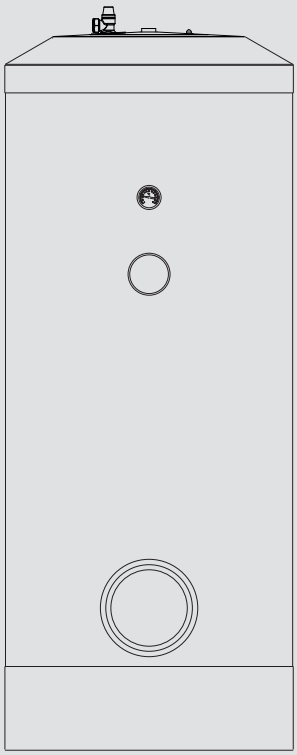
OPERATION AND INSTALLATION

Floorstanding DHW cylinder

» SBB 401 WP SOL GB
» SBB 501 WP SOL GB



STIEBEL ELTRON

OPERATION

1. General information

The chapter “Operation” is intended for appliance users and heating contractors.

The chapter “Installation” is intended for heating contractors.

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

1.1 Further applicable documents

Heat source operation and installation instructions

1.2 Safety instructions

1.2.1 Structure of safety instructions

KEYWORD Type of risk
Here, possible consequences are listed that may result from failure to observe the safety instructions.
► Steps to prevent the risk are listed.

1.2.2 Symbols, type of risk

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

1.2.3 Keywords

KEYWORD	Meaning
DANGER	Failure to observe this information will result in serious injury or death.
WARNING	Failure to observe this information may result in serious injury or death.
CAUTION	Failure to observe this information may result in non-serious or minor injury.

1.3 Other symbols in this documentation

Note
General information is identified by the symbol shown on the left.
▶ Read these texts carefully.

Symbol	Meaning
	Material losses (appliance, consequential, environment)
	Appliance disposal

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

1.4 Units of measurement

Note
All measurements are given in mm unless stated otherwise.

2. Safety

2.1 Intended use

The appliance is specifically designed for heating DHW with heat pumps.

This appliance is designed for domestic use. It can be used safely by untrained persons. The appliance can also be used in a non-domestic environment, e.g. in a small business, as long as it is used in the same way.

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions is also part of the correct use of this appliance. Any modifications or conversions to the appliance void all warranty rights.

2.2 Safety instructions

WARNING Burns
There is a risk of scalding at outlet temperatures in excess of 43 °C.

WARNING Injury
The appliance may be used by children aged 8 and up and persons with reduced physical, sensory or mental capabilities or a lack of experience provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.

Note
The appliance is under pressure.
During the heating process, expansion water will drip from the expansion valve or the T&P valve into the tundish. If water continues to drip when heating is completed, please inform your heating contractor.

2.3 Test symbols

See type plate on the appliance.

3. Appliance description

The heat from the heat pump's heating water is transferred to the DHW by smooth-tube indirect coil.

The internal steel cylinder is coated in "anticor®" enamel and is equipped with a thermometer and a signal anode. The anode with consumption indicator protects the internal cylinder from corrosion.

These appliances are also equipped with a second indirect coil for DHW heating with solar energy.

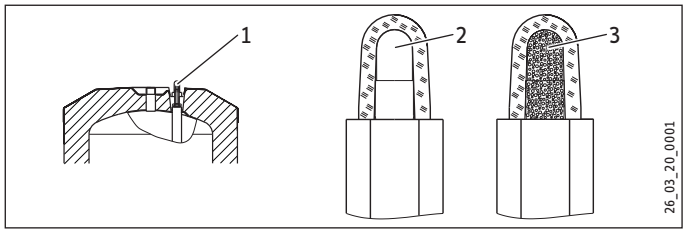
The system is designed to operate directly on mains water supply. When making the connections, observe all applicable national and regional regulations and instructions.

4. Cleaning, care and maintenance

- ▶ Have the function of the safety assembly and electrical safety of the fitted accessories regularly checked by a qualified contractor.
- ▶ Never use abrasive or corrosive cleaning agents. A damp cloth is sufficient for cleaning the appliance.

4.1 Signal anode consumption indicator

Material losses
If the consumption indicator changes colour from white to red, have the signal anode checked by a heating contractor and if necessary replaced.



1 Signal anode consumption indicator
2 white = anode OK
3 Red = check by heating contractor required

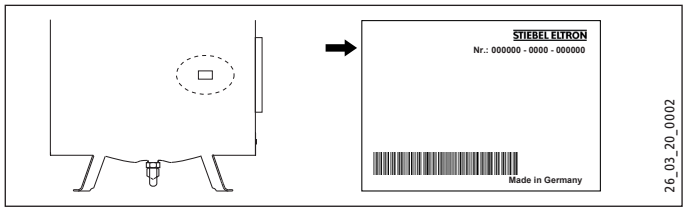
4.2 Scaling

- ▶ Almost every type of water deposits limescale at high temperatures. This settles inside the appliance and affects both the performance and service life. If a flanged immersion heater is installed, the heating elements must be descaled from time to time. A heating contractor who knows the local water quality will tell you when the next service is due.
- ▶ Check the taps/valves regularly. You can remove limescale deposits at the tap outlets using commercially available descaling agents.

5. Troubleshooting

Telephone your contractor.

To facilitate and speed up your enquiry, please provide the serial number from the type plate (000000-0000-000000):



INSTALLATION

6. Safety

Only a qualified contractor should carry out installation, commissioning, maintenance and repair of the appliance.

6.1 General safety instructions

We guarantee trouble-free operation and operational reliability only if the original accessories and spare parts intended for the appliance are used.

6.2 Regulations, standards and instructions

Note
Observe all applicable national and regional regulations and instructions.

6.3 Water installation

6.3.1 Cold water line

Steel or copper pipes or plastic pipework are approved materials.

A safety valve is required.

6.3.2 DHW line

Copper, stainless steel or plastic pipework are approved materials.

Material losses
If a flanged immersion heater is fitted and plastic pipework systems are used at the same time, observe the maximum permissible temperature / the maximum permissible pressure in chapter “Specification / Data table”.

Operate the appliance only with pressure-tested taps and valves.

7. Appliance description

7.1 Standard delivery

Delivered with the appliance:

- Cold water inlet pipe with flat gasket
- Adhesive rosettes for connecting lines
- DHW sensor
- Adjustable feet
- Fixing straps with closure element
- Thermometer (in its delivered condition located in the DHW outlet)
- T&P valve

7.2 Accessories

If it is not possible to fit an anode rod from above, install a segmented signal anode.

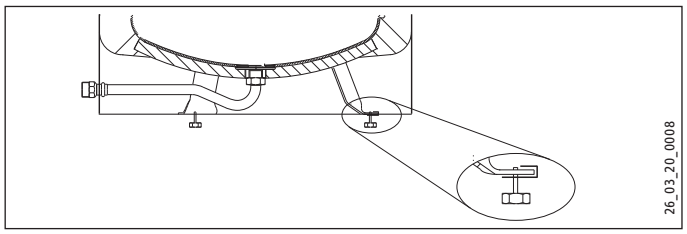
Flanged immersion heaters and electric booster heaters are available as accessories.

8. Preparations

8.1 Installation site

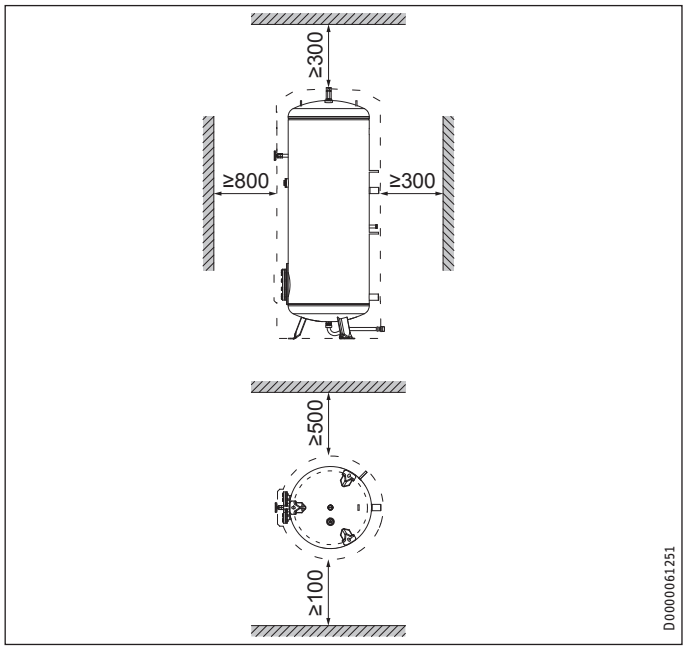
Always install the appliance in a room free from the risk of frost and near the draw-off point.

Ensure the floor offers sufficient stability (see chapter “Specification / Data table” for weight).



▶ Use the adjustable feet to compensate for any unevenness in the floor.

Minimum clearances



▶ Maintain the minimum clearances.

8.2 Transport

Material losses
We recommend removing the cylinder casing for transportation to the installation location to prevent it from becoming dirty or damaged.

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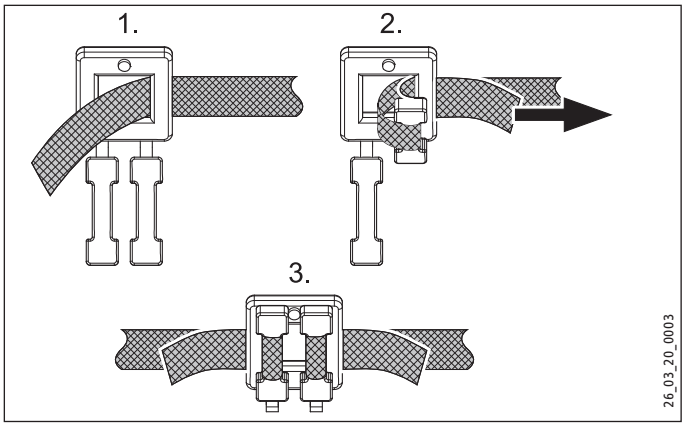
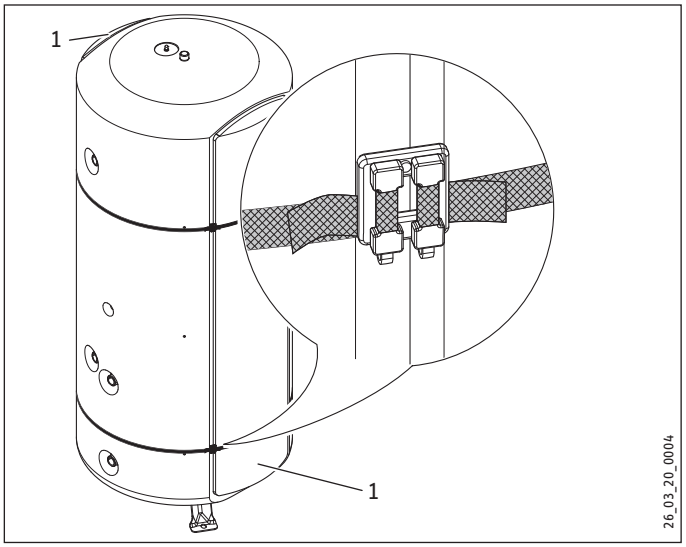
▶ Both side insulation sections can be removed for transportation in tight spaces. To do this, remove the cylinder casing.



▶ Use the fixing straps to refit the thermal insulation sections after transportation.



1 Side thermal insulation section

▶ Ensure that the closures are in the joint between a side thermal insulation section and the thermal insulation of the cylinder.

9. Preparing for installation

9.1 Removing / fitting the cylinder casing

Note
Open or remove the cylinder casing before fitting the DHW circulation and indirect coil lines.
Fit the cylinder casing before fitting a flanged immersion heater.
The plinth trim should be fitted after the tightness check.

9.2 Checking the signal anode

Material losses
The appliance must not be operated without a consumption indicator or with a damaged one, otherwise water will leak out once the anode is depleted.

9.3 Heating installation

The connected heat source must not exceed a maximum flow temperature of 60 °C or must, alternatively, be equipped with a high limit safety cut-out. You may also install a motorised valve that interrupts the cylinder heating by the heat source.

▶ Flush the indirect coils with water before connecting the heating water pipes.

9.3.1 Water quality, solar circuit

A glycol/water mixture of up to 60 % is permitted for the indirect coil in the solar circuit if only dezincification-resistant metals, glycol-resistant gaskets and diaphragm expansion vessels suitable for glycol are used throughout the installation.

9.3.2 Oxygen diffusion

Material losses
Avoid open heating systems and plastic pipes in underfloor heating systems which are permeable to oxygen.

In underfloor heating systems with plastic pipes that are permeable to oxygen and in open vented heating systems, oxygen diffusion may lead to corrosion on the steel components of the heating system (e.g. on the indirect coil of the DHW cylinder, on buffer cylinders, steel heating elements or steel pipes).

Material losses
The products of corrosion (e.g. rusty sludge) can settle in the heating system components and can result in a lower output or fault shutdowns due to reduced cross-sections.

9.3.3 Solar installation

The circuit must include an air-vent, a check valve and an expansion vessel. The check valve is not required if you are utilising a Solar compact installation.

▶ Flush the solar indirect coil with water before connecting the solar circuit.

9.3.4 Without solar installation

▶ Connect both indirect coils to the “heat pump heating return” and “solar flow” connections (see chapter “Specification / Dimensions and connections”).

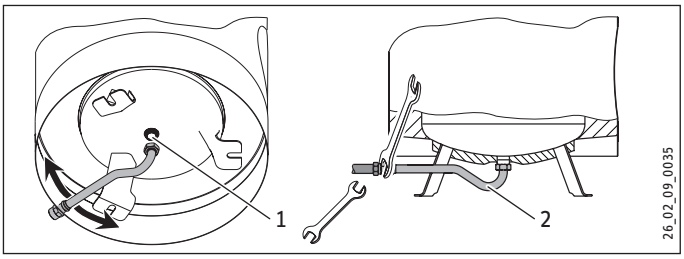
9.4 Fitting the water connection and the safety assembly

Note
Carry out all water connection and installation work in accordance with regulations.

▶ Flush the line thoroughly.

The max. permissible pressure must not be exceeded (see chapter “Specification / Data table”).

▶ Install a type-tested safety valve in the cold water supply line. Please note that, depending on the static pressure, you may also need a pressure reducing valve.



1 Cold water connection
2 Cold water inlet pipe

▶ Connect the cold water supply directly to the cylinder or with the connecting pipe routed between the cylinder feet.

▶ During fitting, counterhold the fitting with an open-ended spanner (size 36).

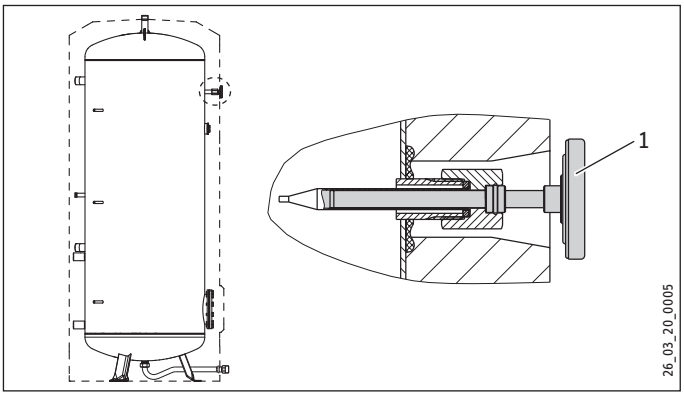
▶ Check the rigidity of the connecting pipe and secure it further if required.

▶ Size the drain so that water can drain off unimpeded when the safety valve is fully opened.

▶ Fit the discharge pipe of the safety valve with a constant downward slope and in a room free from the risk of frost.

▶ The safety valve discharge aperture must remain open to atmosphere.

9.5 Fitting the thermometer and DHW sensor



1 Thermometer

▶ Insert the thermometer as far as it will go and align it.

▶ Insert the DHW sensor as far as it will go into the well for the heat pump flow sensor (recommended energy saving position) or heat pump return sensor (high DHW convenience).

10. Commissioning

Note
Some fluxes used to solder pipes and fittings need to be flush out with hot water. Where this is the case the cylinder should be heated to its normal operating temperature and all pipe work flushed with hot water to ensure all flux and debris is removed from the system.

DHW system

▶ Open all taps.
▶ Open the shut-off valve in the cold water feed line. Allow the system to fill and flush out all flux and debris from the installation.
▶ Close all taps.
▶ Open a downstream draw-off point until the appliance has filled up and the pipes are free of air.
▶ Check the function of the fitted accessories.
▶ Check the function of the safety assembly.
▶ Check that the DHW temperature on the heat pump control unit is displayed correctly.

Heating system

For protection of drinking water, filling the heating system should be undertaken via drain and fill valve in compliance with the UK Water Supply (Water Fittings) Regulations 1999, Section 8 G24.

▶ Observe the operating and installation instructions of the heat pump.
▶ Vent the indirect coils after filling the heat pump system.

Solar system

▶ Observe the operating and installation instructions of the solar pump assembly.
▶ Vent the indirect coils after filling the solar system.

10.1 Appliance handover

▶ Explain the appliance function to users and familiarise them with its operation.
▶ Make users aware of potential dangers, especially the risk of scalding.
▶ Hand over these instructions.

11. Shutting down

▶ Disconnect the appliance from the mains at the MCB/fuse in the fuse box.
▶ Drain the appliance. See chapter “Maintenance / Draining the appliance”.

12. Troubleshooting

Fault	Cause	Remedy
The expansion valve or the T&P valve drips.	The valve seat is contaminated.	Clean the valve seat.

13. Maintenance

WARNING Electrocution
Carry out all electrical connection and installation work in accordance with relevant regulations.

If you need to drain the appliance, observe chapter “Draining the appliance”.

13.1 Checking the safety valve

▶ Regularly vent the expansion valve and T&P valve until a full water jet is discharged.
▶ Close the expansion valve when the check is complete.
▶ Check the T&P valve for tightness.

13.2 Draining the appliance

WARNING Burns
Hot water may escape during the draining process.

If the cylinder needs to be drained for maintenance or to protect the whole installation when there is a risk of frost, proceed as follows:

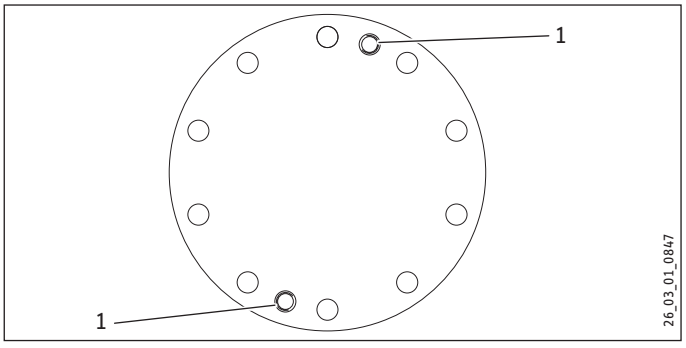
▶ Close the shut-off valve in the cold water line.
▶ Open the hot water taps on all draw-off points.
▶ Drain the appliance via the drain valve.

13.3 Replacing the signal anode

▶ Replace the signal anode if it becomes depleted. Ensure there is a good connection between the anode and the cylinder (maximum permissible transition resistance 0.3 Ω).

13.4 Cleaning and descaling the appliance

You can use the flange aperture as an inspection port to view the cylinder interior.



1 Threaded extraction holes

▶ Use the threaded lift-off holes to release the flange plate from the flange connector.

For the torque of the flange screws, see chapter “Specification / Dimensions and connections”.

Never use descaling pumps.

Never treat the cylinder surface or the signal anode with descaling agents.

13.5 Dimensions and connections

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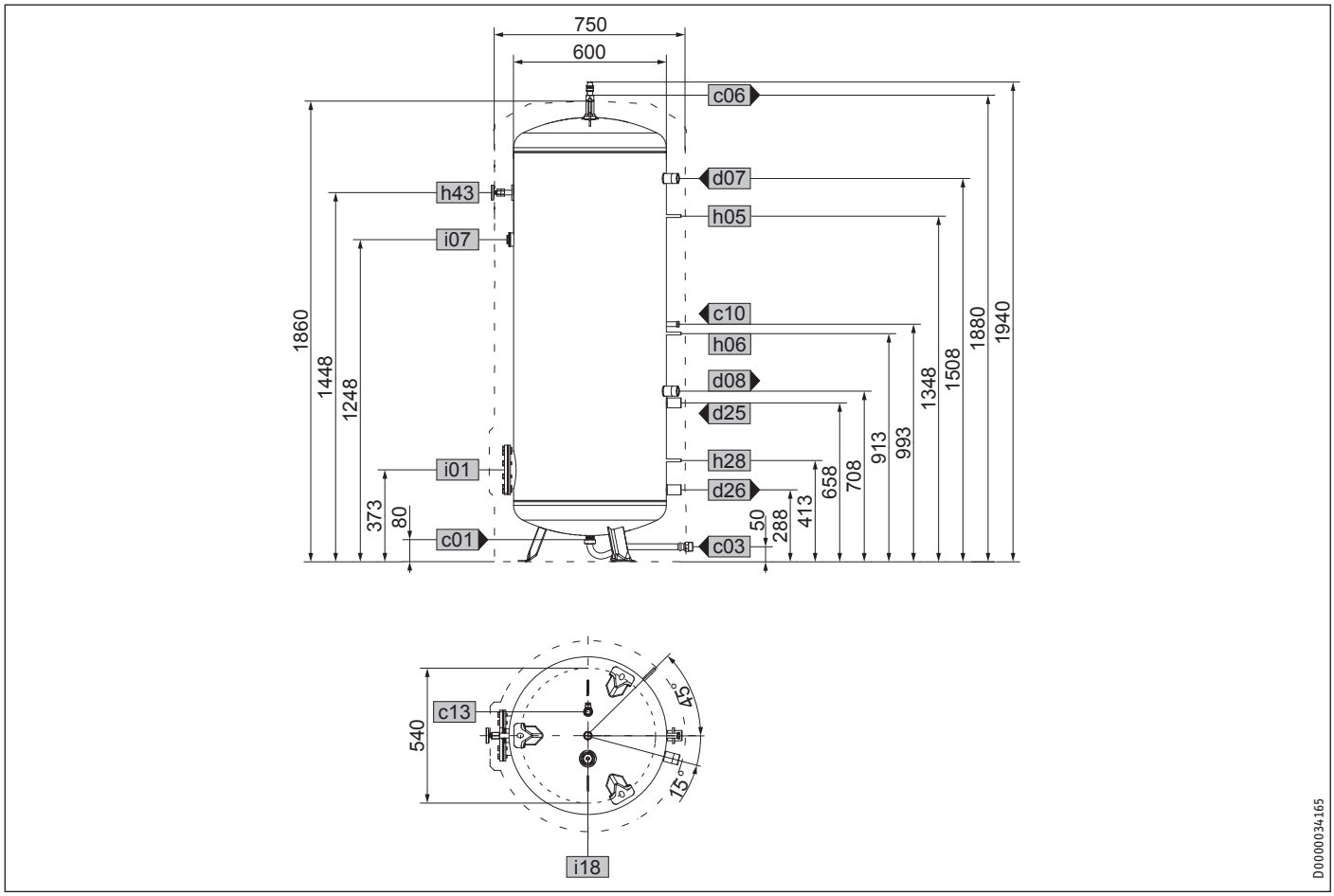
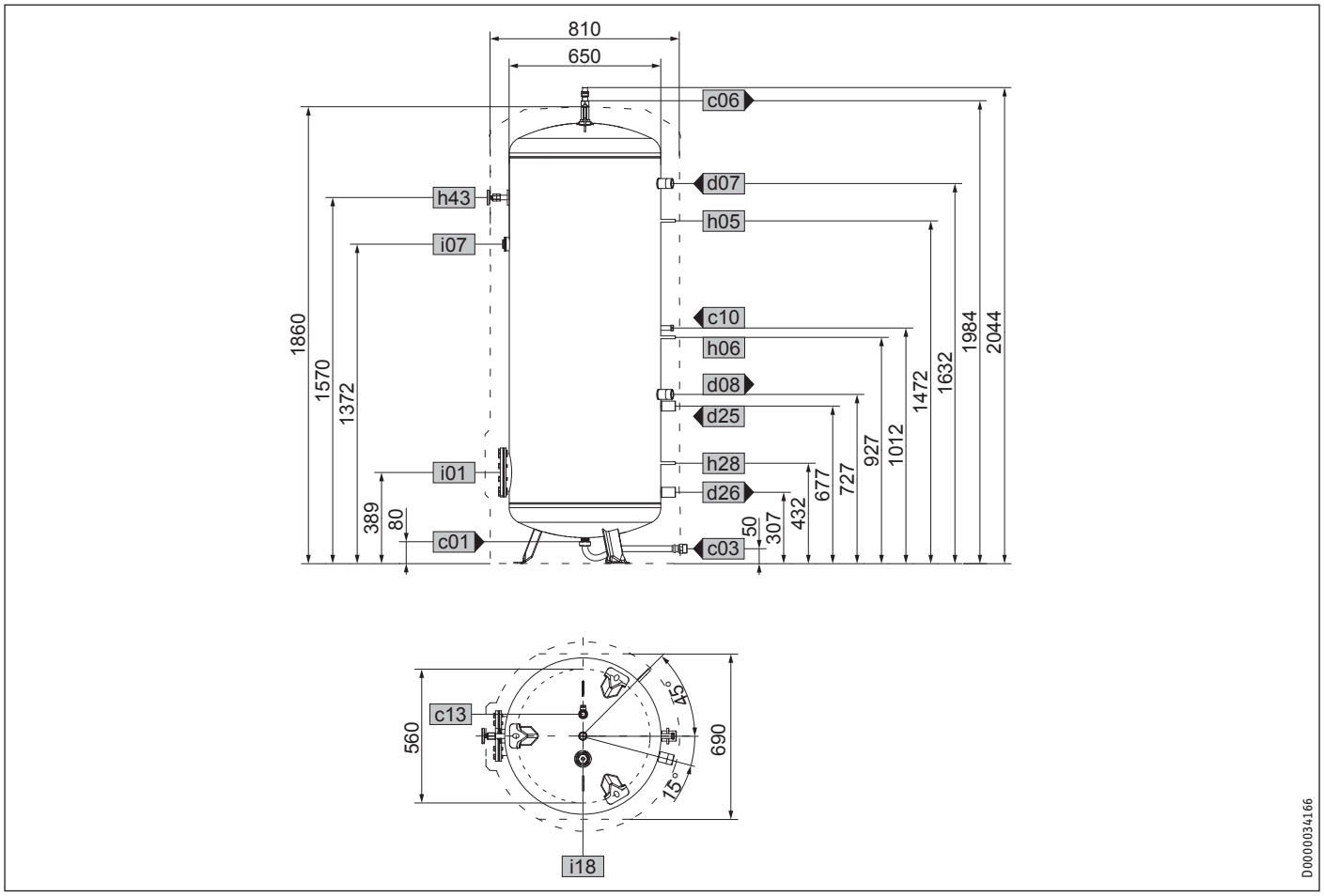
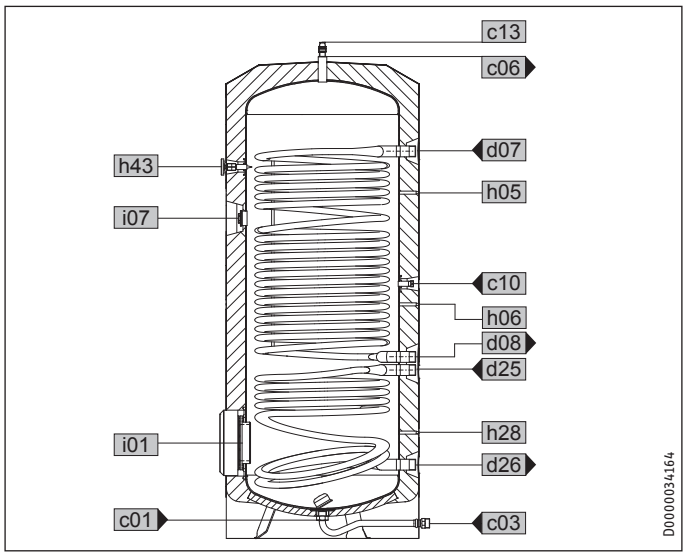


				SBB 401 WP SOL GB	SBB 501 WP SOL GB
a23	Appliance	Width excl. side insulation sections	mm		690
c01	Cold water inlet	Male thread		G 1 A	G 1 A
c03	Cold water inlet pipe	Male thread		G 1 A	G 1 A
		Torque	Nm	100	100
c06	DHW outlet	Male thread		G 1 A	G 1 A
c10	DHW circulation	Male thread		G 1/2 A	G 1/2 A
c13	T&P valve	End connection	mm	22	22
d07	Heat pump heating flow	Female thread		G 1 1/2	G 1 1/2
d08	Heat pump heating return	Female thread		G 1 1/2	G 1 1/2
d25	Solar flow	Female thread		G 1 1/2	G 1 1/2
d26	Solar return	Female thread		G 1 1/2	G 1 1/2
h05	Sensor heat pump DHW	Diameter	mm	9,5	9,5
h06	Sensor heat pump DHW optional	Diameter	mm	9,5	9,5
h28	Sensor solar cylinder	Diameter	mm	9,5	9,5
h43	Thermometer	Diameter	mm	9,5	9,5
i01	Flange	Diameter	mm	210	210
		Pitch circle diameter	mm	180	180
		Screws		M 12	M 12
		Torque	Nm	55	55
i07	Electric emergency/booster heater	Female thread		G 1 1/2	G 1 1/2
i18	Protective anode	Female thread		G 1 1/4	G 1 1/4

SBB 501 WP SOL GB



SBB 401 WP SOL GB | SBB 501 WP SOL GB



13.6 Details on energy consumption

Product data complies with EU regulations relating to the Directive on the ecodesign of energy related products (ErP).

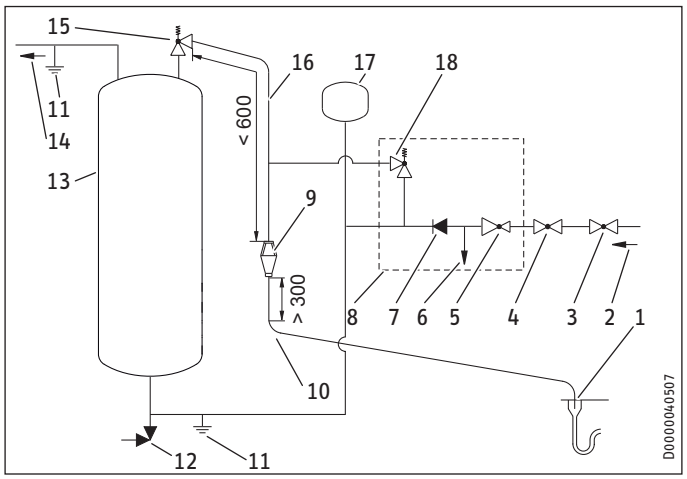
		SBB 401 WP SOL GB	SBB 501 WP SOL GB
		227723	227724
Manufacturer		STIEBEL ELTRON	STIEBEL ELTRON
Energy efficiency class		C	
Standby losses	W	100	100
Cylinder capacity	l	424	533

13.7 Data table

Note
Observe the data table of the connected heat source.

		SBB 401 WP SOL GB	SBB 501 WP SOL GB
		227723	227724
Hydraulic data			
Nominal capacity	l	391	493
Capacity, upper indirect coil	l	25.1	31.3
Capacity, lower indirect coil	l	8.8	8.8
Surface area, upper indirect coil	m²	4.0	5.0
Surface area, lower indirect coil	m²	1.4	1.4
Pressure drop at 1.0 m³/h, upper indirect coil	hPa	47	58
Pressure drop at 1.0 m³/h, lower indirect coil	hPa	17	17
Primary heating power input at flow rate, upper indirect coil	kW - l/min	34.2 - 15.5	40.7 - 15.5
Primary heating power input at flow rate, lower indirect coil	kW - l/min	17.4 - 16.3	18.2 - 15.7
Primary heating power input at flow rate, both indirect coils	kW - l/min	39.8 - 15.0	41.0 - 15.0
Reheating time, upper indirect coil	min	22.4	21.9
Reheating time, lower indirect coil	min	70.8	81.4
Reheating time, both indirect coils	min	22.5	23.7
Dedicated solar volume	l	133.1	184.3
Mixed water volume at 40 °C (15 °C/60 °C)	l	681	857
Hot water capacity, upper indirect coil	l	257	309
Hot water capacity, lower indirect coil	l	390	478
Hot water capacity, both indirect coils	l	316	339
Max. operating temperature heating water	°C	89	89
Application limits			
Max. perimissible pressure (Design Pressure), DHW	MPa	0.7	0.7
Test pressure	MPa	1.5	1.5
Max. permissible pressure (Design Pressure), upper indirect coil	MPa	1.0	1.0
Max. permissible pressure (Design Pressure), lower indirect coil	MPa	1.0	1.0
Max. permissible temperature	°C	89	89
Max. flow rate	l/min	45	50
Max. recommended collector aperture area	m²	10	10
Energy data			
Standby energy consumption/24 h at 65 °C	kWh	2.4	2.4
Energy efficiency class		C	
Output data			
Tested to standard		EN 12897:2006	EN 12897:2006
Values			
T&P valve, nominal set temperature	°C	90	90
T&P valve, nominal set pressure	MPa	0.7	0.7
Dimensions			
Height	mm	1940	2044
Diameter	mm	750	810
Height when tilted	mm	1930	2030
Weights			
Weight, empty	kg	219	260
Weight, full	kg	610	753

13.8 Hydraulic diagram



1 Discharge below fixed grate
2 Cold water supply
3 Shut-off valve
4 Line strainer
5 Pressure reducing valve
6 Balanced pressure; cold water outlet
7 Check valve
8 Safety assembly
9 Tundish
10 Metal discharge pipe (D2) from tundish, with continuous fall
11 Equipotential bond
12 Drain valve
13 Cylinder (standard delivery)
14 DHW outlet
15 T&P valve (standard delivery)
16 Metal discharge pipe (D1) from T&P valve to tundish
17 Expansion vessel
18 Expansion valve

Minimum size of discharge pipe D1	mm			22
Minimum size of discharge pipe D2 from tundish	mm	28	35	42
Maximum permissible pressure drop, expressed as a length of straight pipe (i.e. no elbows or bends)	m	9	18	27
Pressure drop of each elbow or bend	m	1.0	1.4	1.7

Guarantee

The guarantee conditions of our German companies do not apply to appliances acquired outside of Germany. In countries where our subsidiaries sell our products a guarantee can only be issued by those subsidiaries. Such guarantee is only granted if the subsidiary has issued its own terms of guarantee. No other guarantee will be granted.

We shall not provide any guarantee for appliances acquired in countries where we have no subsidiary to sell our products. This will not affect warranties issued by any importers.

Environment and recycling

We would ask you to help protect the environment. After use, dispose of the various materials in accordance with national regulations.

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