



SOLAR POOL HEATING SYSTEM OPERATING INSTRUCTIONS

Congratulations on your purchase of a Solar Pool Heating System from The Energy SuperMarket. When operated properly, your system will give you year after year of trouble free service, providing your pool with heat free from the sun. You will see that your system is very easy to operate. Here are step by step procedures for operating your system.¹

Getting Started

The first thing to do is set the pump timer so that the pump will run during daylight hours when the sun is shining on the solar panels, typically from 9 AM to 5 PM for South facing systems. For East facing systems, set the time to 8 AM to 4 PM; West facing systems, set for 10 AM to 6 PM.

At the beginning of each heating season or after power outages, you will want to re-check the clock for the correct time.

Turning the System On

When you want your solar system to heat the pool, turn on the pump as described above and turn the system on by turning the 3-Way Valve to the “solar on” position. Air will begin to gurgle out of the pool jets for several minutes, then water will start to circulate from the heater. (Please note that the system is operating most efficiently when there is a high flow through the heater and a low temperature difference between the pool water and the water returning from the heater, typically one to eight degrees².) The System will operate each day while the pump is running.

Regulating the Temperature

At the beginning of the heating season or as the summer approaches, you may wish to regulate the temperature of the system. This is done by setting the 3-Way Valve to a partially open position. You can make small adjustments to this (usually every week or two) as the temperature and weather changes. It is generally

not necessary to turn off the Three-way valve during a rainy day, unless the temperature is below 60 degrees and the winds are above 15 mph.

Turning the System Off

When you do not want your solar system to heat the pool, turn the system off by setting the 3-Way Valve to the “solar off/by-pass” position.

Cooling Your Pool

Did you know that your solar system can actually work to cool your pool during the hot summer months? Simply change the pump timer so that the pump comes on at night instead of during the day. Leave the solar system in the “solar on” position. This will gently cool your pool water as it flows through the panels at night.

Recommendations

No matter how you heat your pool, it is always recommended to use a pool cover during the cold months of the year when the night time air temperature is below 60 degrees. So much heat is lost through the surface of an uncovered pool on cool nights, that the heater may not be able to recover. If you need more information on solar pool covers, give us a call.

¹ Note: If your system is equipped with optional automatic controls, see *Addendum A* for additional instructions.

² Pool pumps 1½ Hp or larger should allow for some bypass of flow to prevent erosion in the panels, see *Installation Manual*.

Verifying That The System Is Working

Often homeowners ask, “How do I know my system is working?” Here are a few things to check:

- If you have a pressure gauge on your filter system you will notice a higher than normal pressure reading when your solar system is on. (Typically 3 to 8 psi higher.)
- When the sun is on the panels and the system is on, warmer water should be coming into the pool. Most of the time you can feel this temperature difference, but not always. This difference ranges from 0 to 10 degrees depending on the weather and water temperatures.
- When the system is on the panels should actually feel cool to the touch. This indicates that the water flowing through the panels is taking the heat energy away into the pool.

Freezing Weather

Even though the potential for freeze damage to your system is very unlikely in sub-tropic climates or during the swimming season in northern climates, it is a good idea to take some precautions when the predicted temperature is below 35 degrees¹. Whenever possible, the panels should be manually drained by removing the end plugs on the upper and lower corners of the row. Remember to re-install the end plugs before the pool pump turns on again or you reactivate the solar heater. An alternative method of freeze protection is to turn your pump on at night with the solar system in the “solar on” position. This will cause the water to circulate through the solar system to avoid freezing - this method will greatly reduce the temperature of the pool; it also relies on electricity to run the pump (If the power fails, your system may freeze).

Maintenance

Your system is virtually maintenance free requiring very little attention. Things to check:

- Air coming out of the return jets in the pool indicate a problem and will reduce heating efficiency. If the problem persists, it may

be one of several problems. If the pump basket is not completely clear of bubbles, there is a good chance that there is a suction leak between the pump and the pool. Check the skimmer to insure the water is at the proper level. Lubricate the basket lid o-ring (consult the pump instructions). There may be a suction leak between the pump and the pool, or in the pump internal gaskets. This may require a professional to service. Next, try tightening the stainless hose clamps on each rubber coupling between the panels. On some systems, the water flows down from the panels faster than the pump will supply it. This allows air to draw in at the rubber connectors. First try tightening the hose clamps; next install a ball valve in the return line from the solar above the tee. Adjust the valve closed slowly over a five minute period until the bubbles have stopped. If this valve is closed 50% or more, there may be other problems; consult the technical support line or a professional. The pool pump may be under sized, not supplying adequate lift and flow to fill the panels.

- Occasionally the hose clamps between the panels become loose and require tightening. This is necessary when water leaks are noticed between the panels at the rubber couplings. The clamps can be tightened with a 5/16” nut driver.
- If a leak develops in the panels or piping to or from the roof, service is required. If the water volume is significant, turn off the solar heater to prevent water loss and/or damage to the pump.

Service and Replacement Parts

Service on your system, or any additional Solar Panels, Components, Pool Covers, Cover Rollers or Pool Accessories are all available through your Solar Direct Representatives at 1-800-333-WARM, or online at TheEnergySuperMarket.com.

¹ In northern climates the panels and plumbing must be drained and winterized. To winterize the System, drain the panels & plumbing, remove the end plugs and/or vacuum breaker from the end of the panel row. Make sure all water is drained and/or removed from all plumbing

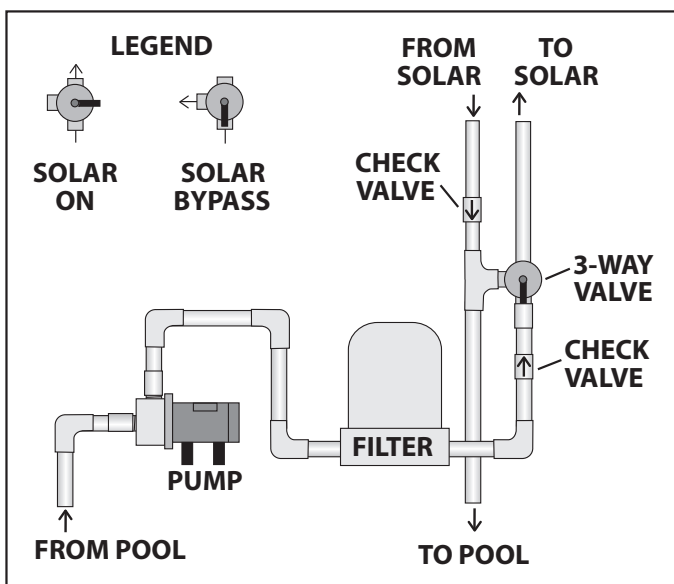
TYPICAL SOLAR SYSTEM PLUMBING SCHEMATIC

Below are typical layouts of how a Solar Pool Heating System is plumbed into your existing pool plumbing.

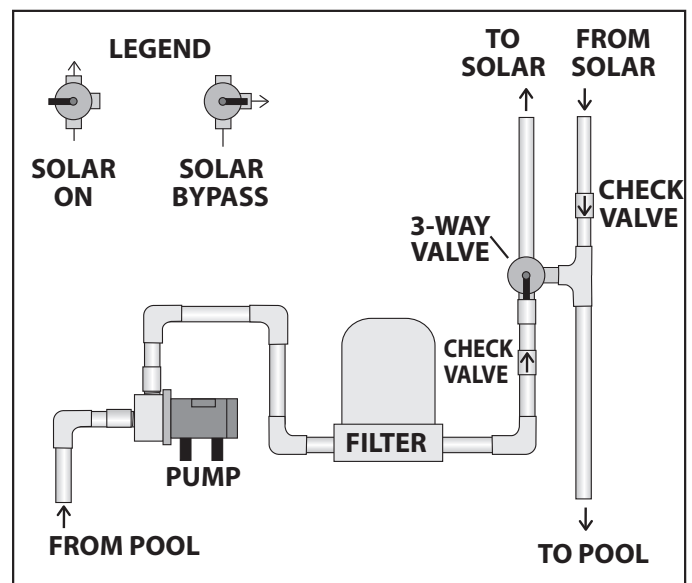
The feed and return plumbing on your solar system should resemble one of these four diagrams. You may have a different type of filter, or you may have additional equipment such as a chlorinator, pool sweep, or gas heater (typically located in the pool return line). In most cases your plumbing will be similar to the plumbing shown.

Notice that the first Check Valve is plumbed in after the filter. This prevents the filter from being back-washed by the water draining from the panels when the pump shuts off. The Three-way Valve either diverts the water to the solar system or directly back to the pool.

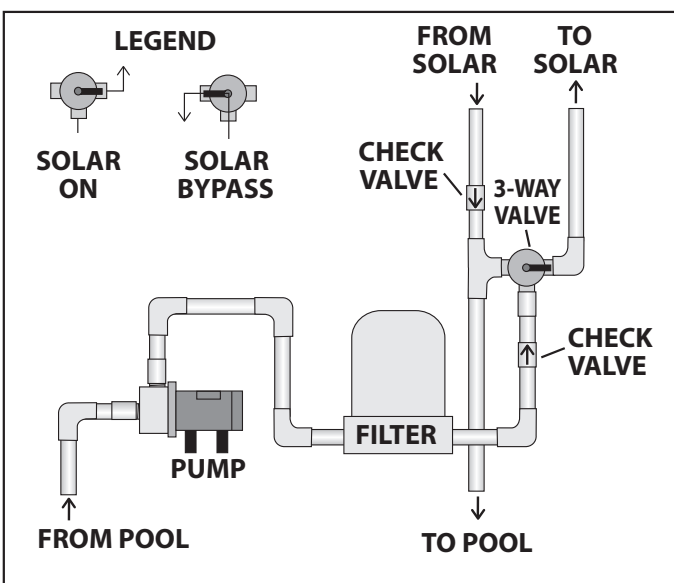
The Check Valve on the solar return pipe prevents the water from flowing backwards through the solar system when the solar system is shut off.



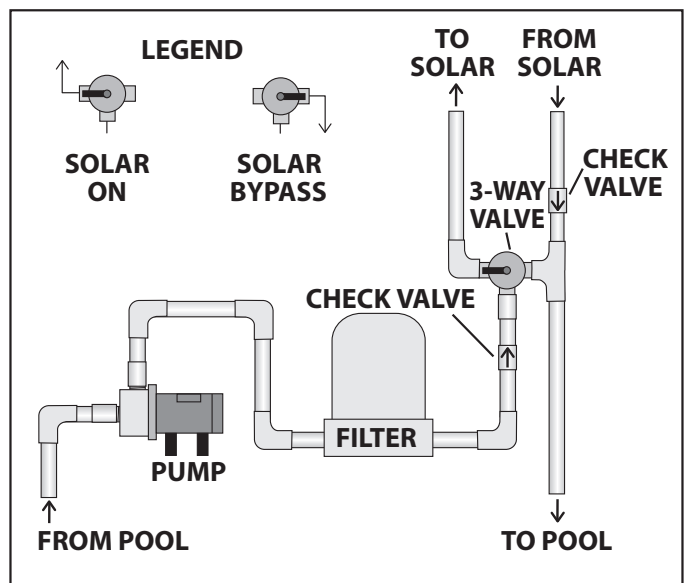
LEFT SIDE RETURN - 90° VALVE ROTATION



RIGHT SIDE RETURN - 90° VALVE ROTATION



LEFT SIDE RETURN - 180° VALVE ROTATION



RIGHT SIDE RETURN - 180° VALVE ROTATION

ADDENDUM A

Instructions For Optional Automatic Controls

If your system has been installed with automatic controls, then in addition to the normal operating instructions, the following instructions will guide you through the operation of your solar system. The automatic control turns your system on and off depending where you set the thermostat and upon whether or not there is energy available at the solar collectors.

System Start Up

To initially start your system you will want to set the pump timer as instructed in the manual system instructions. Then take the following steps:

- * Set the selector switch inside the automatic control to the “AUTOMATIC” position and turn the thermostat all the way to the high position. The system may take several days to reach the temperature you desire.
- * After the pool temperature reaches the desired temperature, turn the thermostat towards low just until you the solar system turns off. Be sure that before you try this that the control is already indicating that the water is flowing through the panels.
- * You may want to mark the control’s face plate with a waterproof pen to indicate that this is the temperature that you like.
- * Your system will now turn on and off automatically to maintain the desired temperature.

The On Position

If you want the water to circulate through the collectors all the time, regardless of the pool and panel temperatures, set the control button to the “ON” position. This is similar to turning a manual solar system on.

The Off Position

If you want the water to by-pass the collectors regardless of the pool and panel temperatures, set the control button to the “OFF”, “BY-PASS”, or “OUT” position. This is similar to turning a manual solar system off.

See the manual that came with the Automatic Control for additional instructions.