

Service instructions  
for contractors

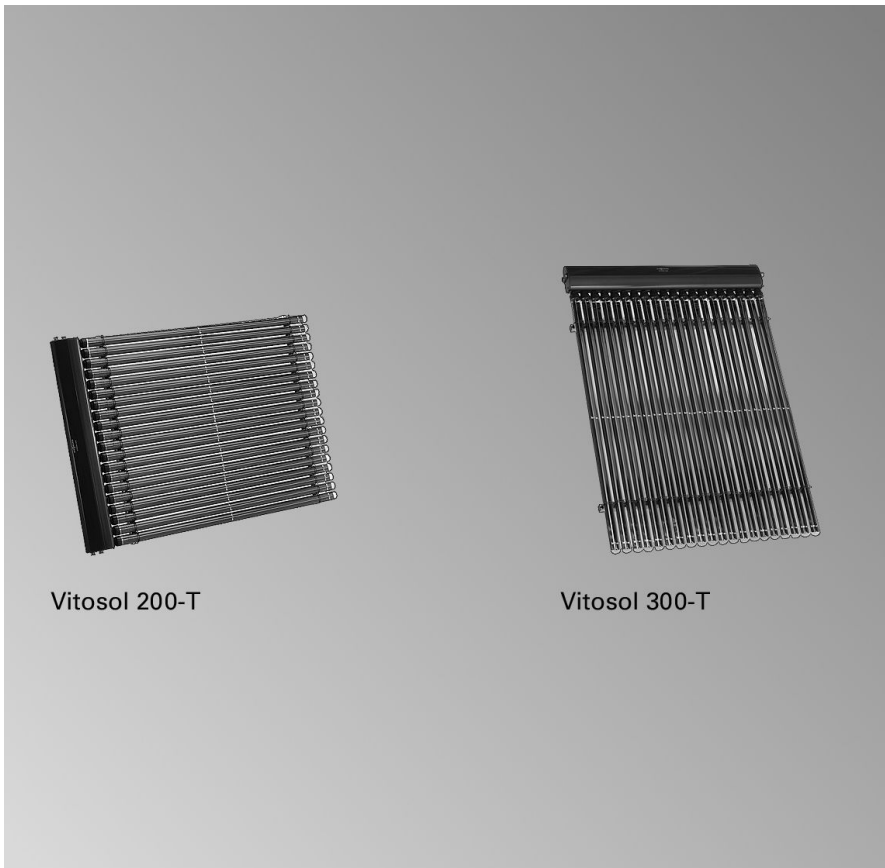


Vitosol-T

*For applicability, see the last page*



**VITOSOL-T**



Vitosol 200-T

Vitosol 300-T

## 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 personnel.

- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

### Regulations

Observe the following when working on this system

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

### 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 main isolator.
- Safeguard the system against unauthorised reconnection.



#### **Please note**

Electronic modules can be damaged by electrostatic discharges.

Touch earthed objects, such as heating or water pipes, to discharge static loads.

### Repair work



#### **Please note**

Repairing components that fulfil a safety function can compromise the safe operation of your heating system.

Replace faulty components only with original Viessmann spare parts.

## **Safety instructions** (cont.)

### **Ancillary components, spare and wearing parts**



#### **Please note**

Spare and wearing parts that have not been tested together with the heating system can compromise its function. Installing non-authorised components and non-approved modifications or conversions can compromise safety and may invalidate our warranty.

For replacements, use only original spare parts supplied or approved by Viessmann.

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## Steps - commissioning, inspection and maintenance

For further information regarding the individual steps, see the page indicated

	Commissioning steps	Inspection steps	Maintenance steps	Page
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## Further details regarding the individual steps

### Checking pressure conditions and pre-charge pressure

Cover the collectors.

#### Note

The glass cover of Viessmann flat-plate collectors is coated with a protective foil.

For vacuum tube collectors, use the **tar-paulins** available as accessories.

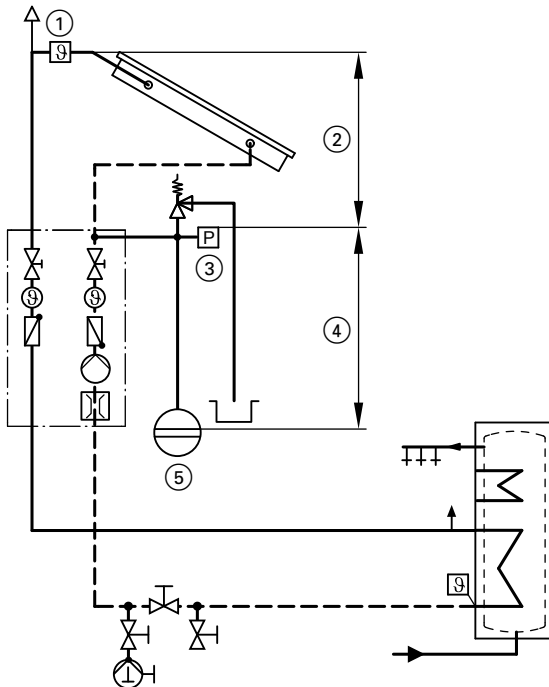
Before the solar thermal system is flushed or filled, check the pre-charge pressure of the expansion vessel. This is no longer possible once the solar thermal system is operational.

#### Note

A manual pressure gauge can be found in the **solar service case** available as an accessory.

Enter values into the following table.

These can be retained for later inspection and maintenance work on the solar thermal system.



### Further details regarding the individual steps (cont.)

#### Documentation of pressure

①	System pressure of the solar thermal system	1 bar
②	Supplement per metre static ceiling	+ 0.1 bar/m
③	<b>System operating pressure (pressure gauge)</b>	..... bar
	Pressure reserve for venting	+ 0.1 bar
	<b>Filling pressure</b>	..... bar
④	Supplement per metre of height difference between pressure gauge — expansion vessel ⑤	+ 0.1 bar/m
	Deduction for hydraulic seal	– 0.3 bar
	<b>Pre-charge pressure, expansion vessel ⑤</b>	..... bar

#### Note

Note the pre-charge pressure level on the expansion vessel. In doing so, specifically use the term "pre-charge pressure" to prevent misunderstandings.

#### Example:

At 10 m static ceiling, the result is:

- System operating pressure = 2 bar
- Fill pressure = 2.1 bar
- Pre-charge pressure = 1.7 bar

### Checking the function of the safety equipment

Check the safety valve:

- Response pressure
- Correct installation, with blow-off line

### Check electrical connections

Check the tightness of the electrical plug-in connectors and cable grommets; check cables for damage.

## Further details regarding the individual steps (cont.)

### Flushing, testing for leaks and filling the solar thermal system



#### **Please note**

Filling and commissioning the solar thermal system without first safeguarding heat transfer results in thermal loads. If commissioning is carried out prior to this, cover the collectors and keep covered until heat transfer has been regulated.

#### **Note**

*The glass cover of Viessmann flat-plate collectors is coated with a protective foil.*

*For vacuum tube collectors, use the **tarpaulins** available as accessories.*

- Flushing the solar thermal system

- Soldered copper pipes  
Flush particularly thoroughly as any residual scale may damage the operation of the solar thermal system.
- Flush solar thermal system with heat transfer medium. Otherwise there is a risk that residual water from flushing may become mixed with the heat transfer medium and thus alter its properties.

#### **Note**

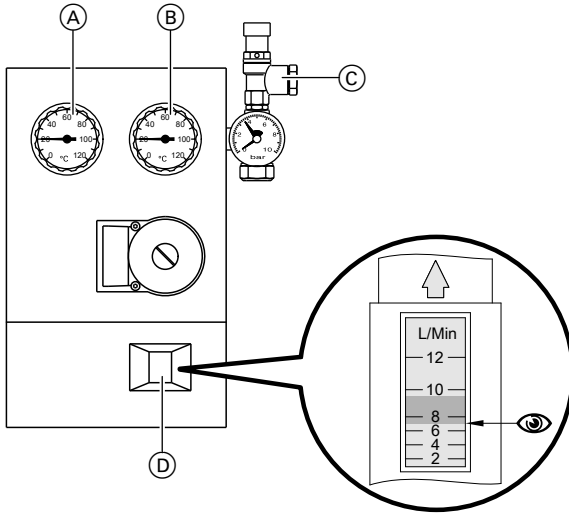
*To flush and fill the solar thermal system, use the **filling container** or **filling station** available as accessories. These contain high speed pumps with high pump rates and filters.*

- **Never** drain the system with a suction pump.



**Further details regarding the individual steps (cont.)**

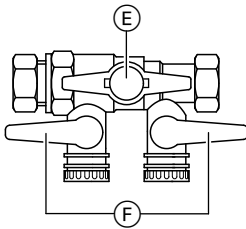
**Solar-Divicon (accessory)**



- (A) Thermometer/non-return valve, flow
- (B) Thermometer/non-return valve, return

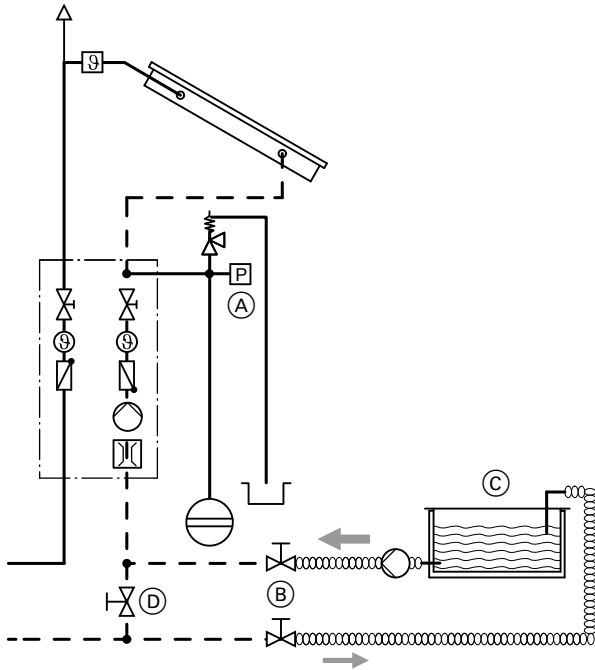
- (C) Safety assembly, with 6 bar safety valve
- (D) Flow indicator

**Fill valve (accessory)**



- (E) Shut-off tap
- (F) Drain & fill taps

**Further details regarding the individual steps (cont.)**



- (A) Pressure gauge
- (B) Drain & fill taps

- (C) Container for heat transfer medium
- (D) Shut-off valve

1. Open shut-off taps or valves. With the Solar-Divicon, open the non-return valves by turning the thermometers clockwise through 45° (see diagram on page 9).

2. Close shut-off tap (E); open drain & fill taps (F) on the fill valve (see diagram on page 9). Connect hoses from the flushing and filling facility. Fill the container with heat transfer medium.

**Note**

*Flush the system via the return connection (flow direction to the collector).*

### Further details regarding the individual steps (cont.)

3. Use a high speed pump to flush the system. Observe the fluid level in the container and top up with heat transfer medium if necessary to prevent any air entering the solar circuit. Let the fill pump run until no more air bubbles rise to the top of the container.
4. Close the drain tap on the fill valve and let the fill pump run until the required system pressure is reached (including 0.1 bar pressure reserve for residual ventilation during operation).
5. Close the fill tap on the fill valve; open the fill pump.  
Pressure must not drop for at least 30 minutes.
6. Vent the circulation pumps. Select manual mode.  
Repeat the ventilation process **until the float in the flow indicator** of the Solar-Divicon (see diagram on page 9) holds a constant position when the pump is running.

**Note**

*Air can be recognised in the flow indicator (float moves).*

**Notes on residual ventilation**

*Even after thorough ventilation, some dissolved air will still remain in the heat transfer medium. This will be released as the temperature rises, and will be extracted via the air separator.*

## Determining the flow rate and adjusting if required

Read off the value at the bottom edge of the float in the flow indicator of the Solar-Divicon (see diagram on page 9).

In conjunction with multi-stage circulation pumps, set required flow rate via output stage (see the following table for approximate set values).

### Flow rates to be set

The details in the following table do not take the pipe pressure drop into account.

Commissioning, inspection, maintenance

### Further details regarding the individual steps (cont.)

#### Specific flow rate 25 l/(h·m<sup>2</sup>)

Collector area in m <sup>2</sup>	Flow rate in l/min
2	0.8
3	1.3
4	1.7
5	2.1
6	2.5
7	2.9
8	3.3
9	3.8
10	4.2

### Starting the system

Close the air vent valve.



Observe operating instructions of installed components.

### Checking the switching function of the solar control unit



Solar control unit installation and service instructions

### Checking heat transfer medium and replacing if required

The heat transfer medium provided is a liquid based on 1,2-propylene glycol with a pH value of 9.0 to 10.5 and frost protection down to -28 °C.

Monitor the operating condition of the medium as part of the annual service of the solar thermal system by the heating contractor.

With the **solar service case** (accessory), the pH value and frost protection temperature can be checked.

In some cases the manufacturer of the heat transfer medium can carry out a laboratory test of the medium, subject to arrangement.

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### Further details regarding the individual steps (cont.)

1. Check the pH value of the heat transfer medium using the pH strip in the solar service case (accessory).  
The colour of the pH strip indicates the approximate value. If the value is below 7.5, replace the heat transfer medium.

***Notes on replacing the heat transfer medium***

*The heat transfer medium can only be mixed with Tyfocor G-LS.  
Never mix with water or third party media.*

2. Check the frost protection temperature of the heat transfer medium with a Viessmann antifreeze tester or the manual refractometer in the solar service case.



Solar service case operating instructions

## Scope of inspection

The solar thermal system should be inspected once a year to ensure operational reliability.

In addition to this, a visual check of all essential components (e.g. collectors and pipework) is recommended every three to five years.

- Vent the solar thermal system.
- Compare system operating pressure with the set value. If the values are different, check the expansion vessel.
- Check heat transfer medium.
- Start circulation pump manually if necessary (listen for noises).
- Compare flow rate with set value.
- Check thermostatic mixing valve is moving easily (if installed).
- Check plausibility of the solar parameters subject to the solar radiation (e.g. flow and return temperatures at the thermometers; collector and cylinder temperatures at the solar control unit).

The safety valve does not have to be checked if there are no visible signs of use (e.g. deposits, drips).

## Parts list Vitosol 200-T, type SP2

### **When ordering spare parts:**

*Quote the part and serial no. (see type plate) and the position no. of the required part (as per this parts list).*

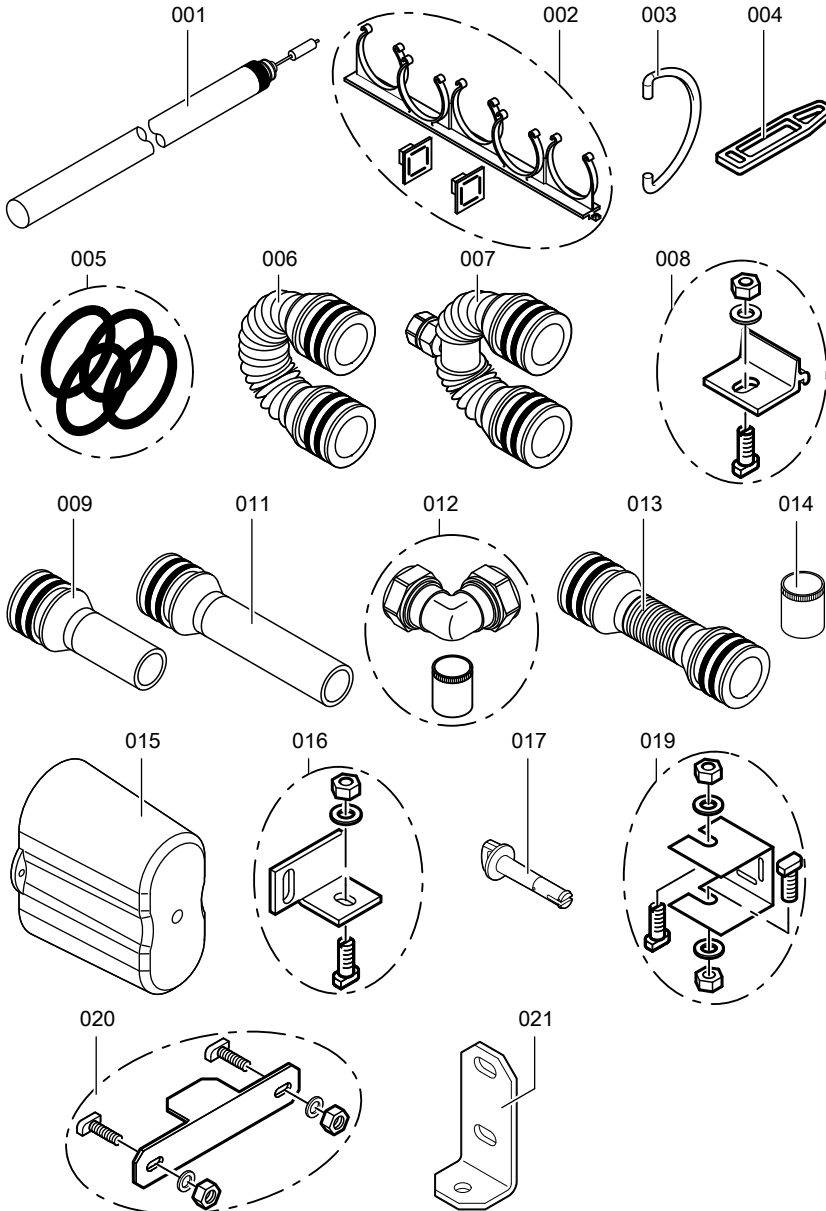
*Obtain standard parts from your local supplier.*

### **Parts**

001 Heat pipe vacuum tube, complete	014 Support sleeve
002 Tube holder	015 Thermal insulation cap, complete
003 Retaining clip	016 Mounting bracket
004 Retaining rubber	017 Fixing pin
005 O-ring	019 Locking bracket
006 U-pipe	020 Spacer
007 U-pipe with air vent valve	021 Mounting bracket
008 Clamping bracket, complete	Parts not shown
009 Connection pipe (short)	010 Special grease
011 Connection pipe (long)	018 Tube retainer
012 Elbow fitting with support ferrule	022 Installation instructions (installation with roof hooks or mounting bracket)
013 Connection pipe	023 Installation instructions (installation with rafter anchor)
	024 Dismantling instructions
	025 Service instructions
	026 Operating instructions

Parts lists

**Parts list Vitosol 200-T, type SP2 (cont.)**





## Parts list Vitosol 300-T, type SP3A

### **When ordering spare parts:**

*Quote the part and serial no. (see type plate) and the position no. of the required part (as per this parts list).*

*Obtain standard parts from your local supplier.*

### **Parts**

- 001 Heat pipe vacuum tube, complete
- 002 Tube holder
- 003 Retaining clip
- 004 Retaining rubber
- 005 O-ring
- 006 U-pipe
- 007 Clamping bracket, complete
- 008 Connection pipe (short)
- 010 Connection pipe (long)

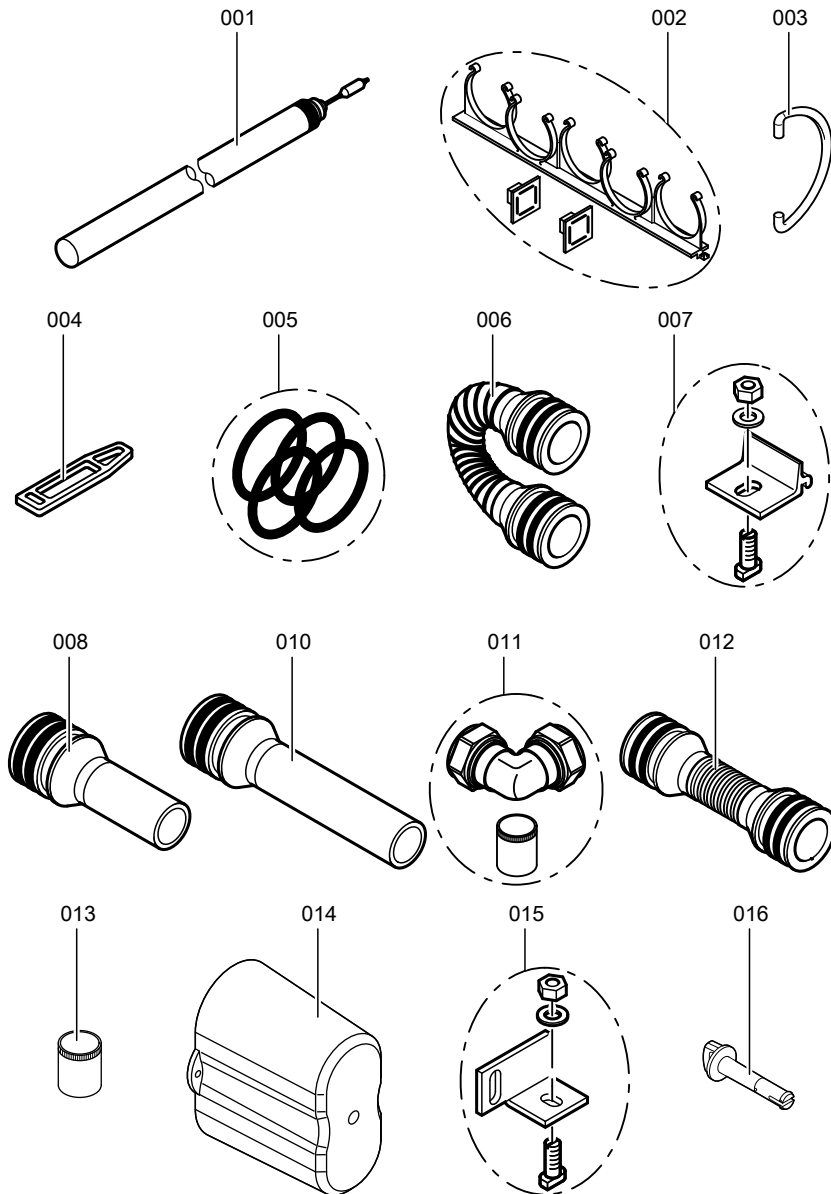
- 011 Elbow fitting with support ferrule
- 012 Connection pipe
- 013 Support sleeve
- 014 Thermal insulation cap, complete
- 015 Mounting bracket
- 016 Fixing pin

### Parts not shown

- 009 Special grease
- 017 Installation instructions (installation with roof hooks or mounting bracket)
- 018 Dismantling instructions
- 019 Service instructions
- 020 Operating instructions
- 030 Installation instructions (installation with rafter anchor)

Parts lists

**Parts list Vitosol 300-T, type SP3A (cont.)**



**Vitosol 200-T, type SP2**

		<b>2 m<sup>2</sup></b>	<b>3 m<sup>2</sup></b>
<b>Absorber area</b>	m <sup>2</sup>	2.00	3.02
<b>Aperture area</b>	m <sup>2</sup>	2.15	3.23
<b>Optical efficiency <math>\eta_0</math></b>	%	76.6	76.6
<b>Heat loss factor <math>k_1</math></b>	W/(m <sup>2</sup> ·K)	1.42	1.42
<b>Heat loss factor <math>k_2</math></b>	W/(m <sup>2</sup> ·K <sup>2</sup> )	0.005	0.005
<b>Thermal capacity c</b>	kJ/(m <sup>2</sup> ·K)	8.4	8.4
<b>Max. idle temperature</b>	°C	270	270
<b>Permiss. operating pressure</b>	bar	6	6
<b>Content, heat transfer medium</b>	litres	1.2	1.7

**Vitosol 300-T, type SP3A**

		<b>2 m<sup>2</sup></b>	<b>3 m<sup>2</sup></b>
<b>Absorber area</b>	m <sup>2</sup>	2.00	3.02
<b>Aperture area</b>	m <sup>2</sup>	2.15	3.23
<b>Optical efficiency <math>\eta_0</math></b>	%	80.9	80.4
<b>Heat loss factor <math>k_1</math></b>	W/(m <sup>2</sup> ·K)	1.37	1.33
<b>Heat loss factor <math>k_2</math></b>	W/(m <sup>2</sup> ·K <sup>2</sup> )	0.0068	0.0067
<b>Thermal capacity c</b>	kJ/(m <sup>2</sup> ·K)	8.4	8.4
<b>Max. idle temperature</b>	°C	273	273
<b>Permiss. operating pressure</b>	bar	6	6
<b>Content, heat transfer medium</b>	litres	1.2	1.7

## Certificates

### Declaration of conformity

We, Viessmann Werke GmbH&Co KG, D-35107 Allendorf, declare as sole responsible body, that the products

**Vitosol 200-T and 300-T**

conform to the following standards:

DIN 1055

EN 12975 to solar KEYMARK

In accordance with the following directives, these products are designated CE:

2006/95/EC

89/336/EEC

97/23/EC

**Details according to the Pressure Equipment Directive (97/23/EC):**

- Heated pressure equipment
- Class I according to appendix II, diagram 5
- Module A according to appendix III
- Identification of individual devices with a content of less than 2 litres as an assembly according to article 3 (2), subject to the installation of at least one pair

The pressure device was tested without fitted equipment (safety assembly).

The pressure device must be equipped in accordance with current national regulations prior to installation and commissioning.

The **product characteristics determined as system values for the Vitosol product as part of EC type testing according to the Efficiency Directive** (see specification table) can be used for the energy assessment of heating and ventilation equipment to DIN V 4701-10.

Allendorf, 1 March 2010

Viessmann Werke GmbH&Co KG



pp. Manfred Sommer









## Applicability

Applicable to the following collectors:

Vitosol 200-T, type SP2, 2 m<sup>2</sup>

Vitosol 200-T, type SP2, 3 m<sup>2</sup>

Vitosol 300-T, type SP3A, 2 m<sup>2</sup>

Vitosol 300-T, type SP3A, 3 m<sup>2</sup>

Part no. SK02 100

Part no. SK02 101

Part no. SK01 430

Part no. SK01 431

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5458 009 GB Subject to technical modifications.