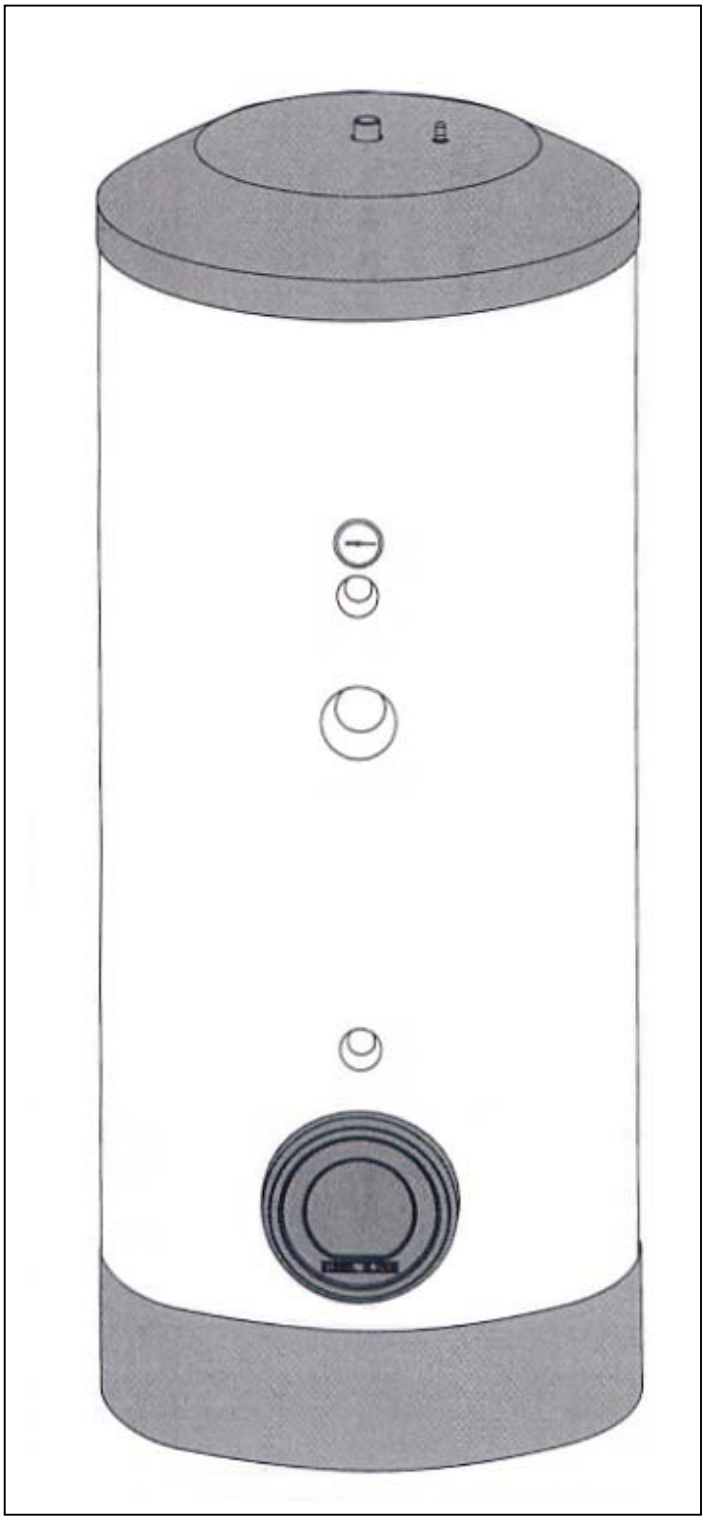
STIEBEL ELTRON

SBB 300 plus, SBB 400 plus, SBB 600 plus

Operation & Installation



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Important Tip

Stiebel Eltron hot water heaters should only be installed or serviced by licensed installers. These are not do-it-yourself appliances.

Please hand this Operation and Installation Manual and hand over to the home or building owner when the installation is complete.

Operating Instructions for the User and the Technician

1. Operation and Service

1.1 Start-up

The boiler (1) and solar storage tank (11), constitute a functional unit (refer Diagram 4 and 5).
Hot water is generated throughout the year by the solar collectors.

The entire heater and hot water system must be filled with water and have adaquate air ventilation. Please, refer to the solar collector's and the boiler's installation instructions.

2. Maintenance and Cleaning

Routine care and maintenance extends the life expectancy and operating safety of the hot water storage unit.
The outer casing should be cleaned with a slightly damp cloth and commercially available neutral cleaning agent, this should be done on a regular basis

2.1 Temperature / Pressure Relief Valve

The proper function of the T & P relief valve is required to prevent damage to the hot water storage unit. The T & P valve needs to be open during cold-water addition. The water has to flow from the relief line at full stream.

The discharging water can be hot!

2.2 Decalcification

With hard tap water, a deposit of scale will form on the inside of the storage unit. Based on professional experience, it is necessary to decalcify with commercially available solvents at timely intervals. Follow the manufacturers instructions for solvent use. The hot water storage unit needs to be emptied. The inspection cover must be removed and sediments on the tank bottom must be flushed.

2.3 Replacement of the Sacrificial Anode

Depending on the composition of the tap water, an inspection of the sacrificial anode (Pos. 1, Diagram 1) timely intervals is recommended. With heavy wear, an original equipment replacement anode must be installed to protect the inner container from corrosion. An inspection should be performed at least once a year.

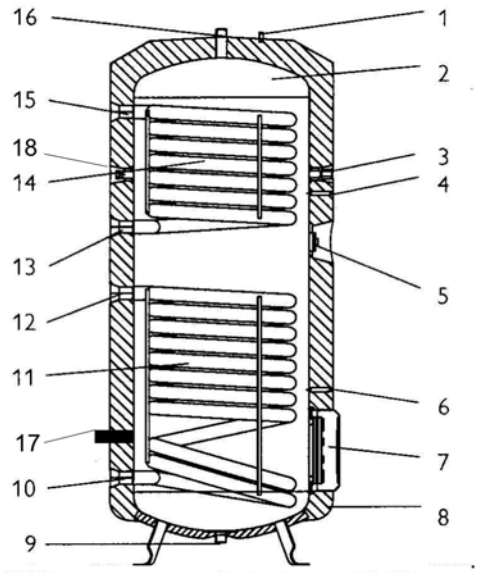
3. Failures – Causes – Correction

Failures	Causes	Correction
Inadequate water pressure	Shut-off valve is not completely open. Cold or hot water line is obstructed.	Open Shut-off valve. Clean or exchange pipes.
Hot water flow inadequate	Boiler temperature is set too low. Recommended 176 to 185º F. Heat exchanger is calcified.	Set boiler to recommended temperature. Clean heat exchanger.
Hot water storage tank not being heated	Program selection at the heater control is not properly selected.	Select and set program per instructions.
Outlet quantity inadequate	Aerator at the extraction point blocked.	Unscrew aerator and clean.
Hot water supply too fast exhausted	Flow rate too high. Recommended 2.6-3.9 gal./min.	Restrict Spigot valve rate.

4. Technical Specifications

Components of the SBB…plus

1



1 Sacrificial anode indicator
2 Glass lined steel tank
3 Immersion sleeve for boiler temperature probez
4 Thermometer well
5 Spare port
6 Immersion sleeve for solar temperature probe
7 Inspection port
8 Expanded polystyrene-thermal insulation
9 Cold water inlet (SBB 300 & SBB 400)
10 Solar inlet
11 Solar heat exchanger
12 Solar return
13 Heat exchanger from boiler feed
14 Upper heat exchanger
15 Heater exchanger to boiler return
16 Warm water outlet / T & P relief valve location
17 Cold water inlet (SBB 600)
18 Circulation port

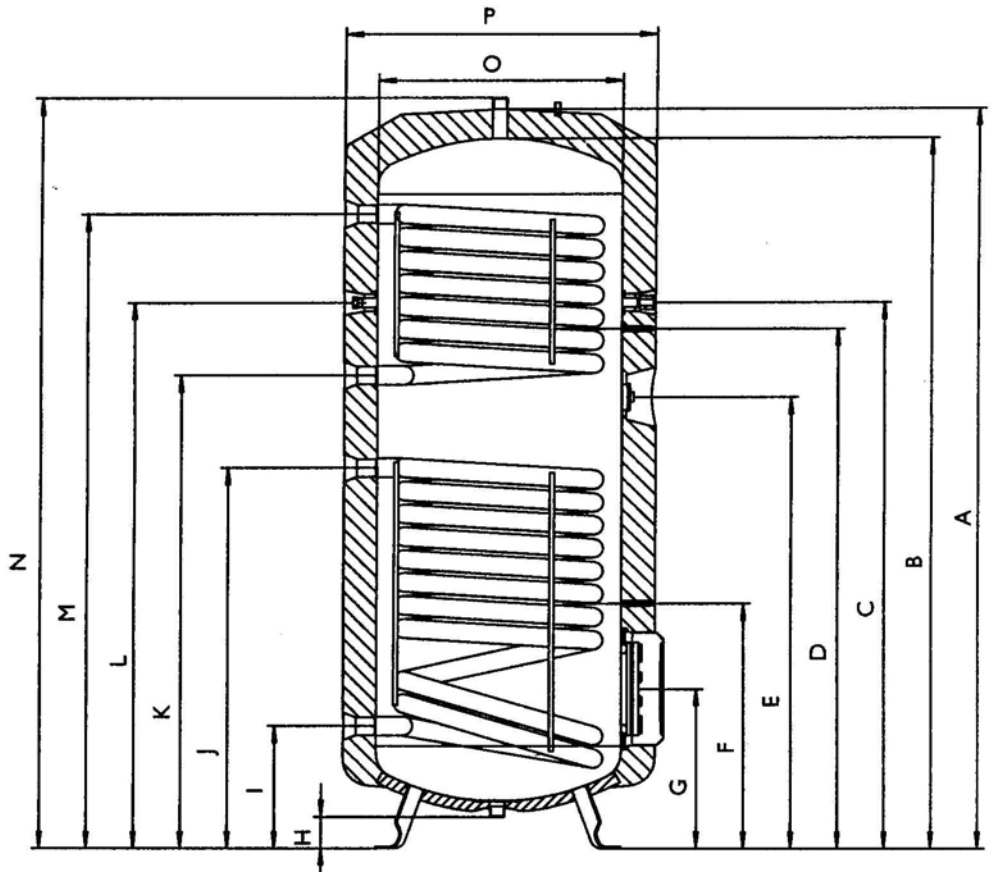
Diag. 1.

4.1 Technical Data

Type		**SBB 300 plus**	**SBB 400 plus**	**SBB 600 plus**
Contents				
Storage capacity	Gal / ltr	80.6 / 305	108.6 / 411	162.9 / 617
Volume of heat exchanger, top	Gal / ltr	1.9 / 7.3	2.2 / 8.2	2.5 / 9.6
Volume of heat exchanger, bottom	Gal / ltr	2.7 / 10.1	2.9 / 11.3	3.5 / 13.2
Pressure				
Working pressure	PSI / bar	150 / 10	150 / 10	150 / 10
Tested to pressure	PSI / bar	217 / (15)	217 / (15)	217 / (15)
Max. pressure of boiler loop	PSI / bar	150 / 10	150 / 10	150 /10
Temperature				
Max. temperature solar loop	°F / °C	203 / 95	203 / 95	203 / 95
Max temperature boiler loop	°F / °C	203 / 95	203 / 95	203 / 95
Heat exchanger				
Surface area heat exchanger top	sq. in. /m2	1705 / 1.1	2015 / 1.3	2325 / 1.5
Surface area heat exchanger bottom	sq. in. /m2	2325 / 1.5	2635 / 1.7	3100 / 2.0
Weights				
Tank weight empty	lb. / kg	339 / 154	412 / 187	544 / 247
Tank weight full	lb. / kg	1,051 / 477	1,362 / 618	1,955 / 887
Other				
Standby losses in 24 hours	KWh / BTU	1.9 / 6500	2.2 / 7500	2.9 / 10,000
Cold/hot water connection	for 3/4” copper pipe w/adapters, provided w/ unit			

Dimensions

2



Diag. 2.

4.2 Dimensions

Type			SBB 300 plus	SBB 400 plus	SBB 600 plus
A	Height of unit w/insulation	in./mm	66.1/1679	72.7/1848	68.3/1735
B	Height of unit without insulation	in./mm	63.3/1609	70.1/1781	65.7/1670
C	Height of well for temp. sensor	in./mm	46.4/1179	48.7/1238	46.9/1192
D	Height thermometer	in./mm	41.1/1045	43.0/1093	41.5/1055
E	Height spare port	in./mm	40.3/1025	42.4/1078	40.9/1040
F	Height of well for temp. sensor	in./mm	21.9/557	22.0/560	23.4/595
G	Height inspection flange	in./mm	14.4/365	14.4/367	15.9/405
H	Height cold water feed	in./mm	2.9/73	2.6/65	2.0/50
I	Height solar cold feed	in./mm	11.0/280	11.1/282	10.9/277
J	Height solar hot return	in./mm	34.0/865	34.1/867	33.9/862
K	Height heater hot boiler return	in./mm	38.4/975	44.5/1130	42.9/1089
L	Height circulation port	in./mm	52.7/1339	63.0/1600	57.2/1453
M	Height cold boiler feed	in./mm	52.7/1339	63.0/1600	57.2/1453
N	Overall height	in./mm	67.08/1704	73.74/1873	69.29/1760
O	Width without thermal insulation	in./mm	21.65550	23.62/600	29.52/750
P	Width with thermal insulation	In./mm	27.55/700	29.52/750	36.22/920

Installation instructions for the Installer

5. General

Diagram 1 is referenced for explanation of the following text.

5.1 Brief Description of the Appliance
5.1.1 Application
The Stiebel Eltron Vertical Solar Storage tank SBB … Plus, in combination with Stiebel Eltron's Solar Collector is an economical hot water generator.

5.1.2 Connections
All connections (cold and hot) are readily accessible and allow for easy installation.

5.2 Delivery Configuration
The hot water storage tank SBB … Plus is wrapped in plastic and is delivered on a one-way pallet. The storage tank has foam insulation, a ABS outer casing and ABS cover.

Equipment

- Storage unit with two welded steel plain-ended pipe heat exchangers
- Hot water corrosion protection with special enamel coating
- Maximum operation pressure
  Hot water 150 PSI
  Heated water 150 PSI
- Three immersion sleeves for housing of temperature probe and thermometer
- Magnesium Safety Anode
- Circulation Socket
- Attached Flange inspection cover (SBB models)
- PU Foam insulation 2.95 in. (70 mm.) thick
- ABS outer casing with zipper in protective pouch
- ABS Cover and Flange cover

Only for 600:

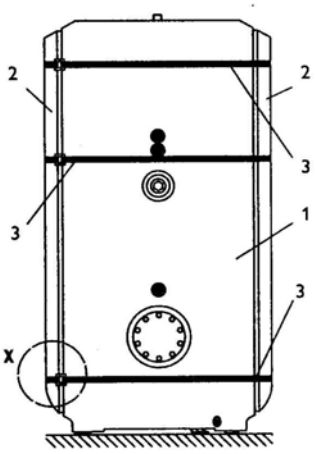
- Removable polyurethane-side panels with fastening strap and locking parts

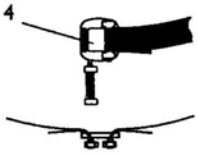
5.3 Tasks to be performed by Installer
An approved technician should perform the setup, installation and initial start-up following these instructions.

5.4 Regulations and Standards
Refer to: Local Construction regulations, fire-code and trade control regulations.

3 **Solar Tank SBB 600 plus with insulation**

1 Solar tank
2 PU side panel
3 Fastening strap
4 Locking part





6. Set-up and Installation

6.1 Set-up
Inspect the packaging for damage and remove packaging at the installation site. Verify presence of six brass thread to sweat fittings.

The installation site must be structurally capable of supporting the weight of the tank when filled. The location has to be above freezing. The water drainage pipe must be freeze proof.

6.2 Connection
Refer to Diagram1 and Diagram 2.

6.3 Heater Installation
The installation of the hydronic loop is shown in Diagram 4. The circuit must include a Temperature / Pressure Relief Valve, and air-vent, a check valve, and an expansion tank.

6.4 Hot Water Installation
6.4.1 Prior to installation check that the local conditions are compatible with the appliance design, especially that the maximum working excess pressure of 150 PSI (10 bar.) is not exceeded.

6.4.2 A steel or a copper pipe with insulation can be used for the hot water connectors. Copper pipe with insulation is especially suitable due to its low heat loss.

Required combination

Cold water pipeline	**Hot water pipeline**
Copper pipe	copper pipe
Steel pipe	steel or copper pipe
Plastic	steel or copper pipe

6.4.3 All safety components must be installed into the cold water supply (7,8,9 & 14 Diagram 4). The order of the individual fittings must be in accordance to local regulations.

6.4.4 The pressure regulator has to be set to 150 PSI (10 bar). It can only be installed into the cold water supply. The supply has to be thoroughly inspected prior to installation. Installation of dirt filters or any other narrowing of the supply line to the pressure relief valve is forbidden.

The pressure relief valve (13) has to be easily accessible. Expansion water generated during the heating has to flow visibly to a drain.
The drainage pipe must be large enough to accommodate water drainage with a fully opened T & P valve. The drainage pipe must be protected from freezing and must not lead outdoors.

The pressure regulator (14) has to be set so no water drips from the T & P valve.

Heavy dripping of the T & P valve can be caused by dirt in the valve seat or water pressure. Water pressure needs to re regulated below 150 PSI.

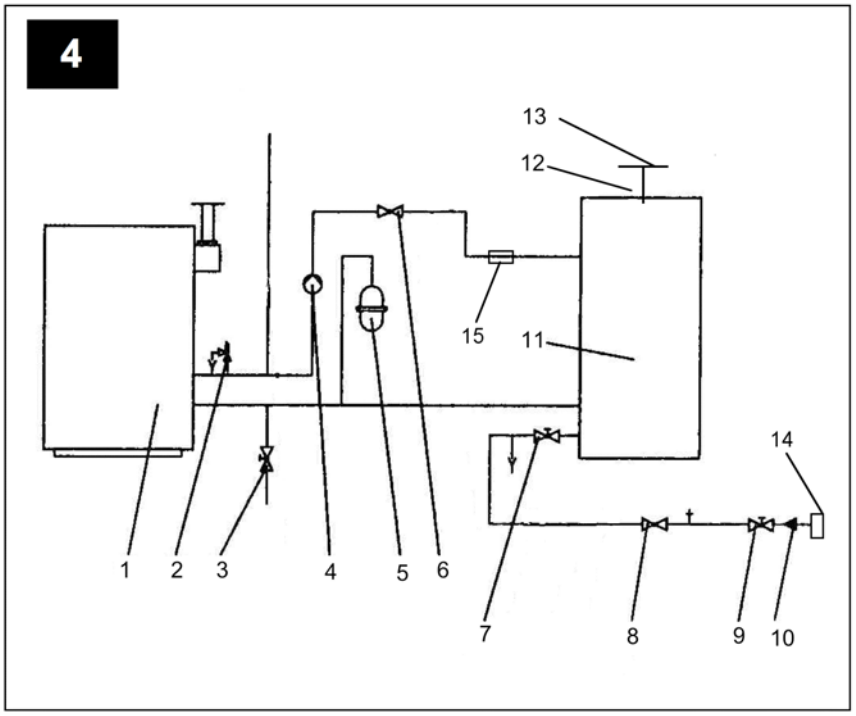
6.4.5 Prior to filling all screws must be tight.

6.4.6 Drainage of the hot water tank is via the drain valve (7).

6.4.7 A re-circulator can be attached to a separate socket across the thermometer. Drill the outer casing with a hole saw ∅ 50 where marked and remove insulation from the socket in that area.

For energy conservation, use of a circulator is not recommended.

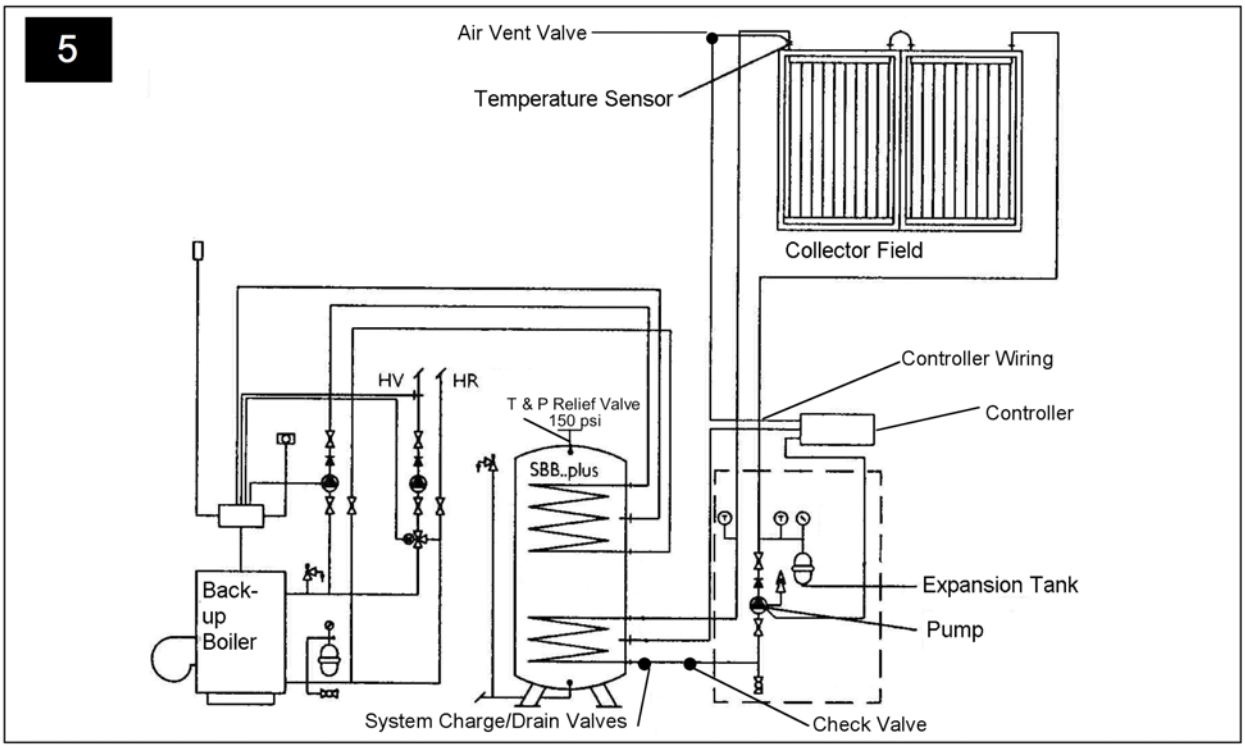
Installation Diagram Solar storage tank SBB plus to Hydronic back-up



1 Boiler
2 T & P valve
3 Boiler filler and drainage faucet
4 Heating loop circulator
5 Pressure expansion tank
6 Check valve
7 Drainage faucet for the tank
8 Check valve
9 Shut-off valve
10 Cold water pipe
11 SBB plus storage tank
12 Hot water pipe
13 T & P valve
14 Pressure regulator
15 Air-vent

Diag. 4

System Diagram



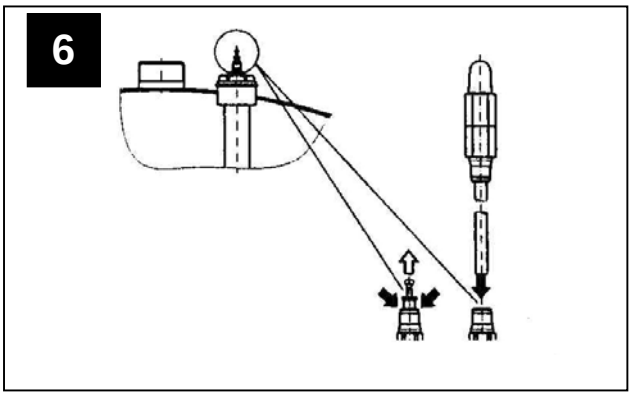
6.5 Hot water temperature probe

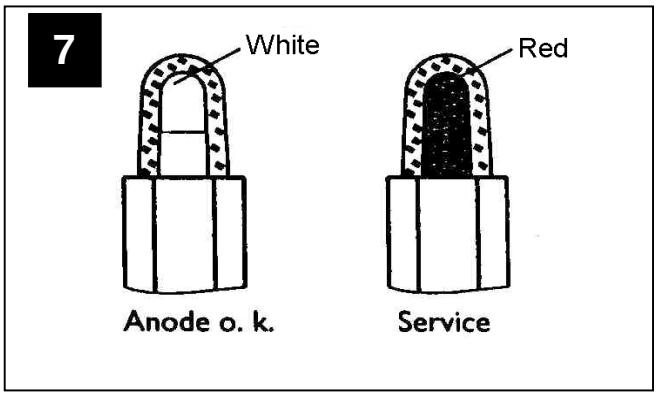
6.5.1 The hot water temperature probe is to be installed into the upper immersions sleeve (Pos. 3 Diagram1).

6.6 Solar Storage Tank – Temperature Probe

The solar storage tank temperature probe to lower immersion sleeve of the hot water storage tank (Pos. 6 Diagram 1).

The temperature probe must be completely inserted into the probe sleeve.





6.7 Connection to the Solar Unit
The installation of the solar loop is shown in Diagram 5. The solar loop must include temp/pressure relief, an air-vent, a check valve and an expansion tank. Refer to the separate operation and installation instructions for the solar collector SOL 25 plus.

Test operation after installation. Start up must follow the approval of the installer (refer operation and use).

6.8 Sacrificial anode (spare part)
If a sacrificial anode is installed into the SBB … plus storage tank, the following must be observed:
Installation – sacrificial anode

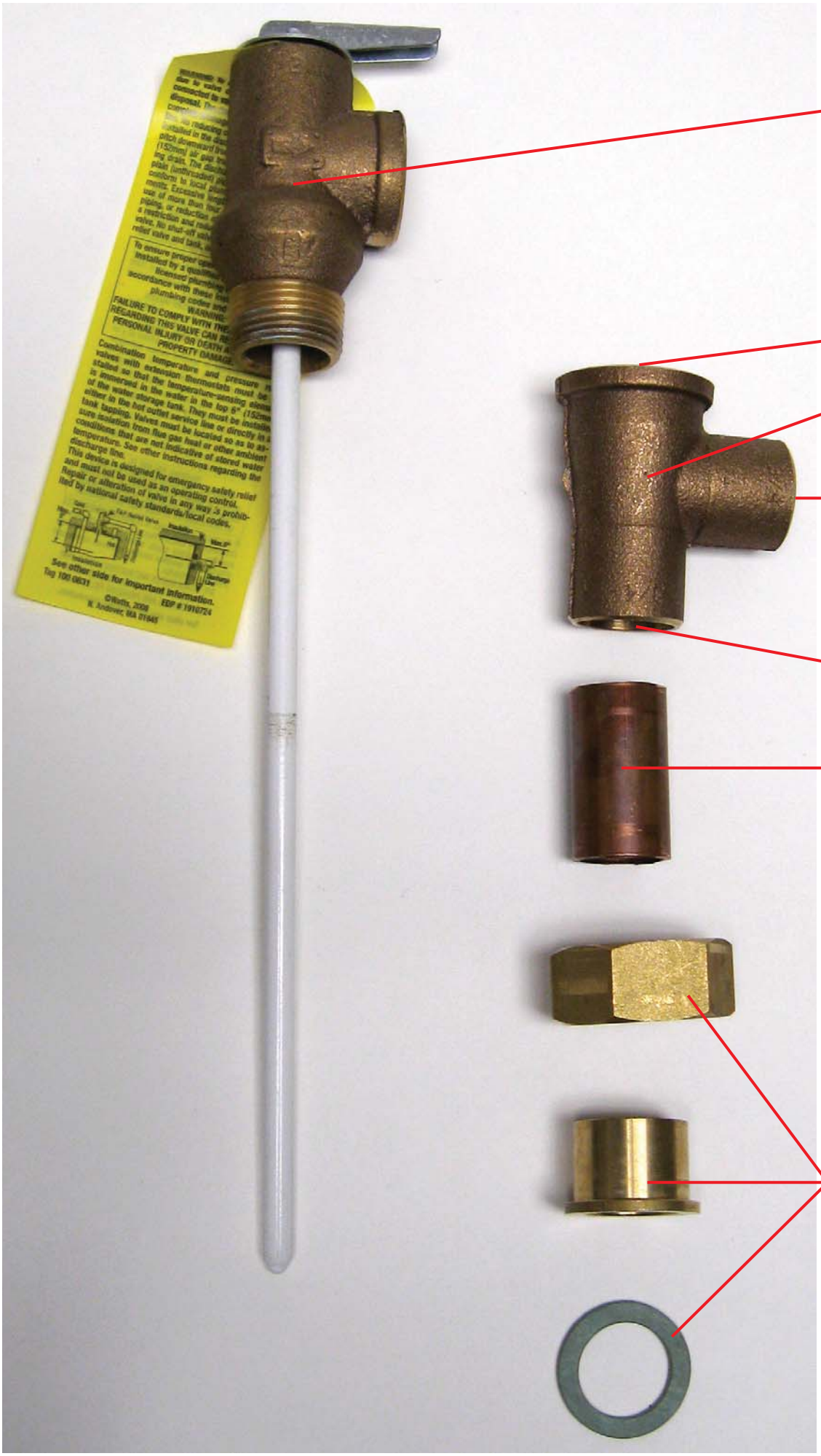
- Pull out the red shut-off plug while simultaneously depressing the pressure ring, Diagram 6.
- Push in the open pipe end of the indicator element until dead-stop.
- Attach the sticker “Note Signal Anode” to a highly visible spot on the insulation.

When the storage tank is not operated with a signal display, the red plug must remain in the anode!

Function – Sacrificial indicator

- After consumption of the anode, humidity escapes through the hollow anode core to the signal cartridge and causes a color change there (refer Diagram 7)
- When the cartridge turns red contact the installer so he can check the anode and if needed replace it.

Routine maintenance improves operating safety and life expectancy of the solar hot water storage tank SBB … plus.



T&P Relief Valve
Automatic-Resetting
Temperature and Pressure
Relief Valve
150 psi 210 °F
Watts #100XL-8
3/4" NPT
SE# S28640

3/4" NPTF

SE# S34292

3/4" copper to Domestic
Hot Water (DHW)

3/4" copper

2" of 3/4" copper

SE# S258181

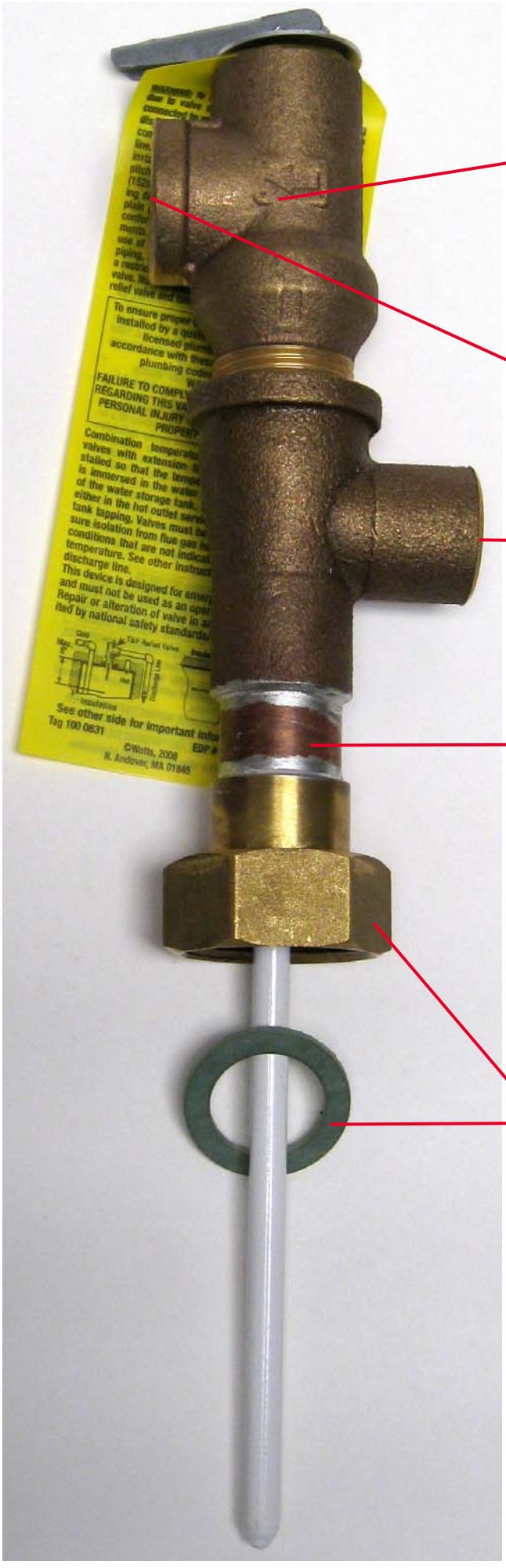


Figure 2 Mounted to top of SBB tank

STIEBEL ELTRON

STORAGE TANK FOR SOLAR APPLICATIONS WARRANTY

Stiebel Eltron warrants to the original owner that the SBB….plus; Storage tank for solar hot water systems 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 storage tank
2. to freeze damage
3. to conditions resulting from misuse, abuse, neglect, accident, or alteration
4. 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
5. to excessive pressure
6. to conditions resulting from floods, earthquakes, winds, fire, lightning, or circumstances beyond the manufacturer's control
7. 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.

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