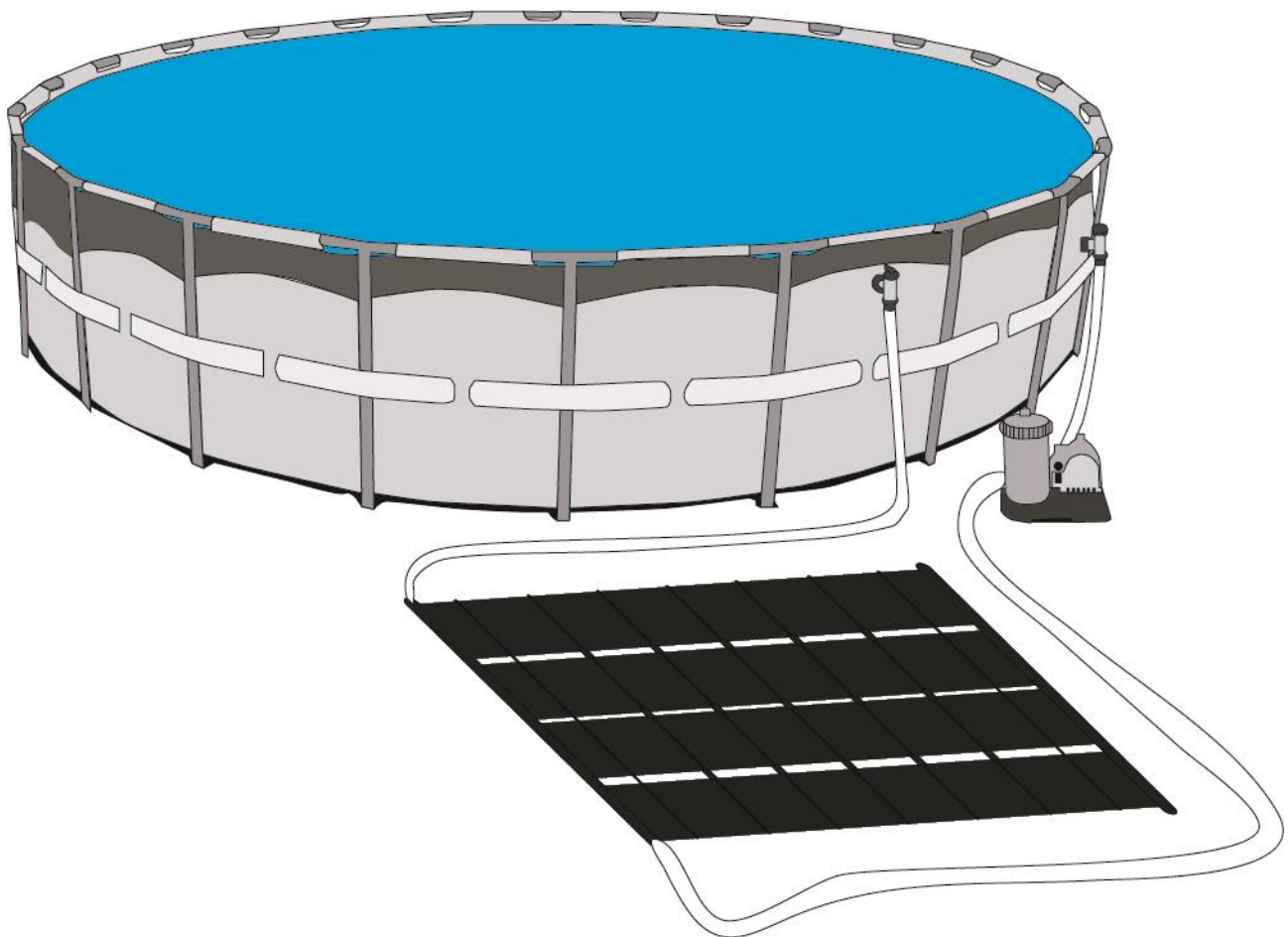


SunSmile

Installation manual



www.magen-ecoenergy.com

Table of contents

INTRODUCTION	3
SAFETY PREDAUTIONS AND REGULATIONS.....	3
GENERAL INFORMATION	4
PROPER SYSTEM SIZING TO POOL	5
HOW DOES IT WORK?	5
FAMILIARIZE YOURSELF WITH OUR SURROUNDING	6
CHOOSING THE IDEAL POISITION	6
TOOLS AND EQUIPMENT REQUIRED	6
LAYING OF THE SOLAR COLLECTOR.....	7
PARTS LIST	7
INSTALLATION INSTRCUTIONS	8
STAGE 1 - Positioning of the solar panel	8
STAGE 2 - Connecting the solar collector to the filter and pump.....	8
STAGE 3 - Connecting the solar collector to pool	9
CONNECTING SEVERAL SOLAR COLLECTROS TOGETHER.....	11
INITIAL OPERATION	12
MAINTENACE	12
TROUBLESHOOTING	13

INTRODUCTION

Congratulations on the purchase of **SunSmile** solar pool heating collector. **SunSmile** has been engineered and manufactures according to the highest standards for reliability, durability, ease of installation, operation and safety. It will heat your pool and extend your swimming season for many years to come.

Before assembling and installing the collector, please take the time to read the following instructions thoroughly, to ensure a smooth and successful installation and operation. Please retain this installation manual for future use.



Read all safety and operation guidelines. Failure to do so could result in serious personal injury or damage to the pool and/or collector.

SAFETY PREDAUTIONS AND REGULATIONS



Warning! Position the solar collector so that it cannot be used by children to obtain access to the pool.



Position the collector on the ground. This solar collector should NOT be installed on the roof or any surface higher than 1.5 meters above pool level.



Avoid stepping on the solar panel.



Do not allow children to operate the collector.



Always turn the filter system off when installing, working on, or servicing the solar collector.



Be sure to place your pool cover on at night to retain the heat generated by the solar collector during the day.



Circulating the water through the collector at inappropriate climate conditions might cool the pool water, therefore at cooler climates or at night, make sure main pump is turned off.



Only 4 collectors can be connected in one system. If additional heating is required, please contact one of our certified distributors to obtain a quote.



Each single SunSmile solar collector can heat 4m³ of pool water.



Water in the solar collector can reach very high temperatures. Caution must be practiced next to pool water inlet upon initial operation or after the pump has been off for a while.

GENERAL INFORMATION

This manual provides information relating to the installation, operation and maintenance of **SunSmile** solar collector. We recommend you read this manual thoroughly and keep it for future reference.

The efficiency of the collector/system installed is dependent on a number of factors:

- Pool area
- Area of the collectors
- Solar system positioning in direction of sun radiation
- Ambient temperatures
- Winds and weather
- Pool cover

The **SunSmile** solar collector is a 4 square meter solar panel. The solar collector is modular, thus enabling adding additional solar panels if additional heating is required.

SunSmile, solar collector for above ground swimming pools, is simple to install and easy to operate. The installation instructions described in this manual are based on the following assumptions:

1. You already have a pool that is completely set up and filled with water.
2. Your pool is equipped with a pump and operational water filtering system.
3. You have the necessary hoses needed to feed water in and out of your pool and filter system.

Once installed, **SunSmile** will completely be dependent on existing pool's filter pump to push water in and through the solar collector.

*depending on the type of circulation pump you have installed, an upgrade might be necessary. (Please refer to table on the next page to determine the required specifications).

PROPER SYSTEM SIZING TO POOL

The following table allows determining how many **SunSmile** units are required to heat the pool:

Round pool (diameter)	Rectangular pool	Recommended num. of collectors*	Recommended pump requirements	
			Required flow rate	Collector pressure drop
1.5 meters	2x2 meters	1	500 lit/hr	1 meter
3 meters	4x2 meters	2	500 lit/hr	2 meter
3.6 meters	5x2.5 meters	3	500 lit/hr	3 meter
4.5 meters	5.5x3 meters	4	500 lit/hr	4 meter

*Pool heating rate is dependent on many factors such as: sun radiation, installation conditions and weather.

**Pump recommendations assume that the collectors are installed in series. Depending on the existing pump, upgrade may be necessary to work with solar collectors. Head loss calculations do not consider other system components such as: filter, installation height, water disinfection system etc.

HOW DOES IT WORK?

When properly installed, **SunSmile** will be connected between the filter and your pool by two hoses: One will feed cold, filtered pool water from your pump into the collector. The other, will feed water warmed by the sun to your pool via the pool return inlet. As cold water is fed into the collector, it flows through the individual riser tubes. The sun radiation is harvested by the collector and heats the water in the tubes which is carried back into the pool.

FAMILIARIZE YOURSELF WITH OUR SURROUNDING

Before you begin assembling, it is a good idea to know certain specifications about your pool:

- How big is your pool?
- How many liters of water does it hold?
- What type of connections does your pool require?
- Hose diameter?
- What is the ideal location of the solar collector for the ultimate exposure to the sun?
- The type of circulation pump you currently have (pressure drop and flow rate)

CHOOSING THE IDEAL POSITION

The solar collector is designed to be installed on the ground next to your existing pump and filter system. Locate a hard level area. Make sure that the place you have chosen is exposed to the sun at least 6 daily hours. Avoid areas that might be shaded at different intervals of the day. For ideal performance, SunSmile should be mounted at a slight angle facing the South (in the Southern Hemisphere) and facing North in the Northern Hemisphere). SunSmile is NOT designed to be mounted on the roof of any other surface higher than 1.5 meters above water level (see picture on page XX).



NOTE: SunSmile must be installed between the filter and the pool water inlet, AFTER the water is filtered to prevent dirt and debris from clogging the riser tubes.

TOOLS AND EQUIPMENT REQUIRED

The following items are not included with the product, but are required for the proper assembly and operation:

- Flat head screwdriver
- Household lubricant such as Vaseline or dish soap or silicone based lubricant.

LAYING OF THE SOLAR COLLECTOR

Two adults are required to remove the solar collector from the box!!!




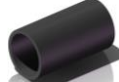
1. Remove the collector and all components from the box and lay them gently on the ground.
2. Gently remove the thin protective nylon wrap from the collector (do not use sharp objects to refrain from damaging the tubes). The collector may retain the shape of an arc due to the tight roll to fit in the box.
3. Spread out the collector and position on the ground. Once the collector has been connected to the water and exposed to the sun it will flatten.

*The collector outlets should be as close as possible to the filter system

**The collector can be mounted on a slope facing the sun. In this case, the collector must be secured to the top part of the slope to avoid its slipping. (special mounting hardware can be purchased from one of our certified distributros).

PARTS LIST

Before installation, make sure all parts in this list are in the box:

Part name	Image	Function	Quantity in box
SunSmile solar collector		Solar absorbing surface	1
Flex hose		Hose for water transfer	1
Metal hose clamp		Secures flex hose to the collector	4
Connecting rubber hose		Connects a number of collectors	1

INSTALLATION INSTRUCTIONS

Please follow the instructions to ensure a safe and quick installation of the **SunSmile** panel to the existing pool/equipment. These instructions assume that the pool and filter system are already assembled and there is a hose attached to the pool return (pool water inlet).

STAGE 1 - Positioning of the solar panel

Carefully remove the **SunSmile** solar collector and all accessories from the box. Make sure all part detailed in the table on page XX are accounted for. Find a flat leveled surface, that is exposed to the sun at least 6 hours a day and is close to the filter and pump. Avoid areas that might be shaded during the day. Lay the collector horizontally on the surface you chose.

STAGE 2 - Connecting the solar collector to the filter and pump

Use the pipe connected to the filter. Connect its other end to the solar collector. If the pipe is not long enough, you will need to purchase a longer pipe from your local pool shop.

1. Turn OFF the circulation pump and filter
2. Block the water flow at both the pool inlet [7] and outlet [3] to prevent water from flowing through the hoses.
3. Detach the hose from your pool inlet [8 - see numbering on sketch in the following page].
4. Connect the detached hose [3] to the bottom side of the solar collector [5] while lubricating the O'ring seal and secure with one of the included metal hose clamps. In INTEX type pools the pipe can be screwed directly to the collector.
5. [Type a quote from the document or the summary of an interesting point. You can position the text box anywhere in the document. Use the Drawing Tools tab to change the formatting of the pull quote text box.]



1/4" pipe diameter

1 1/2" pipe diameter

"Intex" connectors



TIP: It is recommended to immerse the flex hose end in hot water for a few minutes prior to connecting it, to allow an easy connection.

STAGE 3 - Connecting the solar collector to pool

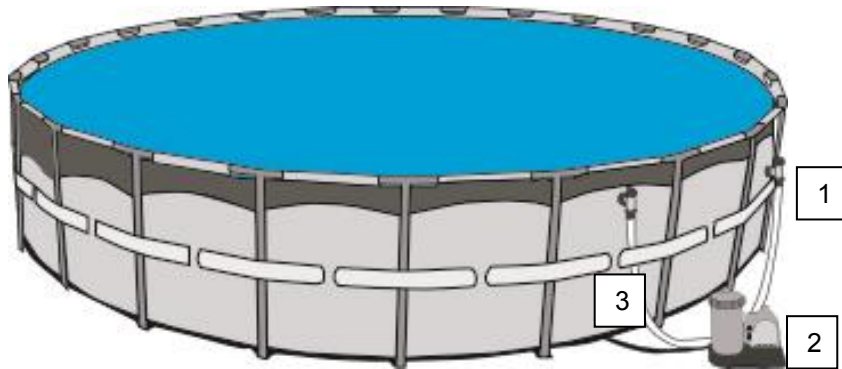
1. Connect one end of the flex hose [7] (the flex hose is supplied with the product) to the outlet of the collector. Push the flex hose on the outlet while lubricating the O'ring seal and secure with the metal hose clamp.
2. Attach the other end of the flex hose to the swimming pool inlet [8].



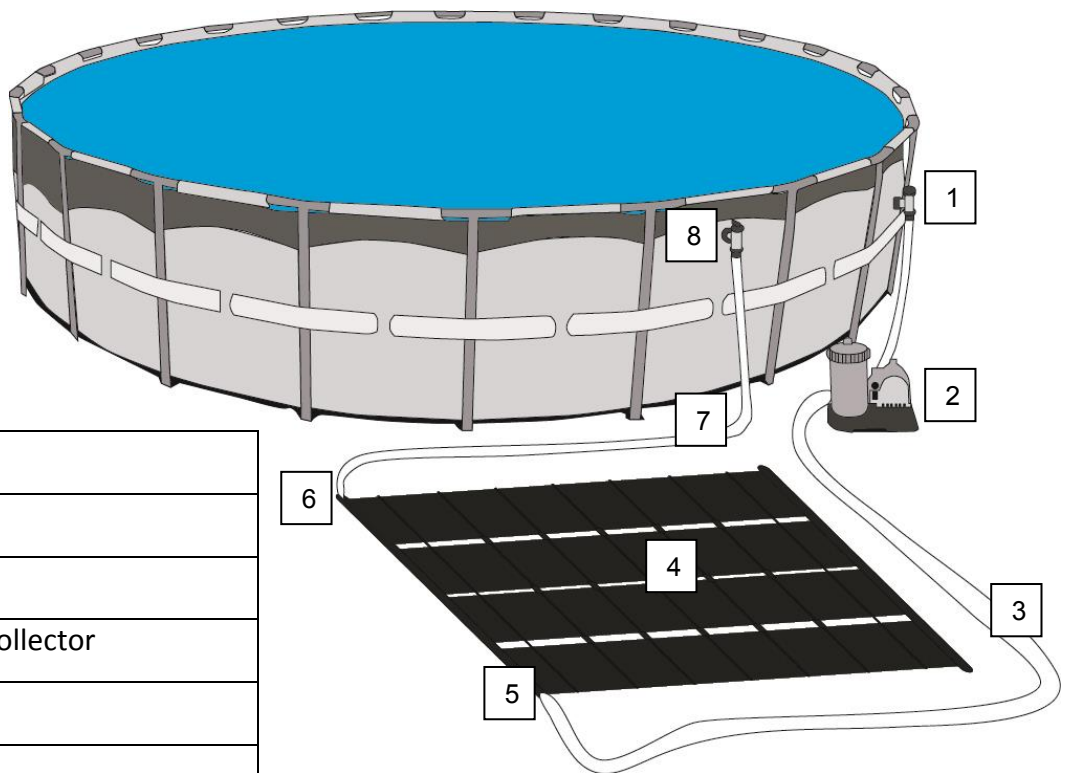
NOTE: While connecting the hose make sure the O'ring seal stays in its place. Use a lubricant to ease the connection.



Before the collector is installed:



After the collector is installed:



1	Pool Outlet
2	Filter and Pump
3	Inlet pipe
4	SunSmile solar collector
5	SunSmile inlet
6	SunSmile outlet
7	Flex hose (supplied with the system)
8	Pool Inlet

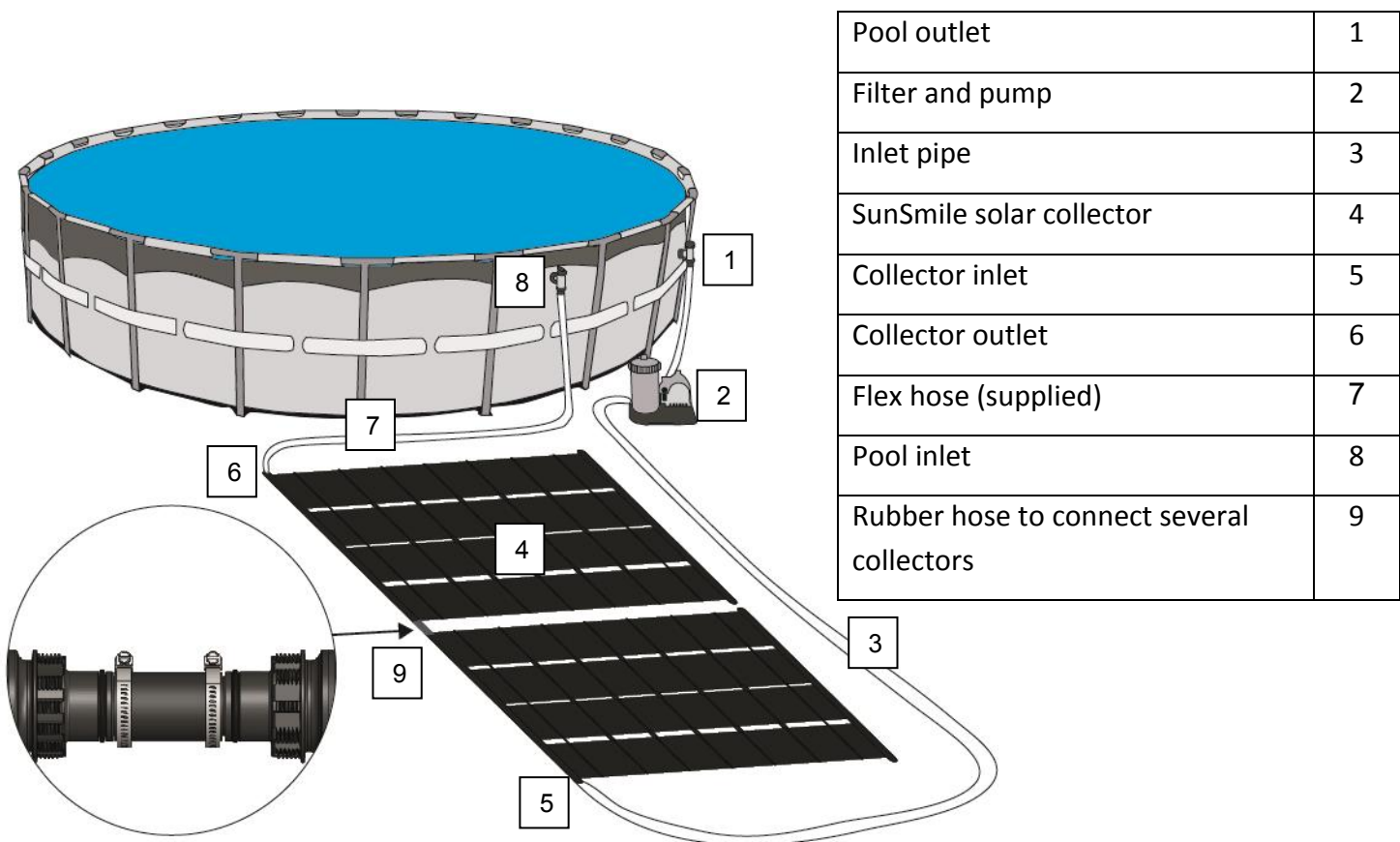
CONNECTING SEVERAL SOLAR COLLECTORS TOGETHER

Connecting several units will offer a higher temperature. The **SunSmile** solar collector is modular unit that can be connected to additional ones if required.

When the solar collectors are positioned, use the short section of rubber hose (supplied) and hose clamps (also supplied) to connect one unit to another as show below:

⚠ NOTE: While connecting the hose make sure the O'ring seal stays in its place. Use a lubricant to ease the connection.

- **When connecting several collectors together a 1 meter head loss must be considered for each collector.**
- **You must confirm the circulation pump can handle the head loss created.**



INITIAL OPERATION

Once the solar collector has been positioned and the hoses connected to the filter, pump and pool return, unblock the flow of water into the pool return hose and turn on the pump and filter system. Bubbles will shoot out of the return nozzle into the pool initially while air is pushed out of the solar collector. If this persists for longer than 2 or 3 minutes, check for and repair any leaks in the hoses or connections or refer to the troubleshooting section of this guide.



Be sure to place your pool cover at night and whenever pool is not in use to retain the heat generated by the solar collector during the day.

The collector and water within can heat to extremely high temperatures! Especially when the sun is shining and the pump is off.

When pump commences its operation; to avoid getting burned or any discomfort, step away from the water inlet inside the pool.

When the system operates properly, the solar collector will be cool to the touch. This is because the heat obtained by the collector is transferred to the water in the collector and to the pool.

MAINTENANCE

The solar collector should not require servicing or maintenance other than winterizing. Prior to the first frost, or at the end of your swim season, the solar collector should be drained from all water.



Water should not be allowed to freeze inside the collector. When freezing, water expands and may burst the riser tubes and collector.

TROUBLESHOOTING

The problem	Solution
<p>Pool is not warm enough</p>	<ul style="list-style-type: none"> • Make sure the circulation pump is operating properly and that water is flowing through the collector. • Check that the circulation pump is not operating at night or when it is cold outside • Check that the collector you have is sufficient to heat the pool (see page 5). • Cover the pool at night to retain the heat that was harvested by the collector during the day. • Make sure the collector is exposed to the sun at least 6 hours a day. • Check that the pump you have is sufficient to the head loss and flow rate required by the peripheral equipment and solar collectors (see page 5).
<p>Bubble are constantly flowing from the pool inlet</p>	<ul style="list-style-type: none"> • Check all connections and make sure there are no leaks and air suction. • Make sure the water is continuously flowing through the pump and that the collector is close to the pool and positioned lower than water surface.
<p>Collector is leaking</p>	<ul style="list-style-type: none"> • Check the O'ring seals are in place and are not "pinched". Fasten the metal bands and connections.