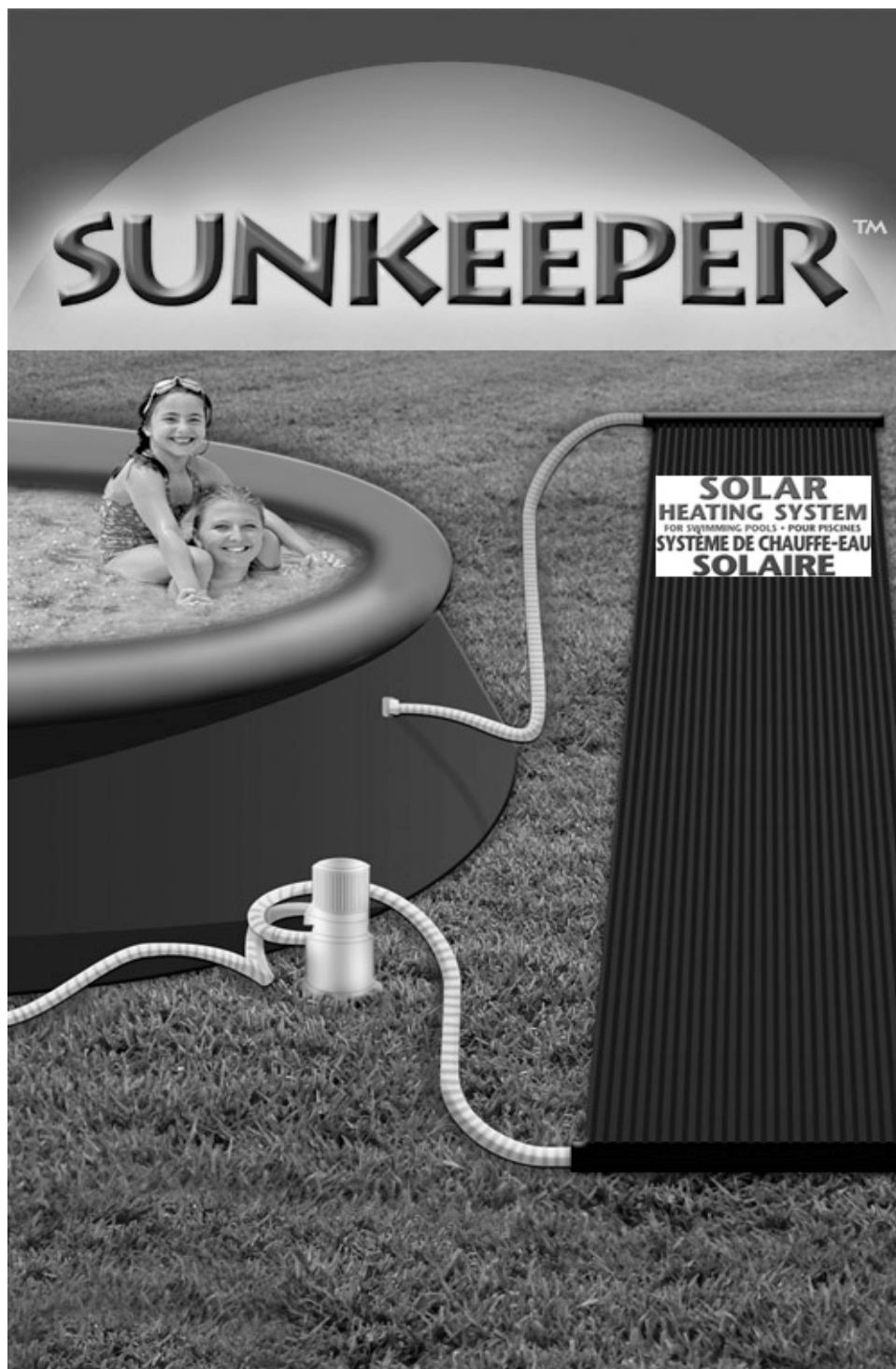


INSTALLATION & OPERATION MANUAL



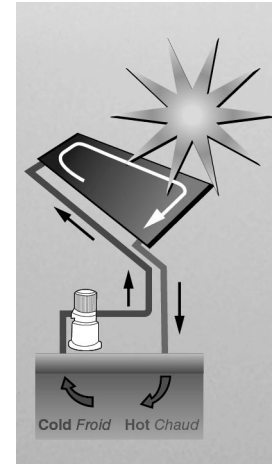
Read all the instructions before installing your solar heating system.

How does a solar heating system work?

1. Connect your existing pool pump to the solar panel. Your pool pump sends cold water to the solar panel.
2. The sun heats the water in the solar panel.
3. Warm water is then returned to your swimming pool.

How well does solar heating work?

A solar heating system if sized and installed properly will raise your pool water temperature up to 10° F / 6° C and extend your swimming season. In order to maximize the heat, the solar panel must be exposed to sunlight as long as possible. On rainy days and at night the solar panel must be turned off so your pool water doesn't cool. Opening the diverter does this. On cloudy days, the solar panel won't work as well. It is recommended to use a solar blanket or a Liquid Solar Blanket. This will help keep more of the heat generated by the solar panel in your pool.

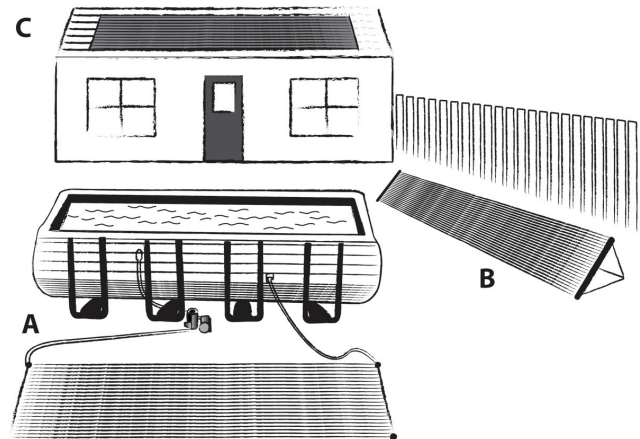


Is a special pump required?

If your panel is on the ground beside your pool, you can use your existing pool pump as long as it is in good working condition. A 1HP pump will handle a panel placed up to 9 meters (30 ft) away from your pool and one story up.

Where can the solar panel be placed?

The solar panel can be placed on the ground. Avoid placing in high traffic areas, as it is not recommended to walk on the solar panel. The solar panel can also be mounted on a rack or a roof. When mounted, the panel should preferably be facing south and be inclined at 30° to 45° degree angle. Don't face the panel North, because it will not heat. A mounting kit (**part#SK-MK**) is required for placing the solar panel on rack or roof.



How many panels do I need?

| Pool Size Round | Panel 1.05m x 3m | Panel 1.05m x 4.95m | Pool Size Oval |
|---|---------------------|------------------------|------------------------|
| 8' , 10' , 12' & 15' | 1 or 2 | 1 | 9' x 18' |
| 18' & 21' | 2 or 3 | 1 or 2 | 12' x 20' to 12' x 24' |
| 24' | 3 or 4 | 2 or 3 | 12' x 28' |
| *27' + | 5 or more | 4 or more | *16' x 25' + |
| # of Panels is the minimum recommended. More panels will give you more heat, faster. * For larger pools please call us at 888-357-6527 | | | |

Box Contents:



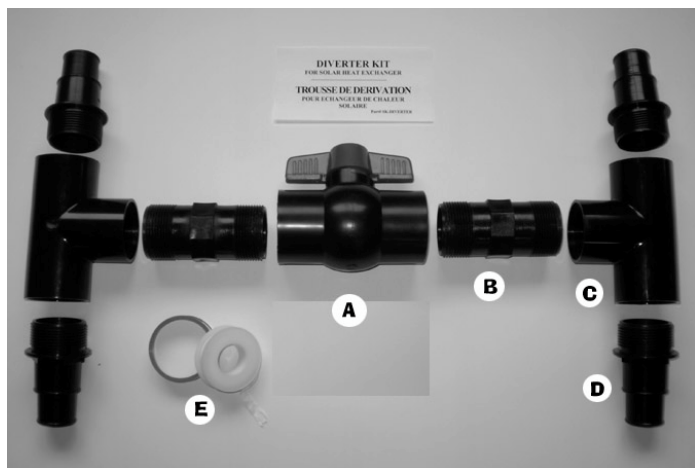
SOLAR PANEL

| Qty | Part # | Description |
|-----|---------|-------------------------------------|
| 1 | SK-1410 | Sunkeeper solar panel 1.05m x 3m |
| Or | | |
| 1 | SK-1416 | Sunkeeper solar panel 1.05m x 4.95m |



PANEL KIT (Part # SK-PK)

| Qty | Part # | Description |
|-----|----------|-----------------------------------|
| 2 | SK-FTG-D | Threaded combination hose adapter |
| 2 | SK-FTG-F | Threaded cap |
| 2 | SK-FTG-I | "O" rings |



DIVERTER KIT (Part # SK-DK)

| Qty | Part # | Description |
|-----|----------|-----------------------------------|
| 1 | SK-FTG-A | Threaded 2 way valve |
| 2 | SK-FTG-B | Threaded nipple |
| 2 | SK-FTG-C | Threaded tee |
| 4 | SK-FTG-D | Threaded combination hose adapter |
| 1 | SK-FTG-E | Roll of teflon tape |



ADD-ON KIT (Part # SK-AK)

| Qty | Part # | Description |
|-----|----------|-----------------------------|
| 1 | SK-FTG-G | Flexible rubber hose |
| 2 | SK-FTG-H | Metal collar (Hose clamp) |
| 1 | SK-FTG-I | "O" rings |

Installation

Additional parts required

- Flexible pool hose. Length dependant on installation -1½ " or 1¼" ID
- Metal collars (Hose clamps) - Quantity dependant on installation.
- For rack or roof placement a mounting kit (**part#SK-MK**) is required

All of these are available from the store you purchased your solar heating system from.

Tools required

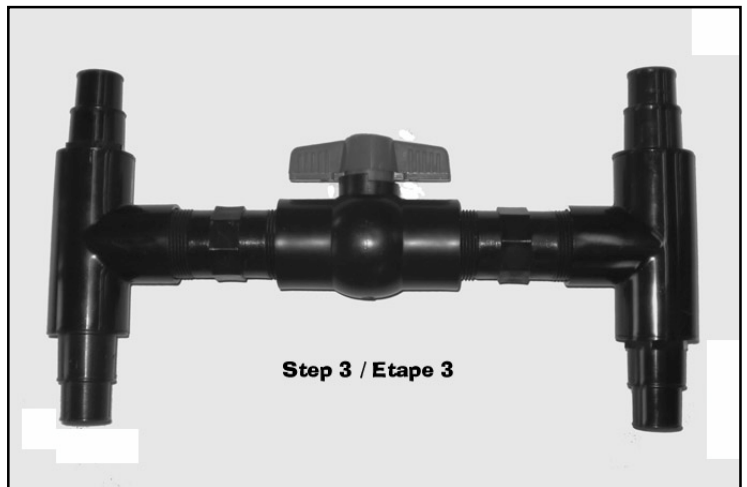
- Flat head screwdriver.
- For rack or roof placement a power drill and silicone sealant.

PANEL ASSEMBLY

1. Choose placement for your solar panel(s). Make sure that it will be in the sun for most of the day. The area should be clear of sharp objects.
2. Take the panel out of the box, remove the strap from panel and let the panel sit in the sun for approximately 30 minutes so it will become flexible.
3. While the panel is warming up you can assemble the diverter kit. The diverter kit serves two purposes. The first is a means to turn the solar panel on and off. The solar panel must be turned off at night and on rainy days. If this is not done, the panel will have the opposite effect and will cool your pool. The second purpose is to adjust the water flow for stronger pool pumps (see operation section in this manual)

Open the bag marked Diverter Kit. Apply teflon tape to threads of both nipples (**SK-FTG-B**) and thread them into the two way valve (**SK-FTG-A**). Apply teflon to other threads of the nipples and thread them into the tees (**SK-FTG-C**) as shown in picture for step 3. Apply teflon to thread of all four of the combination adapters (**SK-FTG-D**) and thread them into the tees. Do not over tighten.

Note : *Even if you are installing more then one panel, you will still only need one Diverter Kit.*



4 a) **For single panel installation.**

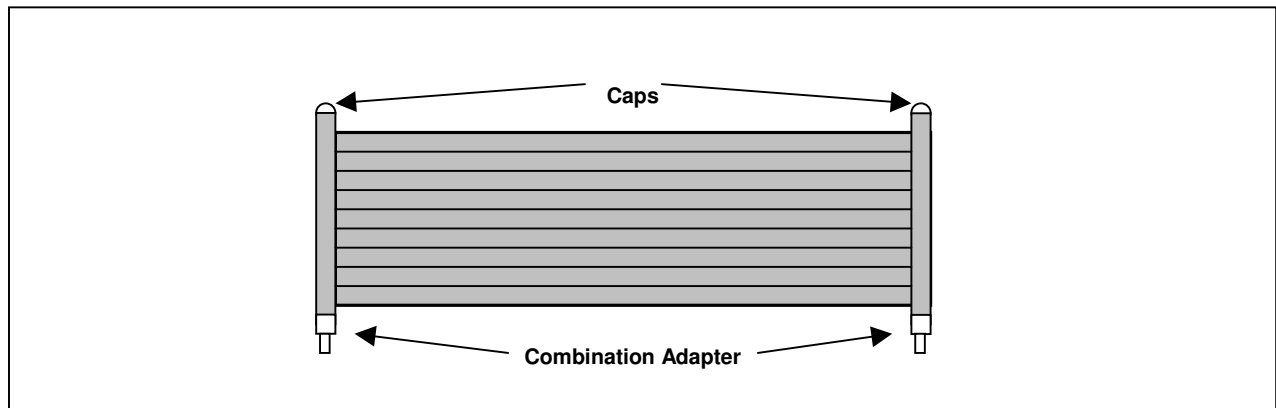


Diagram Step 4 a

Open the bag marked Panel Kit. Apply teflon tape to threads of both caps (**SK-FTG-F**) See Fig 4a-1



Fig 4a-1

Thread both caps into the panel as per Diagram Step 4a. See Fig 4a-2



Fig 4a-2

Put "O" rings (**SK-FTG-I**) on both combination adapters (**SK-FTG-D**) See Fig 4a-3



Fig 4a-3

Thread both combination adapters into the panel as per diagram Step 4a. See Fig 4a-4



Fig 4a-4

Note : You must always use the "O" rings when screwing in combination adapters into the solar panel

4 b) **For multiple panel installation.**

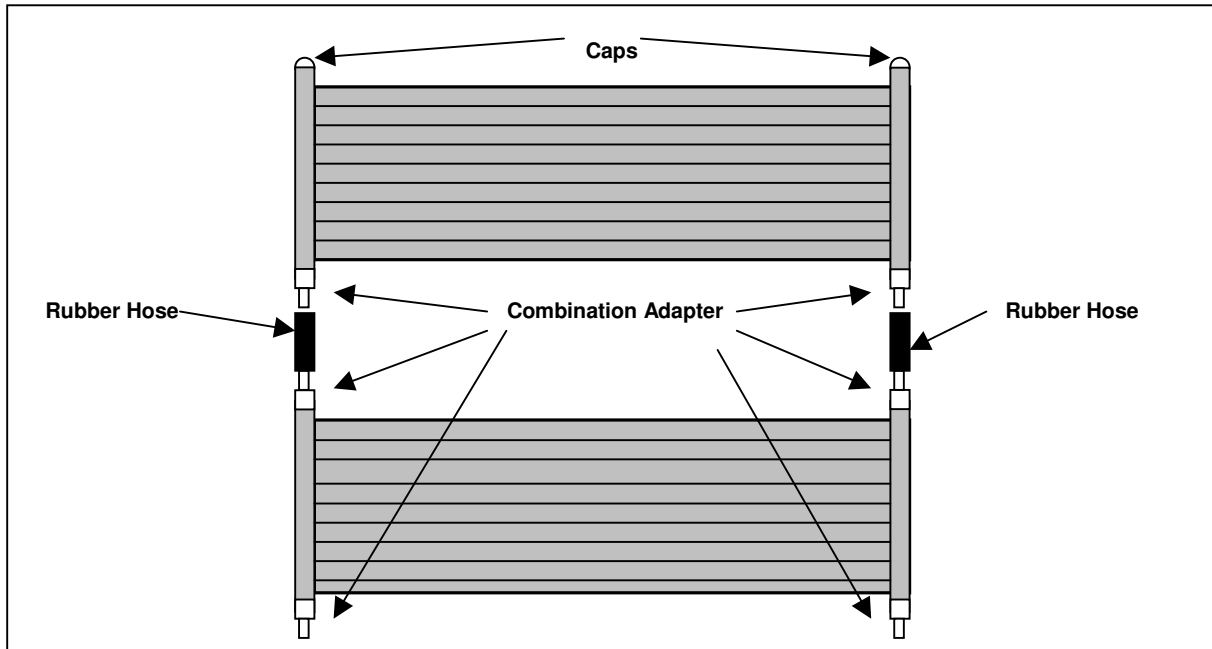


Diagram Step 4 b
(see Appendix A for 3 or more panel installation)

Multiple panels of the same size can be connected together into banks of panels to produce more heat.

For the first panel please follow instructions in step 4a

For the second panel, open both bags marked Add-on Kit. (One from the first panel box and one from the second panel box) Push the rubber hoses (**SK-FTG-G**) over the combination adapters that are screwed into first panel. Slide metal collars (**SK-FTG-H**) onto the rubbers. Place metal collar $\frac{1}{4}$ " from edge and tighten collar with screwdriver. Put the "O" rings (**SK-FTG-I**) aside, you will need them later. See Figure 4b-1



Fig 4b-1

Open the bag marked Panel Kit. You will only need the combination adapters (**SK-FTG-D**) and the "O" rings (**SK-FTG-I**). Put "O" rings on both combination adapters and thread them into second panel. See Figure 4b-2 Open the bag marked Diverter Kit. You will only need the two combination adapters (**SK-FTG-D**). Take the "O" rings that were left over from the Add-on kits and put them on the combination adapters. Thread the combination adapters into second panel.



Fig 4b-2

Take the second panel which now has combination adapters in all four corners and place it beside first panel. Connect the 2 panels together by pushing the rubber hoses over the combination adapters. Tighten metal collars to secure assembly. See Figure 4b-3



Fig 4b-3

For subsequent panels repeat like second panel. **A maximum of 5 panels can be installed per bank.** (See Appendix A)

Note : if you have an odd number of panels (3,5, ...) you will need to order an extra **ADD-ON KIT** (Part # **SK-AK**).
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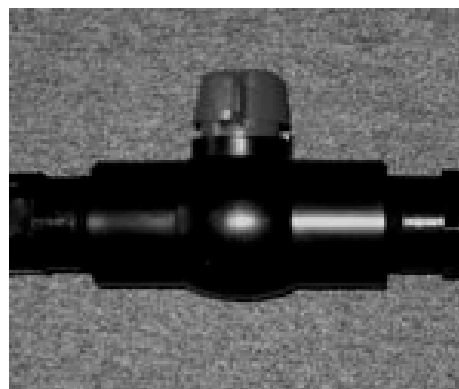
5. For roof or racking mounting you will need the optional Sunkeeper Roof Mounting Kit (Part#SS-MK). Follow the instructions included with the kit.
Panel must be drained of all water at the end of the season before freezing temperatures.
6. Turn off your pool pump. Block the inlet and outlet of your pool so that the water won't empty when you are connecting your panel(s).
7. Remove the hose from the pool inlet (hose between the filter and the pool) Connect the hose to one side of the diverter kit previously assembled. For 1¹/₄" hose, it will only slide over the small end of the combination adapter. For 1¹/₂" hose, it will slide all the way to flange of combination adapter. Place metal collar ¹/₄" from edge and tighten collar with screwdriver. See diagram Step 7-8-9-10
8. Take a hose (not supplied) long enough to reach the panel and connect one end to the diverter kit (same side of the two way valve as in step 7) Place metal collar and tighten. Connect other end of the hose to the panel. Place metal collar and tighten. See diagram Step 7-8-9-10



9. Take another hose (not supplied) and connect it to the panel. Place metal collar and tighten. Connect other end of the hose to the diverter kit. Place metal collar and tighten. See diagram Step 7-8-9-10
10. Take the last hose (not supplied) and connect it to the last open end of the diverter kit. Place metal collar and tighten. Connect the other end of the hose to your pool inlet. Place metal collar and tighten. See diagram Step 7-8-9-10
11. Make sure the valve on the diverter is on the open position.



Valve in the open position
Solar heating is OFF (not heating)
Fig 1a



Valve in the closed position
Solar heating is ON (heating)
Fig 1b

12. Make sure that your hoses are all connected the correct way and that all the collars have been tightened. Unblock the inlet and outlet of your pool.

13. Turn on your pool pump. Check for any leaks. If any of the threaded fittings leak, remove the fitting and apply more teflon. If any of the hoses leak at the connection, loosen the collar and push the hose over the fitting and re-tighten the metal collar. You will see air bubbles coming from the pool inlet. This is normal, the air in the hoses is being purged.
14. Turn your solar heating system on by turning the two way valve in the diverter to the closed position. Once again you will see air bubbles coming from your pool. The system is now purging the air that is in the solar panel(s).

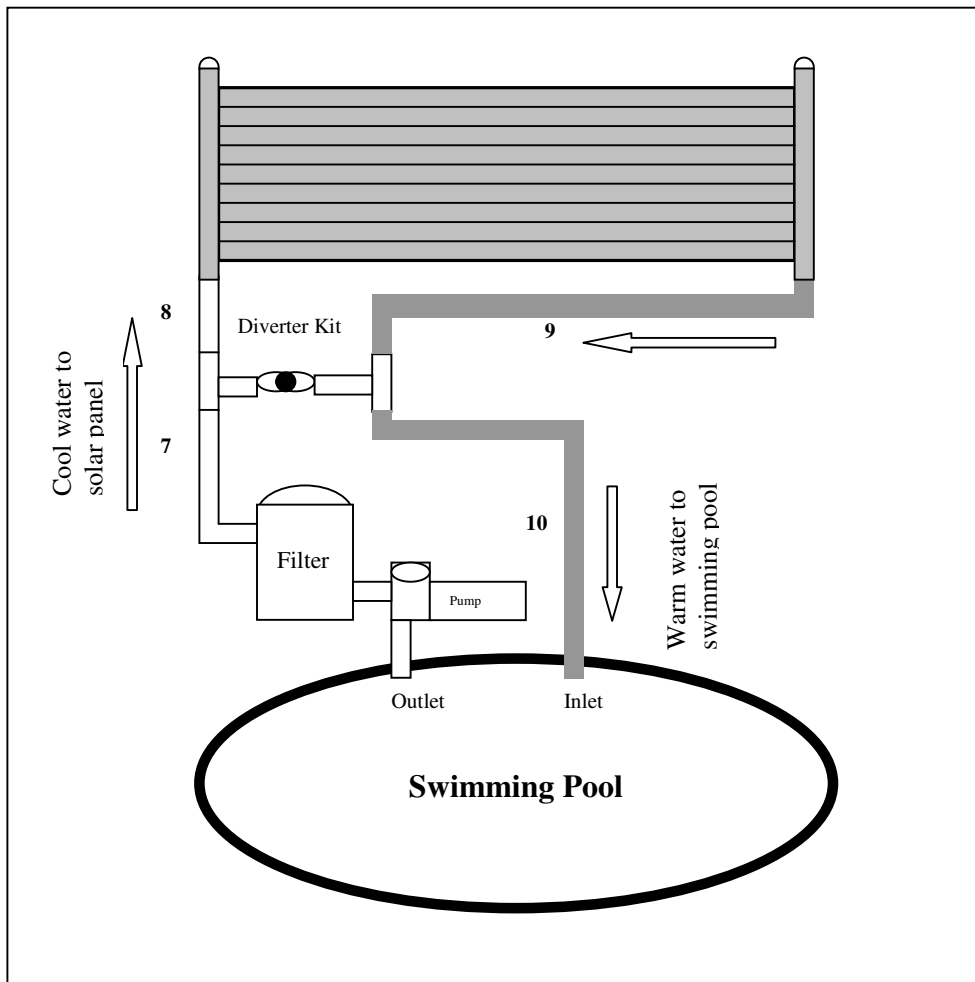


Diagram Step 7-8-9-10

Operation and Maintenance

Turn on your solar heating system whenever the panel(s) are in the sun. You will know the panel is working by touching it, it should feel cool to the touch. That means the heat from the sun is being transferred to the water inside the panel. Turn off your solar heating system at night and whenever it is raining. Failing to do so will cool your pool. It is recommended to close your solar heating system whenever you do a backwash or whenever you manually vacuum your swimming pool. It is also recommended to use a solar blanket or a Liquid Solar Blanket. This will help keep more of the heat generated by the solar panel in your pool.

Adjusting the water flow to your solar panel(s).

Some pool pumps are stronger than others. In order to maximize the heat produced by the solar system, you will need to adjust the water flow to the solar panel(s) with the diverter kit.

- If you do backwashes for your pool, do one now. Alternatively clean your filter cartridge.
- Turn the solar system off (diverter valve in the open position Fig 1a page 7) while the pump is working. Take note of the reading on the pressure gauge of your filtration system.
- While looking at the pressure gauge, slowly turn the solar system on. When the gauge reads 8 PSI more, stop turning the valve. This is the optimum setting for your system. Make a mark on the two-way valve. Always re-open your solar heating system to this mark. If the gauge never reaches 8 PSI more, then your optimum setting is the valve in the closed position (Fig 1b page 7)
- If your filtration system does not have a pressure gauge you don't need to adjust the flow.

Winterizing

At the end of the season, your solar panels **must be drained of all water.**

- Disconnect the hoses from the panel.
- Manipulate the panel until the water is completely out.

Important : Unlike the pipes for your pool, blowing air in the panel will not drain it. The air will only empty a few tubes. You must manipulate the panel until all the water is out.

Internal Freeze damage is not covered by the warranty.

Sunsolar Energy Technologies strongly recommends that you:

- Roll the panel up.
- Store the panel in a heated place until next season.

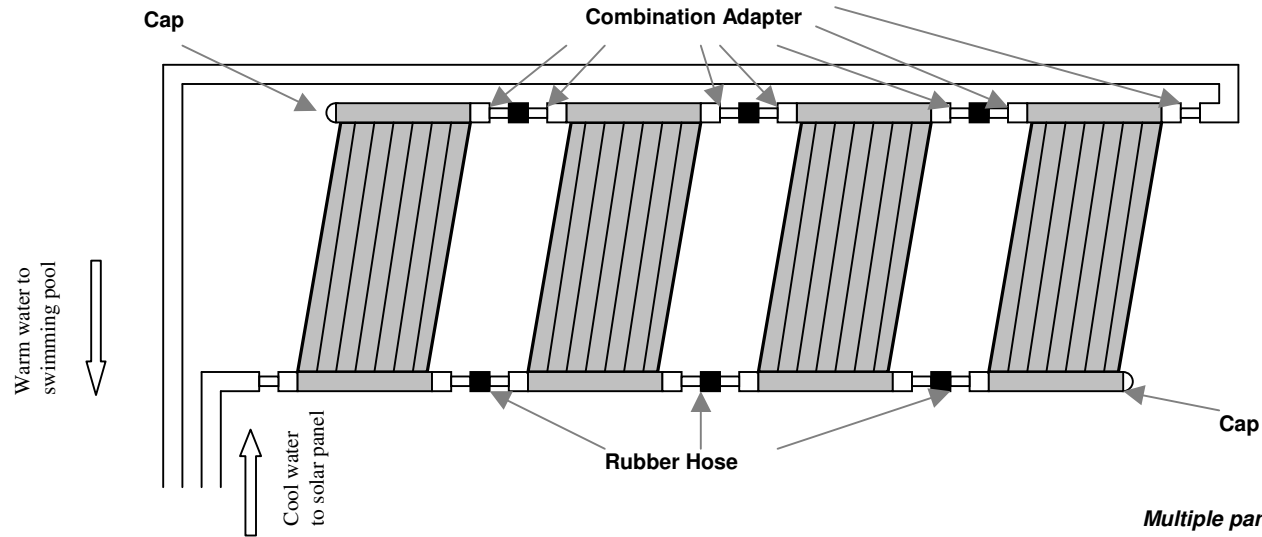
Troubleshooting

If you have any issues with your Sunkeeper, you can visit our website www.sunkeepersolarpanel.com and review our frequently asked questions section.

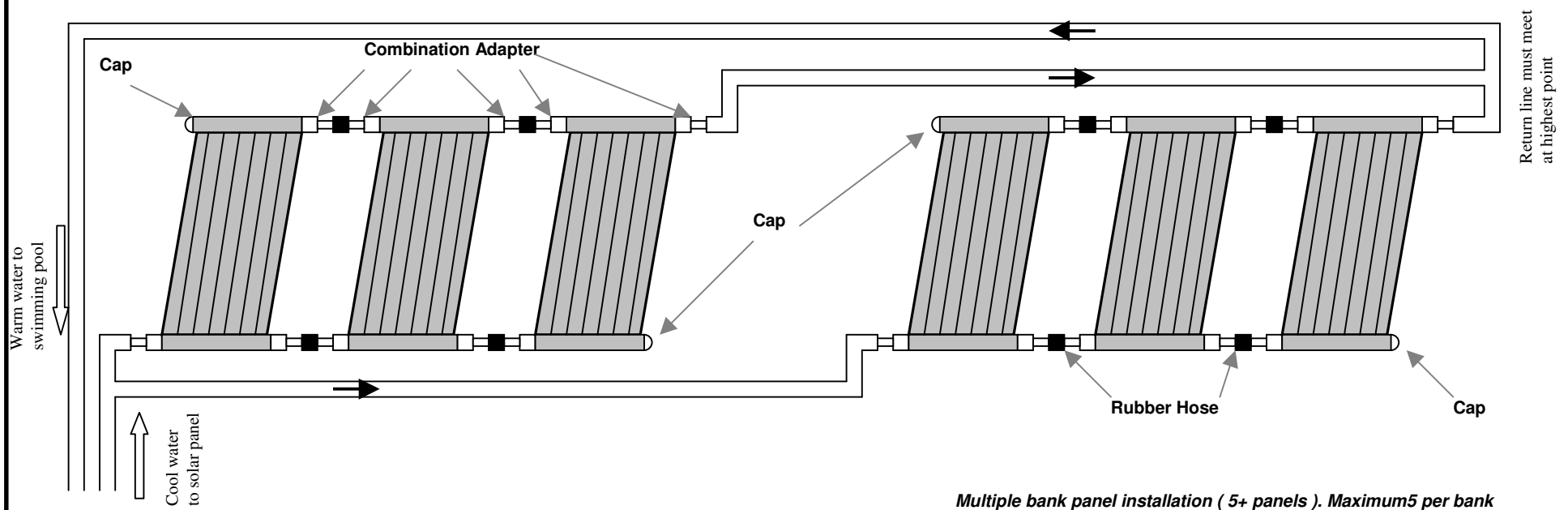
You can also contact our customer support department at 1-888-357-6527

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Appendix A



Multiple panel installation (3 to 5 panels)



Multiple bank panel installation (5+ panels). Maximum 5 per bank