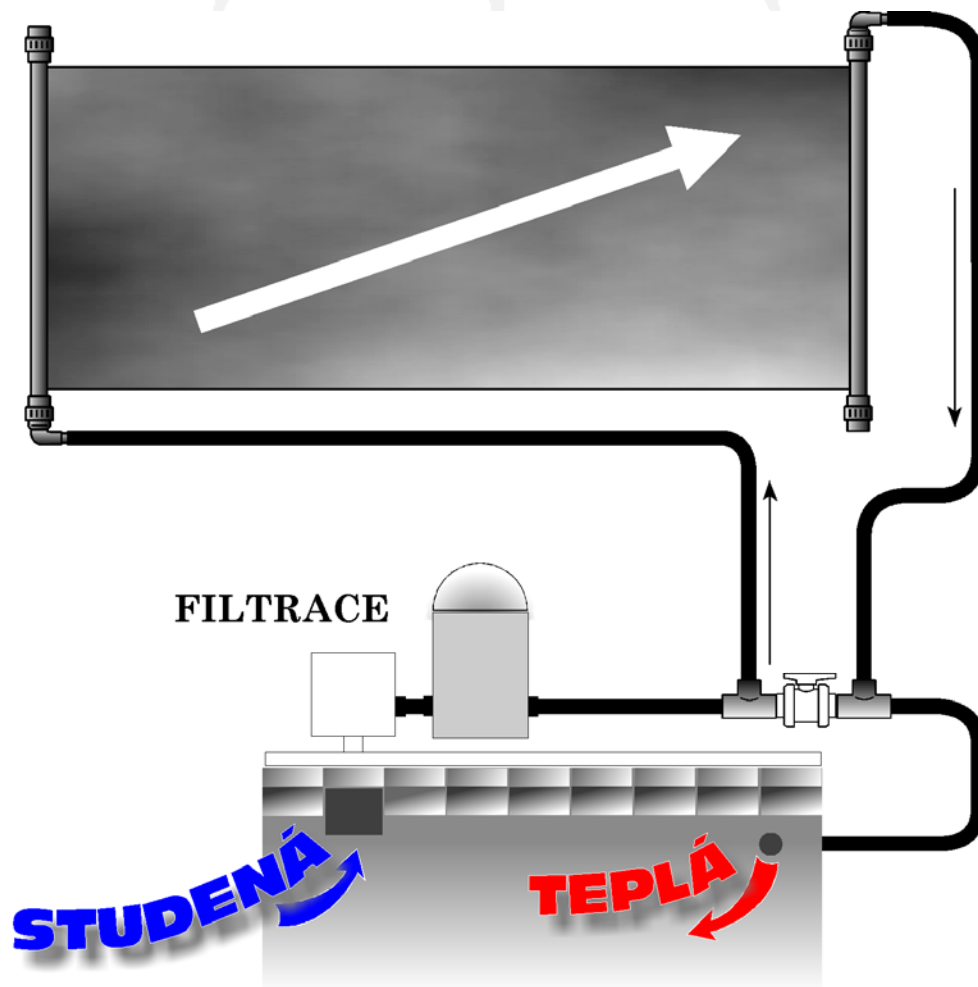


SOLAR

Solar Heating System for Aboveground Pools

INSTALLATION AND OPERATION MANUAL



(Legend: Filtrace = Filtration; Studená = Cold; Teplá = Hot)

PLEASE READ THIS MANUAL CAREFULLY. YOUR ENJOYMENT OF YOUR SOLAR HEATED POOL AND YOUR WARRANTY ARE AFFECTED BY HOW YOUR SOLAR HEATING SYSTEM IS INSTALLED AND USED

CAUTION: a) This solar system can be installed on the roof of a building situated nearby. This installation is, however, by far not as easy as it seems to be. Even if you have a suitable ladder, safety equipment and tools, we recommend you to hire an experienced and specialised firm which have trained staff members for this purpose.

b) When installing collectors on the ground, do not build a rack support that could allow children or animals access into the pool. Without supervision, they could drown!

QUESTIONS AND ANSWERS

How solar pool heating works?

A solar collector absorbs the thermal energy of solar rays and hands it over to water which flows through the collector.

Cold water is drawn from the pool with the help of the filtration system pump into the solar collector. When it is passing through several small rectangular tubes which form the collector, the water is heated and warmer water returns back to the pool. By using this system you can make use of the solar energy for the heating of your pool free of charge. Firm polypropylene does not corrode and it does not suffer from scale sediments either.

When does the solar system work well?

A correctly installed solar system will increase the pool water temperature as much as by 6°C during the season in comparison with the pools without heating. If the weather is cloudy or if it is raining, the solar system will work worse. But it is sufficient to have one or two sunny days only, and the water temperature fast returns to pleasant values.

The pool water temperature should not exceed 30°C. Hot water does not make you too fresh, and it furthermore creates optimum conditions for algae growth. Also certain pool components may have temperature limitations. The liner used in the case of liner pools can soften excessively at higher temperatures. Therefore you should not use solar heating systems when the pool water temperature achieves 30°C.

Where should I put the solar collector?

Place the collector at any place where you can use sufficient amount of direct sun light (at least 6 hours of full sun during the day). The longer the collectors are in the full sun, the better they will work. If you are mounting the solar system on an angle (like a roof, wall, fence or rack), the collectors should face in a southerly to south-westerly direction. An optimum angle of the collector for the period of use from May to September is between 30 to 45 degrees.

For safety reasons please do not install the collector at a distance shorter than 1.5 metre from the pool. This could facilitate children or animals entering into the pool.

Take into consideration also a possible operation of e.g. electrical mowers in the surroundings, etc. and choose the placement of the collector in such a manner that it can be possible to avoid any mechanical damage by e.g. flying stones.

It is always necessary to ensure sufficient attachment of the collector and of the stand to earth in such a manner that the installation will not be damaged by a possible flurry of wind.

Do I need a special pump?

If the filtration system pump is in a good condition, there will not occur any problem relating to the installation of the solar heating system in the vicinity of the filtration system and the swimming pool. By checking whether the collector surface is cold (by touching the same) when the filtration system is operating, you can verify that the through-flow through the panel is sufficient.

Only in the case when the collector is installed further from the pool or at a higher height above the pool water level, it is necessary to consult an expert about this installation.

How big a solar collector should I use?

For the pools with water volume up to 20 m³ it is necessary to use a collector with a surface area of 3.6 m², if the volume is up to 30 m³ then use a collector with a surface area of 5.4 m². The collectors can be interconnected between each other by using pool hoses.

If you have a smaller surface area of collectors than it should be according to the size of your pool, the result of the solar heating will not be satisfactory. In the areas where the summer is colder and shorter we recommend to use panels with a larger area.

What other parts are necessary for installation?

For installation you will need a sufficient length of a hose or pipeline. In the case of a roof installation we recommend you to use a firm installation from PVC pipes; to make such an installation you will need adhesive for PVC and appropriate fittings. For an angle installation it is necessary to ensure a stand (see below in the Instructions).

Be careful about the use of PVC-U in the immediate vicinity of the panel, where the temperature can achieve as much as 70°C during standstill periods.

And what about the solar sheet?

Solar sheet keeps heat in the pool during nights, especially at the beginning and at the end of the swimming season. During hot sunny days it is necessary to remove the sheet from the pool because the direct sunlight will heat water deeper than through the solar sheet material. It is possible to use the solar sheet in combination with the solar heating – at night the sheet keeps the heat, during the day it is the solar heating system that heats the water through.

How to connect the collector?

Please connect the solar collector to the exit from the filtration. There must not be any resistance between the collector and the return fitting, such as a valve, filtration vessel, etc. which would increase pressure in the collector.

The connection of the collector can be carried out by using the method which is provided for in the Figure on the title page of the Manual.

For what purpose does the manual bypass serve?

A solar collector heats water only in the case that the sun is shining onto it. At night, the temperature of the surrounding air is lower, which would lead to an opposite effect, i.e. water cooling. The manual bypass makes it possible to put the solar collectors out of operation at the time when there are not suitable conditions for solar heating, e.g. during the night filtration.

BASIC INSTALLATION PROCEDURE

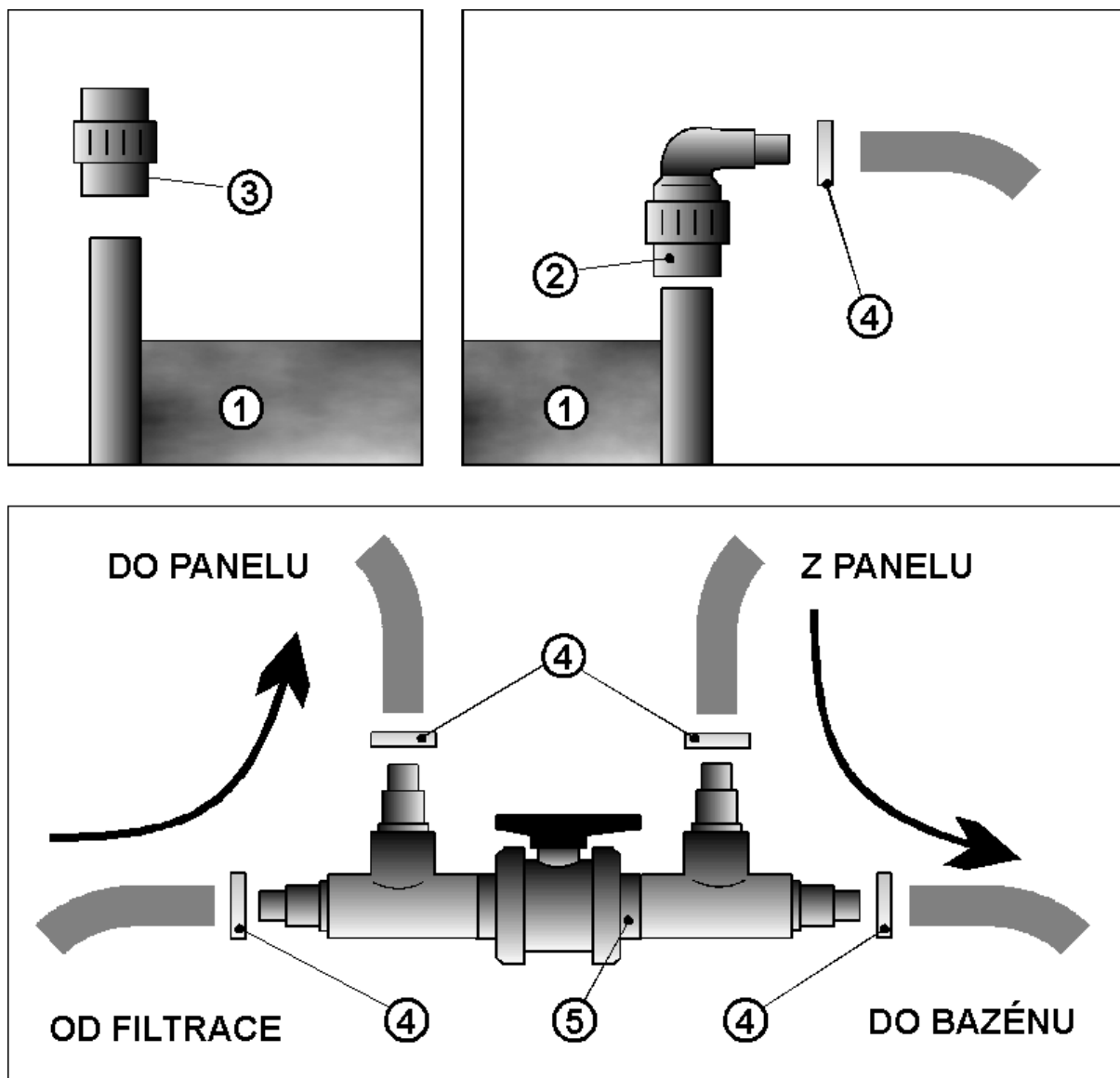
Required tools:

- Flat and Phillips screwdrivers
- Hoses with a suitable length and identical diameter as the hose of the existing filtration circuit (for interconnection of the collector with a filtration circuit)

The principle of the solar heating installation with the help of hoses is clear from the figure on the title page. Choose a suitable area near to the pool (see above). Remove all sharp objects from the area in question. If you want, prepare your own stand (see the dimensional sketch of the collector on the last page of the Instructions).

DO NOT LET THE COLLECTOR LIE DIRECTLY ON THE GRASS – IT COULD CAUSE SELF-IGNITION OF GRASS UNDER THE COLLECTOR. Use either a suitable insulation pad (polystyrene is not suitable) or a grillage to separate the panel from the grass.

Note: for the placement of the panel it is possible to use a tube stand delivered by the collector manufacturer. Ask your dealer for information.



(Legend: do panelu = to the panel; z panelu = from the panel; od filtrace = from filtration; do bazénu = to the pool)

- 1) Remove the collector from the package and extend it so that it can get even. Leave it in the sun for about one hour.
- 2) Place the collector (1) on selected place and install elbow connectors (2) on selected collector holes. Put the connector onto the collector outlet and tighten its bushing.
- 3) Blind the remaining collector holes with plugs (3). Install the plug on the collector outlet and tighten its bushing.
- 4) Interconnect the manual bypass (5) with one upper and one lower collector tube. Establish the connection by using the hoses and hose clamps (4).
- 5) Switch the filtration system off and pull its inlet cable from the socket.
- 6) Blind or otherwise suitably secure the inlet and outlet systems so that no water can leak after the disconnection of the hoses from the filtration system or from the pool. Dismantle the filtration system outlet hoses from the return fitting.
- 7) Interconnect the filtration system outlet hose with the hose coupler on the one side of the manual bypass (5). We recommend you to choose the side of the bypass from which the hose is heading to the lower part of the collector.
- 8) Use another new hose length to interconnect the remaining hose coupler of the manual bypass system (5) with the return fitting of the pool.
- 9) Check the connection of the hoses and retighten the hose clamps (4).
- 10) Remove the plugs installed in previous steps so that the filtration system can be passable.
- 11) Attach the solar collector to the foundation in such a manner that a possible flurry of wind shall not damage the installation. Neither the manufacturer nor the dealer shall be liable for any possible damage.

And now the solar system is ready for operation.

Notes:

- Install the manual bypass system as close to the filtration system as possible. By doing so you will shorten the filtration system and you will obtain a maximum use of the filtration capacity at the time when you are only filtering or exhausting (suction).
- Should you have any problem with the space, it is also possible to install the collector e.g. on your fence. In the case of a vertical installation, however, the panel may not be so efficient because its surface area exposed to the sun is smaller. The vertical position is not ideal.
Attach the collector to the fence on several places in order to avoid slacking and support it in such a manner that the collector edges shall not get damaged.
- If the panel is installed on the stand, roof, etc., it is necessary to ensure connection hoses to the filtration system and to the pool so that they shall not load hose couplers and the collector by the weight of the water column which is still in the hoses. The excessive load in the bents means a jeopardy to the collectors or possible breaking of the hoses.
- In the case of using your own stand:
 - The stand must be oriented as much as possible towards the sun and in an angle of about 30 – 45°.
 - The collector has a large area which is exposed not only to the sun but also to the wind. Therefore it is necessary that the panel should be firmly attached to the stand and the stand should be firmly attached to the foundation on which it is standing.
 - DO NOT PLACE THE STAND IN SUCH A VICINITY TO THE POOL THAT THERE WOULD BE A DANGER OF CHILDREN OR ANIMALS CLIMBING ON IT AND GETTING ACCESS TO THE POOL.

OPERATION AND MAINTENANCE

Operation commencement

Please check whether you have connected the solar system properly to the filtration unit and to the pool.

- 1) Check the joints and connection for proper tightness and possible leakage. Bleed the filtration unit according to appropriate instructions to use.
- 2) If you are using a manual bypass system, check whether the bypass system valve is adjusted in such a manner that water can pass through the collector.
- 3) Turn the filtration pump on and check the installation whether there is no water leakage.
- 4) Immediately after your turning the pump on, air bubbles will start going out from the return fitting. It is normal and it will stop as soon as water presses air out of the solar collector and return pipeline.

Note: In certain cases of installation it will be necessary to bleed air from the solar collector. Ask someone to help you. Release the connector or the plug in the highest position, start up the filtration system and wait as long as the air is leaking and until water starts to flow out. Then turn the pump off and quickly retighten the connection.

Operation

- 1) When water is flowing through the collector, the collector surface should be cold if you touch it. This means that the water flow rate through the collector is sufficient and that the heat gained from the collector is conducted away by water.
- 2) Keep the filtration unit with the solar collector in operation for all the time when the collector is exposed to the sun. The longer this time is, the more and faster heating of the pool is ensured.
- 3) If you leave the filtration unit with the solar collector in operation when there is cold weather, water from the pool will get colder. In such a case please open the manual bypass valve in time and put the solar heating system out of operation.
- 4) For night time we recommend you to put the solar heating system out of operation by opening the manual bypass valve and to cover the pool with a solar sheet in order to reduce thermal loss.
- 5) Do not use the solar heating system if the water temperature achieves 30° C. Hot water does not make you too fresh, and it furthermore creates optimum conditions for algae growth. Also certain pool components may have temperature limitations. The liner used in the case of liner pools can soften excessively at higher temperatures.

**CAUTION: DANGER OF SCALDING:
SOLAR COLLECTOR MAY BE HOT WHEN TOUCHED AND MAY
CONTAIN HOT WATER. HOT WATER WILL FLOW TO THE POOL
IMMEDIATELY AFTER TURNING THE FILTRATION SYSTEM ON
THROUGH THE RETURN FITTING.**

**CAUTION: DANGER OF COLLECTOR DAMAGE:
SOLAR COLLECTOR MAY BE MECHANICALLY DAMAGED AS A
RESULT OF THE SURROUNDING OPERATION. BE CAREFUL IN THE
VICINITY OF THE COLLECTOR.**

Winterising

The solar heating as well as your filtration unit must not get frozen. The frost causes irreversible damage to the collector and other parts of the set. The Warranty shall not apply to damage by frost.

Before the frosts come you should drain all water from the collector and from the hose or pipeline interconnection with the filtration unit and the pool. Dismantle the plugs on the collector and let water flow out. Make sure that no water has remained in the collector (be careful with regard to any possibly slacked spots where some water could remain).

After draining the water completely WE RECOMMEND YOU TO DISMANTLE THE COLLECTOR AND STORE IT IN A DRY PLACE PROTECTED FROM FROSTS.

If you leave the collectors in their places, it is necessary to use an exhauster (for wet suction) to draw all remaining water from then collectors as well as from other parts of the installation.

Collector repairs

A warranty is provided for the water heating solar system in aboveground pools, relating to material and workmanship defects. If the collector leaks for other reasons it may be repaired by using the following method.

Repair procedure

Repair may be carried out by using the following method, but this requires some technical skills.

Identify the place where the collector is leaking. Switch off the filtration system and disconnect the collector. Pour water out of the collector and leave it for about 24 hours in the sun so that it can get dry (even from inside). With the help of a transformer soldering system and a melting rod (made of polypropylene) repair the place damaged. While doing so, it is necessary that you heat the material of both the collector and the melting rod. Handle the soldering machine very carefully in order to avoid the overheating of the material and permanent damage to the collector.

It is possible to use also special sealing putties (e.g. Terostat 9200 with a suitable cleaner). Then proceed according to the Instructions to Use for putty and cleaner application.

Note: The repair of the collector can be ordered through your dealer as well.

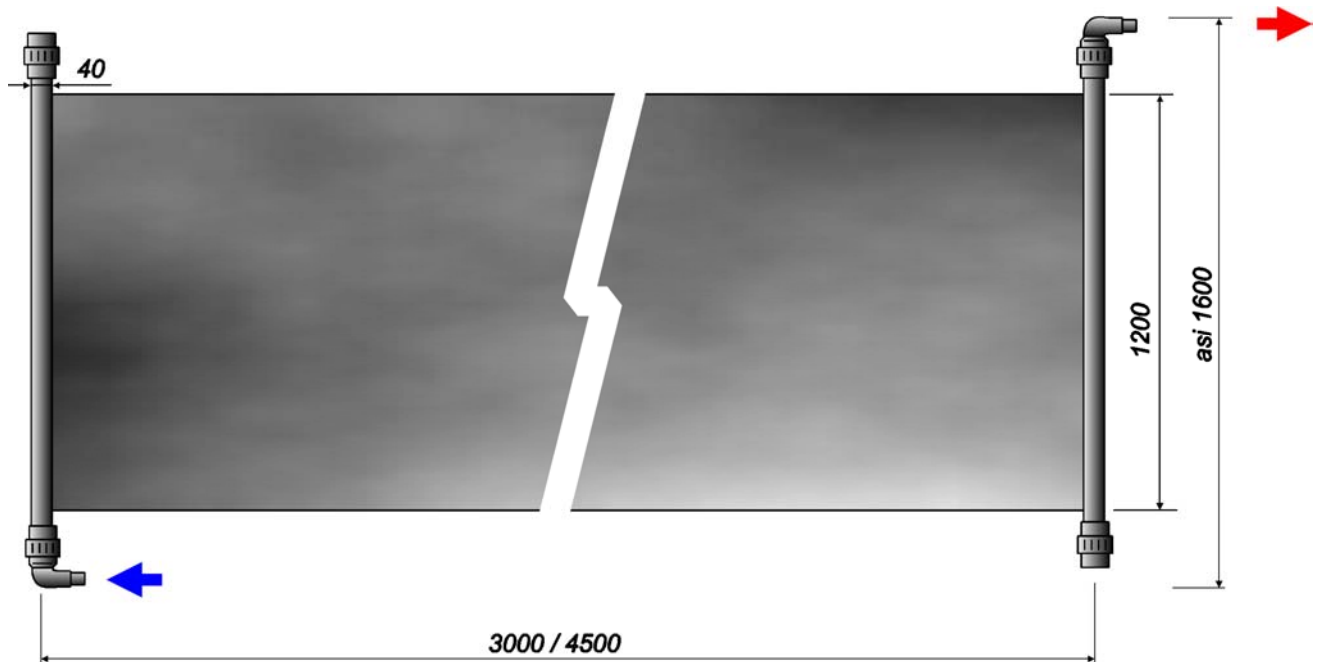
Contents of the delivery

	Description	Heating 3.6 m ²	Heating 5.4 m ²
1	Polypropylene collector	1 (1.2 x 3.0 m)	1 (1.2 x 4.5 m)
2	Connector with a pin (coupler) 32/38 mm	2	2
3	Connector with a plug	2	2
4	Hose clamp	6	6
5	Manual bypass	1	1

Warranty Terms and Conditions, servicing and spare parts

The Warranty Terms and Conditions are provided for in the Warranty Certificate of the Seller. In the case you need to obtain advice, servicing or a spare part, please contact your dealer. While performing maintenance and repairs please use original spare parts only.

COLLECTOR DIMENSIONAL SKETCH



Basic dimensions of the 3.6 m² collector are 1200 x 3000 mm.

Basic dimensions of the 5.4 m² collector are 1200 x 4500 mm.