OPERATION AND INSTALLATION

HIGH PERFORMANCE FLAT-PLATE COLLECTOR

» SOL 27 PREMIUM S
» SOL 27 PREMIUM W



STIEBEL ELTRON

INSTALLATION INSTRUCTIONS SOL 27 PREMIUM S & W COLLECTORS - 230016 & 230017

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CAUTION: READ ALL INSTRUCTIONS BEFORE INSTALLING THESE COLLECTORS. ADDITIONAL ITEMS WILL BE NEEDED TO MOUNT THIS ASSEMBLY.

1 Safety Instructions

General Information

Read this entire manual. Failure to follow all the guides, instructions and rules could cause personal injury or property damage. Improper installation, adjustment, alteration, service and use of this unit can result in serious injury. This unit must be installed by a professional installer. The installation must comply with all national, state and local plumbing and electric codes. Proper installation is the responsibility of the installer. Failure to comply with the installation and operating instructions or improper use voids the warranty. Save these instructions for future reference. Installers should leave these instructions with the consumer. If you have any questions regarding the installation, use or operation of this product, or need any additional manuals, please call our technical service line at 800.582.8423.

Safety Instructions

COLLECTOR WARNING: A SOLAR COLLECTOR GENERATED 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.

SAFETY VALVE 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.

The solar system must not bypass auxiliary system safety devices.

Check Valve

The Flowstar pump station is equipped with two check valves to prevent heat loss from single pipe thermosiphoning between the storage tanks and the solar loop and collectors.

Drain Valve

Install a drain valve at the lowest point of the system.

Expansion Tanks

The diaphragm-type expansion tanks are designed for an operating pressure of 87 psi and are resistant to deterioration from propylene glycol mixtures.

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The air-side inlet pressure should be ser to 5-7 psi less than 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.

WARNING: SETTING THE MAXIMUM TANK TEMPERATURE HIGHER THAN 140°F AT THE CONTROL UNIT IS PERMISSABLE ONLY WITH A THERMOSTATICALLY-CONROLLED DHW MIXING VALVE. OTHERWISE THERE CAN BE A RISK OF SCALDING AT THE DRAWOFF POINT.

IMPORTANT: ALL SENSOR WIRING SHOULD BE RATED FOR EXPECTED TEMPERATURES AND MUST BE PROTECTED FROM DEGRADATION AND ELECTRICAL INTERFERENCE. FOR MORE INFORMATION, CONSULT THE USER MANUAL FOR THE CONTROLLER.

Solar Loop

Use only a mixture of 50% food-grade Propylene Glycol and de-ionized water in the solar loop.



WARNING: FLUID MAY BE DISCHARGED AT HIGH TEMPERATURE AND/OR PRESSURE.

NO OTHER FLUID SHALL BE USED THAT WOULD CHANGE THE ORIGINAL CLASSIFICATION OF THE SYSTEM. UNAU-THORIZED ALTERATIONS TO THIS SYSTEM COULD RESULT IN A HAZARDOUS CONDITION, AND COULD VOID THE MANUFACTURER'S WARRANTY.

Shut-down

Except for repair and/or emergency, the control unit and the pump must remail 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 Collector Basics

The SOL 27 Premium is a highly efficient solar thermal collector. The net absorber surface of over 25 ft² helps result in a maximum output og 31,300 BTU/day per panel (SRCC clear day rating). The SOL 27 Premium also offers features such as a highly selective absorber coating, low-iron, tempered solar glazing, and very effective insulation around the absorber plate. The internal fluid tubes are copper and the absorber plate is aluminum.

The internal fluid tubes are organized in a "harp style" configuration. This consists of two headers. The top header is split in the middle, resulting in half of the tubes directing flow downward, and half directing flow upward.





The collector converts sunlight into heat. Light penetrates the glass cover, which is pre-stressed, highly transparent

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single pane safety glass. As the light strikes the absorber plate, it is converted to heat. The highly selective vacuum coating of the absorber and the thermal insulation on the back of the absorber keep heat lossed 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). Vent holes are provided in the collectors for venting humidity and equalizing air pressure.

Technical Data & Specifications

Туре	SOL 27 Premium S	SOL 27 Premium W			
Item Number	230016	230017			
Туре	Standard / Vertical	Wide / Horizontal			
Height	85.5 [″] / 2171 mm	46.1 [″] / 1171 mm			
Width	46.1 [″] / 1171 mm	85.5 [″] / 2171 mm			
Depth	3.8 [″] / 96 mm	3.8 [″] / 96 mm			
Weight	88.2 lb / 40 kg	89.3 lb / 40.5 kg			
Casing material	Aluminum, cor	rosion resistant			
Glass cover	E	SG			
Glass thickness	0.125″/	3.2 mm			
Thermal insulation thickness	2″/5	0 mm			
Thermal insulation material	Mineral wool, low	outgassing, WLG 040			
Collector connection	22 mm plug·	-in connector			
Max. idle temperature	<410°F	/ 210°C			
Min. operating pressure	50.75 psi .	/ 0.35 MPa			
Max. permissible pressure	87 psi /	0.6 MPa			
Pressure drop @ 1 gpm	0.75 ft	. head			
Test pressure	247 psi /	1.7 MPa			
Test medium	40% Propylene Glycol				
Fluid capacity	0.4 gal / 1.5 l	0.48 gal / 1.83 l			
Nominal flow rate	0.25 - 3	.75 gpm			
Angle of inclination	10 - 90°				
Total area	27.34 ft ²	/ 2.54 m²			
Aperture area	25.73 ft ²	/ 2.39 m²			
Absorber area	25.62 ft ²	/ 2.38 m²			
Absorber material	Aluminum, highly copper pipes,	selective coating, laser welded			
Gasket	EP	DM			
Conversion factor $\eta_{_0}$	0.82	0.83			
Effective heat transfer coef. a1	3.46 W	/ (m²K)			
Effective heat transfer coef. a2	0.0153 V	N / m²K²			
Absorption level $\boldsymbol{\alpha}$	95%	± 2%			
Emission level ε	5% :	± 1%			
Collector yield	>525 kWh /	(m²) per year			





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3 Assembly instructions

3.1 Important Information

WARNING: RISK OF SCALDING. TO PREVENT THE SOLAR FLUID FROM BOILING IN THE COLLECTORS, THE SYSTEM SHOULD NOT BE FLUSHED OR FILLED DURING PERIODS OF STRONG SUNSHINE.

System Pressure

Regularly check the pressure gauge of the heat transfer circuit at the pump station. The pressure should range between 30-70 psi during all operating times. If the system is above or below this pressure, troubleshooting may be required.

After-heating Backup

The backup heater should be of adequate capacity to provide sufficient hot water. The backup water heater must be certified, listed, and labeled by an accredited safety certification organization.

Expansion Tank

An expansion tank must be included in the solar loop, and is typically connected via the dedicated expansion tank connection on the pump station. The expansion tank should be sized according to standard design practices. More information about expansion tank sizing can be accessed via the expansion tank users manual.

IMPORTANT: TO PROTECT THE SYSTEM AGAINST FROST AND CORROSION, FILL THE SOLAR SYSTEM EXCLUSIVELY WITH THE RECOMMENDED PROPYLENE GLYCOL MIXTURE.

4 Installation Instructions

4.1 Planning and Installation

Pipework Installation

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

Vent tiles are 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 pitch and must meet building codes. Hangers must not comporess 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.

Soldered Pipe

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

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.

Rated Volumetric Flow Rate

The rated volumetric flow rate for a collector array (max. 5 collectors) is 0.25 - 1.25 gpm, but it is recommended to be 0.75 gpm. The flow rate for every additional collector array, so in a system of 3 x 3 collectors, the flow rate would be 2.25 - 11.25 gpm, but Stiebel Eltron would recommend 6.75 gpm.

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Thermal Insulation

All exterior piping also requires UV and moisture protection. Insulation must be resistant to temperatures up to 356°F. Use the following recommended temperature and UVresistant thermal insulation to insulate the external pipework:

- » Polyisocyanurate, PVC cover
- » Armaflex®
- » Mineral wool backed by aluminum mesh foil
- » Flexible EPDM hose

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 bird or rodent attack. 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 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 ¼″ to 4″	Identical to pipe diameter							
Greater than 4"	4″							

Collector Temperature Sensor

The collector sensor is immersed into the outlet pipe of the collector array (i.e., positioned at the hot side). Secure the lead to the outside of the insulation (to avoid melting under high temperature operation) and under a protective cover.

Cover the outlet pipe and the roof outlet with thermal insulation, which must be tightly sealed and must be temperature and UV resistant.

4.2 Lifting onto the Roof

WARNING: TO PREVENT DAMAGE TO THE COLLECTOR, NEVER TOUCH THE GLASS PANE. IF THE GLASS SURFACE BECOMES DIRTY, CLEAN THE COLLECTOR SURFACE WITH A CLOTH.

Using a Rope

You can pull the collector onto the roof over a ladder. To do this, place a rope around the collector frame. Never secure the rope to the collector connections.





Using SOL 27 Premium Handles

1. Using the star-shaped knobs, screw both fixing screws

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in or out until they are seated flush with the rivet nuts.

2. Position the grip on the collector so that it engages around the foot of the collector at the bottom.

3. Slide the grip upwards.



4. Make sure it is seated in the groove of the collector trim at the top and in the bottom groove of the collector.



6. Attach the remaining grips on in the same manner.

7. Thread a rope through the handles as shown below. This ensures that the handles are not subjected directly to the load of the collector. Stiebel Eltron accepts no responsibility for the improper use of the handles.



5. When the grip is positioned correctly, tighten the fixing screws.



4.3 Collector Mounting

After determining the appropriate mounting hardware, install the mounting system in accordance with the instructions in its specific installation manual.

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4.4 Collector Connections

Inter-panel Connection

WARNING: THE SPACER SHOULD NOT BE REMOVED UNTIL THE COLLECTORS HAVE BEEN LINKED TO ONE ANOTHER. IF THE SPACER IS REMOVED BEFOREHAND, THE CONNECTOR MAY BE DAMAGED WHEN THE SECOND COLLECTOR IS PUSHED INTO PLACE.



1. Insert the plug-in connection into the collector connection.

2. Push the adjacent collector into place in such a way that its collector connection is pushed onto the inter-panel connector.



3. Remove the spacer.



4. Fit the connecting clips at the junction between the collector connection and the inter-panel connector.



5. Secure the connecting clips by pushing down the tab.



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6. Inulate the connection using the provided thermal insulation.

Inlet & Outlet Connection

The inlets & outlets are plug-in style connections identical to the inter-panel connections. The installation method is the same as the inter-panel connection.



1. Insert the inlet/outlet connector into the collector connection on each end of the array. Make sure to insert the connection with a sensor well on the end of the array that you intend to be the hot side (the outlet of flow of the array).



2. Fit the connecting clip at the junction between collector

and plug-in connection.



3. Secure the connecting clip by pushing down on the locking tab.

4. Install the inlet of the collector array in the same manner.

Collector Sensor

The correct connection of the collector sensor is crucial to the correct function of the solar system.

1. Secure the sensor lead.

2. Connect the sensor lead to the controller. Be sure to properly insulate the sensor wire using standard procedures.

Lightning Protection

If the building has a lightning protection system, the collector casing, mounting frame and pipework must be connected to the existing lightning protection scheme.

Connect the collector to the lightning protection system using screw fittings. Use two stainless steel seft-tapping screws per collector.

1. Pre-drill the holes. Position the drill holes on the lower part of the front of the collector in the area shaded in the following illustration. When drilling the holes, maintain a distance of at least 4 inches from the corner of the collector casing.

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Mounting Frame Lightning Protection

1. Connect the mounting frame to the lighning protection system using screws similar to those used for the collectors.

5 Mounting Instructions

Select the collector mounting kit that is capable of providing the required tilt and azimuth in a mounting location that is not subject to excessive shading of the solar collectors. The mounting kit must be securely attached to a structure capable of supporting and maintaining its integrity under the static and dynamic (e.g., high wind) loading conditions.

The type of mounting system that is best-suited to the installation must be determined by the designer, and must take into consideration the details of the roof, wall, or ground on which the collectors are to be placed, the latitude and orientation of the site, the space available for the collectors, possible shading from nearby structures, other rows of collectors, or vegetation, etc. The intended use of the system should also be an important consideration.

For anchoring in concrete, use six M8 UPAT Multicones or SM M10 anchors, both of stainless steel, per collector.

with DIN 571, at least 10 x 80, of stainless steel, per collector.

If multiple arrays of collectors are being installed on a flat roof, one behind another, the recommended spacing between them should be:

At least 25 ft. (7.6 m) for vertical installations.

At least 14 ft. (4.0 m) for horizontal installations. This spacing prevents excessive shading from adjacent rows for latitudes of up to 50°. For latitudes significantly higher than 50°, multiple rows of collectors may not be practical due to low sun altitude angles.

If installing in a high wind environment, 8 clamps per collector should be used. In vertical installations, 4 clamps per collector are supplied with the collector frames, so 4 additional clamps per collector should be added to the equipment list for the installation.

For more information on the specifications about Stiebel Eltron solar racking systems, consult the specific installation manuals.

The 45° vertical mounting racks can develop significant pull-out forces under heavy wind conditions; therefore it is important to take wind loads into account.

Wall Mounting

All of the Stiebel Eltron tilt racking systems can be mounted on a wall just as easily as on a roof.

The type of roof or wall is a crucial factor in the choice of fasteners. Remember to take the static and dynamic (live load) forces into account.

5.1 Flush Mounting

One of the most common types of collector installs are flush mounted arrays. Mounting in this way is the most visually appealing and structurally sound. The collectors are subjected to lower wind and snow loads when flush mounted to a roof.

For anchoring in wood, use six wood screws in accordance

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Flush Mount Vertical Side-by-side

This array orientation is designed for SOL 27 Premium S collectors in portrait orientation. In certain applications, SOL 27 Premium W collectors can be used as well.



Flush Mount Rail Kits	Part #	# of Collectors				
		1	2	3	4	
			# of	Part	s	
Flush Mount Vertical Side-by-side						
Vertical Flush Mount Rail	560104-27	2	2	3	4	
Single Mounting Frame	230169	1	0	1		
Double Mounting Frame	230170	0	1	1	2	
Frame Connector Kit	SFC 001	0	0	1	1	
Mounting						
L-Bracket Flashing Kits (Asphalt)	560104-L	4	4	6	8	
S5U & L-102 (Raised Seam)	S5U & L-102	4	4	6	8	

Flush Mount Horizontal Side-by-side

This array orientation is designed for SOL 27 Premium W collectors in landscape orientation. In certain applications, SOL 27 Premium S collectors can be used as well.



Flush Mount Rail Kits	Part #	# of Collectors			
		1	2	3	4
			# o	Part	s
Flush Mount Horizontal Side-by-side					
Horizontal Flush Mount Rail	560107-27	2	4	6	8
Double Mounting Frame	230170	1	2	3	4
Frame Connector Kit	SFC 001	0	1	2	3
Mounting					
L-Bracket Flashing Kits (Asphalt)	560104-L	4	8	12	16
S5U & L-102 (Raised Seam)	S5U & L-102	4	8	12	16

Flush Mount Up-roof

This mounting system is designed to use SOL 27 Premium

S panels in a landscape orientation. This allows for fluid to be evacuated effectively during stagnation conditions. It is design to protect the solar fluid from overheating and will extend its life.



Flush Mount Rail Kits	Part #	# of Collectors				
		1	2	3	4	
			# of	Part	s	
Flush Mount Up-roof						
1 Collector Flush Mount Kit	560403	1	0	0	0	
2 Collector Flush Mount Kit	560401	0	1	1	1	
1 Collector Extension Rail Kit	560402	0	0	1	2	
Mounting						
L-Bracket Flashing Kits (Asphalt)	560104-L	4	6	8	10	
S5U & L-102 (Raised Seam)	S5U & L-102	4	6	8	10	

5.2 Tilt Mounting

Tilt mounting is another way to mount either SOL 27 Premium S or W collectors. Mounting in this orientation allows for the customer to acheive the optimal angle of the solar array for maximum solar gain. A potential drawback of this way of mounting is that the collectors and racks are subjected to greater forces in windy and snowy conditions.

For tilt mounted arrays, either SOL 27 Premium S or W panels can be used.

Use the following pictures and tables for reference when determining how to install your tilt mount collectors.

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Horizontal Tilt Mount

The horizontal tilt mount kit is designed to be adjustable in the field to three different angles. It comes partially preassembled for easy and fast field installation. The possible angles range every 5° between 10 & 45°.



Horizontal Tilt Mount	Part #	# o	f Co	llect	ors
		1	2	3	4
Horizontal Tilt Mount		#	of	Part	s
Low angle horizontal tilt mount (10-20°)*	560301	1	2	3	4
Mid angle horizontal tilt mount (20-30°)*	560302	1	2	3	4
High angle horizontal tilt mount (35-45°)*	560303	1	2	3	4
Frame Connector Kit	SFC 001	0	1	2	3
Mounting					
L-Bracket Flashing Kits (Asphalt)	560104-L	4	8	12	16
S5U & L-102 (Raised Seam)	S5U & L-102	4	8	12	16

* Each rack type is available in multiple angles. When determining quantity of parts, use only one type of rack.

Vertical Angled Rack

The vertical angled rack is a more robust version of the tilt mounting system. It is designed for higher angle installs in a portrait orientation. It is available in three different angles: 30, 45 & 60°.



Flush Mount Rail Kits	Part #	# of Collectors			
		1	2	3	4
Vertical Angled Rack		#	t of I	Part	s
Vertical 45° Rack (45°)*	560101	2	2	3	4
Vertical 30-60° Rack (30, 60°)*	230170	1	2	3	4
Vertical X-Brace	560106	1	1	2	2
Single Mounting Frame	230169	1	0	1	0
Double Mounting Frame	230170	0	1	1	2
Frame Connector Kit	SFC 001	0	0	1	1
Mounting					
L-Bracket Flashing Kits (Asphalt)	560104-L	4	4	6	8
S5U & L-102 (Raised Seam)	S5U & L-102	4	4	6	8

* Each rack type is available in multiple angles. When determining quantity of parts, use only one type of rack.

Horizontal Angled Rack

The horizontal angled rack is a scaled-down version of the vertical angled rack. It is designed for higher angle installs in a landscape orientation. It is available in three different angles: 30, 45 & 60°.



Flush Mount Rail Kits	Part #	# of Collectors				
		1	2	3	4	
Horizontal Angled Rack*		#	ŧ of	Part	s	
Horizontal 45° Rack (45°)*	560201	1	0	0	0	
Horizontal 30-60° Rack (30, 60°)*	560203	0	1	1	1	
Horizontal X-Brace	560206	0	0	1	2	
Double Mounting Frame	230170	1	2	3	4	
Frame Connector Kit	SFC 001	0	1	2	3	
Mounting						
L-Bracket Flashing Kits (Asphalt)	560104-L	4	8	12	16	
S5U & L-102 (Raised Seam)	S5U & L-102	4	8	12	16	

* Each rack type is available in multiple angles. When determining quantity of parts, use only one type of rack.

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Typical System Layout

Below is a schematic for a basic solar thermal system using Stiebel Eltron components. Specifics of this design may vary, depending on the demands of the job site.



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Collector Spacing

For latitudes up to 50°, use the following distances for mounting solar arrays behind each other. For higher latitudes, it may not be practical at all to orient solar arrays behind each other because of the low sun angle.



6 Commissioning the System

6.1 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.

6.2 Setting the 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 less than the target system pressure. For example, if the final target system (solar loop) pressure is to be 50 psig, fill the expansion tank to 45 psig (which is the recommended default value). When complete, cap the Schrader valve fitting and re-attach the tank to the pump station. Make sure the expansion tank always faces up (the Schrader valve must be pointed down).

6.3 Final Charging & Venting

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. The system must not be topped off with water.

More Information

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

7 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

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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) of the heat transfer medium annually.

8 Warranty

Stiebel eltron warrants to the original owner that the sol 27 premium - flat plate solar collector will be free from defects in workmanship and materials for a period of ten (10) years from the date of purchase.

Should the part(s) prove to be defective under normal use during this period, stiebel eltron, inc. Will be responsible for replacement of the defective part(s) only. Stiebel eltron, inc. Will not be liable for any costs of transportation, removal, reinstallation, or any other labor or freight charges that may arise in connection with a warranty claim or any incidental or consequential expenses.

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 framewall or absorber plate.
- 5. To glass breakage.
- 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 and ordinances, good industry practices or applicable manuals, diagrams, technical bulletins or written installation instructions; and, to applications other than medium temperature.

To obtain service under this warranty, the owner must first secure written authorization from stiebel eltron, inc. The owner shall be required to show proof of purchase date, and to pay all transportation costs to return the defective part(s) for repair or replacement.



For any service or warranty related issue, contact Stiebel Eltron at:

800.582.8423

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

APPENDIX A SOL 27 PREMIUM S - SRCC OG-100 CERTIFICATION

Sal Sal	CENTIFIC	ATUM	s	UPPLIER:				CERTIFIED S	BRAND:	LECTOR	Stiebel I	Eltron		
			s	tiebel Eltro	n				MODEL:	MODEL: SOL 27		Premium S		
Ę			1 V	/ vvest Str /est Hatfiel	eet Id. MA 01	088 USA			COLLECT	LLECTOR TYPE: Glazed Flat			9	
E.		7 S	/ w	ww.stiebel	-eltron-u	sa.com			CERTIFIC	ATION #:	201103	5A		
	ESTABLISHED	1980							Original C	ertification:	May 26,	2011		
									Expiration	Date:	Decemb	oer 10, 20	022	
The solar c Certificatior the SRCC. document n	ollector Body, This aw nust be	listed be in accord ard of cer reproduce	low has b ance with tification is ed in its en	een evalu SRCC OG s subject to tirety.	ated by f -100, Op all terms	the Solar Reperating Gui	ating & C delines a ions of the	ertification Cor nd Minimum Sta e Program Agre	poration™ (andards for (ement and t	SRCC™), a Certifying S he documer	an ANSI acc olar Collecto nts incorpora	redited a ors, and f ted there	and EPA recognized has been certified by in by reference. This	
					COL	LECTOR T	HERMAL	PERFORMANC	E RATING					
	к	ilowatt-ho	ours (therm	nal) Per Pa	nel Per D	Day			Thou	isands of Bt	tu Per Panel	Per Day		
Climate -> Category (Ti-Ta)	Hi (6.3	gh Radia 8 kWh/m²	ion M day) (1edium Ra 4.7 kWh/m	diation I².day)	Low Ra (3.1 kWh/	diation m².day)	Climate -> Category (Ti-Ta)	High Rad (2000 Btu	diation /ft².day)	Medium Rad (1500 Btu/ft	diation ².day)	Low Radiation (1000 Btu/ft².day)	
A (-5 °C)		11.2		8.5		5.	7	A (-9 °F)	38.	3	28.9		19.6	
B (5 °C)		10.3		7.6		4.9	9	B (9 °F)	35.	3	25.9		16.6	
C (20 °C)		8.9		6.2		3.0	3	C (36 °F)	30.	4	21.2		12.1	
D (50 °C)		6.1		3.6		1.:	2	D (90 °F)	20.	9	12.2		4.1	
E (80 °C)		3.4		1.2		0.0)	E (144 °F)	11.	6	4.2		0.0	
COLLECTO	OR SPE	CIFICATI	ONS 2.54	D- Spac	e & Wate	er Heating (C	2 Cool Clima	ate) E- Commer	cial Hot Wat	er & Cooling	9 40 ka		87 lb	
Net Apertur	e Area:		2.35	94 m²		25.77 ft	2	Fluid Capacit	itv: 1./		Fluid Capacity: 1.5 liter			0.4 gal
Absorber A	rea:		2.37	78 m²		25.59 ft	2	Test Pressure	ə:	11	03 kPa		160 psi	
TECHNICA	L INFO	RMATION						Tested in acc	ordance with	1:				
ISO Efficien	cy Equa	ation [NO	TE: Based	on gross a	area and	(P)=Ti-Ta]								
SI UNITS:			η= 0.764	- 3.32510(P/G) - 0.0	01363(P²/G)		Y Intercept:		0.767	Slope:	-4.018	W/m².°C	
IP UNITS:			η= 0.764	- 0.58602(P/G) - 0.0	00133(P²/G)		Y Intercept:		0.767	Slope:	-0.708	Btu/hr.ft².°F	
	gle Mod	ifier		_				Test Fluid:			Water			
Incident An	10	20	30	40	50	60	70	Test Mass Flo	ow Rate:		0.0310 k	0.0310 kg/(s m²) 22.12 lb/(hr ft²)		
Incident An ย	10			1 · · ·				1						

Technical Director



Print Date: August, 2013 Page 1 of 3 © Solar Rating & Certification Corporation™

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APPENDIX A SOL 27 PREMIUM W - SRCC OG-100 CERTIFICATION

Klip Climate -> High Category (G.3 k (Ti-Ta) A (-5 °C) B (5 °C) C (20 °C) D (50 °C) E (80 °C)	isted beloc accordar d of certif aproduced h Radiatio kWh/m².da 11.7 10.7 9.2 6.2 3.5	SS SS 11 W W W W W Sow has b nce with fication is d in its en ms (therm on ay) (A- Pool NS 2.54	UPPLIER: itibel Ettror 7 West Strevent vest Hatfield www.stiebel- www.stiebel- ween evalua SRCC OG- s subject to titrety. 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	n eet d, MA 01 -eltron-us ated by t -100, Op all terms COL mel Per C diation 2.day)	1088 USA sa.com the Solar R perating Gu s and condit LUECTOR T Day Low Ra (3.1 kWh 6.1 5.1 5.1 5.1 3.1 1.2 0.0 mate) B - Po or Heating (C	ating & C idelines a itions of the HERMAL diation /m².day) 0 0 0 6 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PERFORMAN Climate -> Category (Ti-Ta) A (-9 °F) B (9 °F) C (36 °F) D (90 °F) E (144 °F) (Cool Climate) te) E- Comment	BRAND: MODEL: COLLECT CERTIFIC Original Co Expiration poration™ (S andards for Co ement and th CE RATING Thou High Rac (2000 Btu/ 40.0 36.7 31.3 21.3 11.8 C- Water He cial Hot Wate	OR TYPE ATION #: ertification Date: SRCC™), Certifying S e docume sands of E iation ft ² .day)	Stiebel SOL 27 : Glazed 201103 : May 26 Decem an ANSI ac Solar Collect ints incorpora Medium Ra (1500 Btu/ 30.3 26.9 21.8 12.3 4.2 m Climate)	Eltron 7 Premium 1 Flat Plate 36A 3, 2011 uber 13, 20 credited <i>a</i> ors, and <i>h</i> ated theree 1 Per Day diation ft ² .day) 3 3 3	n W e 2022 and EPA recognize has been certified b in by reference. Thi Low Radiation (1000 Btu/ft².day) 20.5 17.2 12.3 4.0 0.0
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A (-5 °C) B (5 °C) C (20 °C) D (50 °C) E (80 °C) COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equations SI UNITS: I UNITS:	11.7 10.7 9.2 6.2 3.5 IFICATIOI	A- Pool NS 2.54	8.9 7.9 6.4 3.6 1.2 Heating (W D - Space	/arm Clir e & Wate	6. 5. 3. 1.: 0. mate) B - Po er Heating ((0 0 6 2 0 ol Heating Cool Clima	A (-9 °F) B (9 °F) C (36 °F) D (90 °F) E (144 °F) (Cool Climate) te) E - Commen	40.0 36.7 31.2 21.3 11.8 C - Water He cial Hot Wate	ating (Wa	30.3 26.9 21.8 12.3 4.2 rm Climate)	5 9 3 5	20.5 17.2 12.3 4.0 0.0
B (5 °C) C (20 °C) D (50 °C) E (80 °C) COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equati SI UNITS: I UNITS:	10.7 9.2 6.2 3.5	A- Pool NS 2.54	7.9 6.4 3.6 1.2 Heating (W D - Space	/arm Clir ∋ & Wate	5. 3. 1. 0. mate) B - Po er Heating ((0 6 2 0 ol Heating Cool Clima	B (9 °F) C (36 °F) D (90 °F) E (144 °F) (Cool Climate) ate) E - Commen	36.7 31.3 21.3 11.8 C- Water He cial Hot Wate	ating (Wa	26.9 21.8 12.3 4.2 rm Climate)) 3 3	17.2 12.3 4.0 0.0
C (20 °C) D (50 °C) E (80 °C) COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equati SI UNITS: I UNITS:	9.2 6.2 3.5	A- Pool NS 2.54	6.4 3.6 1.2 Heating (W D- Space	Varm Clir e & Wate	3. 1. 0. mate) B - Po er Heating (0	6 2 0 ol Heating Cool Clima	C (36 °F) D (90 °F) E (144 °F) (Cool Climate) te) E - Commen	31.3 21.3 11.8 C- Water He cial Hot Wate	ating (Wa	21.8 12.3 4.2 rm Climate)	5	12.3 4.0 0.0
COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equations SI UNITS:	6.2 3.5	A - Pool NS 2.54	3.6 1.2 Heating (W D - Space	√arm Clir ∋ & Wate	1.: 0. mate) B - Po er Heating (0	2 0 ol Heating Cool Clima	E (144 °F) (Cool Climate) ate) E - Commen	21.3 11.8 C- Water He cial Hot Wate	ating (Wa	12.3 4.2 rm Climate)	5	4.0
COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equati SI UNITS:		A- Pool NS 2.54	1.2 Heating (W D - Space	/arm Clir e & Wate	mate) B - Po er Heating (0	0 ol Heating Cool Clima	E (144 °F) (Cool Climate) ate) E - Comme	C- Water He cial Hot Wate	ating (Wa	4.2 rm Climate)		0.0
COLLECTOR SPECI Gross Area: Net Aperture Area: Absorber Area: TECHNICAL INFORM ISO Efficiency Equati SI UNITS:		A- Pool NS 2.54	Heating (W D- Space	Varm Clir e & Wate	mate) B - Po er Heating ((ol Heating Cool Clima	i (Cool Climate) ate) E - Commei	C- Water He	ating (Wa r & Coolir	rm Climate)		
Absorber Area: TECHNICAL INFORM ISO Efficiency Equations SI UNITS:		2.39	93 m²		25.76 f	t²	Fluid Capacit	y:		1.9 liter		0.5 gal
TECHNICAL INFORM		2.37	78 m²		25.59 f	t²	Test Pressur	ə:	1	400 kPa		203 psi
ISO Efficiency Equation	MATION						Tested in acc	ordance with				
SI UNITS:	ion [NOTE	E: Based	on gross a	rea and	(P)=Ti-Ta]		1					
ID LINITO.	η	0.748 = 0	- 3.52440(F	P/G) - 0.0	01060(P²/G))	Y Intercept:		0.749	Slope:	-4.035	W/m².°C
IP UNITS:	η	0.748 = 0	- 0.62115(F	P/G) - 0.0	00104(P²/G))	Y Intercept:		0.749	Slope:	-0.711	Btu/hr.ft².°F
Incident Angle Medifi							Tool Ehride			10/ataa		
	20	20	40	50	60	70	Test Mass El	nu Poto		vvater	ka/(0 m2)	22 12 lb//br #2
6 10 Km 1.00	1.00	0.00	40	0.95	0.88	0.62		ow Rate.	Impact	Safety Ratin	kg/(s m⁻)	22.12 ID/(III II ⁻)
REMARKS:												

		00					
	Kilowatt-hours (th	Thousands of	Btu Per Panel Per Day	/			
Climate ->	High Radiation	Medium Radiation	Low Radiation	Climate ->	High Radiation	Medium Radiation	Low Radiation
Category (Ti-Ta)	(6.3 kWh/m².day)	(4.7 kWh/m².day)	(3.1 kWh/m².day)	Category (Ti-Ta)	(2000 Btu/ft².day)	(1500 Btu/ft².day)	(1000 Btu/ft².day)
A (-5 °C)	11.7	8.9	6.0	A (-9 °F)	40.0	30.3	20.5
B (5 °C)	10.7	7.9	5.0	B (9 °F)	36.7	26.9	17.2
C (20 °C)	9.2	6.4	3.6	C (36 °F)	31.3	21.8	12.3
D (50 °C)	6.2	3.6	1.2	D (90 °F)	21.3	12.3	4.0
E (80 °C)	3.5	1.2	0.0	E (144 °F)	11.8	4.2	0.0
	A - P	ool Heating (Warm Cli	mate) B - Pool Heating	(Cool Climate)	C- Water Heating (Water & Cool	arm Climate)	

COLLECTOR SPECIFICA	TIONS				
Gross Area:	2.546 m ²	27.40 ft ²	Dry Weight:	40 kg	89 lb
Net Aperture Area:	2.393 m ²	25.76 ft ²	Fluid Capacity:	1.9 liter	0.5 gal
Absorber Area:	2.378 m ²	25.59 ft ²	Test Pressure:	1400 kPa	203 psi

TECHNICAL INFO	RMATION	Tested in accordance with:				
ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]						
SI UNITS:	η= 0.748 - 3.52440(P/G) - 0.01060(P²/G)	Y Intercept:	0.749	Slope:	-4.035 W/m².°C	
IP UNITS:	η= 0.748 - 0.62115(P/G) - 0.00104(P²/G)	Y Intercept:	0.749	Slope:	-0.711 Btu/hr.ft ² .°F	

Incident Angle Modifier							Test Fluid:	Water		
θ	10	20	30	40	50	60	70	Test Mass Flow Rate:	0.0310 kg/(s m ²)	22.12 lb/(hr ft²)
Κτα	1.00	1.00	0.99	0.98	0.95	0.88	0.62	Impact Safety Rating:		

Jem Juggins Technical Director



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COMMISSIONING LOG SOL 27 PREMIUM COLLECTORS

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: