OKU solar heating for swimming Pool

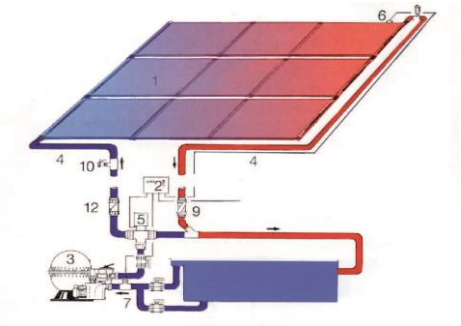
Instruction for installation an operating

Introduction

Solar heating for swimming pools with OKU-Absorbers normally will be operated with a direct circuit. The water from the pool will be pumped directly through the absorbers. The use of a heat exchanger is not necessary.

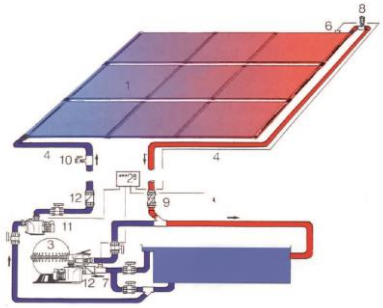
Different configurations of OKU swimming pool solar heating

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



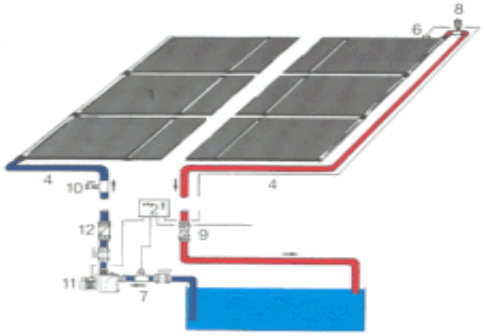
This configuration can usually be selected if the absorbers are not to be set up higher than 6 m above the surface of the water. The three-way motor ball valve is integrated into the pressure line of the filter installation. Because of the difference-temperature regulation the ball valve is changed over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

B) Operation with own pump an difference temperature regulation integrated into the filter circuit



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

C) Operation with own pump and difference-temperature regulation - piping independent of filter circuit



This configuration is chosen when the filter piping is difficult to access. The water is sucked out of the swimming pool by an immersion pipe, pumped through the absorbers, and the warmed water is conducted back into the swimming pool. Here again the difference temperature regulation ensures that the pump only runs to win energy. If the pump is mounted above the water level and the delivery head is more than 5 m, a non-return valve should be incorporated.

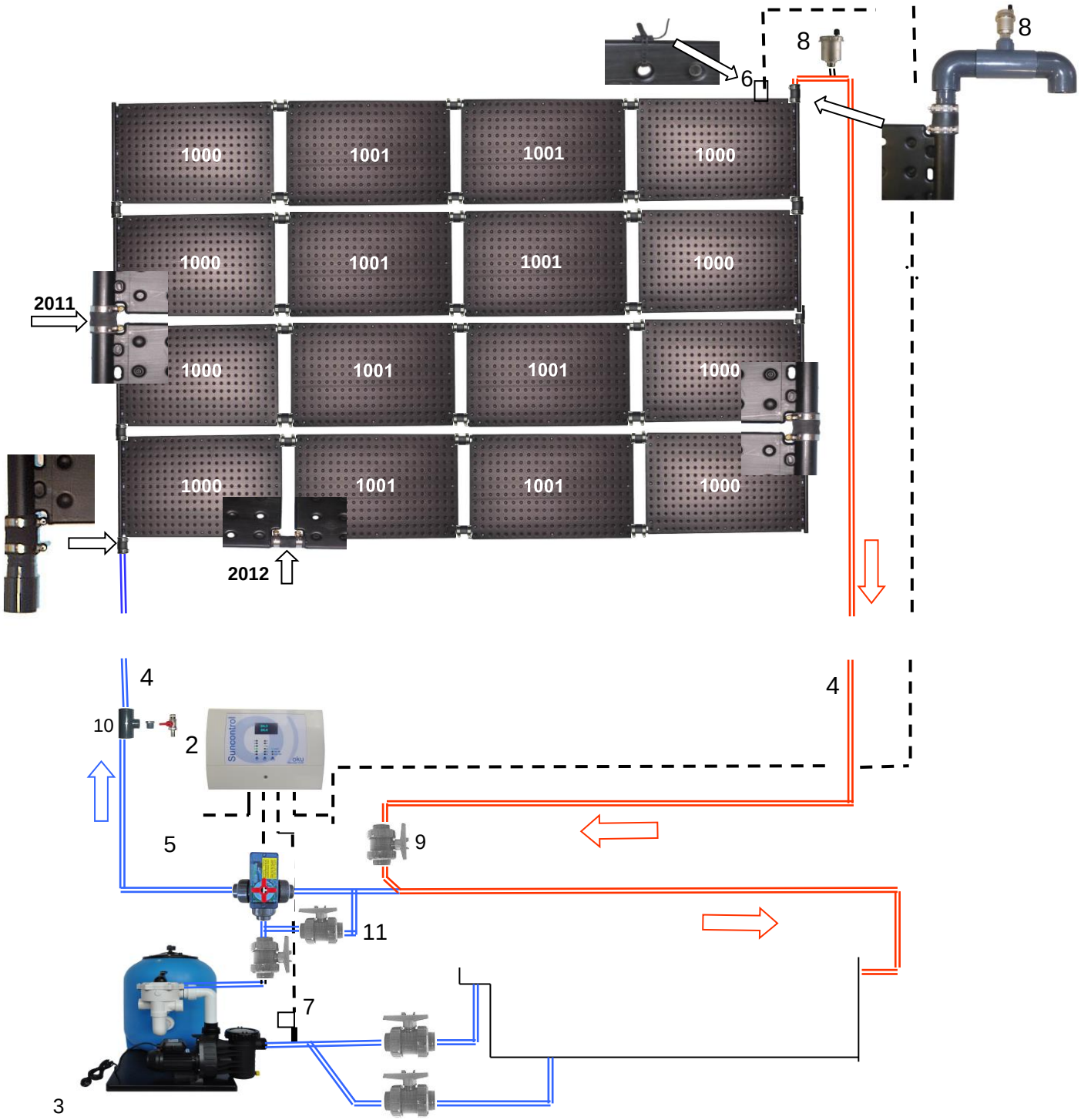
1) OKU-Absorber
2) Difference-temperature regulation OE 1
3) Filter installation
4) Solar circuit forward and return
5) Three-way motor ball valve
6) Temperature sensor, absorbers
7) Temperature sensor, swimming pool
8) Vent valve
9) Stop cock (downdraft brake)
10) Drain cock
11) Pump for solar circuit
12) Non-return valve

The water of the swimming pool can flow through the OKU absorbers in either direction, so they can be mounted both lengthwise and side by side. The individual rows of absorbers are connected on a Tichelmann principle (same routes for each row). It is not advisable to connect more than ten absorbers in series.

Example according to version A)

We recommend to read the following instructions 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**

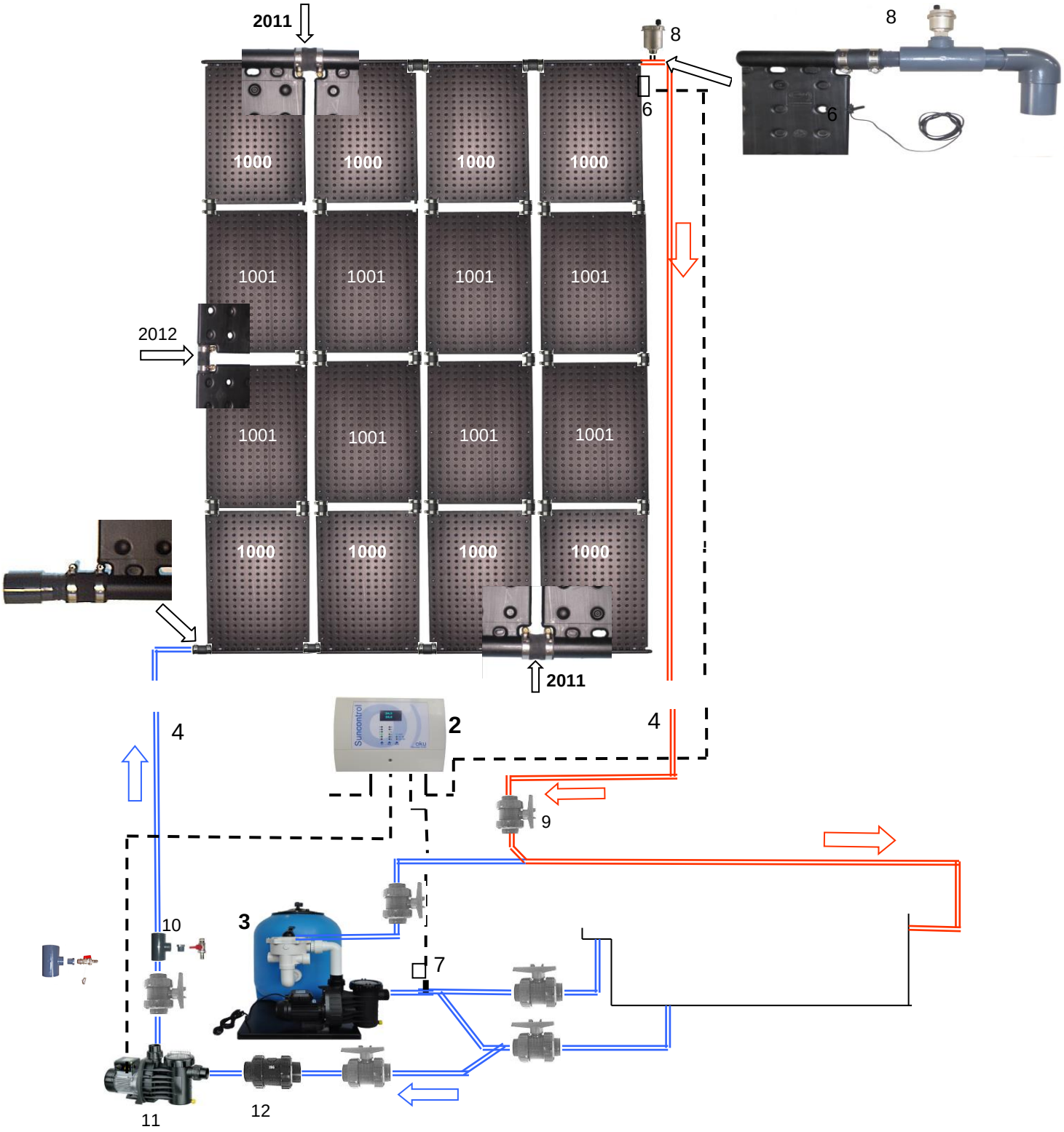
Operation with filter pump via three-way motor ball valve with difference-temperature regulation



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

If pump flow rate is higher 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, a warranty will not be recognized

Operation with additional pump and difference-temperature regulator



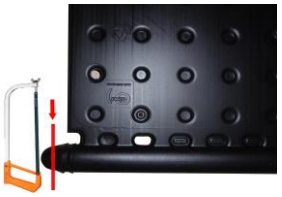
1) OKU absorber
2) Difference-temperature regulator
3) Filter
4) Solar circuit forward and return
6) Temperature sensor, absorbers
7) Temperature sensor, swimming pool
8) Vent valve
9) Stop cock (downdraft brake)
10) Drain cock
11) Pump for solar circuit
12) Non-return valve

Pump flow rate maximum 250 Liters/hour per panel
otherwise there is the risk of too much pressure in the panels.

If not observed, a warranty will not be recognized

Installation of the system

1. OKU-Absorbers are supplied with a onesided closed header.
If further connections are required to connect the absorbers parallel to one another, simply cut off the cap.



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 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.

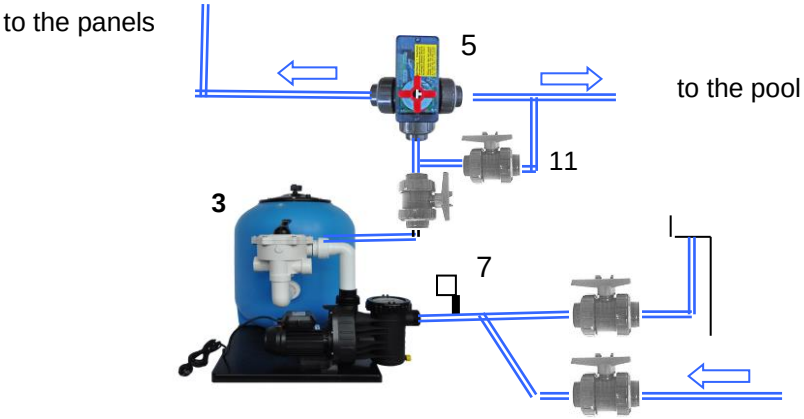
3. To make circuit points for supply and return lines, glue the hose nozzle into the elbow or the socket and add it with the hose coupling on the absorber. If you use a pipe dia. 50 mm or bigger, you have to glue a reduction piece into place.

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

panels mounted vertical

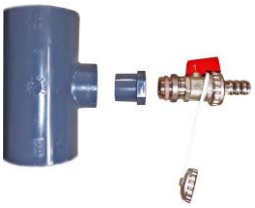
panels mounted horizontal

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



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


7. Construct and fix flow line 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.



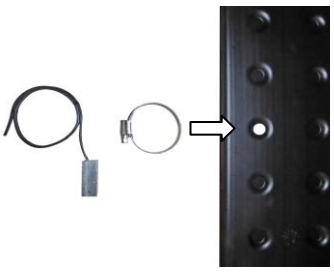

8. Regulation: Please take a look at the instruction for installation and operating for the difference-temperature regulation and the three-way motor ball valve in connection with the pump. Close attention should be paid to the manner of the electrical installation. Swimming pool systems have to be equipped with an earth leakage circuit breaker.
Fix the difference-temperature regulator and connect it according to the wiring diagram.
Use wires with cross-section 2 x 1 mm² to lengthen sensor adaptors.

Temperature sensor panel (6): fasten panel sensor (6) to the panel

Suncontrol


Suncontrol
Pumps that have more than 2000W power intake and three-phase current pumps should install a security switch.

Minisol, Solax, Digisol, Kombisol




Minisol, Solax, Digisol, Kombisol
Pumps that have more than 600W power intake and three phase current pumps should install a security switch

Temperature sensor pool (7):

Glue reducing tee with 1/2" nipple for swimming pool sensor (7) into pipe coming from the pool and screw in sensor


Operating Instruction

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

If after a few minutes the system still operates with air in it, close the stop cock (downdraft brake) a little until the water escapes at the intake nozzle and is free of air. The stop cock should now be left in this position. 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 that are emptied once they are switched off, do not need any further precautions.

Advice to glue pvc pipes

Glue pvc pipes only if they are absolutely dry. Water, condensation and humidity prevent a good connection.

Do not glue under a Temperature of 5°C. The time for drying is approximately 24 hours.
Do not use the pvc pieces under pressure before that time.

Clean ends and fittings with a cleaner. Glue both parts the same way. Use a flat brush.
It´s important to disperse the glue lengthwise from the inside to the outside.
Directly after applying the glue, you have to plug ends and fittings together.
Take off the surplus glue. Clean the brush with cleaner.

Fastening the panels on the roof

Warning:

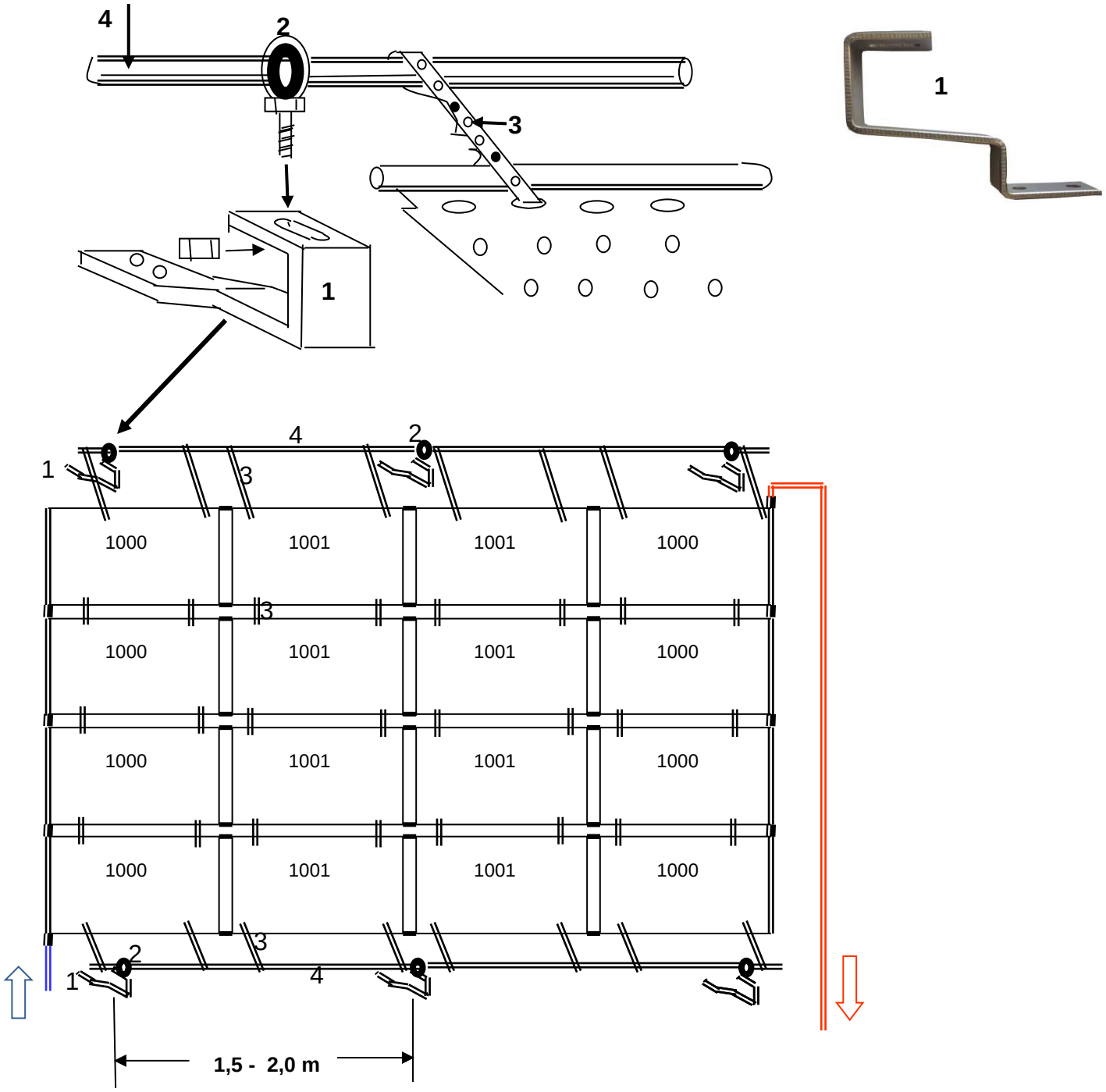
because of the thermal expansion, the panels may not be screwed to fastening surface.

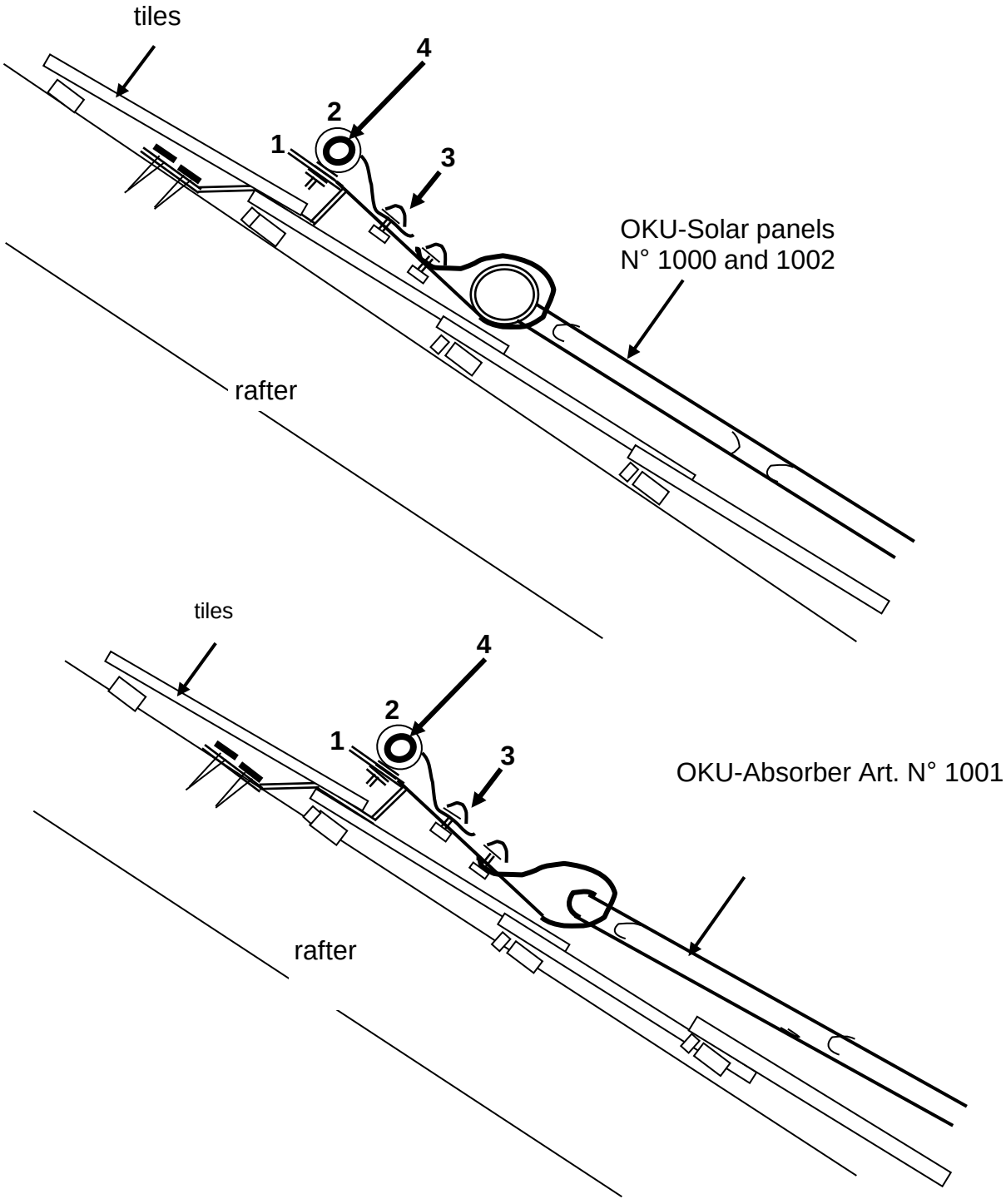
Thermoplastic material (HDPE) in comparison to metal and duroplastic proves to have a higher coeffient thermal expansion. For this reason, the fastening of the panels must be done in a flexible manner. In extreme cases temperature differences of up to 100° C may occur. For example, in summer as high as 80° C and in winter as low as -20° C. Calaculation Formula: Heat expansion = 0,20 mm x Length of Part x Delta T

Example for 1 OKU panel - Longitudinal change by 30° C temperature change
0,20 x 1,3 m x 30° C = 7,8 mm

How to fasten on a tiled roof

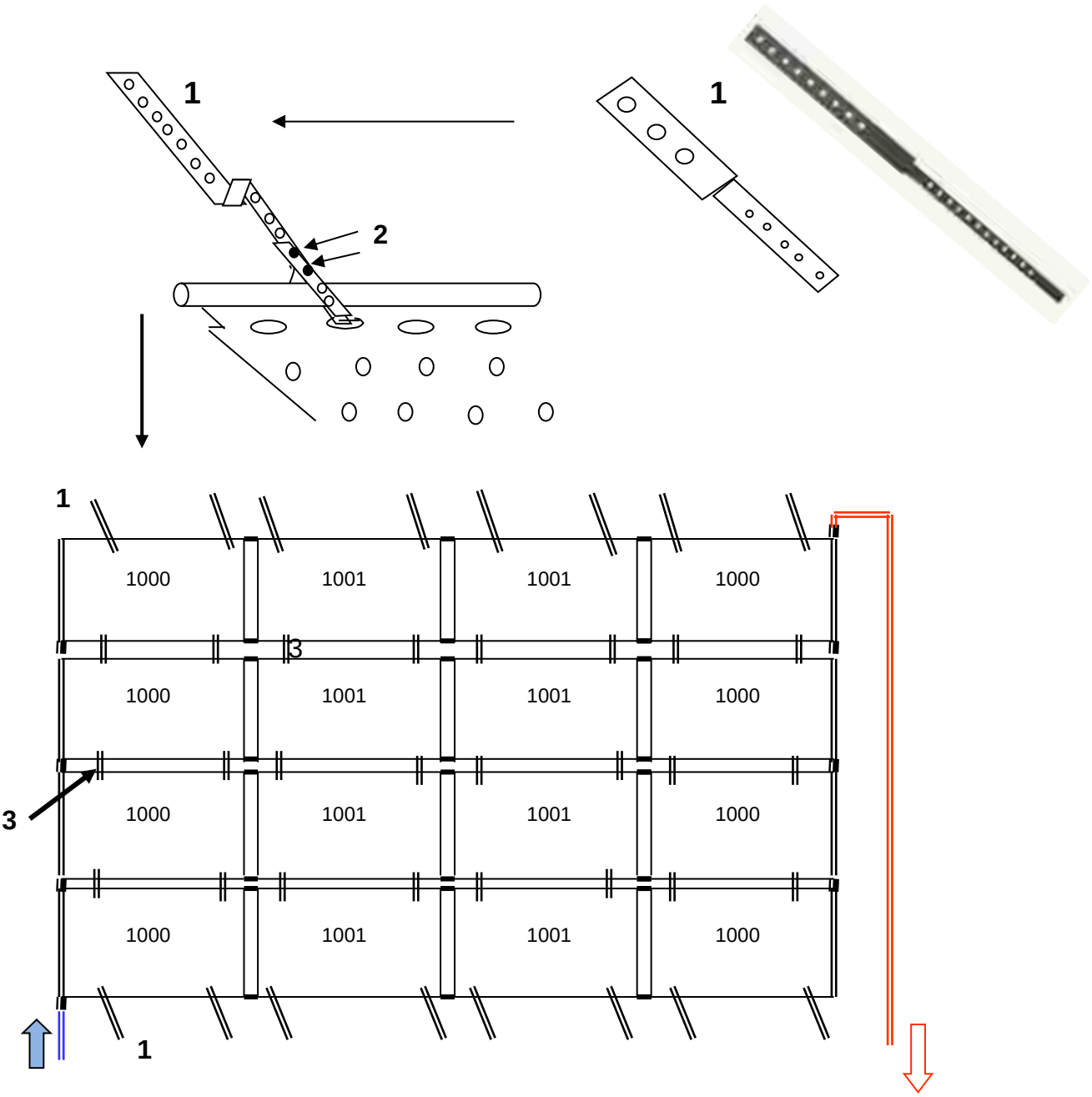
1. Hook for tiled roof Art.N° 3212
2. Screw-in pipe clamp 1/2" zinc plated with a rubber inlay Art.N° 3213
3. Perforated zinc plated tape; 12 x 1 Art.N° 3210 with a screw 5 x 16 Art.N° 3211
4. galvanized pipe 1/2" or stainless steel

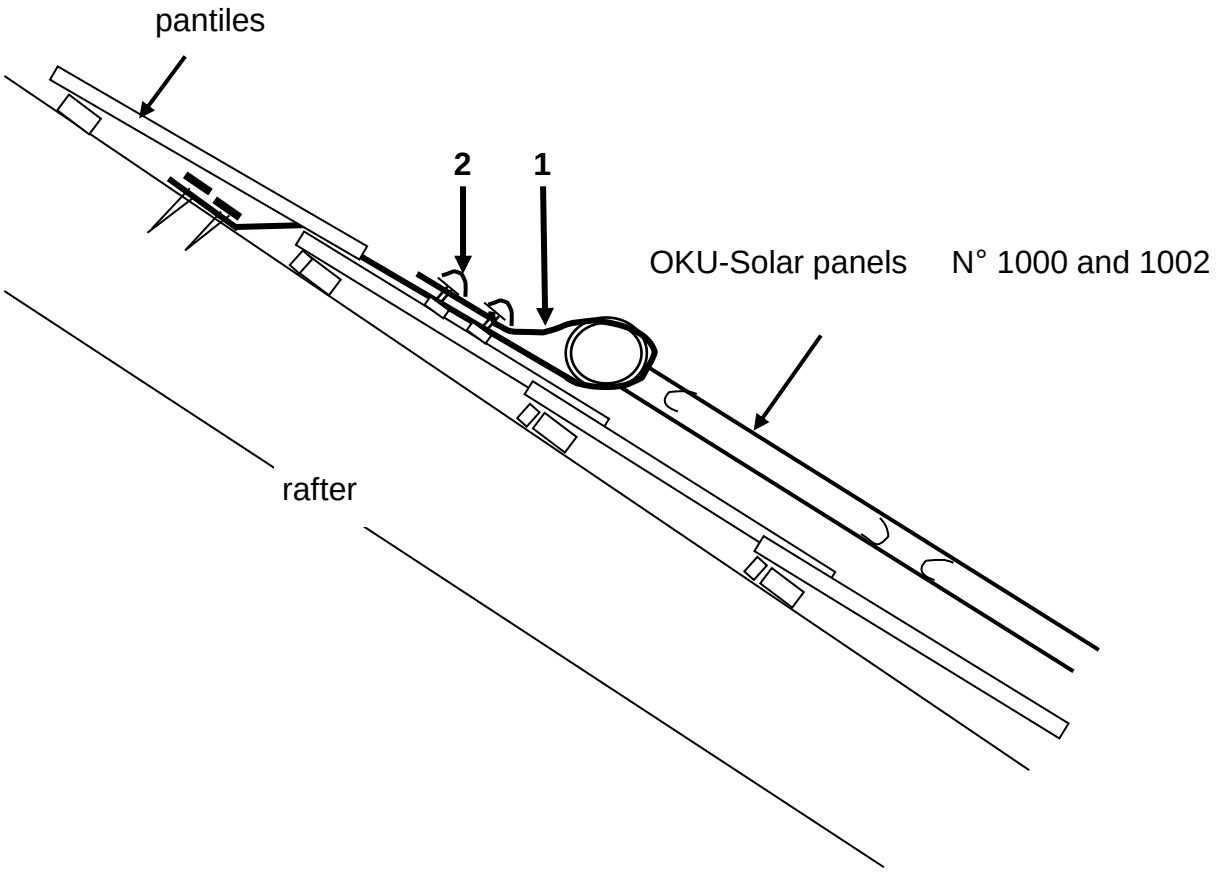


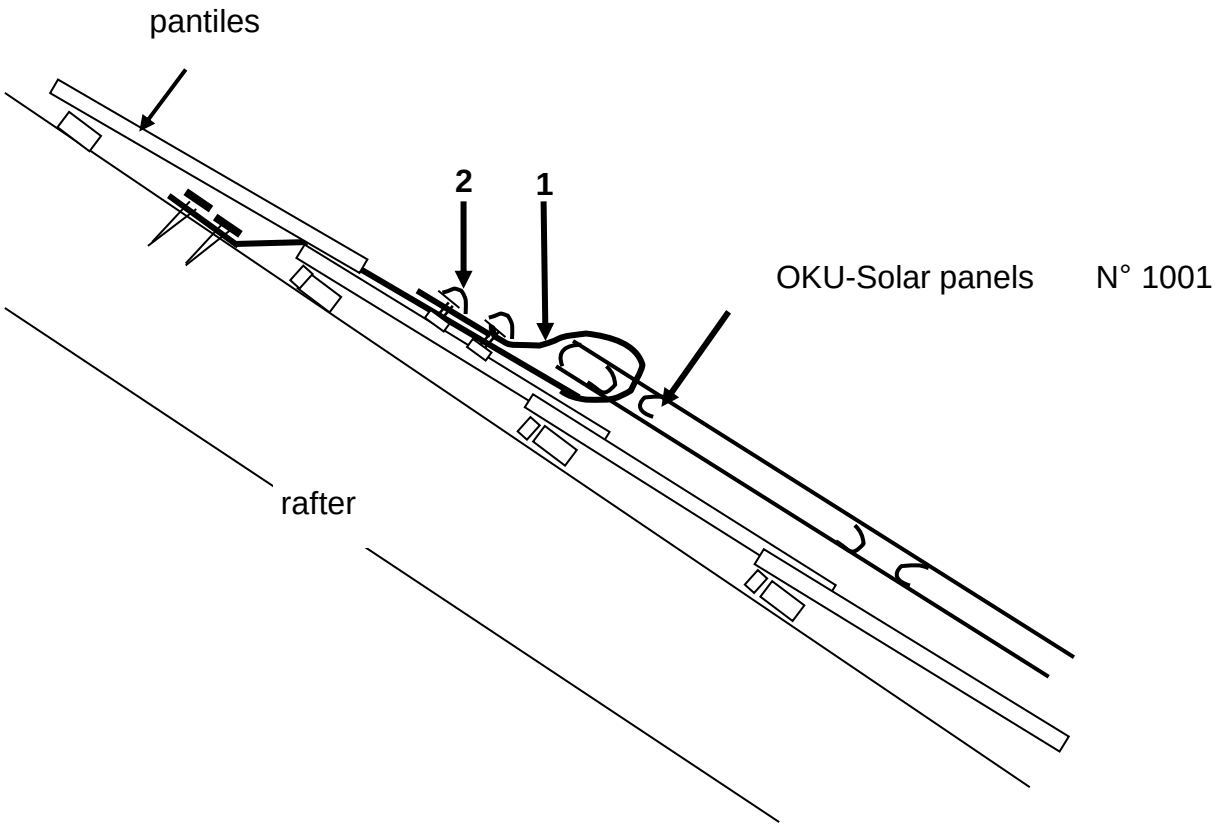

tiles
4
2
1
3
OKU-Solar panels
N° 1000 and 1002
rafter

tiles
4
2
1
3
OKU-Absorber Art. N° 1001
rafter

Fixation of OKU-Solar panels on a tile roof with universal mounting strap Item N° F3217

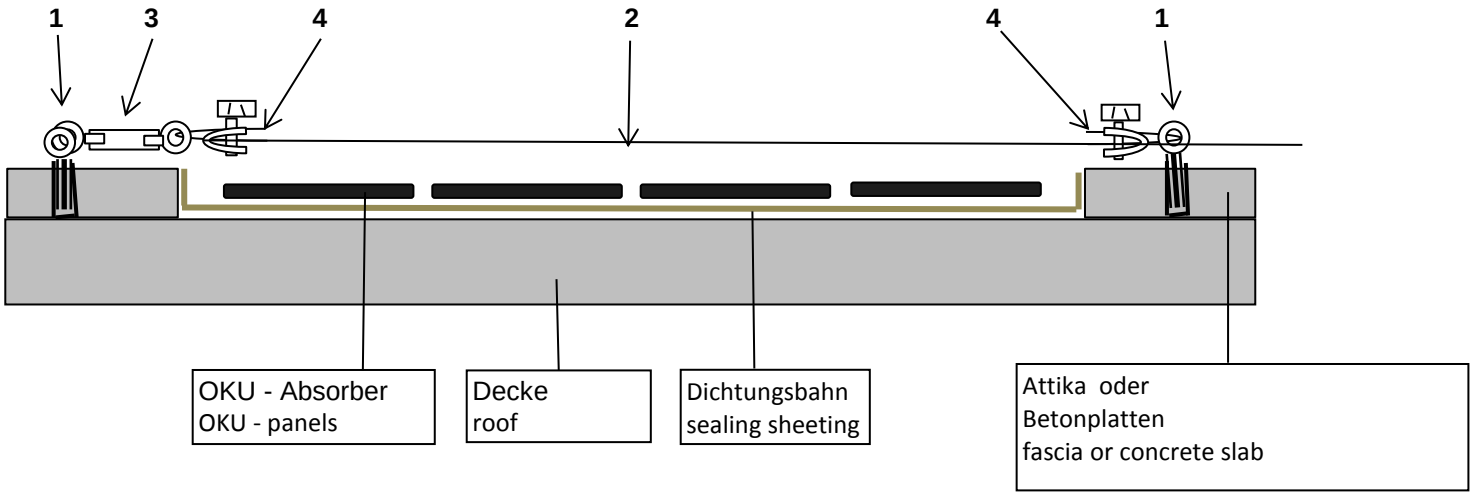


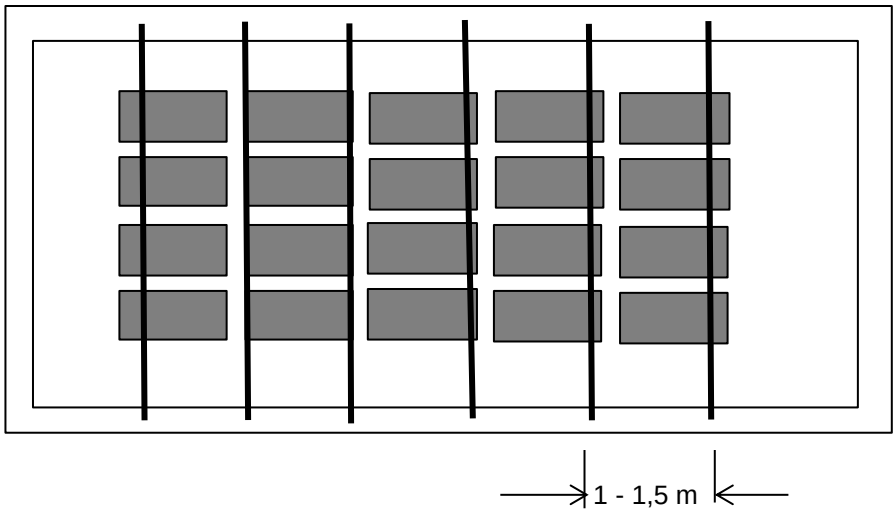

pantiles
2
1
OKU-Solar panels N° 1000 and 1002
rafter


pantiles
2
1
OKU-Solar panels N° 1001
rafter

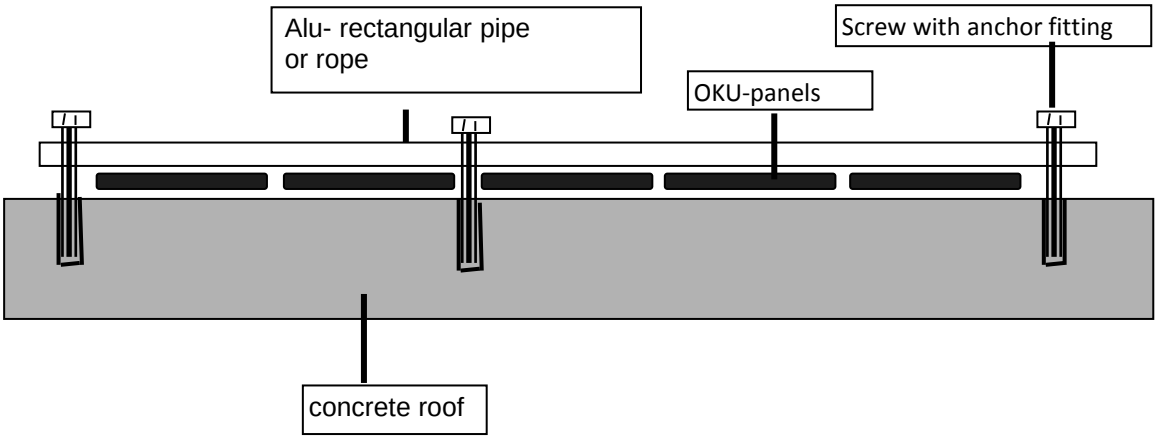
Fastening of OKU-Panels on flat roofs with set F 3219

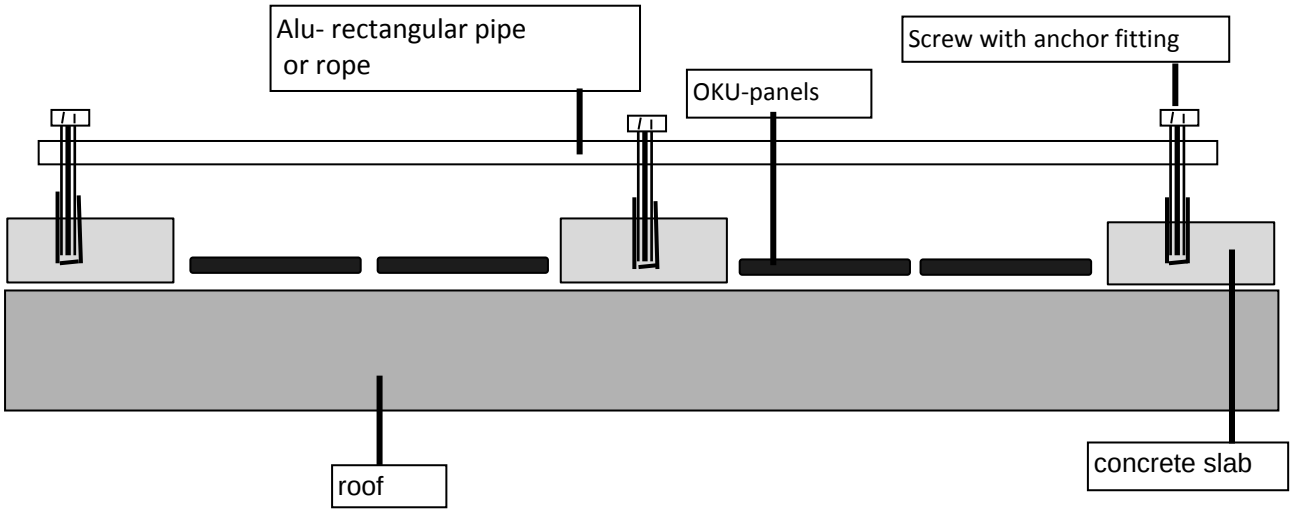
1 ring bolt innox
2 steel rope innox
3 tightener innox
4 rope clamp innox





Proposal on site fastening of OKU-panels on flat roofs fom concrete





Roof fastening on sloped roofs of slate or cement asbestos

Fastening of OKU panels on slate or cement asbestos is similar to that of a tiled roof. However ring bolts must penetrate through the roofs layer and be screwed into the roofs fundement.
For roofs with a wooden fundament, it is the same. Be sure to secure into the sheating and firring.
In order not to crack slate or cement asbestos, it is important not to use the "hammer mode" when drilling.
After securing the screws, it is advised to use a silicone sealing compound for best results.

Qualität hat einen Namen
oku
Obermaier GmbH

OKU Obermaier GMBH
Sudetenstr. 82

D- 82538 Geretsried

Tel. +49 (0) 8171 93520
Fax +49 (0) 8171 909295
mail info@okuonline.com
www.okuonline.com