

SUNSYSTEM®

BUFFER TANKS

series P/PS/PSM/PBM/SPBM

up to 5000 L



**TECHNICAL PASPORT
INSTALLATION AND OPERATION MANUAL**

EN

Version 0.7




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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

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

	<p>Use only original SUNSYSTEM parts.</p>
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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 3 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.

**P series - Inlet/Outlet arrangement:
180 angle degrees.**

Models P – without coil

Models PR – with one coil

Models PR2 - with two coils

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 (PR /PR 2).
- All threads are internal.
- Easy installation.

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

**PS series - Inlet/Outlet arrangement:
100 angle degrees.**

Models PS - without coil

Models PS1 - with one coil

Models PS2 - with two coils

Product features:

- Compact dimensions.
- High efficiency insulation with thickness 50 mm and outer casing of PVC with RAL 9006 color.
- Efficiency insulation with thickness

20 mm and foamed polyethylene with RAL 9006 color.

(only for models - 80 L and 100 L).

- Multi-position mounting of temperature sensor.
- Heat exchanger coil /coils (PS 1 /PS 2).
- All threads are internal.
- Easy installation.
- Optional kit for electric heating with nominal power 3kW;

PBM series - Inlet/Outlet arrangement: 90 angle degrees for easy and convenient installation.

Possible installation in the corner of boiler room.

Models PBM - without coil

Models PBM R - with one coil

Models PBM R2 - with two coils

Product features:

Optional removable insulation with thickness 100mm and outer casing of PVC with RAL 9006 color.

Insulation type available for all models: soft PU , fleece.

Insulation type available for H* models: rigid PU.

Primer coated on the outside of the tank

Up to 5 pcs. Rp½” sensor sleeves

Up to 13 pcs. Rp1” or Rp1½” inlet/outlet sleeves -connections to heating boilers, indirect heating of domestic hot water (DHW) and solar system

Heat exchanger coil /coils (PBM R /H* and PBM R2/H*)

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

SPBM series -

Inlet/Outlet arrangement: 90 angle degrees for easy and convenient installation.

Possible installation in the corner of boiler room.

- Models SPBM - without coil*
- Models SPBM R - with one coil*
- Models SPBM R2 - with two coils*

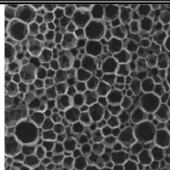
Product features:

- Optional removable insulation with thickness 100mm and outer casing of PVC, RAL 9006 color.
- Insulation type available for all models: soft PU , fleece.
- Dividing plate (Separator). Distribution plate (water stratification unit).
- Primer coated on the outside of the tank
- Up to 5 pcs. Rp1/2" sensor sleeves
- Up to 13 pcs. Rp1" or Rp1/2" inlet/outlet sleeves -connections to heating boilers, indirect heating of domestic hot water (DHW) and solar system
- Heat exchanger coil /coils (PBM R and PBM R2)
- Optional kit for electric heating with nominal power 3kW, 4.5kW, 6kW or 7.5kW

2.1. Insulation and outer casing

* PBM-H/ SPBM-H series – Rigid PPU

Capacity Buffer tank, L	Insulation type
150, 200,	Rigid PPU 50mm
300, 500, 800, 1000, 1500, 2000, 2500, 3000, 5000	Soft PPU 100 mm removable

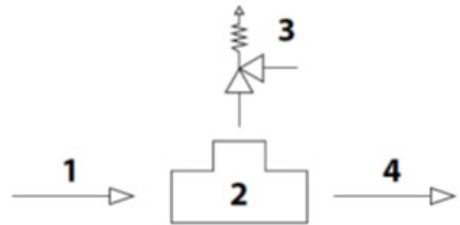


A microscopic view of hard polyurethane

The quality of the insulation of a water heater is a key factor for its heat conservation capability and energy efficiency.

All Buffer tanks have a high efficiency insulation (DIN 4753, part 8) and outer casing with RAL 9006.

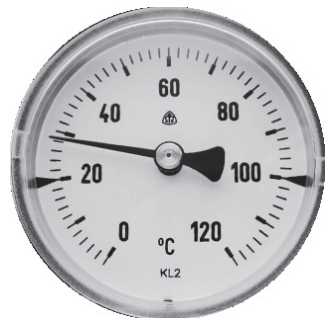
2.2. Connecting of safety relief valve to buffer tank



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.



2.4. Electric heating element /option/

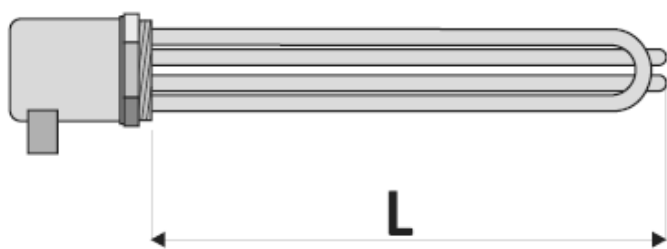
All buffer tanks are equipped with Outlet connection 1 1/2" for electric heating element:

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

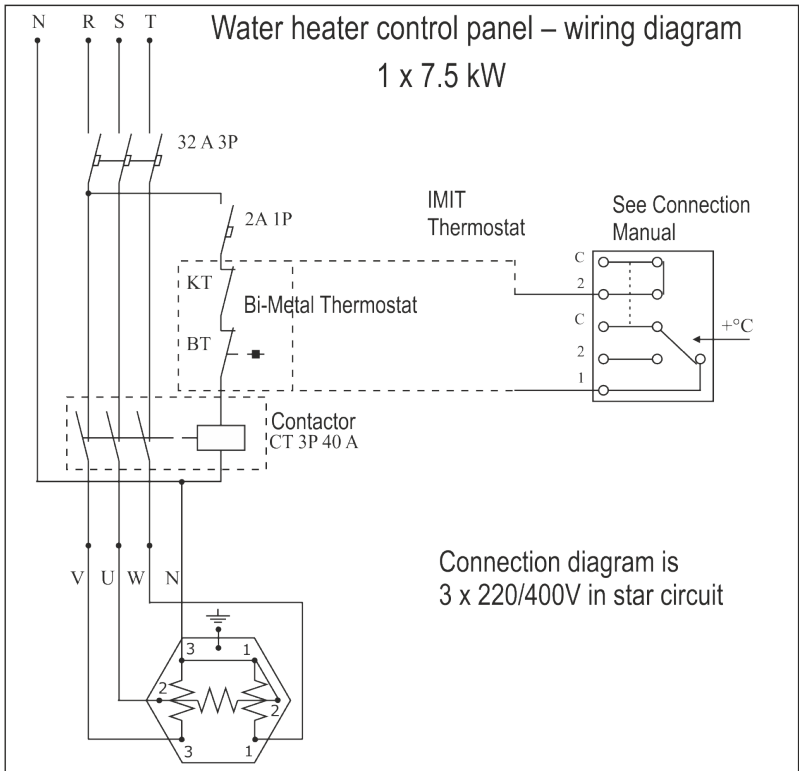
	<p>The connection of the electric heating element to the electric power supply must be done by a qualified electricians.</p> <p>When connect the heating element to the electric network, make sure that it is properly grounded.</p>
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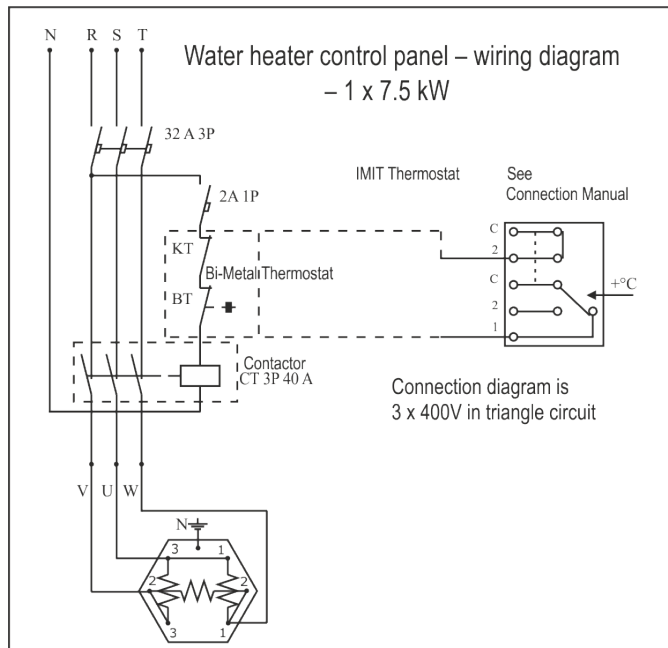
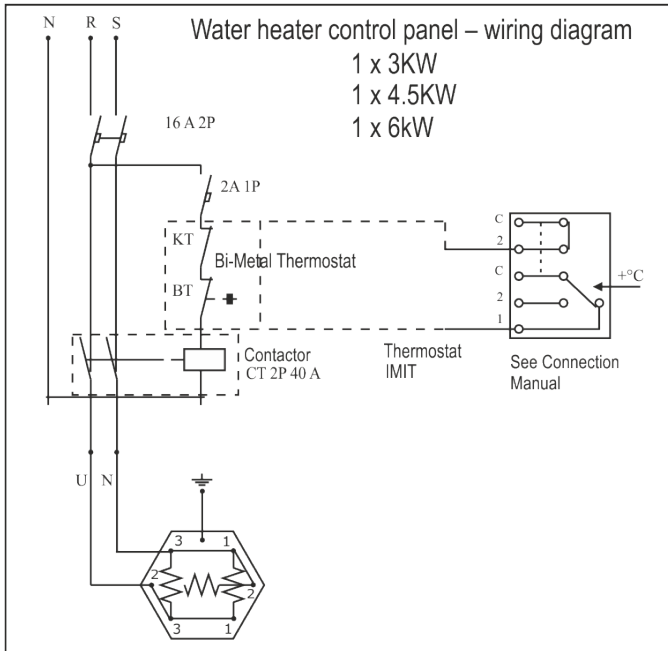
In the table of technical parameters is specified location for installation of electric heating element.

Buffer tank Capacity, L	Connection	Length L, mm	Current, W	Voltage, V
150 ÷ 5000	1 1/2"	210	3000	230
300 ÷ 5000	1 1/2"	320	4500	230
400 ÷ 5000	1 1/2"	410	6000	230
500 ÷ 5000	1 1/2"	590	7500	230/400

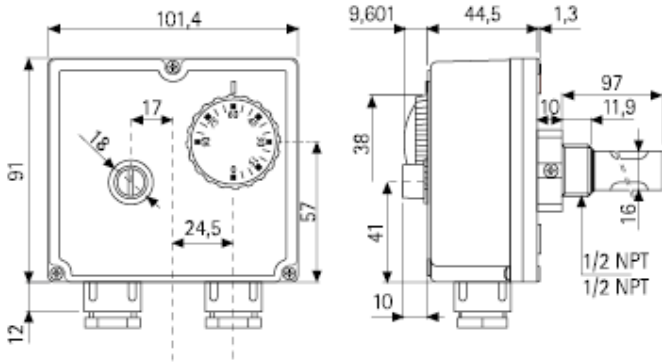


CONNECTIONS SCHEMES





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**.

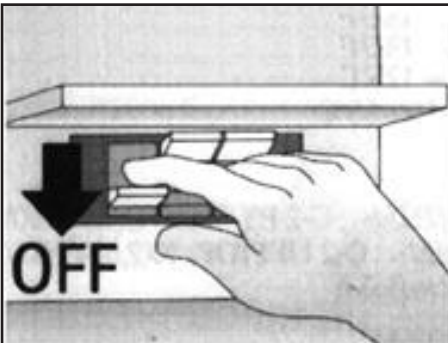
Type of wire – **M20 x 1.5**.



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

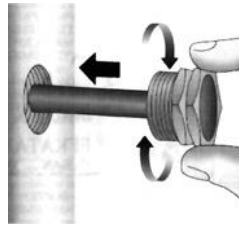
INSTALLATION AND CONNECTION
Safety instructions:

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.

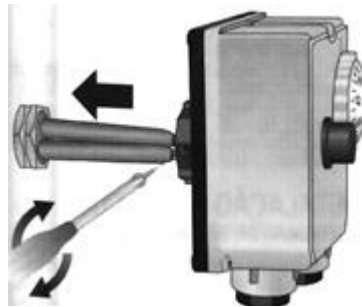


schema 2

a) See Schema 3 and 4.

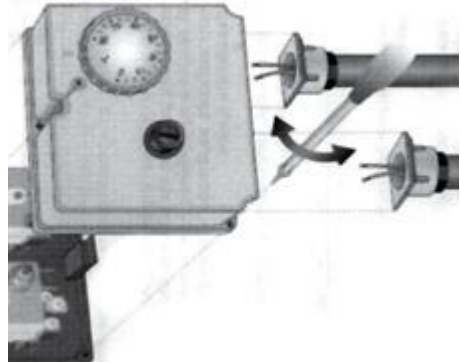


schema 3

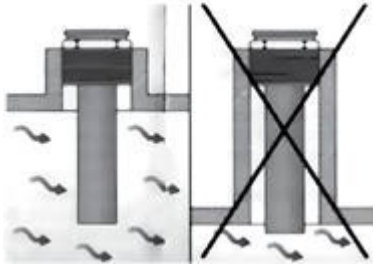


schema 4

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.

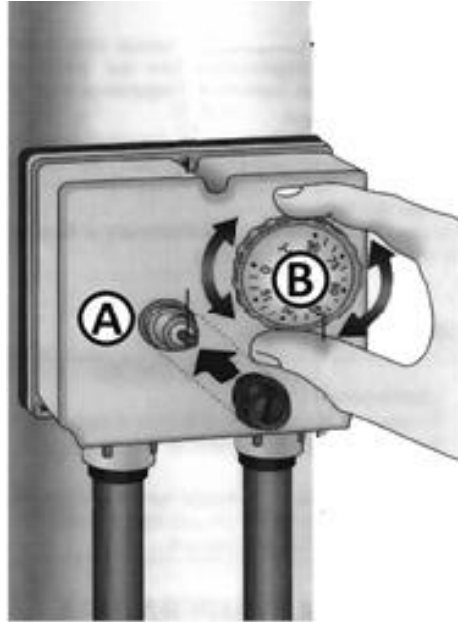
THERMOSTAT

TERMINAL 1 – opens the circuit when the temperature rises.

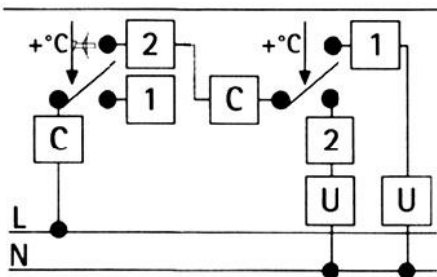
TERMINAL 2 – closes the circuit when the temperature rises

TERMINAL C – common contact

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



schema 8

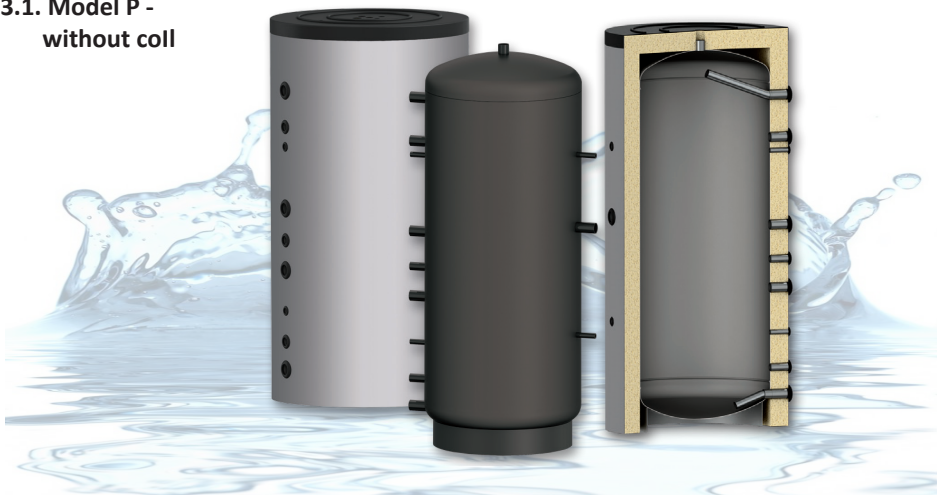


schema 7

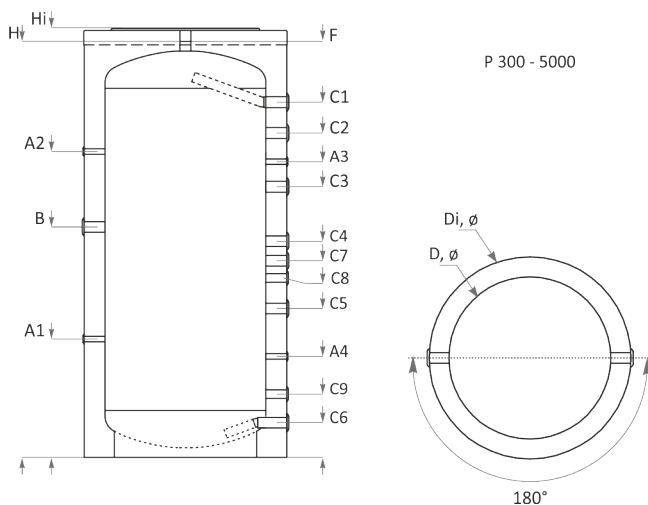


3. TECHNICAL PARAMETERS BUFFERS - P series

3.1. Model P - without coll



		P 300	P 500	P 800	P 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1610/1660	1860/1910	2040/2090
Minimal vertical clearance	mm	1430	1640	1900	2075
Diameter without insulation /with insulation	D, mm	∅ 650/750	∅ 650/850	∅ 790/990	∅ 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	60/70	90/102	118/134	133/151
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	760	790	920	1130
Heat carrier	C1, mm, Rp1 ^{1/2} "	1170	1370	1573	1742
Heat carrier	C2, mm, Rp1 ^{1/2} "			1390	1520
Heat carrier	C3, mm, Rp1 ^{1/2} "	880	990		
Heat carrier	C4, mm, Rp1 ^{1/2} "	770	880	980	1060
Heat carrier	C5, mm, Rp1 ^{1/2} "	540	620	670	730
Heat carrier	C6, mm, Rp1 ^{1/2} "	150	150	170	170
Heat carrier	C7, mm,				
Heat carrier	C8, mm, Rp1 ^{1/2} "	660	770	820	880
Heat carrier	C9, mm, Rp1 ^{1/2} "	260	250	310	310
Sensor sleeve	A1, mm, Rp1/2"	410	410	570	580
Sensor sleeve	A2, mm, Rp1/2"	1060	1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"	1010	1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"	420	460	465	495
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1610	1860	2040

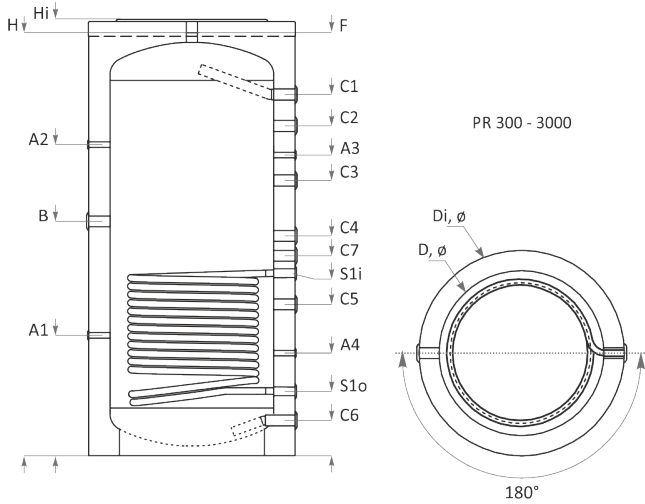


		P 1500	P 2000	P 2500	P 3000	P 5000
Capacity	L	1500	2000	2500	3000	5000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2482/2532	2246/2296	2940/2990
Minimal vertical clearance	mm	2220	2220	2542	2332	3066
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600	∅ 1600/1800
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	55-100	91-167
Weight without insulation/with insulation	kg, kg i	206/229	273/300	305/335	402/437	585/625
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1130	1170	1170	1184	1505
Heat carrier	C1, mm, Rp1 ^{1/2} "	1808	1775	2126	1797	2438
Heat carrier	C2, mm, Rp1 ^{1/2} "	1635				
Heat carrier	C3, mm, Rp1 ^{1/2} "	1305	1420		1474	2115
Heat carrier	C4, mm, Rp1 ^{1/2} "	1085	1170	1420	1184	1735
Heat carrier	C5, mm, Rp1 ^{1/2} "	765	735	735	864	1155
Heat carrier	C6, mm, Rp1 ^{1/2} "	235	230	230	344	385
Heat carrier	C7, mm,	Rp1 ^{1/2} "/975		Rp1 ^{1/2} "/1170		
Heat carrier	C8, mm, Rp1 ^{1/2} "	895	980	980	1082	1373
Heat carrier	C9, mm, Rp1 ^{1/2} "	375	380	380	477	518
Sensor sleeve	A1, mm, Rp1/2"	875	920	920	910	951
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1645	1660	2001
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1625	1590	2231
Sensor sleeve	A4, mm, Rp1/2"	520	500	500	610	691
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2150	2132	2482	2246	2938

3.2. Model PR - with one coil



		PR 300	PR 500	PR 800	PR 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1610/1660	1860/1910	2040/2090
Minimal vertical clearance	mm	1430	1640	1900	2075
Diameter without insulation /with insulation	D, mm	Ø 650/750	Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	78/88	104/116	152/168	180/198
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	760	790	920	1130
Heat carrier	C1, mm, Rp1 ^{1/2} "	1170	1370	1573	1742
Heat carrier	C2, mm, Rp1 ^{1/2} "			1390	1520
Heat carrier	C3, mm, Rp1 ^{1/2} "	880	990		
Heat carrier	C4, mm, Rp1 ^{1/2} "	770	880	980	1060
Heat carrier	C5, mm, Rp1 ^{1/2} "	540	620	670	730
Heat carrier	C6, mm, Rp1 ^{1/2} "	150	150	170	170
Heat carrier	C7, mm,				
Sensor sleeve	A1, mm, Rp1/2"	410	410	570	580
Sensor sleeve	A2, mm, Rp1/2"	1060	1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"	1010	1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"	420	460	465	495
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1610	1860	2040
Coil capacity S1	S1 L	6.2	10.5	17.9	18.5
Heat exchange surface S1	S1 m ²	1.0	1.7	2.9	3.0
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	660/260	770/250	820/310	880/310

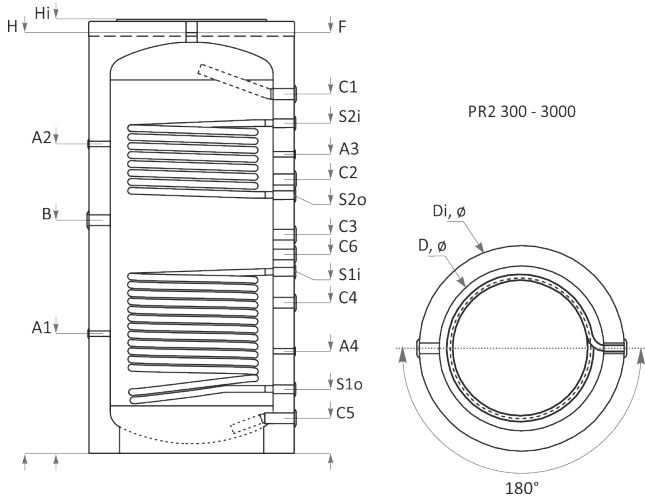


		PR 1500	PR 2000	PR 2500	PR 3000
Capacity	L	1500	2000	2500	3000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2482/2532	2246/2296
Minimal vertical clearance	mm	2220	2220	2542	2332
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	55-100
Weight without insulation/with insulation	kg, kg i	272/295	330/356	362/392	476/511
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1130	1170	1170	1184
Heat carrier	C1, mm, Rp1 ^{1/2} "	1808	1775	2126	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	1420	1184
Heat carrier	C5, mm, Rp1 ^{1/2} "	765	735	735	864
Heat carrier	C6, mm, Rp1 ^{1/2} "	235	230	230	344
Heat carrier	C7, mm,	Rp1/2"/975		Rp1 ^{1/2} "/1170	
Sensor sleeve	A1, mm, Rp1/2"	875	920	920	910
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1645	1660
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1625	1590
Sensor sleeve	A4, mm, Rp1/2"	520	500	500	610
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2150	2132	2482	2246
Coil capacity S1	S1 L	21	24.6	24.6	29.9
Heat exchange surface S1	S1 m ²	3.4	4.0	4.0	4.9
Inlet/Outlet Lower coil S1	S1i/S1o, mm,Rp1"	895/375	980/380	980/380	1082/477

3.3. Model PR2 - with two coils



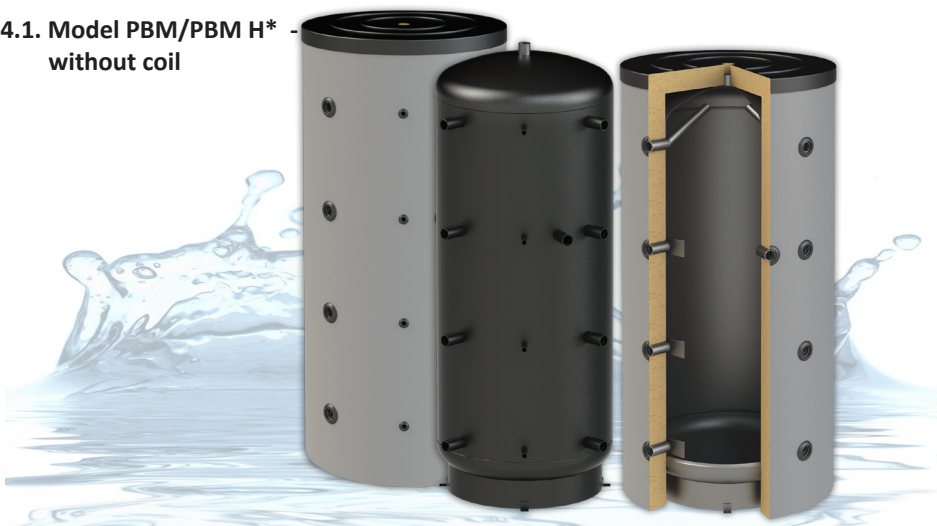
		PR2 300	PR2 500	PR2 800	PR2 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1610/1660	1860/1910	2040/2090
Minimal vertical clearance	mm	1430	1640	1900	2075
Diameter without insulation /with insulation	D, mm	Ø 650/750	Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	83/93	118/130	189/205	203/221
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	760	790	920	1130
Heat carrier	C1, mm, Rp1 ^{1/2} "	1170	1370	1573	1742
Heat carrier	C2, mm, Rp1 ^{1/2} "			1390	1520
Heat carrier	C3, mm, Rp1 ^{1/2} "	880	990		
Heat carrier	C4, mm, Rp1 ^{1/2} "	770	880	980	1060
Heat carrier	C5, mm, Rp1 ^{1/2} "	540	620	670	730
Heat carrier	C6, mm, Rp1 ^{1/2} "	150	150	170	170
Sensor sleeve	A1, mm, Rp1/2"	410	410	570	580
Sensor sleeve	A2, mm, Rp1/2"	1060	1120	1290	1500
Sensor sleeve	A3, mm, Rp1/2"	1010	1120	1290	1450
Sensor sleeve	A4, mm, Rp1/2"	420	460	465	495
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1610	1860	2040
Capacity lower/upper coil S1/S2	S1/S2 L	6.2/3.1	10.5/6.2	17.9/11.1	18.5/12.3
Heat exchange surface S1/S2	S1/S2 m ²	1.0/0.5	1.7/1.0	2.9/1.8	3.0/2.0
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	660/260	770/250	820/310	880/310
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1080/880	1270/990	1390/1072	1520/1172



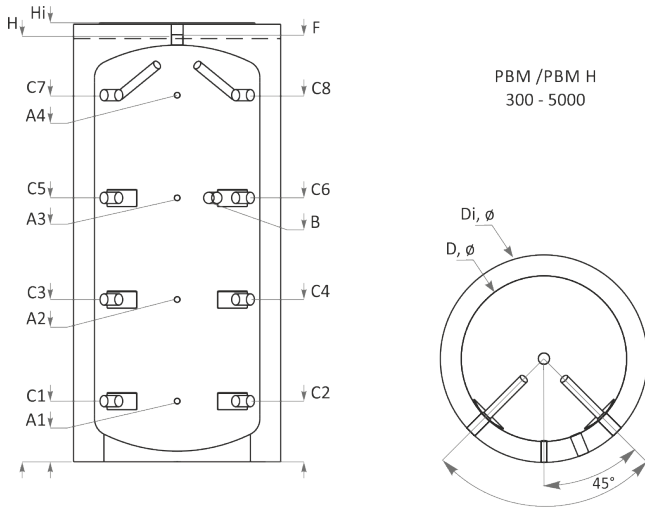
		PR2 1500	PR2 2000	PR2 2500	PR2 3000
Capacity	L	1500	2000	2500	3000
Height without insulation / with insulation	H, Hi, mm	2150/2220	2132/2182	2482/2532	2246/2296
Minimal vertical clearance	mm	2220	2220	2542	2332
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	55-100
Weight without insulation/with insulation	kg, kg i	306/329	366/393	400/430	520/555
Sleeve for Electric heating element	B, mm, Rp 1 1/2"	1130	1170	1170	1184
Heat carrier	C1, mm, Rp1 1/2"	1808	1775	2126	1797
Heat carrier	C2, mm, Rp1 1/2"	1305	1420		1474
Heat carrier	C3, mm, Rp1 1/2"	1085	1170	1420	1184
Heat carrier	C4, mm, Rp1 1/2"	765	735	735	864
Heat carrier	C5, mm, Rp1 1/2"	235	230	230	344
Heat carrier	C6, mm, Rp1 1/2"	Rp1 1/2"/975		Rp1 1/2"/1170	
Sensor sleeve	A1, mm, Rp1/2"	875	920	920	910
Sensor sleeve	A2, mm, Rp1/2"	1500	1645	1645	1660
Sensor sleeve	A3, mm, Rp1/2"	1525	1625	1625	1590
Sensor sleeve	A4, mm, Rp1/2"	520	500	500	610
Air vent sleeve	F, mm, Rp1 1/2"	2150	2132	2482	2246
Capacity lower/upper coil S1/S2	S1/S2 L	21/14.8	24.6/14.8	24.6/14.8	29.9/17.1
Heat exchange surface S1/S2	S1/S2 m²	3.4/2.4	4.0/2.4	4.0/2.4	4.9/2.8
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	895/375	980/380	980/380	1082/477
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1635/1225	1645/1285	1889/1525	1660/1310

4. TECHNICAL PARAMETERS BUFFERS - PBM series

4.1. Model PBM/PBM H* - without coil



		PBM 300	PBM 500	PBM/H* 800	PBM/H* 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888	2039/2089
Minimal vertical clearance	mm	1430	1727	1877	2073
Diameter without insulation /with insulation	D, mm	∅ 550/750	∅ 650/850	∅ 790/990	∅ 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	60/70	81/93	108/125	126/144
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090	1260
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710	775
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090	1260
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039	2039



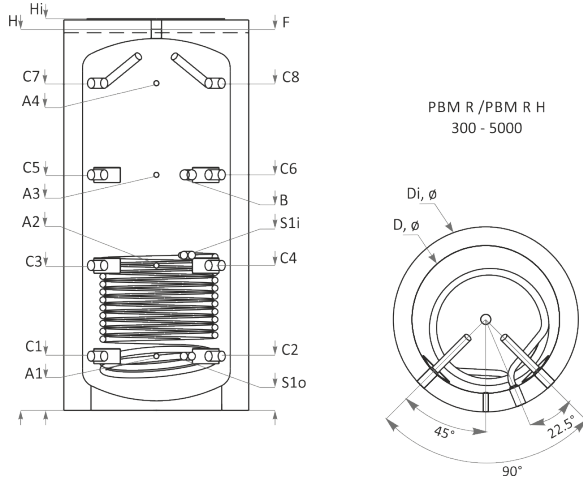
PBM /PBM H
300 - 5000

		PBM 1500	PBM 2000	PBM 2500	PBM 3000	PBM 5000
Capacity	L	1500	2000	2500	3000	5000
Height without insulation / with insulation	H, Hi, mm	2140/2290	2131/2181	2713/2763	2746/2796	2841/2891
Minimal vertical clearance	mm	2192	2220	2760	2817	2932
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600	∅ 1600/1800
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	73-133	82-151
Weight without insulation/with insulation	kg, kg i	205/228	254/281	337/372	474/514	571/613
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1308	1678	1690	1754
Heat carrier	C1, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C2, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C3, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C4, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C5, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C6, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C7, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Heat carrier	C8, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Sensor sleeve	A1, mm, Rp1/2"	339	388	396	438	502
Sensor sleeve	A2, mm, Rp1/2"	833	848	1037	1064	1128
Sensor sleeve	A3, mm, Rp1/2"	1327	1308	1678	1690	1754
Sensor sleeve	A4, mm, Rp1/2"	1821	1768	2319	2316	2380
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2140	2131	2713	2746	2841

4.2. Model PBM R - with one coil



		PBM R 300	PBM R 500	PBM R/H* 800	PBM R/H* 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888	2039/2089
Minimal vertical clearance	mm	1430	1727	1877	2073
Diameter without insulation /with insulation	D, mm	∅ 550/750	∅ 650/850	∅ 790/990	∅ 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	75/85	106/118	144/161	164/182
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090	1260
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710	775
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090	1260
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039	2039
Coil capacity S1	S1 L	5.6	9.8	14	15.2
Heat exchange surface S1	S1 m ²	0.9	1.6	2.3	2.48
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	640/240	689/239	785/290	830/290

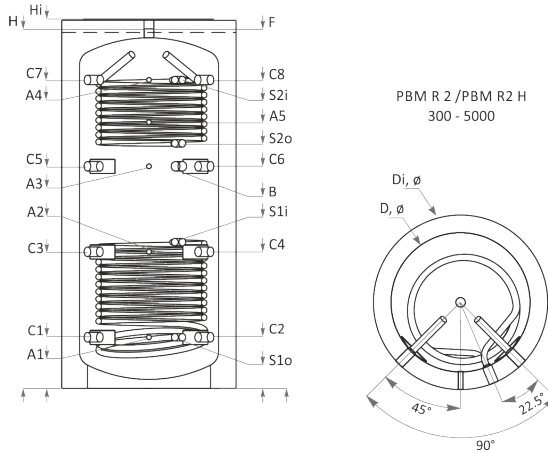


		PBM R 1500	PBM R 2000	PBM R 2500	PBM R 3000	PBM R 5000
Capacity	L	1500	2000	2500	3000	5000
Height without insulation / with insulation	H, Hi, mm	2140/2290	2131/2181	2713/2763	2746/2796	2841/2891
Minimal vertical clearance	mm	2192	2220	2760	2817	2932
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600	∅ 1600/1800
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	73-133	82-151
Weight without insulation/with insulation	kg, kg i	257/280	329/356	406/441	555/594	665/707
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1308	1678	1690	1754
Heat carrier	C1, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C2, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C3, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C4, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C5, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C6, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C7, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Heat carrier	C8, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Sensor sleeve	A1, mm, Rp1/2"	339	388	396	438	502
Sensor sleeve	A2, mm, Rp1/2"	833	848	1037	1064	1128
Sensor sleeve	A3, mm, Rp1/2"	1327	1308	1678	1690	1754
Sensor sleeve	A4, mm, Rp1/2"	1821	1768	2319	2316	2380
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2140	2131	2713	2746	2841
Coil capacity S1	S1 L	20.65	30	27.95	32	37.2
Heat exchange surface S1	S1 m ²	3.4	4.9	4.6	5.2	6.1
Inlet/Outlet Lower coil S1	S1i/S1o, mm,Rp1"	939/339	1158/388	1146/396	1118/438	1152/502

4.3. Model PBM R2 - with two coils



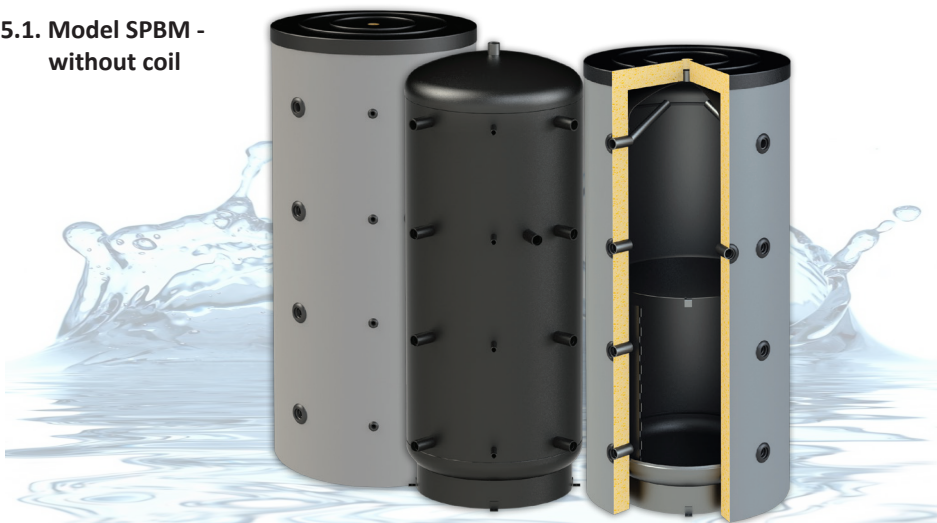
		PBM R2 300	PBM R 2 500	PBM R2/H* 800	PBM R2/H* 1000
Capacity	L	300	500	800	1000
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888	2039/2089
Minimal vertical clearance	mm	1430	1727	1877	2073
Diameter without insulation /with insulation	D, mm	Ø 550/750	Ø 650/850	Ø 790/990	Ø 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27	18-33
Weight without insulation/with insulation	kg, kg i	82/92	124/136	171/188	191/209
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090	1260
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710	775
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090	1260
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710	775
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090	1260
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039	2039
Capacity lower/upper coil S1/S2	S1/S2 L	5.6/2.6	9.8/6.6	14/10.5	15.2/10.5
Heat exchange surface S1/S2	S1/S2 m ²	0.9/0.4	1.6/1.1	2.3/1.71	2.48/1.71
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	640/240	689/239	785/290	830/290
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1170/970	1451/1121	1550/1190	1750/1390



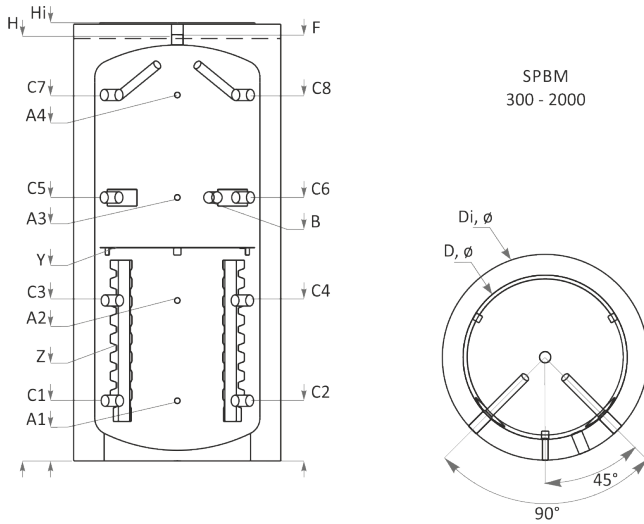
		PBM R 2 1500	PBM R 2 2000	PBM R 2 2500	PBM R 2 3000	PBM R 2 5000
Capacity	L	1500	2000	2500	3000	5000
Height without insulation / with insulation	H, Hi, mm	2140/2290	2131/2181	2713/2763	2746/2796	2841/2891
Minimal vertical clearance	mm	2192	2220	2760	2817	2932
Diameter without insulation /with insulation	D, mm	∅ 1000/1200	∅ 1200/1400	∅ 1250/1450	∅ 1400/1600	∅ 1600/1800
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110	16/110	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	27-50	36-67	46-84	73-133	82-151
Weight without insulation/with insulation	kg, kg i	287/310	360/387	453/488	609/649	729/771
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1308	1678	1690	1754
Heat carrier	C1, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C2, mm, Rp1 ^{1/2} "	339	388	396	438	502
Heat carrier	C3, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C4, mm, Rp1 ^{1/2} "	833	848	1037	1064	1128
Heat carrier	C5, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C6, mm, Rp1 ^{1/2} "	1327	1308	1678	1690	1754
Heat carrier	C7, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Heat carrier	C8, mm, Rp1 ^{1/2} "	1821	1768	2319	2316	2380
Sensor sleeve	A1, mm, Rp1/2"	339	388	396	438	502
Sensor sleeve	A2, mm, Rp1/2"	833	848	1037	1064	1128
Sensor sleeve	A3, mm, Rp1/2"	1327	1308	1678	1690	1754
Sensor sleeve	A4, mm, Rp1/2"	1821	1768	2319	2316	2380
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2140	2131	2713	2746	2841
Capacity lower/upper coil S1/S2	S1/S2 L	20.65/11.85	30/12.4	27.95/18.7	32/21.4	37.2/25.6
Heat exchange surface S1/S2	S1/S2 m ²	3.4/1.93	4.9/2.0	4.6/3.05	5.2/3.5	6.1/4.2
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	939/339	1158/388	1146/396	1118/438	1152/502
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1821/1506	1768/1503	2178/1778	2230/1790	2304/1854

5. TECHNICAL PARAMETERS BUFFERS - SPBM series

5.1. Model SPBM - without coil



		SPBM 300	SPBM 500	SPBM 800
Capacity	L	300	500	800
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888
Minimal vertical clearance	mm	1430	1727	1877
Diameter without insulation /with insulation	D, mm	∅ 550/750	∅ 650/850	∅ 790/990
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	6-10	10-17	15-27
Weight without insulation/with insulation	kg, kg i	60/70	81/93	108/125
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039

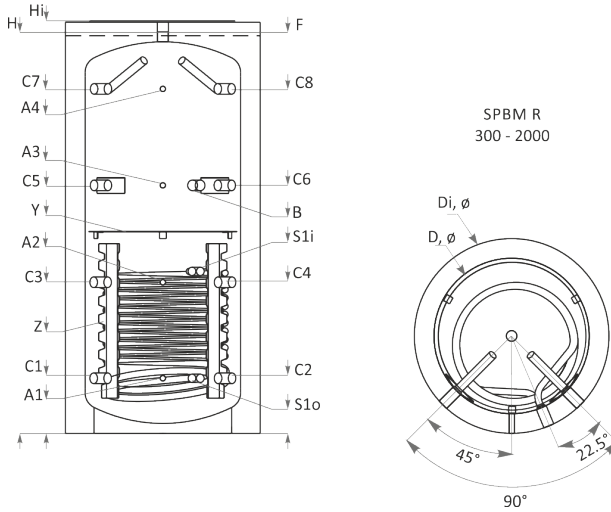


		SPBM 1000	SPBM 1500	SPBM 2000
Capacity	L	1000	1500	2000
Height without insulation / with insulation	H, Hi, mm	2039/2089	2140/2290	2131/2181
Minimal vertical clearance	mm	2073	2192	2220
Diameter without insulation /with insulation	D, mm	∅ 790/990	∅ 1000/1200	∅ 1200/1400
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	18-33	27-50	36-67
Weight without insulation/with insulation	kg, kg i	126/144	205/228	254/281
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1260	1308
Heat carrier	C1, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C2, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C3, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C4, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C5, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C6, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C7, mm, Rp1 ^{1/2} "	1750	1821	1768
Heat carrier	C8, mm, Rp1 ^{1/2} "	1750	1821	1768
Sensor sleeve	A1, mm, Rp1/2"	290	339	388
Sensor sleeve	A2, mm, Rp1/2"	775	833	848
Sensor sleeve	A3, mm, Rp1/2"	1260	1327	1308
Sensor sleeve	A4, mm, Rp1/2"	1750	1821	1768
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2039	2140	2131

5.2. Model SPBM R - with one coil



		SPBM R 300	SPBM R 500	SPBM R 800
Capacity	L	300	500	800
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888
Minimal vertical clearance	mm	1430	1727	1877
Diameter without insulation /with insulation	D, mm	∅ 550/750	∅ 650/850	∅ 790/990
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	6-10	10-17	15-27
Weight without insulation/with insulation	kg, kg i	75/85	106/118	144/161
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039
Coil capacity S1	S1 L	5.6	9.8	14
Heat exchange surface S1	S1 m ²	0.9	1.6	2.3
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	640/240	689/239	785/290

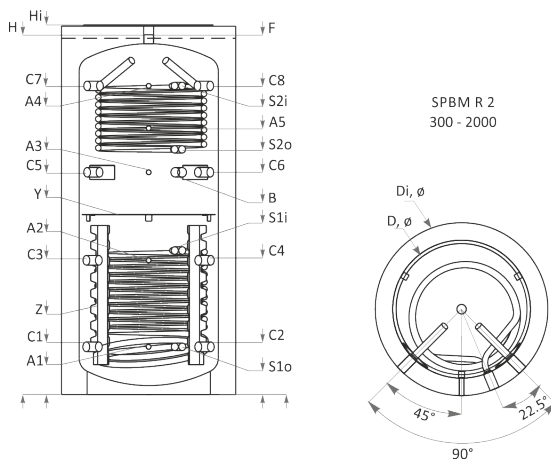


		SPBM R 1000	SPBM R 1500	SPBM R 2000
Capacity	L	1000	1500	2000
Height without insulation / with insulation	H, Hi, mm	2039/2089	2140/2290	2131/2181
Minimal vertical clearance	mm	2073	2192	2220
Diameter without insulation /with insulation	D, mm	∅ 790/990	∅ 1000/1200	∅ 1200/1400
Operating pressure/Max. buffer 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	18-33	27-50	36-67
Weight without insulation/with insulation	kg, kg i	164/182	257/280	329/356
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1260	1308
Heat carrier	C1, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C2, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C3, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C4, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C5, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C6, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C7, mm, Rp1 ^{1/2} "	1750	1821	1768
Heat carrier	C8, mm, Rp1 ^{1/2} "	1750	1821	1768
Sensor sleeve	A1, mm, Rp1/2"	290	339	388
Sensor sleeve	A2, mm, Rp1/2"	775	833	848
Sensor sleeve	A3, mm, Rp1/2"	1260	1327	1308
Sensor sleeve	A4, mm, Rp1/2"	1750	1821	1768
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2039	2140	2131
Coil capacity S1	S1 L	15.2	20.65	30
Heat exchange surface S1	S1 m ²	2.48	3.4	4.9
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	830/290	939/339	1158/388

5.3. Model SPBM R2 - with two coils



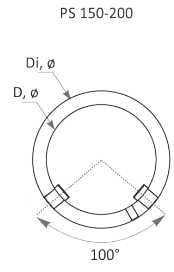
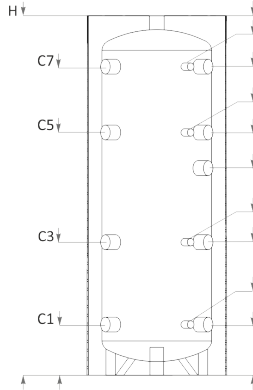
		SPBM R2 300	SPBM R 2 500	SPBM R2 800
Capacity	L	300	500	800
Height without insulation / with insulation	H, Hi, mm	1410/1460	1700/1750	1838/1888
Minimal vertical clearance	mm	1430	1727	1877
Diameter without insulation /with insulation	D, mm	Ø 550/750	Ø 650/850	Ø 790/990
Operating pressure/Max. buffer 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	6-10	10-17	15-27
Weight without insulation/with insulation	kg, kg i	82/92	124/136	171/188
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	860	997	1090
Heat carrier	C1, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C2, mm, Rp1 ^{1/2} "	240	239	290
Heat carrier	C3, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C4, mm, Rp1 ^{1/2} "	550	643	710
Heat carrier	C5, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C6, mm, Rp1 ^{1/2} "	860	997	1090
Heat carrier	C7, mm, Rp1 ^{1/2} "	1170	1451	1750
Heat carrier	C8, mm, Rp1 ^{1/2} "	1170	1451	1750
Sensor sleeve	A1, mm, Rp1/2"	240	239	290
Sensor sleeve	A2, mm, Rp1/2"	550	643	710
Sensor sleeve	A3, mm, Rp1/2"	860	997	1090
Sensor sleeve	A4, mm, Rp1/2"	1170	1451	1750
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1410	1700	2039
Capacity lower/upper coil S1/S2	S1/S2 L	5.6/2.6	9.8/6.6	14/10.5
Heat exchange surface S1/S2	S1/S2 m ²	0.9/0.4	1.6/1.1	2.3/1.71
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	640/240	689/239	785/290
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1170/970	1451/1121	1550/1190



		SPBM R2 1000	SPBM R2 1500	SPBM R2 2000
Capacity	L	1000	1500	2000
Height without insulation / with insulation	H, Hi, mm	2039/2089	2140/2290	2131/2181
Minimal vertical clearance	mm	2073	2192	2220
Diameter without insulation /with insulation	D, mm	∅ 790/990	∅ 1000/1200	∅ 1200/1400
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	18-33	27-50	36-67
Weight without insulation/with insulation	kg, kg i	191/209	287/310	360/387
Sleeve for Electric heating element	B, mm, Rp 1 ^{1/2} "	1260	1260	1308
Heat carrier	C1, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C2, mm, Rp1 ^{1/2} "	290	339	388
Heat carrier	C3, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C4, mm, Rp1 ^{1/2} "	775	833	848
Heat carrier	C5, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C6, mm, Rp1 ^{1/2} "	1260	1327	1308
Heat carrier	C7, mm, Rp1 ^{1/2} "	1750	1821	1768
Heat carrier	C8, mm, Rp1 ^{1/2} "	1750	1821	1768
Sensor sleeve	A1, mm, Rp1/2"	290	339	388
Sensor sleeve	A2, mm, Rp1/2"	775	833	848
Sensor sleeve	A3, mm, Rp1/2"	1260	1327	1308
Sensor sleeve	A4, mm, Rp1/2"	1750	1821	1768
Air vent sleeve	F, mm, Rp1 ^{1/2} "	2039	2140	2131
Capacity lower/upper coil S1/S2	S1/S2 L	15.2/10.5	20.65/11.85	30/12.4
Heat exchange surface S1/S2	S1/S2 m ²	2.48/1.71	3.4/1.93	4.9/2.0
Inlet/Outlet Lower coi S1	S1i/S1o, mm, Rp1"	830/290	939/339	1158/388
Inlet/Outlet Upper coil S2	S2i/S2o, mm, Rp1"	1750/1390	1821/1506	1768/1503

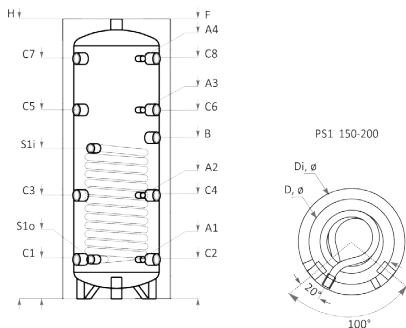
6. TECHNICAL PARAMETERS BUFFERS - PS series

6.1. Model PS - without coil /150L - 200 L/



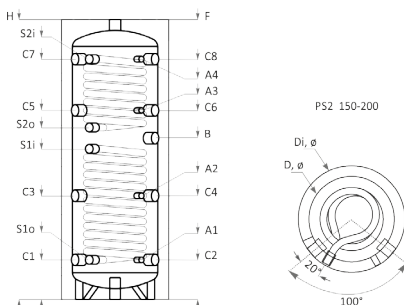
		PS 150	PS 200
Capacity	L	150	200
Height	H, mm	1310	1710
Minimal vertical clearance	mm	1400	1780
Diameter without insulation /with insulation	D, mm	∅ 400/500	∅ 400/500
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95
Recommended boiler size, connected to buffer tank	kW	6-10	6-10
Weight	kg,	38	47
Sleeve for Electric heating element	B, mm, Rp1 ^{1/2} "	755	995
Heat carrier	C1, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C2, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C3, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C4, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C5, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C6, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C7, mm, Rp1 ^{1/2} "	1125	1525
Heat carrier	C8, mm, Rp1 ^{1/2} "	1125	1525
Sensor sleeve	A1, mm, Rp1/2"	185	185
Sensor sleeve	A2, mm, Rp1/2"	485	725
Sensor sleeve	A3, mm, Rp1/2"	885	1165
Sensor sleeve	A4, mm, Rp1/2"	1125	1525
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1310	1710

6.2. Model PS 1 - with one coil



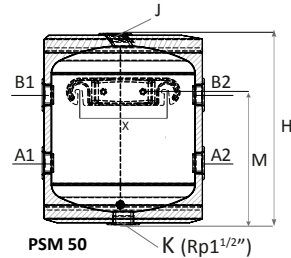
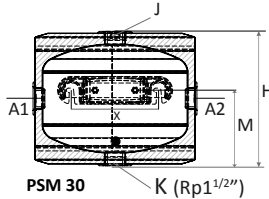
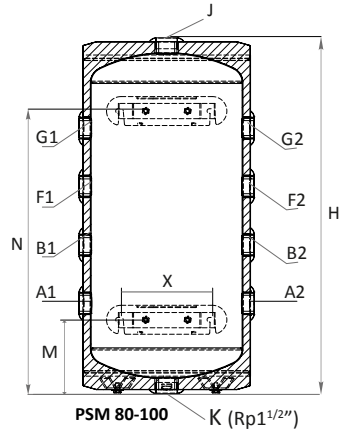
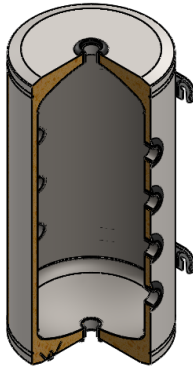
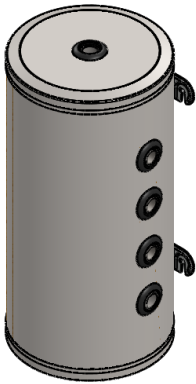
		PS 1 150	PS 1 200
Capacity	L	150	200
Height	H, mm	1310	1710
Minimal vertical clearance	mm	1400	1780
Diameter without insulation /with insulation	D, mm	∅ 400/500	∅ 400/500
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	6-10
Weight	kg,	56	74
Sleeve for Electric heating element	B, mm, Rp1 ^{1/2} "	755	995
Heat carrier	C1, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C2, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C3, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C4, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C5, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C6, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C7, mm, Rp1 ^{1/2} "	1125	1525
Heat carrier	C8, mm, Rp1 ^{1/2} "	1125	1525
Sensor sleeve	A1, mm, Rp1 ^{1/2} "	185	185
Sensor sleeve	A2, mm, Rp1 ^{1/2} "	485	725
Sensor sleeve	A3, mm, Rp1 ^{1/2} "	885	1165
Sensor sleeve	A4, mm, Rp1 ^{1/2} "	1125	1525
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1310	1710
Coil capacity S1	S1 L	6.8	9.9
Heat exchange surface S1	S1 m ²	1.1	1.6
Inlet/Outlet Lower coil S1	S1i/S1o, mm, Rp1"	705/185	1125/805

6.3. Model PS 2 - with two coils



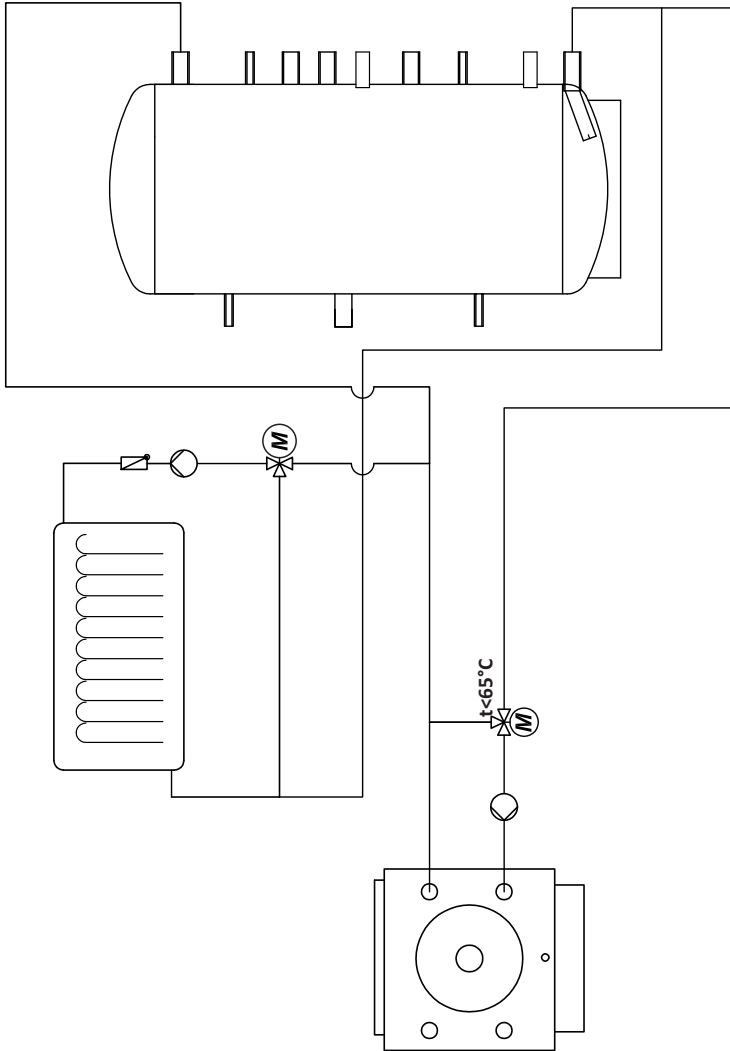
		PS 2 150	PS 2 200
Capacity	L	150	200
Height	H, mm	1310	1710
Minimal vertical clearance	mm	1400	1780
Diameter without insulation /with insulation	D, mm	Ø 400/500	Ø 400/500
Operating pressure/Max. buffer temperature	bar/°C	3/95	3/95
Operating pressure /Max. coil temperature	bar/°C	16/110	16/110
Recommended boiler size, connected to buffer tank	kW	6-10	6-10
Weight	kg,	69	91
Sleeve for Electric heating element	B, mm, Rp1 ^{1/2} "	755	995
Heat carrier	C1, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C2, mm, Rp1 ^{1/2} "	185	185
Heat carrier	C3, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C4, mm, Rp1 ^{1/2} "	485	725
Heat carrier	C5, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C6, mm, Rp1 ^{1/2} "	885	1165
Heat carrier	C7, mm, Rp1 ^{1/2} "	1125	1525
Heat carrier	C8, mm, Rp1 ^{1/2} "	1125	1525
Sensor sleeve	A1, mm, Rp1/2"	185	185
Sensor sleeve	A2, mm, Rp1/2"	485	725
Sensor sleeve	A3, mm, Rp1/2"	885	1165
Sensor sleeve	A4, mm, Rp1/2"	1125	1525
Air vent sleeve	F, mm, Rp1 ^{1/2} "	1310	1710
Capacity lower/upper coil S1/S2	S1/S2 L	6.8/4.1	9.9/6.2
Heat exchange surface S1/S2	S1/S2 m ²	1.1/0.66	1.6/1.0
Inlet/Outlet Lower coi	S1/S1o, mm, Rp1"	705/185	945/185
Inlet/Outlet Upper coil	S2/S2o, mm, Rp1"	1125/805	1525/1045

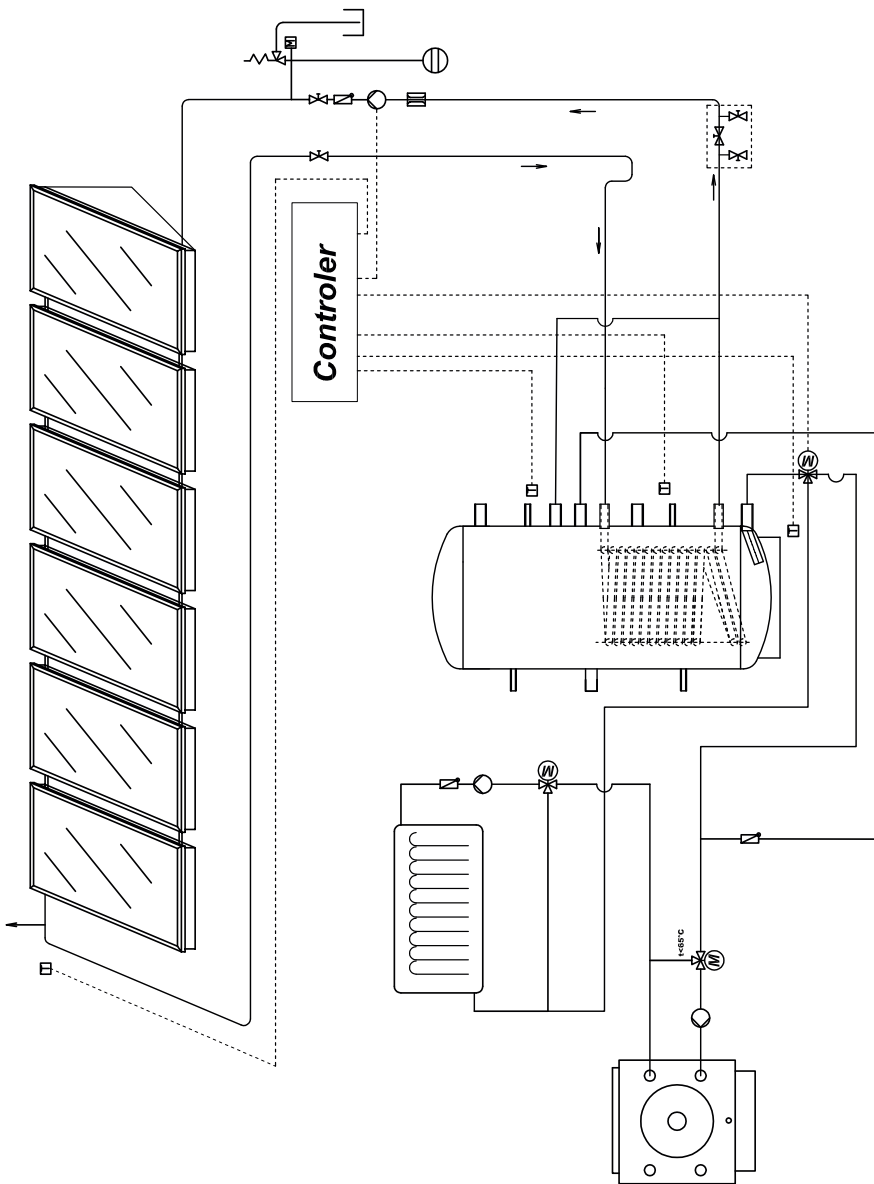
7. Model PSM - without coil /30 L - 100 L/

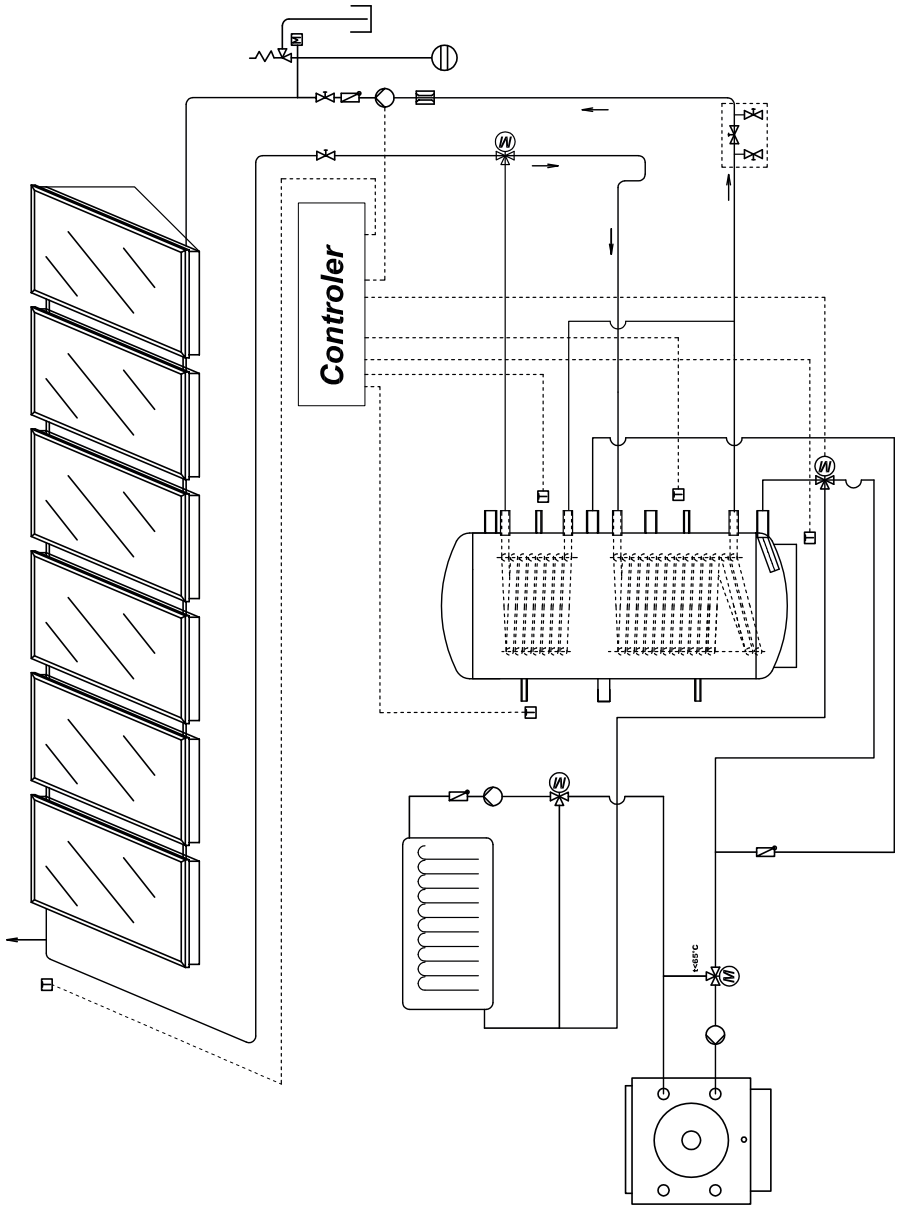


		PSM 30	PSM 50	PSM 80	PSM 100
Capacity	L	30	50	80	100
Height without feet	H, mm	360	520	755	915
Diameter with insulation	D, mm	Ø 440	Ø 440	Ø 440	Ø 440
Operating pressure/Max. buffer temperature	bar/°C	6/95	6/95	6/95	6/95
Recommended boiler size, connected to buffer tank	kW	1-4	3-5	6-10	6-10
Weight	kg,	13	17	25	29
Connection	A1,A2 mm, Rp1 ^{1/2} "	180	170	190	230
Connection	B1,B2 mm, Rp1 ^{1/2} "	-	355	315	380
Connection	F1,F2 mm, Rp1 ^{1/2} "	-	-	440	535
Connection	G1,G2 mm, Rp1 ^{1/2} "	-	-	570	690
Connection	J, mm, Rp1 ^{1/2} "	360	520	755	915
Connection	K mm, Rp1 ^{1/2} "	Rp1 ^{1/2} "	Rp1 ^{1/2} "	Rp1 ^{1/2} "	Rp1 ^{1/2} "
Dimensions	M, mm	210	370	165	165
Dimensions	N, mm	-	-	605	765
Distance between suspension holes of the wall mount	X, mm,	240	240	240	240

8. SHEMES







9. TRANSPORT AND PACKING

The buffers can be with or without insulation.

They are secured on a pallet. Packed with foil.

All models up to 2500 liters are secured on a pallet upright.

Buffer tank	Dimensions of pallet (without insulation)	Dimensions of pallet (with insulation)
P 500	650x650	900x900
P 800	790x790	1050x1050
P 1000	790x790	1050x1050
P 1500	1000x1000	1250x1250
P 2000	1150x1150	1400x1400
P 2500	1150x1150	1400x1400

Buffer tank	Dimensions of pallet (without insulation)
PS 150	550x550
PS 200	550x550
PS1 150	550x550
PS1 200	550x550
PS2 150	550x550
PS2 200	550x550

All models above 3000 liters are secured on a pallet horizontal.

Buffer tank	Dimensions of pallet (without insulation)	Dimensions of pallet (with insulation)
P 3000 d=1250	650x650	900x900
P 3000 d=1400	790x790	1050x1050
P 5000	790x790	1050x1050

Insulation, decorative cover and rosettes can be delivered separately.

Advantages:

- Easy transportation (takes less space at transportation).
- Easy conveyance to the place of installation.

Easy and quick packing of the water heater with soft insulation. All necessary openings in the soft polyurethane casing are made beforehand, and the installer has only to find them and take them out. The casing is fastened by a zipper at the assembly platform.

10. WARRANTY CERTIFICATE OF WATER HEATERS

10.1. Manufacturing defects and materials guarantee

NES Ltd. expressly guarantees that the products it manufactures shall be free from defects in materials and workmanship which can prevent from normal operation under proper and normal use, installation and maintenance for the intended functions of the products for a period set out in the warranty certificate of the respective water heater model you have bought. The warranty period begins from the date indicated in the purchase invoice. If a product or any component thereof is determined to be defective in manufacture or materials, NES Ltd. will repair or replace the defective component or product.

10.2. Exclusions and Limitations of Warranty Coverage

a) The customer can claim warranty during warranty period of respective product immediately after any defects have been determined, except for in case of noticeable defects at the moment of purchase, in which case the customer must make the claim at the shop immediately after noticing the defect as it is pro-

vided for in the general conditions of sale.

b) This warranty certificate is considered void in cases when defects and errors in functioning

of products are caused by:

1) Accidents, installation on movable structures, negligence, improper care or nonconformity.

2) Failure to observe the installation, use and maintenance instructions set forth in the installation manual of respective product.

3) Improper installation and use as well as changes, especially if they are not made by authorized after-sale service personnel of NES Ltd.

4) Testing and operation pressures greater than values established by NES Ltd. and set forth in product manuals, or use of water with characteristic values exceeding:

- Dissolvable salts – 500 mg/l;
- Calcium carbonate – 200 mg/l;
- Free carbon dioxide – 50 mg/l;
- ph content – minimum 5 and maximum 12.

5) Freeze, flood, natural disasters or third party actions as well as any interventions into normal functioning conditions of water heaters and the control of NES Ltd.

The customer as well should monitor the anticorrosion system (magnesium anode / Correx up, etc.). He should periodically check the magnesium anode and replace it depending on the geographic location at intervals depending on the type of water (soft or hard) of the region where the water heater is being used.

c) The warranty certificate is considered void for water heaters whose serial identification numbers have been modified, removed or blurred, or cannot be expressly attested.

d) Damages in the appearance of products shall not be considered as defects except for those ones which cause losses during operation or change technical characteristics of water heaters set forth in brochures.

e) NES Ltd. preserves the right, in case of replacement, to deliver another model of water heater in order to fulfill approved warranty claims when the original model is not being manufactured.

10.3. Claiming warranty.

Every customer who has purchased a water heater from NES Ltd., and who has good reasons to lay a warranty claim, shall proceed as follows:

- a) Immediately notify in writing:
 - 1) The installer, or the company that has sold the water heater to him, or
 - 2) The distributor firm, or
 - 3) The commercial representative of NES Ltd. in the region.

For this purpose the claimant shall fill out a claim form; the latter shall be accompanied by the document proving the purchase of the water heater (invoice) with the date of purchase in it.

b) After receiving the claim form, NES Ltd. considers it and makes decision whether the claim has grounds, and whether the defect is within the scope of the warranty set forth in this certificate for limited warranty; after which informs the customer as to its decision and the steps he shall follow.

c) The return of a product cannot be done without written authorization issued by the Quality Department. The return procedure shall be according to RMA (Return Material Authorization).

d) If on customer’s request, and

when there is reason for urgency, the customer demands immediate replacement of the product he has claimed warranty for, before the decision as to the claim has been made, said request shall be accompanied by a Purchase requisition from the Commercial Department. After a decision for satisfaction of the claim has been made, the Purchase requisition mentioned above will be annulled by issuing a receipt for returned goods; with this receipt the customer can purchase another product with the same price in case the claim has proved grounded.

e) NES Ltd. preserves the right to make in situ reports from the claims they have received, for the purpose of checking every aspect that might be useful for better consideration of warranty claims; for this reason the customer shall not make any changes in installation conditions which are reasons for the claim without prior written consent of the Technical Department.

10.4. Limitation of liability

a) NES Ltd. is not liable before the customer, neither directly nor indirectly, for any non-fulfillment or delay at applying the warranty obligations which might originate from external pressure of other circumstances outside NES Ltd.

b) The liability of NES Ltd. under this Warranty Certificate is limited to the abovementioned obligations and up to the sum in accordance with the purchase receipt of the product to be claimed; excluded is any liability for indirect damages such as loss of data at information applications, loss of production thermal variations at the service, etc. which do not violate the applicable regulations of any

country concerning product liability.

c) Abovementioned warranty limitations will be applied in any cases, and when they do not violate the regulations in any country concerning product liability. If this circumstance annuls some of preceding clauses, annulment will refer only to this clause, while the others will remain valid. In conclusion, excluded is application of any Regulation pointed out in this Warranty which violates the Law 23/July 10, 2003 and Directive 1999/44/EU concerning water heaters and their use on the territory of the EU.

Any other warranty right that is not mentioned in this Warranty Certificate is excluded

11. RECYCLING AND WASTE DISPOSAL

At the end of life cycle of each product its components are due to be disposed of in conformity with regulatory prescriptions. Obsolete equipment shall be collected separately from other recyclable waste containing materials with adverse effect on health and environment.

Metal details, as well as non-metal ones shall be sold to licensed recyclable metal or non-metal waste collection organizations. Those should not be treated as domestic waste.



ISO 9001
BUREAU VERITAS
Certification



NES
new energy systems

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