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PS N+

Installation and Operation Manual

THERMAL STORES

**PS 200 N+, PS 300 N+, PS 400 N+, PS 500 N+,
PS 600 N+, PS 700 N+, PS 800 N+, PS 900 N+,
PS 1000 N+, PS 1100 N+, PS 1500 N+, PS 2000 N+**

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PS N+

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1 - Description

PS N+ Thermal Stores are intended for storing and subsequent distribution of thermal energy from solid-fuel fired boilers, heat pumps, solar collectors, electric boilers etc. No heating coils can be installed into these tanks, just an el. heating rod. Heating elements of 2-12 kW output can be installed directly into the 6/4" sleeves that are power supplied either with 230V or 3x230V/400V. Tanks are fitted with nine side sleeves to connect heat sources, four for sensor sheaths and one for a safety valve. As an option, 100mm thick insulation for these tanks is sold separately.

1.1 - Models

Twelve models of 181, 280, 397, 474, 561, 656, 804, 860, 927, 1040, 1504 and 2005 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

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 1/2" F thread

1 side sleeve for a 3 bar safety valve (included), G 1/2" F thread

1.5 - Packing

Tanks are delivered standing, each screwed to its pallet, packed in bubble wrap.

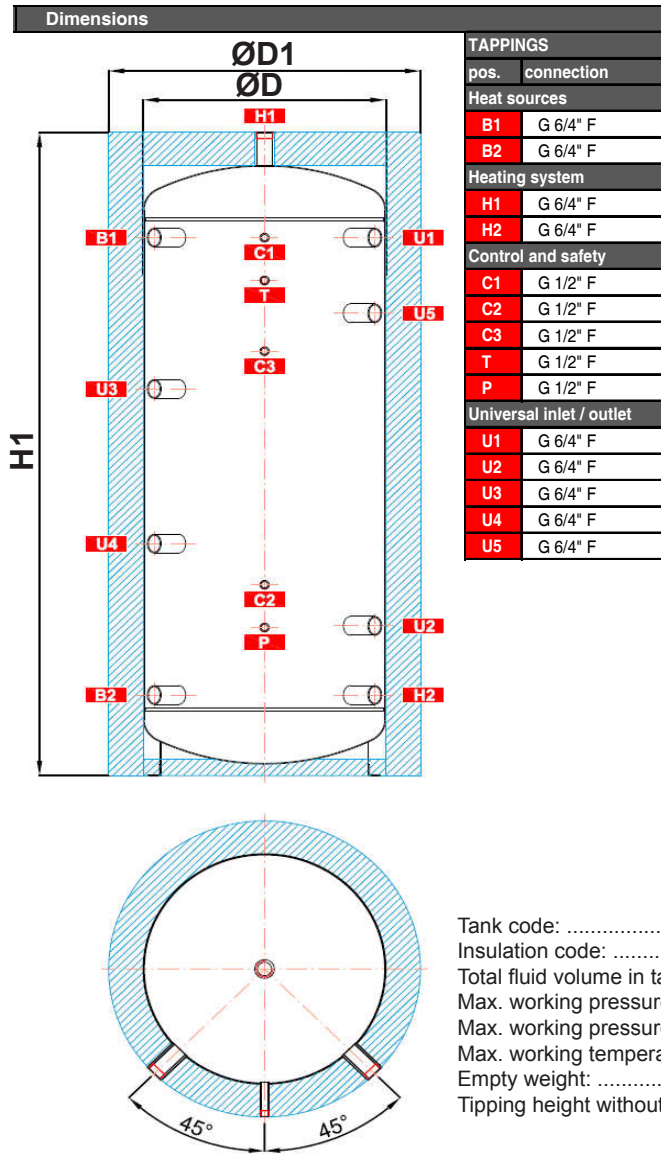
2 - General Information

This Owners Manual is an integral and important part of the product and must be handed over to the User. Read care-fully 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, otherwise the warranty is null and void.

This appliance is designed to accumulate heating water and distribute it subsequently. It shall be connected to a heating system and heat sources.

Using the thermal store tank for other purposes than above described is forbidden and the manufacturer accepts no responsibility for damage caused by improper or wrong use. The thermal store shall not be used as a DHW tank!

3 - Technical Data and Dimensions



Type - model		PS200 N+	PS300 N+	PS400 N+	PS500 N+	PS600 N+	PS700 N+	PS800 N+	PS900 N+	PS1000 N+	PS1100N+	PS1500 N+	PS2000 N+
Tank code	a	14717	14720	13783	14723	15135	15138	15141	15144	15147	15150	15153	15156
Insulation code	b	16326	16327	16329	16332	16335	16337	16339	16342	16345	16350	16352	16353
Fluid volume in tank [l]	c	181	280	397	474	560	656	804	860	927	1040	1504	2005
Empty weight [kg]	d	42	52	71	72	80	85	99	103	109	128	176	209
Tipping height [mm]	V1	1370	1435	1930	1940	1965	2080	1890	2020	2120	2125	1965	2055
Dimensions [mm]	Ø D1	650	750	750	800	850	900	1000	990	1000	1050	1300	1450
	Ø D	450	550	550	600	650	700	800	790	800	850	1100	1250
	B1	1093	1120	1610	1615	1625	1635	1455	1645	1690	1740	1475	1510
	B2	193	220	220	225	235	245	315	255	300	260	335	370
	H1	1351	1405	1905	1915	1935	1955	1845	1975	2080	2080	1885	1955
	H2	193	220	220	225	235	245	315	255	300	260	335	370
	C1	1093	1120	1610	1615	1625	1635	1455	1645	1690	1740	1475	1510
	C2	413	440	565	560	570	580	605	590	635	615	625	660
	C3	843	870	1265	1270	1280	1290	1155	1300	1345	1385	1175	1210
	T	993	1020	1480	1485	1495	1505	1335	1515	1560	1620	1355	1390
	P	333	360	450	450	440	450	450	390	435	395	450	450
	U1	1093	1120	1610	1615	1625	1635	1455	1645	1690	1740	1475	1510
	U2	333	360	450	435	440	455	515	465	510	490	535	570
	U3	793	795	1150	1155	1165	1175	1075	1185	1230	1270	1095	1130
	U4	493	520	680	685	695	705	695	715	760	740	715	750
	U5	893	920	1380	1385	1395	1405	1235	1415	1460	1500	1255	1290

4 - Operation

In the thermal store, 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 thermal store shall be connected to a heat source through G 6/4" threaded fittings. Should the tank be connected to a solar system, this must be done via a heat exchanger because solar systems are not filled with heating water. 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.

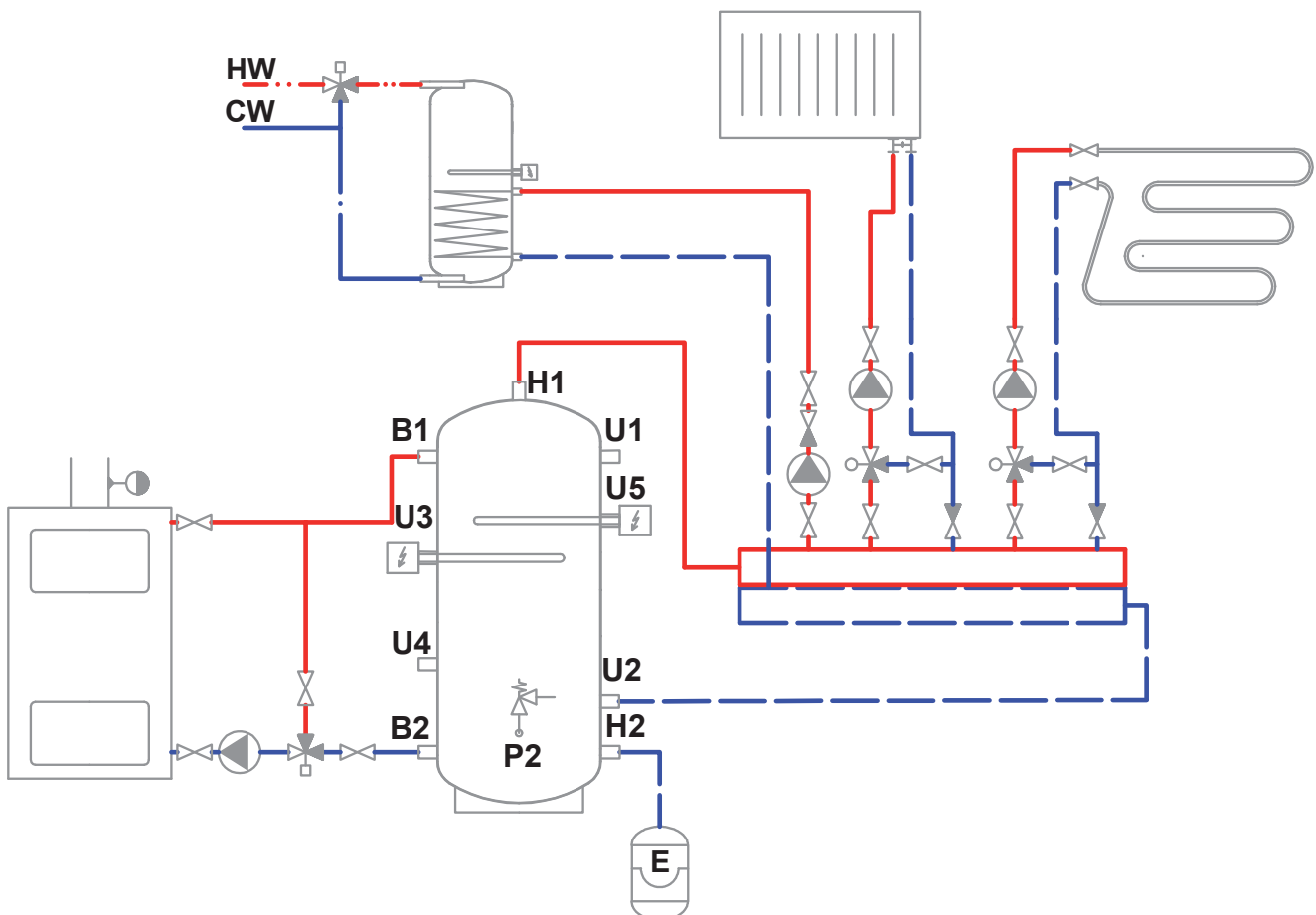
5 - Examples of ports allocation

Conn. point	Example I. -solid boil. + el.	Example II. - firepl. + gas boil.	Example III. - heat p. + el.
H1	outlet to a heating system	outlet to a heating system	outlet to a heating system
B1	inlet from a solid fuel boiler	outlet to a gas boiler	el. heating element
U3	el. heating element	plug	inlet from a heat pump
U4	plug	plug	plug
B2	inlet to a solid fuel boiler	inlet to a fireplace	return line to a heat pump
H2	drain valve, expansion vessel	drain valve, expansion vessel	drain valve, expansion vessel
U2	return line from a heating system	return line from a heating system	return line from a heating system
U5	plug	plug	plug
U1	el. heating element	plug	el. heating element
P2	safety valve, G 1/2", 3 bar	safety valve, G 1/2", 3 bar	safety valve, G 1/2", 3 bar
C2, C2, T, C1	sheaths for weather compensated controller, thermometer, thermostat...		

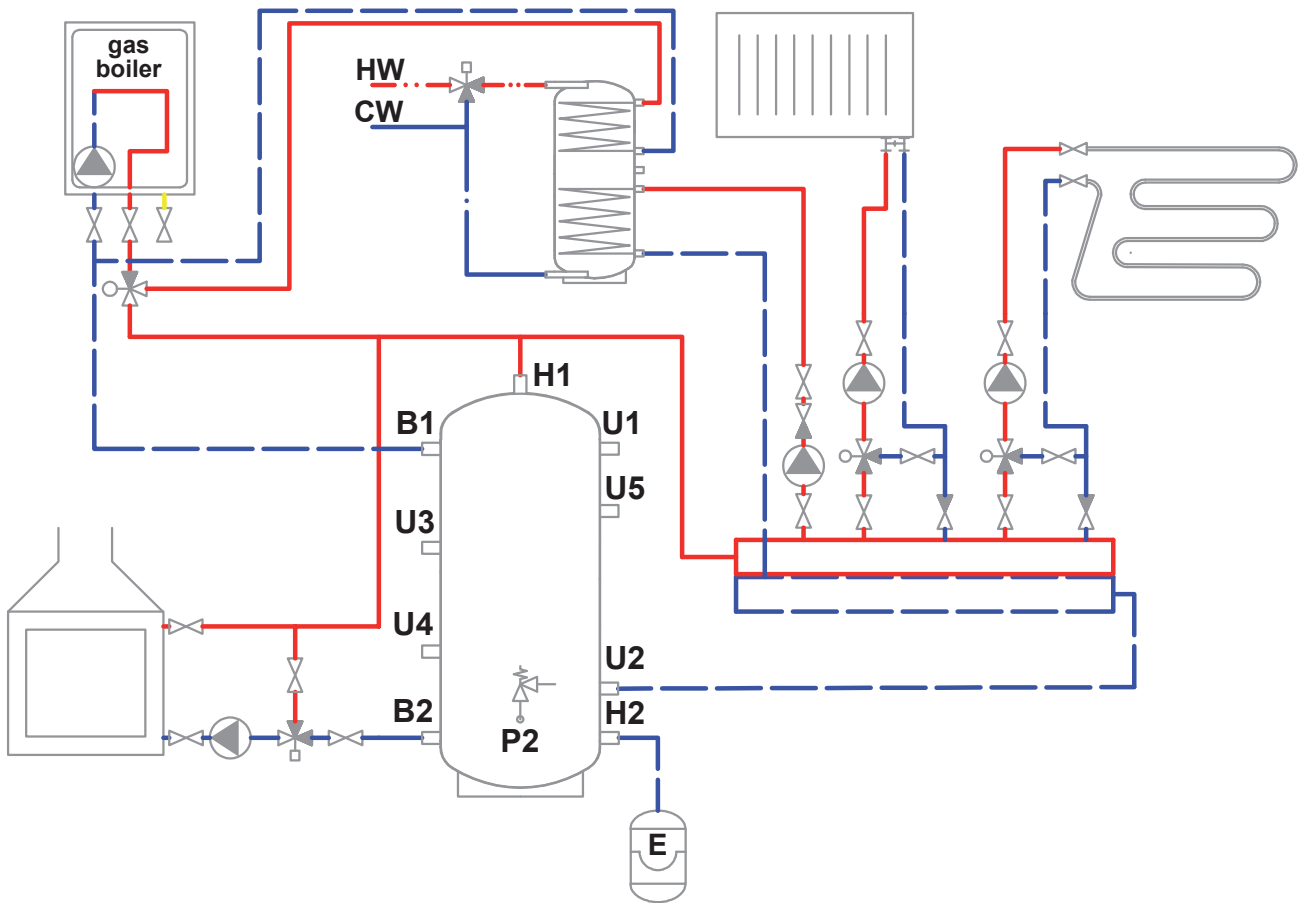
Connections depend on the circuit to be connected, the a.m. examples are informative only.

Example I.

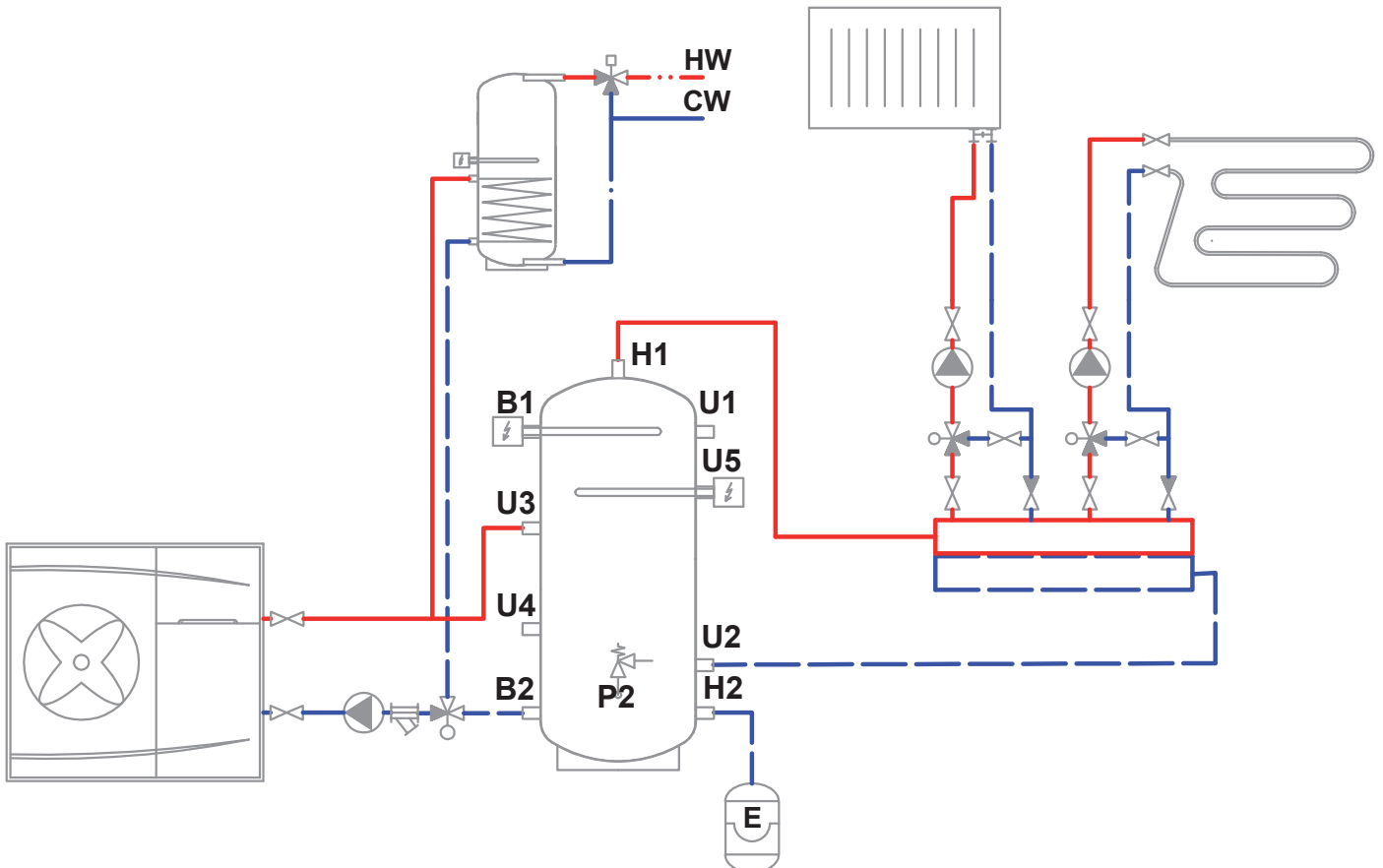
Solid fuel boiler and el. heating element.



Example II.
Gas fired boiler and hydronic fireplace.



Example III.
Heat pump and electric heating element.



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

The tank can is not primarily intended for use with a solar system but if needed, this can be done via a heat exchanger between the solar system and the tank. In such a case, insulate well 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

This tank is not designed for DHW heating.

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.

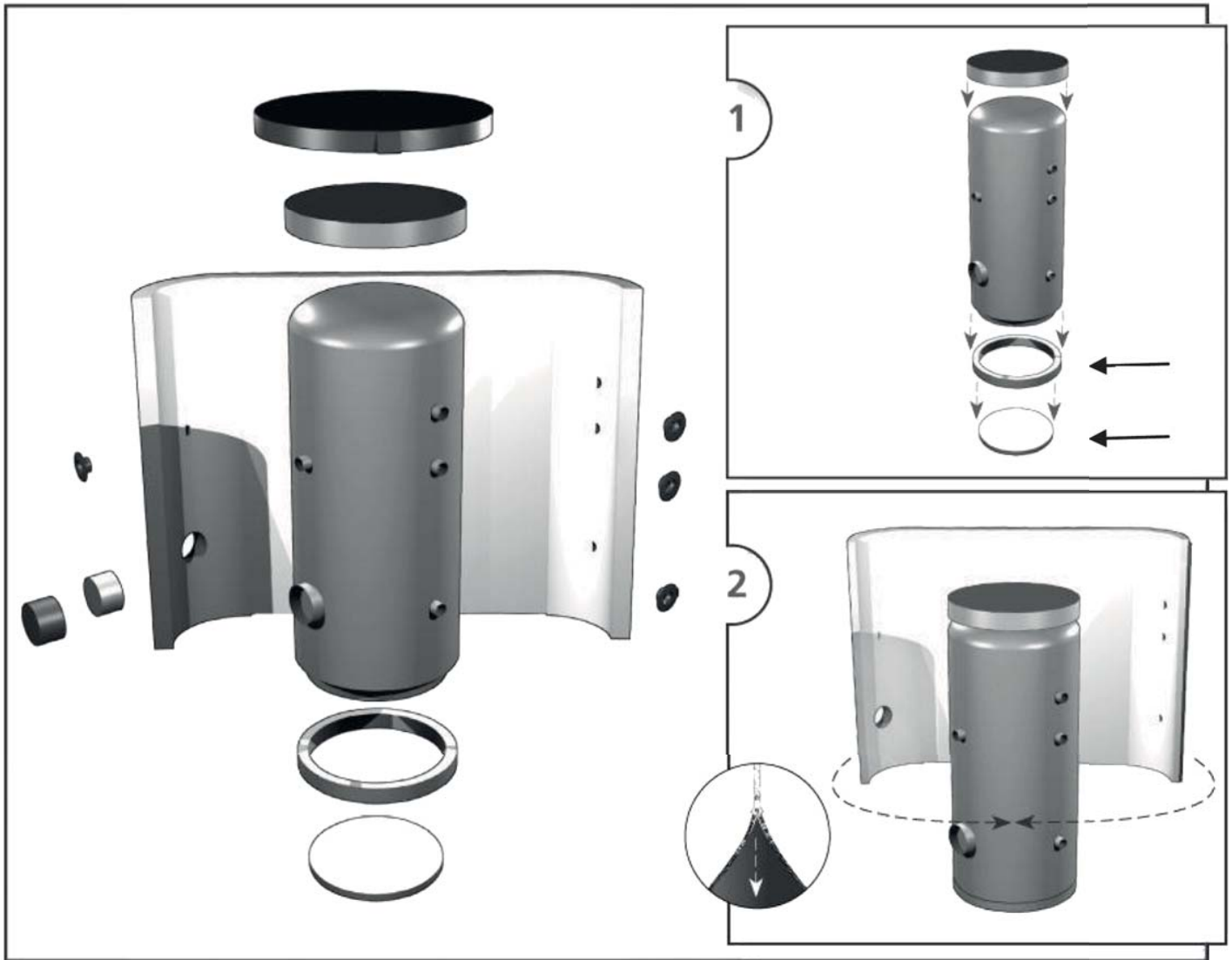
Warranty on insulation

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 thermal store tank scope of supply.

