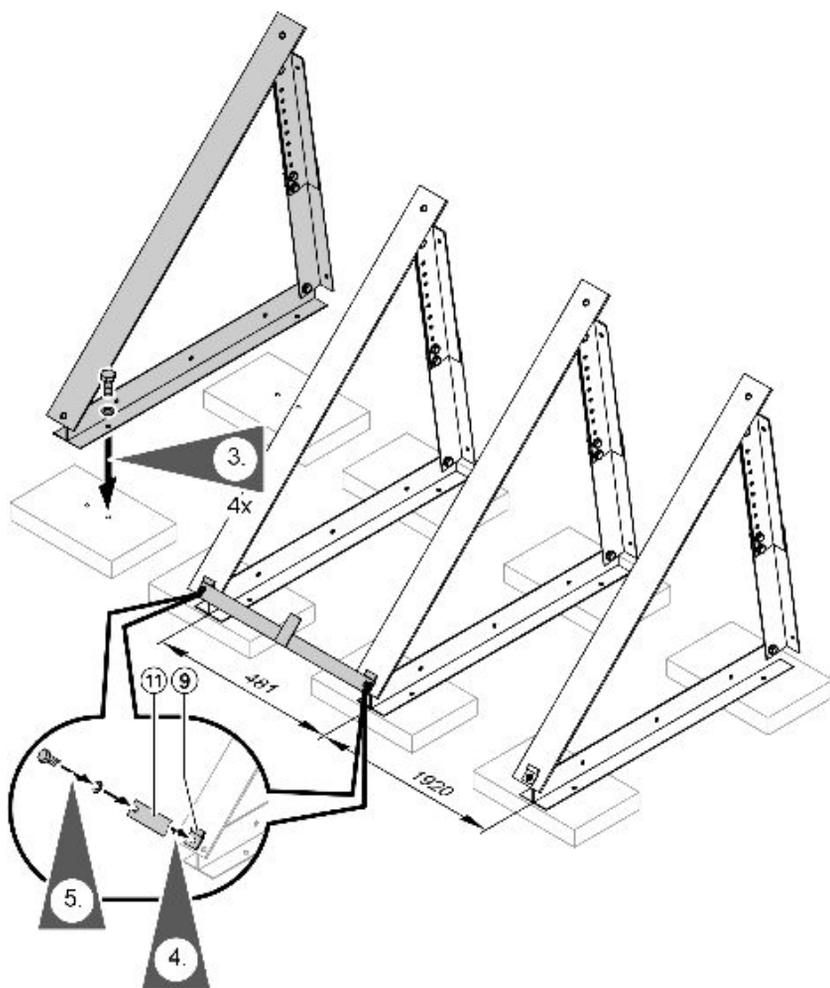
12. Secure the connecting brace turned by 180 ° to the next brace using the clamping brackets between the second and third, the fourth and fifth supports etc.

13. Tighten all screws.

Continue with fitting the connection set and the collector temperature sensor, see page 24.

## Installation on flat roofs or freestanding (cont.)

### Installation with ballast, only for type SH

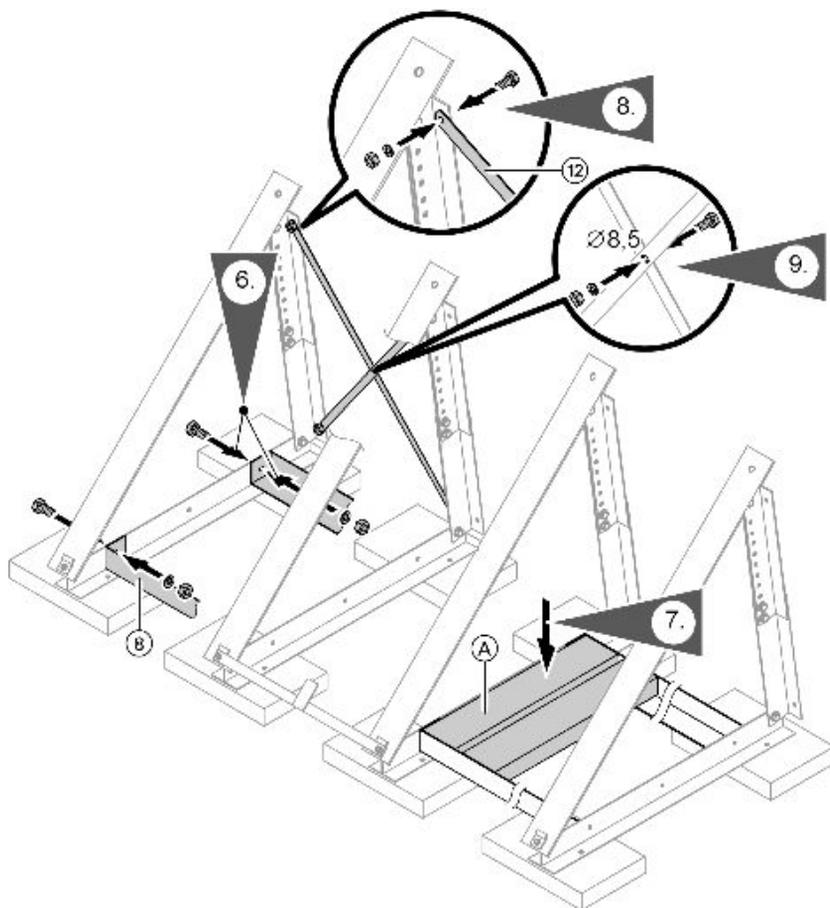


1. Observe the max. load and distance from the edge of the roof for the on-site substructure in accordance with DIN 1055.

2. Remove any gravel or similar from the installation area, cover the surface with protective building mats and position concrete slabs on top of these mats.

## Installation on flat roofs or freestanding (cont.)

- Secure the cross braces (use as drilling template) on the concrete slabs.
- Secure retaining plates to the **bottom** of all collector supports; do not yet tighten the screws.
- Secure the connecting brace onto the retaining plates between the second and third, the fourth and fifth supports etc.  
Tighten all screws.



## Installation on flat roofs or freestanding (cont.)

6. Secure the support rails between the cross braces.

**Note**

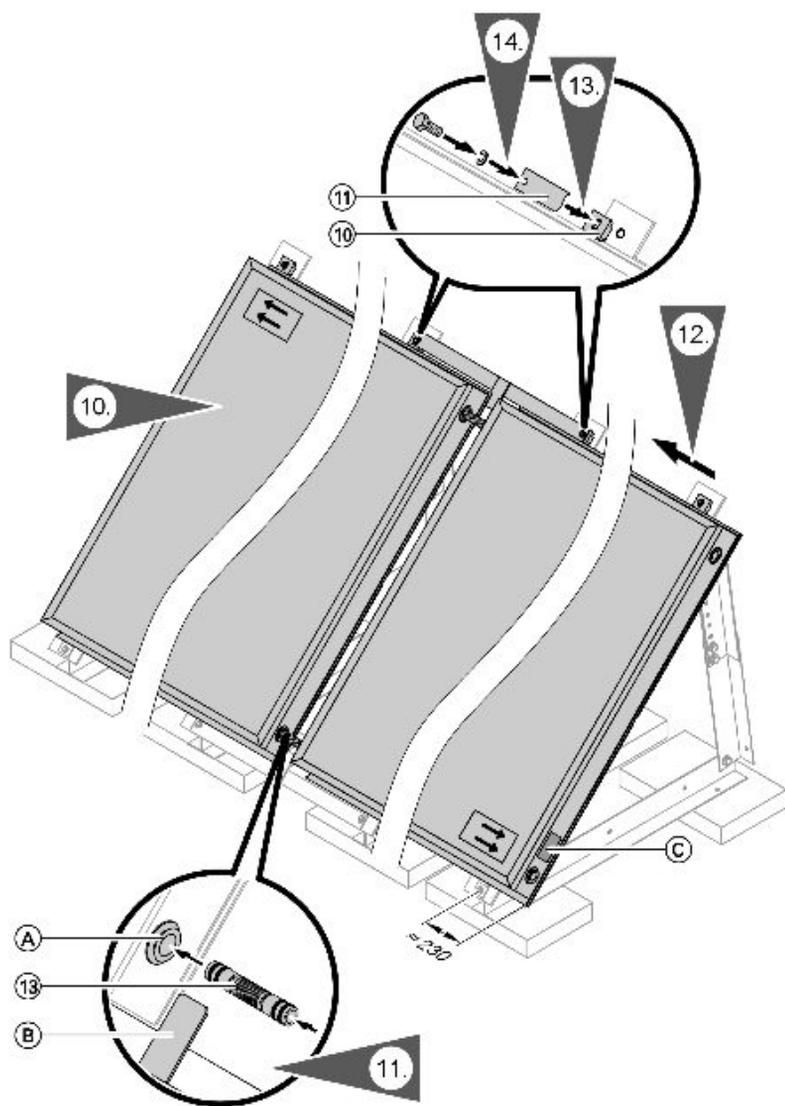
*With an angle of inclination of 25 and 30°, the front support rails can be secured in the centre.*

7. Apply weights (see table on page 18).

8. Secure two connecting ties diagonally side by side to the adjustable supports, respectively for between one and six collectors.

9. Drill  $\varnothing$  8.5 mm holes into the connecting ties and secure the ties. 

## Installation on flat roofs or freestanding (cont.)



(A) Collector connection

(B) Spacer lip  
(C) Type plate



## Installation on flat roofs or freestanding (cont.)

10. Position the first collector into the retaining plates and push right up to the spacer lip of the connecting brace.  
Centre the distance when fitting only a single collector.

**Note**

*The side with the type plate **must** be on the **outside** of the first and last collector.*

*Secure the pipework on only one collector **opposite** the side with the type plate.*

11. **!** **Please note**  
Interconnecting pipes should not show any signs of damage.  
Lubricate all plug-in connectors (O-rings) found on the collectors **only** with the special grease supplied with the connection set.

Insert the interconnecting pipes as far as possible into the collector connections.

12. Carefully push the next collector up to the spacer lip and insert the interconnecting pipes as far as possible.

13. Click clamping brackets into the collector edge at the **top** of all supports.

14. Secure the connecting brace turned by 180 ° to the next brace using the clamping brackets between the second and third, the fourth and fifth supports etc.

15. Tighten all screws.

Continue with fitting the connection set and the collector temperature sensor, see page 24.

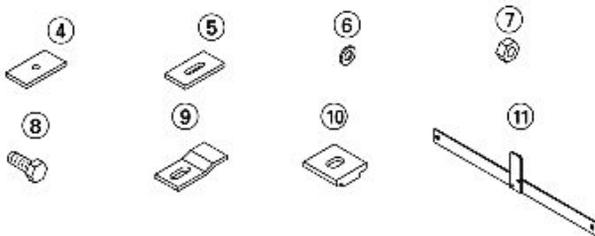
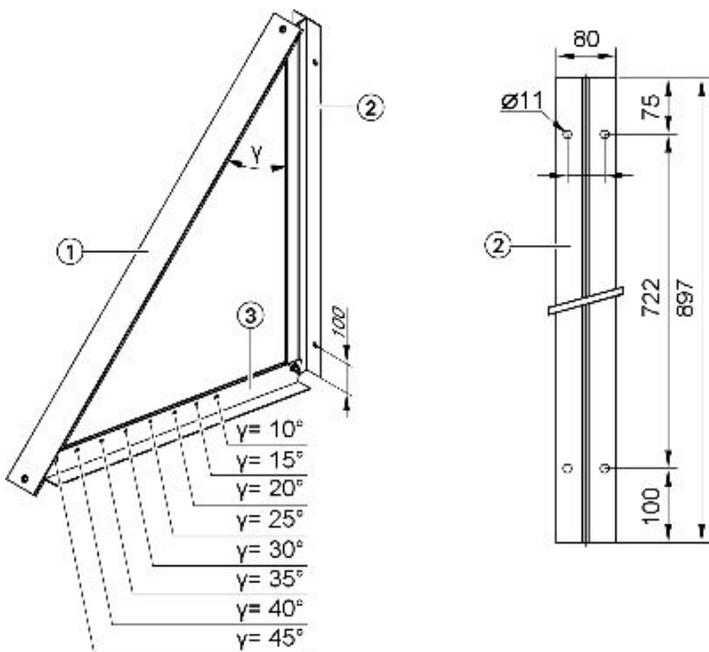
### Type SH (calculation in accordance with DIN 1055-4 8/1986 and DIN 1055-5 6/1975)

		Protection against slip-			Protection against lifting		
		page					
Installation height above ground	m	<8	8–20	20–100	<8	8–20	20–100
Ballast to be applied at 25°	kg	323	561	800	155	315	476
Ballast to be applied at 45°	kg	492	845	1198	132	254	375

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## Installation on a wall

### Component overview Vitosol-F, type SH

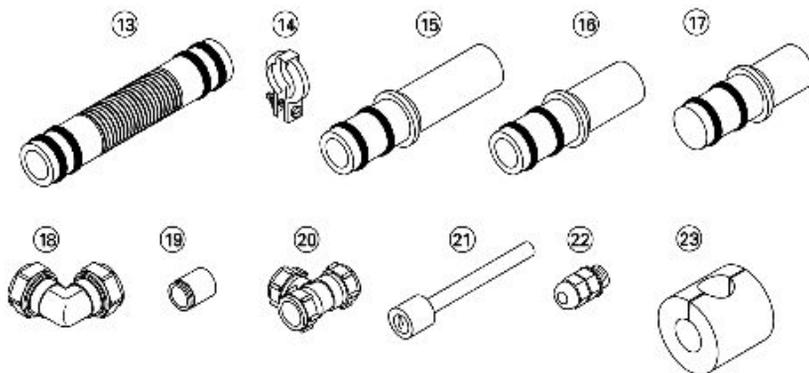


- ① Collector support
- ② Cross brace
- ③ Adjustable support
- ④ Gusset plate with circular hole
- ⑤ Gusset plate with slot
- ⑥ Washer  $\varnothing$  8.4 mm

- ⑦ Hexagon nut M 8
- ⑧ Hexagon screw M 8 x 20
- ⑨ Retaining plate
- ⑩ Clamping bracket
- ⑪ Connecting brace

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## Installation on a wall (cont.)



### Accessories for one collector array

- ⑬ Connecting pipe
- Connection set, comprising:
  - ⑭ Profile clip
  - ⑮ Connecting pipe (long)
  - ⑯ Connecting pipe (short)
  - ⑰ Plug
  - ⑱ Clamping ring fitting (elbow)  $\varnothing$  22 mm, 90°
  - ⑲ Support sleeve

### Accessories for one solar heating system

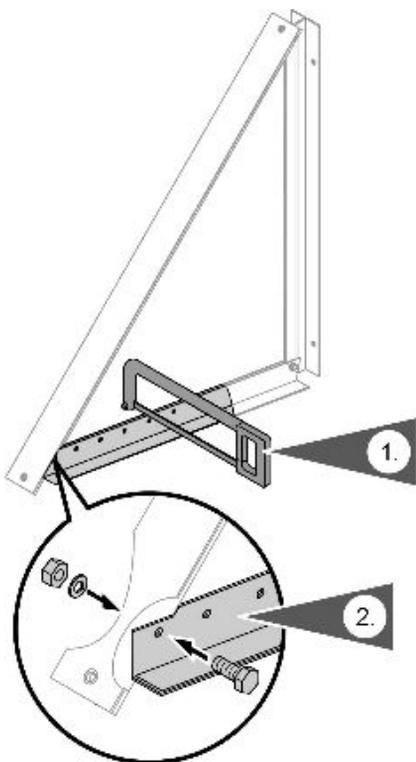
- Sensor well set, comprising:
  - ⑲ Support sleeve
  - ⑳ Locking ring fitting (tee),  $\varnothing$  22 mm
  - ㉑ Sensor well



## Installation on a wall (cont.)

- ② Strain relief fitting
- ③ Thermal insulation

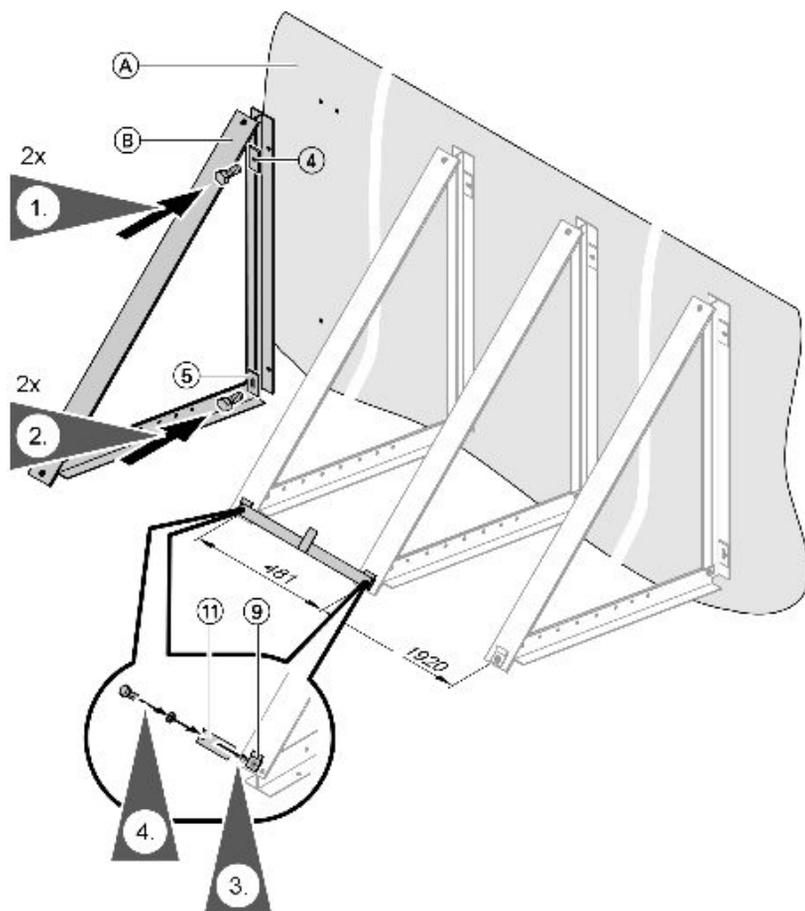
### Fitting the collector supports and adjusting the angle of inclination $\gamma$



1. Trim the adjustable supports in accordance with the required angle of inclination (see page 19).
2. Secure the adjustable support with the collector support.

## Installation on a wall (cont.)

### Collector installation



(A) Wall

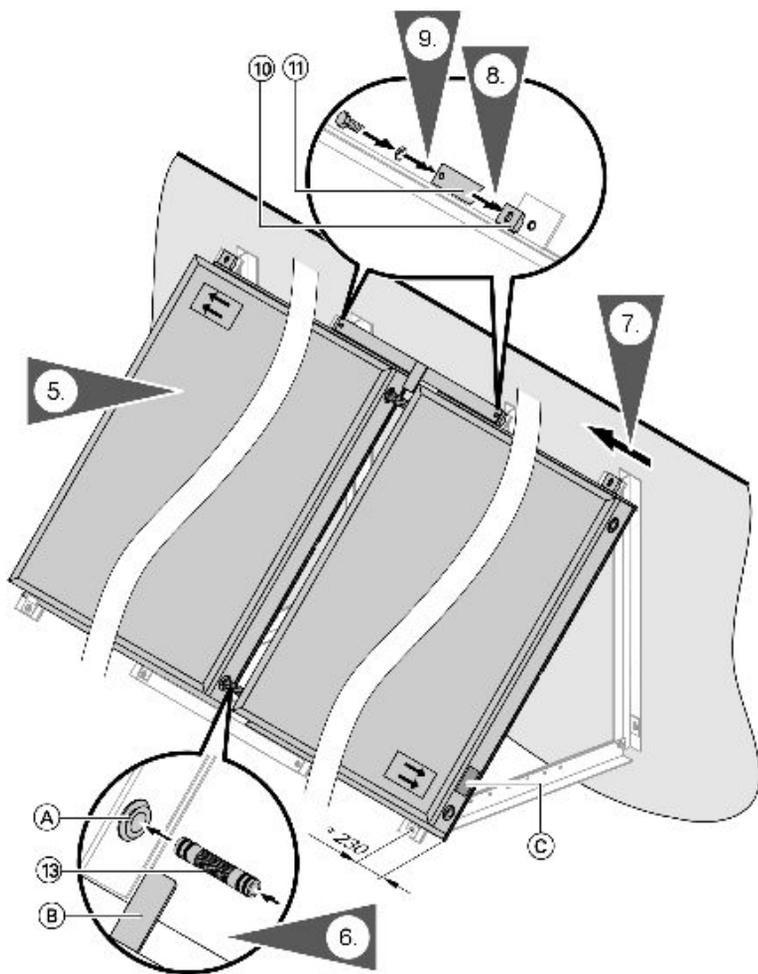
1. Use the cross braces as drilling template.  
Secure the cross braces with gusset plate **with circular hole** at the top of the wall.

(B) Collector support

2. Secure the cross braces with **slotted** gusset plate at the bottom of the wall.
3. Secure retaining plates to the **bottom** of all collector supports; do not yet tighten the screws.

## Installation on a wall (cont.)

4. Secure the connecting brace onto the retaining plates between the second and third, the fourth and fifth supports etc.  
Tighten all screws.



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(A) Collector connection

(B) Spacer lip

(C) Type plate



## Installation on a wall (cont.)

5. Position the first collector into the retaining plates and push right up to the spacer lip of the connecting brace.

Centre the distance when fitting only a single collector.

### Note

*The side with the type plate **must** be on the **outside** of the first and last collector.*

*Secure the pipework on only one collector **opposite** the side with the type plate.*

6. **!** **Please note**  
Interconnecting pipes should not show any signs of damage.  
Lubricate all plug-in connectors (O-rings) found on the collectors **only** with the special grease supplied with the connection set.

Insert the interconnecting pipes as far as possible into the collector connections.

7. Carefully push the next collector up to the spacer lip and insert the interconnecting pipes as far as possible.

8. Click clamping brackets into the collector edge at the **top** of all supports.

9. Secure the connecting brace turned by 180 ° to the next brace using the clamping brackets between the second and third, the fourth and fifth supports etc.

10. Tighten all screws.

11. Fit a snow guard on the roof above the collectors.

## Installing the connection set and collector temperature sensor

Observe the following when installing the locking ring fitting:

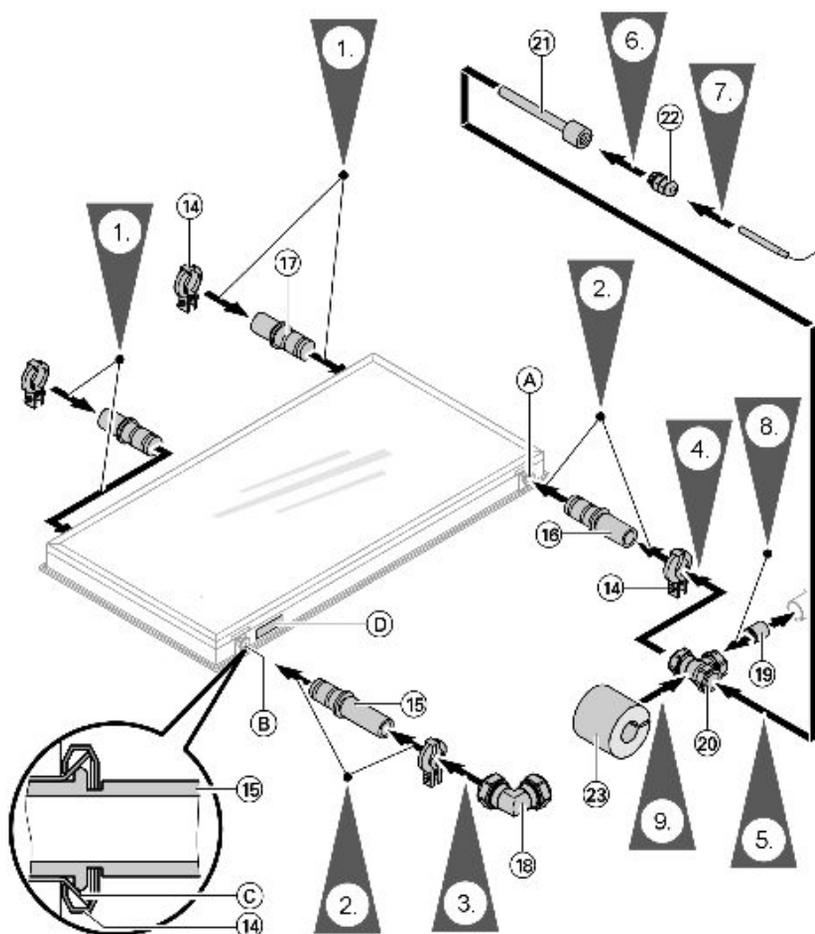
- All pipes must be cut at a right angle and deburred.
- Push the union nut and the locking ring onto the pipe and lightly lubricate the threads with oil.

- Push the pipe into the locking ring fitting as far as it will go.

- Initially turn the union nut by hand, then tighten with an open ended spanner by a further  $\frac{3}{4}$  turn.

**Never fit** annealed copper pipes onto the locking ring fittings.

## Installing the connection set and collector . . . (cont.)



- (A) Flow connection
- (B) Return connection

- (C) Swaged connection
- (D) Type plate

1. Insert the plug as far as possible, then secure it with hose clips.
2. Insert the connecting pipes as far as possible, then secure them with profile clips.

3. Fit the elbow to the return connector.
4. Fit the tee onto the flow connector. ▶▶

## Installing the connection set and collector . . . (cont.)

5. Insert the sensor well into the tee, counterholding the tee.
6. Insert the strain relief fitting into the sensor well.
7. Insert the collector temperature sensor as far as possible into the sensor well and secure with strain relief fitting.
8. Insert the support sleeves into the connecting pipes of the solar circuit.  
Make the connection between the collector array and pipework of the solar heating circuit.
9. Fit the thermal insulation and join its cut faces with adhesive.



### **Please note**

The collectors may be damaged if the solar heating system is not filled with heat transfer medium immediately after installation. Therefore, protect the collectors against insolation by covering them up.

## Installation



### **Please note**

Incorrect installation can lead to collector damage.  
Use only gunmetal or brass fittings and copper pipes for the installation. Use hemp only in conjunction with pressure and temperature-resistant sealants (e.g. Viscotex Solarpaste from Locher, CH-9450 Altstätten, Switzerland).  
Never step onto solar panels.  
**Never solder** near or on the collector.

1. Position pipes so that complete ventilation is guaranteed. We recommend the installation of an air vent valve with shut-off facility at the highest point of the system. Install an air separator at an accessible point in the pipework (see the following diagram).
2. Equip systems to EN 12975 with expansion vessel, safety valve and circulation pump.





## Installation (cont.)

- |                          |                      |
|--------------------------|----------------------|
| Ⓔ Pre-cooling vessel     | Ⓕ Drain              |
| Ⓕ Shut-off valve         | Ⓖ Air separator      |
| Ⓖ Filling facility       | Ⓗ DHW cylinder       |
| Ⓗ Manual solar fill pump | Ⓘ Solar control unit |
| Ⓘ Fill valve (Ⓕ, Ⓖ, Ⓕ)   | Ⓚ Air vent valve     |

## Commissioning and adjustment



Service instructions "Vitosol-F".

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