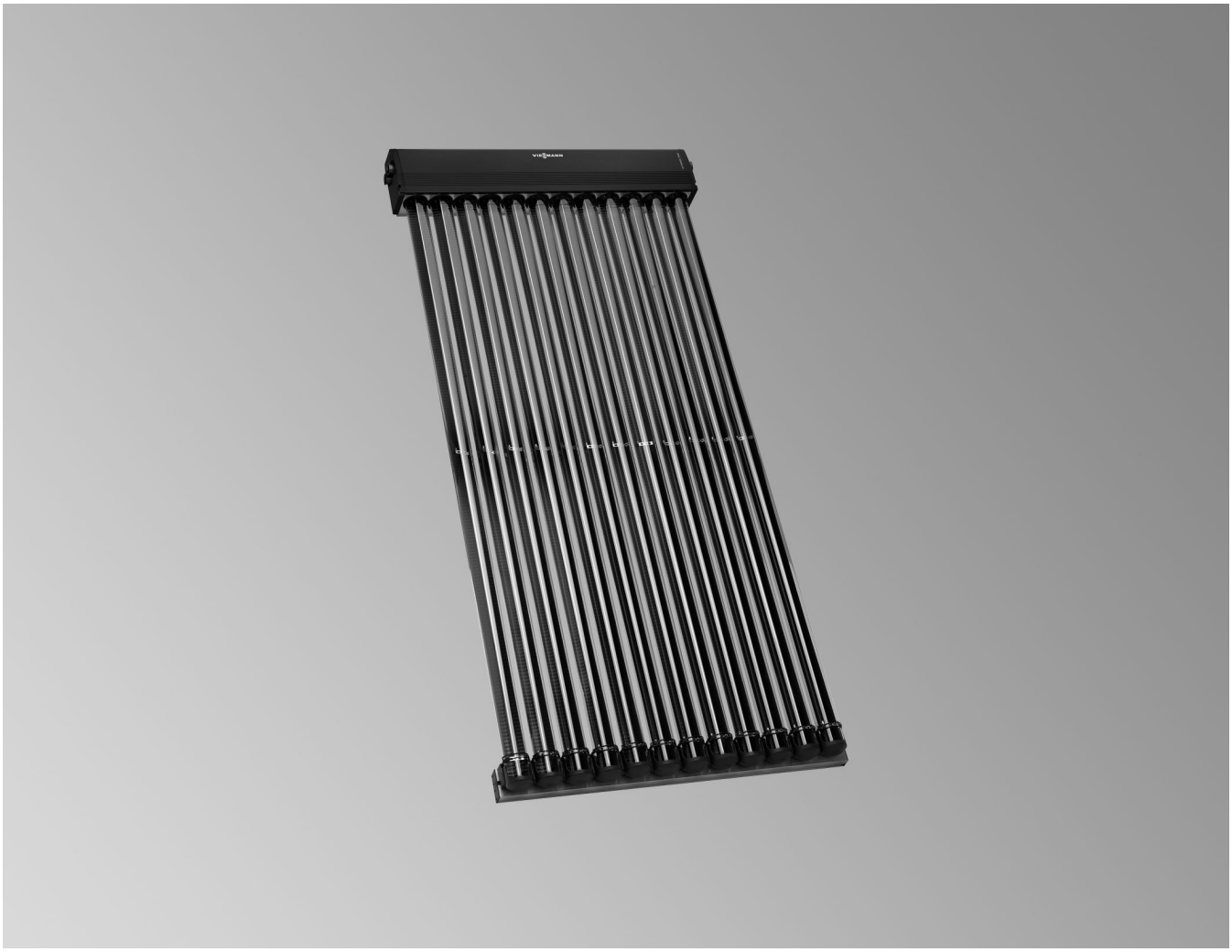
VIESMANN

# VITOSOL 300-TM

Vacuum tube collector based on the heat pipe principle
For the utilisation of solar energy

## Datasheet

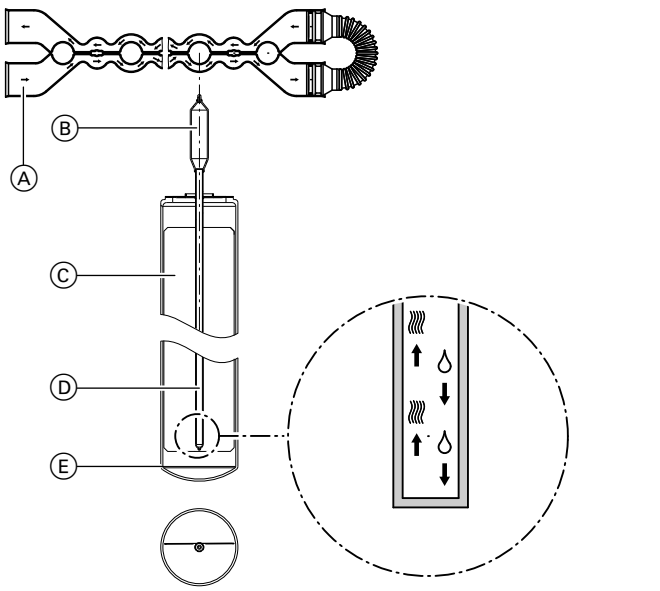
**Part no. and prices: See pricelist**



## VITOSOL 300-TM Type SP3C

**Vacuum tube collector**
For the heating of DHW, central heating and swimming pool water via heat exchangers as well as for the generation of process heat.
For installation on flat and pitched roofs and for freestanding installation.

## Product description



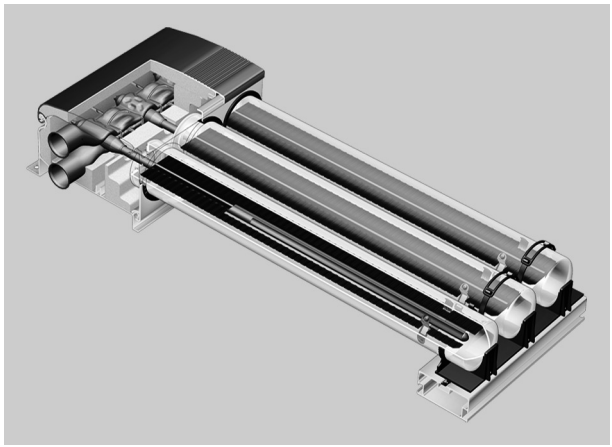

Ⓐ Copper double pipe heat exchanger
Ⓑ Condenser
Ⓒ Absorber
Ⓓ Heat pipe
Ⓔ Evacuated glass tube

The Vitosol 300-TM vacuum tube collector, type SP3C, is available in the following versions:
- 1.26 $m^2$ with 10 vacuum tubes
- 1.51 $m^2$ with 12 vacuum tubes
- 3.03 $m^2$ with 24 vacuum tubes

The Vitosol 300-TM, type SP3C, can be installed on pitched roofs, flat roofs, on walls, or as a freestanding collector.
On pitched roofs the collectors may be positioned in line (vacuum tubes at right angles to the roof ridge) or across (vacuum tubes parallel to the roof ridge).
An absorber with highly selective coating is incorporated inside each vacuum tube. The absorber ensures high absorption of insolation and low emissions of thermal radiation.
A heat pipe filled with an evaporation liquid is fitted to the absorber. The heat pipe is connected to the condenser. The condenser is fitted inside a Duotec copper double pipe heat exchanger.
This involves a so-called "dry connection", i.e. the vacuum tubes can be rotated or replaced even when the installation is filled and under pressure.
The heat is transferred from the absorber to the heat pipe. This causes the liquid to evaporate. The steam rises into the condenser. The heat is transferred to the passing heat transfer medium by the double pipe heat exchanger containing the condenser. This causes the steam to condense. The condensate returns back down into the heat pipe and the process repeats.
The inclination angle to horizontal must be greater than zero to guarantee circulation of the evaporator liquid in the heat exchanger.
The vacuum tubes can be rotated to precisely align the absorber with the sun. The vacuum tubes can be rotated through 25° without casting shade on the absorber surface.
Up to 15 $m^2$ absorber area can be connected to form one collector array. For this purpose, the standard delivery includes flexible connection pipes with O-rings. The connection pipes are cladded with a thermally insulated covering.
A connection set with locking ring fittings enables the collector array to be readily connected to the solar circuit pipework. The collector temperature sensor is installed in a sensor retainer on the flow pipe in the header casing of the collector.
The collectors can also be used in coastal regions.

## Benefits

- Highly efficient vacuum tube collector based on the heat pipe principle, with ThermProtect automatic temperature-dependent shutdown for high operational reliability
- Universal application through vertical or horizontal installation in any location, either on rooftops or walls, or for freestanding installation
- Narrow balcony module (1.26 $m^2$ absorber area) for installation on balcony railings or walls
- The absorber surface with highly selective coating integrated into the vacuum tubes is not susceptible to contamination
- Efficient heat transfer through fully encapsulated condensers and Duotec copper double pipe heat exchanger
- Vacuum tubes can be rotated for optimum alignment with the sun, thereby maximising the energy utilisation
- Dry connection, meaning vacuum tubes can be inserted or changed while the system is full
- Highly effective thermal insulation for minimised heat losses from the header casing
- Easy installation through the Viessmann assembly and connection systems



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## Specification

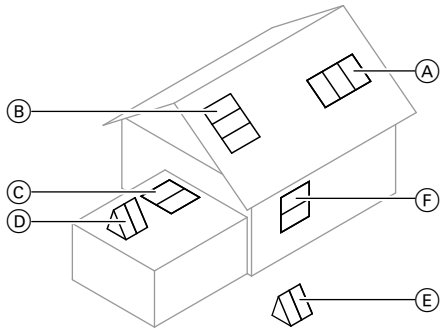
**Specification**

| **Type SP3C** | | **1.25 m²** | **1.51 m²** | **3.03 m²** |
|---|---|---|---|---|
| **Number of tubes** | | 10 | 12 | 24 |
| **Gross area** (required when applying for subsidies) | m² | 1.98 | 2.36 | 4.62 |
| **Absorber area** | m² | 1.26 | 1.51 | 3.03 |
| **Aperture area** | m² | 1.33 | 1.60 | 3.19 |
| **Clearance between collectors** | mm | — | 88.5 | 88.5 |
| **Dimensions** | | | | |
| Width a | mm | 885 | 1053 | 2061 |
| Height b | mm | 2241 | 2241 | 2241 |
| Depth c | mm | 150 | 150 | 150 |
| The following values apply to the absorber area: | | | | |
| – **Optical efficiency** | % | 79.2 | 79.7 | 78.2 |
| – **Heat loss factor $k_1$** | W/(m² · K) | 1.512 | 2.02 | 1.761 |
| – **Heat loss factor $k_2$** | W/(m² · K²) | 0.027 | 0.006 | 0.008 |
| The following values apply to the aperture area: | | | | |
| – **Optical efficiency** | % | 75 | 75.2 | 74 |
| – **Heat loss factor $k_1$** | W/(m² · K) | 1.432 | 1.906 | 1.668 |
| – **Heat loss factor $k_2$** | W/(m² · K²) | 0.025 | 0.006 | 0.007 |
| The following values apply to the gross area: | | | | |
| – **Optical efficiency** | % | 50.4 | 51 | 51.4 |
| – **Heat loss factor $k_1$** | W/(m² · K) | 0.932 | 1.292 | 1.158 |
| – **Heat loss factor $k_2$** | W/(m² · K²) | 0.017 | 0.004 | 0.005 |
| **Thermal capacity** | kJ/(m² · K) | 6.08 | 5.97 | 5.73 |
| **Weight** | kg | 33 | 39 | 79 |
| **Liquid content (heat transfer medium)** | litres | 0.75 | 0.87 | 1.55 |
| **Permiss. operating pressure** | bar/MPa | 6/0.6 | 6/0.6 | 6/0.6 |
| With installation of an 8 bar safety valve (accessories) | bar/MPa | 8/0.8 | 8/0.8 | 8/0.8 |
| **Max. stagnation temperature** | °C | 150 | 150 | 150 |
| **Steam-producing power** | W/m² | 0 | 0 | 0 |
| **Connection** | Ø mm | 22 | 22 | 22 |

**Specification for determining the energy efficiency class (ErP label)**

| **Type SP3C** | | **1.26 m²** | **1.51 m²** | **3.03 m²** |
|---|---|---|---|---|
| **Aperture area** | m² | 1.33 | 1.6 | 3.19 |
| The following values apply to the aperture area: | | | | |
| – **Collector efficiency $\eta_{col}$**, at a temperature differential of 40 K | % | 68 | 69 | 69 |
| **Optical efficiency** | % | 74 | 76 | 76 |
| – **Heat loss factor $k_1$** | W/(m² · K) | 1.3 | 1.3 | 1.3 |
| – **Heat loss factor $k_2$** | W/(m² · K²) | 0.007 | 0.007 | 0.007 |
| **Incidence angle modifier** IAM | | 0.98 | 0.98 | 0.98 |

| | |
|---|---|
| Installation position (see following diagram) | Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, Ⓕ |

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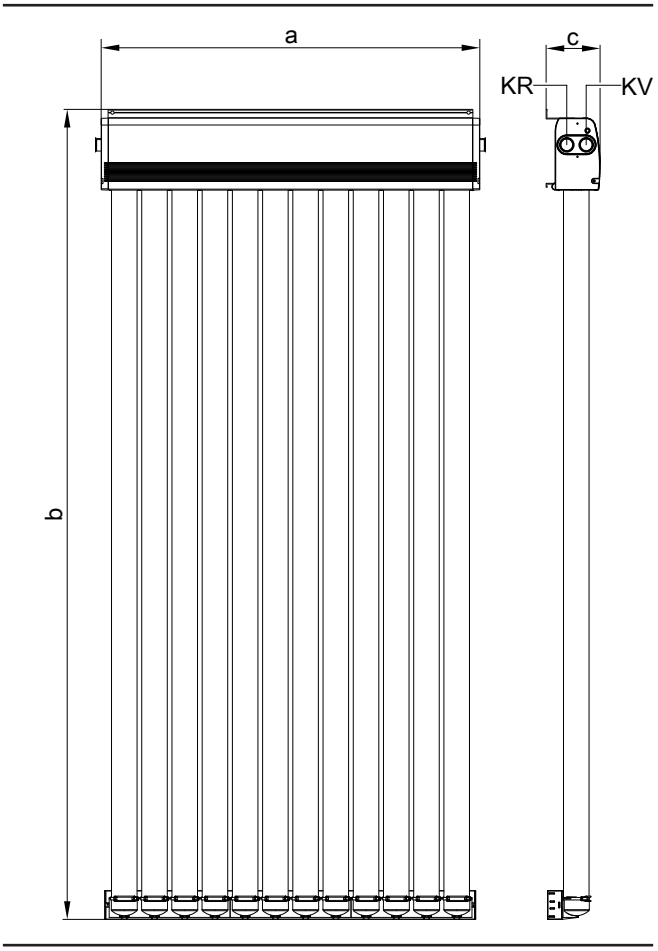
## Specification (cont.)




KR Collector return (inlet)
KV Collector flow (outlet)

## Tested quality

### Tested quality

These collectors meet the requirements of the "Blue Angel" eco-label to RAL UZ 73.
Tested in accordance with Solar KEYMARK to EN 12975 or ISO 9806.

CE designation according to current EC Directives

Subject to technical modifications.

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