Before attempting installation, read these instructions and acquaint yourself with the component names. Great care has been taken to make this an easy-to-follow procedure. A little time spent understanding the system and its parts will assure a successful, trouble-free installation.

CAUTION: SAFETY COMES FIRST

When working on or around your roof or system, please take care to avoid hazards such as electrical wires and loose shingles.
Congratulations on investing in one of the most advanced solar water heating systems available. Utilizing the free, environmentally friendly energy from the sun to heat water for your home makes so much sense. Solar energy is safe and reliable and your decision to use solar energy is helping to preserve our environment and to reduce our rapid depletion of non-renewable, fossil fuels.

Your new Solene Solar Hot Water System uses state-of-the-art technology and will provide you with many years of maintenance free and dependable service. If you have any questions, please feel free to contact your local dealer or our home office.

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COMPONENT LIFE EXPECTANCY - Installed and maintained properly, your Solene Solar Hot Water Heating System should provide many years of trouble free, uninterrupted service. The main component of the system, the Aurora Solar Collector, is designed to last 25 to 30 years. Solar Storage Tanks have a life expectancy anywhere from 10 to 20 years depending greatly upon regional water quality. (Replacing the internal sacrificial anode rod from time to time can extend Tank life.) Differential Control and Circulation Pump life expectancies run from 5 to 10 years. As electrical components, they are susceptible to lightning strikes or electrical surges. Valve life expectancy varies greatly depending on water quality and usage.
BEFORE YOU START YOUR INSTALLATION, HERE ARE A FEW IMPORTANT TIPS:

1. **Caution - SAFETY COMES FIRST!**
   There is no substitute for safety. Always exercise extreme caution, care, and good judgment when working on or around a roof.
   - Please take care to avoid hazards such as overhead electrical wires or loose shingles.
   - Be sure to secure ladders so they will not slip or fall.
   - Do not allow extension cords to lie in standing water.
   - Wear shoes with proper tread to prevent slipping on the ladder or sloped roof areas.
   - Disconnect all power to any energized equipment when installing differential control system.

2. Check with your local building department to determine permitting and code requirements in your area.

3. While this manual explains how to install Solene solar collectors properly in typical situations, it cannot possibly address all the unique or individual circumstances possible. If you have any installation questions, contact your Solene representative for assistance.

4. Before starting any work, determine the location of your system and prepare a schematic drawing of the installation area. Roof areas often times look bigger than they really are, so be sure to measure the available area before making your schematic.

5. Familiarize yourself with all of the Solene components and plumbing materials that you will need to complete the installation.

6. Don’t take shortcuts. Whenever possible, panels should be installed so they are accessible and away from roof edges.

7. Depending upon your specific job, you will need various plumbing items and materials. Be sure to use quality products that will withstand direct sunlight year after year.

**NOTE:** As the installer, you are responsible for exercising good judgment when installing Solene systems to protect the long term integrity of the collectors as well as the mounting surfaces.

**THE OPEN LOOP SYSTEM** - The Solene open loop system is a pressurized open loop system. When the photovoltaic module powers the pump on, water is pulled from the tank and circulated up through the solar collectors and back. This circulated water comes directly from the solar storage tank.

Open loop systems are used in areas where freezing temperatures rarely occur.
SIZING & ORIENTATION: The vast majority of Solar Domestic Hot Water (SDHW) systems are comprised of “Medium Temperature” solar collectors manufactured using tempered glass and some type of metal absorber plate. They differ from “Low Temperature” systems predominantly utilized in swimming pool heating applications. These systems are typically manufactured using plastic resins. “High Temperature” systems are utilized to generate steam for industrial applications. Solene collectors belong to the “Medium Temperature” category.

Normally, only one or two Solene collectors are needed for a SDHW system. The number of collectors is determined not only by the amount of water that is needed, but also by the latitude of the installation and the collector’s orientation.

The following table details Solene’s recommended minimum system sizing guide for a typical installation:

<table>
<thead>
<tr>
<th>Tank Capacity</th>
<th>Number of Collectors</th>
<th>Collector Type</th>
<th>Control Type</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>66 Gallon</td>
<td>1</td>
<td>SLAR32 (4’ x 8’)</td>
<td>Photovoltaic Module</td>
<td>SLAR32PV-66</td>
</tr>
<tr>
<td>80 Gallon</td>
<td>1</td>
<td>SLAR40 (4’ x 10’)</td>
<td>Photovoltaic Module</td>
<td>SLAR40PV-80</td>
</tr>
<tr>
<td>120 Gallon</td>
<td>2</td>
<td>SLAR32 (4’ x 8’)</td>
<td>Photovoltaic Module</td>
<td>SLAR64PV-120</td>
</tr>
<tr>
<td>120 Gallon</td>
<td>2</td>
<td>SLAR40 (4’ x 10’)</td>
<td>Photovoltaic Module</td>
<td>SLAR80PV-120</td>
</tr>
<tr>
<td>66 Gallon</td>
<td>1</td>
<td>SLAR30 (4’ x 6’)</td>
<td>Photovoltaic Module</td>
<td>SLAR30PV-66</td>
</tr>
<tr>
<td>80 Gallon</td>
<td>1</td>
<td>SLAR32 (4’ x 8’)</td>
<td>Photovoltaic Module</td>
<td>SLAR32PV-80</td>
</tr>
<tr>
<td>80 Gallon</td>
<td>1</td>
<td>SLSG40 (4’ x 10’)</td>
<td>Photovoltaic Module</td>
<td>SLSG40PV-80</td>
</tr>
<tr>
<td>120 Gallon</td>
<td>2</td>
<td>SLSG40 (4’ x 10’)</td>
<td>Photovoltaic Module</td>
<td>SLSG80PV-120</td>
</tr>
</tbody>
</table>

To comply with SRCC certification the storage tank shall have an additional insulation jacket.
3. Installation Instructions. - Cont.

Normally, collectors are installed on roofs, as close as possible to the tank, to minimize heat loss through the pipe. The pipes between the tank and the collectors MUST be insulated with at least ¾” thick insulation, for the same reason. Check local codes for well thickness in your area.

The solar collectors must be located in a structurally sound area of the roof that will be exposed to the sun for the majority of the day, all year round. A solar pathfinder can be used for solar site analysis.

The recommended angle of the collectors is equal to the location's LATITUDE. This angle is designed to maximize solar absorption annually. For increased energy production in winter months, the collector angle can be increased up to +15 degrees from latitude. For increased summer energy production, decrease collector angle up to - 15 degrees from latitude. A variation of +/- 15 degrees is acceptable. The orientation of the collectors must be due south ± 55 degrees. Flush mounts on available roof slopes are recommended to allow convenience and cost effectiveness, since these variations from the exact angle and orientation will affect the system’s performance only by about 5%.

There are three basic roof-mounting methods:

**FLUSH MOUNT INSTALLATION** - Parallel to the roof line, as illustrated below.

Flush Mount Installations are recommended when the roof’s slope conforms to the orientation and slope requirements as stated previously. This is the easiest and most aesthetically pleasing installation method. After the collector(s) are installed, it should resemble a skylight. The flush mount (1-5060-031) consists of four (4) mounting brackets, four (4) carriage bolts, four (4) nuts, and associated hardware. There are two sets each for the top and bottom.

1. Start from the bottom. When elevating the collector to the roof, make sure that the “weep holes” are facing down. It is recommended to install the collectors vertically (length up the roof’s slope), but the collectors may be installed horizontally as well.

2. Once the collector’s location is determined, anchor two (2) flush mount brackets to the roof using two (2) stainless steel 3/8” lag bolts for each bracket. Each bolt should be sealed using an appropriate roof sealant in order to prevent any possible leaks from penetrating the roof members. The flush mount brackets should be spaced so the lag bolts penetrate the roof trusses. The collectors will rest on top of the flush mount brackets. (Fig. 2)

3. Verify a secure connection to the trusses. If lagging directly into the roof trusses is not possible, secure a 2’ x 4’ wood beam perpendicular to the trusses, inside the attic, and anchor the bolts to this member. Again, verify a secure connection into the new member.

4. Connect the flush mount brackets to the collector’s frame by stainless steel self-drilling screws or bolt mounting bracket into frame slot using (1) 5/16” carriage bolt, nut, and washer.

5. Repeat steps 1-4 for the top. That’s it. The collector is anchored.
FLUSH MOUNT GRIPPER INSTALLATION - Parallel to the roof line, as illustrated below.

Flush Mount Installations are recommended when the roof’s slope conforms to the orientation and slope requirements as stated previously. This is the easiest and most aesthetically pleasing installation method. After the collector(s) are installed, it should resemble a skylight. The flush mount gripper (1-5060-030) consists of four (4) U-channels four (4) grippers, four (4) strut nuts with springs, and associated hardware. There are two sets each for the top and bottom.

1. **Start from the bottom.** When elevating the collector to the roof, make sure that the “weep holes” are facing down. It is recommended to install the collectors vertically (length up the roof’s slope), but the collectors may be installed horizontally as well.

2. **Once the collector’s location is determined,** anchor two (2) U-channel to the roof using two (2) stainless steel 3/8” lag bolts for each U-channel. Each bolt should be sealed using an appropriate roof sealant in order to prevent any possible leaks from penetrating the roof members. The U-channel should be spaced so the lag bolts penetrate the roof trusses, and the U-channel should run parallel to the truss. The collectors will rest on top of the U-channel. (Fig. 2)
3. Verify a secure connection to the trusses. If lagging directly into the roof trusses is not possible, secure a 2’ x 4’ wood beam perpendicular to the trusses, inside the attic, and anchor the bolts to this member. Again, verify a secure connection into the new member.

4. Connect the latch to the gripper (Fig 3) utilizing the provided nut and bolt. Slide the latch into the top of the U channel so that the gripper remains on top of the opening. Place them at the middle of the U-channel’s top and tighten. (Fig 4)

5. Loosen the gripper providing space to insert the slot at the collector’s edge between the Gripper’s hook and the U-channel’s top. Once both grippers are grabbing the collector’s edge slot, tighten both grippers. (Fig 5)

6. Repeat steps 2-5 for the top. That’s it. The collector is anchored.

**ANGLE MOUNT INSTALLATION** - Not parallel to the roof line, normally used on flat roofs, east/west, and ground mounts, as illustrated below.

Angle Mount Installations involve positioning the collector(s) at an angle so that the upper part of the collector is higher than the lower in reference to the mounting surface. The “angle mounting” is used on horizontal surfaces or on roofs that slope in directions other than south at 55 degrees.

1. Use the angle mounting kit (1-5060-039), see figure 8. Connect the U-channels to the roof just like in the Flush Mounting method. Assemble the mounting clips to both U-channels utilizing the provided bolts (Fig. 7).

![Fig. 8](image1.png)

![Fig. 9](image2.png)

2. Screw the mounting clips to the BOTTOM part of the collector (the weep hole side) using two (2) stainless steel self-drilling screws, each. (Fig. 10). Mounting clips may also bolt into collector frame slot using (1) 5/16 carriage bolt, nut, and washer.

![Fig. 10](image3.png)

3. Assemble both tilt legs and top mounting clips Fig. 11. Connect the clips to the collector’s top by stainless steel self-drilling screws. Mounting clips may also bolt into collector frame slot using (1) 5/16 carriage bolt, nut, and washer.

![Fig. 11](image4.png)

![Fig. 12](image5.png)

![Fig. 13](image6.png)

4. Connect the U-channels to the opposite side of the tilt leg, using the provided nuts and bolts. (Fig. 13).
5. **Plumbing.**

Make sure that all the components are accessible and easy to reach. Provide for clear access to the storage tank, pump, mixing valve, differential control and other key components. If a component in the potable waterside of the system may require future service or maintenance, make the connections with brass unions. Use only brass nipples and unions and copper and brass fittings in plumbing the solar storage tank and expansion tank. The use of galvanized fittings or nipples, PVC pipe is prohibited.

Hard copper connections to the city cold water supply line and the home hot water feed lines are recommended. The gaskets in standard water heater flex hose connectors can become brittle and compressed over time and begin leaking on the water heater. If not detected in a timely manner even a small drip or leak may cause serious damage to the tank’s electrical components or, in extreme cases, may cause the tank to leak from the outside in.

Tank plumbing is required to provide for the isolation of the solar storage tank from the city cold water supply line by means of an isolating valve.

The circulation pump shall be pre-wired with a 6” line cord so that it can be plugged directly into the 115-volt receptacle on the differential control. Repairs or routine system maintenance can be completed without introducing air into the system or draining the HTF.

A high quality thermostatic mixing valve is a required component in all OG-300 certified systems and should be plumbed in line with brass union connections for ease of future repair or replacement. The specified mixing valve shall be the Watts model 70A-075 or equal. It should have an operating range between 95°F and 140°F. The mixing valve should be set to 120°F.
The temperatures generated by your Solene system will vary throughout the year. In the Northern Hemisphere the water temperature will be hottest in the spring and summer months while cooler temperatures are to be expected from November through March. On sunny days system temperatures may range from 110°F to 180°F depending upon the season and hot water demand. The mixing valve described above blends the hot and cold water supplies to deliver hot water to your fixtures at a safe, controlled temperature.

A pressure relief valve is required on the collector loop portion of the system.

**WARNING:** SCALDING CAN OCCUR WITHIN FIVE SECONDS WHEN WATER TEMPERATURES APPROACH 140°F. THE MIXING VALVE SHOULD BE ADJUSTED BY THE INSTALLATION CONTRACTOR TO PROVIDE WATER TO DWELLING FIXTURES AT NO MORE THAN 120°F.

There may be a need to completely shutdown the solar system. Under these circumstances there must be a way to prevent the electrical current from the PV module reaching the DC pump. Since it is not to industry standard to simply disconnect the wires, a manual switch should be fitted to the system. For this purpose, Ivan Labs recommends that a standard ¾” electrical steel box be installed adjacent to the pump. A Douglas Lighting (WN-5002) dry contact switch should be connected to the pump wiring and placed within the steel box. This will allow for the complete shutdown of the system without disconnecting the wiring directly from the pump.

### 6. Photovoltaic (PV) Module Control.

The photovoltaic module should be mounted on the same plane as the solar collector. It operates a 12 VAC pump. Its speed will fluctuate with the amount of available solar energy. The pumping of the water through the system is then fully dependent on the amount of available solar energy.
It is important to use at least 16-gage double strand, PVC jacketed wire for lengths up to 80'. For run lengths greater than 80', use 14-gage wire. Under no circumstances should the polarity be reversed. The red is always hot and the black wire is always ground. The panel-mounting bracket is bolted to the collector using the provided 5/16” hardware. The panel should be placed tight against the tapered end of the panel bracket. The panel bracket bolts to the mounting hardware using the 5/16” hardware.
7. Pipe Insulation.

The minimum ¾” collector loop cold supply and hot return lines must be well insulated with a high quality flexible closed cell insulation to minimize heat loss. The wall thickness of the pipe insulation should not be less than ¾”. A 1” wall thickness is required in all areas prone to annual hard freeze conditions. When it comes to pipe insulation the rule is simple: thicker is better. The specified insulation material is Armaflex or equal.

To the extent possible, slide the insulation material over the pipe without cutting or taping. All butt joints must be sealed with contact adhesive. The use of rigid polyethylene pipe insulation is prohibited.

All outdoor insulation should be protected from moisture and ultraviolet deterioration by either paint or foil tape. All copper piping should be properly supported, approximately every 6’. The support clamps should be installed in a way as to not compress the pipe insulation.

8. Electrical And Wiring Requirements.

A properly licensed contractor must make the 230-volt electrical connection to the water heater or solar storage tank and the electronic time switch (Optional). If your solar contractor is not allowed by law to make these connections consult a licensed electrician. NEVER ACTIVATE THE CIRCUIT BREAKER CONTROLLING THE ELECTRICAL HEATING ELEMENT UNTIL THE SOLAR STORAGE TANK IS COMPLETELY FILLED WITH WATER. This will prevent “dry firing” of the heating element. The electrical heating element will be destroyed almost instantaneously if not completely submerged in water when activated. Make sure the water heater circuit breaker is off until the solar storage tank is completely filled.

9. Thermometers. (Optional)

Locate two thermometers; one at the supply line and one on the return line of the solar loop so that the temperature rise across the collector can be determined.

10. Labels.

Label installation is mandatory at several locations of the system. Please insure compliance by affixing labels at the designated locations.
11. Operating Procedures.

START-UP PROCEDURES

Refer to the Solene PV System Schematic on page 13 when performing the start-up procedures listed below.

1. Before turning on power to the solar storage tank, be sure that the cold inlet valve to the tank is open and that the tank is full of water and that the toggle switch on the circulation pump is in the “OFF” position.

2. Close both Drain Valves.

3. Open both Isolation Valves.

4. Have a water vessel or a drain hose hooked up to the Drain Valve on the return line from the Solar Collector. Very slowly, open the Drain Valve on the return line. (CAUTION – WATER MAY BE EXTREMELY HOT – POSSIBLE STEAM) Continue to open the Drain Valve all the way and let the water run for several minutes

5. Shut off the Drain Valve on the return line for 20 seconds and reopen. Repeat this procedure 4 to 5 times. This insures that all the air in the solar system is completely purged.

6. Close the Drain Valve.

7. Turn the toggle switch on the Circulation Pump to the ‘ON’ position. Your system is now operating automatically.

SYSTEM SHUT-OFF OR DRAIN DOWN PROCEDURES

There may be times when you want to completely shut the solar system off and drain the water. For instance, you may need to shut off the main water feed to the house, or you may want to turn your solar system off while you are going on an extended vacation. To completely shut off and drain your solar system, refer to the plumbing schematic on page 13 and do the following:

1. Adjacent to the circulation pump, turn off the switch connecting the PV module to the Circulation Pump.

2. Close both Isolation Valves.

3. Connect drain hose to the Drain Valve on the return line of the solar system, or use a water vessel to catch the water. Open the Drain Valve on the return line. (CAUTION – WATER MAY BE EXTREMELY HOT – POSSIBLE STEAM) Allow all the water to drain out of the solar system.

4. Move drain hose or water vessel to the Drain Valve on the feed line and open the Drain Valve on the feed line.

5. Leave these Drain Valves open while the system is turned off. If water is leaking past the isolation valves, even though they are shut off, you’ll want to see that this is happening rather than allowing the system to inadvertently fill with water when you think that they are empty, especially if you are draining the system during freezing conditions.

6. Your system is now fully shut off and drained. When you want to start-up your solar system again, follow the steps outlined in the Start-Up Procedures.
12. Freeze Protection.

Your system is designed not to be damaged due to freezing when installed in areas where ambient temperatures remain above 20°F. Freeze tolerance limits are based upon an assumed set of environmental conditions. Extended periods of cold weather, including ambient air temperatures above the specified limit, may cause freezing in exposed parts of the system. It is the owner’s responsibility to protect the system in accordance with the Solene’s instructions if the air temperature is anticipated to approach the specified freeze tolerance limit. Your system has two methods of freeze protection: 1) Automatic Freeze Protection, and 2) Manual Drain Down Freeze Protection.

AUTOMATIC FREEZE PROTECTION

Your solar system is designed to automatically protect itself in the event of a freeze without any manual intervention required. (SHUTTING OFF THE ISOLATION VALVES WITHOUT COMPLETELY DRAINING YOUR SOLAR SYSTEM, THINKING THAT THIS WILL HELP PROTECT IT FROM FREEZING, IS THE WORST POSSIBLE THING YOU CAN DO AS THIS WILL ENSURE THAT THE SYSTEM WILL FREEZE). Here is how your automatic freeze protection works. A FP-45 Dole Freeze Valve is installed at the top outlet of your solar collector. This valve has an internal mechanism that is sensitive to temperature and operates without any electrical power or sensors. When the temperature reaches 45°F, this valve begins to open up allowing a trickle of water to flow through the valve to the roof. Because there is a check valve on the solar return line, the only direction this water can come from is from the feed line. As the valve opens up, water flows from the bottom of the storage tank, up through the feed line, through the solar collector and out the FP-45 Freeze Valve. As the water from the storage tank flows through the solar collector it prevents the collector from freezing thus providing your system with automatic freeze protection.

The colder the Freeze Valve gets the more water the valve allows to flow through it. When the Freeze Valve warmer up by the water flowing through it, it closes again. This cycle happens as much as is necessary during freezing conditions. NOTE THAT WATER PRESSURE MUST BE MAINTAINED TO ALLOW THE FREEZE VALVE TO OPERATE PROPERLY. THIS IS WHY YOU DON’T EVER WANT TO TURN OFF THE ISOLATION VALVES WITHOUT COMPLETELY DRAINING THE SYSTEM DURING FREEZING CONDITIONS.

MANUAL FREEZE PROTECTION

Another way to protect your system from freezing is to follow the steps listed in the System Shut-Off or Drain Down Procedures. Be sure that your system is completely drained and leave the drain valves open to make sure that the system does not inadvertently fill back up with water.
13. Component Parts List & Functions.

While specific products are mentioned below, there are many components that can be substituted with like or equal products. For instance, there are several different mixing valves or isolation valves that can be utilized, not just the one specifically listed. Sometimes sweat or threaded connections or varying fitting sizes are dealer preference. All of the components listed below are available from Solene at 950 Sunshine Lane, Altamonte Springs, FL 32714 (886) 902-0060.

See the schematics on pages 15-18 for the location of the following list of components.

1. Solar Collector – SLAR30 4 x 6, SLSG40 4 x 10, SLAR40 4 x 10, or SLAR32 4 x 8.
2. Solar Storage Tank – Lochinvar FTA066K 66 Gallon, or FTA082K 80 Gallon, or FTA120K 120 Gallon Solar Storage Tank with Single 4500W Backup Element, or AO Smith Sun-80, or AO Smith Sun-120.
3. PV Panel – Power UP BSP5-12 5 Watt PV Panel, powers #4 DC Circulation Pump.
4. DC Circulation Pump – Tops Flo Circulation Pump for 5 Watt PV Panel, circulates water through system.
5. Freeze Valve – Therm-Omega ½’ Freeze Valve protects system from freezing.
6. Vacuum Relief Valve – Watts N-36 Vacuum Relief Valve allows air into the system when draining collector.
7. Air Vent – Sparco FV-147 Air Vent allows air trapped in collector to purge.
8. Pressure Relief Valve – Watts 530C Pressure Relief Valve protects system from excessive pressure.
9. Pipe Insulation – ACT05834 Armaflex Copper Pipe Insulation to prevent heat loss through pipes. Any Pipe Insulation that is exposed to sunlight must be wrapped with foil tape or coated with a water-based acrylic resin coating as specified by the Insulation Manufacturer.
10. Roof Penetration Flashing – All Copper Roof Flashing. Gooseneck type flashing is recommended for feed line to accommodate sensor wire.
11. Thermometer – Letro 1-5020-028 In-Line Thermometer w/ temperature range of 50°F to 220°F.
12. Boiler Drains – 1-5115-017 ½’, or 1-5115-020 ¾’ Boiler Drains on both Feed and Return lines used in conjunction with #13 Ball Valves, allow for manually draining the solar system.
13. Check Valve – Heliodyne 1-5115-046 Check Valve for PV Systems prevents thermo-siphoning from storage tank through solar collectors.
14. Ball Valves – 1-5115-023 ½’, or 1-5115-027 ¾’ Ball Valves used as Isolation Valves in conjunction with #11 Boiler Drains to manually drain the solar system.
15. Cold Water Inlet Valve – 1-5115-034 ¾’ Gate Valve gives ability to turn off the cold feed to the Solar Storage Tank.
17. Pressure & Temperature Relief – Watts 100XL-4 P&T Relief Valve located on the solar storage tank opens at 150psi or 210°F.

To comply with SRCC certification the storage tank shall have an additional insulation jacket.
14. System Schematics. - (Cont.)
15. System Labels.

SOLENE OPEN LOOP PV OG-300 SYSTEM LABELS
(Whole page will be embossed foil)

The following labels provide the system owner with important safety and operating information. Be sure to cut out the labels below and apply them to the proper system components as described below. Refer to the Solene DHW System Schematic in this manual for reference numbers.

**WARNING**
Fluid may be discharged at high temperature and/or pressure.
No other fluid shall be used that would change the original classification of this system.
Unauthorized alterations to this system could result in hazardous health conditions.
AWWA Class 1

**WARNING**
Fluid may be discharged at high temperature and/or pressure.
No other fluid shall be used that would change the original classification of this system.
Unauthorized alterations to this system could result in hazardous health conditions.
AWWA Class 1

Place these labels on Manual Drains (#12)

**WARNING HOT**

**WARNING HOT**

Place these labels on Circulation Pump (#4), Tank (#2), and Mixing Valve (#16)

**WARNING**
Underground piping
Stay clear during any thunderstorm activity.

**WARNING**
Underground piping
Stay clear during any thunderstorm activity.

Place these labels on Solar Feed and Solar Return Lines

**WARNING**
Underground piping
Stay clear during any thunderstorm activity.

Place label on Circulation Pump (#4),
Your Solene Solar System has an automatic drain valve (FP-45) that protects your system from freezing during normal winter conditions in your area. Should you experience prolonged extreme cold conditions your system can be manually drained.

**SYSTEM SHUT-OFF OR MANUAL DRAIN DOWN PROCEDURES** - To completely shut off and drain your solar system do the following:

- Above the Solar Storage Tank, disconnect the wires from the PV Panel to the Circulation Pump.
- Close both Isolation Valves.
- Connect drain hose to the Drain Valve on the return line of the solar system, or use a water vessel to catch the water. Open the Drain Valve on the return line. **(CAUTION – WATER MAY BE EXTREMELY HOT – POSSIBLE STEAM)** Allow all the water to drain out of the solar system.
- Move drain hose or water vessel to the Drain Valve on the feed line and open the Drain Valve on the feed line.
- Leave these Drain Valves open while the system is turned off. If water is leaking past the isolation valves, even though they are shut off, you’ll want to see that this is happening rather than allowing the system to inadvertently fill with water when you think that they are empty, especially if you are draining the system during freezing conditions.

Your system is now fully shut off and drained. When you want to start-up your solar system again, follow the steps outlined in the Start-Up Procedures.

**Maximum Operation**

- Temperature: 210°F
- Pressure: 150 PSI
- Freeze Tolerance Limit: -32°F
The solar energy system described by this manual, when properly installed and maintained, meets the minimum standards established by the SRCC. This certification does not imply endorsement or warranty of this product by SRCC.

SRCC OG-300 Certified Solar Water Heating System

The solar energy system described by this manual, when properly installed and maintained, meets the minimum standards established by the Florida Solar Energy Center, in accordance with Section 377.705, Florida Statutes. This certification does not imply or endorse warranty of the product by the Florida Solar Energy Center of the State of Florida.