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PSWF N+

Installation and Operation Manual
THERMAL STORES
PSWF 300 N+, PSWF 500 N+, PSWF 800 N+,
PSWF 1000 N+, PSWF 1500 N+ and PSWF 2000 N+

EN

PSWF N+

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1 - Description

PSWF N+ Accumulation Tanks are intended for accumulation and subsequent distribution of thermal energy from solid-fuel fired boilers, heat pumps, solar collectors, electric boilers etc. This accumulation tank shall be always connected to a sealed heating circuit. It is fitted with one upper flange ready to receive a suitably sized tube heat exchanger. A heat exchanger with 1" connections is installed in the bottom part. Mating flanges for heat exchangers with either G 1" or G ¾" connections are available as an option. When no heat exchanger is installed, a blind flange shall be used (option). These heat exchangers are made of finned copper tubes that feature larger surface area and better heat transfer. The lower heat exchanger usually connects to a solar system and the upper one is used for DHW heating (continuous) which limits significantly the risk of Legionella bacteria formation. The tanks are also fitted with nine G 6/4" side sleeves to connect heat sources, four G ½" ones for sensor sheaths and one G ½" sleeve for a safety valve. El. heating elements can be installed directly into the 6/4" sleeves.

In order to reach proper working of the tank, it is necessary to design optimum hydraulics of the whole system, i.e. position of circulation pumps for sources and heating circuits, valves, non-return valves etc. When more heat sources shall be combined, it is recommended to use an intelligent controller, e.g. Regulus IR, for both the source and load sides of a heating circuit, i.e. also for charging and discharging the accumulation tank.

1.1 - Models

Six models of 280, 472, 807, 930, 1498 and 1997 l capacity.

1.2 - Tank protection

The inner surface has no finish, no anticorrosion protection, the outer surface is lacquered in gray.

1.3 - Thermal insulation

Tank insulation is available as a separate item, installed on the tank on the spot for easier handling. The insulation is made of 100 mm thick fleece and fitted with a zippered outer layer in PU leather.

1.4 - Connection points on the tank

- 1 flange with 210 mm inner diam.
- 8 side sleeves in a 90° sector, G 6/4" F thread
- 1 top sleeve, G 6/4" F thread
- 4 side sleeves for sensor sheaths, G ½" F thread
- 1 side sleeve for a 3 bar safety valve (included), G ½" F thread
- 2 side sleeves for a heat exchanger, G 1" F thread

1.5 - Packing

Tanks are delivered standing, each screwed to its pallet, packed in bubble wrap. Included in the package are gaskets and bolts for the flange.

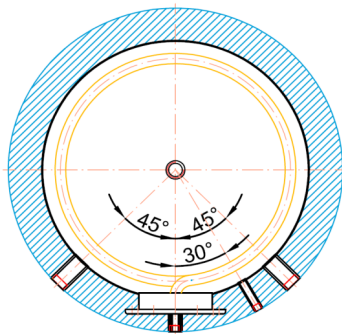
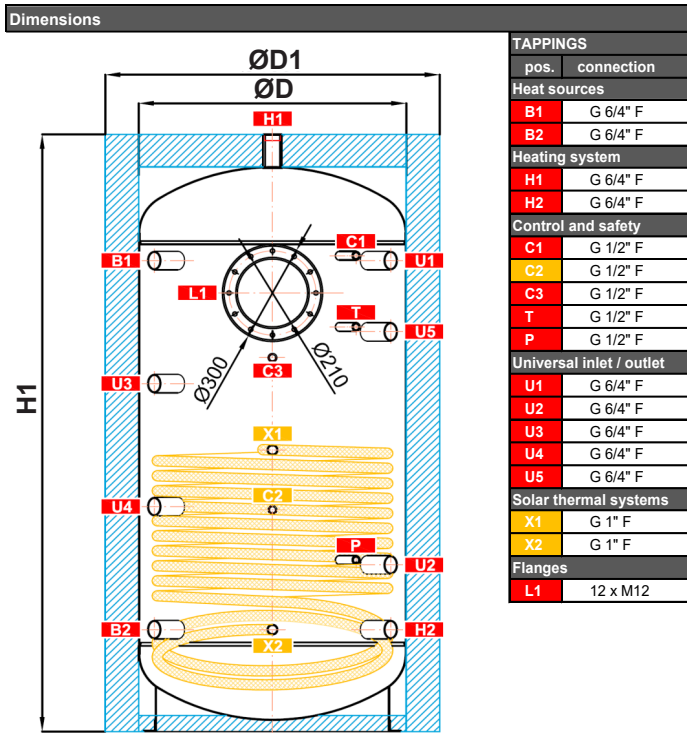
2 - General Information

This Owners Manual is an integral and important part of the product and must be handed over to the User. Read carefully the instructions in this Manual as they contain important information concerning safety, installation, operation and maintenance. Keep this Manual for later reference. The appliance shall be installed by a qualified person according to valid rules and Manufacturer's Instructions.

This appliance is designed to accumulate heating water and distribute it subsequently. It shall be connected to a heating system and heat sources. The equipment is suitable also for continuous water heating. In such a case, the customer needs to buy a suitably sized heat exchanger (available as accessory) and have it installed into the flange.

Using the accumulation tank for other purposes than above described (e.g. as a DHW tank) is forbidden and the manufacturer accepts no responsibility for damage caused by improper or wrong use.

3 - Technical Data and Dimensions



Tank code: a
 Insulation code: b
 Total fluid volume in tank: c
 Fluid volume in tank: d
 Fluid volume in heat exchanger: e
 Surface area of heat exchanger: f
 Max. working temperature in tank: 95 °C
 Max. working temperature in heat exchanger: 110 °C
 Max. working pressure in tank PSWF 300 N+ ÷ PSWF 1000 N+: 4 bar
 Max. working pressure in tank PSWF 1500 N+ ÷ PSWF 2000 N+: 3 bar
 Max. working pressure in heat exchanger: 10 bar
 Empty weight: g
 Tipping height without insulation: V1

Type - model		PSWF 300 N+	PSWF 500 N+	PSWF 800 N+	PSWF 1000 N+	PSWF 1500 N+	PSWF 2000 N+
Tank code	a	14732	14735	15230	15232	15234	15236
Insulation code	b	16366	16367	16371	16368	16369	16370
Total fluid volume in tank [l]	c	280	472	807	930	1498	1996
Fluid volume in tank [l]	d	271	461	792	912	1476	1971
Fluid volume in heat exchanger [l]	e	9,0	11,0	15,0	18,0	22,0	25,0
Heat exchanger surface area [sqm]	f	1,5	2,0	2,7	3,2	4,0	4,5
Empty weight [kg]	g	87	118	160	180	265	311
Tipping height without insulation [mm]	V1	1430	1950	1895	2120	1965	2050
Dimensions [mm]	Ø D1	750	800	1000	1000	1300	1450
	Ø D	550	600	800	800	1100	1250
	B1	1120	1615	1455	1690	1475	1510
	B2	220	225	315	300	335	370
	H1	1405	1915	1845	2080	1885	1955
	H2	220	225	315	300	335	370
	C1	1135	1630	1470	1705	1490	1525
	C2	520	585	685	740	735	760
	C3	895	1400	1250	1475	1270	1305
	T	830	1270	1155	1345	1175	1210
	P	375	450	530	525	550	585
	U1	1120	1615	1455	1690	1475	1510
	U2	360	435	515	510	535	570
U3	795	1155	1075	1230	1095	1130	
U4	520	685	695	760	715	750	
U5	880	1385	1235	1460	1255	1290	
X1	670	765	870	950	940	955	
X2	220	225	315	300	335	370	
L1	1010	1515	1355	1590	1375	1410	

4 - Operation

This accumulation tank is designed to accumulate heat and heat water for space heating in domestic or industrial applications, however always in sealed pressure circuits with forced circulation. In the accumulation tank, heating water is heated up from several heat sources like various types of hot-water boilers, renewable energy sources (heat pumps, solar collectors), or electric heating elements.

The accumulation tank shall be connected to a heat source through G 6/4" threaded fittings. A solar system connects to the outlets of the inbuilt heat exchanger through G 1" threaded fittings.

Individual connection points are assigned according to the circuits to be connected. There is a wide choice of combinations, just some examples are described in the following chapter.

5 - Examples of ports allocation

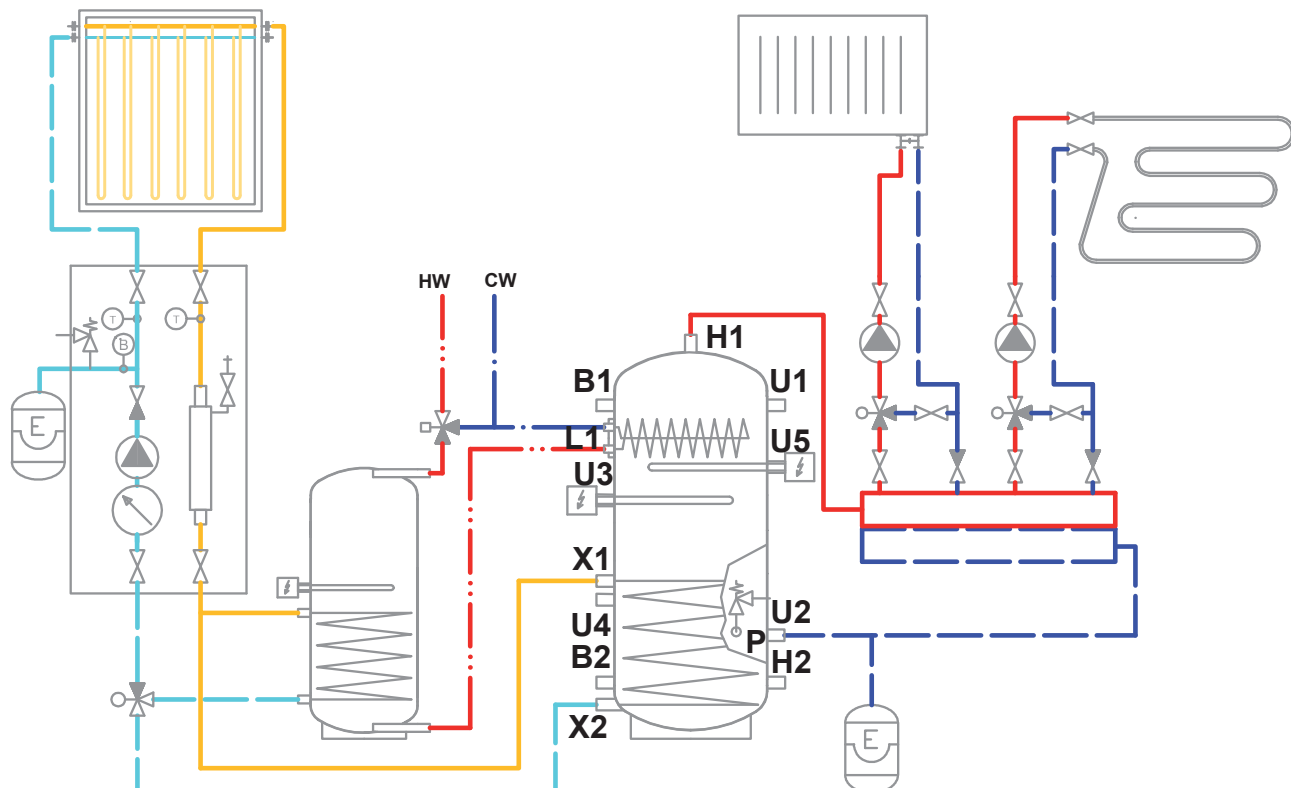
Conn. point	Example I. Solar collectors + el. heating elements	Example II. Solar collectors + gas boiler	Example III. Solar collectors + solid fuel boiler + el. heating elements
H1	outlet to heating system	outlet to heating system	outlet to heating system
B1	plug (inlet from fireplace)	outlet to gas boiler	inlet from boiler
U3	el. heating element	plug (inlet from heat pump)	el. heating element
U4	plug (outlet from heat pump)	plug	plug
B2	plug (outlet to fireplace, heat pump)	plug (outlet to fireplace, heat pump)	outlet to boiler (fireplace)
H2	drain valve	drain valve	drain valve
U2	inlet from heating system	inlet from heating system.	inlet from heating system
U5	el. heating element	plug	el. heating element
U1	plug	plug (inlet from fireplace), from heating system	plug (inlet from fireplace)
C1	thermostats for heating elements (adjustable+limit)	temperature sensor to heating controller	thermostats for heating elements (adjustable+limit)
C3	temperature sensor to heating controller	thermometer	temperature sensor to heating controller
T	thermometer	plug	thermometer
X1	inlet from solar system	inlet from solar system	inlet from solar system
C2	temperature sensor to solar controller	temperature sensor to solar controller	temperature sensor to solar controller
P	safety valve, G 1/2", 3 bar	safety valve, G 1/2", 3 bar	safety valve, G 1/2", 3 bar
X2	outlet from solar system	outlet from solar system	outlet from solar system
L1 upper flange	heat exchanger for preheating DHW tank	heat exchanger for preheating DHW tank	heat exchanger for preheating DHW tank

Connections depend on the circuit to be connected, the a.m. examples are informative only.

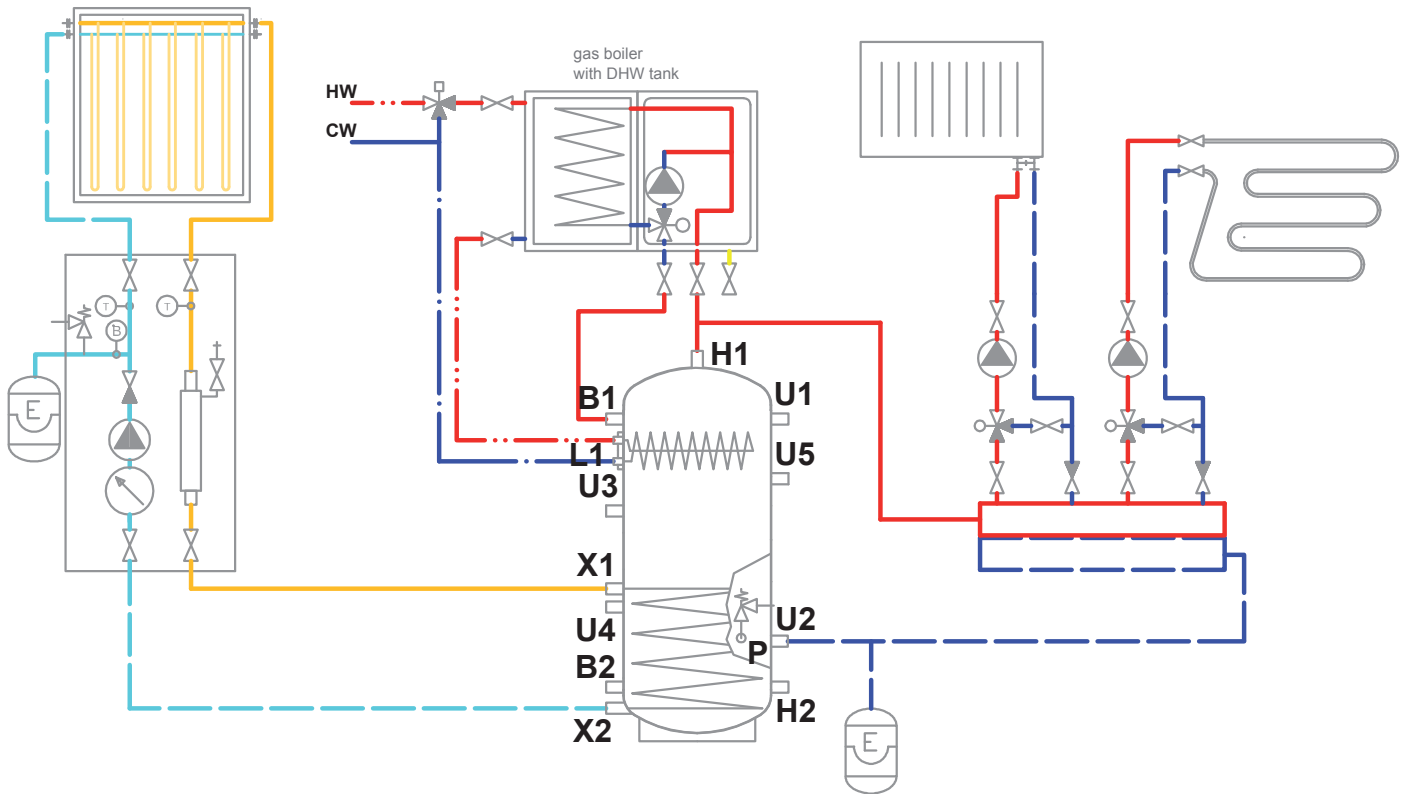
* possible variants with a fireplace and a heat pump shown in brackets

Example I.

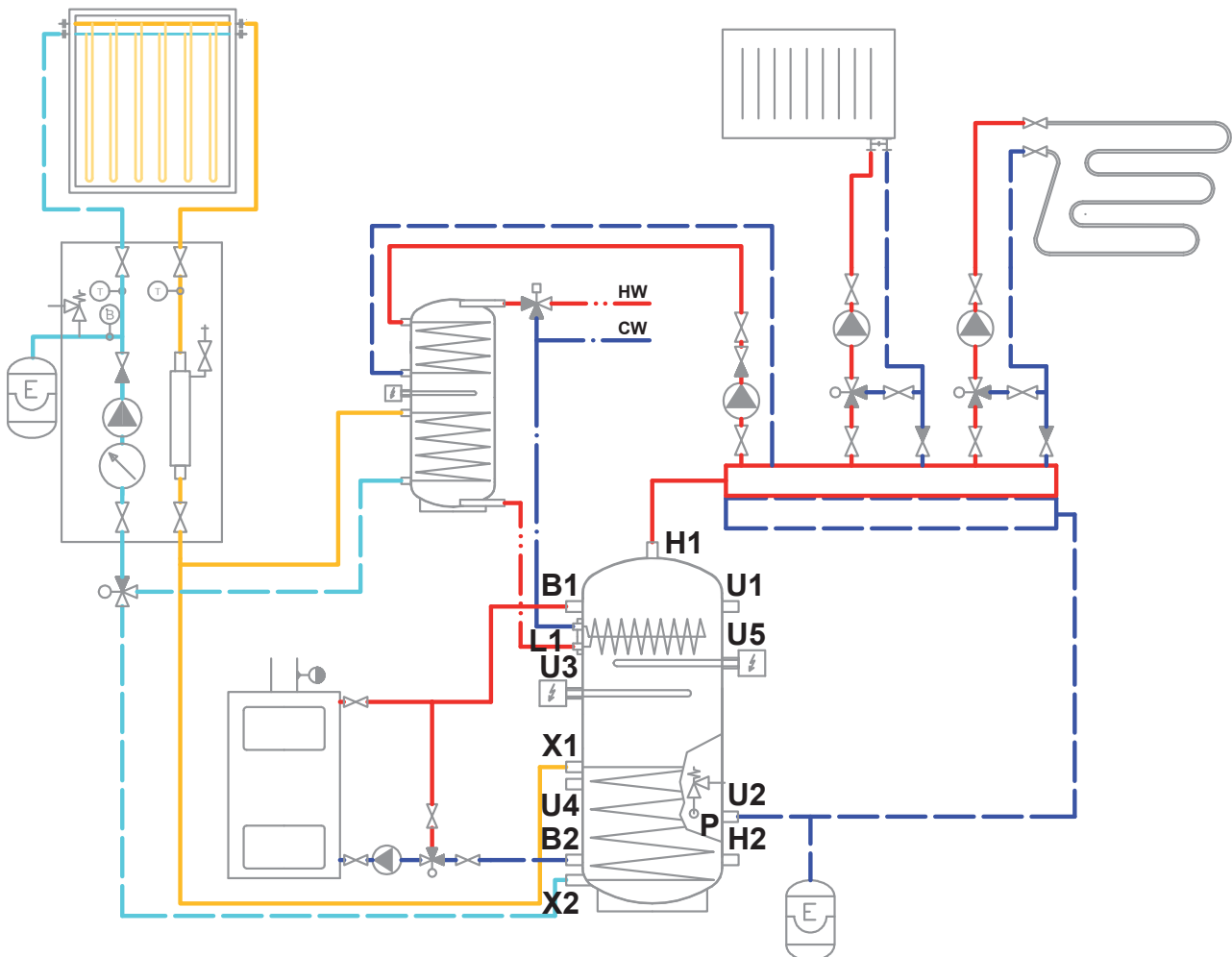
Solar collectors and el. heating elements.



Example II.
Solar collectors and combi gas boiler.



Example III.
Solar collectors, solid fuel boiler and el. heating elements.



6 - Installation and Commissioning

Installation shall meet valid rules and may be done by qualified staff only.

Defects caused by improper installation, use or handling are not covered by warranty.

After the tank is installed and connected to an existing heating system, it is recommended to clean the entire heating system using a suitable cleaning agent, e.g. MR-501/R.

Anti-corrosion protective liquid should be also used, e.g. MR-501/F or F1.

6.1 - Connection to heat sources

Place the tank on the floor, as close to your heat source as possible. Mount the insulation, cf. Installing Insulation on the Tank. Connect the heating circuits to inlets and outlets respecting the thermal stratification in the tank. Install a drain valve at the lowest point of the tank. Install an air vent valve at the highest point of the system. Insulate all the connecting piping.

6.2 - Connection to a solar system

This tank is suitable for use with a solar system. In such a case the inlet of heated solar fluid from collectors connects to the G 1" upper sleeve of the heat exchanger and the return line from the solar system connects to its lower sleeve. Insulate meticulously all the piping between the tank and the solar system.

6.3 - El. heating element installation

The tank may be fitted with electric heating elements up to 12kW output. They can be power-supplied either directly (elements with built-in thermostat) or via a controller for the entire heating system.

All electric heating elements shall be protected by a safety thermostat.

Electric heating elements shall be installed by an authorized person only.

6.4 - Commissioning

The tank shall be filled up together with the heating system, respecting valid standards and rules. In order to minimize corrosion, special additives for heating systems should be used. The quality of heating water depends on the quality of filling water at commissioning, on the top-up water and on the frequency of topping up. This has a strong influence on the lifetime of heating systems. Poor quality of heating water may cause problems like corrosion or incrustation, esp. on heat transfer surfaces.

Fill the heating circuits with the appropriate fluids and air-bleed the entire system. Check all connections for leaks and verify the system pressure. Set the heating controller in compliance with the documentation and manufacturer's recommendations. Check regularly proper function of all control and adjustment elements.

7 - Installing Insulation on the Tank

Instructions

Product description

Fleece thermal insulation with PU leather surface.

Warning

Insulation installation shall be done in two or three persons, depending on its size. The insulation **must not be installed at temperatures below 20 °C**. If this cannot be avoided, the insulation shall be pre-warmed in another room to at least 20 °C. It is impossible to install insulation of lower temperature, there is a risk of damage, esp. to the zipper. Do not use any tools for installation.

Keep away from open fire.

Installing Insulation

1. Fix the tank following installation instructions.
2. Wrap the insulation around the tank carefully. Check that the insulation adheres to its body perfectly. This can be reached by rubbing and patting the insulation by hand from its center evenly in both directions until the insulation adheres to the tank's surface completely and no bubbles are left.
3. Use the holes for sleeves as a rest during the insulation installation.
4. At least one person presses the insulation to the tank, pulling both ends together. The other person closes the zipper.
5. Put on the upper insulation and cover.
6. Push on the covering plastic rosettes depending on the size of sleeves, or put on the flange plug(s) with insulation.
7. Finish the tank installation in compliance with the respective instructions and valid standards and rules.

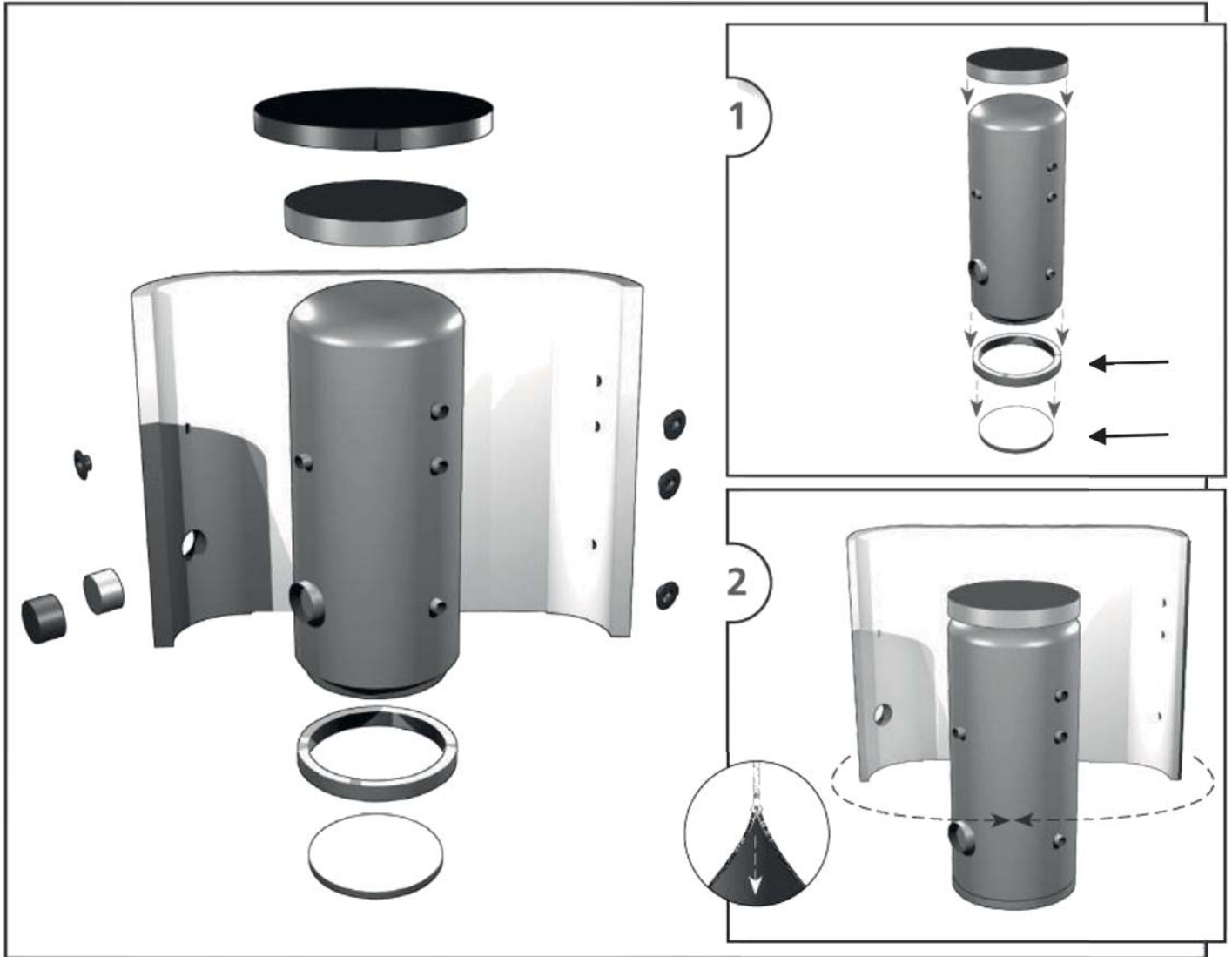
Warranty on insulation

The insulation is covered by a 24-month warranty. This period starts the next day after the insulation is sold.

- Warranty shall become null and void if:
 - the procedure described in the Installation Manual was not respected,
 - the product was used for other purposes than intended.
- Warranty does not cover:
 - usual wear and tear,
 - damage caused by fire, water, electricity or a natural disaster,
 - defects caused by failure to use the product in compliance with its intended purpose, by improper use and insufficient maintenance,
 - defects caused by mechanical damage to the product,
 - defects caused by tampering or incompetent repair.



+ 20.0° C
+ 68.0° F



8 - Maintenance

If the tank is fitted with a heating element, disconnect it from the mains first. Clean the exterior of the tank with a soft cloth and a mild detergent. Never use abrasive cleaners or solvents. Check all connections for leaks.

9 - Disposal

Packing shall be disposed of in compliance with the valid rules. When the product reaches the end of its life, it shall not be disposed of as household waste. It shall be dropped off at a Local Waste Recycling Center. Insulation shall be recycled as plastic and the steel vessel as scrap iron.

10 - Warranty

This product is covered by warranty under the conditions listed in this Manual and in compliance with the Warranty Certificate. A Warranty Certificate is an integral part of this accumulation tank scope of supply.

