

FAFCO

Solar Bear

Solar Pool Heater

for above and inground swimming pools

(Not recommended for Inflatable Pools)



Installation & Owners Manual



Made in the USA

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Overview

Thank you for choosing the SolarBear solar pool heating system. SolarBear 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 a roof or other 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. Sun shine heats the solar collector.
2. The 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!







Sizing

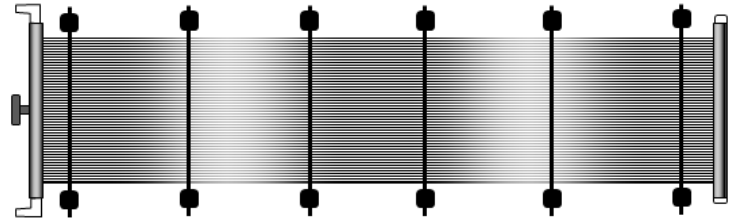
To determine the optimal number of solar collector needed to heat your pool, visit www.fafco.com. You may order additional solar collector from your SolarBear dealer.

Overview (continued)

Contents

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

Component		975-3
4' x 20' Wide Solar Collector with 1-1/2" barb connections		1
Mounting Cap		12
Mounting Base		12
Mounting Strap		6
Valve Handle		1
Rubber tube plugs		20



Flexible Pool Hose

Additional materials required:

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

Tools required:

- Flat head screwdriver or 5/16" nut driver
- Optional roof or 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) & roof sealant
- 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:

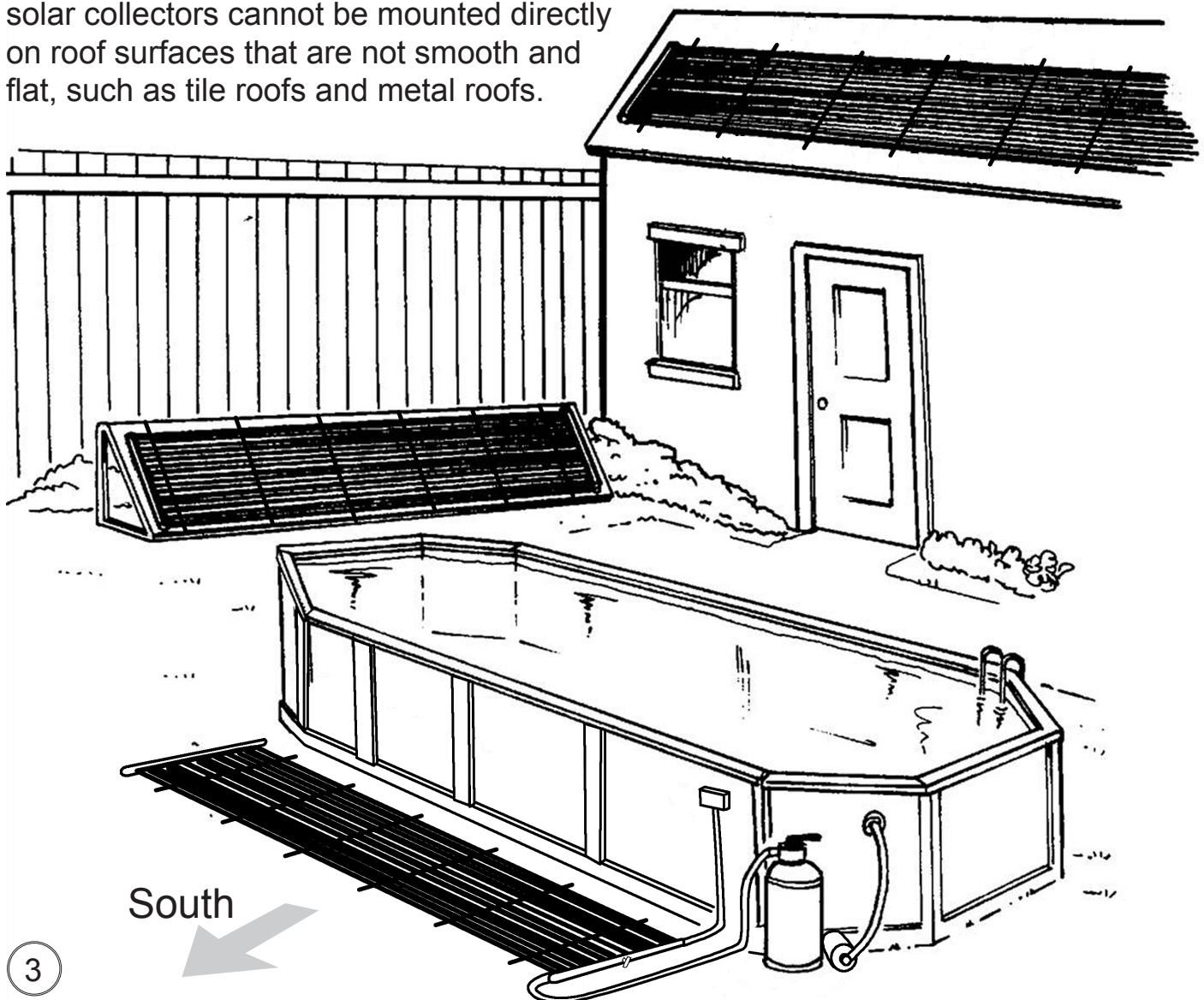
- PVC pipe cutters or equivalent
- Flat head screwdriver or 5/16" nut driver for tightening hose clamps
- Power drill with 1/8" pilot drill bit and a Phillips head bit

Installation

1) Determine location to install solar collector

elect an unshaded location on the ground or roof near the pool that is at least 5' x 20' 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.

For ground installation, consider laying the solar collectors on grass, 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. For roof installations, the roof must be composition asphalt or equivalent. The solar collectors cannot be mounted directly on roof surfaces that are not smooth and flat, such as tile roofs and metal roofs.



Installation (continued)

Ground Rack Example

The following drawing is provided as a suggestion for the construction of a rack for your solar system.

SOLAR COLLECTOR SUPPORT FOR TWO SOLAR COLLECTORS, ADD A SECOND 1"x4" UNDER TOP COLLECTOR.

item	qty	description
10	3	LUMBER, 2x4x10' (CUT QTY-12, 27.5' L)
9	100	WOOD SCREW, 1" L
8	12	NUT, HEX, 3/8"
7	12	WASHER, LOCK, 3/8"
6	12	WASHER, FLAT, 3/8"
5	12	BOLT, CARRIAGE, 3/8", 5" L
4	7	LUMBER, 1x4x10'
3	3	LUMBER, 1x4x8' (CUT QTY-12, 21' L)
2	6	LUMBER, 2x4x10' (CUT QTY-12, 55' L)
1	3	PLYWOOD, 1/4" - 3/8" THK, 4' x 8'

Ground Rack

ONE 4X20 SOLAR COLLECTOR
OR
TWO 2X20 SOLAR COLLECTORS

NOTES:

- 1.) RACK IS DESIGNED FOR 30 DEGREE (7/12) PITCH.
- 2.) ENSURE SOLAR COLLECTOR AND PIPING ARE PROPERLY SUPPORTED AND CAN FREELY EXPAND AND CONTRACT WITHOUT RUBBING AGAINST SHARP EDGES.
- 3.) SECURE PANELS USING SOLAR COLLECTOR ROOF MOUNT KIT.
- 4.) WHEN INSTALLING COLLECTORS ON THE GROUND, DO NOT BUILD A RACK THAT CAN ALLOW CHILDREN ACCESS TO THE POOL.

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APPROVED:
SCALE: N.T.S.
SHEET: 1 OF 1
DWG. NO.: 07366
REV: A

ADDED SOLAR COLLECTOR SUPPORT PER 6559
M.Rubio 9/23/09

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 they 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 panels 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 provided). For roof or ground rack installations, align straps with rafter locations in order to anchor mounting bases to rafters. Locate rafters by looking under roof eaves or by finding rafter nails on fascia boards. Lift mounting strap away and drive 1/4" x 2" outdoor screws with roof sealant into mounting bases. Thread on mounting caps.

4) Connect to pool and start-up

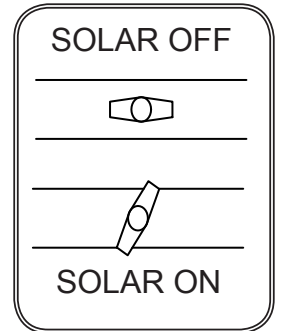
Flexible Pool Hose

- 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)

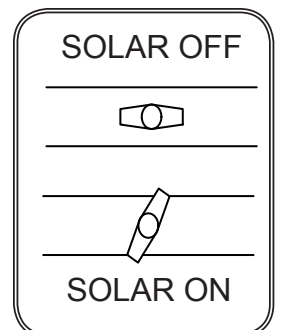
which case either end can be the inlet.. Place a hose clamp on the end of the hose and push the hose onto solar collector end at least one inch past the raised ribs. Slide the hose clamp into place and tighten. Note: You may need to warm the hose end by placing it in hot water for several seconds to 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.
- g. Save the provided repair plugs. Discard any other unused parts.



Rigid PVC Pipe

- 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 the end-pipe of your solar collector is in line with the end-pipe (solar off position) prior to starting the system. Turn



Installation (continued)

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.

g. Save the provided repair plugs. Discard any other unused parts.

Operation

WARNING: If the solar collector are 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 SolarBear whenever the solar collector are 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. 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 are properly stored for the winter.

Note:

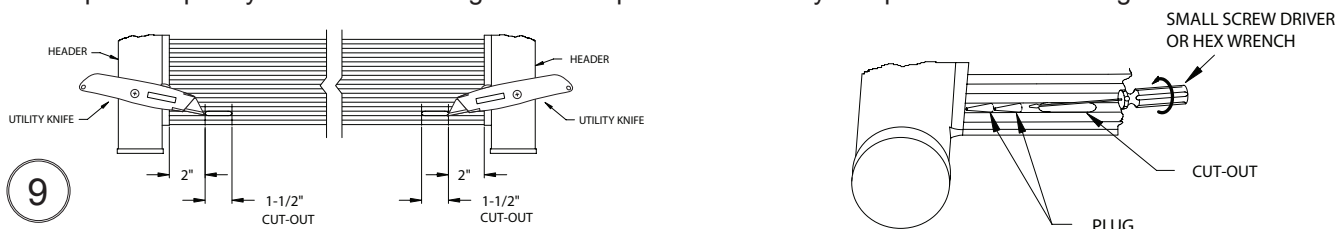
Operating your solar system during freezing conditions is not an approved freeze-protection method. Blowing the lines and/or solar collectors with a shop vacuum, leaf blower, or compressor will NOT remove water completely and is not an approved freeze-protection method.

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"> • A properly sized system will raise pool temperatures 10-15 degrees during the swimming season. • 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. • Be sure the solar collector is getting sun the entire day and is not shaded. • If installed on a rack, be sure the solar collector is pointed near south tilted 10° to 30°. • Be sure the inlet side of the solar collector is on the bottom. The solar collector will not function if fed from the top. • 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. • Consider adding additional solar collector.
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. 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. A one HP pump will handle installations up to 30 feet away from the pool equipment and one story high. 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 turn you 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 3" away from the header. The following procedure outlines the steps to repair a tube leak using supplied repair plugs. Refer to the warranty for information regarding other damage.

Panel Repair Plug Instructions

Required: Repair plugs (included with system), soapy water, utility knife, small 4 inch hex head or phillips screw driver.

1. Locate the leaking tube and mark the tube location on each end of the solar collector.
2. Using a utility knife, start approximately 3" away from the end of the solar collector, then cutting back away from the header, scoop out the top portion of the collector tube 1 to 1-1/2" long to insert the plug through. Do not cut adjacent tubes.
3. Apply soapy water to the repair and inside of the tube.
4. Insert the plug pointed end first into the opened tube section. Using a small screw driver or hex wrench, push the plug gently, without stopping, into the tube until it reaches the end of the solar collector.
5. Remove the small screw driver or hex wrench with a quick twisting motion.
6. Take a second plug and slide it in, stopping as it hits the first plug. Repeat this procedure at the opposite end as well. This repair completely isolated the damaged tube. Repeat as necessary to repair additional damaged tubes.



LIMITED TEN-YEAR WARRANTY

FOR THE SOLARBEAR SOLAR POOL COLLECTOR

1. SCOPE OF COVERAGE: This warranty applies only to new swimming pool solar collectors manufactured by SolarBear and installed according to SolarBear instructions on premises owned by the original consumer buyer.

2. IDENTITY OF WARRANTOR AND WARRANTEE: The warranty is extended by SolarBear to the original consumer buyer of the solar collector.

3. LIMITED TEN-YEAR WARRANTY: The SolarBear solar collectors are warranted to be free from defects in materials and workmanship under normal use and service for the heating of either an inground or above ground swimming pool for ten (10) years from date of purchase, subject to the terms, conditions, and limitations described below.

4. WHAT IS NOT COVERED

A. EXCLUSIONS - The above warranty does not apply:

1. To conditions resulting from a defect in a component or part which is not part of the SolarBear collector.
2. To conditions resulting from a significant departure from SolarBear's installation instructions.
3. To conditions such as internal freezing (freeze damage) resulting from failure to provide reasonable and necessary maintenance or storage in accordance with SolarBear's operating and maintenance instructions.
4. To conditions resulting from any misuse, abuse, neglect, accident, or alterations.
5. To normal fading and minor deterioration of exterior surfaces resulting from exposure to the elements, except conditions that do or will affect performance.
6. Damage caused by natural phenomenon

B. NO WARRANTY OF PERFORMANCE OF THE SOLAR COLLECTORS AND SYSTEM:

SolarBear makes no warranty as to the performance of its solar collectors as to any particular temperature or level to which the water will be heated, since this depends upon the amount and intensity of sunlight and other variable factors which are impossible to predict and which cannot be controlled.

C. LIMITATIONS ON EXCLUSION FROM COVERAGE:

The above warranty shall not be considered to be violated or its coverage in any way reduced by conditions that may occur in the normal operation of the system.

5. SOME THINGS BUYER MUST DO

A. PROPER INSTALLATION:

INSTALLATIONS MUST BE PERFORMED ACCORDING TO THE INSTRUCTIONS INCLUDED WITH THE PRODUCT.

B. ROUTINE MAINTENANCE:

Provide reasonable and necessary maintenance in accordance with SolarBear's operating and maintenance instructions.

C. KEEPING SolarBear INFORMED:

If it appears to you that any warranted component or part is not functioning properly, promptly notify SolarBear. Early attention to a minor problem may help avoid serious problems later.

6. WHAT SolarBear WILL DO

A. REPAIR OR SERVICE:

If a defect in material or workmanship becomes evident during the warranty period, SolarBear will repair or, at its option, replace the malfunctioning solar collector with a new solar collector of at least the same quality, within a reasonable time, upon payment of the charges described below. All replacement parts and repairs shall assume the remaining warranty period of the part(s) repaired or replaced. To verify that your warranty is still in effect, you should be prepared to furnish evidence of date of Purchase, purchase price and send photos showing that the installation was performed according to the instructions included with the collector. The system must be returned to dealer, distributor, or SolarBear at homeowner's expense.

B. IF REPLACEMENT IS REQUIRED:

To obtain replacement of the defective solar collector under the warranty, you are required to pay the difference between:

- a) SolarBear's suggested retail price for the solar collector at the time the warranty claim is made, and
- b) the prorated portion of SolarBear's suggested retail price for the solar collector at the time of the original purchase, in accordance with the following proration schedule:

Year of Claim	Percent of Original Purchase Price Credited Toward Replacement	Year of Claim	Percent of Original Purchase Price Credited Toward Replacement
First Year	100%	Sixth Year	50%
Second Year	90%	Seventh Year	40%
Third Year	80%	Eighth Year	30%
Fourth Year	70%	Ninth Year	20%
Fifth Year	60%	Tenth Year	10%

IN ADDITION TO THE CHARGES FOR REPAIR OR REPLACEMENT OF THE DEFECTIVE SOLAR COLLECTOR, YOU ARE RESPONSIBLE FOR THE PAYMENT OF ANY COSTS AND EXPENSES OF DISASSEMBLY, REMOVAL AND RE-INSTALLATION OF THE SOLAR COLLECTOR, AND ANY OTHER INCIDENTAL SERVICES INVOLVED. NONE OF SUCH COSTS OR EXPENSES ARE COVERED BY THIS WARRANTY, AND SolarBear IS NOT LIABLE FOR ANY OF THEM.

7. NO OTHER EXPRESS WARRANTIES - THESE REMEDIES ARE EXCLUSIVE Unless otherwise explicitly agreed to in writing, it is understood that this is the only written warranty given by SolarBear and SolarBear neither assumes nor authorizes anyone to assume for it any other obligations or liability in connection with its products. IN NO EVENT SHALL SolarBear BE LIABLE FOR DAMAGE TO PROPERTY, LOST PROFITS, INJURY TO GOODWILL, OR ANY OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTIVE SOLAR COLLECTOR OR ANY BREACH OF THE ABOVE EXPRESS WARRANTY, FOR NEGLIGENCE OR OTHERWISE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion or limitation may not apply to you. The above warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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