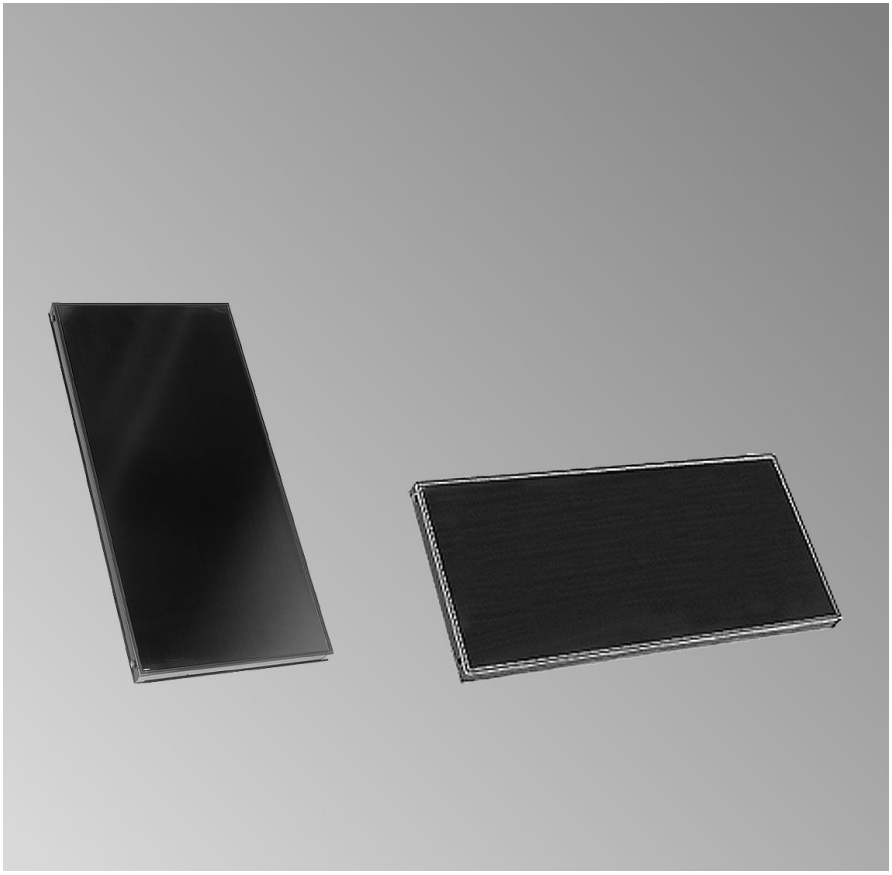
# Installation instructions

**for contractors**

**Vitosol-F**
**Type SV and SH**
Flat-plate collector for installation on supports and wall mounting

## VITOSOL-F



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**Dispose after installation.**

## 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.

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

### Target group

These instructions are exclusively designed for qualified contractors.
- Work on electrical equipment must only be carried out by a qualified electrician.

### Regulations

Observe the following when working on this system
- National installation requirements
- Legal instructions regarding the prevention of accidents
- Legal instructions regarding environmental protection
- The Code of Practice of relevant trade associations
- All current safety regulations as defined by DIN, EN, DVGW, VDE and all locally applicable standards.
  (A) ÖNORM, EN and ÖVE
  (CH) SEV, SUVA, SVTI, SWKI and SVGW

### Working on the system

- Isolate the system from the power supply and check that it is no longer 'live', e.g. by removing the separate fuse or by means of a main isolator.
- Safeguard the system against unauthorised reconnection.

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**Installation sequence**


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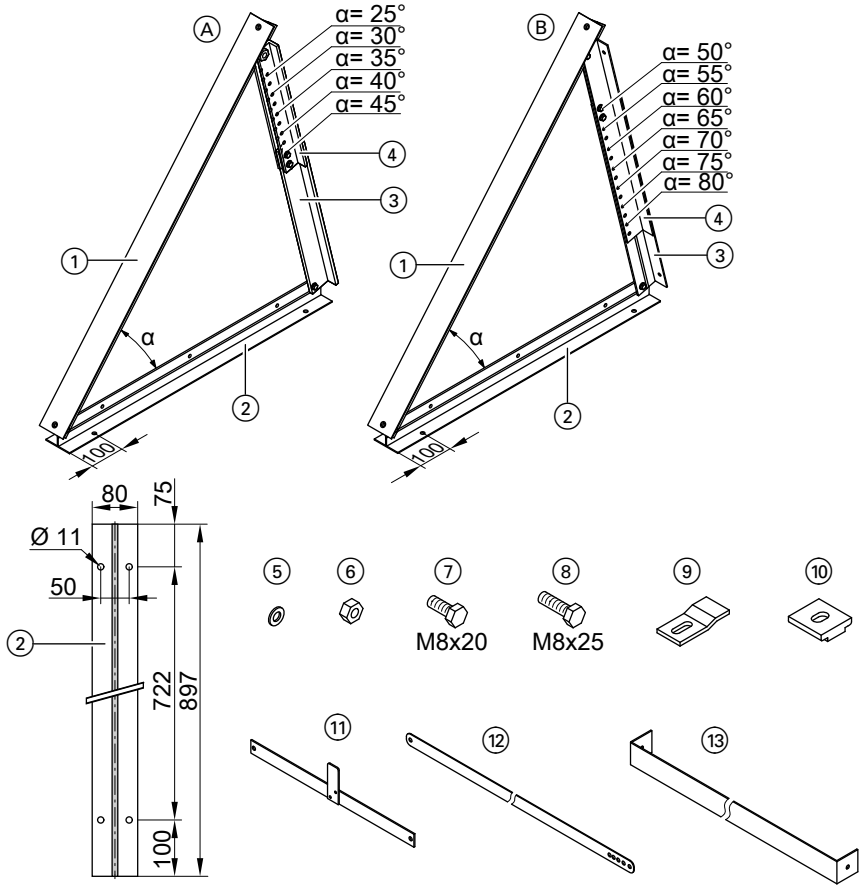
## Installation on supports

### Components Vitosol-F, type SH




Ⓐ Collector support, angle of inclination α 25 to 45°

Ⓑ Collector support, angle of inclination α 50 to 80°

① Collector support
② Base rail
③ Adjustable support, lower section
④ Adjustable support, upper section (2-part support)
⑤ Washer ∅ 8.4 mm
⑥ Hexagon nut M 8
⑦ Hexagon bolt M 8 x 20
⑧ Hexagon bolt M 8 x 25
⑨ Retaining bracket
⑩ Clamping bracket
⑪ Connection brace

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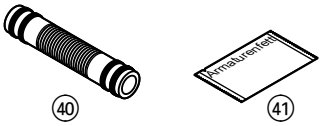
## Installation on supports (cont.)

⑫ Cross brace
⑬ Support rail (only for roofs with gravel ballast)

**Connection pipe**

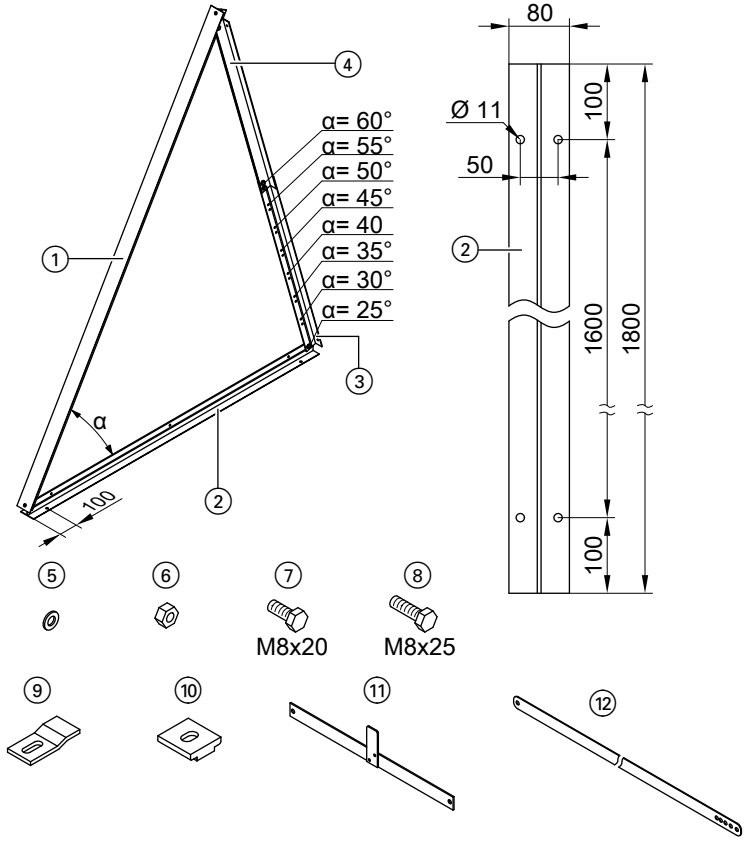



⑩ Connection pipe

⑪ Special valve grease

## Installation on supports (cont.)

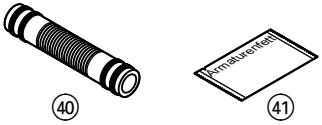
### Components Vitosol-F, type SV




① Collector support
② Base rail
③ Adjustable support, lower section
④ Adjustable support, upper section (2-part support)
⑤ Washer ∅ 8.4 mm
⑥ Hexagon nut M 8
⑦ Hexagon bolt M 8 x 20
⑧ Hexagon bolt M 8 x 25
⑨ Retaining bracket
⑩ Clamping bracket
⑪ Connection brace
⑫ Cross brace

## Installation on supports (cont.)

**Connection pipe**

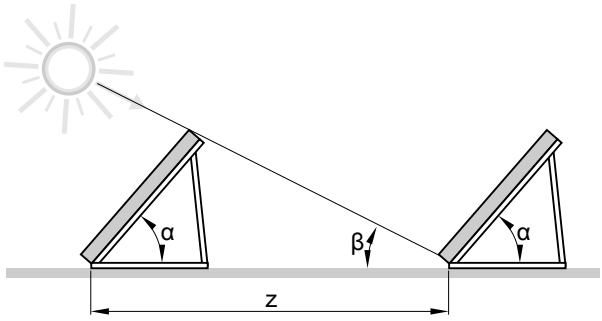



(40) Connection pipe

(41) Special valve grease

## Determining collector row clearance z

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




z Collector row clearance

α Collector angle of inclination

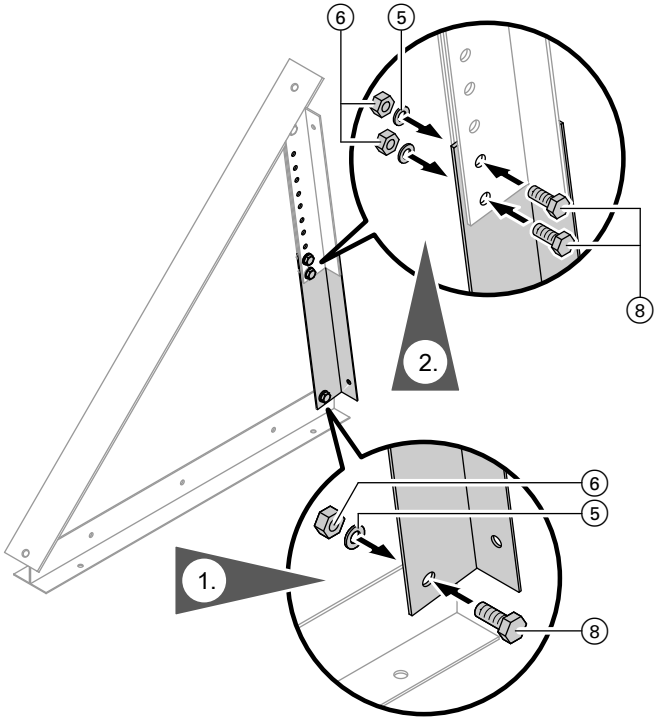
β Angle of the sun

| Angle of inclination α | Clearance between collector rows z in mm | |
|---|---|---|
| | Type SV | Type SH |
| Flensburg | | |
| 25° | 6890 | 3060 |
| 35° | 8370 | 8370 |
| 45° | 9600 | 4260 |
| 50° | 10,100 | 4490 |
| 60° | 10,890 | 4830 |
| Kassel | | |
| 25° | 5830 | 2590 |
| 35° | 6940 | 3100 |
| 45° | 7840 | 3480 |

## Installation on supports (cont.)

| Angle of inclination α | Clearance between collector rows z in mm | |
|---|---|---|
| | Type SV | Type SH |
| 50° | 8190 | 3640 |
| 60° | 8720 | 3870 |
| Munich | | |
| 25° | 5160 | 2290 |
| 35° | 6030 | 2680 |
| 45° | 6710 | 2980 |
| 50° | 6980 | 3100 |
| 60° | 7350 | 3260 |

### Installation of the collector supports and adjustment of the angle of inclination α




For angles of inclination, see the diagrams on pages 4 and 6.

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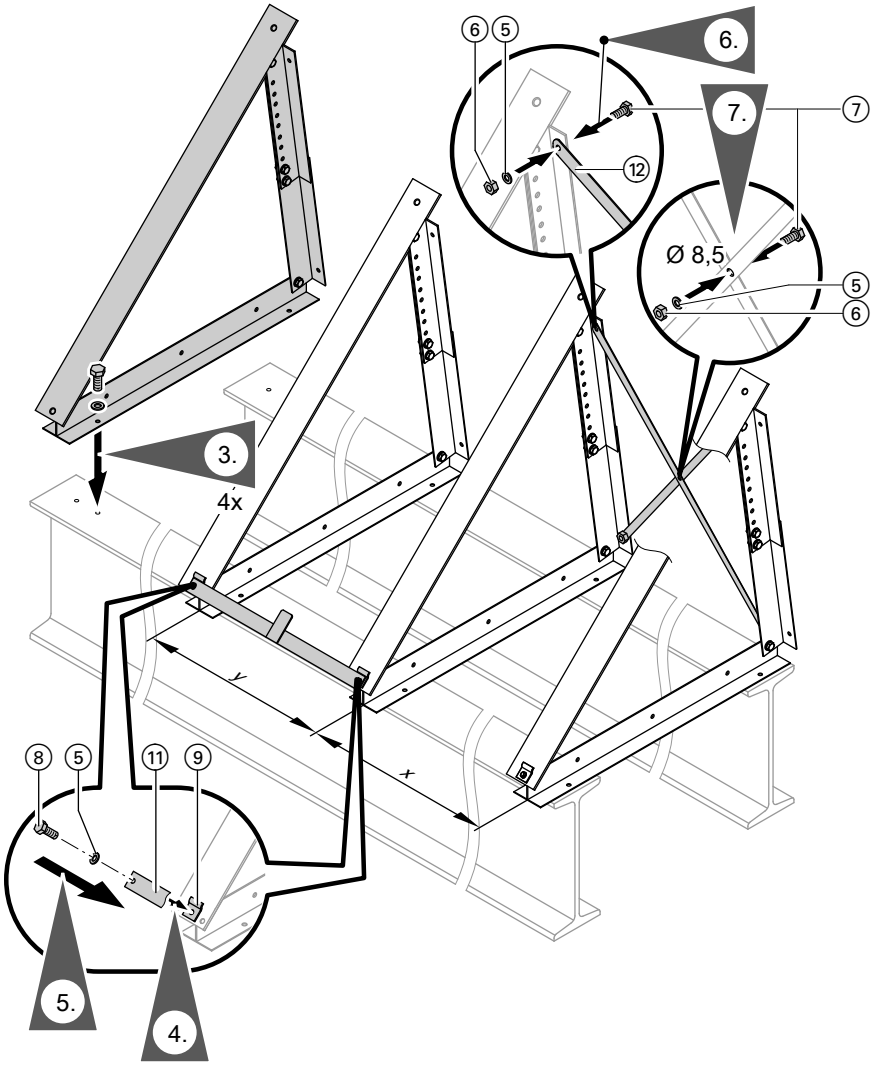
## Installation on a substructure, e.g. steel beam

Installation information:

- Observe the max. load and distance from the edge of the roof for the on-site substructure in accordance with DIN 1055.
- Install the on-site substructure at a right angle and horizontally level to the collector orientation.
- Secure the connection brace onto the retaining brackets between the **second and third**, the **fourth and fifth** collector supports, etc. (see diagram below).
- For every **1 to 6** collectors, secure two cross braces diagonally side by side to the adjustable supports (see diagram below).
- The side with the type plate **must** be on the **outside** of the first and last collector (see diagram on page 11). Secure the pipework on only one collector **opposite** the side with the type plate.
- 

! **Please note**
Connection pipes should not show any signs of damage. Lubricate O-ring seals **only** with the special valve grease provided.

## Installation on supports (cont.)




Use the base rails as a drilling template.

| Type | x mm | y mm |
|---|---|---|
| **SV** | 595 | 481 |
| **SH** | 1920 | 481 |

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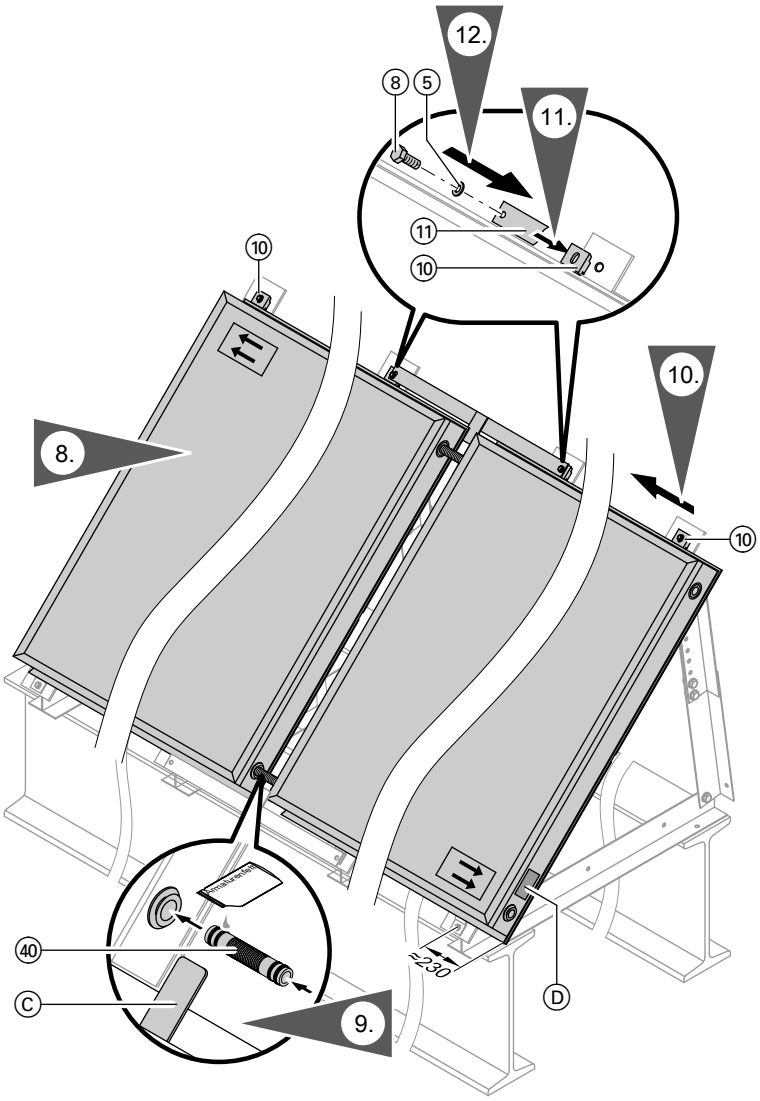
## Installation on supports (cont.)




Ⓒ Spacer lip

Ⓓ Type plate

Continue with "installing the connection set and collector temperature sensor".

## Installation on concrete slabs, only for type SH

Installation information:

- Observe the max. load and distance from the edge of the roof for the on-site substructure in accordance with DIN 1055.
- 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 (see table below).
- Secure the connection brace onto the retaining brackets between the **second and third**, the **fourth and fifth** supports, etc. (see diagram below).
- For every **1 to 6** collectors, secure two cross braces diagonally side by side to the adjustable supports (see diagram on page 14).
- The side with the type plate **must** be on the **outside** of the first and last collector (see diagram on page 15). Secure the pipework on only one collector **opposite** the side with the type plate.
- 

**Please note**
Connection pipes should not show any signs of damage. Lubricate O-ring seals **only** with the special valve grease provided.

**Calculation in accordance with DIN 1055-4 8/1986 and DIN 1055-5 6/1975**

| | | Securing against slippage | | | Securing against lifting | | |
|---|---|---|---|---|---|---|---|
| **Installation height above ground** | m | **<8** | **8–20** | **20–100** | **<8** | **8–20** | **20–100** |
| **Loads at 25°** | kg | 323 | 561 | 800 | 155 | 315 | 476 |
| **Loads at 45°** | kg | 492 | 845 | 1198 | 132 | 254 | 375 |

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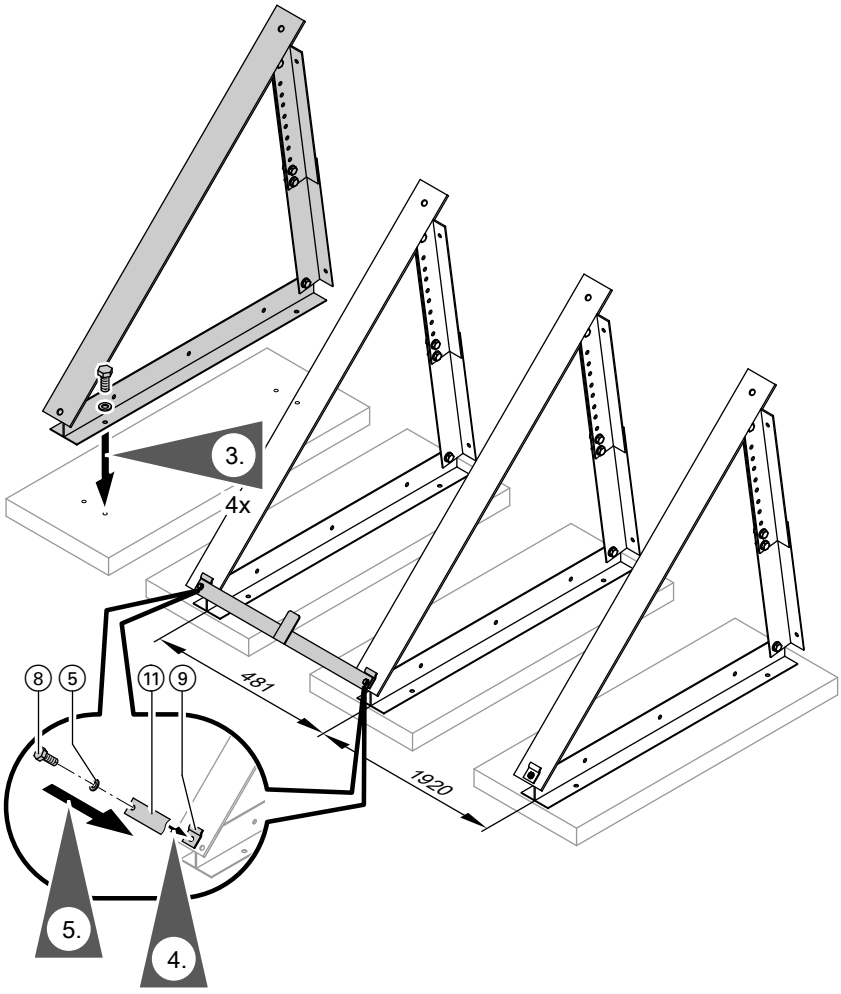
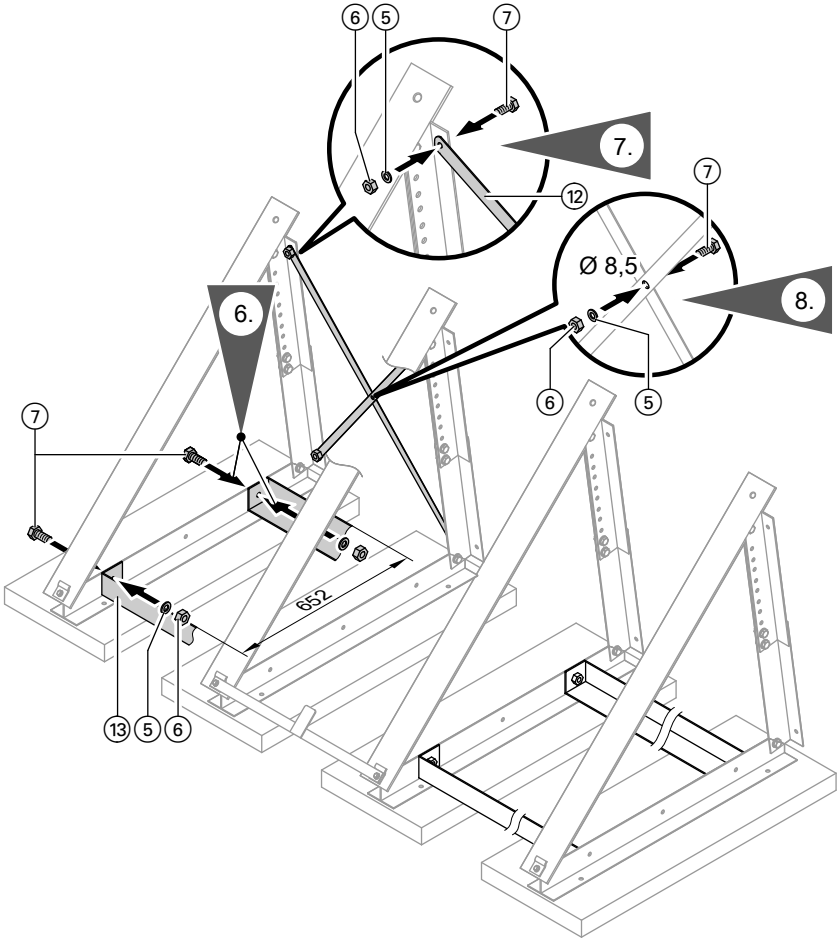
## Installation on supports (cont.)



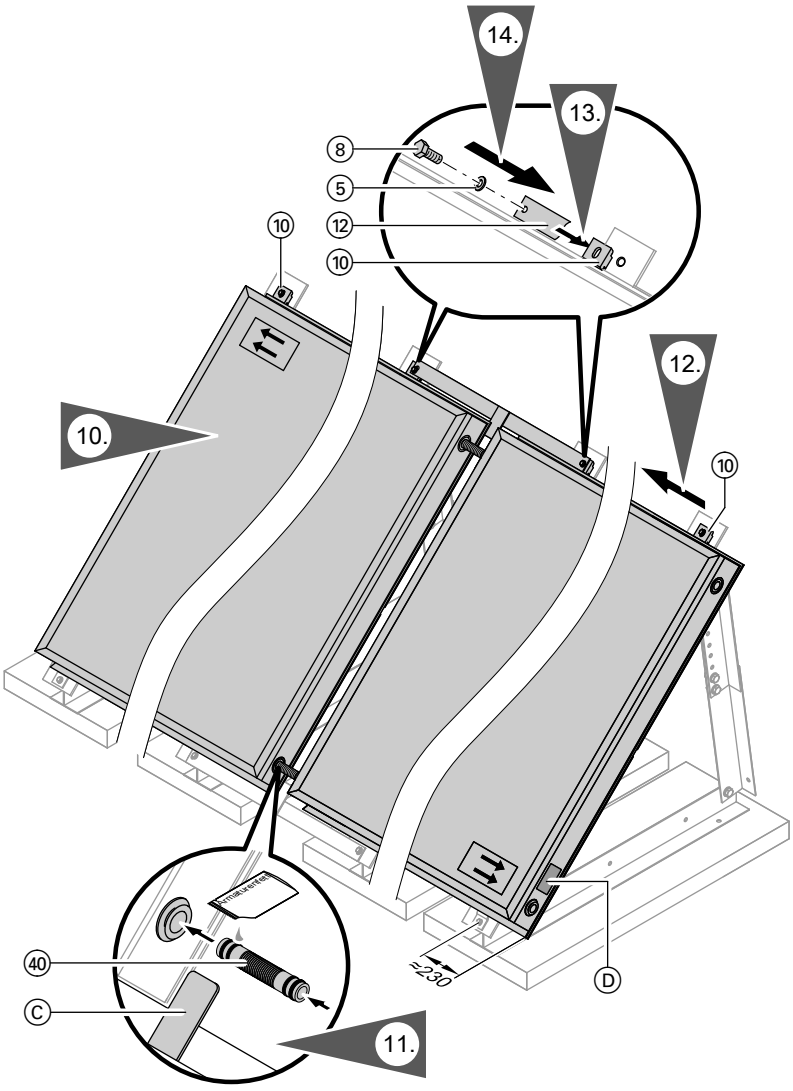

Use the base rails as a drilling template.

## Installation on supports (cont.)




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

## Installation on supports (cont.)



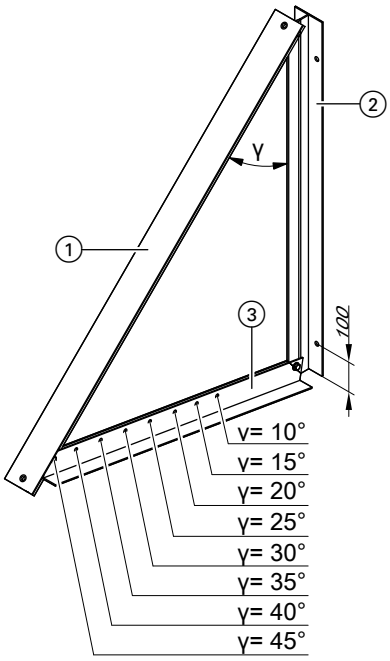

Ⓒ Spacer lip

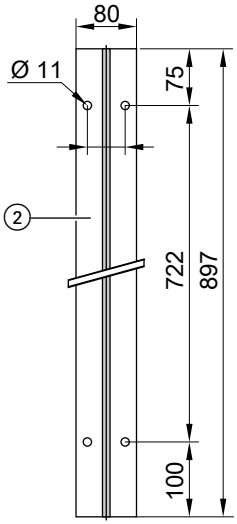
Ⓓ Type plate

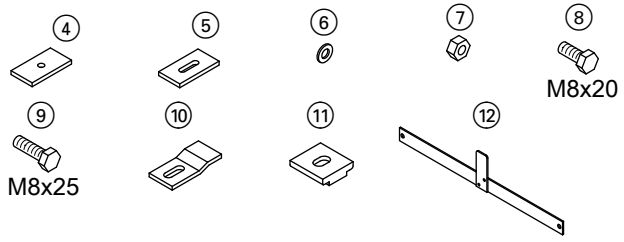
Continue with "installing the connection set and collector temperature sensor".

## Wall mounting (only for type SH)

### Components




① Collector support
② Base rail
③ Adjustable support
④ Gusset plate with circular hole
⑤ Gusset plate with slot
⑥ Washer ∅ 8.4 mm
⑦ Hexagon nut M 8
⑧ Hexagon bolt M 8 x 20
⑨ Hexagon bolt M 8 x 25
⑩ Retaining bracket
⑪ Clamping bracket
⑫ Connection brace

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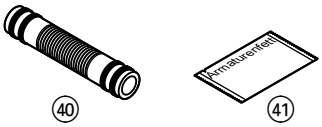
## Wall mounting (only for type SH) (cont.)

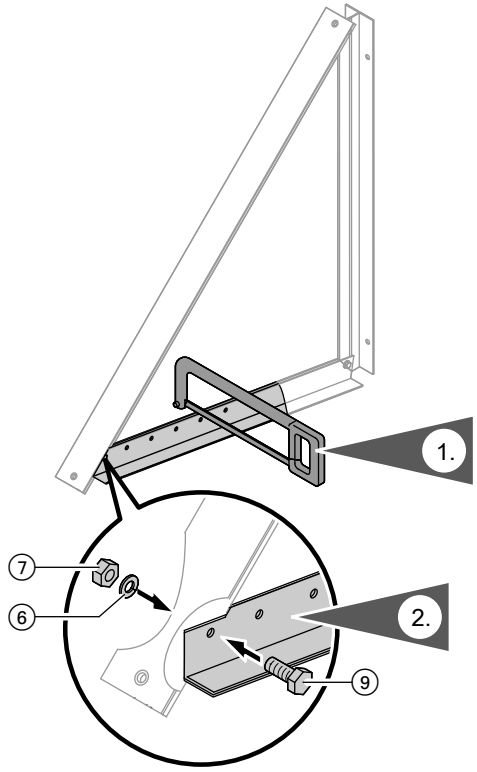
**Connection pipe**




40 Connection pipe

41 Special valve grease

## Installation of the collector supports and adjustment of the angle of inclination γ




Trim the adjustable supports in accordance with the required angle of inclination (see page 16).

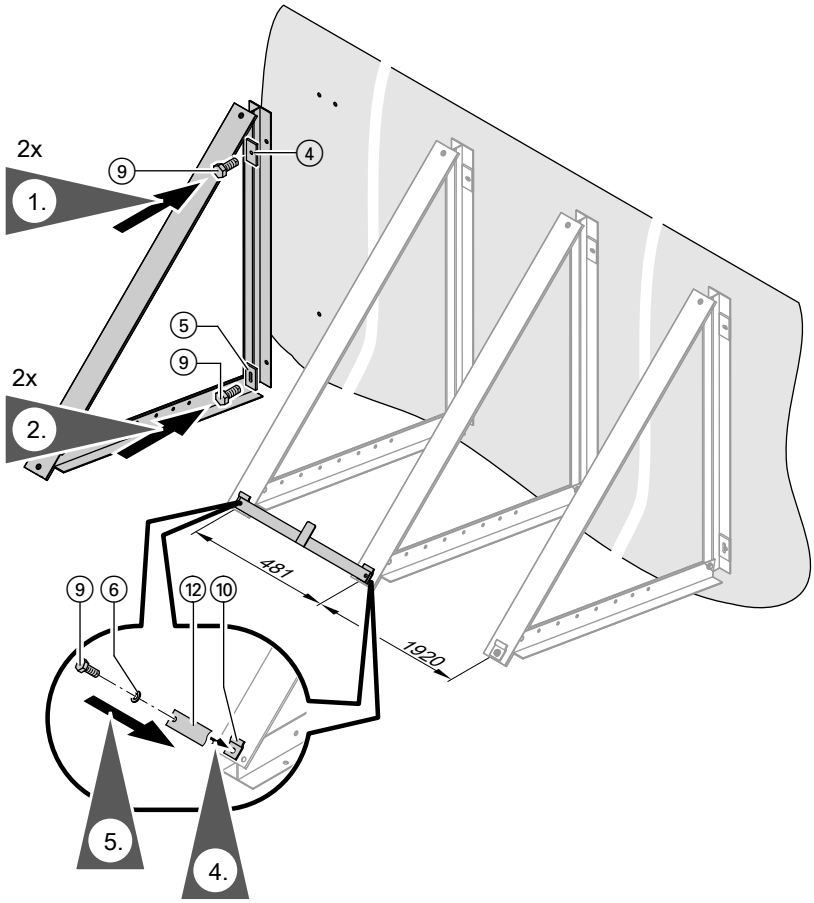
## Installing the collectors

Installation information:

- Gusset plate with circular hole at top
- Gusset plate with slot at bottom
- Secure the connection brace onto the retaining brackets between the **second and third**, the **fourth and fifth** supports, etc. (see diagram below).
- The side with the type plate **must** be on the **outside** of the first and last collector (see page 20).
  Secure the pipework on only one collector **opposite** the side with the type plate.
-

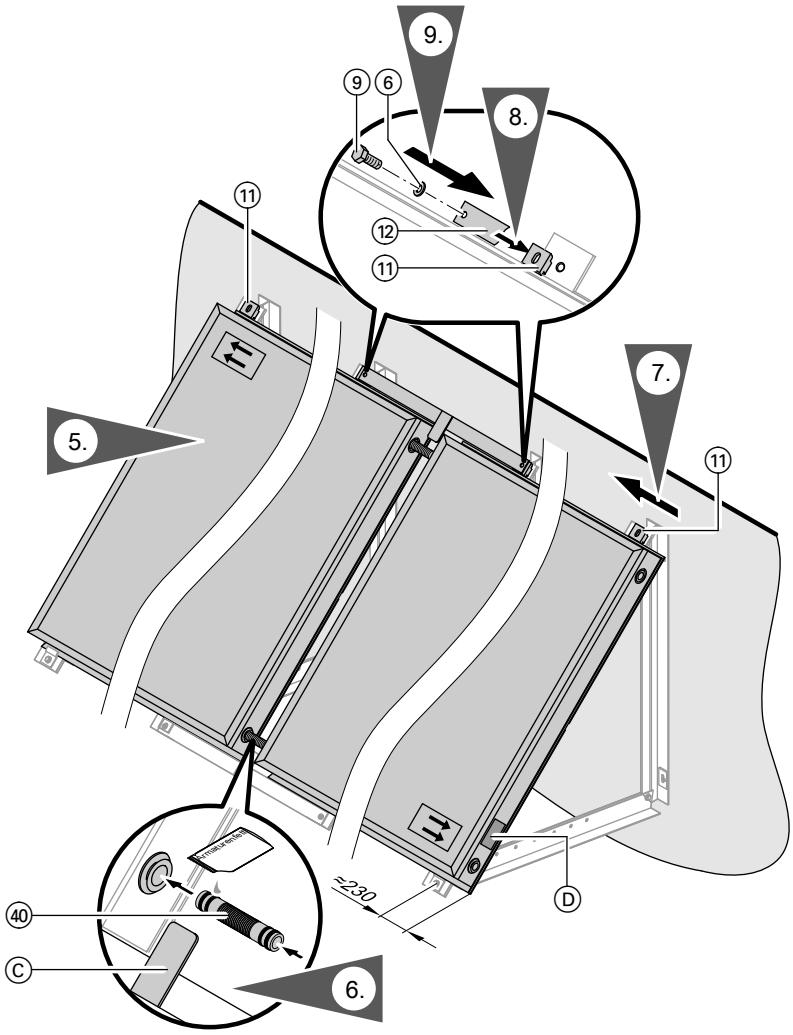
**!** **Please note**
Connection pipes should not show any signs of damage.
Lubricate O-ring seals **only** with the special valve grease provided.

## Wall mounting (only for type SH) (cont.)




Use the base rails as a drilling template.

## Wall mounting (only for type SH) (cont.)




Ⓒ Spacer lip

Ⓓ Type plate

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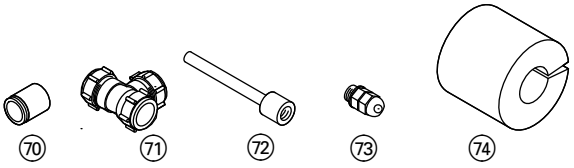
## Installing the connection set and collector temperature sensor

### Components

**Connection set**


60 Connection pipe (short)
61 Connection pipe (long)
62 Plug
63 Locking ring fitting (angle), ∅ 22 mm, 90°
64 Profile clip
65 Support sleeve
66 Special valve grease

**Sensor well set**



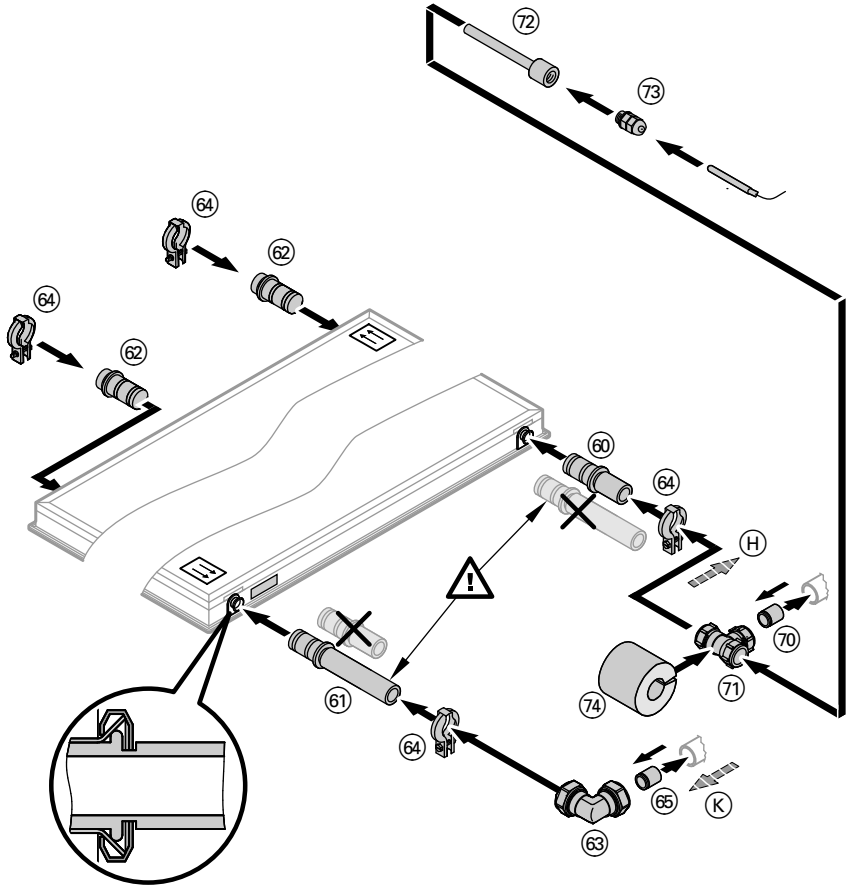

70 Support sleeve
71 Locking ring fitting (tee), ∅ 22 mm
72 Sensor well
73 Strain relief fitting
74 Thermal insulation

Observe the following when installing the locking ring fitting:
- All pipes must be cut at right angles 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 ¾ turn.
- 

**Please note**
There should be no signs of damage on the connection pipes or plugs.
Lubricate O-ring seals **only** with the special valve grease provided.

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

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




Ⓗ Flow connection

Ⓚ Return connection

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

**Please note**
The collectors may be damaged if the solar thermal system is not filled with heat transfer medium immediately after installation.

Therefore, protect the collectors against solar radiation by covering them up.

## Installation

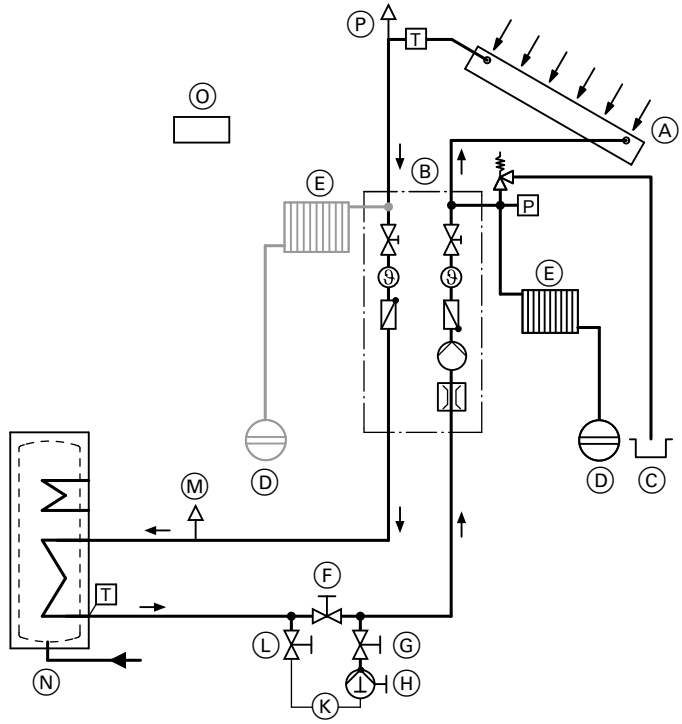
- **Please note**
  Incorrect installation can lead to collector damage.
  Use only gunmetal or brass fittings and copper pipes for the installation.
  Never step on the collectors.
  **Never solder** on or near the collector.

- Position pipes so that complete ventilation is guaranteed. Install an air separator at an accessible point in the pipework (see the following diagram).
- Generally, copper lines in solar circuits are hard soldered or joined by press fittings.
  Soft solder could be weakened, particularly near the collectors, due to the max. temperatures that may occur there. Metal seal connections, locking ring fittings or Viessmann plug-in connections with double O-rings are the most suitable.
  If other seals such as flat gaskets are used, adequate glycol, pressure and temperature stability must be guaranteed by the manufacturer.
- Make all connections pressure and temperature-resistant (observe the maximum idle temperature of the collector).
  Never use:
  – Teflon (inadequate glycol stability)
  – Hemp connections (not sufficiently gas-tight)
- Equip systems to EN 12975 with an expansion vessel, safety valve and circulation pump.
- The expansion vessel must be approved in accordance with DIN 4807.
  The diaphragms and seals of the expansion vessel and safety valve must be suitable for the heat transfer medium.

  To calculate the pre-charge pressure, see the "Vitosol" service instructions.

- If operating without a Solar-Divicon, only use safety valves designed for 120 °C, a maximum pressure of 6 bar, and which carry the "S" (Solar) designation.

## Installation (cont.)




Ⓐ Collector
Ⓑ Solar-Divicon
Ⓒ Drip container
Ⓓ Expansion vessel
Ⓔ Stagnation heat sink
Ⓕ Shut-off valve
Ⓖ Filling
Ⓗ Manual solar fill pump
Ⓚ Fill valve (Ⓕ, Ⓖ, Ⓛ)
Ⓛ Drain
Ⓜ Air separator
Ⓝ DHW cylinder
Ⓞ Solar control unit
Ⓟ Air vent valve

## Commissioning and adjustment

Serviceanleitung "Vitosol-F".

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