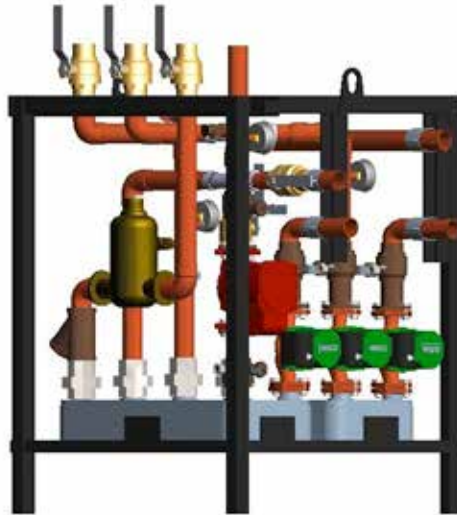


SOLARHOT™

SuperVox

Installation/ Owner's Manual



Description / Applications ***System Overview***

The SOLARHOT SuperVox solar thermal glycol system. The SuperVox allows for easy installation of large solar water heating systems.

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⚠ WARNING

Electrical Shock, Fire, Explosion and Burn Hazards

This system must be installed, adjusted, and put into operation only by a trained, qualified professional or service agency in accordance with the National Electric Code ANSI/NFPA 70 (Canada CSA C22.1), state and local codes, and authorities having jurisdiction.

The installer must carefully read and follow the installation and service instructions contained in this manual. Also make these instructions available to the equipment owner, so they can be kept for future reference.

Features

SOLARHOT SuperVox Features

SOLARHOT has uniquely created the SuperVox package which allow for the easy installation of a large scale industrial solar water heating system using an atmospheric solar storage tanks.

- Heat exchangers, circulators and state of the art digital controls in one space saving package
 - Patent pending heat exchange process means the pumps run less, increasing savings
 - Extra layer of protection with 2 heat exchangers between potable water and glycol loop
 - Decreased installation time
 - Reduces labor and engineering costs
 - Easy maintenance
 - Scalability allows for a wide variety of applications
 - 1.5 inch potable piping connections for easy tie in to back up tanks
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⚠ WARNING

Electrical Shock and Fall Injury Hazard.

Use extreme caution when mounting collectors on a roof or when connecting any wiring or electrical hookups.

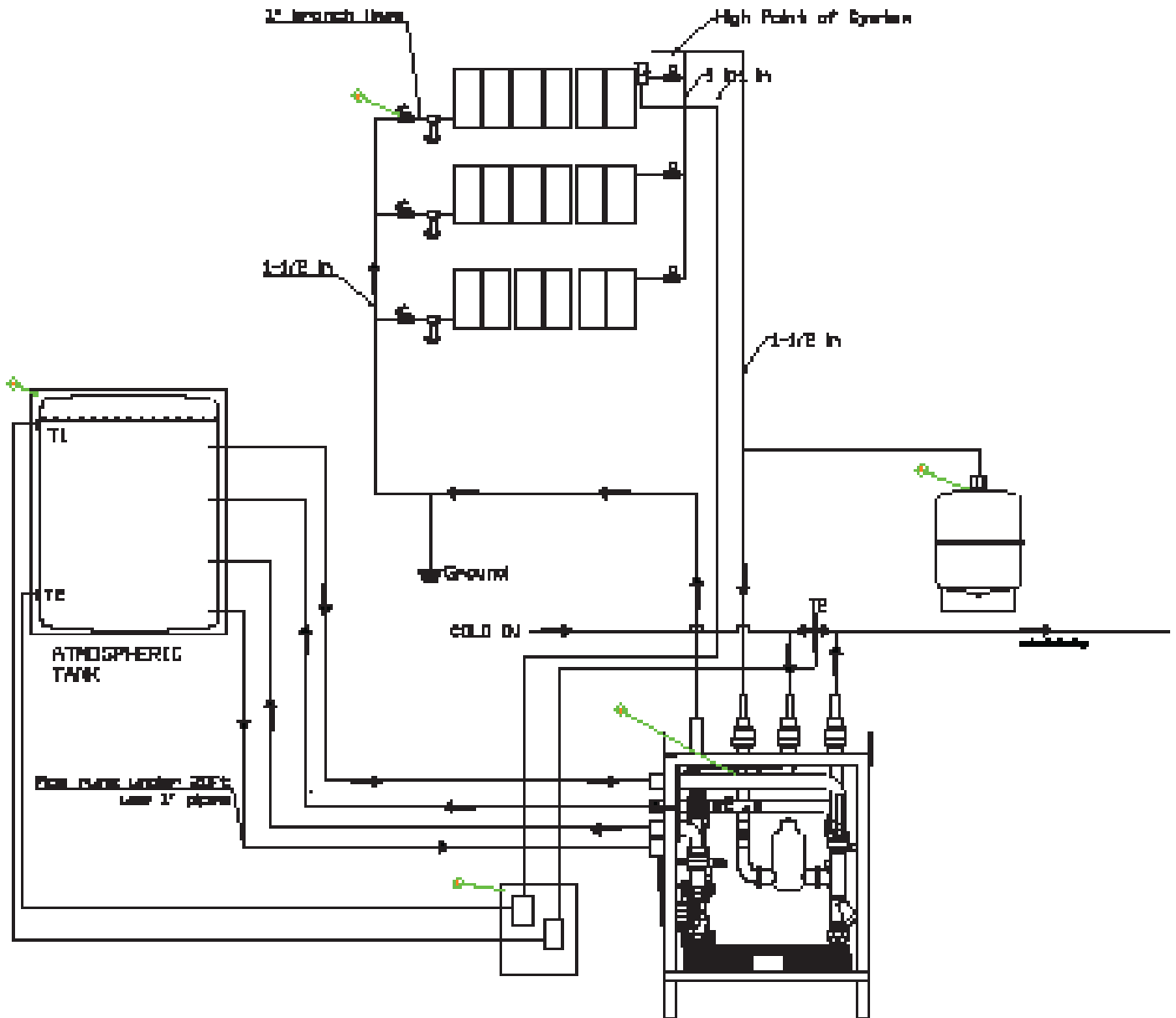
Safety

- Secure all ladders on level ground
- Locate all possible hazards, overhead wires, loose shingles, etc.
- Make sure power is turned off before adding water to the system
- NEVER connect power to the water heater or storage tank until it has been filled.
- Use a tempering valve or mixing valve to prevent scalding
- Consult proper authorities and check with your local building inspector for permit requirements and local building codes before project commencement. The system must meet local code requirements for penetrating structural members and fire-rate assemblies.

Installation

Refer to **Figure 1** for the relative location of the pipes, collectors, and SuperVox pump package.

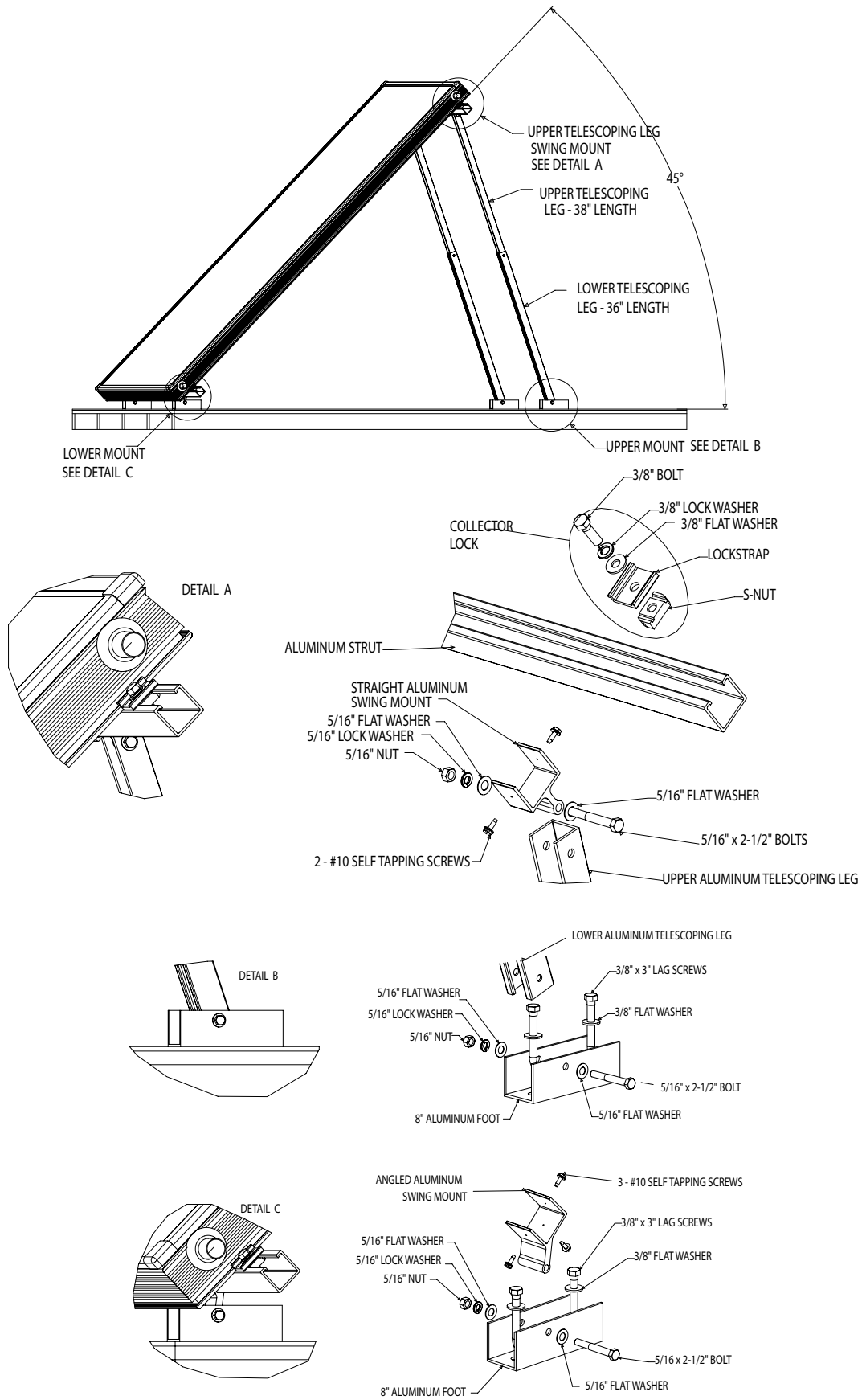
Figure 1 - Installation Diagram



Notes:

- The pipe size will be determined by the size of the collector array.
- To Backup heat source DO NOT USE PLASTIC PIPES!
- An expansion tank should be installed on the potable water side for systems that do not allow backflow.
- Refer to manufacturer's instructions regarding installation of the tempering valve.

Collector Adjustable Mount



Installing the Temperature Sensor

1. Strap the PT1000 probe sensor to the copper pipe at the collector outlet using a stainless steel screw clamp **or use a SOLARHOT thermal well**.
2. For sensor to operate correctly it must be isolated from exterior conditions. All of the exposed copper, as well as the sensor itself, needs to be completely covered with insulation and UV jacketing.

Pipe Runs

Use copper or stainless steel tubing sized for the array size and run lengths. All pipes should be wrapped with insulation. We recommend Elastomeric insulation. Outdoor pipes should also be jacketed with UV protection material or some other means to protect it from moisture and ultraviolet deterioration. All pipes must be well supported or they will sag. Sagging pipes may trap water. The hanger should spread the load so that the insulation is not compressed.

Installing the Tempering Valve

Refer to manufacturer's instructions for information on installing the tempering valve.

Installing the Differential Control

Your SuperVox system is automated by the differential controls located in the control box.

Place sensors as shown in Figure 1. The control for the solar loop uses a sensor installed at the outlet of the collector array and a sensor at the coldest part of the atmospheric tank. The potable loop uses a sensor placed on the cold in line between 2 closely positioned tees leading to 2 of the ball valves at the top of the SuperVox. Install the other sensor at the top of the atmospheric tank. Ensure that the tank volume does not drop below the position of the tank sensor.

Check Collector Loop for Leaks

1. Before the system has been charged, open all shut-off valves on the collector loop.
2. Apply 100 psi of pressure for 15 minutes. Any drop in pressure during that time indicates a leak.
3. Find the source of the leak and repair it. Repeat this procedure until the loop holds pressure.

Charging the System

1. Flush the system with water to clean out any debris or sediment from the pipes and collectors.
2. Connect the outlet of a transfer pump via a hose to the fill valve.
3. Open the fill valve.
4. Open the drain valve. Connect the drain valve to a bucket.
5. Fill the bucket with the appropriate mixture of propylene glycol and water.
6. Run the pump. Continue running the pump until you do not see air bubbles in the coolant.
7. Turn off the pump. Let the system sit for ten minutes.
8. Discharge any air caught in the air trap.
9. Repeat previous steps until no air is discharged.
10. Close drain valve.
11. Continue charging until it reaches the necessary pressure for the system's configuration.
12. Close the fill valve.
13. Turn off and disconnect charging pump.

WARNING Do not use plastic piping

PEX, PVC and other forms of non-metal pipes will burst at solar temperatures. Only use correctly sized copper or stainless steel pipes in solar heating system on both the solar and potable water loops. All connections to and from the SuperVox must be copper or stainless steel.

Operation

Starting the System

1. Confirm that all shut-off valves are fully open.
2. Turn on the system and let it run.
3. Double-check every component and all pipe runs and fittings for leaks.

Emergency Shut Off

1. If there is a leak or other issue requiring the collector loop to be drained, turn the system off by setting the switch on the left side of the differential control to the "OFF" position.
2. Attach a hose to the drain valve.
3. Open the drain valve.

Warning! DO NOT dispose of the heat transfer fluid on the ground or in the water system. Collect it in a container which can be sealed and dispose of it according to the manufacturer's directions.

Maintenance

The solar water system requires very little by way of maintenance, but a few regular system checks can extend the life of your system well beyond 20 years.

Freeze Protection

This system is designed to protect itself from freeze damage to temperatures as low as -30°F as long as the heat transfer fluid in the collectors is at least 40% GRAS propylene glycol. Freeze tolerance limits are based upon an assumed set of environmental conditions. In the event of extreme or prolonged cold weather, protect

your system by shutting it down and draining the collector loop as described in the "Vacation Settings" and "Emergency Shut- Off" sections.

Clear Sediment from Strainer

1. Turn off your solar water system with the switch on the side of the differential control and disconnect the power to the SolVelox by unplugging it from the wall outlet.
2. Close the two shut-off flanges. Open the clean out port.
3. Remove any sediment buildup from the clean out port.
4. Close and tighten clean out port.
5. Return shut-off flanges to the open position and reconnect the power to the SuperVox.

Descaling the Heat Exchanger

1. Turn off your solar water system with the switch on the side of the solar differential control and disconnect the power to the SuperVox by unplugging it from the wall outlet.
2. Close the shut-off valves. Open the descaling ports and remove any sediment buildup from the clean out port.
3. Flush the heat exchanger with a weak solution of white vinegar and water.
4. Close and tighten descaling and clean out ports.
5. Return shut-off flanges to the open position and reconnect the power to the SuperVox.



WARNING Burn and Scald Hazard

Excessive water temperatures could cause explosion, burns, scalding, pressure relief flooding and fitting leaks. Carefully follow the outlined procedures for temperature sensor installation to ensure accurate water temperature sensing and effective control operation.

Change Heat Transfer Fluid

The heat exchange fluid contains buffers which keep the pH of the solution neutral. Heat and time will degrade these buffers, so it is important that you drain the fluid and recharge the system every 3-5 years.

To drain the system:

1. Turn the system off by setting the switch on the left side of the differential control to the "OFF" position.
2. Attach a hose to the drain valve on the lower left side of the SolVelox.
3. Open the drain valve. Dispose of used heat transfer fluid according to manufacturer's directions.

 WARNING Burn Hazard

Exercise extreme caution when draining, as the heat transfer fluid may be dangerously hot.

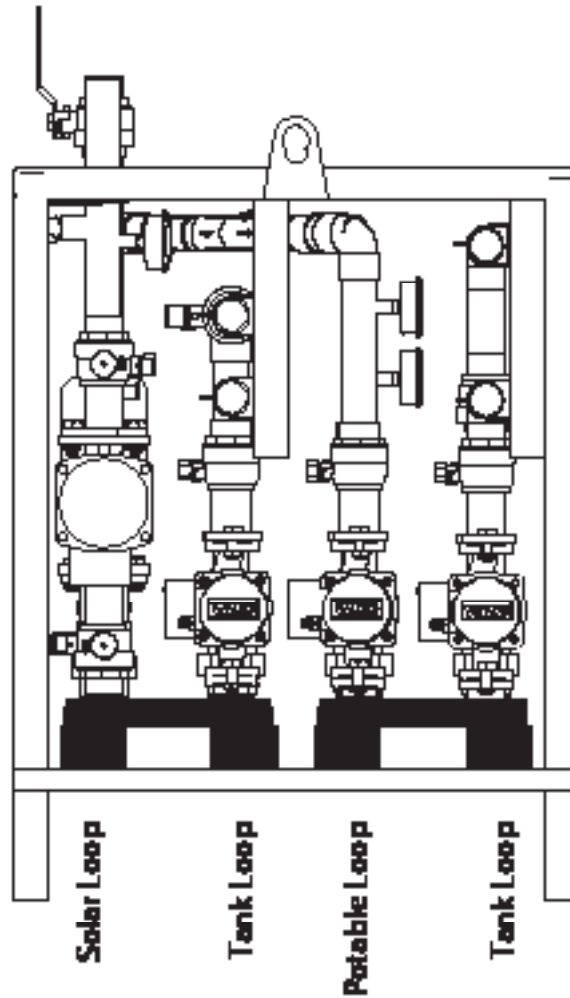
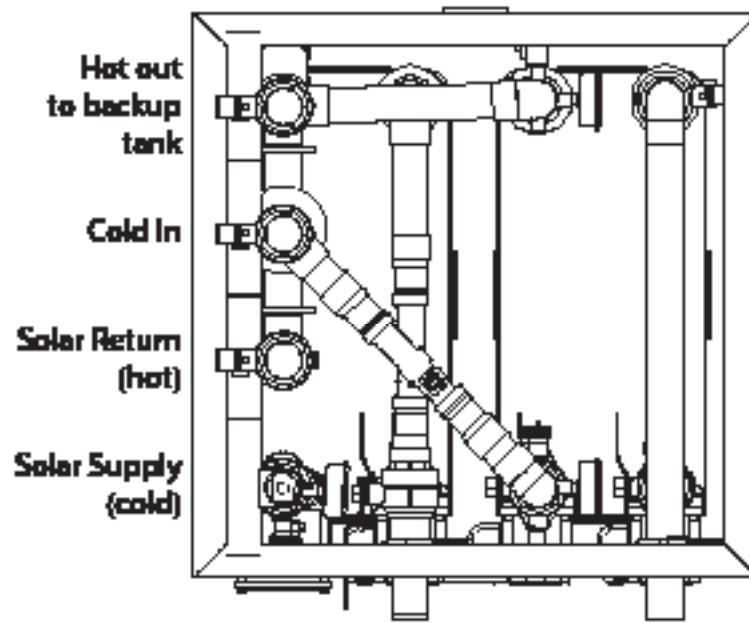
Pumps

The circulation pumps have a life expectancy of 5-10 years. If a pump should require servicing or replacement:

1. Turn off the system with the switch on the side of the differential control.
2. Close all the ball valves at the top of the SuperVox. Leave the system off for several hours until the pumps are completely cooled to room temperature.
3. Solar pumps are flanged so they can be easily removed by loosening the flange's nuts and bolts. Potable loop pumps use bolts and must be unscrewed.

Service

To obtain service for your SuperVox™, notify the dealer who installed or sold the SuperVox™. In notifying your dealer, provide identification of your SuperVox™, date of purchase (with proof), and the nature of the defect. To obtain the location of the nearest authorized SOLARHOT service and/or distribution facility, call (919) 439-2387 or email customerservice@solarhotusa.com



Warranty Information

Limited Two Year
MANUFACTURER'S WARRANTY
For SuperVox System

SolarH²Ot Limited warrants to buyer for a period of twenty-four (24) months from the date of sale that the equipment at the time of shipment will be free from defects of design, material, and workmanship.

- If any defects or malperformance occur during the warranty period, SOLARHOT's sole obligation shall be limited to alteration, repair, or replacement at SOLARHOT's expense, F.O.B. Factory, of parts or equipment, which upon return to SOLARHOT and upon SOLARHOT's examination prove to be defective.
- SOLARHOT shall not be liable for damage or wear to equipment caused by abnormal conditions, acts of God, failure to properly prime or to operate equipment without flow or caused by corrosives, abrasives or foreign objects.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

IN NO EVENT SHALL SOLARHOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

Limited Ten Year
MANUFACTURER'S WARRANTY
For SOLARHOT Collectors

SolarH²Ot Limited warrants to buyer for a period of ten (10) years from the date of sale that the equipment at the time of shipment will be free from defects of design, material and workmanship.

- If any defects occur during the warranty period, SOLARHOT's sole obligation shall be limited to alteration, repair or replacement at SOLARHOT's expense, F.O.B. Factory, of parts or equipment, which upon return to SOLARHOT and upon SOLARHOT's examination prove to be defective.
- Equipment and accessories not manufactured by SOLARHOT are warranted only to the extent of and by the original manufacturers' warranty.
- SOLARHOT shall not be liable for damage or wear to equipment caused by abnormal conditions, acts of God, failure to properly prime or to operate equipment without flow or caused by corrosives, abrasives or foreign objects.

Please note that the warranty does not apply to conditions or damage caused by:

1. A failed component or part that is not a part of the SOLARHOT collector.
2. Freezing conditions.
3. Misuse, abuse, neglect, accident, or alteration.
4. Cosmetic discoloration of the frame-wall, absorber plate, or glazing over time.
5. Glass breakage.
6. The introduction of harmful chemicals, caustic fluids, or liquids deleterious to copper tubing, including improperly applied or maintained heat transfer fluids and chlorinated water. The use of SOLARHOT collectors for pool or spa heating is not covered by this warranty unless the pool or spa water is isolated from the collector through the use of a heat exchanger.
7. Heat transfer fluids other than distilled water or propylene glycol are used.
8. Propylene glycol pH levels exceeding 10 or falling below 8.
9. Stagnation in excess of 30 days.
10. Excessive pressure.
11. Excessive flow rates.
12. Improper plumbing configurations.
13. Clouding or condensation naturally resulting from temporary intrusions of moisture into the collector.
14. Acts of God.
15. Installation methods, including mounting, that do not conform to relevant national, state, or local codes and ordinances, good industry practices, or current applicable SOLARHOT manuals, diagrams, or installation instructions.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

IN NO EVENT SHALL SOLARHOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

After one (1) year of warranty, freight and shipping costs are the responsibility of the owner.

SUPERVOX SYSTEM



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