

**solar  cub**

By  **FAFCO**®



# Installation and Owner's Manual

Solar Pool Heater for Above-Ground Swimming Pools

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## Overview

Thank you for choosing FAFCO for your solar swimming pool heating solution. This Solar Collector is proudly manufactured in the United States. Since 1969, we have provided high-quality, long-lasting products that help our customers save money on energy costs and reduce the environmental impact associated with traditional energy sources.

Read this manual completely before installing your system. Use caution when selecting the location to mount your solar collector. Failure to observe safe practices on any elevated structure may result in falling, leading to serious injury. Unless you are experienced and have proper safety equipment, hire someone with the necessary experience to do the installation. If you build a ground rack, ensure that it does not enable children access into the pool.

### How it works:

1. Sunshine heats the solar collector.
2. The swimming pool pump circulates pool water through the heated solar collector.
3. Warm, solar-heated water flows back into your pool.
4. You enjoy swimming in a solar heated pool!

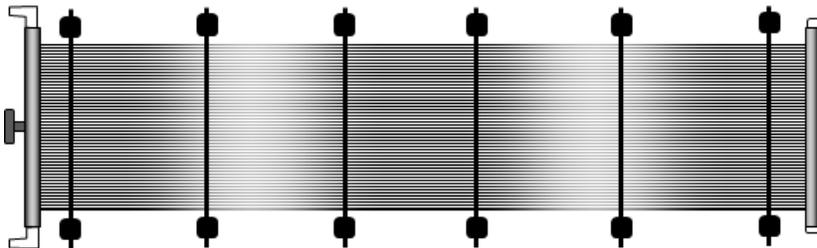
**CAUTION:** This product is for use with above-ground swimming pools and above-ground swimming pool equipment ONLY.  
Failure to obey could result in injury or death.

# Overview (continued)

## Contents

Your system includes one solar collector, along with mounting hardware, connection hardware, an integrated bypass valve and valve handle. See the list below for the contents of your exact system:

Collector Kit		
Solar Collector with Handle		1
Installation Kit (required)		
1-1/2" Barbed Fitting		2
1-1/2" PVC Plug		2
Mounting Cap		12
Mounting Base		12
Mounting Strap		6



### Flexible Pool Hose (Recommended)

#### **Additional Materials Required:**

- 1-1/2" I.D. flexible hose
- Ground spikes (ground installation)
- **Optional Rack Mounting:**
  - \* Mounting screws (1/4" x 2" long, outdoor screws)
  - \* Ground rack lumber and materials

#### **Tools required:**

- Flat head screwdriver or 5/16" nut driver
- **Optional Rack Mounting:**
  - \* Power drill with 1/8" pilot drill bit and a Phillips head bit

### Rigid PVC Pipe

#### **Additional Materials Required:**

- Mounting screws (1/4" x 2" long, outdoor screws)
- PVC primer, PVC cement, and PVC fittings
- (2) 1-1/2" PVC tees, (6) 1-1/2" PVC elbows (varying with installation)
- 1-1/2" Sch.40 PVC pipe to connect solar system to pool equipment

#### **Tools required:**

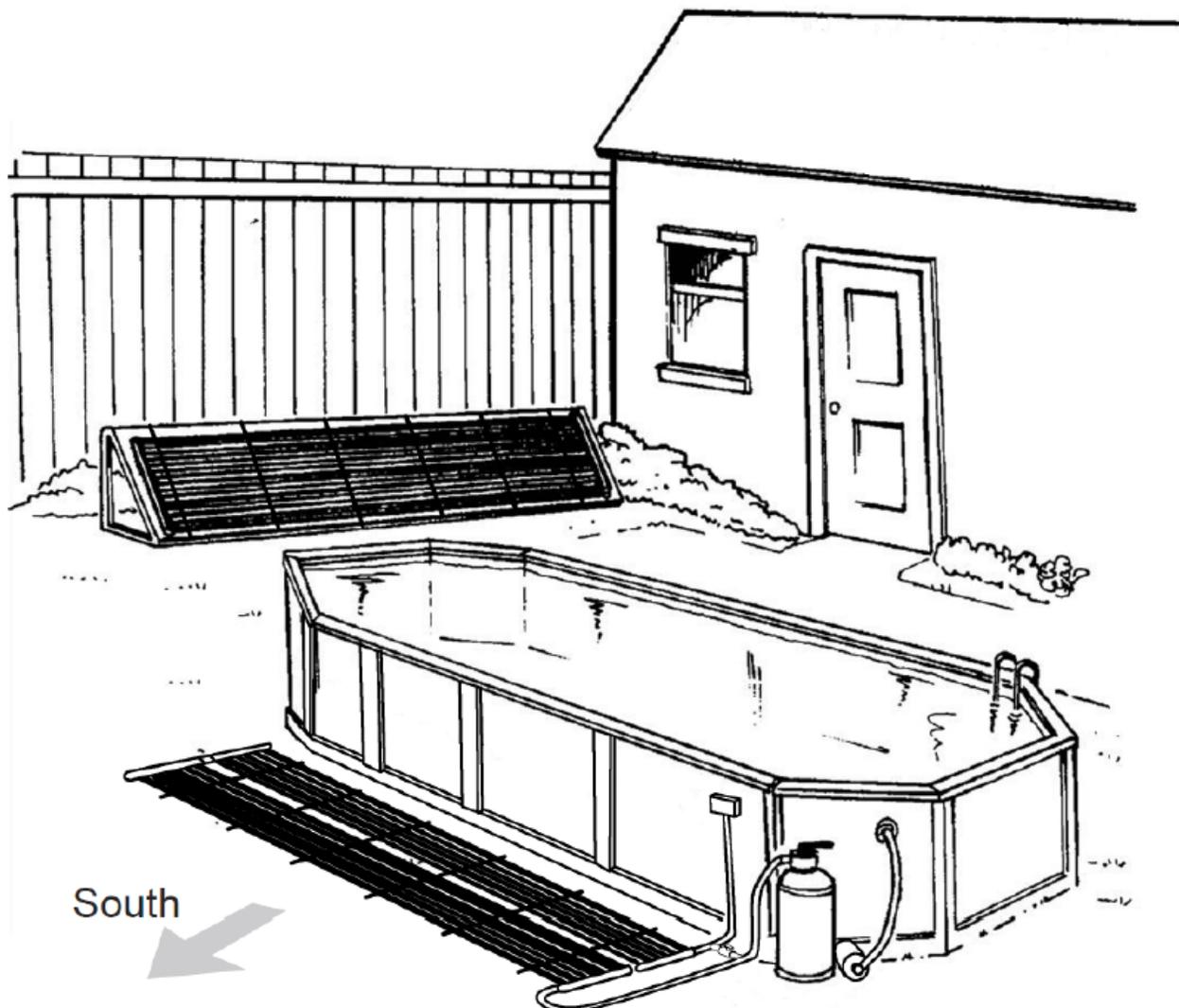
- PVC pipe cutters or equivalent
- Flat head screwdriver or 5/16" nut driver for tightening hose clamps
- Power drill with 1/8" pilot drill bit and a Phillips head bit

# Installation

## 1) Determine location to install solar collector

Select an unshaded location on the ground near the pool that is 1 foot wider and 1 foot longer than your collector's footprint and receives full sun for most of the day. The solar collectors operate most efficiently when tilted 10 to 30 degrees towards the South, although they are still effective when facing West, East, or mounted flat. The solar collectors must be mounted horizontally on a smooth and flat surface using the provided mounting hardware to prevent damage. The solar collector inlet (water coming from the pump and filter) must always be at the lowest point of the solar collectors (unless mounted flat). They need to be accessible for annual winterizing. (Note: Winter is considered anytime air temperature is below 40°F.)

For ground installation, consider laying the solar collectors on grass, smooth gravel, landscaping bark or similar. If available ground surfaces are not smooth and flat, consider building a wooden rack, platform, or deck. An example ground rack is shown on the next page. This product can not be mounted on a roof.



# **Installation (continued)**

## **2) Roll out solar collector**

Lay the box containing the solar system near the selected installation location. Ensure there are no rocks or other sharp objects lying on the ground that could puncture the solar collector. Remove the contents and verify quantities using list shown in the overview.

Position the rolled up solar collector so that it will unroll into the area you have chosen. Remove and discard the plastic end caps used for shipping. Cut the solar collector strap with scissors. Be careful so you don't damage the solar collector. Gently unroll the solar collector. Place a smooth object of no more than 15 pounds on each end of the solar collector to hold them flat. After 30 minutes or so in the sun the panel will stay flat.

## **3) Strap down the solar collector**

Lay the mounting straps evenly spaced across the solar collector. The outside mounting straps should be roughly 6 inches away from solar collector ends. Place mounting bases under mounting straps, a couple inches away from both sides of the solar collector.

For ground installations, anchor the mounting bases to the ground using ground spikes (not included). For ground rack installations, align straps with rafter locations in order to anchor mounting bases to rafters (Item 2 on pg. 4). Lift mounting strap away and drive 1/4" x 2" outdoor screws into mounting bases. Thread on mounting caps.

## **4) Connect to pool and start-up**

### **Flexible Pool (not included)**

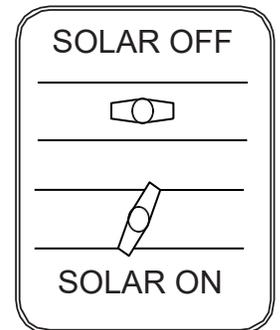
- a. The solar collector ends are 1-1/2" hose size. If your pool uses a different hose size, purchase appropriate reducers from a pool supply store.
- b. Turn on your pool pump and record the pressure shown on the pressure gauge on the pool filter. Turn off your pool pump and block the inlet and outlet of your pool using the plugs supplied by your pool manufacturer or a suitable alternative.
- c. Disconnect the hose at the pool filter outlet.
- d. Use a new or existing 1-1/2" flexible hose to connect the pool filter outlet to the solar collector. The solar collector inlet is at the bottom of solar collector, unless laid flat in

## Installation (continued)

which case either end can be the inlet. Place a hose clamp on the end of the hose and push the hose onto solar collector end at least one inch past the raised ribs. Slide the hose clamp into place and tighten. Note: You may need to warm the hose end by placing it in hot water for several seconds to make it more pliable.

e. Use a new or existing 1-1/2" flexible hose to connect the remaining solar collector end to the pool inlet or existing pool heater inlet.

f. Unblock the inlet and outlet of your pool. Be sure the red handle in the middle of the end-pipe of your solar collector is parallel with the end-pipe (solar off position) prior to starting the system. Turn your pump on and check the hose clamps and plumbing for leaks. If there's a leak, you may have to loosen the clamp, then push the hose further up onto the barb. Then tighten the hose clamps or couplers again. After the pump is on and has run for about 5 minutes, slowly turn the red handle ('Solar On' position). Watch the pressure gauge on your filter. When it has increased 5-7 psi you have achieved optimum flow through the panel and should stop turning the handle. In most cases the handle



should never be turned completely across the pipe. The air that was in the panel will bubble out into your pool for a few minutes--this is normal.

### **Rigid PVC Pipe (Not Included)**

a. The solar collector ends have 1-1/2" barbed hose connections. You have the option to use this connection type, or unthread the hose connections and use the 1-1/2" MPT threads on the ends of the solar collector. Common 1-1/2" threaded pipe fittings can then be used to connect to the solar collector, if rigid PVC pipe is used. If your pool uses a different pipe size, consider using appropriate reducers.

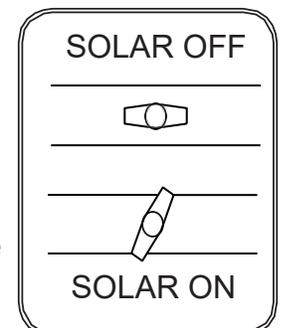
b. Turn on your pool pump and record the pressure shown on the pressure gauge on the pool filter. Turn off your pool pump. If the pump is lower than the top of the pool, block the inlet and outlet of the pool.

c. Cut out approximately 2 foot section of pipe directly after the pool filter using PVC pipe cutters or equivalent.

d. Using appropriate PVC primer and cement, glue an 1-1/2" elbow on each open end.

e. Install pipe and elbows to connect the elbow immediately after the filter to the solar inlet on the bottom of the solar collector, and to connect the other elbow to solar collector outlet on top of the solar collector.

f. Unblock the inlet and outlet of your pool. Be sure the red handle in the parallel to the end-pipe of your solar collector is in line with the end-pipe (solar off position) prior to starting the system.



## **Installation (continued)**

Turn your pump on and check the hose clamps and plumbing for leaks. If there's a leak, you may have to loosen the clamp, then push the hose further up onto the barb. Then tighten the hose clamps or couplers again. After the pump is on and has run for about 5 minutes, slowly turn the red handle ('Solar On' position). Watch the pressure gauge on your filter. When it has increased 5-7 psi you have achieved optimum flow through the panel and should stop turning the handle. In most cases the handle should never be turned completely across the pipe. The air that was in the panel will bubble out into your pool for a few minutes--this is normal.

# Operation

**WARNING:** If the solar collector is full of water and has been sitting in the sun without the pump running, the water can get very hot. **Hot water can cause burns**, so be sure that everyone is away from the pool inlet each time the solar is turned on.

When the solar system is running efficiently, the solar collector will be cool to the touch. The sun's heat will be carried into your pool immediately. For best results, turn on your solar collector whenever it is in the sun. Turn the solar and/or the pump off at night, when it's cloudy, or when it's raining to prevent cooling of the pool. If your pool system has a timer, set it to operate from 9 a.m. until 5 p.m. This is the best solar heating period. Using a pool blanket in addition to the solar system will hold the warmth in the pool and help it heat more quickly. It is particularly important to use the blanket at night or when it's windy. If your pool becomes too warm during the season, turn the pump and solar on at night to help cool the pool.

# Winterization



SOLAR COLLECTOR DAMAGE CAUSED BY FREEZING WATER IS NOT COVERED UNDER WARRANTY. WATER WILL FREEZE AT 40°F, FOLLOW THIS WINTERIZATION PROCEDURE TO AVOID FREEZE DAMAGE:

The solar collector must be completely drained and isolated before winter to prevent freeze damage. The solar collector will not be damaged by freezing conditions when properly drained and isolated as follows:

1. Turn off the pool pump and plug pool inlet and outlet.
2. Disconnect solar collector
3. The solar collector must be manually lifted and drained. Unmount solar collector and fully drain them by tilting them back and forth until no evidence of water remains inside of them.
4. Store solar collector in a conditioned space (above 40°F) for the winter.
5. Cap off the open pipe or hose connections.
9. The pool pump, filter, and sweep can now be used while the solar collector is properly stored for the winter.

## Note:

Operating your solar system during freezing conditions is not an approved freeze-protection method. Blowing the lines and/or solar collectors with a shop vacuum, leaf blower, or compressor will NOT remove water completely and is not an approved freeze-protection method.

## TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
1. My system doesn't seem to be working. The water returning to my pool is not hot.	Turn off pool pump midday in bright sunlight for approximately 10 minutes and feel solar collector. It should be quite warm. Turn pool pump on again for 10 minutes and feel the solar collector, which should have become quite cool to the touch. The difference in temperature is the heat being added to your swimming pool. Ensure the bypass valve is properly adjusted so that sufficient flow is circulating through the solar collector, without excessive back pressure. If you have a high horsepower pump, a significant portion of that water may be bypassed, causing the return water to seem only slightly warmer than the pool water.
2. My pool is not warm enough.	<ul style="list-style-type: none"> <li>• A properly sized system will raise pool temperatures up to 10 degrees during the swimming season.</li> <li>• Solar will not work as well when it is cloudy or rainy (you most likely won't be swimming during those times). After one or two warm days, your water will be back up to a comfortable temperature.</li> <li>• Be sure the solar collector is getting sun the entire day and is not shaded.</li> <li>• If installed on a rack, be sure the solar collector is pointed near south tilted 10° to 30°.</li> <li>• Be sure the inlet side of the solar collector is on the bottom. The solar collector will not function if fed from the top.</li> <li>• Consider adding a pool blanket. A pool blanket traps the solar heat captured by the solar collector during the day. This is very complementary to the solar system.</li> <li>• Consider adding an additional solar collector.</li> </ul>
3. There are bubbles in the pool.	This is normal during startup because air is being purged from the solar collector. If air bubbles never stop, adjust the bypass valve (red handle). Turn the bypass valve to "Solar Off" to determine if you have an issue with your pool pump, and not with the solar system.
4. Flow seems greatly reduced and the filter pressure excessive.	Check that the plastic caps were removed from the inlet and outlet prior to installation. Also be sure the inlet and outlet are properly connected. Check the bypass valve adjustment. Ensure the pump and filter are in good working condition. You are getting enough flow if the panel is cool to the touch on a hot day.
5. My pool is too hot	You can reduce your solar heat by running your pump when the sun goes down or bypassing the solar system with the bypass valve. During the hottest part of the summer, running the solar system at night can cool a pool to a more refreshing swimming temperature - down several degrees in one night if the conditions are right. Also, if your pool is too warm, leave the solar blanket off at night to allow more heat to escape.
6. I have a leak in my solar collector	A tube leak can be repaired if damage is located at least 2" away from the header. Contact your local dealer, where you purchased the product or email <a href="mailto:service@fafco.com">service@fafco.com</a> for more information on how to repair the solar collector.

For above-ground swimming pool use only.

Don't forget, if you need more solar heat, you can always add another Solar Collector.  
(Check your product spec sheet for more information)

For more information on your FAFCO product  
visit

[www.fafco.com/online-support](http://www.fafco.com/online-support)

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