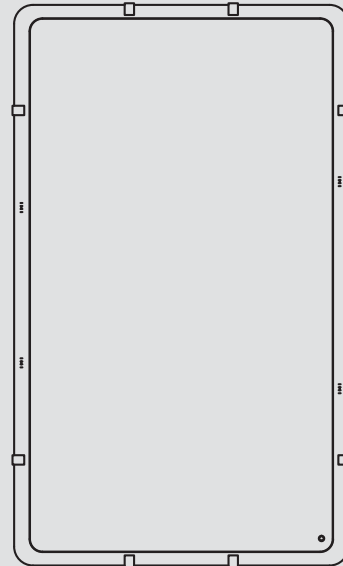


# OPERATION AND INSTALLATION

Solar Thermal Collector

- » SOL 29 Premium S
- » SOL 29 Premium W



**STIEBEL ELTRON**

# OPERATION

## General Instructions

### OPERATION

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# OPERATION

## 1. General Instructions

This manual includes important information regarding the safe and efficient handling of the water heater. Keep this manual with the water heater at all times.

Work must only be carried out by a licensed installer who has read and understands these instructions. All federal, state and local codes must be followed. Failure to do so may result in equipment failure, serious injury, or death.

While working on the water heater, disconnect the power supply. Illustrations in these instructions are designed to aid a general understanding and may deviate from the actual water heater version. No claims can be derived from such installations.

### Limited liability:

We have collated all details and information in this manual in due consideration of applicable standards and regulations, the state of the art and our long-term know-how and experience.

Losses due to the following are excluded from our liability:

- Non-observance of these instructions
- Incorrect use
- Installation of water heater by unqualified personnel
- Unauthorized modifications
- Use of unauthorized spare parts

For more information on liability, see the warranty section at the back of this manual.



### NOTE:

Read these instructions carefully before using the appliance and retain them for future reference.  
Pass on the instructions to a new user if required.

## 1.1 Safety instructions

### 1.1.1 Symbols, type of risk

| Symbol | Type of risk            |
|--------|-------------------------|
|        | Injury                  |
|        | Electrocution           |
|        | Burns (burns, scalding) |
|        | Fire                    |

1.2 Other symbols in this documentation



**NOTE:**  
Notes are bordered by horizontal lines above and below the text. General information is identified by the adjacent symbol.  
▶ Read these texts carefully.

| Symbol | Meaning  |
|--------|--|
|        | Material losses (appliance damage, consequential losses and environmental pollution) |
|        | Appliance disposal   |
|        | Never cover the appliance  |

▶ This symbol indicates that you have to do something. The action you need to take is described step by step.

2. Safety

Observe the following safety information and regulations.

Operate the appliance only when fully installed and with all safety equipment fitted.

2.1 Intended use

This device is intended to produce hot water for domestic and heating use by collecting energy radiated from the sun.

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions and of instructions for any accessories used is also part of the correct use of this appliance.

2.2 General safety



**WARNING:**  
A solar collector generates heat from sunlight. This leads to the collectors and their connectors getting very hot, even when they are not filled. Cover the collectors with opaque material until the installation has been completed.



**WARNING:**  
Never install any valves or shut-off devices in the piping between the collectors and the safety valve. The safety valve is activated at 87 psi.  
Never set the solar loop pressure greater than the dhw water supply pressure. If the potable water pressure is too low, a booster pump may be needed to assure that it exceeds the required solar loop pressure.



**WARNING: Scalding**  
Setting the maximum tank temperature higher than 140°F at the control unit is permissible only with a thermostatically-controlled DHW mixing valve. Otherwise there can be a risk of scalding at the tapping point.

2.3 Mandatory equipment

Check valve

Check valves must be installed on the supply and return piping to the collectors to prevent heat loss via single-pipe thermosiphoning.

Drain valve

A drain valve must be installed at the lowest point of the solar thermal system to aid in draining for maintenance.

Expansion tank

A diaphragm-type expansion tank must be installed to accept expanding fluid in the solar loop. The expansion tank should be designed for an operating pressure of 87 psi and are resistant to deterioration from propylene glycol mixtures.

The air-side inlet pressure should be set equal to the system start-up (cold) pressure; check it when the system has not been filled or when the wet side of the expansion tank is open to the atmosphere.

Solar heating fluid

Use only a mixture of food-grade propylene glycol and de-ionized water in the solar loop. The ratio of glycol to water should provide sufficient freeze protection below expected cold water temperatures in the climate of the installation location.

Besides freezing, glycol must be used as a corrosion inhibitor in the rest of the solar loop piping. See the specifications for the solar fluid in section 9.3 on page 13.

2.4 Emergency shut-down

Except for repair and/or emergency, the control unit and the pump must remain powered and activated in order to avoid overheating the collectors. Prior to shutting down the system for repairs, cover the solar collectors or work at night.

If emergency shut-down is needed, unplug the control unit and call for service.

2.5 Licenses/certificates

- SRCC Standard 100-2006-09 (OG-100): 10002015

## INSTALLATION

### Register your product

#### 3. Register your product



You must register this product within 90 days of purchase on our web site in order to activate the standard warranty or to be eligible for any extended warranty. Go to our web site at [www.stiebel-eltron-usa.com](http://www.stiebel-eltron-usa.com) and click on register your product.

Before beginning the registration process, we suggest that you gather the necessary information which will be as follows:

Model (Example: SOL 29 Premium S): \_\_\_\_\_

Serial number (listed after "Nr."): \_\_\_\_\_

Place of Purchase: \_\_\_\_\_

Purchase date: \_\_\_\_\_

First & last name: \_\_\_\_\_

Email address: \_\_\_\_\_

Physical address: \_\_\_\_\_

Phone number: \_\_\_\_\_

If you have any questions concerning the registration process or warranty options, please contact Stiebel Eltron USA directly at (800)-582-8423.

#### 4. General product information

The SOL 29 Premium S & SOL 29 Premium W collectors are solar thermal collectors designed for closed-loop operation. The absorber plate is a four-port serpentine style designed for a single array with up to 10 collectors connected together.

The collector converts sunlight into heat. Light penetrates the glass cover, which is pre-stressed, highly transparent single pane safety glass. As the light strikes the absorber plate, it is converted to heat. The highly selective coating of the absorber and the thermal insulation on the back of the absorber keep heat loss to the environment to a minimum.

The thermal energy produced by the collector is transported by the heat transfer medium (solar loop fluid), via a circulating pump, to the storage tank(s).

The inside of the collector can fog up under certain operating conditions (e.g., large tank with low temperature compared to the outdoor temperature and/or high relative humidity).

## INSTALLATION

#### 5. Safety

The installation of solar thermal collectors typically involves installation on a roof, or otherwise elevated structure. Refer to all relevant safety codes to ensure that installation can be completed without injury.

After installation and commissioning, the collectors will be filled with fluid. During the day, the fluid will become hot due to solar radiation. Venting the collectors, or performing other working tasks on the collectors while it is hot may cause you to come into contact with hot solar fluid, which is a scalding risk. Always cover the collectors with an opaque material if they are filled with fluid and being worked on.



##### WARNING: Risk of scalding

To prevent the solar fluid from boiling in the collectors, the collectors should be covered with an opaque material while working on the system.



##### Material losses:

To protect the system against frost and corrosion, fill the solar system exclusively with the recommended propylene glycol mixture.

##### 5.1 Regulations, codes, and standards



##### NOTE:

Observe all federal, state, and local codes when performing electrical, plumbing, or roof work during installation.

#### 6. Installation

##### 6.1 Planning and installation



##### Material losses:

Solar collectors, mounting equipment, and solar heating fluid will add weight onto a roof. Have a licensed contractor inspect the roof structure to ensure that the installation location has sufficient integrity to hold all necessary components, with expected snow and winds loads included.

The planned site for the collectors should have maximum sun exposure for the most amount of time as possible. The location should avoid shading from trees or other objects.

Ground-mount installations have a similar installation procedure to roof installations, other than the method of securing the array to the ground. These instructions are for a roof installation, but a ground-mount installation is very similar. Contact Stiebel Eltron customer support for more information about a ground-mount installation.

# INSTALLATION

## Installation

### 6.1.1 Mounting location

The collectors must be installed in a location such that they are not shaded for 6 hours per day on average over the course of a year. Evaluating the site for optimal sun exposure is recommended.

### 6.2 Determining array size

Once the number of collectors in the array is known, you need to determine if the collectors should be connected into one or more sub-arrays. If there are more than 10 collectors in the array, at least 2 sub-arrays are needed since the maximum for one array is 10.

Generally it is a good idea to have an equal number of collectors in each sub-array along with a reverse-return pipe configuration to ensure adequate and even flow through each sub-array. If it is not possible to make the arrays even, then balancing valves must be installed on the supply to each sub-array to ensure the proper flow rates.

### 6.3 Determining mounting hardware quantity

To determine the number of mounting hardware assemblies in each sub-array, add 1 to the number of collectors. For example: in a sub-array with 2 collectors, use 3 mounting hardware assemblies for proper installation.

### 6.4 Mounting hardware spacing

#### 6.4.1 Tilt mount racking

##### Finding the on center distance between mounting points

Consult the table below for the rafters that will need to be secured to. This is a minimum specification. It may be possible or necessary to add more mounting racks per array if needed to spread out the roof load.

| # of collectors | On-center rafter-mount spacing                              |   |
|-----------------|---|---|
|                 | SOL 29 Premium S  | SOL 29 Premium W  |
| 1               | 0', 4'  | 0, 5'-4"  |
| 2               | 0', 4', 8'  | 0, 6'-8", 8', 13'-4"  |
| 3               | 0', 4', 8', 12'   | 0, 6'-8", 8', 13'-4", 14'-8", 20"   |
| 4               | 0', 4', 8', 12', 16'  | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8"   |
| 5               | 0', 4', 8', 12', 16', 20'                                   | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4"  |
| 6               | 0', 4', 8', 12', 16', 20', 24'                              | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4", 34'-8", 41'-4"  |
| 7               | 0', 4', 8', 12', 16', 20', 24', 28'                         | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4", 34'-8", 41'-4", 42'-8", 48"   |
| 8               | 0', 4', 8', 12', 16', 20', 24', 28', 33'-4"                 | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4", 34'-8", 41'-4", 42'-8", 48', 49'-4", 54'-8"                           |
| 9               | 0', 4', 8', 12', 16', 20', 24', 28', 33'-4", 37'-4"         | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4", 34'-8", 41'-4", 42'-8", 48', 49'-4", 54'-8", 56', 61'-4"              |
| 10              | 0', 4', 8', 12', 16', 20', 24', 28', 33'-4", 37'-4", 41'-4" | 0, 6'-8", 8', 13'-4", 14'-8", 20', 21'-4", 26'-8", 28', 33'-4", 34'-8", 41'-4", 42'-8", 48', 49'-4", 54'-8", 56', 61'-4", 62'-8", 68" |

##### Finding the distance between front and back mount points

For the distance between the front and back mounting points on the 20° and 35-50° mounting racks use the table below.

| Mounting type    | Front-back mounting point distance         |                  |
|------------------|--|------------------|
|                  | SOL 29 Premium S                           | SOL 29 Premium W |
| 20° tilt rack    | 70 <sup>3</sup> / <sub>8</sub> " / 1800 mm | 1020 mm          |
| 35-50° tilt rack | 63 <sup>3</sup> / <sub>4</sub> " / 1620 mm | 1020 mm          |

#### 6.4.2 Flush mount racking

For the distance between the front and back mounting points on the flush mount racks use the table below.

| Mounting type | Front-back mounting point distance         |   |
|---------------|--|---|
|               | SOL 29 Premium S                           | SOL 29 Premium W                            |
| Flush mount   | 77 <sup>3</sup> / <sub>8</sub> " / 1971 mm | 44 <sup>9</sup> / <sub>16</sub> " / 1132 mm |

# INSTALLATION

## Installation

### 6.5 Mounting hardware installation



#### NOTE:

The installation surface should have as little height variation as possible to ensure the proper installation of the collectors. A surface height variation larger than  $\frac{1}{4}$ " between each mounting point is not permitted. Stress damage to installed components caused by inattention to surface height variation is cause for a voided warranty.



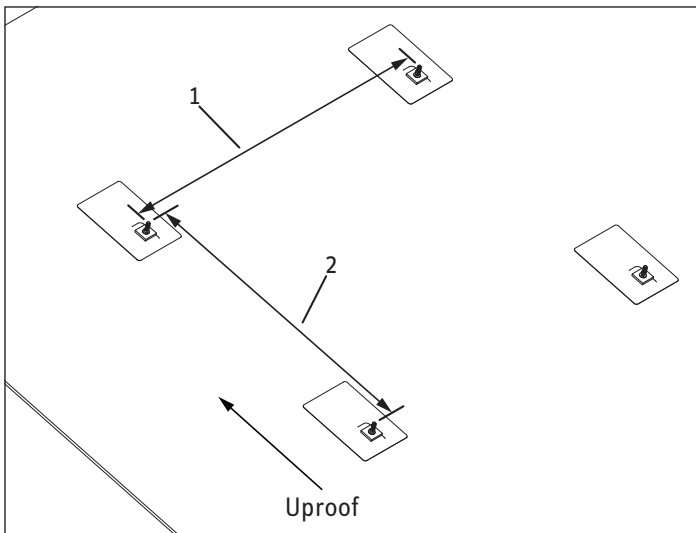
#### Material losses:

Penetrating a roof with mounting hardware leaves it susceptible to permanent leaks if not installed properly. Installers must be properly trained and certified for rooftop work.

Once the number of mounting points and their distances are determined, mount the flashing kit to the roof at the appropriate spacing. Consult the installation instructions for your particular mounting kit for more detailed mounting and fastening instructions.

#### 6.5.1 Installation of flashing and mounting hardware

Mount the flashing or mounting hardware on the roof so that the bolts sticking up from the roof are spaced as described in section 6.4.1 on page 5.

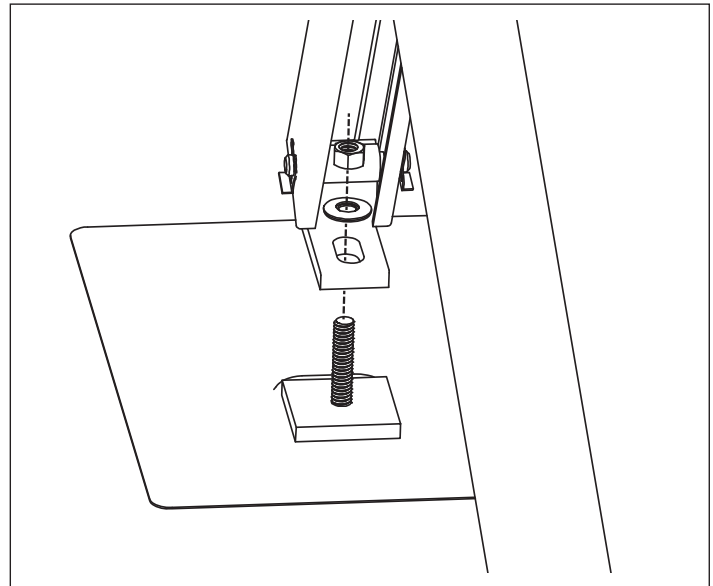


- 1 Mounting point spacing between rafters
- 2 Front and back mounting spacing

Repeat the mounting process for all flashing kits in the array. Pay attention to vertical variation in the roof surface. A vertical variation over  $\frac{1}{4}$ " (6mm) between the mounting points will result in improper installation and possibly damage the collectors.

#### 6.5.2 Installation of tilt mount racking

For a tilt mount system, consult the installation manual for the tilt mount racking to pre-assemble the racking kits. Once assembled, fasten the tilt mount racking to the flashing hardware.

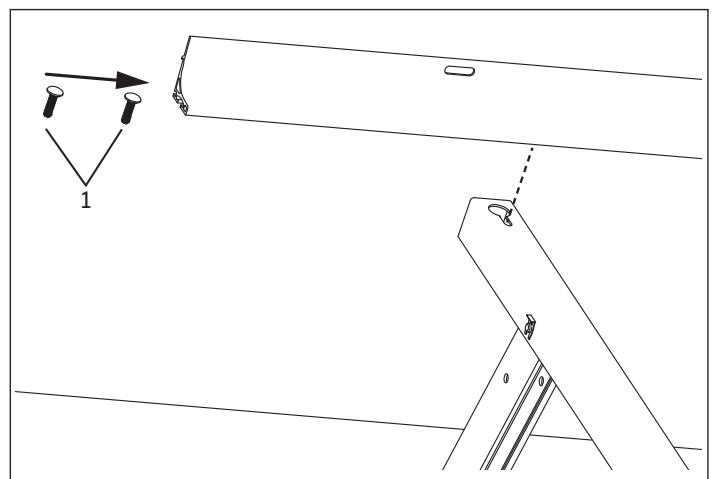


Fasten the racking securely to the mounting bolts. Secure racking is critical to a safe installation of the solar thermal array.

#### 6.5.3 Installation of flush mount racking

This manual shows an extended installation procedure for this collector with tilt-mount racking. Other than the elevated nature of the install with tilt mount racking, the installation process is identical for flush mount racks. For a flush mount rack install, observe the spacing requirements outlined in section 6.4.2 on page 5, and read the dedicated installation manual for flush mount racking.

### 6.6 Collector frame installation

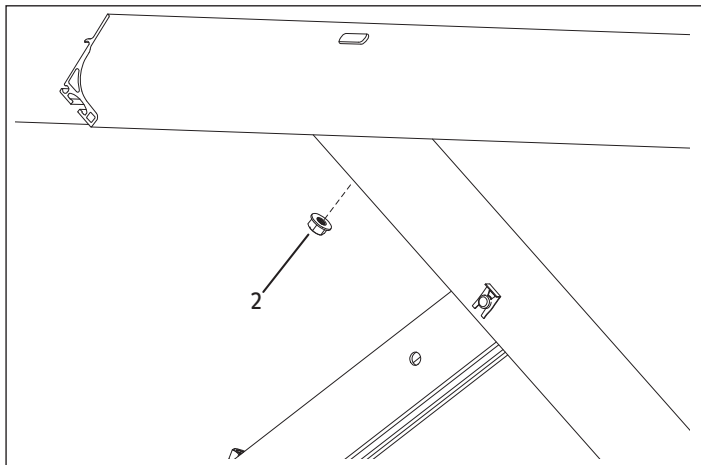


- 1  $\frac{3}{8}$ " carriage bolts

Insert carriage bolts into the slot on the underside of the collector frame.

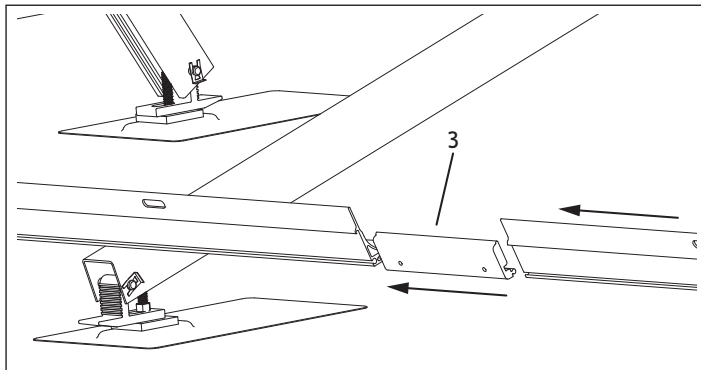
# INSTALLATION

## Installation



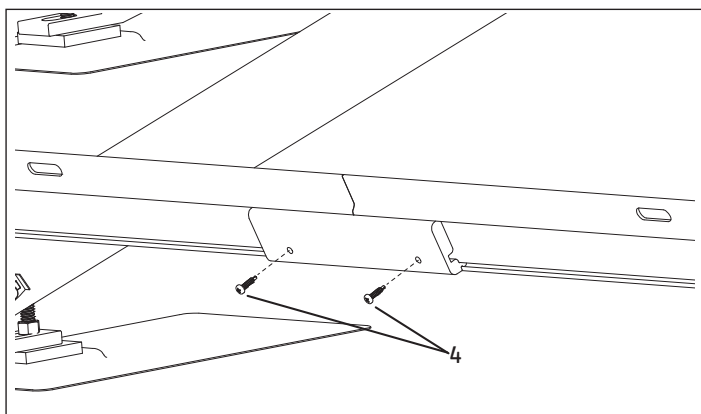
2 Fastening nut

Secure the collector frame by fastening a nut to the carriage bolt.



3 Splice connector

If joining two frames together for a larger sub-array of collectors, slide the splice connector into the groove of the first frame. Slide the next frame onto the splice connector.



4 Sheet metal screws

### 6.7 Collector installation



**NOTE:**

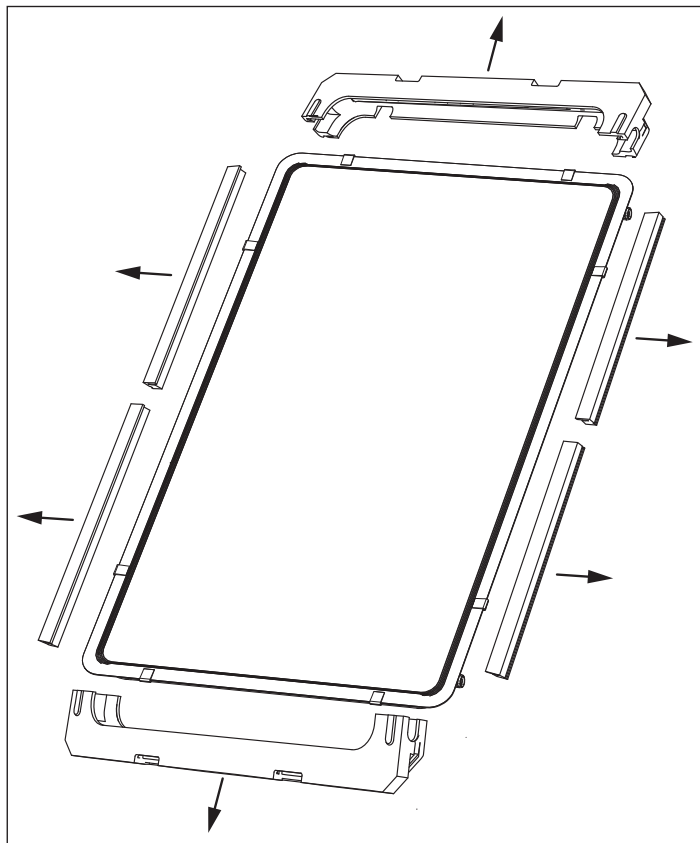
The collector has a sensor well near one of the four connection points. This sensor well must be oriented so that a sensor can measure the temperature of the solar fluid as it exits the array. Do not orient the collector so that the sensor well is located at the bottom of the collector. For more information see section 6.9 on page 9.



**Material losses:**

While carrying out work on the installation site, the collectors are susceptible to damage from heavy equipment or large objects.

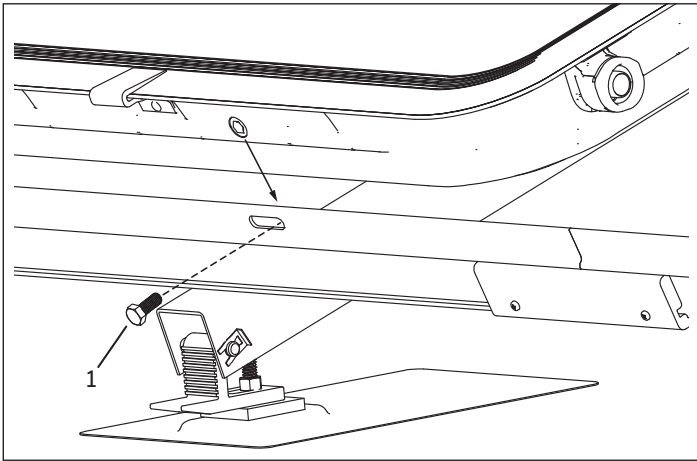
To protect the collectors, do not remove the collector insulation until the mounting hardware is completely installed and ready for collector insulation.



Remove the protective insulation from the collector.

## INSTALLATION

### Installation

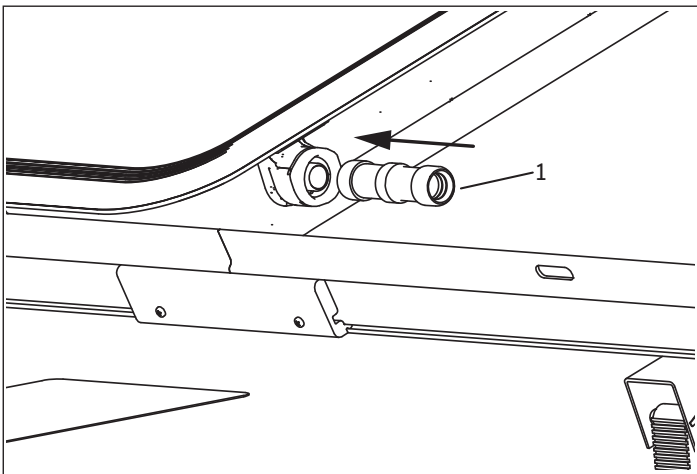


1 M8 x 20mm bolt

Place the collector into the collector frames and fasten the bolt through the collector frame into the collector. There are four fastening points on each collector that must be secured. Two bolts secure into the top of the collector, and two secure into the bottom.

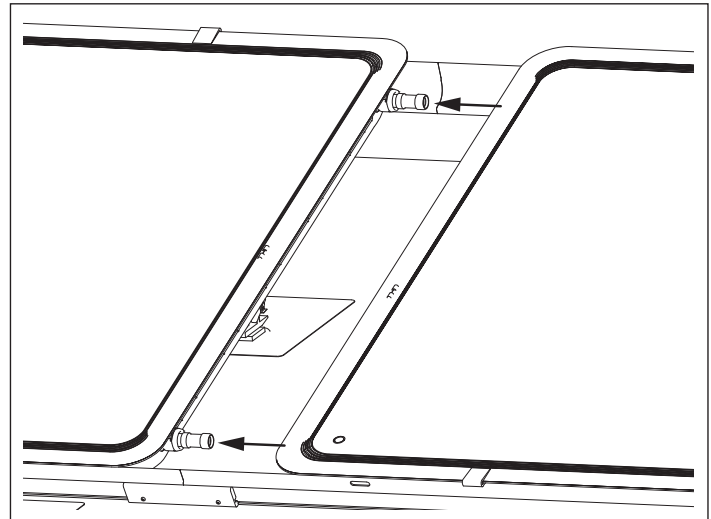
#### 6.8 Collector connection

##### 6.8.1 Connection between collectors



1 Inter-panel connector

Push the inter-panel connectors completely into the collector connection. Do this for both connector ports on the side where the next collector will be installed.

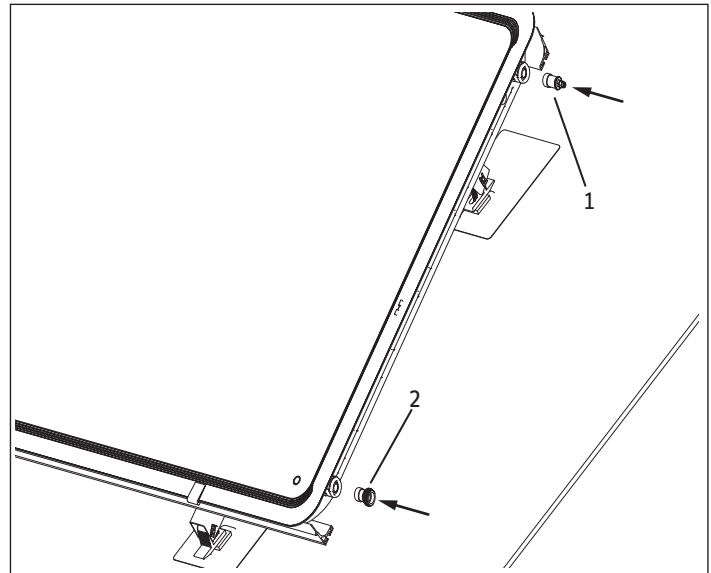


Sit the next collector into the frames and slide the inter-panel connectors into the connections of the next collector.

Secure each collector with the M8 x 20mm bolts as each one is installed. Repeat the process with any additional collectors.

##### 6.8.2 Connection at end of array

###### Cold inlet



1 Vent plug connector

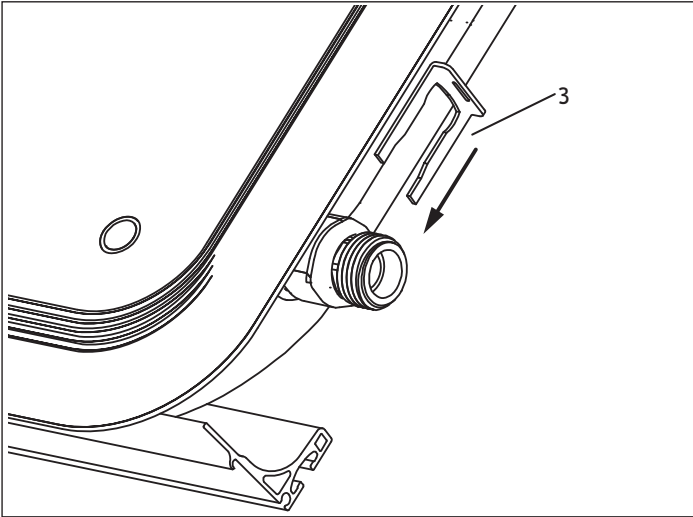
2 1" male connector

On the connection side where the cold fluid will enter the collector array, install a vent plug connector in the top collector connection and a threaded connector in the bottom collector connection.



# INSTALLATION

## Installation



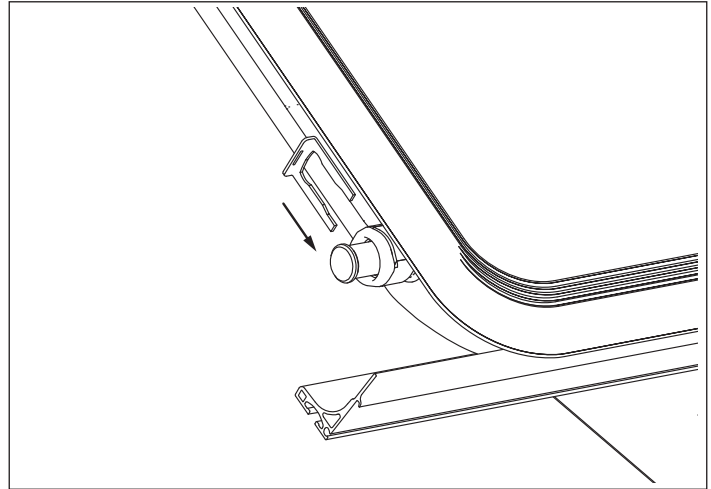
3 Collector connection clip

Secure all external connectors with the collector connection clip.



**Material losses:**

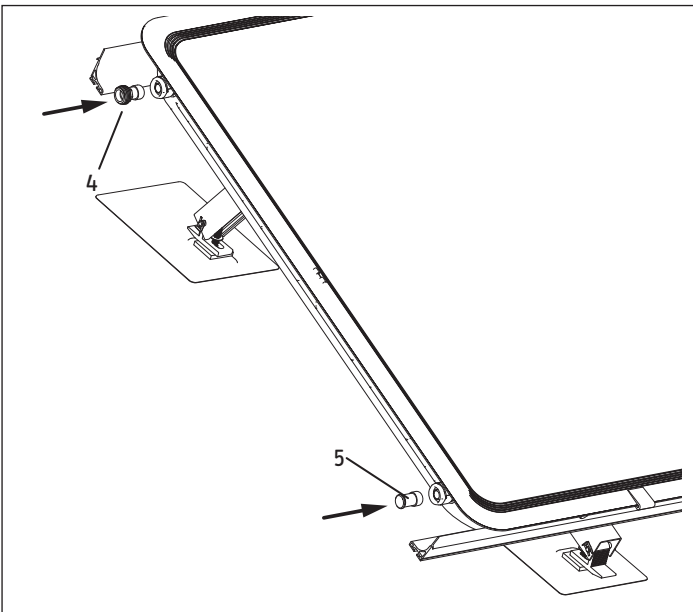
All external connectors must be secured with a collector connection clip. Failure to do so will cause rapid depressurization of the solar loop during the charging procedure and require repair and reconnection of the connectors.



**WARNING: Burns**

Once the collectors are installed, they will begin to heat up even during cloudy days. Covering the collectors with an opaque material will make working around and with the collectors easier during the installation.

**Hot outlet**

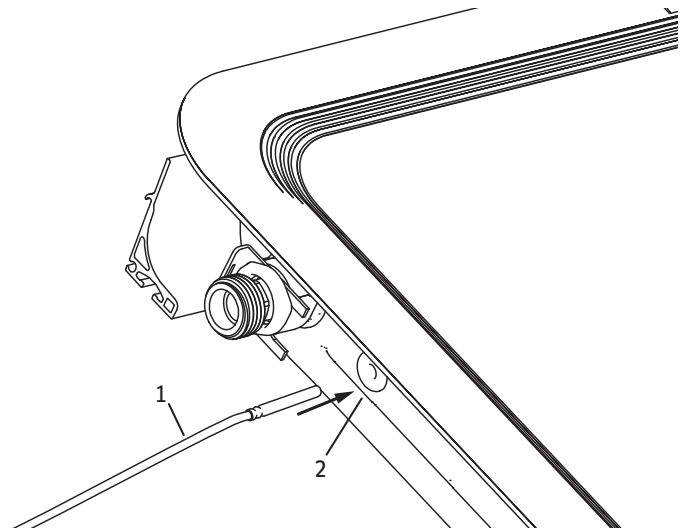


4 1" male connector  
5 Plug connector

On the connection side where the hot fluid exits the collector array, install a threaded connector in the top collector connection and a plug connector in the bottom collector connection.

### 6.9 Temperature sensor installation

Install a temperature sensor into the sensor well of the collector where the fluid exits the array and returns to the system heat exchanger. Secure the temperature sensor so that it will not become dislodged from the sensor well accidentally.



1 Temperature sensor  
2 Sensor well

# INSTALLATION

## Commissioning

### 6.10 Pipework installation

Use copper or stainless steel pipes or corrugated stainless steel hoses for the supply and return lines. Pipe diameter is dependent on the length of the run and expected flow rates. Recommended pipe diameter for systems of up to eight collectors is 3/4". If the pipe run is longer than 60 feet (18 m), a larger pipe diameter may be needed.

Flashing is recommended for pipe run penetrations into the roof. On flat roofs and roofs with shallow pitches, passing the pipes through an external wall is recommended to avoid water leaks. Pipe hangers must provide correct support and angle and must meet building codes. Hangers must not compress insulation and should allow for thermal contraction and expansion of the pipework. Installers must comply with all local, state and national codes.

We recommend trimming pipes with pipe cutters to avoid creating metal filings. Electrically ground the pipework in accordance with electrical codes. Connect all pipework to the building's ground over the shortest possible distance.

All piping in the solar thermal loop must be properly supported for the expected loads of the system. The piping supports must not compress the pipe insulation.

The piping is to be run in such a way that the performance of any fire rated assembly is not reduced.

#### 6.10.1 Soldered pipe

Soldered pipe must be hard-soldered using 95/5 lead-free solder.

#### 6.10.2 Alternative piping

Piping made with locking ring fittings, press fittings, and corrugated hoses must be sealed using suitable sealants. Seals must be resistant to propylene glycol and temperatures up to 356°F (180°C).

### 6.11 Thermal insulation

All exterior piping also requires UV and moisture protection. Insulation must be resistant to temperatures up to 356°F (180°C).

A rigid aluminum sheath is recommended as protection for the mineral wool. The EPDM hose can be finished with UV-resistant paint. Where required, protect the thermal insulation against birds or rodents. Insulate all lines of the solar loop. Apply the thermal insulation after pressure testing and checking the system for leaks.

Extremely cold climates that experience nighttime winter temperatures below -30°F (-34.4°C) may need thicker pipe insulation to prevent pipe freeze-ups or slushing of the antifreeze mixture.

#### Minimum Insulation Thickness

| Diameter of Pipe | Minimum thickness of insulation layer |
|------------------|---------------------------------------|
| Less than 3/4"   | 3/4"                                  |
| 3/4" to 1 1/4"   | 1"                                    |
| 1 1/4" to 4"     | Identical to pipe diameter            |
| Greater than 4"  | 4"                                    |

## 7. Commissioning

### 7.1 Pressure and leak test

After the pipe work has been installed and the collectors have been connected it will be necessary to pressure-test the system to detect leaks before filling the solar loop with heat transfer fluid. Propylene glycol solutions can leak from much smaller gaps than can water; so such testing is critical to assuring a successful installation. Recommended test pressure is 80 psi. Thermal pipe insulation should be installed only after the leak test has been successfully completed.

It is recommended that compressed air be used to test the system for leaks, as it is very easy to make repairs and it will prevent loss of solar medium, spills, property damage, and messy clean-up problems. Air is also capable of revealing very small leaks that water may not reveal, through which propylene glycol will often leak. Leaks will be evident from the sound of escaping air, observation of bubbles emanating from fittings and other leak-prone components that are coated with soapy water, and watching the pressure gauge over time. Bear in mind that the pressure gauge will vary some based on temperature of the air, so one must try to read the pressure at nights when the system cools down to ambient temperature or when covered.

### 7.2 Expansion tank pre-charge pressure

While the leak testing is being performed, the installer should set the expansion tank's pre-charge pressure. Make sure that the "wet" side of the expansion tank (pipe connection) is vented to atmosphere. Using a compressor, pre-charge the tank with air (or use pressurized nitrogen) to a final pressure of 5 psi (350 mbar) less than the target system pressure. For example, if the final target system (solar loop) pressure is to be 50 psig (3.45 bar), fill the expansion tank to 45 psig (3.1 bar), which is the recommended default value. When complete, cap the Schrader valve fitting and reattach the tank to the pump station. Make sure the expansion tank always faces up (the Schrader valve must be pointed down).

### 7.3 Charging & venting



#### WARNING:

Freeze tolerance limits are based upon an assumed set of environmental conditions. This manual assumes product installation in North America and the reasonable range of weather conditions encountered there. 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 Stiebel Eltron's instructions if the air temperature is anticipated to approach the specified freeze tolerance limit.

The solar heating system must be filled exclusively with the premixed propylene glycol heat transfer medium. Stiebel Eltron glycol containers have been premixed and require no further treatment.

Never mix water with the heat transfer fluid, otherwise the essential characteristics and corrosion protection can no longer be guaranteed.

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## INSTALLATION

### Maintenance & care

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The system must not be topped off with water. Consult the manual or technical data sheet of the glycol mixture before using.

#### 7.3.1 Freeze limit

Glycol provided by Stiebel Eltron provides freeze protection to -30°F (-34°C). Weather conditions beyond this point may damage the system.

#### 7.4 More information

For more detailed instructions on how to fill, flush & charge the solar loop, consult the pump station manual.

## 8. Maintenance & care

Specialists should carry out an annual inspection of the solar heating system to ensure proper functioning of the system and its components, including the control unit, safety equipment, and tank. System components (fittings, thermal insulation, mounting hardware, fasteners, etc.) exposed to the weather must also be checked periodically for their condition. Look for signs of abrasion, wear, corrosion, contamination, or damage. Check the pH value (> 7) and frost protection level (< -20°F / -29°C) of the heat transfer medium annually.

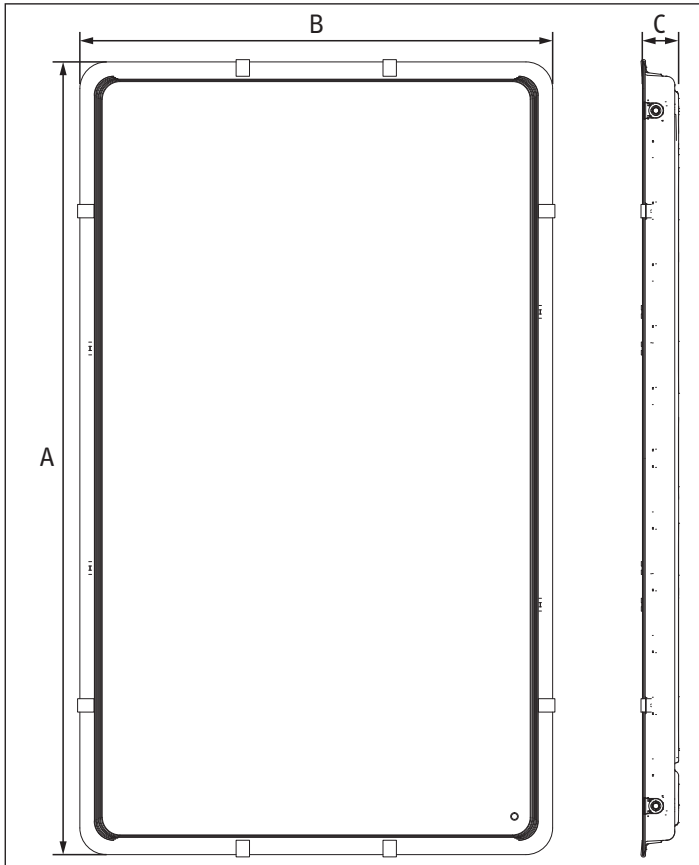
# INSTALLATION

## Technical data

### 9. Technical data

#### 9.1 Dimensions

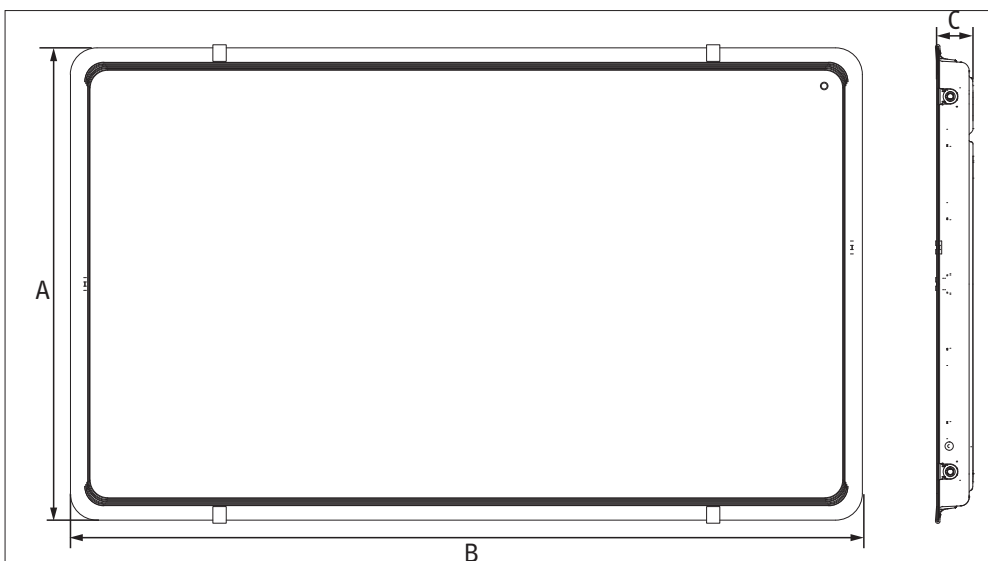
##### SOL 29 Premium S



#### 9.2 Data table

|                                       | SOL 29 Premium S   | SOL 29 Premium W  |
|---------------------------------------|--|-------------------|
| Item Number                           | 290016   | 290017            |
| Type                                  | Standard / Vertical  | Wide / Horizontal |
| Height (A)                            | 82" / 2083 mm  | 49" / 1245 mm     |
| Width (B)                             | 49" / 1245 mm  | 82" / 2083 mm     |
| Depth (C)                             | 3 <sup>3</sup> / <sub>4</sub> " / 95 mm                              |                   |
| Weight                                | 84 lbs / 38.1 kg   |                   |
| Housing material                      | deep-drawn aluminum tray   |                   |
| Glass cover                           | Tempered solar safety glass  |                   |
| Glass thickness                       | 1 <sup>1</sup> / <sub>8</sub> " / 3 mm                               |                   |
| Glass transmittance                   | >89%   |                   |
| Thermal insulation                    | 2" / 50.8 mm mineral wool  |                   |
| Collector connection                  | 1" BSPP thread (ships with 3 <sup>4</sup> / <sub>4</sub> " adapters) |                   |
| Max. idle temperature                 | 345°F / 174°C  |                   |
| Min. operating pressure               | 145 psi / 10 bar   |                   |
| Test medium                           | 50/50 propylene glycol/water mixture                                 |                   |
| Fluid capacity                        | 0.4 gal / 1.5 l  |                   |
| Angle of inclination                  | 15°-90°  |                   |
| Total area                            | 27.66 ft <sup>2</sup> / 2.57m <sup>2</sup>                           |                   |
| Aperture area                         | 24.33 ft <sup>2</sup> / 2.26m <sup>2</sup>                           |                   |
| Absorber area                         | 24.65 ft <sup>2</sup> / 2.29m <sup>2</sup>                           |                   |
| Absorber material                     | selectively coated aluminum  |                   |
| Absorption level $\alpha$             | 95%  |                   |
| Emission level $\epsilon$             | 5%   |                   |
| SRCC OG-100 High Radiation C Rating   | 30,600 Btu/panel/day / 8.97 kWh/panel/day                            |                   |
| SRCC OG-100 Medium Radiation D Rating | 12,100 Btu/panel/day / 3.55 kWh/panel/day                            |                   |

##### SOL 29 Premium W



# INSTALLATION

## Technical data

### 9.3 Propylene glycol specifications

This solar thermal system should be filled only with propylene glycol approved by Stiebel Eltron.

|                                     | DOWFROST HD                           |
|-------------------------------------|---------------------------------------|
| Item Number                         | 074300                                |
| Contents of container               |                                       |
| Volume of Mixture                   | 5 gal / 18.9 l                        |
| Weight % Propylene Glycol           | 50                                    |
| Volume % Propylene Glycol           | 50                                    |
| Mixture color                       | Bright Yellow                         |
| Mixture properties                  |                                       |
| Freezing Point                      | -28.3°F / -33.5°C                     |
| Boiling Point @ 1 bar               | 222°F / 105.6°C                       |
| Freeze protection temperature       | -60°F / -51°C                         |
| Burst protection temperature        | -100°F / -73°C                        |
| DOWFROST fluid properties           |                                       |
| Weight % Propylene Glycol           | 94                                    |
| Weight % performance additives      | 6                                     |
| Specific gravity (60 °F / 15 °C)    | 1.053 - 1.062                         |
| pH of Solution                      | 9.5 - 10.5                            |
| Reserve alkalinity                  | 15.0 ml                               |
| Vapor pressure over operating range | 2.2 mmHg                              |
| Flash point                         | 219°F / 104°C                         |
| Auto-ignition temperature           | 700°F / 371°C                         |
| Collector yield                     | >525 kWh / (m <sup>2</sup> ) per year |

Dispose of in accordance with all applicable local, state and federal regulations. Empty containers should be taken to an approved waste handling site for recycling or disposal.

In event of accidental release, wipe up with absorbent material. Wear eye and skin protection when handling.

In case of skin contact, wash off with plenty of water.

In case of eye contact, contact a physician. If inhaled or swallowed, contact a physician.

For more safety information, contact Stiebel Eltron for more information.

Commissioning guide

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**10. Commissioning guide**

The installer should fill out this sheet at the end of the installation, and leave it at the installation site.

**Site:**

System operator: \_\_\_\_\_  
\_\_\_\_\_

Installation site: \_\_\_\_\_

Collectors: \_\_\_\_\_

Collectors (number / type): \_\_\_\_\_

Collector surface area: \_\_\_\_\_

**System specifications:**

System height: \_\_\_\_\_

Pipe run length: \_\_\_\_\_

Ventilation: \_\_\_\_\_

Solar fluid (type / concentration): \_\_\_\_\_

Max. flow rate: \_\_\_\_\_

Pump station: \_\_\_\_\_

Pump setting (low/med high): \_\_\_\_\_

System pressure (cold): \_\_\_\_\_

System pressure (hot): \_\_\_\_\_

Expansion tank: \_\_\_\_\_

**Checklist:**

Mark for condition (checked, closed, open, etc.)

Pressure relief valve: \_\_\_\_\_

Check valves: \_\_\_\_\_

Ball valves: \_\_\_\_\_

**Serial numbers:**

Pump station: \_\_\_\_\_

Controller: \_\_\_\_\_

Software version: \_\_\_\_\_

Installation company: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_

## 11. Warranty

Subject to the terms and conditions set forth in this limited warranty, Stiebel Eltron, Inc. (the “Manufacturer”) hereby warrants to the original purchaser (the “Owner”) that each Solar Thermal Collector (the “Collector”) shall not (i) leak due to defects in the Manufacturer’s materials or workmanship for a period of ten (10) years from the date of purchase. As Owner’s sole and exclusive remedy for breach of the above warranty, Manufacturer shall, at the Manufacturer’s discretion, send replacement parts for local repair; retrieve the unit for factory repair, or replace the defective Collector with a replacement unit with comparable operating features. Manufacturer’s maximum liability under all circumstances shall be limited to the Owner’s purchase price for the Collector.

This limited warranty shall be the exclusive warranty made by the Manufacturer and is made in lieu of all other warranties, express or implied, whether written or oral, including, but not limited to warranties of merchantability and fitness for a particular purpose. Manufacturer shall not be liable for incidental, consequential or contingent damages or expenses arising directly or indirectly from any defect in the Heater or the use of the Collector. Manufacturer shall not be liable for any water damage or other damage to property of Owner arising, directly or indirectly, from any defect in the Collector or the use of the Collector. Manufacturer alone is authorized to make all warranties on Manufacturer’s behalf and no statement, warranty or guarantee made by any other party shall be binding on Manufacturer.

This warranty does not apply:

1. To conditions resulting from a failed component or part that is not part of the solar collector or absorber plate;
2. to freeze damage;
3. to conditions resulting from misuse, abuse, neglect, accident, or alteration;
4. to minor discoloration of the collector frame wall or absorber plate;
5. to glass breakage;

6. to conditions resulting from the introduction of harmful chemicals, caustic fluids, or liquids deleterious to copper tubing, including improperly applied or maintained heat transfer fluids;
7. to propylene glycol ph levels above 10 or below 8;
8. to periods of stagnation in excess of 60 days;
9. to excessive pressure;
10. to clouding or similar occurrence resulting from the normal intrusion of moisture into;
11. to conditions resulting from floods, earthquakes, winds, fire, lightning, or circumstances beyond the manufacturer’s control;
12. to installation methods which do not conform to relevant national, state or local codes.

Should owner wish to return the Collector to manufacturer for repair or replacement under this warranty, Owner must first secure written authorization from Manufacturer. Owner shall demonstrate proof of purchase, including a purchase date, and shall be responsible for all removal and transportation costs. If Owner cannot demonstrate a purchase date this warranty shall be limited to the period beginning from the date of manufacture stamped on the Collector. Manufacturer reserves the right to deny warranty coverage upon Manufacturer’s examination of Collector. This warranty is restricted to the Owner and cannot be assigned.

Some States and Provinces do not allow the exclusion or limitation of certain warranties. In such cases, the limitations set forth herein may not apply to the Owner. In such cases this warranty shall be limited to the shortest period and lowest damage amounts allowed by law. This warranty gives you specific legal rights and you may also have other rights which vary from State to State or Province to Province.

Owner shall be responsible for all labor and other charges incurred in the removal or repair of the Collector in the field. Please also note that the Collector must be installed in such a manner that if any leak does occur, the flow of water from any leak will not damage the area in which it is installed.



**The installation and first operation of this appliance should be carried out by a qualified installer.**



**The company does not accept liability for failure of any goods supplied which have not been installed and operated in accordance with the manufacturer’s instructions.**

This Warranty is valid for U.S.A. & Canada only. Warranties may vary by country. Please consult your local Stiebel Eltron Representative for the Warranty for your country.

### Environment and recycling

Please help us to protect the environment by disposing of the packaging in accordance with the national regulations for waste processing.

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Due to our continuous process of engineering and technological advancement, specifications may change without notice.

Stand 8643

**STIEBEL ELTRON**

A 330772-40358-9271