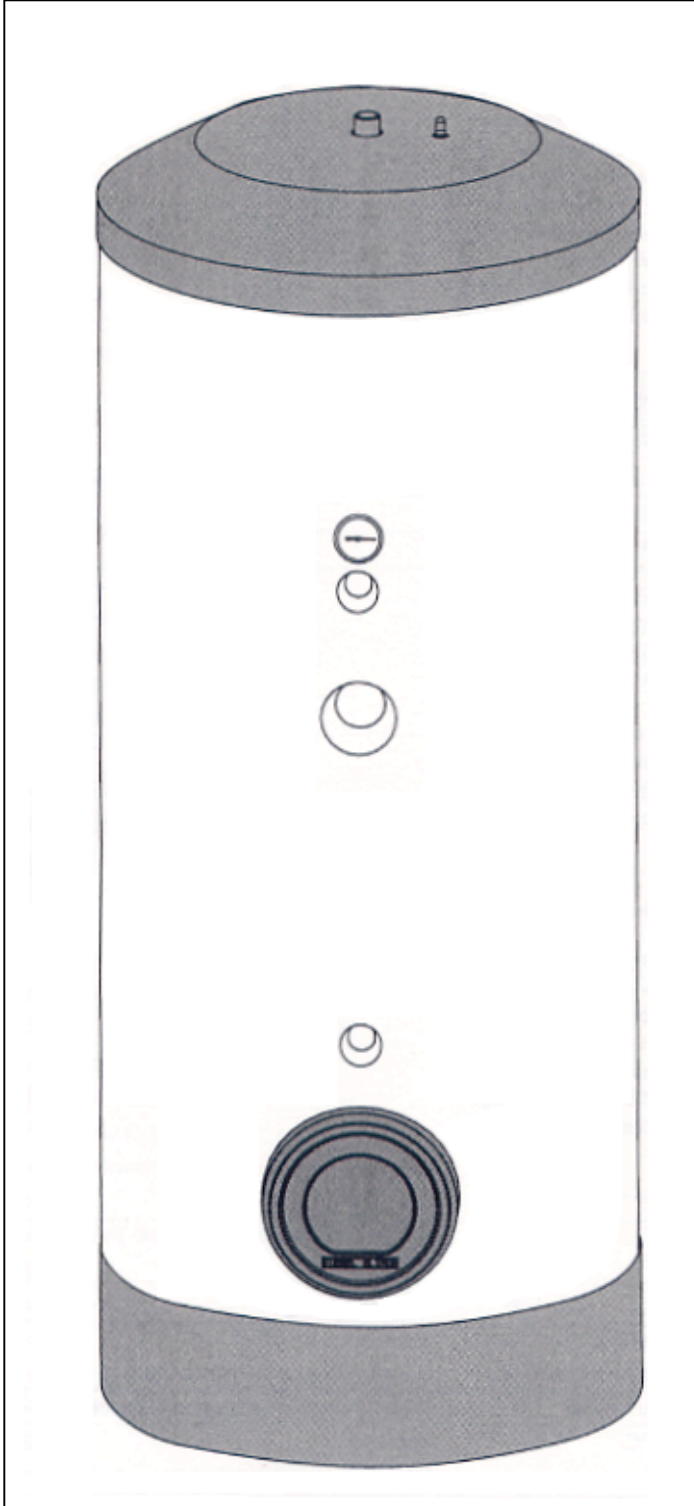


SBB 300 plus, SBB 400 plus, SBB 600 plus

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 (39) and solar storage tank (30) after installation, constitute a functional unit (refer Diag. 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 good 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 Membrane Safety Valve

The proper function of the safety group (28), especially of the membrane safety valve (21) is very important to prevent damage to the hot water storage unit. The membrane safety valve needs to be monitored for functionality during cold-water addition (27). The water has to flow from the drip 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 revisions flange at the storage bin must be dismantled and sediments on the tank bottom must be removed.

2.3 Exchange of the Safety Anode

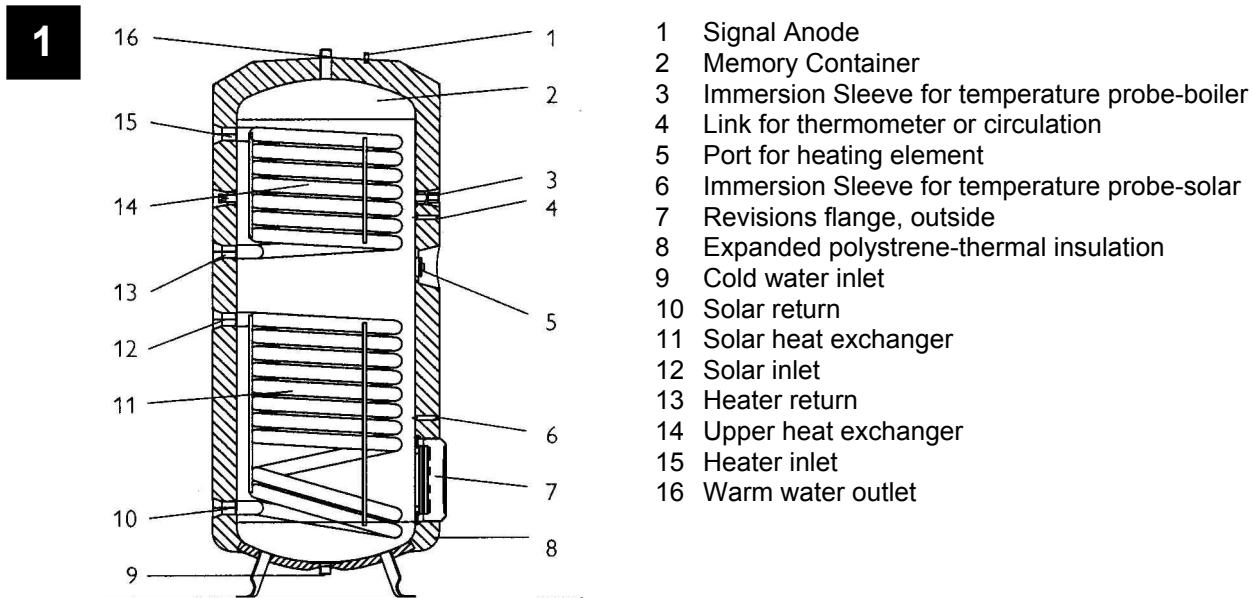
Depending on the composition of the tap water, an inspection of the safety anode (Pos. 1, Diag. 1) at more or less timely intervals is recommended. With heavy wear, an original equipment replacement anode (refer Ch.6.8 and Ch.7) must be installed to protect the inner container from corrosion. An inspection 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 gauge is set too low. Recommended 80-85°C. Heat exchanger is calcified.	Set boiler temperature gage to recommended temperature. Clean heat exchanger.
Hot water storage tank not being heated	Program selection at the heater gage is not properly selected.	Select and set program per instructions.
Outlet quantity inadequate	Perlator at the extraction point blocked.	Unscrew perlator 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...K Sol



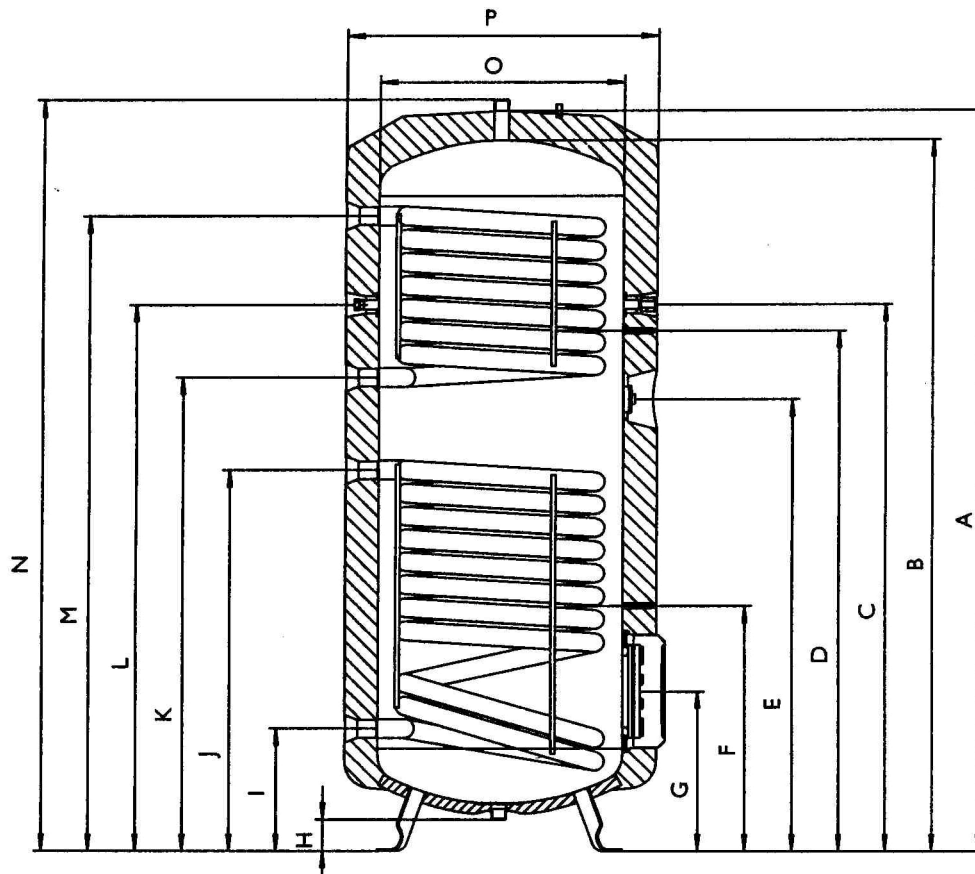
Diag. 1.

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	(15) / 217	(15) / 217	(15) / 217
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	1.9	2.2	2.9
Cold/hot water connection	for 1" 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 link thermometer/circulation	in./mm	41.1/1045	43.0/1093	41.5/1055
E	Height link screwing in heating element	in./mm	40.3/1025	42.4/1078	40.9/1040
F	Height of dipping case for temp. sensor	in./mm	21.9/557	22.0/560	23.4/595
G	Height revision flange	in./mm	14.4/365	14.4/367	15.9/405
H	Height cold water link	in./mm	2.9/73	2.6/65	2.0/50
I	Height solar return	in./mm	11.0/280	11.1/282	10.9/277
J	Height solar advance	in./mm	34.0/865	34.1/867	33.9/862
K	Height heater return	in./mm	38.4/975	44.5/1130	42.9/1089
L	Height heater advance	in./mm	52.7/1339	63.0/1600	57.2/1453
M	Overall height	in./mm	67.1/1704	73.7/1873	69.3/1760
N	Memory without thermal insulation	in./mm	21.6/550	23.6/600	29.5/750
O	Memory with thermal insulation	in./mm	27.5/700	29.5/750	36.2/920

Installation instructions for the Installer

5. General

The illustration on page 5 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 ... K SOL is, in combination with Stiebel Eltron's Solar Collector is an economical hot water generator.

5.1.2 Connectors

All connectors (cold and hot water connectors) are readily accessible and allow for easy installation.

5.2 Delivery Form

The hot water storage tank SBB ... K SOL, wrapped in plastic wrap, is delivered on a one-way pallet. The storage tank has foam insulation, a KU outer casing and KU 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 145 PSI (10 bar)
Heated water 145 PSI (10 bar)
- Three immersion sleeves for housing of temperature probe/thermometer
- Magnesium Safety Anode
- Circulation Socket G_A
- Plug for bushing G1_
- Attached Flange
- PU Foam insulation 2.95 in. (70 mm.) thick
- KU outer casing with zipper in protective pouch
- KU Cover and Flange cover

Only for 600:

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

5.3 Tasks to be performed by the Technician

An approved technician should perform the setup, installation and initial start-up following these instructions.

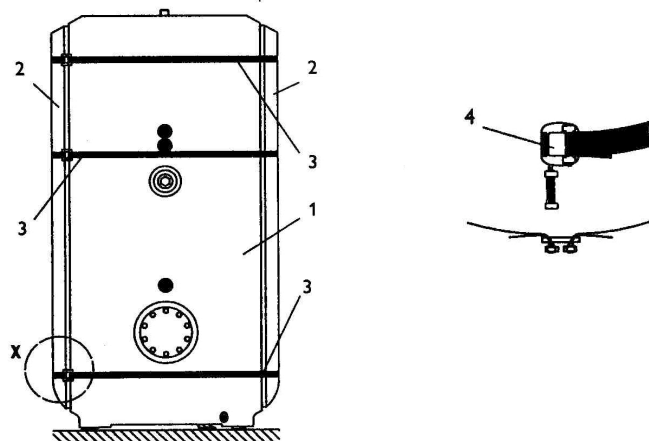
5.4 Regulations and Standards

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 preferable only at the installation site.

For the selection of the installation site, the tare weight of the storage unit (unit and insulator) including the fill-water weight must be considered. The room has to be above freezing. For drainage, the water drainage pipe must be freeze proof.

6.2 Connection

Refer to Diag.1 and Diag. 2.

6.3 Heater Installation

The installation of the heating circuitry is shown in Diag. 4. The heater installation can be according to the installation diagram. This, however, varies according to operation. In addition, it must be assured that no air can collect in the system. Therefore, an exhaust unit has to be built into the heating circuitry (31).

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 145 PSI (10 bar.) can be maintained.

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 because of its low friction and 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 A safety group (28) must be installed into the cold water supply (27, Diag. 4). The order of the individual fittings must be in accordance to local regulations.

6.4.4 The membrane safety valve (21) has to be set to 145 PSI (10 bar.) excess pressure and sealed. It can only be installed into the cold water supply (27). The supply has to be thoroughly inspected prior to installation. Installation of dirt filters or any other narrowing of the supply line to the membrane safety valve is forbidden.

The membrane safety valve (21) has to be easily accessible. Expansion water generated during the heating has to flow visibly into a funnel and be drained.

Funnel and drainage pipe must be large enough to accommodate water drainage with a fully opened membrane safety valve. The drainage pipe must be protected from freezing and must not lead outdoors.

The membrane safety valve (21) has to be set such that there are no water drips with the resting heater (storage water being reheated).

Heavy dripping of the membrane safety valve on the outside of the warming operation can be caused by dirt in the valve seat of water pressure that is too high. At excessive water pressure a pressure reducer (25) needs to be installed.

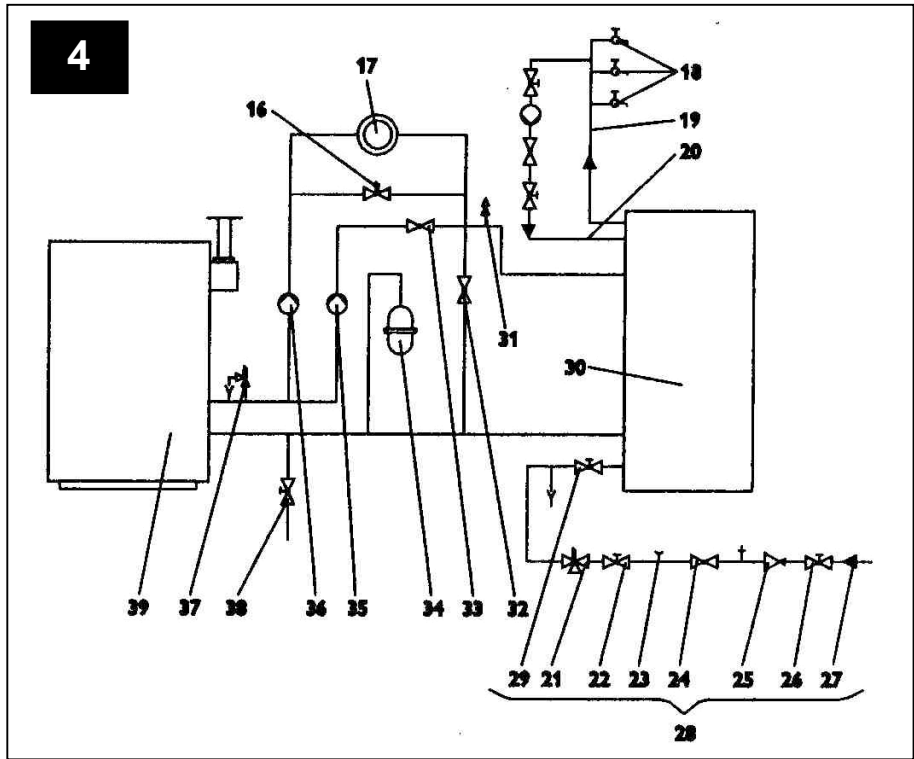
6.4.5 During installation all necessary screws outside of the flange area must be in order. This assures that the revision flange can be maintained.

6.4.6 Drainage of the hot water tank (30) is via the drainage faucet (29) at the drainage connector.

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

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

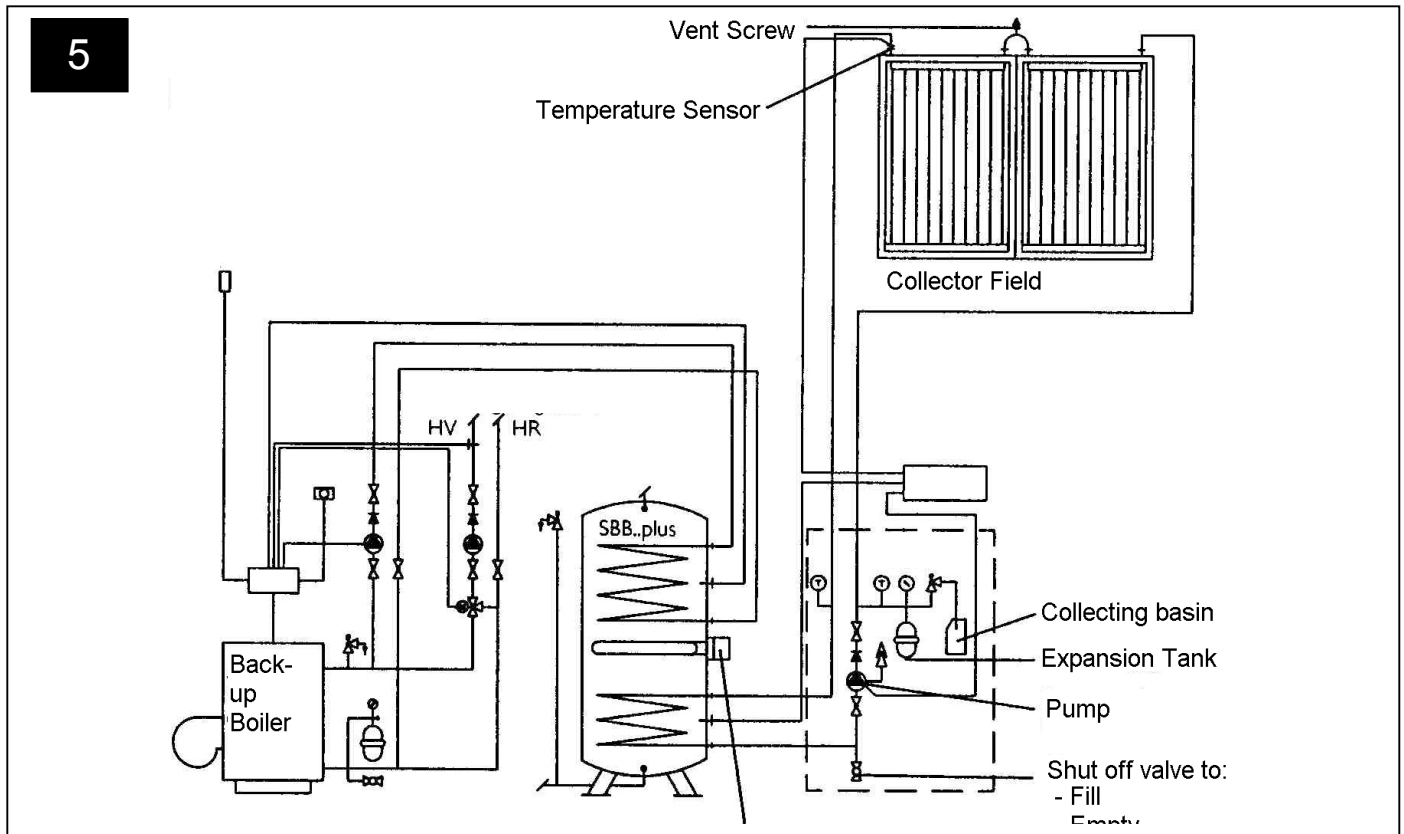
Installation Diagram Solar storage tank SBB plus



- 16 overflow valve
- 17 heater unit
- 18 hot water processor
- 19 hot water heater
- 20 circulation pipe (only if needed)
- 21 membrane safety valve
- 22 shut-off valve
- 23 Manometer connector socket
- 24 check valve
- 25 pressure reducer
- 26 shut-off valve
- 27 cold water pipe
- 28 safety group
- 29 drainage faucet for the tank
- 30 SBB plus storage tank
- 31 exhaust valve
- 32 check valve
- 33 check valve
- 34 pressure expansion vessel
- 35 storage cycle pump
- 36 heating cycle pump
- 37 membrane safety valve
- 38 boiler filler and drainage faucet
- 39 boiler

Diag. 4

System Diagram



5

- Vent Screw
- Temperature Sensor
- Collector Field
- Collecting basin
- Expansion Tank
- Pump
- Shut off valve to:
 - Fill
 - Empty

Diag. 5

6.5 Hot water temperature probe

6.5.1 The hot water temperature probe is to be installed into the immersion sleeve (Pos. 3 Diag.1) of the hot water storage tank.

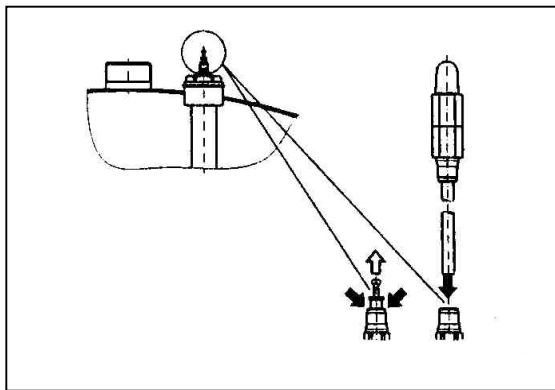
Then the connector pipe for heater regulation has to be installed and attached to the clamps of the low voltage plug as described in separate operation and installation instructions for the regulator.

6.6 Solar Storage Tank – Temperature Probe

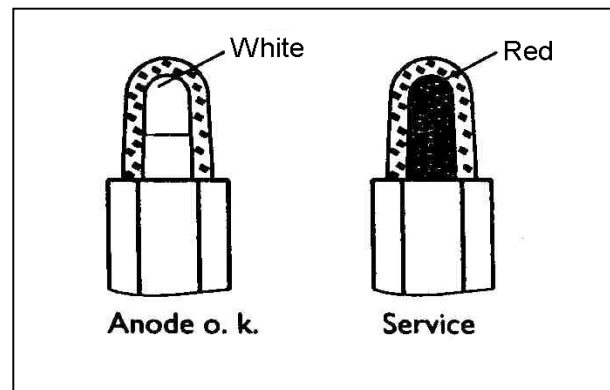
The solar storage tank temperature probe must be attached to the immersion sleeve of the hot water storage tank (Pos. 6 Diag. 1).

The temperature probe must be inserted into the probe sleeve until its dead stop (Ill.6). The compressed flat rod has to be inserted until set with the spring struts in the front.

Then the connector pipe has to be laid according to solar regulator SOM 6K, SOM 6/3D or SOM 7/2 and attached to the clamps of the low voltage plug as described in separate operation and installation instructions of the regulator.



Diag. 6



Diag. 7

6.7 Connection to the Solar Unit

The installation of the solar circuitry is shown in Diag. 5, page 12. The solar circuitry installation can follow the installation diagram. This differs depending on the application.

Refer to the separate operation and installation instructions for the solar collector SOL 25 S.

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

6.8 Signal anode (spare part)

If a signal anode is installed into the SBB ... K SOL storage tank, the following installation of the signal anode must be observed:

Installation – signal anode

- Pull out the red shut-off plug while simultaneously depressing the pressure ring, Diag. 6a. on page 13.
- Push in the open pipe end of the indicator element until dead-stop, Diag. 6b.
- 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 – Signal Anode

(Safety Anode with usage display)

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

6.9 Screw-in unit BGC

BGC is screwed into a 1 " bushing into the front side of the storage tank. This is then locked with a 4-corner plug SW22. As an alternative the bushing can be dismantled with a 12-corner nut SW26. The installation instructions of the screw-in heater must be observed.

7. Tips for the User

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

Solar Collector/Solar Storage Tank Warranty Statement

Residential and Commercial Warranty: Stiebel Eltron warrants to the original owner that the SOL 25 S - 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. In addition, the SBB 300, SBB 400 and SBB 600 plus storage tanks are warranted to the original or subsequent user for a period of (7) 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 to conditions resulting from a failed component or part that is not part of the solar collector, absorber plate or storage tank; to freeze damage; to conditions resulting from misuse, abuse, neglect, accident, or alteration; to minor discoloration of the collector framewall, absorber plate or storage tank skin over time; 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; to propylene glycol pH levels above 10 or below 8; to periods of stagnation in excess of 60 days; to excessive pressure; to clouding or similar occurrence resulting from the normal intrusion of moisture into the collector box; to conditions resulting from floods, earthquakes, winds, fire, lightning, or circumstances beyond the manufacturer's control; 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.

STIEBEL ELTRON

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