SOLE EUROSTAR

BUFFER TANKS

series SOLE BF

TECHNICAL PASPORT
INSTALLATION AND OPERATION MANUAL

Version 0.1

CONTENTS

Dear Customers,

This manual contains important information for the safe and correct installation, start-up and trouble-free operation and maintenance of buffer tank. Observing the instructions of this Manual is in the interest of the customer, and it is one of the guarantee terms and conditions.

1. INSTRUCTION TO INSTALLER

	The preparation, installation and commissioning must be performed by an authorized installer / service.

During installation and operation, the country specific requirements and regulations must be
observed:

- local construction regulations on installation of water tank; weight of the boiler to comply with
the stability of the floor of the room where it will be installed.
- regulations and norms concerning the fitting of the installation with safety devices.
- safety during installation - personal protective equipment

i	**Use only original parts.**

1.1. Requirements to water tank installation room

When choosing a room for tank installation observe the following requirements:

- to have a drainage channel. Some maintenance procedures require draining of all water from the tank.

- Thermal insulation of the room. This provides efficiency of the appliance and prevents the water from freezing.

1.2. Requirements for installation.

- The length of connecting pipes between the water tank and consumer must be as short as possible.

- Before connecting the boiler to the installation, check all screw connections (bolt inspection cover flange, plug and anode). In very rare cases - during transportation, loading and unloading operations - the screw connections may be loosen.

- Before commissioning, check the installation for leaks.

- Do not exceed the working pressure of 4 bar.

- If there is a risk of freezing of water in the tank - drain the tank completely or let the water heater works continuously.

2. DESCRIPTION OF BUFFER TANK

Accumulates the heat generated by boiler; recommended for each space-heating system. Ensures optimum operating mode of biomass boiler, permitting its

functioning at nominal power output even when the heating system does not need all the heat energy produced thereby.

Produced heat is accumulated and stored inside the buffer tank and can be used even when the boiler itself has cooled down.

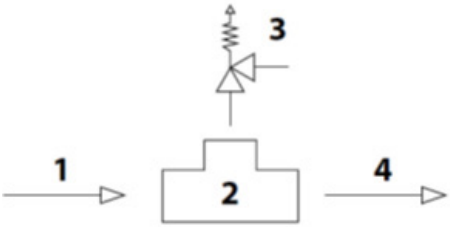
SOLE BF-0 400-2000 series - Inlet/Outlet arrangement:
180 angle degrees.

Product features:

- Removable high efficiency insulation with thickness 100 mm and outer casing of PVC with RAL 9006 color.
- Multi-position mounting of temperature sensor.
- Primer coated on the outside of the tank.
- Heat exchanger coil /coils (*SOLE BF-1* / *SOLE BF-2*).
- All threads are internal.
- Easy installation.

Optional kit for electric heating with nominal power 3kW, 4.5kW, 6kW or 7.5kW.

2.2. Connecting of safety relief valve to buffer tank

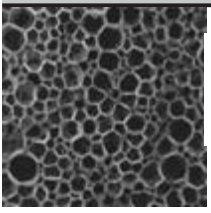


1. Heating installation.
2. Tee.
3. Safety (relief) pressure valve.
4. Heat-carrier inlet.

	Stop (Shut-off) valves should never be installed between a safety (relief) valve and the tank. It is recommended once a year to check the operation of the safety valve.

2.3. Thermometer.

Capacity Buffer tank, L	Insulation type
500, 800, 1000, 1500, 2000, 2500, 3000, 5000	**Soft PPU 100 mm removable**



A microscopic view of hard polyurethane

2.4. Electric heating element /option/

All buffer tanks are equipped with Outlet connection 1 ½" for electric heating element:

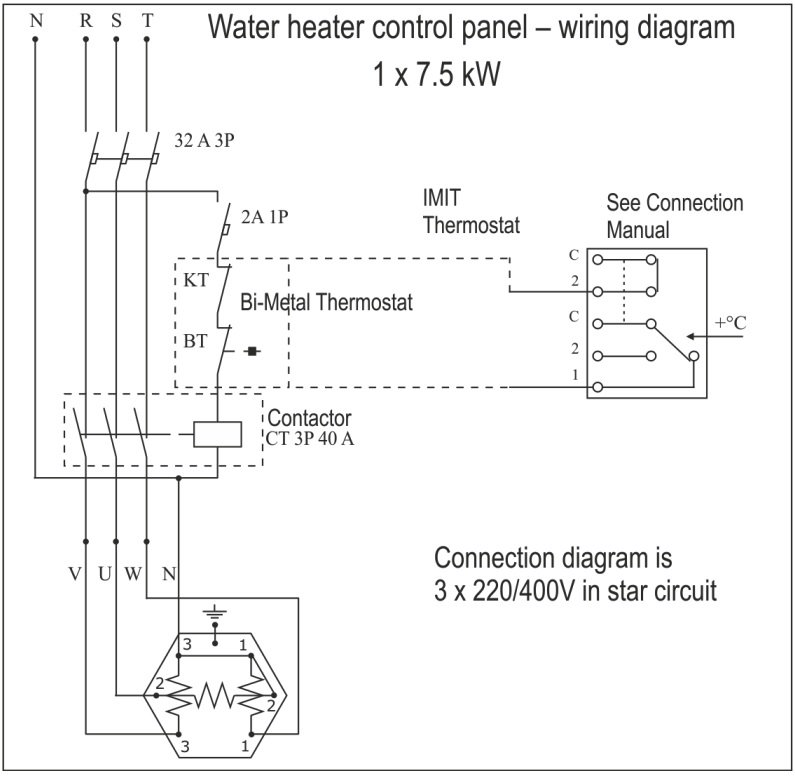
3000W/230V; 4500W/230V;
6000W/230V; 7500W/400V.

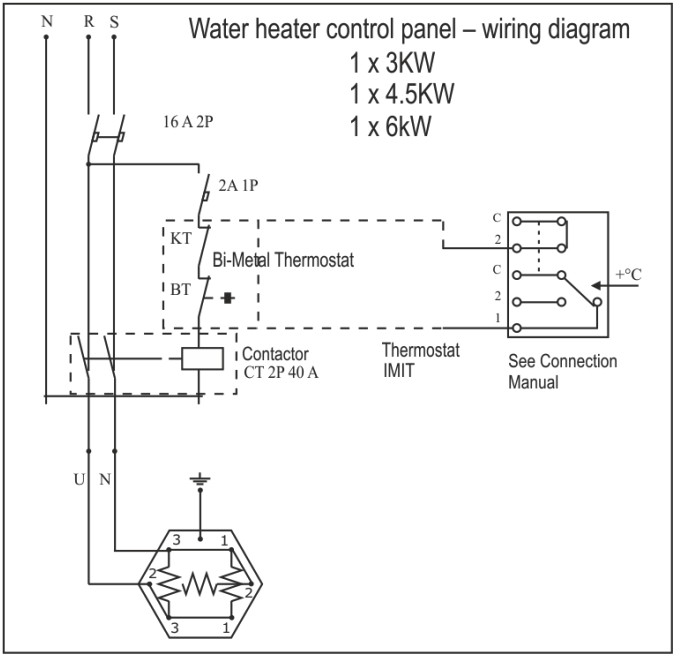
	The connection of the electric heating element to the electric power supply must be done by a qualified electricians. **When connect the heating element to the electric network, make sure that it is properly grounded.**

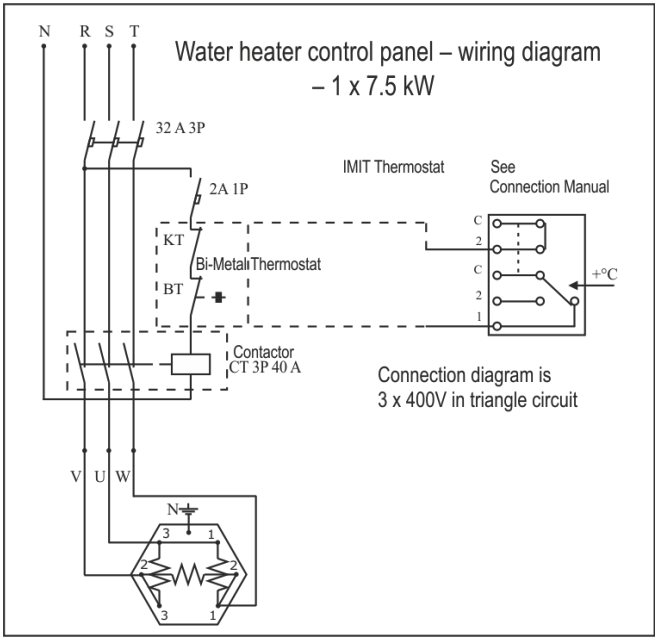
In the table of technical parameters is specified location for installation of electric heating element.

Capacity, L	Connect.	Length L, mm	W	V
400 ÷ 5000	1 1/2"	410	6000	230
500 ÷ 5000	1 1/2"	590	7500	230/ 400

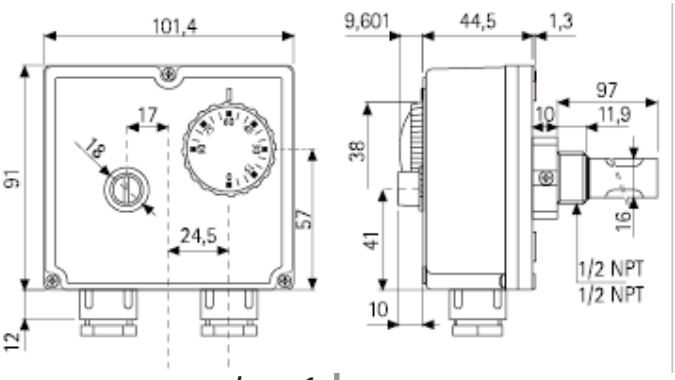
CONNECTIONS SCHEMES




N R S
Water heater control panel – wiring diagram
1 x 3KW
1 x 4.5KW
1 x 6kW
16 A 2P
2A 1P
KT
Bi-Metal Thermostat
BT
C
2
C
2
1
+°C
Contactor
CT 2P 40 A
Thermostat
IMIT
See Connection
Manual
U N
3 1
2 2
3 1


N R S T
Water heater control panel – wiring diagram
– 1 x 7.5 kW
32 A 3P
IMIT Thermostat
See
Connection Manual
2A 1P
KT
Bi-Metal Thermostat
BT
C
2
C
2
1
+°C
Contactor
CT 3P 40 A
Connection diagram is
3 x 400V in triangle circuit
V U W
N
3 1
2 2
3 1

2.5. Thermostat /option/.



schema 1

This is an adjustable double THERMOSTAT which is designed to regulate the water temperature and ensures safety tolerance; it can be manually adjusted (TLSC model) or automatically adjusted (TLSC/A model).

CONFORMITY WITH STANDARDS
This product is in conformity with:
- EN 60730 - 1 and subsequent editions;
- EN 60730 - 2 - 9

CONFORMITY WITH REGULATIONS
This product complies with:
- Low Voltage Directive 73/23 EEC
- Electromagnetic Compatibility Directive 89/336/EC

TECHNICAL CHARACTERISTICS
Temperature range – regulation: 0°C÷90°C, limit: 90°C÷110°C
Tolerance – regulation: ± 5k, limit - 15k; - 6k (depends on the type)
Temperature differential – regulation: 6 ± 2k; 4 ± 1k (depends on the type), limit 25 ± 8k; 15 ± 8k (depends on the type)

Automatic adjustment (**TLSC/A**) and manual adjustment (**TLSC**).
Degree of protection = **IP 40**.
Insulation class = **I**.
Temperature change rate ≤ **1K/min**.
Maximal temperature point = **80°C**.
Maximal temperature for electric lamp = 125°C
Accumulation temperature = **15°C ÷ 55°C**.
Maximum pressure of the cartridge = **10 bar.**
Constant time ≤ 1';.
Electric connection:

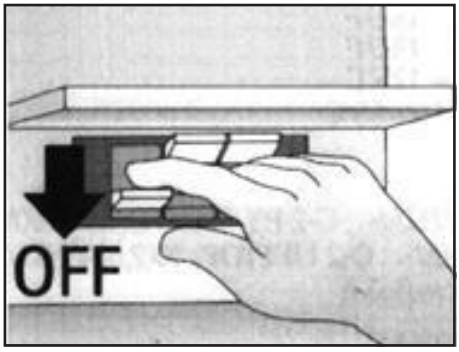
C-1 ADJ.: 10(2,5)A/250V~;
C-2 ADJ.: 6(2,5)A/250V~;
C-1 LIM.: 0,5A/250V~;
C2 LIM.: 10(2,5)A/250V~;

Terminal – circuit breaker or switch-on contacts.
Switch-on action – **2B**.
Place of installation – **NORMAL**.
Type of wire – **M20 x 1.5**.

	WARNING! All installation operations, including manual adjustments, must be fulfilled by a qualified specialist following all safety conditions.

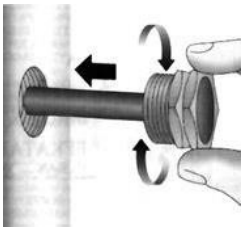
INSTALLATION AND CONNECTION
Safety instructions:

Before connecting the thermostat, make sure that THE UNIT TO BE THERMALLY CONTROLLED (water heater, pump, etc.) IS NOT CONNECTED to the power supply network, and is in compliance with the instructions in schema 2.

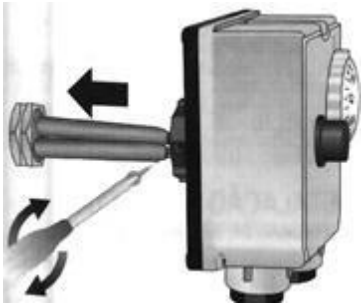


schema 2

a) See Schema 3 and 4.

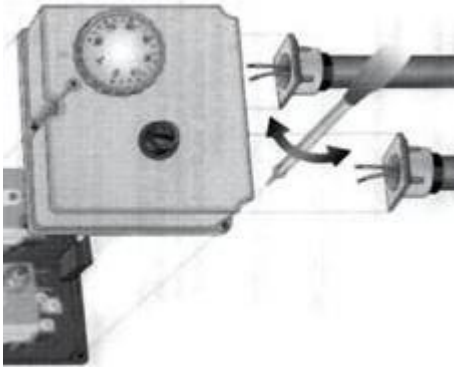


schema 3

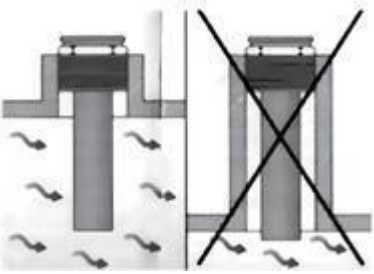


schema 4

b)Unscrew the three bolts and remove the front part of the thermostat. Unravel the power supply wires and connect them to the terminals of the thermostat (Schema 5) following the instructions.



schema 5

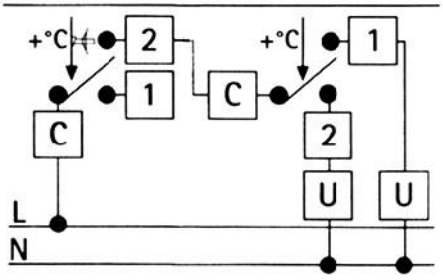


schema 6

NOTE: See Figure 6.
To close the front part, the cartridge opening must align with the coupling of the adjustment knob.

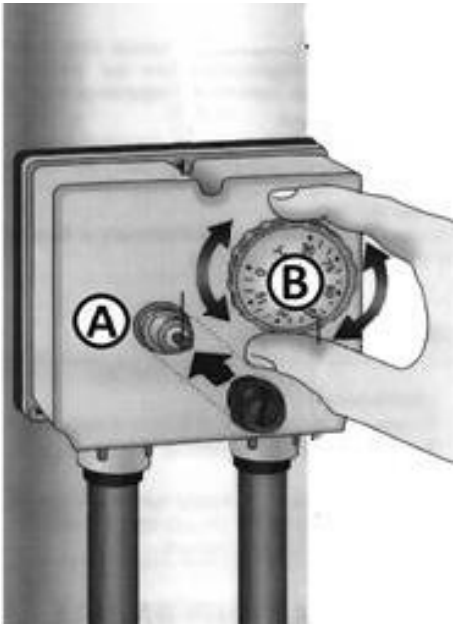
CONNECTION LIMITATION
TERMINAL 2 – opens the circuit when the temperature rises.
TERMINAL C – common contact.

THERMOSTAT
TERMINAL 1 – opens the circuit when the temperature rises.
TERMINAL 2 – closes the circuit when the temperature rises
TERMINAL C – common contact



schema 7

TEMPERATURE ADJUSTMENT
A – Reset button (only for TLSC)
B – Knob for temperature adjustment

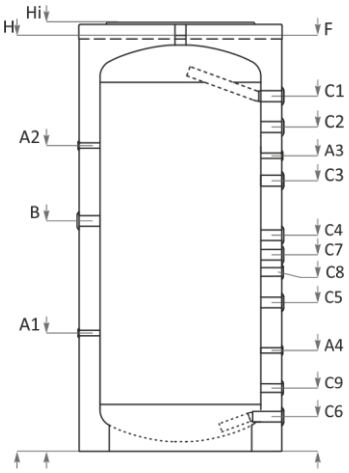


schema 8

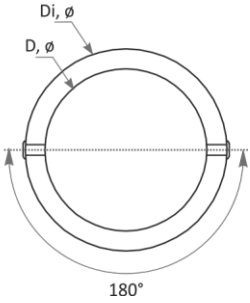
3. TECHNICAL PARAMETERS BUFFERS - SOLE BF series

3.1. Model SOLE BF-0 - without coil

		SOLE BF-0 500	SOLE BF-0 800	SOLE BF-0 1000
Capacity	L	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1610/1660	1860/1910	2040/2090
Minimal vertical clearance	Mm	1640	1900	2075
Diameter without insulation /with insulation	D, mm	Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/^{o}C	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	Kw	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	90/102	118/134	133/151
Sleeve for Electric heating element	B, mm, Rp $1^{1/2"}$	790	920	1130
Heat carrier	C1, mm, Rp$1^{1/2"}$	1370	1573	1742
Heat carrier	C2, mm, Rp$1^{1/2"}$		1390	1520
Heat carrier	C3, mm, Rp$1^{1/2"}$	990		
Heat carrier	C4, mm, Rp$1^{1/2"}$	880	980	1060
Heat carrier	C5, mm, Rp$1^{1/2"}$	620	670	730
Heat carrier	C6, mm, Rp$1^{1/2"}$	150	170	170
Heat carrier	C7, mm,			
Heat carrier	C8, mm, Rp$1^{1/2"}$	770	820	880
Heat carrier	C9, mm, Rp$1^{1/2"}$	250	310	310
Sensor sleeve	A1, mm, Rp1/2"	410	570	580
Sensor sleeve	A2, mm, Rp1/2"	1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"	1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"	460	465	495
Air vent sleeve	F, mm, Rp$1^{1/2"}$	1610	1860	2040

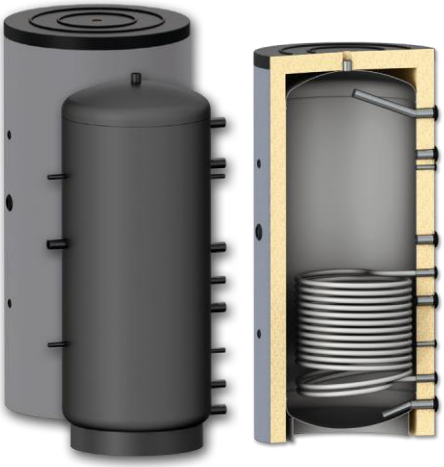


300 - 5000

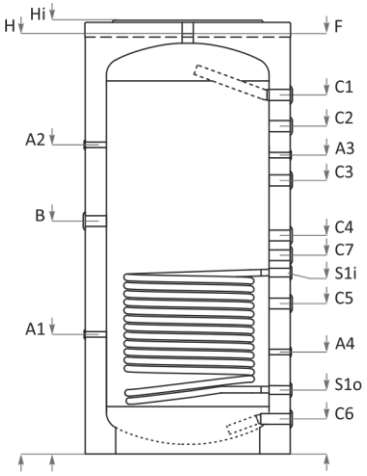


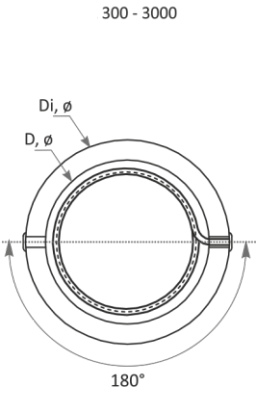
		SOLE BF-0 1500	SOLE BF-0 2000	SOLE BF-0 3000
Capacity	L	1500	2000	3000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2246/2296
Minimal vertical clearance	mm	2220	2220	2332
Diameter without insulation /with insulation	D, mm	Ø 1000/1200	Ø 1200/1400	Ø 1400/1600
Operating pressure/Max. buffer temperature	bar/^{0}C	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	55-100
Weight without insulation/with insulation	kg, kg i	206/229	273/300	402/437
Sleeve for Electric heating element	B, mm, Rp 1$^{1/2"}$	1130	1170	1184
Heat carrier	C1, mm, Rp1$^{1/2"}$	1808	1775	1797
Heat carrier	C2, mm, Rp1$^{1/2"}$	1635		
Heat carrier	C3, mm, Rp1$^{1/2"}$	1305	1420	1474
Heat carrier	C4, mm, Rp1$^{1/2"}$	1085	1170	1184
Heat carrier	C5, mm, Rp1$^{1/2"}$	765	735	864
Heat carrier	C6, mm, Rp1$^{1/2"}$	235	230	344
Heat carrier	C7, mm,	Rp1/2"/975		
Heat carrier	C8, mm, Rp1$^{1/2"}$	895	980	1082
Heat carrier	C9, mm, Rp1$^{1/2"}$	375	380	477
Sensor sleeve	A1, mm, Rp1/2"	875	920	910
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1660
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1590
Sensor sleeve	A4, mm, Rp1/2"	520	500	610
Air vent sleeve	F, mm, Rp1$^{1/2"}$	2150	2132	2246

3.2. Model SOLE BF-1 - with one coil



Capacity	L	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1610/1660	1860/1910	2040/2090
Minimal vertical clearance	mm	1640	1900	2075
Diameter without insulation /with insulation	D, mm	Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/^{0}C	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/^{0}C	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	104/116	152/168	180/198
Sleeve for Electric heating element	B, mm, Rp 1$^{1/2''}$	790	920	1130
Heat carrier	C1, mm, Rp1$^{1/2''}$	1370	1573	1742
Heat carrier	C2, mm, Rp1$^{1/2''}$		1390	1520
Heat carrier	C3, mm, Rp1$^{1/2''}$	990		
Heat carrier	C4, mm, Rp1$^{1/2''}$	880	980	1060
Heat carrier	C5, mm, Rp1$^{1/2''}$	620	670	730
Heat carrier	C6, mm, Rp1$^{1/2''}$	150	170	170
Heat carrier	C7, mm,			
Sensor sleeve	A1, mm, Rp1/2"	410	570	580
Sensor sleeve	A2, mm, Rp1/2"	1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"	1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"	460	465	495
Air vent sleeve	F, mm, Rp1$^{1/2''}$	1610	1860	2040
Coil capacity S1	S1 L	10.5	17.9	18.5
Heat exchange surface S1	S1 m^2	1.7	2.9	3.0
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	770/250	820/310	880/310

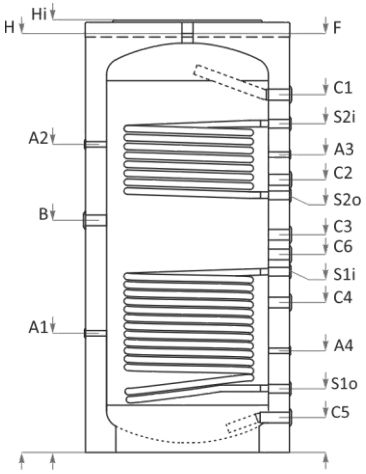




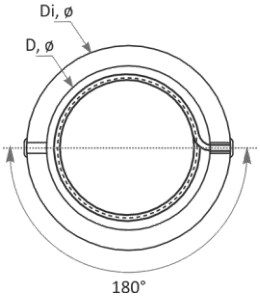
		SOLE BF-1 1500	SOLE BF-1 2000	SOLE BF-1 3000
Capacity	L	1500	2000	3000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2246/2296
Minimal vertical clearance	mm	2220	2220	2332
Diameter without insulation /with insulation	D, mm	Ø 1000/1200	Ø 1200/1400	Ø 1400/1600
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	55-100
Weight without insulation/with insulation	kg, kg i	272/295	330/356	476/511
Sleeve for Electric heating element	B, mm, Rp 1 1/2"	1130	1170	1184
Heat carrier	C1, mm, Rp1 1/2"	1808	1775	1797
Heat carrier	C2, mm, Rp1 1/2"	1635		
Heat carrier	C3, mm, Rp1 1/2"	1305	1420	1474
Heat carrier	C4, mm, Rp1 1/2"	1085	1170	1184
Heat carrier	C5, mm, Rp1 1/2"	765	735	864
Heat carrier	C6, mm, Rp1 1/2"	235	230	344
Heat carrier	C7, mm,	Rp1/2"/975		
Sensor sleeve	A1, mm, Rp1/2"	875	920	910
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1660
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1590
Sensor sleeve	A4, mm, Rp1/2"	520	500	610
Air vent sleeve	F, mm, Rp1 1/2"	2150	2132	2246
Coil capacity S1	S1 L	21	24.6	29.9
Heat exchange surface S1	S1 m^2	3.4	4.0	4.9
Inlet/Outlet Lower coil S1	S1i/S1o, mm,Rp1"	895/375	980/380	1082/477

3.3. SOLE BF-2 - with two coils

			SOLE BF-2 500	SOLE BF-2 800	SOLE BF-2 1000
Capacity	L		500	800	1000
Height without insulation / with insulation	H, Hi, mm		1610/1660	1860/1910	2040/2090
Minimal vertical clearance	mm		1640	1900	2075
Diameter without insulation /with insulation	D, mm		Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/^{0}C		3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/^{0}C		16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW		10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i		118/130	189/205	203/221
Sleeve for Electric heating element	B, mm, Rp 1$^{1/2"}$		790	920	1130
Heat carrier	C1, mm, Rp1$^{1/2"}$		1370	1573	1742
Heat carrier	C2, mm, Rp1$^{1/2"}$			1390	1520
Heat carrier	C3, mm, Rp1$^{1/2"}$		990		
Heat carrier	C4, mm, Rp1$^{1/2"}$		880	980	1060
Heat carrier	C5, mm, Rp1$^{1/2"}$		620	670	730
Heat carrier	C6, mm, Rp1$^{1/2"}$		150	170	170
Sensor sleeve	A1, mm, Rp1/2"		410	570	580
Sensor sleeve	A2, mm, Rp1/2"		1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"		1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"		460	465	495
Air vent sleeve	F, mm, Rp1$^{1/2"}$		1610	1860	2040
Capacity lower/upper coil S1/S2	S1/S2 L		10.5/6.2	17.9/11.1	18.5/12.3
Heat exchange surface S1/S2	S1/S2 m^{2}		1.7/1.0	2.9/1.8	3.0/2.0
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"		770/250	820/310	880/310
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"		1270/990	1390/1072	1520/1172



300 - 3000



		SOLE BF-2 1500	SOLE BF-2 2000	SOLE BF-2 3000
Capacity	L	1500	2000	3000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2246/2296
Minimal vertical clearance	mm	2220	2220	2332
Diameter without insulation /with insulation	D, mm	Ø 1000/1200	Ø 1200/1400	Ø 1400/1600
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	55-100
Weight without insulation/with insulation	kg, kg i	306/329	366/393	520/555
Sleeve for Electric heating element	B, mm, Rp 1 1/2"	1130	1170	1184
Heat carrier	C1, mm, Rp1 1/2"	1808	1775	1797
Heat carrier	C2, mm, Rp1 1/2"	1305	1420	1474
Heat carrier	C3, mm, Rp1 1/2"	1085	1170	1184
Heat carrier	C4, mm, Rp1 1/2"	765	735	864
Heat carrier	C5, mm, Rp1 1/2"	235	230	344
Heat carrier	C6, mm, Rp1 1/2"	Rp1/2"/975		
Sensor sleeve	A1, mm, Rp1/2"	875	920	910
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1660
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1590
Sensor sleeve	A4, mm, Rp1/2"	520	500	610
Air vent sleeve	F, mm, Rp1 1/2"	2150	2132	2246
Capacity lower/upper coil S1/S2	S1/S2 L	21/14.8	24.6/14..8	29.9/17.1
Heat exchange surface S1/S2	S1/S2 m^2	3.4/2.4	4.0/2.4	4.9/2.8
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	895/375	980/380	1082/477
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1635/1225	1645/1285	1660/1310