

# SHC 2.5 & SHC 4 WATER HEATERS

## INSTALLATION AND OPERATING INSTRUCTIONS



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## STIEBEL ELTRON

Distributed by:

**[www.TitanHeater.com](http://www.TitanHeater.com)**

14629 SW 104 Street, Suite #134

Miami, FL 33186

Tel: (888) 697-8456

Fax: (305) 675-7974

Email: [info@titanheater.com](mailto:info@titanheater.com)



## WARNING

Improper installation, adjustment, alteration, service or maintenance can cause death, serious injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer.

## FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

The warranty on this water heater is in effect only when the water heater is installed and operated in accordance with these instructions. The manufacturer of this water heater will not be liable for any damage resulting from failure to comply with these instructions. Properly installed it will give you years of trouble free service.

## IMPORTANT

Read instructions carefully before installing your water heater. Proper installation will provide safe and efficient service and avoid needless expenses not covered under the warranty.



## WARNING

This water heater must be installed strictly in accordance with the instructions enclosed and local electric and building codes. It is also possible that connections to the water heater itself may develop leaks. **IT IS THEREFORE IMPERATIVE** that the water heater be installed so that any water is directed to an adequate drain in such a way that water damage to the building, furniture, carpeting or other property cannot occur. Neither the manufacturer nor the distributor **CAN BE HELD RESPONSIBLE** for damage caused by water from the water heater, temperature pressure relief valve, or related fittings where adequate provision to drain such water has not been provided.

Hydrogen gas can be produced in a hot water system served by this heater that has not been used for long time (generally two weeks or more). Hydrogen gas is extremely flammable,

To reduce the risk of injury under these conditions, it is recommended that the hot water faucet be opened for several minutes before using any electrical appliance connected to the hot water system. If hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the faucet at the time it is open.

**PLEASE RETAIN THESE INSTRUCTIONS IN A SAFE LOCATION FOR FUTURE REFERENCE.**

## **IMPORTANT SAFETY INSTRUCTIONS**

**WARNING:** When using electrical appliances, basic safety precautions should be followed to reduce the risk of fire, electrical shock or personal injury including:

1. READ ALL INSTRUCTIONS BEFORE USING THE WATER HEATER.
2. This water heater must be grounded. Connect to properly grounded outlet only! See chapter called "ELECTRICAL CONNECTION".
3. Install or locate this water heater only in accordance with the installation instructions.
4. Use this water heater for its intended use only as described in this manual.
5. Do not use an extension cord with this water heater. If no receptacle is available adjacent to the water heater, contact a qualified electrician to have one properly installed.
6. As with any appliance, close supervision is necessary when used by children.
7. Do not operate this water heater if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped.
8. Do not locate the water heater where water lines could be subject to freezing temperatures.
9. It is recommended to have a floor drain nearby to permit easy draining of the unit if necessary.
10. Install the water heater so that in the event of a leak, the resulting flow of water will not cause damage to the area around the water heater. Under no condition is the manufacturer liable for any water damage in connection with this water heater.
11. When installing the water heater, ensure that clearance around the unit is provided, for ease of maintenance and service.
12. Only qualified, licensed service personnel should service this water heater. Contact the nearest authorized licensed personnel for inspection, repair or adjustment.

The manufacturer or distributor is not responsible for damages caused by improper installation, or by non-observance of the instructions in this manual.

**A QUALIFIED, LICENSED TECHNICIAN MUST ALWAYS INSTALL THE WATER HEATER AND CONDUCT ALL SUBSEQUENT SERVICE WORK AND/OR MAINTENANCE.**

## **CAUTION**

**NEVER USE THE WATER HEATER UNLESS IT IS COMPLETELY FULL OF WATER, TO PREVENT DAMAGE TO THE TANK AND THE HEATING ELEMENT. WATER MUST FLOW FROM THE HOT WATER FAUCET BEFORE TURNING ON THE POWER TO THE HEATER.**

## 1. GENERAL INFORMATION

These SHC water heaters can be used in most point-of-use applications. They are designed to supply hot water for all hand wash and kitchen sinks in a residential, commercial or industrial environment.

These water heaters can replace traditional hot water systems which consist of a central hot water heater with hot water piping going to several draw-off points.

The SHC water heaters are lightweight and compact and manufactured for easy installation. The units are designed to be mounted on the wall.

These units are designed to operate under normal street water pressure.

## 2. TECHNICAL DESCRIPTION

There are two SHC models available, a 2.5 gallon model and a 4 gallon model.

The pressure vessel of the water heater is welded glass-lined steel and is equipped with a sacrificial anode rod. The thermal insulation is polystyrene.

The water heater is equipped with both a thermostat and high limit temperature switch.

A temperature/pressure relief valve is supplied with the unit.

## TECHNICAL SPECIFICATIONS

| Model                          |           | SHC 2.5      | SHC 4        |
|--------------------------------|-----------|--------------|--------------|
| Phase                          |           | 1            | 1            |
| Voltage                        | V         | 110 - 120    | 110 - 120    |
| Wattage                        | W         | 1200         | 1200         |
| Amperage                       | A         | 11           | 11           |
| Nominal water volume           | Gal / L   | 2.65 / 10    | 3.96 / 15    |
| Weight empty                   | Lbs / kg  | 19.84 / 9    | 22 / 10      |
| Height                         | Inch / cm | 18.19 / 46.2 | 18.19 / 46.2 |
| Width                          | Inch / cm | 11.42 / 29   | 12.28 / 31.2 |
| Depth                          | Inch / cm | 11.42 / 29   | 12.28 / 31.2 |
| Maximum operating pressure     | PSI / Bar | 150 / 10     | 150 / 10     |
| Maximum adjustable temperature | °F / °C   | 171° / 77°   | 171° / 77°   |
| Recovery time                  | Min       | 45           | 60           |
| Water connections              |           | 1/2" NPT     | 1/2" NPT     |

**PLEASE RETAIN THESE INSTRUCTIONS IN A SAFE LOCATION FOR FUTURE REFERENCE.**

### 3. GENERAL RECOMMENDATIONS

The installation must be carried out by licensed professionals. All state and local codes must be adhered to.

The manufacturer will not be liable for any damages because of failure to comply with these installation instructions or because of improper installation performed by an unqualified installer.

Choose a location that allows easy access for maintenance or servicing. The water heater should be installed at least 8 – 9" from the ceiling or any adjacent walls.



Figure 1

1. Cold water inlet
2. Hot water outlet
3. Pressure/temperature relief valve
4. Discharge pipe

### 4. MOUNTING THE UNIT

1. Drill two (2) 1/4 inch holes in the wall where the water heater will be mounted
2. Install plastic wall anchors
3. Fasten wall mounting bracket to the wall
4. Hook water heater to the mounting bracket
5. Pull downwards on the water heater to properly seat it on the bracket

### 5. PLUMBING CONNECTIONS

Connect the cold water pipe to the cold water connection on the unit (blue). Connect the hot water pipe to the hot water connection on the unit (red, see fig. 1.)

Connect the water pipes to the heater.

**IMPORTANT:** If water pipes are of copper or bronze, use dielectric connections to prevent heater corrosion. Failure to provide dielectric insulation may result in premature tank or nipple failure and may void your warranty.

Ensure that the water heater is installed in a level position.

Install a shut off on the cold-water side of the water heater. This is for emergency shut-off. It must be kept open when the water heater is operating.

When using copper piping, solder a piece of tubing to a threaded fitting (union) before screwing the adapter to the tank.

**DO NOT APPLY HEAT DIRECTLY TO INLET OR OUTLET CONNECTIONS.**

Install a discharge pipe from the relief valve terminating at a sink or drain.

**DO NOT CAP OR THREAD THE END OF THE DISCHARGE PIPE, IT MUST BE UNOBSTRUCTED AND FULL SIZE**

**CAUTION!** To reduce the risk of excessive pressure and temperature in the water heater, a combination temperature/pressure (P & T) relief valve has been provided and must be installed.

The P & T valve is certified by a nationally recognized test laboratory that maintains periodic inspection of the listed equipment, and meets the requirements for relief valves and automatic shut-off devices for hot water supply systems ANSI 121.22-1979.

The P & T valve is marked with a maximum pressure, which does not exceed the maximum working pressure of the water heater (150 PSI).

Install the P & T valve into the threaded opening and orient the tubing so that discharge will exit within 6" above or at any distance below the structural floor, and cannot contact any live electrical part.

#### THE DISCHARGE PIPE

1. Must not be smaller in size than the outlet pipe size of the valve, or have reducing couplings
2. Must not be plugged or blocked
3. Must be of material suitable for hot water
4. Must not be over fifteen feet (15') in length
5. Must not have more than two elbows
6. Must terminate at an adequate drain

7. Must not have a valve between the relief valve and the tank

#### FILLING THE WATER HEATER

To fill the water heater:

1. Open the hot water faucet
2. Open the cold water supply valve
3. When water runs out of the faucet, the tank is filled
4. Close the hot water faucet
5. Check entire system for leaks

**CAUTION: NEVER PLUG THE WATER HEATERS CORD INTO AN ELECTRICAL OUTLET UNLESS IT IS FILLED WITH WATER. OTHERWISE, THE UNIT WILL SELF DESTRICT.**

#### 6. ELECTRICAL CONNECTION

To be certain that all the air is out of the system, open the hot water faucet on your fixtures until constant water flows from them. Otherwise, damage to the element may occur.

Connect the water heater to a **GROUNDING OUTLET**.

The unit is fitted with a power cord to connect the water heater to a receptacle. State and local codes must be adhered to. Install the correct breaker at the circuit breaker panel.

The water heater was manufactured and wired in accordance with the UL requirements.

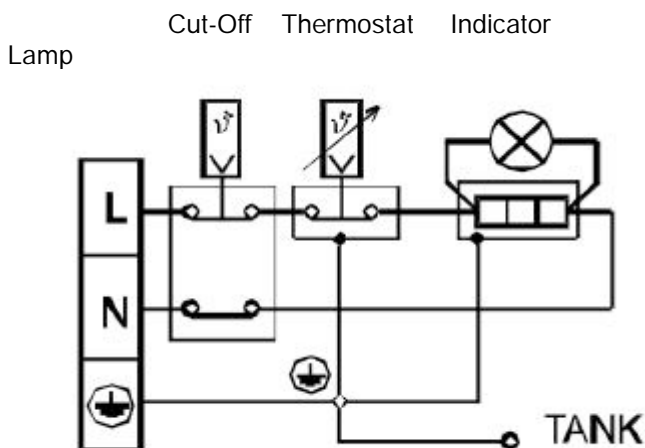
A temperature high limit with manual reset has been factory installed to interrupt the power supply in the event of a thermostat failure.

This water heater is designed for 110 – 120 V.

DO NOT use this water heater with any other voltage. Failure to use the correct voltage may result in personal injury or property damage.

The heater is supplied with an electrical cable with a plug. If the cable is damaged or length not sufficient, it must be replaced by a licensed electrician.

### ELECTRICAL DIAGRAM (SHC 2.5 & 4)

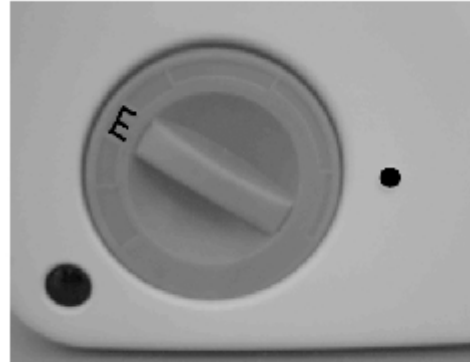


The water heater is equipped with an adjustable thermostat that automatically controls water temperature. The indicator lamp remains lit only when the water is being heated.

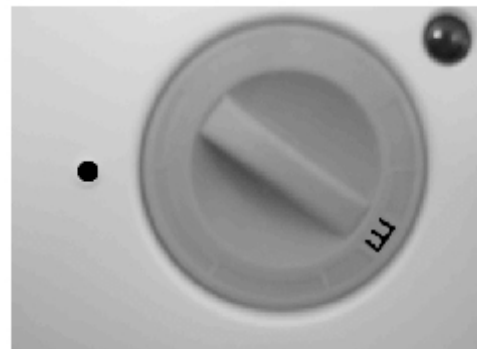
The temperature is adjusted by turning the knob clockwise (to the right) to increase the temperature and counter-clockwise (to the left) to decrease the temperature.

The water heater thermostat can be set to guard against freezing. This position keeps the internal temperature above the freezing point.

### Freeze Protection Setting For SHC 2.5



### Freeze Protection Setting For SHC 4



It is highly recommended to set the thermostat to position "E". Position "E" on the thermostat represents approximately 125° F.

## 7. MAINTENANCE INSTRUCTIONS

Do not attempt to repair the water heater. Call your licensed plumber or electrician for service.

Unplug the unit whenever the water supply is turned off.

Before calling for service, make sure that:

1. The heater is properly filled
2. The electrical supply has not been interrupted.

**WARNING!** Before servicing or cleaning the water heater, disconnect the water heater from the electrical outlet.

Approximately once per year, it is advisable to descale the heating element and to check the condition of the magnesium anode, replacing it if the diameter is less than .39" (10 mm). (See changing the anode rod).

**WARNING!** The temperature/pressure relief valve must be manually operated at least once per year. Caution should be taken to ensure that:

1. No one is near the temperature/pressure relief valve discharge pipe.
2. The water discharged will not cause any bodily injury or property damage. The water may be extremely hot.

If after manually operating it, the valve fails to completely reset and continues to release water, immediately close the cold water inlet to the heater. Replace the temperature/pressure valve with a new one.

Failure to install and maintain a properly functioning and properly listed temperature/pressure relief valve will release the manufacturer and distributor of this water heater from any claim which might result from excessive temperature or pressure.

### **Draining the water heater**

Some service work requires draining the water heater. This should be done in the following manner:

1. Unplug the water heater.
2. Open the hot water faucet to let the hot water out. Let it continue to

flow until cold water runs from the faucet.

3. Turn off the cold water supply to the heater.
4. Close the hot water faucet
5. Disconnect the heater from both the hot and cold water pipes.
6. Carefully detach the water heater from the wall.
7. Tilt the water heater to drain out the remaining water.

### **Removing the cover (SHC 2.5)**

1. Remove the temperature control knob from the front of the unit.
2. Remove the screw from the bottom of the cover.
3. Remove the cover by lifting the back and pulling forward. Cover should come right off.

### **Removing the cover (SHC 4)**

1. Remove the temperature control knob from the front of the unit.
2. Remove the screw from the bottom of the cover.
3. Remove the five screws from the bottom of the cover.
4. Remove cover by lifting front and pulling forward. Cover should come right off.

### **Removing the heating element**

1. Unplug and drain the water heater (see draining instructions).
2. Remove the cover.
3. Remove all the line wires from the heating element.
4. Remove the fitting on top of the heating element pipe.
5. Using a suitable wrench, unscrew the 2<sup>nd</sup> nut.
6. Remove the heating element.



## 7. DE-SCALING THE HEATING ELEMENT

Scale deposit can affect the heating capacity of the heating element. Scale can even cause the element to burn out. The element can be descaled either chemically or manually.

1. Remove the heating element. (See above).
2. To de-scale chemically, soak the heating element in white vinegar or other descaling solution then rinse well.
3. To de-scale manually, use a non-metallic (soft) tool; brush the crust off the element. Make sure you do not damage the surface of the heating element.
4. Reinstall the heating element
5. Refill the tank before turning on the power to the water heater.

## 9. REPLACING THE HEATING ELEMENT

1. Unplug and drain the water heater (see draining instructions).
2. Remove the cover (see removing cover instructions).
3. Remove the heating element (see removing heating element instructions).
4. Install a new element and new gasket. Make sure that both the gasket and heating element are positioned correctly.
5. Remount all the line wires from the heating element to their original location.

## 10. CHANGING THE ANODE ROD

A magnesium anode is used to extend the life of the tank. Permanent removal of this

anode for any reason will void the warranty.

Depending on conditions, the magnesium anode rod may need to be changed every year or so. Galvanic and electrolytic corrosion can destroy a tank with a spent anode rod. Rusty water is usually an indicator of a spent anode rod.

1. Unplug and drain the water heater (see draining instructions)
2. Remove cover (see removing cover instructions)
3. Remove heating element (see removing the heating element instructions)
4. Remove the anode rod from the dismantled heating element holder by unscrewing the female screw
5. Fit a new anode rod into the heating element holder
6. Refit all the wires and the heating element
7. Refill the water heater with water and check for leaks before connecting the power

## 11. SAFETY SHUT-OFF

Resetting high temperature shut off system

NOTICE: Do not attempt to reset the high limit switch without first cooling down the water inside the water heater.

**WARNING!** Never lock the sliding reset plunger.

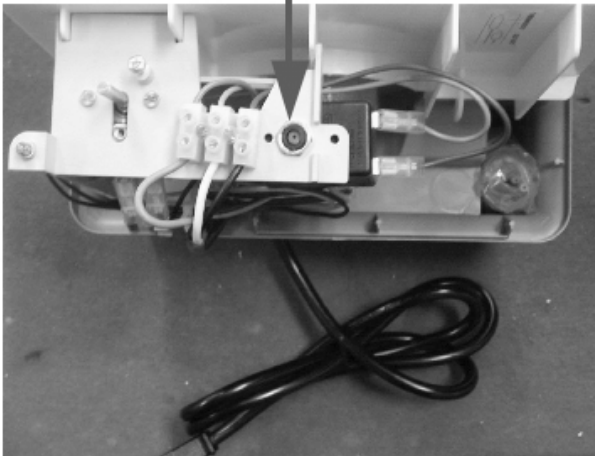
1. Unplug the water heater
2. Remove the cover (see removing the cover instructions)
3. Press in red button with an appropriate tool. (See diagrams below)

4. Replace the cover of the heater and tighten
5. Replace the thermostat control knob

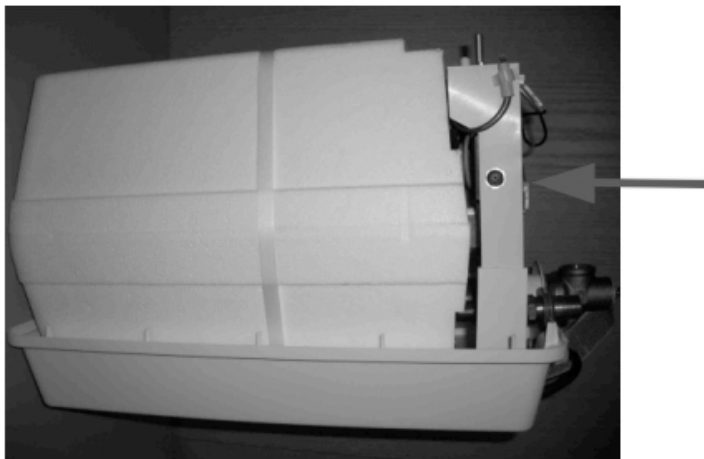
During heating, the water volume and water pressure increases in the tank.

It is possible for water to leak from the safety valve, this is normal.

**SHC 2.5**



**SHC 4**



# **STIEBEL ELTRON**

## **SHC 2.5 / SHC 4 WATER HEATER WARRANTY**

Stiebel Eltron warrants to the original owner that the SHC 2.5 / SHC 4 water heater will be free from defects in workmanship and materials. The tank is guaranteed against leakage for a period of six (6) years from the date of purchase. All other components are warranted for a period of two (2) years.

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. if the water heater has not been installed, operated or maintained in accordance with the manufacturer's written instructions.
2. if the water heater has not been installed in accordance with applicable state/local plumbing or building codes.
3. if the water heater has not been continuously supplied with water, otherwise defined as "dry - firing"
4. if the water heater has been altered in any manner, or installed by non-qualified personnel.
5. to conditions resulting from misuse, abuse, neglect, accident, or alteration to excessive pressure
6. to conditions resulting from floods, earthquakes, winds, fire, lightning, or circumstances beyond the manufacturer's control
7. to water damage resulting either directly or indirectly, from any defect in the water heater or its components.

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.

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**www.TitanHeater.com**  
14629 SW 104 Street, Suite #134  
Miami, FL 33186  
Tel: (888) 697-8456  
Fax: (305) 675-7974  
Email: [info@titanheater.com](mailto:info@titanheater.com)

**STIEBEL ELTRON, INC.**  
**17 West Street**  
**West Hatfield, MA 01088**  
**(800) 582-8423 • (413) 247-3380**  
**Fax: (413) 247-3369**  
**Email: [info@stiebel-eltron-usa.com](mailto:info@stiebel-eltron-usa.com)**  
**[www.stiebel-eltron-usa.com](http://www.stiebel-eltron-usa.com)**