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#### OWNER'S MANUAL AND INSTALLATION INSTRUCTIONS

GT50C10BAM GT40C10BAM GT25C10BAM

#### **FRANÇAIS**

Write the model and serial numbers here:

Model #\_\_\_\_\_

Serial # \_\_\_\_\_

You can find them on the rating label on the right side of your water heater.

Pour une version français de ce manuel d'utilisation, veuillez visiter notre site web à l'adresse GEAppliances.com.

#### ESPAÑOL

Para consultar una version en español de ests manual de instrucciones, visite nuestro sitio de internet GEAppliances.com

# THANK YOU FOR MAKING GE APPLIANCES A PART OF YOUR HOME.

Whether you grew up with GE Appliances, or this is your first, we're happy to have you in the family.

We take pride in the craftsmanship, innovation and design that goes into every GE Appliances product, and we think you will too. Among other things, registration of your appliance ensures that we can deliver important product information and warranty details when you need them.

Register your GE appliance now online. Helpful websites and phone numbers are available in the Consumer Support section of this Owner's Manual. You may also mail in the pre-printed registration card included in the packing material.



# IMPORTANT SAFETY INFORMATION **READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE**

# **A**WARNING

For your safety, the information in this manual must be followed to minimize the risk of fire or explosion, electric shock, or to prevent property damage, personal injury, or loss of life.

Be sure to read and understand the entire Owner's Manual before attempting to install or operate this solar water heater. It may save you time and cost. Pay particular attention to the Safety Instructions. Failure to follow these warnings could result in serious bodily injury or death. Should you have problems understanding the instructions in this manual, or have any questions, **STOP** and get help from a qualified service technician or the local electric utility.

AWARNING Risk of Fire - DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Keep rags and other combustibles away.

AWARNING If the water heater has been subjected to flood, fire, or physical damage, turn off power and water to the water heater.

Do not operate the water heater again until it has been thoroughly checked by qualified service personnel.

#### Safety Precautions

A. Do Not turn on or remove protective glass film unless the water heater is filled with water.

**B.** Do Not turn on or remove protective glass film if the cold water supply shut-off valve is closed.

NOTE: Flammable vapors may be drawn by air currents from surrounding areas to the water heater.

**C.** If there is any difficulty in understanding or following the Operating Instructions or the Care and Cleaning section, it is recommended that a qualified person or serviceman perform the work.

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- User must be in compliance with all applicable federal, state, and municipal building and fire safety laws, codes, and regulations. Check the unit and the accessories for any visible defects, cracks, or other damages after unpacking and before first use. If you see any damage, do not use the product. Contact customer service for help. Only operate the product after proper and complete installation and assembly.
- Assure that minors under the age of 18, or persons with reduced physical, sensory or mental abilities do not have access to the GeoSpring Solar System. Assure that the system is not in direct contact with any items such as leaves, twigs, flammable materials, cables, or other materials. Keep a safety clearance of at least 5 feet from air conditioning systems, heaters, satellite dishes or any other electronic devices.
- Regulation-compliant, non-personal fall protection or safety netting or other catch equipment, in accordance with Roof Covering and Roof Sealing Work and Scaffolding Work with Safety Net, must be installed before starting work. ASSURE COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE, AND MUNICIPAL SAFETY LAWS, CODES AND **REGULATIONS PERTAINING TO ROOFING** SAFETY.

- Only use safety harness equipment (harnesses or belts, ropes and straps, fall arresters, rope shorteners) that has been approved by authorized testing authorities.
- Do not use damaged ladders e.g. splintered stringers and rungs on wooden ladders, bent or kinked metal ladders. Do not patch up splintered or broken stringers, steps and rungs of wooden ladders.
- Make sure that lean-to ladders are propped securely. Secure lean-to ladders against slipping, falling over and sinking into the ground e.g. by using wider feet, adjusting the ladder feet to the ground surface, securing/hook fixtures.
- When using lean-to ladders, there is a risk of dangerous falls if the ladder sinks, slips or falls over. Only lean ladders against secure supporting surfaces. Cordon off ladders in traffic areas.
- Only the prescribed liquid type may be used.
- Safety harnesses must be secured above the user if possible. Only secure safety harnesses to building elements or connection points with sufficient loadbearing capacity. If no non-personal fall protection or fall arrest system is used there is a risk of falling from a great height which can lead to serious or fatal injury if no safety harness or equipment is used.

# **READ AND SAVE THESE INSTRUCTIONS**

# IMPORTANT SAFETY INFORMATION READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE



Water temperature over 125°F can cause severe burns instantly or death from scalds.

Children, disabled and elderly are at highest risk of being scalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

Temperature limiting valves are available; see manual.

### WATER TEMPERATURE ADJUSTMENT

Water temperatures above 125°F can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined on the label pictured.

#### Time/Temperature Relationship in Scalds

Temperature	Time to Produce a Serious Burn
120°F (49°C)	More than 5 minutes
125°F (52°C)	1-1/2 to 2 minutes
130°F (54°C)	About 30 seconds
135°F (57°C)	About 10 seconds
140°F (60°C)	Less than 5 seconds
145°F (63°C)	Less than 3 seconds
150°F (66°C)	About 1-1/2 seconds
155°F (68°C)	About 1 second

Table courtesy of Shriners Burn Institute

Voltage radius

3.5 ft . . . . . up to 1000 V

7 ft . . . . . . 1000 V to 11000 V

10 ft . . . . . . 11000 V to 22000 V

14 ft . . . . . . 22000 V to 38000 V

> 16 ft if the voltage is not known

Mixing valves are required for the GeoSpring Solar System. They are used to reduce water temperature by mixing hot and cold water in branch water lines. Contact a licensed plumber or the local plumbing authority for further information.

The chart shown above may be used as a guide in determining the proper water temperature for your home.

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There is a Hot Water SCALD Potential if the mixing valve control temperature is set too high. Households with small children, disabled or elderly persons may require a 120°F (49°C) or lower thermostat setting to prevent contact with "HOT" water.

### 

# ELECTRICAL SHOCK HAZARD

Contact with live overhead electrical cables and wiring can lead to mortal injury.

Work in the vicinity of live, electrical cables and wiring, where contact is possible, can only be carried out if:

- they are voltage-free and it is ensured that they remain so for the duration of the work to be carried out
- the live elements are secured by being covered up or cordoned off
- safety distances are observed

## **A**CAUTION

The GeoSpring Solar System and its pipes and accessories can reach temperatures of up to 212°F. Do not touch any parts of the system, its pipes or its accessories during operation or when it is exposed to sunlight.



Wear protective goggles when drilling or handling collectors



Wear safety shoes when carrying out installation work



Wear cut-proof safety gloves when carrying out installation work or handling collectors.



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If no non-personal fall protection or fall arrest system or equipment has been installed for technical reasons, safety harnesses must be worn.

# **READ AND SAVE THESE INSTRUCTIONS**

# IMPORTANT SAFETY INFORMATION READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE

# f A FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California Law requires that residential water heaters must be braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motions. For residential water heaters up to 52 gallons (236.4 L) capacity, a brochure with generic earthquake bracing instructions can be obtained from: Office of the State Architect, 400 P Street, Sacramento, CA 95814 or you may call 916.324.5315 or ask a water heater dealer.

Applicable local codes shall always govern installation. For residential water heaters of a capacity greater than 52 gallons (236.4 L), consult the local building jurisdiction for acceptable bracing procedures.

# Water Heater Sizing Information

#### Mixing Valves - Water Heater Capacity and Increasing Temperature Setpoint:

Mixing valves for reducing point-of-use water temperature by mixing hot and cold water in branch water lines are commercially available. Contact a licensed plumber or the local plumbing authority for further information.

The water heater temperature setting strongly impacts the amount of usable hot water available for showers and baths.

- Energy consumption/savings and efficiency testing of water heaters, including the GeoSpring<sup>™</sup> Solar, is performed according to Solar Rating & Certification Corporation (SRCC) requirements specified at the date of manufacture.
- Safety regulations require a factory setting no greater than 125°F (52°C) for all new water heaters.
- The user can adjust the temperature setting to meet their needs. Always read and understand the safety instructions contained in the owner's manual before adjusting the temperature setpoint.

ADANGER There is a Hot Water SCALD Potential if the control water temperature is set too high. Households with small children, disabled or elderly persons may require a 120°F (49°C) or lower thermostat setting to prevent contact with "HOT" water.

#### **Ground Mount or Readily Accessible Areas**

When a collector module is intended for installation in areas which are readily accessible to other than service personnel. The water heater must be guarded to protect against unintentional contact. Contact with the solar water heater during use may result in severe burns. Use caution when servicing or performing maintenance.

## AWARNING BURN HAZARD

If installing the water heater on the ground or other areas that are accessible, the water heater must be guarded to protect against unintentional contact.

Contact with the solar water heater during use may result in severe burns. Use caution when servicing or performing maintenance.





# **READ AND SAVE THESE INSTRUCTIONS**

# **Specifications for Water Quality**

#### **Required Water qualities\***

WATER SUBSTANCE	UNITS OF MEASUREMENT	PARAMETER
pH value	-	7-9 (under observance of SI Index)*
Total hardness	gpg	6-15
Chlorides	ppm	<300
Free chlorine	ppm	0.5
Sulfate	ppm	<300
Conductibility	EC	0.750

#### NOTICE:

\*To avoid system failure and damages, assure that the water quality falls within the range of the water values as written in the table.

#### NOTICE:

Your warranty is void if you operate the GeoSpring<sup>™</sup> Solar using water which does not fall within the range of the water values as written in the table.

\*under observance of SI Index

# Technical Data - GeoSpring™ Solar 25

GeoSpring Solar 25					
Gross area	12 ft <sup>2</sup>	Net area	10 ft <sup>2</sup>		
Max. height, mount 45°/30°	19"/16"	Collector outer dimensions	86" x 20"		
Volume hot water storage tank 24 gal		Collector/inclination	20°-75°		
Weight (with mount, no water)	ith mount, no water) 83 lbs Max. operating pressu		60 PSI		
Weight (with mount and water) 279 lbs Cold/hot water connections 3/4 MNPT		3/4 MNPT			
Thermal insulation - storage tank	1.2″	Liquid Type	Water		

Average Performance Data (High Radiation)						
Location         Climate Category         GT25C10BAM (gal/day at 113°F)         GT25C10BAM Avg. Sola Energy (kWh/day)						
Phoenix, AZ	В	34	3.14			
Los Angeles, CA	С	21	2.52			
San Francisco, CA	С	18	2.21			



# Technical Data - GeoSpring<sup>™</sup> Solar 40

GeoSpring Solar 40					
Gross area	19 ft <sup>2</sup>	Net area	17 ft <sup>2</sup>		
Max. height, mount 45%/30%	28"/22"	Collector outer dimensions	86" x 31.5"		
Volume hot water storage tank 38 g		Collector/inclination	20°-75°		
Weight (with mount, no water) 125 lbs		Max. operating pressure	60 PSI		
Weight (with mount, with water	441 lbs	Cold/hot water connections	3/4 MNPT		
Thermal insulation - storage tank 1.2" Liquid Type Water					

Average Performance Data (High Radiation)							
Location         Climate Category         GT40C10BAM (gal/day at 113°F)         GT40C10BAM Avg. Solation           Location         Energy (kWh/day)							
Phoenix, AZ	В	71	6.59				
Los Angeles, CA	С	46	5.46				
San Francisco, CA	С	41	4.91				



# Technical Data - GeoSpring<sup>™</sup> Solar 50

GeoSpring Solar 50					
Gross area	Net area	23 ft <sup>2</sup>			
Max. height, mount 45°/30°	36"/28"	Collector outer dimensions	86" x 43.3"		
Volume hot water storage tank	51 gal	Collector/inclination	20°-75°		
Weight (with mount, no water)	168 lbs	Max. operating pressure	60 PSI		
Weight (with mount, with water 593 lbs		Cold/hot water connections	3/4 MNPT		
Thermal insulation - storage tank	1.2″	Liquid Type	Water		

	Average Performance Data (High Radiation)						
Location         Climate Category         GT50C10BAM (gal/day at 113°F)         GT50C10BAM Avg. Sola           Energy (kWh/day)							
Phoenix, AZ	В	97	9.00				
Los Angeles, CA	С	62	7.39				
San Francisco, CA	С	56	6.67				



**OPERATING INSTRUCTIONS:** Specifications / Technical Data

# General

The Limited Warranty is void if you do not drain and cover the GeoSpring Solar under the temperature conditions described in this manual. Appropriate insulation or pipe heat tracing must be provided on-site to prevent hot and cold water pipes from freezing. A mixing valve, at which the required water temperature can be set, must always be installed at the hot water outlet.

#### NOTICE:

If the temperature falls below 32°F for 8 consecutive hours, the GeoSpring Solar system must be drained and covered. The water heater warranty does not cover damage or failure resulting from freezing. The combined non-return/safety valve provided must be installed at the cold water connection of the GeoSpring Solar system to limit positive pressure in the water circuit. The freeze tolerance limits are based upon an assumed set of environmental conditions. Extended periods of cold weather, including ambient air temperatures below the specified limit, may cause freezing in exposed parts of the system. It is the owner's responsibility to protect the GeoSpring Solar system in accordance with the manufacturer's instructions if the air temperature is anticipated to approach the specified freeze tolerance limits.

# **Operating and Filling Instructions**

The GeoSpring Solar system is delivered with a protective film on the solar glass. Do not remove this film, which blocks the sunlight, until after the system has been filled with water. Otherwise the system components can be damaged because the unblocked sunlight heats up the empty system which lacks water to absorb the heat. Remove the protective film after the system has been filled, as it serves no other purpose. It is recommended that you fill the system within 2 weeks after installation, otherwise residue from the film may adhere to the solar glass. Repeat filling and flushing until you are sure that all air has been removed from the system. Make sure that the maximum operating pressure stated on the rating plate or in the installation instructions is not exceeded. Check to make sure that all safety components have been installed in accordance with the hydraulic diagram (in the chapter "Hydraulic Connection" in this manual) before you open the water supply, fill the system, and initialize start-up.

- 1. If possible, fill the collector in the morning before sun light heats up the absorber.
- 2. It is recommended that you fill the collector before you connect the return piping to the collector outlet. Make sure that the system is vented to the atmosphere. Failure to follow these instructions could void the warranty and damage the system.
- 3. Close the cold water shut-off valve. Set the flow control valves to the solar pre-heat position. Consult system valve position drawings. Close the water heater drain on the supply side to the solar loop piping. Open the water heater drain on the return side.
- 4. Open the cold water shut-off valve to fill the collector. Allow the air to be purged from the system through

the open water heater drain on the return side of the solar loop piping.

- 5. Allow water to flow from the system for several minutes to flush out the collector and the piping.
- 6. Close the open water heater drain. Carefully inspect the system for leaks.
- 7. Turn on a hot water faucet in the house to purge any remaining air from the system.
- 8 Make sure all SRCC and manufacturer required labels are placed on the system. Consult SRCC appendix for required labels and their placements.
- 9. Place installer label on the auxiliary water heater.
- 10. Follow this manual for additional installation and operation instructions.

#### To Fill the Water Heater

#### NOTICE:

Risk of Unit Damage - The tank must be full of water before removing the film and turning on. The water heater warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

Vent to atmosphere before and while filling.

Open the shut-off valve in the cold water supply line.

Open each hot water faucet slowly to allow the air to vent from the water heater and piping.

A steady flow of water from the hot water faucet(s) indicates a full water heater.

# Operation

If the homeowner cannot get water to flow from the hot water lines, check all shut off valves and ensure the combined non-return/safety valve has been installed correctly, as it has an integrated check valve. To determine whether the GeoSpring Solar system is working, measure the water temperature returning from the system on a sunny day. The output temperature should be warmer than the input temperature.

# AWARNING BURN HAZARD

Do NOT touch water heater pipes or surfaces, which can be hot. Failure to follow these instructions can result in severe burns.

# Increasing Efficiency

To increase the efficiency of the GeoSpring Solar system:

- If possible, use hot water in the evening. For example, take showers in the evening rather than during the day.
- The performance of the GeoSpring Solar system in the Northern Hemisphere is optimized when it is mounted facing true south. Performance, however, suffers very little when it is oriented no more than 45° East or 45° West of True South.
- The collector should be in unobstructed direct sunlight between 9:00 a.m. and 3:00 p.m. on any day of the year.

## System Operating Pressure

The maximum operating pressure in the water circuit must be limited to 60 PSI at all times. Install a pressure reducer if necessary.

# Leaving the System Unused

If the GeoSpring Solar system is to be unused for more than two weeks, such as absence due to vacation, it is best to leave the system pressurized, filled with water, and covered. If unused for longer periods, it is best to drain the collector and the solar loop piping. The entire system MUST be covered by a light-reflective cloth or foil to prevent damage due to overheating. An original cover is available at your GeoSpring Solar system dealer.

#### NOTICE: Risk of Unit Damage

The tank must be full of water before removing the film and turning on. The water heater warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

## **Routine Preventive Maintenance**

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Risk of Scald - Before manually operating the combined non-return/safety valve, make certain no one will be exposed to the hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be released into a suitable drain to prevent injury or property damage.

NOTE: If the combined non-return/safety valve on the hot water heater discharges periodically, this may be due to thermal expansion in a closed water system. Contact the water supplier or your plumbing contractor on how to correct this. Do not plug the relief valve outlet.

# 

# Risk of shock - Shut off power to the water heater before draining water.

Properly maintained, your water heater will provide years of dependable trouble-free service. It is suggested that the following annual preventive maintenance program be established.

- 1. Inspect the combined non-return/safety valve and ventilation valve.
- 2. Inspect heating elements, ECO, and wiring to each (if installed).
- 3. Drain and Flush the water heater tank.

#### **Five Year Maintenance**

The below valves must be replaces by year five to gain the limited warranty for years six through ten. See page 18 for details.

- 1. Replace combined Non-Return/Safety Valve
- 2. Replace Ventilation Valve

#### Combined Non-Return/Safety Valve:

At least once a year, test the combined non-return/safety valve located on the front left side of the water heater, to make certain the valve operates freely. Allow several gallons to flush through the discharge line to an open drain.

#### Heating Elements and Energy-Cut-Off Control (ECO) (on some models):

Once a year, it is recommended to inspect the heating elements, ECO, and wiring to each, if installed. Inspection should be completed by service personnel qualified in electrical appliance repair.

Most electrical appliances, even when new, make some sound when in operation. Contact a qualified installer or plumber for inspection.

### Periodic Inspection (once a year):

It is further recommended that a periodic inspection of the operating controls, heating elements and wiring should be made by service personnel qualified in electric appliance repair.

Conduct an inspection of the GeoSpring Solar system at least annually for any damage, leakage and soiling. The manufacturer recommends annual maintenance by a qualified specialist (licensed installer, contractor, plumber, HVAC, or solar contractor). For maintenance or repair work on the GeoSpring Solar system that requires the water content to be drained off, the system must be covered by a light-reflective cloth or foil to prevent damage by possible overheating. A original cover is available at your GeoSpring Solar partner.

- 1. Close cold and hot water supply.
- 2. Attach hoses to both water heater drains and terminate the hoses in either a service basin or an appropriate spot outside the house.
- 3. Open both water heater drains at the same time to drain the GeoSpring Solar system (No. 6 in plumbing figure).
- 4. Inspect all valves for proper operation.

#### NOTICE: RISK OF UNIT OR PROPERTY DAMAGE

Replace combined non-return/safety valve at year five for limited warranty coverage. Failure to replace and provide documentation will result in a parts warranty termination.

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RISK OF SCALD WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES OF UP TO OR EXCEEDING 212°F. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.

5. After all water has been drained from the collector, close both water heater drains (No. 6 in plumbing figure) and remove hoses.

If installed, a conventional water heater will continue to provide hot water to the household when the GeoSpring Solar system is by-passed and drained.

# **Care and Cleaning**

### **Annual Maintenance**

# ADANGER Risk of Scald

Before manually operating the combined non-return/safety valve, make certain no one will be exposed to the hot water released by the valve. The water may be hot enough to create a SCALD hazard. The water should be released into a suitable drain to prevent injury or property damage.

Each 1/3 rotation of the red cap will allow a short release of water. Rotate the red cap a full 5 rotations. Make sure valve operates freely. Allow several gallons to flush through the discharge line to an open drain.



# GENERAL INSTALLATION AND TRANSPORT INSTRUCTIONS

Installation, maintenance, cleaning and all other procedures listed in this manual shall only be performed by fully and properly instructed, gualified and authorized personnel, which means licensed installers, contractors, plumbers, HVAC and solar contractors. The materials supplied must be used for installation. Before any installation or operation of the GeoSpring Solar system, familiarize yourself with and then comply with all national, state and local laws and regulations that apply. Lift the GeoSpring Solar system only by its frame and **NEVER** by any of the water connections or bolts. Incorrect lifting can damage the GeoSpring Solar system. Always be careful to avoid any physical damage, especially to the solar glass, back wall and pipe connections. The manufacturer is not liable for structural damage or any other damage caused by improper handling or incorrect installation.

# **ON ROOF INSTALLATION**

Installation shall only be carried out on roof surfaces or substructures with sufficient load bearing capacity. The structural load bearing capacity of the roof or substructure must be tested in terms of local and regional conditions by a structural engineer before installing the GeoSpring Solar system. During inspection pay particular attention to the quality of the substructure for retaining screw connections used to secure the installation materials for the GeoSpring Solar system. Inspection of the entire installation structure in accordance with national and local regulations is particularly necessary in areas with heavy snowfall that can lead to increased load. When choosing the installation location, make sure that maximum loads are not exceeded by snowfall or wind forces.

The inspection should also take into account any particularities of the installation location, e.g. air jets, eddies etc. that can lead to increased load. There must be a distance of at least 3 ft to the roof ridging or edge. Structural members penetrated by solar system components must meet code. Building materials adjacent to solar components must not be exposed to elevated temperatures.

Penetration through fire-rated assemblies must not reduce fire resistance below code. Meet applicable codes and national Roofing Contractors Association practices. Do not impair enclosure function. Do not allow vermin intrusion.

## FLAT ROOF OR GROUND MOUNT INSTALLATION

Installation shall only be carried out on roof surfaces or substructures with sufficient load bearing capacity. The structural load bearing capacity of the roof or substructure must be inspected, tested and approved in accordance with local and regional conditions by a structural engineer before the GeoSpring Solar system can be installed. During inspection, the structural engineer must pay particular attention to the quality of the substructure for proper anchoring of the retaining screw connections used to secure the installation materials for the GeoSpring Solar system. Inspection of the entire installation structure in accordance with national and local regulations is particularly necessary in areas with heavy snowfall that can lead to increased load. When choosing the installation location, make sure that maximum loads are not exceeded by snowfall or wind forces. There must be at a distance of at least 3 ft to the roof ridging or edge.

**NOTE:** Installing a GeoSpring Solar system means changing the structure of an (existing) roof. Extended and inhabited lofts or inadequate minimum roof inclinations often require additional measures carried out on-site by a licensed roofing contractor e.g. sarking, to secure against water penetrating as a result of wind pressure and drifting snow.

# **CONNECTIONS AND PIPING**

The GeoSpring Solar system shall be connected to the connection piping with a 3/4" NPT thread. Before tightening the connection, check to make sure that seals are positioned properly. Use a torque wrench to tighten the connection and do not exceed a torque of 30 ft-lbs. Please refer to Thermal Expansion and Local Installation Regulation sections for additional information. Only use pipes suited for use in sanitary facilities and which can withstand temperatures of at least 212°F. The GeoSpring Solar system requires the use of all copper or brass fittings in the collector loop plumbing. Couplings rather than unions should be used to join the collectors to avoid leaks and fluid loss. Use only lead-free solder. NOTE: The piping supports must not compress the insulation. If this is not possible, insulate the piping supports as well. To prevent dielectric corrosion, make sure that there is no connection between stainless or galvanized steel pipes and copper pipes.

# COLLECTOR LOOP PIPE INSULATION

The collector loop cold water supply and hot return lines shall be well insulated with high quality flexible closed cell insulation to minimize heat loss. Use closed-cell tube insulation with a wall thickness of 3/4" in mild climates. In cold climates, where freezing occurs, use insulation with 1 1/2" wall thickness. Any above ground exterior pipe insulation is subject to UV degradation and must be jacketed, wrapped with aluminum foil tape, or painted with two coats of high quality water-based acrylic resin coating as supplied by the insulation manufacturer. To the extent possible, slide the insulation material over the pipe without cutting or taping. Seal all butt joints with contact adhesive. Do not use rigid polyethylene pipe insulation. Insulate the pipes with a suitable material of appropriate thickness in order to reduce heat loss and protect the pipes from freezing. Do not insulate the valves.

# INCLINATION OF THE GEOSPRING SOLAR SYSTEM

Use the GeoSpring Solar system only if it can be installed so that it has an inclination of at least 20° but no more than 75°. Protect the system connections from contaminants entering the system, like dust etc.

# INSULATION

The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy-saving or other unapproved devices (other than those authorized by the manufacturer) into, onto or in conjunction with the water heater. The use of unauthorized energy-saving devices may shorten the life of the water heater and may endanger life and property.

The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

Application of any external insulation, blankets or water pipe insulation to this water heater will require careful attention to the following:

- Do not cover the combined non-return/safety valve or ventilation valve.
- Do not cover the operating or warning labels attached to the water heater or attempt to relocate them on the exterior of the insulation blanket.

# WATER SUPPLY CONNECTIONS

Refer to the illustration below for suggested typical installation. The hot and cold water connections are clearly marked and are 3/4" NPT on all models.

**NOTE:** Install a shut-off valve in the cold water line near the water heater. This will enable easier service or maintenance of the unit later.

NOTICE: Do not apply heat to the HOT or COLD water connections. If sweat connections are used, sweat tubing to adapter before fitting the adapter to the cold water connections on heater. Any heat applied to the hot or cold water connection will permanently damage the internal plastic lining in these ports.



# THERMAL EXPANSION

Determine if a check valve exists in the inlet water line. It may have been installed in the cold water line as a separate backflow preventer, or it may be part of a pressure-reducing valve, water meter or water softener. A check valve located in the cold water inlet line can cause what is referred to as a "closed water system." A cold water inlet line with no check valve or backflow prevention device is referred to as an "open" water system.

As water is heated, it expands in volume and creates an increase in the pressure within the water system. This action is referred to as "thermal expansion." In an "open" water system, expanding water which exceeds the capacity of the water heater flows back into the city main where the pressure is easily dissipated.

A "closed water system," however, prevents the expanding water from flowing back in to the main supply line, and the result of "thermal expansion" can create a rapid and dangerous pressure increase in the water heater and system piping. This rapid pressure increase can quickly reach the safety setting of the relief valve, causing it to operate during each heating cycle. Thermal expansion, and the resulting rapid and repeated expansion and contraction of components in the water heater and piping system, can cause premature failure of the relief valve, and possibly the heater itself. Replacing the relief valve will not correct the problem!

The suggested method of controlling thermal expansion is to install an expansion tank in the cold water line between the water heater and the check valve. During installation, ensure the expansion tank is properly supported to relieve weight loads off connection pipes. The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving the over-pressure condition and eliminating the repeated operation of the relief valve. Other methods of controlling thermal expansion are also available. Contact your installing contractor, water supplier, or plumbing inspector for additional information regarding this subject.

# LOCAL INSTALLATION REGULATIONS

This water heater must be installed in accordance with these instructions, local codes, utility codes, utility company requirements or, in the absence of local codes, the latest edition of the National Electrical Code. It is available from some local libraries or can be purchased from the National Fire Prevention Association, Batterymarch Park, Quincy, MA 02169 as booklet ANSI/NFPA 70.

The solar energy system shall comply with building code, plumbing code, mechanical code, and fire code adopted by the authority having jurisdiction or, in the absence of such codes, with the International Building Code, International Plumbing Code, International Mechanical Code, and International Fire Code.

# RELIEF VALVE

**A CAUTION** RISK OF UNIT DAMAGE - THE PRESSURE RATING OF THE RELIEF VALVE MUST NOT EXCEED 60 PSI (413.6 KPA), THE MAXIMUM WORKING PRESSURE OF THE WATER HEATER AS MARKED ON THE RATING PLATE.

A listed and labeled pressure-relief valve (combined non-return/safety valve) is supplied and must remain installed in the opening provided and marked for the purpose on the water heater. No valve of any type should be installed between the relief valve and the tank. Local codes shall govern the installation of relief valves.

The BTUH rating of the relief valve must not be less than the input rating of the water heater as indicated on the rating label located on the heater (1 watt=3.412 BTUH).

Connect the outlet of the relief valve to a suitable open drain so that the discharge water cannot contact live electrical parts or persons and to eliminate potential water damage.

Piping used should be of a type approved for hot water distribution. The discharge line must be no smaller than the outlet of the valve and must pitch downward from the valve to allow complete drainage (by gravity) of the relief valve and discharge line. The end of the discharge line should not be threaded or concealed and should be protected from freezing. No valve of any type, restriction or reducer coupling should be installed in the discharge line.

# RELIEF VALVE (Cont.)

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#### RISK OF SCALD AND PROPERTY DAMAGE

To reduce the risk of excessive pressures in this water heater, install pressure protective equipment required by local codes and no less than a pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials. This valve must be marked with a maximum set pressure not to exceed the marked maximum working pressure of the water heater. Install the valve into an opening provided and marked for this purpose in the water heater, and orient it or provide tubing so that any discharge from the valve exits only within 6 inches above, or at any distance below. the structural floor, and does not contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances.



CO	MPONEN	TS	
1		COMBINED NON-RETURN/SAFETY VALVE This valve is a pressure release mechanism used in pressure systems. It has a non-return valve integrated. The use of these valves is strictly required due to safety regulations. The safety valve opens at a pressure of 72 PSI to reduce excess pressure. Valve must be replaced by year five to gain the limited warranty for years six through ten. A WARNING BURN HAZARD Do NOT touch hot water outlet pipes. Failure to do so can result in severe burns.	3/4" NPT, 72 PSI Open Pressure Max. working temperature: 250°F Relief Thread: G1/2"
2		VENTILATION VALVE This valve ensures that no vacuum is created when draining the water tank. In the event of negative pressure, the ventilation valve automatically supplies the system with air. This ventilation valve must comply with ANSI Z21.22 Valve must be replaced by year five to gain the limited warranty for years six through ten. A WARNING BURN HAZARD Do NOT touch hot water outlet pipes. Failure to do so can result in severe burns.	Female G3/4" x 3/4" MNPT, with DN1 solar neoperl backflow preventer, UV resistant Material: brass Max. working temperature: 250°F
3		<b>NPT THREAD ADAPTOR</b> This nipple is a thread converter for use with metric threads to convert to English NPT threads.	3/4" MNPT x Female G3/4"
4		<b>COLD WATER SUPPLY ISOLATION VALVE</b> This valve should stay open to allow water from the public water system to fill the GeoSpring water tank. When this valve is closed, the GeoSpring Solar system and the supplemental water heater are disconnected from the pressurized mains of the public water system.	3/4" NPT fully ported Brass Ball Valve for plumbing, Max. safe operating pressure 600 PSI, temperature range up to 250°F Material to be provided by contractor.
5		HOT WATER SUPPLY ISOLATION VALVE Keep this valve open to assure that hot water can drain or escape in case of overheating. This valve can temporarily be closed for maintenance purposes.	3/4" NPT fully ported Brass Ball Valve for plumbing applications, Max safe operating pressure 600 PSI, temperature range up to 250°F Material to be provided by contractor
6		DRAIN VALVE         These water heater drains are normally closed and capped. Use these valves to drain the GeoSpring Solar system. Attach a garden hose to both drain valves. Terminate the hoses in either a service basin or an appropriate spot outside the house. Open both water heater drains at once to drain the unit.         AWARNING       SCALD RISK WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.	3/4" unibody ball valve, Max. temperature: 250°F Material: Brass Material to be provided by contractor.
7		<b>THERMOSTATIC MIXING VALVE</b> This valve controls the temperature of the warm water output. According to local standards the valve must have a scald safe function. Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically.	An ASSE 1017 rated mixing valve to avoid severe burns or death from scalding temperatures IS REQUIRED PER SRCC OG-300. Material to be provided by contractor
8		<b>PRESSURE REDUCING VALVE</b> This valve should ensure a constant output pressure of 60 PSI independent of the input pressure delivered from any source.	Pressure setpoint range: 20 to 90 PS Material: Brass Material to be provided by contractor
9		<b>3 WAY BALL VALVE</b> This valve provides solar system cold water shut off without interrupting normal cold water service.	Max. pressure: 240 PSI Material: Brass Temperature Range: up to 250°F Material to be provided by contractor.
10	$\bigcirc$	<b>THERMOMETER</b> To determine whether the solar system is working, it is necessary to install a thermometer.	Temperature Range: 32°F to 250°F Material to be provided by contractor

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Scald Risk

# HYDRAULIC CONNECTION

Stand Alone (This system is NOT SRCC certified)

#### 

Mixing valve must be set to auxiliary water heater temperature or below. Failure to do so may result in severe burns or death from scalds.

NOTICE: Your warranty is void if you operate the GeoSpring<sup>™</sup> Solar without a pressure reducing valve set at 60 PSI or lower.

The combined non-return/safety valve can be placed at distances greater than 40 inches from the product. To do so, you **MUST** ensure the pressure measured at the product does not exceed 60 PSI during operation.



Please note that a thread adapter (#3) has to be used for American NPT threads in combination with GeoSpring Solar system connections and valves.

To protect the system for inconsistent pressure or pressure damage we recommend using an expansion tank.

# AWARNING RISK OF PERSONAL INJURY

TO AVOID SERIOUS BODILY INJURY OR DAMAGE, ALL COMPONENTS SHOWN IN THE DRAWING ABOVE MUST BE INSTALLED.

THE MAXIMUM OPERATING PRESSURE IN THE WATER CIRCUIT MUST BE LIMITED TO 60 PSI AT ALL TIMES.

INSTALL A PRESSURE REDUCER IF NECESSARY.

See page 18 for details on the components NOTES:

#### Whole Home Water Filter:

Ensure water quality complies with Specifications of Water Quality section (Page 6)

#### **Combined Non-Return/Safety Valve:**

- Contains integrated check valve. Ensure proper orientation.
- Valve opens at a pressure of 72 PSI to reduce excess pressure. Connect the outlet of the relief valve to a suitable open drain.



# FLAT ROOF OR GROUND MOUNT INSTALLATION

# Materials for Flat Roof or Ground Mount Installation

**NOTE:** Check package contents to make sure that you have received all components listed below. If you need spare parts, please contact your local GeoSpring Solar system dealer.







Collector Leg - Qty. 2



Metric T-Head Bolt, M8x20 -Qty. 4



Metric Bolt, M8x20 - Qty. 4



Flat Washer, M8 - Qty. 8



Metric Nut, M8 - Qty. 8



Flat Seal - Qty. 1



3/4" MNPT x Female G3/4" Thread Adaptor (Factory Installed) - Qty. 1



3/4" MNPT x Female G3/4" Ventilation Valve - Qty. 1



3/4" NPT Combined Non-Return/Safety Valve - Qty. 1

Sensor Emersion Sleeve



(Optional – Used to measure temperatures inside the tank)

# FLAT ROOF OR GROUND MOUNT INSTALLATION

## 1. Unpack the Unit

AWARNING TO AVOID BODILY HARM AND/OR PROPERTY DAMAGE, HAVE TWO PEOPLE JOINTLY INSTALL THE PRODUCT. FRAGILE PRODUCT – HANDLE WITH CARE!

# 

MUST BE PERFORMED BY A LICENSED CONTRACTOR.



# 2. Assemble Collector Legs

Attach the four mounting brackets to the right and left collector legs using the bolts, nuts, and washers provided.

COLLECTOR LEGS MAY HAVE SHARP EDGES. HANDLE WITH CARE TO AVOID BODILY HARM AND/OR PROPERTY DAMAGE.



3. Install Collector Panel to Collector Legs

### 

for this procedure.

**ACAUTION** Ensure that the collector leg is stabilized and secured.

One person should tilt the panel slowly, while the second person attaches the panel to collector legs using the special metric T-head bolts.



 Using a flat-head screwdriver, turn the T-head bolt 90° to lock the bolt into the groove on the panel. Tighten the 4 nuts with a torque of 18 ft-lbs.



# FLAT ROOF OR GROUND MOUNT INSTALLATION

### 4. Prepare to Install Collector Panel Assembly

- Make sure that the bottom edge of the product touches the surface for support.
- $\bigcirc$
- 5. Install Collector Panel Assembly
  - Carefully move the assembly.

#### 

Use caution when moving

#### assembly.

- Using a 10mm drill bit (or equivalent), drill pilot holes into the structure at the marks made in step 4.
- Hammer a purchased plastic anchor into the holes made for the screws.



Make sure the collector legs are parallel and mark the attachment points.



# 

Use caution when moving assembly.

- Carefully move the assembly back into position.
- Mount the assembly to the structure using anchor screws and make sure the brackets are at a 90° angle with the collector legs. Securely tighten the four bolts with a torque of 18 ft-lbs.





### 6. Final Installation Steps

NOTICE: Risk of Unit Damage Do NOT insulate combined non-return/ safety valve or ventilation valve. The water heater warranty does not cover damage or failure resulting from operation with insulated valves.

 Connect the cold water inlet and fill the collector. Use the thread adaptors for US -NPT threads. (Reference Hydraulic Connection and ventilation valve installation section)



# **ON-ROOF INSTALLATION**



Metric T-Head Bolt, M8x20 -

Flat Washer, M8 - Qty. 4



3/4" MNPT x Female G3/4" Ventilation Valve - Qty. 1

temperatures inside the tank)

# **ON-ROOF INSTALLATION**





# 1. Install Lower Mounting Brackets to Roof Beams

- Determine the location of the Collector Panel. Make sure the outermost beams are between 2 and 10 inches from the sides of the panel.
- Lift or remove the roofing material. Use 2 of the wood screws provided (per bracket) to install the lower Mounting Brackets to the roof beams.
- Replace the roofing material.



# **ON-ROOF INSTALLATION**

### 2. Place Collector Panel

### 

DAMAGE, HAVE TWO PEOPLE JOINTLY INSTALL THE PRODUCT. FRAGILE PRODUCT – HANDLE WITH CARE!

- Place a Metric T-Head Bolt through the end of each of the brackets with the head toward the panel. Attach a washer and a nut to the end of each bolt. Do not tighten. The T-Head should be turned so it will fit into the groove of the panel.
- Place the collector panel onto the brackets on the roof sliding it down until it fits up against the bracket. Turn the T-Head Bolt 90° so it will fit into panel. See figure.
- Use a wrench to tighten each nut (18 ft-lbs).

# 3. Attach Flexible Bracket to the Roof

- Lift or remove roofing material. Use 2 of the wood screws provided (per bracket) to install the Flexible Mounting Brackets to the roof beams.
- Replace the roofing material.



Metric T-Head Bolt Flat Washer

Metric Nut

90°

 $\square$ 

Òð

Lower Mounting

Bracket

# 4. Attach Flexible Bracket to the Collector Panel

- Place a Metric T-Head Bolt through the end of each of the Flexible Brackets with the head toward the panel. Attach a washer and a nut to the end of each bolt. Do not tighten.
- Place the bolt head into the groove on the side of the panel. Do this on each side.
- Using a screw driver on the end of the bolt, turn the bolt 90° to lock the bolt into the groove.



 Tighten the nuts to make the brackets secure (18 ft-lbs).

## 5. Final Installation Steps

NOTICE: Risk of Unit Damage Do NOT insulate combined non-return/safety valve or ventilation valve. The water heater warranty does not cover damage or failure resulting from operation with insulated valves.

 Connect the cold water inlet and fill the collector. Use the thread adaptors for US - NPT threads. (Reference Hydraulic Connection and ventilation valve installation section)







- Connect the hot water outlet.
- Remove the foil within 14 days of installing the GeoSpring Solar system but never before the system is filled!



# HIGH LOAD ROOF INSTALLATION

# Materials for High Load Roof Installation

**NOTE:** Check package contents to make sure that you have received all components listed below. If you need spare parts, please contact your local GeoSpring Solar system dealer.



Mounting Bracket GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



Metric M5.5x29 Self Tapping Screw GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 4



Rubber Bushing GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



3/4" MNPT x Female G3/4" Ventilation Valve - Qty. 1



Mounting Rail GeoSpring (TM) 25 - Qty. 2 GeoSpring (TM) 40/50 - Qty. 3



Metric M12x300 Anchor GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



Metric Nut, M12 GeoSpring (TM) 25 - Qty. 12 GeoSpring (TM) 40/50 - Qty. 18



Flat Seal - Qty. 1



Sensor Immersion Sleeve (optional – Used to measure temperatures inside the tank)



High Load Bracket GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



Metric T-Head Bolt GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



Metric Nut, M8 GeoSpring (TM) 25 - Qty. 4 GeoSpring (TM) 40/50 - Qty. 6



3/4" NPT Combined Non-Return/Safety Valve - Qty. 1

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3/4" MNPT x Female G3/4" Thread Adaptor (Factory Installed) - Qty. 1

# HIGH LOAD ROOF INSTALLATION

# **Attachment Point Recommendations**

	** <b>Ib/ft</b> <sup>2</sup> 10.5	<b>МРН</b> 121	Ainch	B	<b>C</b> inch	D inch
GeoSpring™ Solar 25			19.4 ± 0.4	24.0	32.0	2.0
GeoSpring™ Solar 40			31.1 ± 0.4	35.5	32.0	2.0
GeoSpring™ Solar 50			42.7 ± 0.4	47.25	32.0	2.0



# HIGH LOAD ROOF INSTALLATION

### 1. Locate Collector Panel

# ACAUTION .

FOLLOWING STEPS MUST BE PERFORMED BY A LICENSED ROOFING CONTRACTOR.

 Determine the location of the Collector Panel according to the information on the previous page. The brackets need to be installed directly into a beam below roofing.



# 2. Install Collector Panel Brackets

- Using a 6mm drill bit, drill pilot holes into the beams through the shingles for attaching the brackets to the roof.
- Install the Metric M12x300 Anchor into the beams making sure the anchor is no less than 4.3" into the beam.



 Install the Rubber Bushing, Nuts and Bracket, as shown, for each hole drilled (4 holes for GeoSpring 25, 6 holes for GeoSpring 40/50).
 Each Bracket, once installed, should be a maximum of 1.38" off of the top of the shingle roofing. Bolts

max. 1.38

should be tightened to 18 ft-lbs.

Install 4 or
 6 brackets
 depending on
 your model.



# HIGH LOAD ROOF INSTALLATION

### 3. Assemble Mounting Rails

- Determine the length of rail needed for your installation. Cut off and discard the excess rail.
- Install the Self-Tapping Screw as shown, one on the top lower portion of the rail and one on the right side of the upper portion of the rail. Position the Self-Tapping Screw 0.78" from the end of the rail and tighten the screw
- Follow these steps with all rails.



### 4. Install Mounting Rails

 The mounting rails fit onto the mounting brackets using T-Head Bolts. Place a T-Head Bolt into the upper side of the rail to the inside of the block and turn it 90° so it is secure in groove of the rail. 1



Place a T-Head Bolt into the lower side of the rail and turn it  $90^{\circ}$  so it is secure in groove of the rail. **2** You can slide the bolts up and down the rail so they accommodate the mounting bracket.

- Slide the threaded portion of the bolt into the mounting bracket that is installed on the roof. Secure using an M8 Metric Nut.
- Repeat this step with all rails.



# HIGH LOAD ROOF INSTALLATION

# 5. Install Lower High Load Brackets

- Install a High Load Bracket on the top of the lower portions of each rail. Set the bracket into the groove in the rail above the self-tapping screw. Turn the High Load Bracket 90° clockwise to lock into place. Install the lower High Load Bracket on all rails.
- The High Load Bracket has a T-Head Bolt installed. Turn the bolt 90° so the T is horizontal and will fit into the groove of the collector panel.



# 6. Place Collector Panel and Install Upper High Load Brackets

A WARNING BODILY HARM AND/OR

PROPERTY DAMAGE, HAVE TWO PEOPLE JOINTLY INSTALL THE PRODUCT. FRAGILE PRODUCT – HANDLE WITH CARE!

- Place the collector panel onto the rails on the roof, sliding it down until it fits up against the High Load Brackets. The T-Head Bolt should fit into the groove in the front of the panel. Turn the T-Head Bolt 90° so it will lock into panel. See figure.
- Install a High Load Bracket on the top of the upper portions of each rails.
   Set the bracket into the groove in the rail. Turn the High Load Bracket 90° clockwise like you did with the Lower High Load Bracket.
- The High Load Bracket has a T-Head Bolt installed. Turn the bolt 90° so the T is horizontal and will fit into the groove of the Collector Panel.



Slide the High Load Bracket so the T-Head Bolt fits into the groove of the Collector Panel. Turn the T-Head Bolt 90° so it will lock into the panel. See figure.



INSTALLATION CHECKLIST				
<b>1</b> . Installation has sufficient load bearing capacity and in accordance with local and regional codes.				
<b>2.</b> Installed in accordance with these instructions, local, and regional codes.				
<b>3.</b> Inspected substructure for retaining screw connections used to secure installation.				
<b>4.</b> Inlet/Outlet connections tightened to 30 ft-lbs.				
<b>5.</b> Collector loop piping is secured and allows for expansion/contraction.				
<b>6.</b> Piping can withstand 212° F.				
7. No connections between copper and stainless steel.				
<b>8.</b> Supply and returns lines insulated and protected from UV degradation.				
9. Valves are NOT insulated.				
<b>10.</b> Installed system has an inclination between 20° to 75°.				
<b>11.</b> Combined non-return/safety valve is working and drain line completed per local code.				
<b>12.</b> No leaks after filling the tank with water, either when water is flowing or not.				
<b>13.</b> Water quality meets specifications on page 6.				
<b>14.</b> South facing installation with minimized shading.				

# Troubleshooting

Before you call for service....

Save time and money! Review the chart below first and you may not need to call for service.

**ACAUTION** For your safety, DO NOT attempt repair of electrical wiring, controls, heating elements or other safety devices. Refer repairs to qualified service personnel.

Problem	Possible Causes	What To do
OPERATION AND I	PERFORMANCE	
Not enough or no hot water	Water temperature may be set too low	<ul> <li>See the Water Temperature Adjustment and Water Heater Capacity sections. (Pages 4 &amp; 5)</li> </ul>
	Hot water usage pattern exceeds the capability of the water heater in current mode	Wait for the water heater to recover.
	Cold water inlet temperature may be colder during the winter months	<ul> <li>This is normal. The colder inlet water takes longer to heat.</li> <li>Consider increasing the set temperature as described in the Water Temperature Adjustment section.</li> </ul>
	Leaking or open hot water faucets	Make sure all faucets are closed.
	Long runs of exposed pipe, or hot water piping on outside wall	Insulate piping.
	Water Connections to unit reversed	Correct piping connections.
	Recirculating System Interference (if installed)	<ul> <li>Check flow rate is not set too high.</li> <li>Insulate piping</li> </ul>
	Check installation is south facing with minimized shading	<ul> <li>Correct installation to face south and minimize shading</li> </ul>
Water is too hot	Water temperature is set too high	See the Water Temperature Adjustment section.
	Mixing valve has failed	<ul> <li>Contact your local installer, plumbing contractor, or previously agreed upon service agency.</li> </ul>
OTHER		
Water dripping down the outside of the heater	Hot/Cold water connections or other parts have loosened	<ul> <li>Tighten the loose connections. This should only be done by a qualified service person.</li> </ul>
Combined non-return/ safety valve producing popping sound or draining	Pressure buildup caused by thermal expansion to a closed system	• This is an unacceptable condition and must be corrected. See Thermal Expansion section on page 15. Do not plug the relief valve outlet. Contact your local installer, plumbing contractor, or previously agreed upon service agency to correct this.
	The combined non-return/ safety valve will open at 72 PSI	Reduce system water pressure
Water Not Filling Heater	Cold Water supply is off	Check all valves to ensure system can be filled with water
	Combined non-return/safety valve	The combined non-return/safety valve has a check valve integrated. If installed backwards, flow can be prevented from filling the water heater.
### **Replacement Parts**

For GeoSpring<sup>™</sup> Solar models.

#### Instructions for Placing a Parts Order

All parts orders should include:

- 1. The model and serial number of the water heater from the rating plate
- 2. Specify voltage and wattage as marked on the rating plate (if specified).
- 3. Part description (as noted below) and number of parts desired.

### **A**CAUTION

For your safety, DO NOT attempt repair of electrical wiring, thermostat(s), heating elements or other operating controls. Refer to qualified service personnel.



Appearance may vary by model

The solar system installer is to indicate (circle, check, etc.) the system that was actually installed.

DG-300 Certified	This product certified by: Solar Rating & Certification Corporation™ Solar-Rating.org	GE Appliances, A Haier Company 4000 Buechel Bank Road Louisville, KY 40225 USA
Solar Energy Factor (SEF⊳)	SRCC Cert. No.	Model No.
0.90 1.00 1.20 1.10 1.20 1.40 0.70 0.80 0.90	30004294 30004293 30004292 30004291 30004290 30004289 30004288 30004287 30004286	GT25C10BAM-TG GT40C10BAM-TG GT50C10BAM-TG GT25C10BAM-E GT40C10BAM-E GT50C10BAM-E GT25C10BAM-G GT40C10BAM-G GT50C10BAM-G

The installed system is marked above

The solar energy system described by this manual, when properly installed and maintained, meets the minimum standards established by the ICC-SRCC. This certification does not imply endorsement or warranty of this product by ICC-SRCC.

# **SRCC OG-300 Certification**

The following labels/tags must be attached to the relevant valves in the systems in order for it to be considered OG-300 compliant. This page should be laminated, each label cut from it, punched in the margin on the left-hand side and affixed to the appropriate valve with a wire tie. Plastic ties are inappropriate due to high operating temperatures and UV-radiation. Failure to affix these labels will void the SRCC OG-300 certification.

	 $\sigma_{1}$
1	COMBINED NON-RETURN/SAFETY VALVE This valve is a pressure release mechanism used in pressure systems. It has a non-return valve integrated. The use of these valves is strictly required due to safety regulations. The safety valve opens at a pressure of 72 PSI to reduce excess pressure. Valve must be replaced by year five to gain the limited warranty for years six through ten. AWARNING BURN HAZARD Do NOT touch hot water outlet pipes. Failure to do so can result in severe burns.
2	VENTILATION VALVE   This valve ensures that no vacuum is created when draining the water tank.   In the event of negative pressure, the ventilation valve automatically supplies the system with air.   This ventilation valve must comply with ANSI Z21.22   Valve must be replaced by year five to gain the limited warranty for years six through ten.   AWARNING   BURN HAZARD   Do NOT touch hot water outlet pipes. Failure to do so can result in severe burns.
4	<b>COLD WATER SUPPLY ISOLATION VALVE</b> This valve should stay open to allow water from the public water system to fill the GeoSpring Solar System water tank. When this valve is closed, the GeoSpring Solar System and the supplemental water heater are disconnected from the pressurized mains of the public water system.
5	HOT WATER SUPPLY ISOLATION VALVE Keep this valve open to assure that hot water can drain or escape in case of overheating. This valve can temporarily be closed for maintenance purposes.
6	DRAIN VALVE These water heater drains are normally closed and capped. Use these valves to drain the GeoSpring Solar System. Attach a garden hose to both drain valves. Terminate the hoses in either a service basin or an appropriate spot outside the house. Open both water heater drains at once to drain the unit. AWARNING SCALD RISK WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.
6	DRAIN VALVE These water heater drains are normally closed and capped. Use these valves to drain the GeoSpring Solar System. Attach a garden hose to both drain valves. Terminate the hoses in either a service basin or an appropriate spot outside the house. Open both water heater drains at once to drain the unit. AWARNING SCALD RISK WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.
7	THERMOSTATIC MIXING VALVE This valve controls the temperature of the warm water output. According to local standards, the valve must have a scald safe function. Scald safe means that in the case of a cold water failure, the hot water supply shuts off automatically. An ASSE 1017 rated mixing valve to avoid severe burns or death from scalding temperatures IS REQUIRED PER SRCC OG-300.
8	PRESSURE REDUCING VALVE This valve should ensure a constant output pressure of 60 PSI independent of the input pressure delivered from any source.
9	<b>3 WAY BALL VALVE</b> This valve provides solar system cold water shut off without interrupting normal cold water service.
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# SRCC OG-300 Certification

### **Freeze Protection**

The following labels must be attached to the relevant valves in the systems in order for it to be considered OG-300 compliant. This page should be laminated, each label cut from it, punched in the margin on the left-hand side and affixed to the appropriate valve with a wire tie. Plastic ties are inappropriate due to high operating temperatures and UV-radiation. Failure to affix these labels will void the SRCC OG-300 certification.

The GeoSpring Solar System may be installed in areas within the United States that experience mild winter climates. However, the GeoSpring Solar System must be drained if the temperatures have ever fallen to **32°F for 8** consecutive hours.

When these environmental conditions are lower than the stated value, the GeoSpring Solar System must be manually drained in accordance with the Care and Cleaning instructions. Failure to do so will void the warranty coverage.

### Freeze Protection:

#### 32°F for 8 consecutive hours

When these environmental conditions are lower than the stated value, the GeoSpring Solar System must be manually drained in accordance with the Care and Cleaning instructions.

### **Drain Procedure:**

VALVE 4 COLD WATER SUPPLY ISOLATION VALVE

#### VALVE 6 DRAIN VALVE

Valve 4 is normally open and allows cold water to fill the GeoSpring Solar System. When the valve is closed, the GeoSpring Solar System is isolated from the pressurized cold water supply line piping. To drain the system, open valve 6.

### AWARNING SCALD RISK

WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.

# SRCC OG-300 Certification

### Labeling for all fill and drain ports:

The following labels must be attached to the relevant valves in the systems in order for it to be considered OG-300 complaint. This page should be laminated, each label cut from it, punched in the margin on the left-hand side and affixed to the appropriate valve with a wire tie. Plastic ties are inappropriate due to high operating temperatures and UV-radiation. Failure to affix these labels will void the SRCC OG-300 system certification.



No other fluid shall be used that would change the original classification of this system.

Unauthorized alterations to this system could result in a hazardous health condition.

### AWARNING SCALD RISK

WATER MAY BE DISCHARGED AT VERY HIGH TEMPERATURES. TO AVOID SCALDING, EXERCISE MAXIMUM CAUTION WHEN DRAINING THE HOT WATER FROM THE GEOSPRING SOLAR SYSTEM. DO NOT POINT HOSE AT PERSONS OR PETS. ALWAYS DISCHARGE THE HOT WATER TO A SAFE PLACE.

No other fluid shall be used that would change the original classification of this system.

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## **GE Appliances Solar Water Heater Limited Warranty**

LIMITED WARRANTY

All warranty service provided by our Authorized Servicer Network.

For The Period Of:	We Will Replace:	
<b>One Year</b> From the date of the original purchase	Any part of the Water Heater which fails due to a defect in materials or workmanship. During this <i>limited one-year warranty</i> , GE Appliances will reimburse registered service providers, or will reimburse consumers for documented out of pocket costs for parts and/ or labor for professional service at a predetermined rate as found on the GE Appliances Website: GEAppliances.com/waterheater, unless service provided to replace defective parts is determined to be a result of improper installation or maintenance.	
<b>Second through Fifth</b> <b>Year</b> From the date of the original purchase	<b>Any part</b> of the Water Heater which fails due to a defect in materials or workmanship. During this <i>limited second through year five warranty period</i> , labor and related service to replace the defective part are not included.	
<i>Sixth through Tenth</i> <i>Year</i> From the date of the original purchase	50% of the cost of <b>any part</b> of the water heater which fails due to a defect in materials or workmanship. During this limited <b>sixth through the end of the warranty period</b> , labor and related service to replace the defective part are not included.	
	Warranty is based on the 6th and 7th digit of model number located on rating plate (e.g.: GT50C <u>10</u> BAM has a part warranty of 10 years).	

### What Is Not Covered:

- Service trips to your home to teach you how to use the product.
- Improper installation, delivery or maintenance.
- Failure of the product if it is abused, misused, altered, or used for other than the intended purpose.
- Use of this product where water is microbiologically unsafe or of unknown quality, without adequate disinfection before or after the system.
- Replacement of house fuses or resetting of circuit breakers.
- Damage to the product caused by accident, lightning, fire, flood or acts of God.
- Incidental or consequential damage caused by possible defects with this appliance, its installation or repair.
- Product not accessible to provide required service in a safe manner. Attic installation must have flooring and accessible stairs.
- If product removed from original installation location.
- If product or other appliance must be moved for service access.
- Damage, malfunction or failure caused by the use of repair service not approved by GE Appliances.

- Damages, malfunctions or failure caused by the use of unapproved parts or components.
- Damages, malfunctions or failure resulting from operating the water heater with an empty or partially empty tank.
- Damages, malfunctions or failure caused by subjecting the tank to pressure greater than those shown on the rating label.
- Water heater failure due to the water heater being operated in a corrosive atmosphere.
- If this Solar Water Heater is used for other than residential private family use, labor will not be covered under warranty, and the parts warranty is reduced to 1 year from the date of purchase.
- Harmful chemicals, caustic fluids, or liquids deleterious to steel tubing, including improperly applied or maintained heat transfer fluids, or chlorinated pool or spa water
- Water related corrosion
- Clouding or condensation naturally resulting from temporary intrusions of moisture into the product.
- Water freezing in tanks, pipes, or other product components
- Breakage of glass surface of any product component

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

This limited warranty is extended to the original purchaser and any succeeding owner for products purchased for home use within the USA. If the product is located in an area where service by an installer, plumbing contractor, or previously agreed upon service agency is not available, you may be responsible for a trip charge to the service provider.

Some states do not allow the exclusion or limitation of incidental or consequential damages. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are, consult your local or state consumer affairs office or your state's Attorney General.

For product purchased outside of the US, contact your dealer for Warranty and Service information.

Warrantor for Products Purchased in the United States:

GE Appliances, a Haier company Louisville, KY 40225

## **Consumer Support**

### **Register Your Appliance**

Register your new appliance on-line at your convenience! Timely product registration will allow for enhanced communication and prompt service under the terms of your warranty, should the need arise.

• Scan QR Code on product registration card, or on product.

**NOTE:** This is just an example of what a QR code represents.

- · Or go to GEAppliances.com/register
- · Or mail in your pre-printed registration card included in the packing material

### **Consumer Service**

If you have a question or need assistance with your new water heater on adjustments, repairs, or routine maintenance:

- · Review the Troubleshooting Tips or Care and Cleaning sections of this Owner's Manual.
- · Contact your local installer, plumbing contractor, or previously agreed upon service agency.

NOTE: Your installer phone number may be located on the product label.

If you still have issues, contact the GEA Customer Support at GEAppliances.com/waterheater

### **Extended Warranties**

Purchase a GE Appliances extended warranty and learn about special discounts that are available while your warranty is still in effect. You can purchase it on-line anytime. GE Appliances Services will still be there after your warranty expires. In the US: **GEAppliances.com/extended-warranty** or call 800.626.2224 during normal business hours.

### **Parts and Accessories**

Individuals qualified to service their own appliances can have parts or accessories sent directly to their homes. (VISA, MasterCard and Discover cards are accepted). Order on-line today 24 hours every day.

In the US, go to GEApplianceparts.com

### **Contact Us**

If you are ultimately not satisfied with the service you receive, contact us on our Website with all the details including your phone number, or write to:

In the US: General Manager, Customer Relations |GE Appliances, Appliance Park |Louisville, KY 40225 **GEAppliances.com/contact**