

PHYWE Systeme GmbH & Co. KG
Robert-Bosch-Breite 10
D-37079 Göttingen

Telefon +49 (0) 551 604-0
Fax +49 (0) 551 604-107
E-mail info@phywe.de

Operating instructions

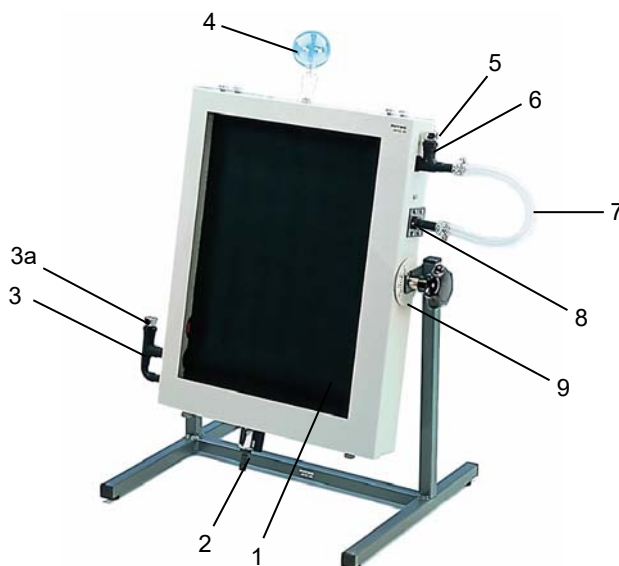


Fig. 1: 06753-00 Solar Ray Collector

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1 SAFETY PRECAUTIONS



Caution!

- Carefully read these operating instructions completely before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Do not start up this instrument in case of visible signs of damage to it.
- Only use the instrument for the purpose for which it was designed.

2 PURPOSE AND CHARACTERISTICS

The Solar Ray Collector 06753-00 is a demonstration model for showing the construction and working principle of a low temperature collector. The absorber is made of stainless steel with a matt black finish. The heated water can flow up through a number of channels between two panels. The glass panel and the insulation at the back can be removed so that the heating of the collector can be measured at various stages of assembly.

Only absorber.

- Absorber with insulation layer.
- Complete collector.

The solar ray collector is supported in the Stand (Order no. 06757-00). For quantitative measurements a Pump with Flowmeter (Order no. 06754-01) and a Heat Exchanger (06755-00) are installed in the circuit. The collector has two temperature measurement points which enable, for example, the efficiency of the collector to be determined.

The collector can be aligned with the sun using the stand. A 1000W Halogen Lamp (Order no. 08127-93) can be used as a. substitute sun., giving a radiant flux density of about 1000W/m² at a distance of about 70cm.

3 FUNCTIONAL AND OPERATING ELEMENTS

- 1 Absorber (under glass panel)
- 2 Filling and draining points with tap
- 3 Absorber input with temperature measuring point 3a
- 4 Venting pipe with expansion vessel
- 5 Absorber output with temperature measuring point 5a
- 6 Hose link, absorber output-return pipe
- 7 Return pipe to absorber input 3
- 8 Support device with angular scale

4 HANDLING

The front frame with the glass panel and the insulation at the back can each be removed by loosening four knurled screws.

The sun ray collector is inserted in the guides in the stand using the side shafts on the support device 8 and it is locked in position with the star-shaped knob.

Two Thermometers ($d = 8\text{mm}$, Order no. 38056-00) or Protective Sleeves (Order no. 11762-05) for accepting temperature probes are inserted in the temperature measuring points.

The expansion vessel is fitted to the venting point with a section of hose. Just the collector itself is operated in the convection circuit. The hose link 6 is removed to set up a circulation circuit including the heat exchanger and circulation pump with flowmeter.

Rubber Tubing $d_i = 10\text{mm}$ (Order no. 39290-00) is suitable for all the required hose connections.

The sun ray collector is filled with water and drained through the filling point 2.

When including the pump and heat exchanger in the set-up, it is more practicable to fill these two additional devices with water before connecting them to the sun ray collector:

- Position the heat exchanger with hoses between the water tap and the pump input (lower connection point).
- First direct the pump output into the basin.
- Slowly rinse and fill this system with water until no air bubbles are present (see also the operating instructions for the Pump 06754.00).
- Turn off the water tap and shut off the system with hose clamps.
- Fill the sun ray collector until water escapes from the return pipe.
- Connect the system of pump and heat exchanger to the collector between the output 5 and the return 7.
- Continue filling the sun ray collector until the expansion vessel is about one third full of water.
- Loosen the hose clamps.

After filling, the complete collector system should be cleared of air bubbles by pressing the hoses and by repeated tilting of the collector to the left and right until no air bubbles escape in the expansion vessel.

5 EXPERIMENTS

Solar Ray Collector

P2360100

6 LIST OF EQUIPMENT

Solar Ray Collector	06753-00
Stand for Solar Ray Collector	06757-00
Circulating pump with flowmeter	06754-01
Heat exchanger	06755-00
Halogen lamp 1000 W	08127-93
Rubber tubing $d_i = 10\text{ mm}$	39290-00
Lab thermometer, $-10\dots+110^\circ\text{C}$	(2x) 38056-00
Hose clamp, $b = 15\text{ mm}$	(2x) 43631-15

7 TECHNICAL DATA

Absorber	stainless steel, matt black finish
Volume	ca. 350 cm^3
Thermal insulation	polyurethane, $d = 20\text{ mm}$
Glass cover	glass panel, $d = 2,8\text{ mm}$
Slope	$0 \dots 90^\circ$ continuously adjustable using mounting in Stand
Temperature measuring points	two, $d = 10\text{ mm}$
Hose connections	for hose $d_i = 10\text{ mm}$
Housing dimensions (mm)	480 x 520 x 60

8 WARRANTY

We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EC. This guarantee does not cover natural wear nor damage resulting from improper handling. The manufacturer can only be held responsible for the function and technical safety characteristics of the instrument, when maintenance, repairs and changes to the instrument are only carried out by the manufacturer or by personnel who have been explicitly authorized by him to do so.

9 WASTE DISPOSAL

The packaging consists predominately of environmental compatible materials that can be passed on for disposal by the local recycling service.



Should you no longer require this product, do not dispose of it with the household refuse. Please return it to the address below for proper waste disposal.

PHYWE Systeme GmbH & Co. KG
Abteilung Kundendienst
Robert-Bosch-Breite 10
D-37079 Göttingen

Telefon +49 (0) 551 604-274
Fax +49 (0) 551 604-246