



“SOLPAC” Active System Retrofit Module Installation and Operation Manual



Model Number(s);
SP 2002 501-HX-D, SP 2002 802-HX-D, SP 2002 803-HX-D,
SP 2002 1203-HX-D, SP 2002 1204-HX-D

Solargenix Energy, LLC
2101 Westinghouse Blvd., Suite 115 • Raleigh, North Carolina, 27604

~ INTRODUCTION ~

The procedures and recommendations described within this manual are intended for use with the "SOLPAC" - Active System Retrofit Module only (herein referred to as the "SOLPAC"). Be sure to read and understand the operation and maintenance procedures of this manual prior to performing any operation and/or service. Failure to follow the procedures and practices described within this manual could result in harm to person and property and would void the manufacturer's warranty.

CODE COMPLIANCE

The SOLPAC, and associated components, should be installed by a licensed solar contractor and in accordance with applicable local building codes, ordinances and regulations governing solar water heating system installations. If a solar contractor is not available, seek help from qualified plumbing, roofing and electrical service personnel.

SAFETY PRECAUTIONS

Before attempting to install the SOLPAC, insure the electrical service to the water heater is turned-off at the circuit breaker, the water service is shut-off and the water heater empty.

The solar thermal collectors and the photovoltaic module (PV), which supply heat and electrical energy to the SOLPAC, should be covered with opaque coverings to impede the generation of thermal / electrical energy during the install.

PLACEMENT

The SOLPAC should be installed next to the water heater and **not** in an area where leakage of the SOLPAC or connections will result in damage to the adjacent area to it or to lower floors of the structure. Where such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the SOLPAC. Whenever possible elevate or raise the storage tank above the level of the SOLPAC to enhance the thermosyphoning of the cold water in the storage tank.

WARNING

The use of galvanized or plastic type piping (i.e., CPVC, PVC, and etc...) is prohibited. Lead-free solder is to be used for all soldered connections. The use of 50/50 lead solder is prohibited. Damage resulting from use of these products will not be covered under the warranty.

Threaded connections should have no less than Teflon thread tape and the addition of Teflon thread sealant where applicable.

~ INSTALLATION INSTRUCTIONS ~

1. INSPECTION - Carefully remove all packaging materials and inspect for signs of damage. The SOLPAC outer cover has a translucent blue film protecting the material surface. Removal of this film, will not impede/impair the function of the SOLPAC.
2. PLACEMENT - Place the SOLPAC into the pre-determined position adjacent to the water tank. Remove the lid and using a bubble type level, check the unit for plumb/level. Adjust the feet and tighten the locking nuts to secure the unit once plumb/level is achieved.
3. SETUP – Remove the front cover by removing the lid and removing the fasteners as shown in Figure 1.

A - ¼"-20 bolts and nuts (2x)

B - #2 Phillips head panels rivets (2x)

C - ball valve nut and arm (1x)

Tilt cover forward and pull upward/outward to release from connection grommet at the bottom of the unit.

Replace the lid temporarily, prior to making the solar-side connections.

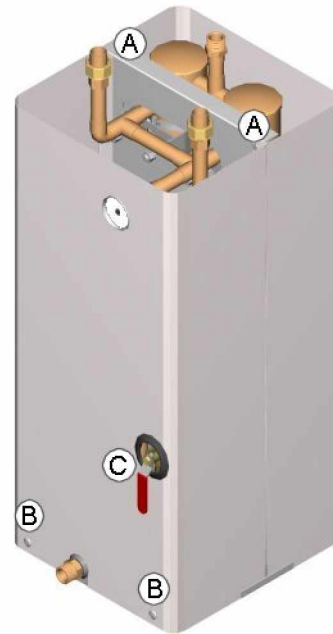


Figure 1

~ INSTALLATION - CONT. ~

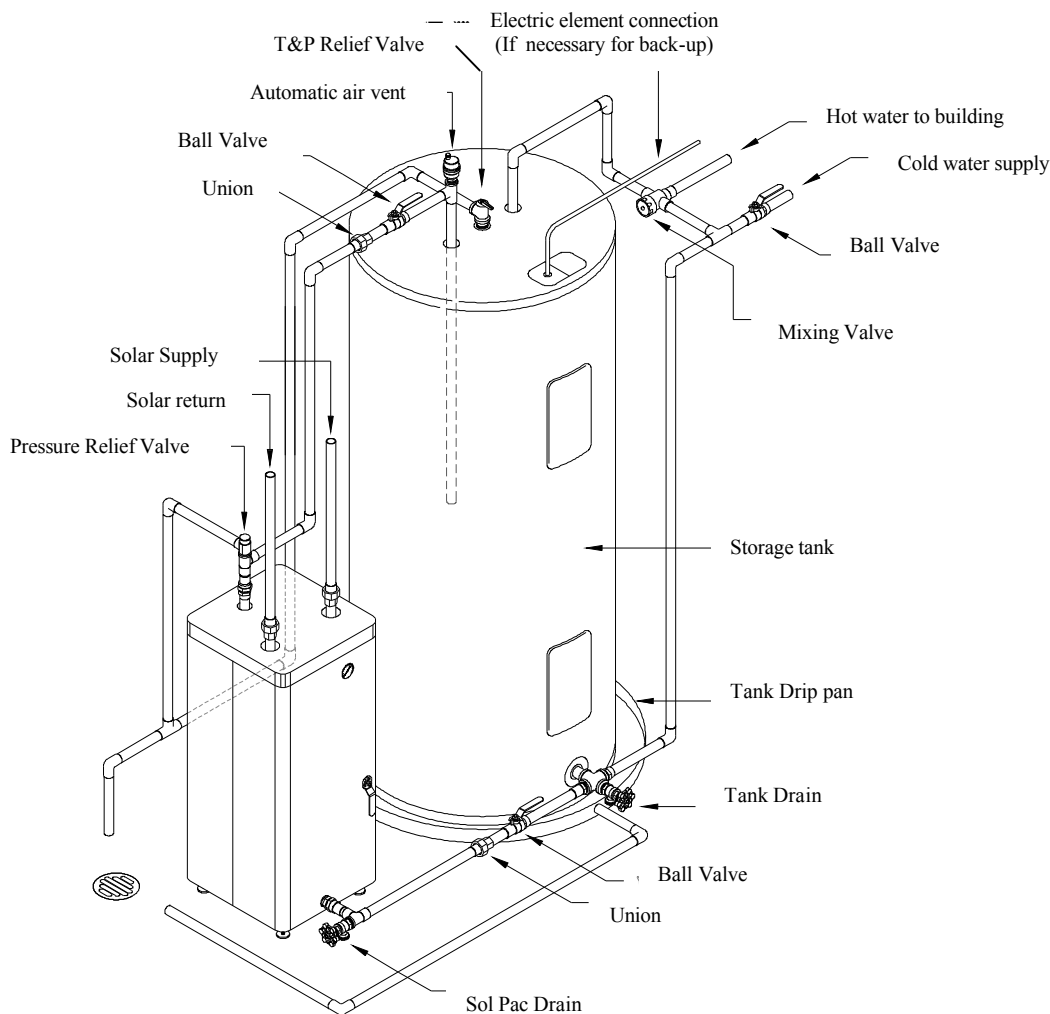


Figure 2

4. CONNECTIONS - Figure 2 illustrates a typical installation using the water tank drain as the cold water supply to the system(s). In this illustration, isolation valves, unions and an additional drain valve (all optional) are used as interconnects and allow for cut-off of the module if repair/replacement is required.

NOTE - The tank-side loop, of the SOLPAC, relies on the effect of natural convection for circulation. The

connection from the storage tank to the SOLPAC should have a gradual incline or decline to minimize air entrapment. The cold water dip-tube should be removed and cut to a shorter length approximately 1/3 of the distance from the top of the storage tank.

The return connection at the collector should include an air vent (manual, keyed) as shown in Figure 3.

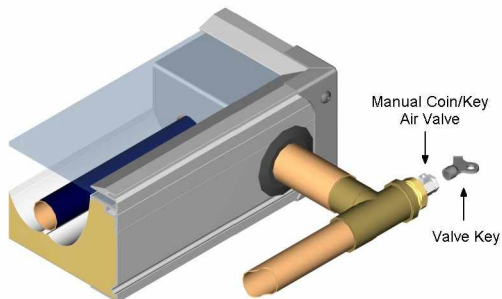


Figure 3

5. CHARGING THE SYSTEM (solar-side) – After all connections have been made and a final pressure test has been performed, the system is ready to be charged. Air vents should be loosened to allow air to escape during the charging process.

Fill the system with an approved solution of antifreeze and distilled water and secure the air vents. Pressurize the system to the required pressure and secure the expansion tank. (Ensure tank pressure is properly set)

6. ELECTRICAL CONNECTIONS – The SOLPAC contains a 12-volt seal-less magnetic drive pump used to circulate the heat-transfer fluid media throughout the solar-side loop of the unit. This is typically powered by a photovoltaic module (PV) mounted adjacent to the collectors, on the roof. The power supply cable should be of a size and type, suitable for the application.

WARNING - *The PV produces electrical energy when subjected to light energy. Insure the PV is covered with an opaque covering, prior to making electrical connections between the PV and the SOLPAC.*

7. REASSEMBLE & TEST –

- Slide the SOLPAC lid up the collector feed lines enough to replace and secure the front cover using the fasteners removed in step 3. Slide the lid back into position.
- Check to insure all tank-side drain valves are closed and isolation valves (if applicable) are open.
- Open the cold water supply valve to fill the water heater and tank-side loop of the unit (open a faucet in the structure to allow air to escape while filling).
- Remove any coverings from the solar collectors and the PV module.

~ DESCRIPTION OF OPERATION ~

The SOLPAC is an active-indirect solar interface for new or existing domestic hot water systems. The unit is designed to work virtually free of user interface. A photovoltaic module is incorporated to deliver electrical energy to the 12-volt pump, which circulates the heat-transfer fluid media through solar-side loop of the unit. Solar thermal collectors provide heat energy to the twin “tube-in-shell” style heat exchangers contained in the unit. As the solar-side loop is energized, it heats the fluid media flowing through the heat exchangers. Conduction transfers this heat energy to the water contained in the tank-side loop of the heat exchangers.

The tank-side loop utilizes natural convection (the thermosiphon effect) to heat the water in the water heater. As the water is heated in the heat exchangers, it becomes lighter and begins to rise out of the SOLPAC and dispenses into the top of the water heater. Colder - denser water is drawn into the bottom of the heat exchangers, from the water tank, and as it heats – rises, thus creating a natural circulation within the tank-side loop. The system will continue to operate as long as there is light energy available to run the pump.

~ MAINTENANCE ~

The SOLPAC is equipped with a “seasonal position” or SP valve, located on the face of the unit. During the colder months, as evening air temperatures drop, the unit is subject to reverse thermosiphon (a natural phenomenon which could potentially give up heat energy to the night sky). The SP valve introduces a flow check valve, to the solar-side loop, to prevent this phenomenon from occurring. During the warmer months, when the air temperatures are higher, the check valve is bypassed allowing the system to free-flow which aids the system from potential overheating.

A general rule of thumb would be, when nighttime ambient air temperatures fall below the ambient ground water temperature, the SP valve should be in the off, closed or horizontal position and when water to air temperatures are equal or the nighttime air temperature higher, the SP valve should be in the on, open or vertical position. The SP valve should only need to be adjusted twice per year.

Always set the valve in the summer position during vacation periods.

Contact the technical department for more information as necessary.

Solargenix Energy, LLC
2101 Westinghouse Blvd.
Suite 115
Raleigh, North Carolina 27604
Phone: 919.871.0423
Fax: 919.871.0702
email@solargenix.com
www.solargenix.com