

Destination:

KS2000 collector is a direct flow flat plate collector, designed to receive the energy coming from solar radiation. It may be used for heating the usable water, water in swimming pools as well as for supporting the central heating systems.

Technical Data:

- dimensions.....2019 x 1037 x 90 mm
- weightKS2000 SP, SLP - 39 kg / KS2000 TP, TLP - 40 kg
- max work pressure.....6 bar
- recommended flow.....1,2÷1,9 l/min per one collector (it should be multiplied by the number of collectors in one battery; for example: 2x KS2000 – 2,4÷3,8 l/m, 5x KS2000 – 6,0÷9,5 l/m)
- pressure drop.....400 Pa

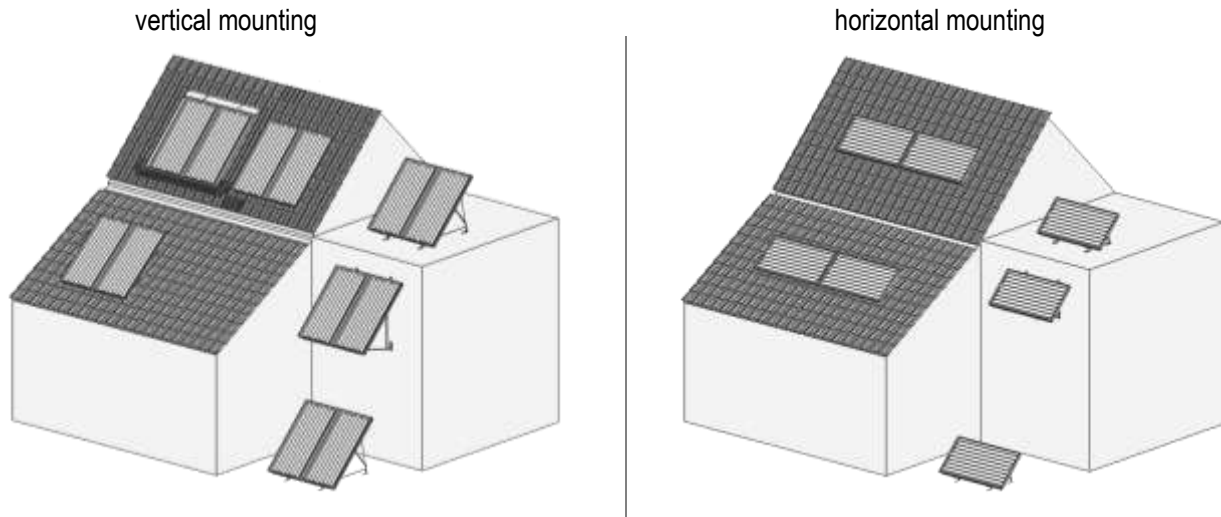
Transportation and storage:

Collectors must be transported in a horizontal position, the glass on top, or vertically. In the case of horizontal transport and storage, stacked piles may have no more than 15 pc. In the case of vertical transport and storage, it may only be a complete pallet filling. The exception is solar set, placed on a collective pallet. During transport all precautions are to be taken to prevent any movement of the collectors.

The assembly description:

KS2000 collectors can be installed according to the following examples. For installation, use selected and supplied by the manufacturer installation kit. Detailed installation instructions will be provided with an appropriate mounting system.

The advised angle of the collector to the horizontal line is $45^{\circ} \pm 15^{\circ}$



Precautions to be taken during mounting, maintenance and operations of installation:

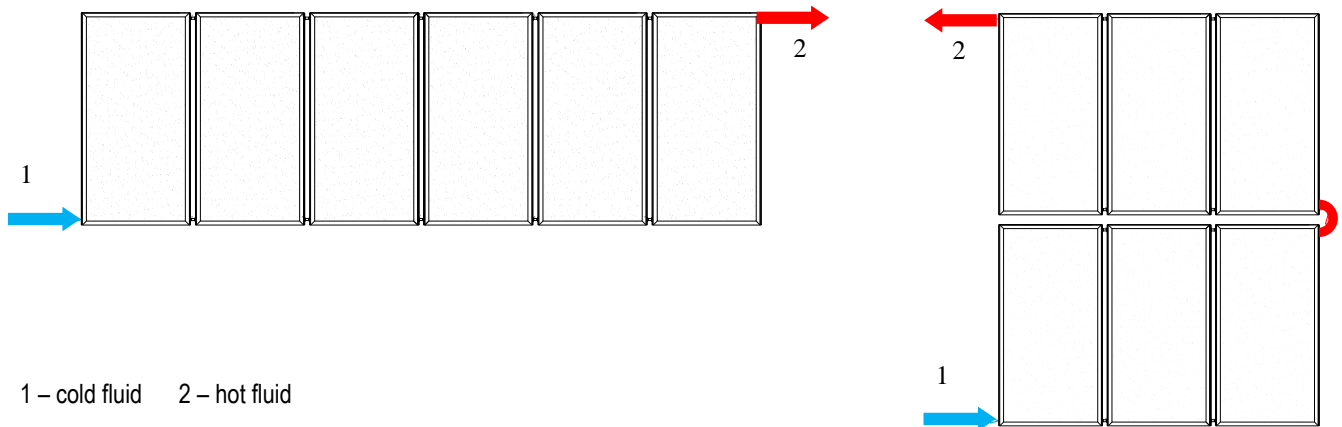
- **WARNING!** During filling the installation, keep all precautions recommended by the manufacturer of the liquid.
- When refilling, maintenance of installation attention should be paid to the temperature of the liquid to prevent possibility of scalding.
- During operations of installation, especially during stagnation, collector elements and pipe installation are very hot. Attention should be paid to prevent possibility of scalding
- Do not place in the sun unfilled collector. If necessary, cover collector with non-transparent material, protecting it from sunlight. Installation can be filled only in the absence of solar radiation (high cloudiness) or when the collector is covered.

Notices regarding the assembly of KS2000 solar collectors

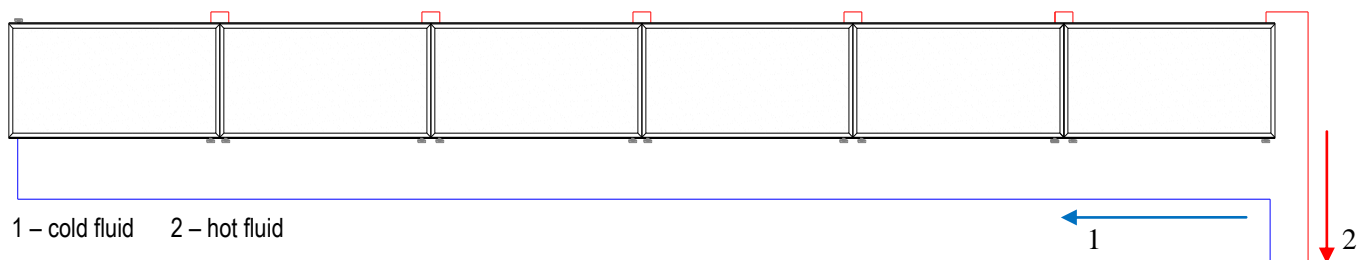
1. KS2000 solar flat plate collectors can be mounted vertically or horizontally remembering about correct connection of the hydraulic system. When installing solar collectors in the vertical position the intake (cold fluid) should be at the bottom of the collector and the outlet (hot fluid) diagonally at the top. When installing solar collectors in a horizontal position an individual basis provided by the manufacturer should be used.

2. Collectors are to be mounted on roofs with original **KSAL (KSOL) universal or adjusting handles**. These should be chosen according to the angle of the roof or the flat surface.
3. **Universal constructions KSOL** offered by the producer are to be used for installation of the collectors on flat roofs and ground. For mounting on the ground there is an additional ground basis for the universal construction, which must be used.
4. **Flashing for flat collectors** is to be used for the roof integrated installation of the collectors KS2000.
5. Collectors may be connected in series of up to 5 pieces using the hard pipe unions and up to 8 pieces using the flexible pipe unions. If there are more collectors, the previously connected sets should be connected in parallel order. To keep the steady flow in particular sets, an equal amount of collectors should be used in those sets. Horizontal mounting should be always consulted with the producer.

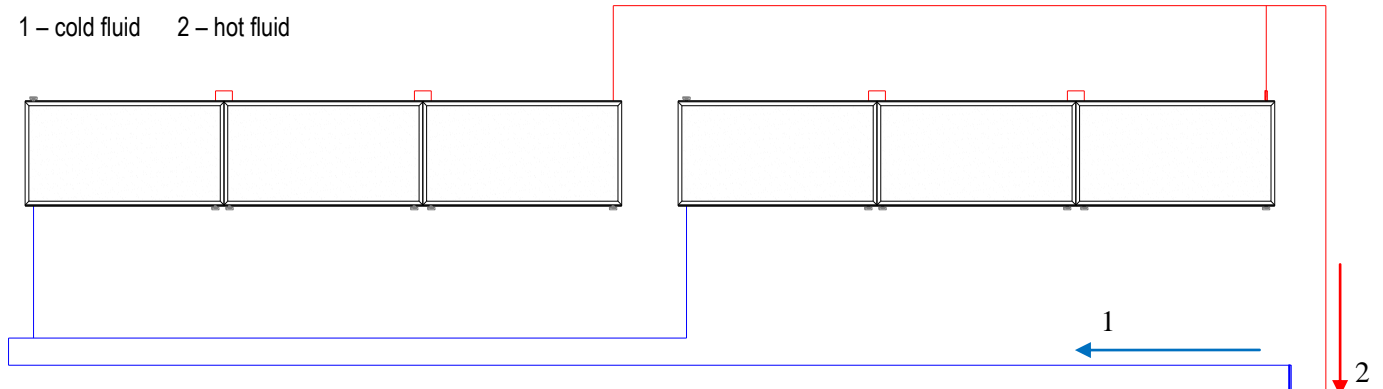
a) series connection / vertical mounting



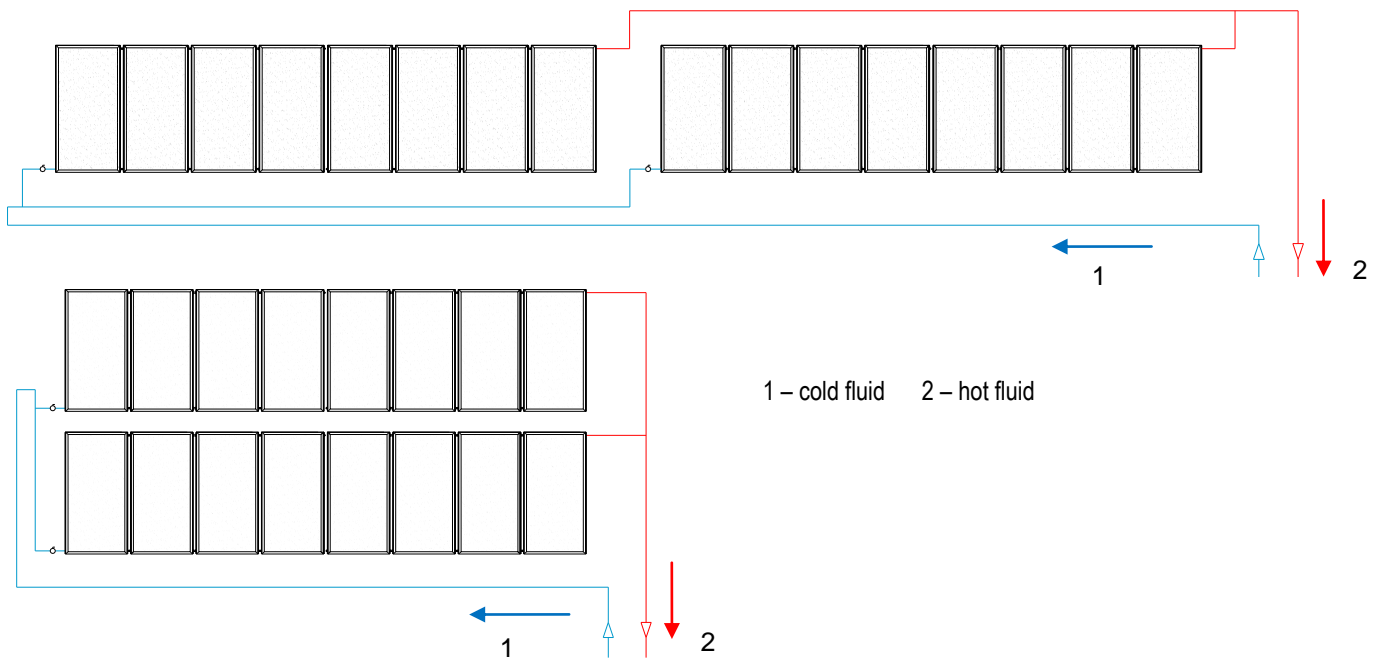
b) series connection / horizontal mounting



c) parallel connection / horizontal mounting



6. To create a hydraulic connections use a copper, steel or stainless steel pipe. The use of plastic pipes or multilayer plastic pipes is not allowed.
7. The groups of more than 8 collectors (more than 14.56 m²) should be connected in batteries, composed of an equal number of units (max. 8) using a special connection sets, for example, 2x5, 2x6, 3x4, 2x8, 4x5 , etc. It is recommended to use the original mounting handles or constructions (see paragraph 2-3). **Parallel mounting of collectors can be made only after prior consultation with the manufacturer. Individual guidance will be provided in accordance with the requirements of the project.**



8. The diameter of connection pipe in following case should be:
 - set 1×KS2000 – 4×KS200 connection pipe of diameter DN16mm
 - set 5×KS2000 – 8×KS2000 connection pipe of diameter DN20mm
 - set 9×KS2000 – 12×KS2000 connection pipe of diameter DN25mm
 - set > 12×KS2000 connection pipe of diameter > DN 25mm, project requirements should be regarded.
9. After mounting the system, before its activation, the temperature of solar collectors should be reduced through protecting them from solar radiation. The protection may be provided through covering the vacuum tubes with non transparent, waterproof material.
10. To fill the installation use antifreeze liquid made of non-toxic propylene glycol with appropriate freezing point. For filling the installation, only fluids with appropriate additives as corrosion inhibitors should be used. The same fluid must be used for complementing the liquid in the installation as the one used for filling the installation. You should not use a water solution of the glycol, which can cause corrosion of system's elements. Once a year to check the temperature of freezing liquid and check if vacuum tubes are not cracked.
11. Description of the filling procedure is in assembly instruction for ZPS pump control unit. The smooth operation of the installation is dependent on its thorough venting.
12. Whatever the choice of placement of the collector, it is recommended to connect the metal elements of the fastening and of the collector to a lightning rod system, which is made in accordance with local requirements for these systems.
13. It is important to pay attention to proper mounting of the system on the roofs or on the ground. The construction of solar collector and mounting system provide resistance to wind pressure of 550 Pa, including any additional congestion. The construction of solar collector and mounting system will receive by advised angle lower load from snow than form wind.

Pressure drop characteristic of KS2000 collector

