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**Ocean Solar Absorber**  
**Technical Data**



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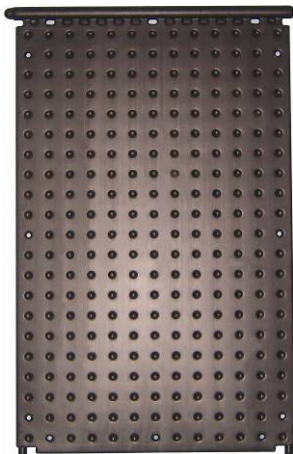


**OCEAN solar heating in the direct circular flow:  
efficient, eco-friendly, quickly installed.**

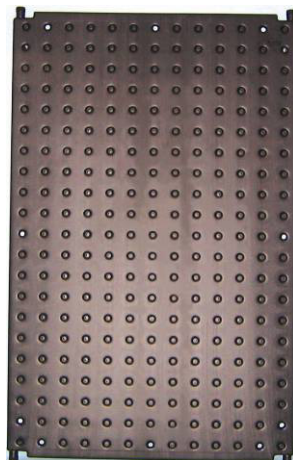
The problem is familiar. An outdoor swimming pool that is not heated is only really comfortably warm for three or four weeks in the middle of the summer – very little time considering all the investment and maintenance put into it. An indoor swimming pool has to be heated all year round, even in the summer, but doing this with conventional sources of energy results in high costs and is also a load on the environment. It does not have to be like that! The heating of swimming pools is an ideal application for the free-of-charge and eco friendly solar energy. Since only remote temperatures are needed, but large quantities of water have to be heated, it makes sense to run these systems with high flow rate on a relatively low temperature level. Thus your OCEAN swimming pool solar heating produces optimum efficiency.



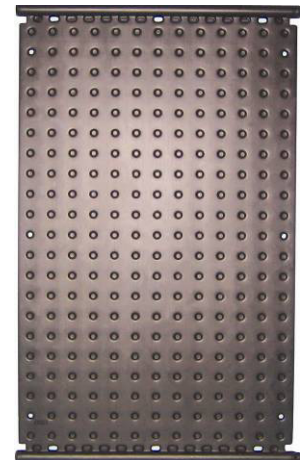
**Enjoy a well-tempered swimming pool with your OCEAN solar heating. The investment costs are low and you take advantage of the sun's energy – an exhaustless natural energy source that does not cost anything. A progressive technology – your contribution to protecting the environment!**



Part No. 75754 -1000  
with integrated connection pipe  
ø 40mm and 2 spigots ø 25mm  
length 1.320mm – width 820mm –  
1,08 m<sup>2</sup>



Part No.. 75755 - 1001  
with 4 connection spigots ø 25mm  
length 1.280mm – width 820mm –  
1,05 m<sup>2</sup>



Part No. 75756 - 1002  
with integrated connection pipe  
ø 40mm on both quoinis  
length 1.320mm – width 820mm –  
1,12 m<sup>2</sup>

Low pressure loss: ~ 0,003 bar at 200 l/h/m<sup>3</sup>  
Flow rate: 150 – 250 l m<sup>2</sup>/h  
Weight: ~ 6kg/m<sup>2</sup> - water content 6l/m<sup>2</sup>  
Test pressure: 4.5 bar at NT  
Operating pressure: up to 1,2 bar at 40 °C  
Efficiency: up to ~ 85%, power up to 0,85 Kwh/m<sup>2</sup>  
Average value: 0,5 – 0,6 Kwh/m<sup>2</sup>  
Temperature resistant from -50 °C to +115 °C

Cast in one piece and homogeneously dyed black.  
Operation often possible with existing filter pump  
Non-corroding – resistant to swimming pool water  
The pool water is directly pumped through the absorbers  
Hohohedral water flow, frost proof and accessible.

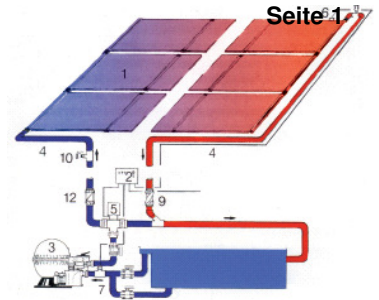
**OCEAN solar absorbers  
made of high molecular  
polyethylene offer the best  
conditions for the operation  
of a swimming pool solar  
heating.**



**There are 3 simple connection types for OCEAN swimming pool solar heating:**

**1. Operation with filter pump via 3-way motor ball valve with difference temperature control:**

This configuration can usually be selected if the absorbers are not to be set up higher than 6m above the surface of the water. The 3-way motor ball valve is integrated into the pressure line of the filter installation. Because of the difference temperature control the ball valve is changed over then the absorber temperature is higher than the temperature of the pool water. The filter stream is then pumped through the absorbers. The heated water flows back into the filter circuit by way of a tee.



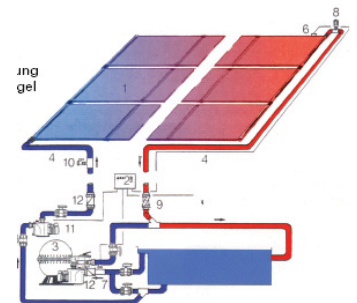
**3-Way Motor Ball Valve with separate Solar Control SC01: Alternative 2-Way Motor Ball Valve available.**

This consists of a ready to plug-in and compact control box (acc. to DIN), where the required pool water temperature (+20°C - +40°C) can be set manually. Also included are: cold- and warm water temperature sensors (1 each), that have to be fixed on the piping system behind the skimmer or at the solar collector, 10/3m connection cable, 2- or 3 way Praher PVC ball valves DN40/d50 or DN50/d63 with EO510 electric drive MVO 12-230V AC/DC, with integrated venting drill hole in the ball (3 ways), manual override system, IP54 protection rate, CE.



**2. Operation with own pump and difference temperature control integrated into the filter**

In many cases it may be sensible or even necessary to install a separate pump for the solar heating. For example, if the delivery head from the water level to the absorber panel is more than 6m. The water is diverted from the filter installation by means of a tee and pumped through the absorbers by the auxiliary pump. This pump is switched by the difference temperature control to ensure that it only runs to actually win energy. The filter and solar pump are separately regulated. It is usually recommended to integrate cone check valves in both the solar and the filter circuit.



**Solar Control SC02:**

The SC02 also consists of a compact, ready-to-plug-in control box (acc. to DIN), where the required pool water temperature (+5°C - +60°C) can be set manually. Also this control has got an integrated 'solar pump connection', 230V, for direct control. Digital display, cooling function taking care of keeping the set temperature, even if the pool water temperature is rising (display by 'red blinking Leds'), adjustment for difference in temperature between pool & solar panel from +2° to +20°C/switch from °C to °F simply done, the SC02 solar controls are mainly used for solar heating in private- and hotel pools.

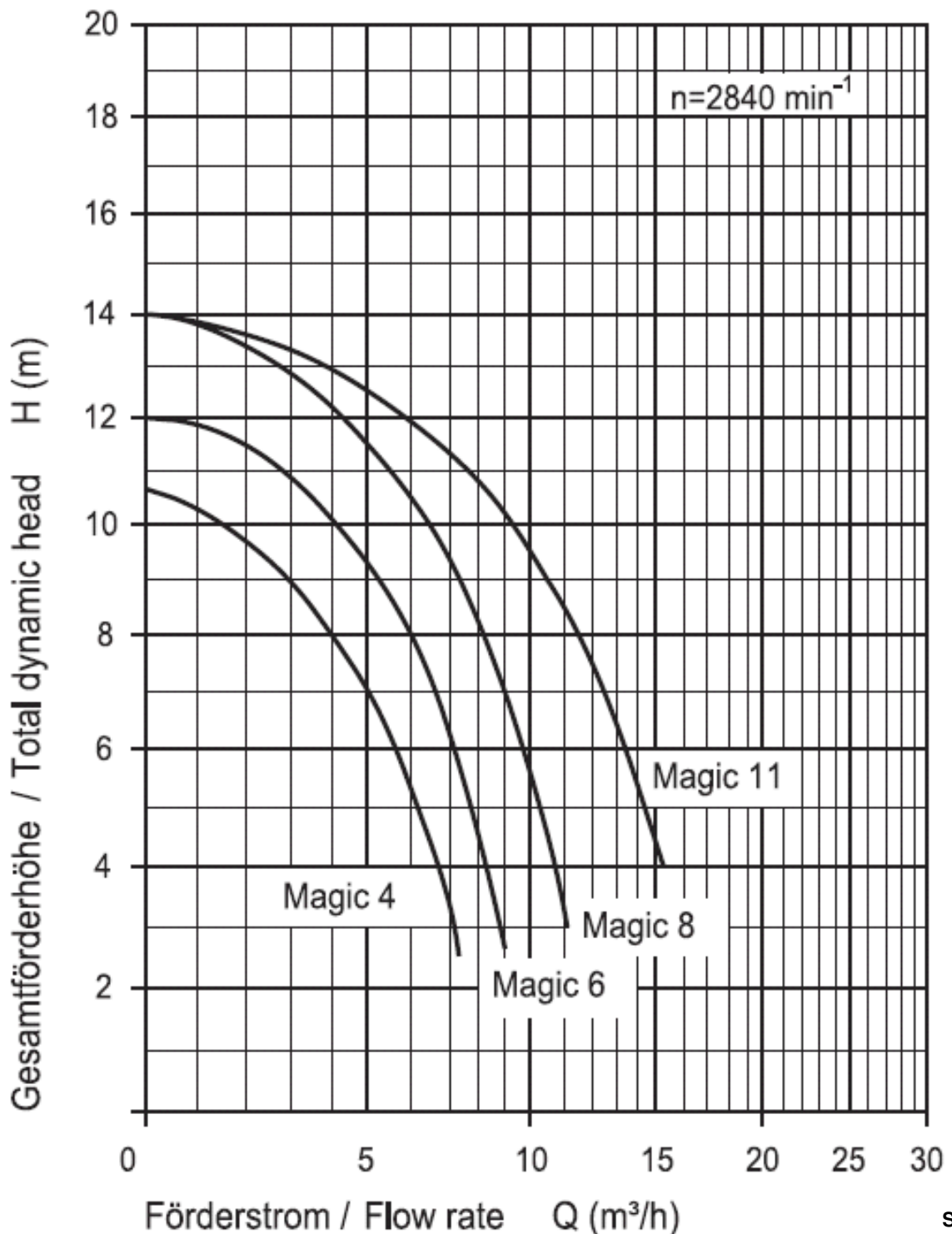
This provides substantial extension of the outdoor pool season.



**How to select the correct solar pump?**

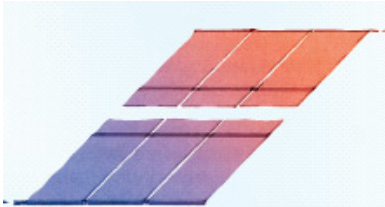
The correct pump capacity  $H(m)/m^3/h$  always depends on the distance between the position of the solar pump and the OCEAN solar absorber mounted at highest position. The chart below shows only the capacity of Speck pumps. However, of course other brands can be used provided satisfying characteristics.

**Characteristics:**



## OCEAN components:

1. OCEAN Absorber
2. difference temperature control SC01
3. filter
4. solar circuit forward and return
5. 3-Wege motor ball valve
6. temperature sensor, absorber
7. temperature sensor, swimming pool
8. Aerating valve
9. ball valve (downdraft brake)
10. drain valve
11. pump for solar circuit
12. cone check valve



The pool water is able to flow through the OCEAN Absorber in every direction. Therefore they can be mounted both lengthwise as well as side by side. The individual rows of absorber are connected according to Tichelmann's principle (same routes for each row). It is not recommended to connect more than 8 absorbers after the other.

## Calculation

Recommended absorber surface in % of the pool surface of outdoor pools with cover or indoor pools (beginning of may until end of September). Increase of temperature 4 – 7°C compared to unheated swimming pools.



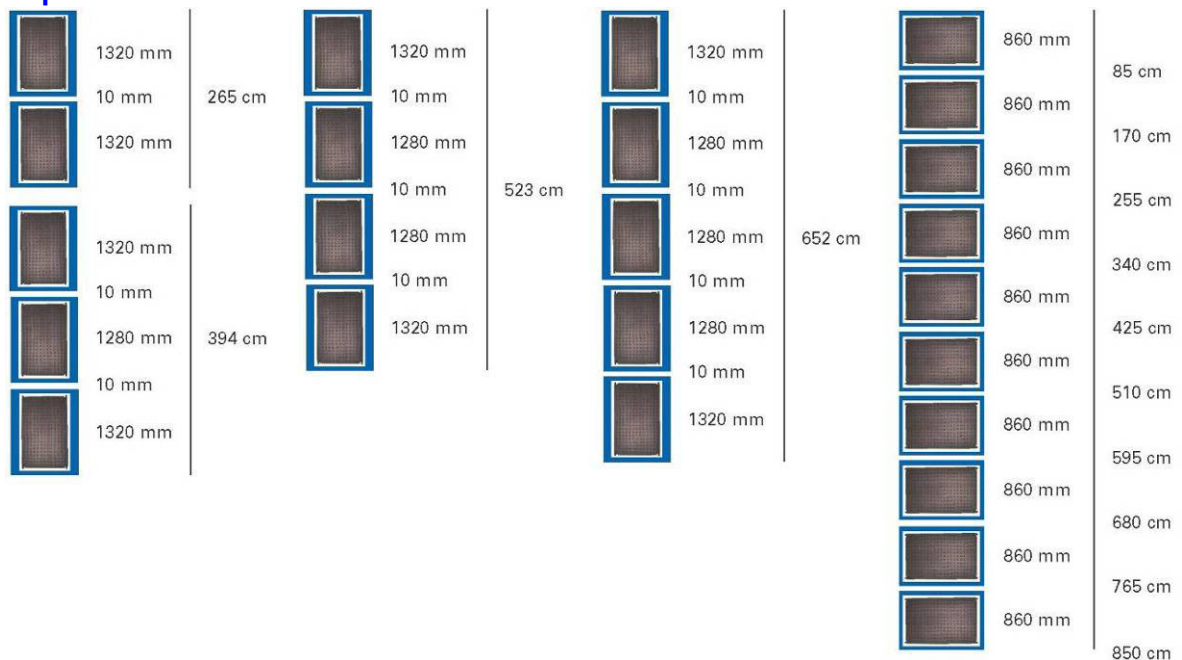
tilt angle	tilt direction					absorber surface in % of the pool surface
	E	SE	S	SW	W	
90°	90	80	70	75	85	
60°	80	65	55	60	70	
45°	70	60	50	55	65	
30°	60	55	45	50	55	
15°	55	50	50	50	55	
0°	50	50	50	50	50	

In case there is no cover, the absorber surface should be increased by 50%. The regionally different number of sunshine hours can be calculated by addition or deduction of up to 20 % of the absorber surface.

## Pump performance

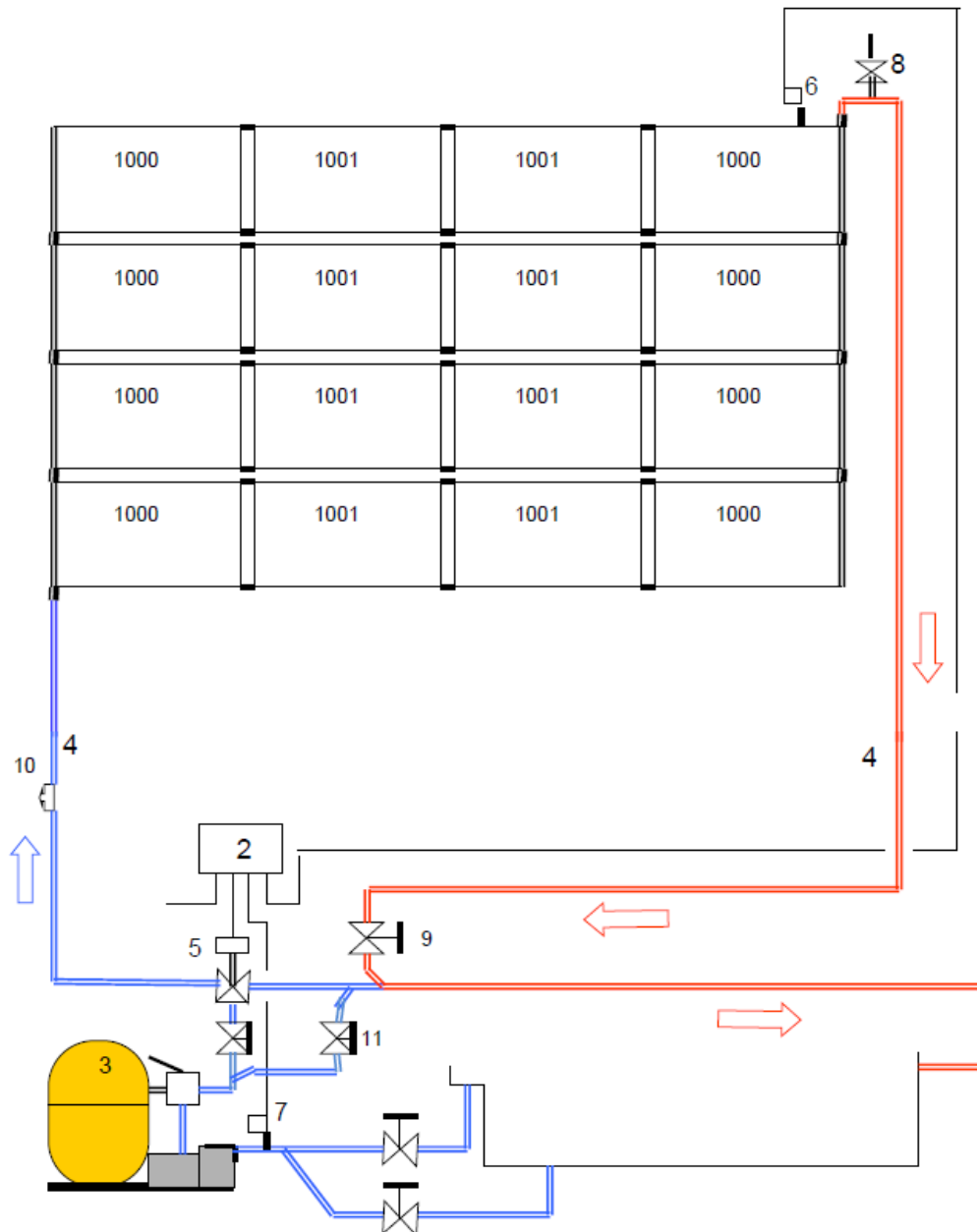
Recommended is a flow rate of 150 up to 250 l/m<sup>2</sup> absorber surface per hour. The necessary pump type can be easily determined. The capacity is calculated: absorber surface x 200l. The delivery head is the difference in height between the water level and the absorber panel plus approx. 5m.

## Space requirement for OCEAN Solar Absorbers:



We recommend to read the following instruction thoroughly before starting the installation and to make a plan of how to connect the absorbers in case your arrangement of absorbers differs from the example shown below. This example represents a system with 16 OKU absorbers in 4 lines at 4 items. Depending on the size of your swimming pool and the area available for the absorbers numerous other schemes of installation are also possible.

**Warning: flow rate maximum 250 Liters / hour per panel**



Operation with filter pump via three-way motor ball valve with difference-temperature regulation

- |  |                                      |                                |
|--|--------------------------------------|--------------------------------|
| 1) OKU absorber                          | 5) Three-way motor ball valve        | 9) Stop cock (downdraft brake) |
| 2) Difference-temperature regulator OE 1 | 6) Temperature sensor, absorbers     | 10) Drain cock                 |
| 3) Filter installation                   | 7) Temperature sensor, swimming pool | 11) By-Pass                    |
| 4) Solar circuit forward and return      | 8) Vent valve                        |                                |

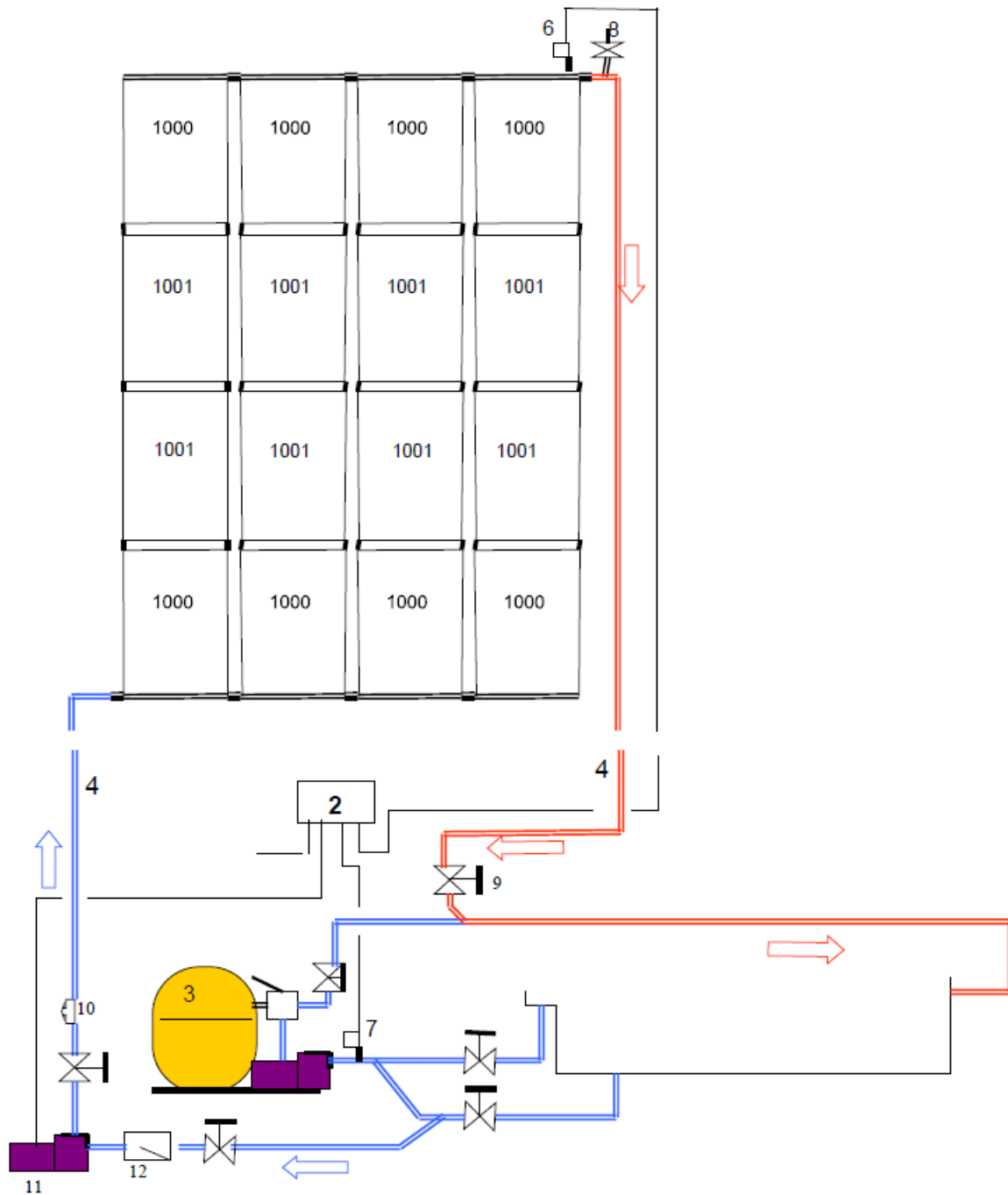
If pump power is stronger than 250 Liters/hour per panel a by-pass must be installed, otherwise there is the risk of too much pressure in the panels.

**If not observed warranty will not be recognized**

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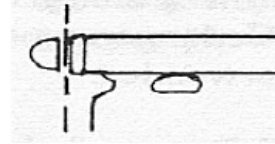


Operation with additional pump and difference-temperature regulator

- |                                     |                                      |                            |
|-------------------------------------|--------------------------------------|----------------------------|
| 1) OKU absorber                     | 6) Temperature sensor, absorbers     | 10) Drain cock             |
| 2) Difference-temperature regulator | 7) Temperature sensor, swimming pool | 11) Pump for solar circuit |
| 3) Filter                           | 8) Vent valve                        | 12) Non-return valve       |
| 4) Solar circuit forward and return | 9) Stop cock (downdraft brake)       |                            |

**Installation of the system**

1. OKU-Absorbers are supplied with connecting pieces that are opened diagonally. If further connections are required to connect the absorbers in series only the cap has to be cut off.



2. Place the OKU-Absorbers on the designated areas in the arrangement that is desired and connect them with hose connections and hose saddles according with the scheme of connection. In case of steeper sloping roofs roof fastenings must be carried out simultaneously to prevent absorbers from slipping away during installation.



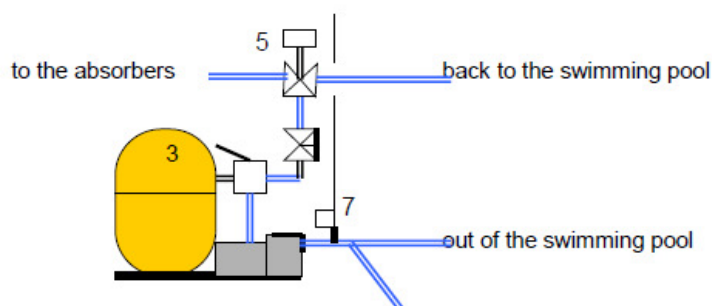
3. To make circuit points for supply and return fuel lines. Glue the hose nozzle into the elbow or the socket and add it with the hose coupling on the absorber. If you take a pipe dia. 50 mm or bigger you have to glue a reducing.



4. Vent valve (8): The vent valve must be installed vertically. Glue in connection correspondingly and screw in vent valve.



5. Install 3-way valve (5) behind filter pump (3).



6. Put tee for collector forerun into pipe leading to the pool. Glue Stop cock (9) - downdraft brake into forerun pipe



7. Construct and fix forerun and return travel of collector (4). If for winter a drain cock is needed glue a reducing tee with reducing piece 1/2" for the drain cock.



8. Regulation: Please take a look at the instruction for installation and operating for the difference-temperature regulation and the three-way motor ball valve respectively the pump. Attention should be paid to the accomplishment of electrical installation. Swimming pools systems have to be equipped with a earth leakage circuit breaker.

Fasten collector sensor (6) to absorber with clamp. Glue reducing tee with nipple 1/2" for swimming pool sensor (7) into pipe coming from the pool and screw in sensor. Fix the difference-temperature regulator and fasten it like the wiring diagram.

Use wires with cross-section 2 x 1 mm<sup>2</sup> to lengthen sensor adaptors.



If you take a pump with more than 600 W charging rate or three-phase pumps, you have to install a contactor.

### Operating Instruction

To start the system adjust the difference temperature to approx. 3 or 4 °C and place the hand switch on automatic. In systems working with filter pumps adjust the filter cycle to the hours of sunshine. Installations with own pump works independent from the filter circuit.

If after a few minutes the system works still with air in it, close the stop cock (downdraft brake) a little until the water escape at the intake nozzle is majority free of air. The stop cock now always stay this way. Additionally you can close the cover cap of the vent valve.

### Operating the system in winter

OKU-Absorbers are frost resistant. Due to the pipes the system must be emptied in winter nevertheless. Usually systems which emptied when they're switched off, don't need any precaution.

### Advice to glue pvc pipes

Glue pvc pipes only if they're absolutely dry. Water, condensates and humidity prevent a good connection.

Don't glue under a Temperature of 5°C. The time for drying is circa 24 hours, do not use it with pressure before.

Clean ends and fittings with a cleaner. Glue both parts the same way. Take a flat brush.

It's important to disperse the glue lengthwise from the inside to the outside.

Directly after apply the glue you have to plug ends and fittings together.

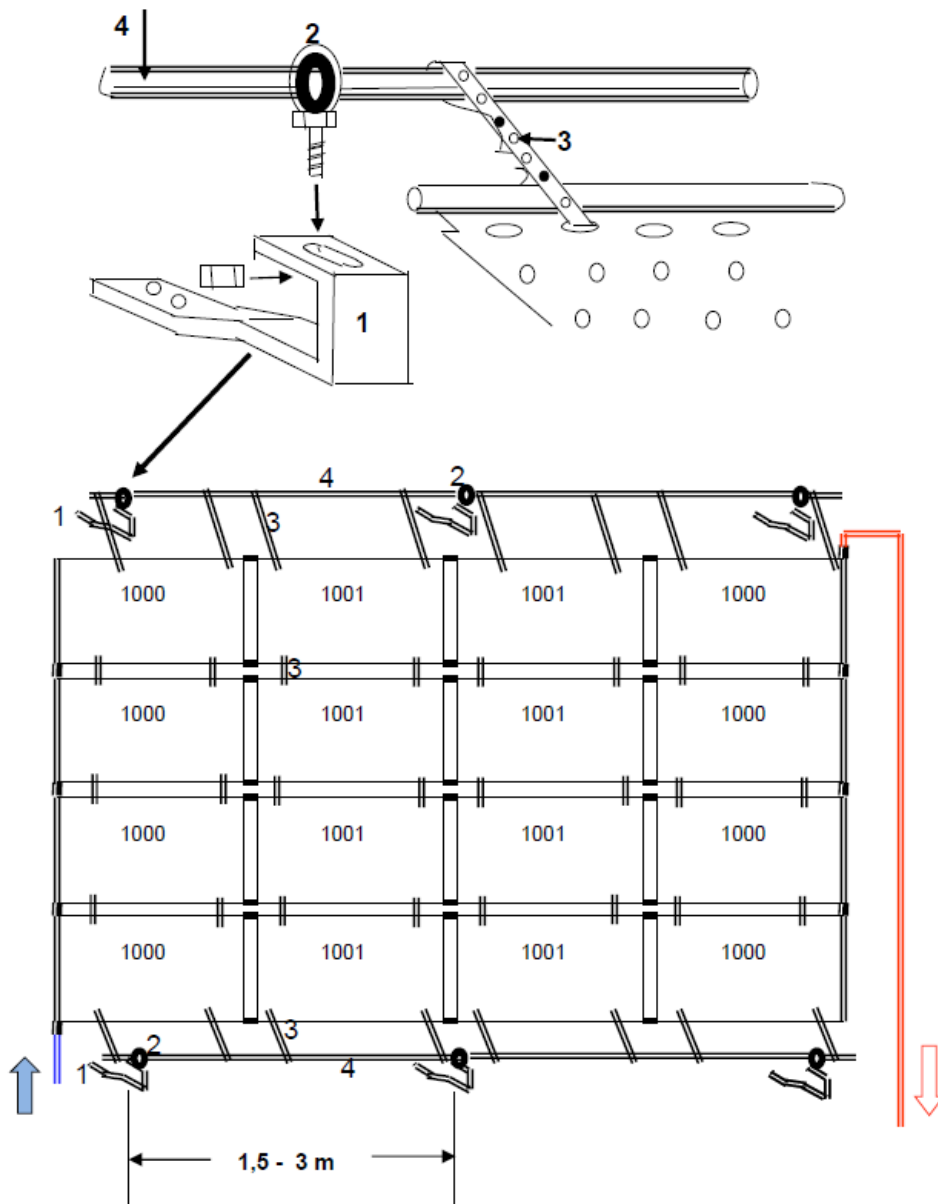
Take of the surplus glue. Clean the brush with cleaner.

**Attention:**

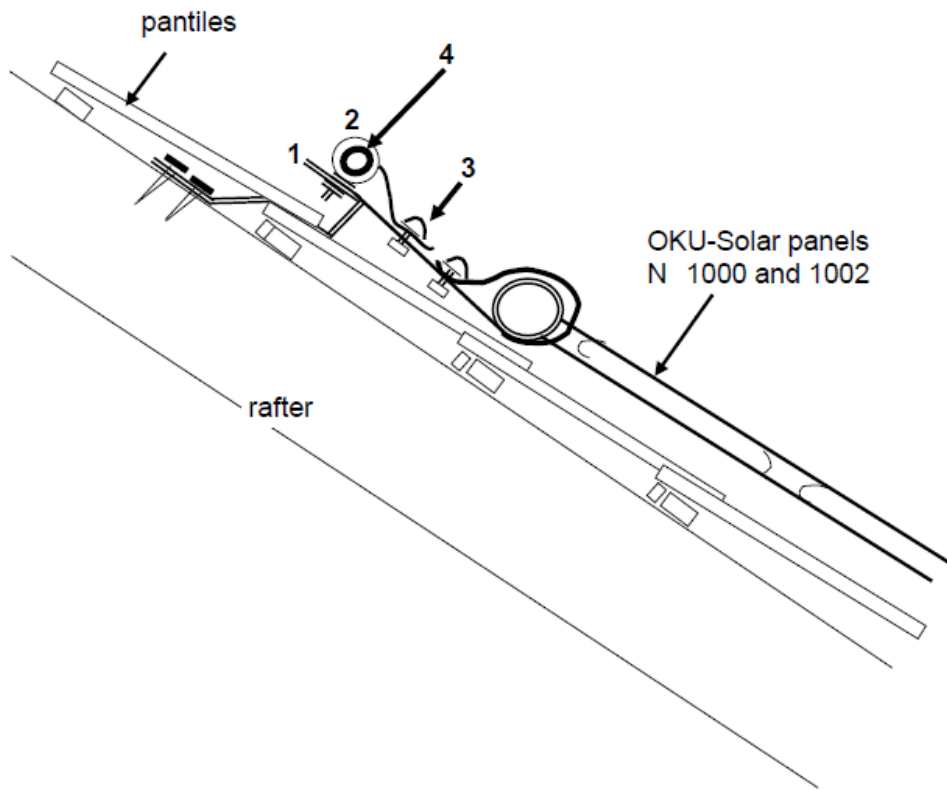
because of the thermal expansion the panels may not be screwed tightly

**How to fasten on a pantiles tiled roof**

1. Hook for pantiles tiled roof Art.N° 3212
2. Screw-in pipe clamp 1/2" zinc plated with a gum inlay Art.N° 3213
3. Perforated tape zinc plated 12 x 1 Art.N° 3210 with a screw 5 x 16 Art.N° 3211

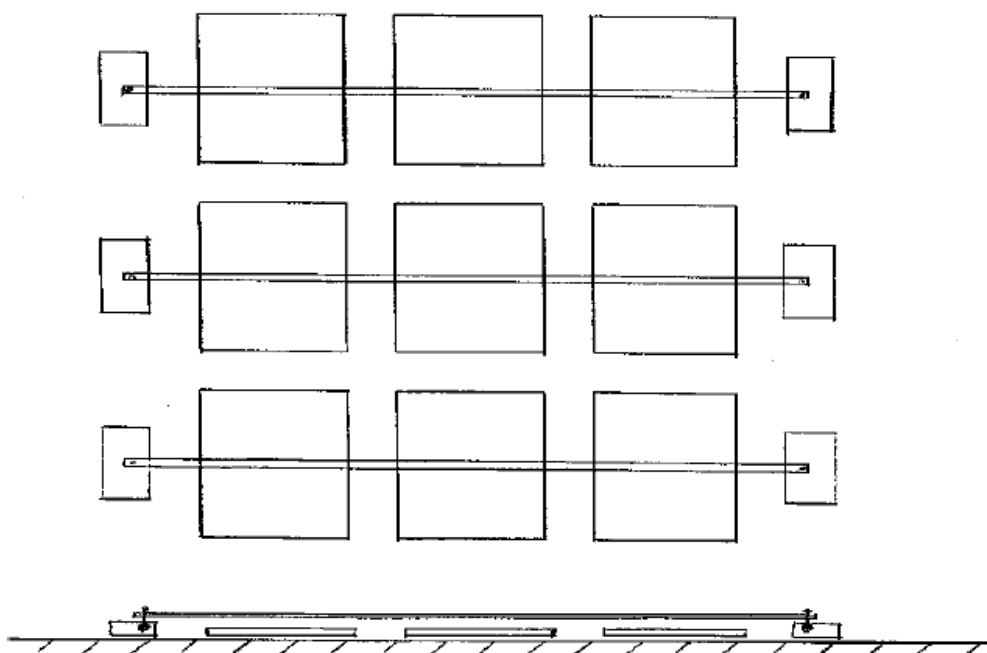






#### How to fasten on a flat roof

On a flat roof you have to safe the OKU-Solar panel against the wind. Therefore you can stretch a wire rope or a perlon-hurry against the absorber field at intervals of circa 2 m and anchor it on the edge of the roof. You also can weigh the absorbers down directly or you can fasten them with garden-plates and U-profiles. Take a look at the diagram below.





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## **How to fasten it on a sloping roof (slated roof or cement asbestos roof)**

The fastening on a slated or cement asbestos roof is comparable with the fastening on a tiled roof. But you have to screw-in the ring-screw through the roofing into the foundation. If you have a wooden foundation screw it into the boarding or battens. If you bore slate or cement asbestos you have to do it without the slugging device to get around splitting the plates. After screw-in the screw you have to seal it up with silicone or another sealing compound like this.

**Fixation of OKU-Solar panels on a tile roof with universal mounting strap**

- 1 Art. N° 3217 universal mounting strap, stainless steel
- 2 Art. N° 3211 screw with bold M5x16
- 3 Art. N° 3210 perforized band, screw with bold

