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THERMAL STORES PS K+

Installation and Operation Manual  
THERMAL STORES PS 400 K+, PS 500 K+, PS 600 K+,  
PS 700 K+, PS 900 K+ and PS 1100 K+

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THERMAL STORES PS K+

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## 1 - Description

PS K+ 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

Six models of 403, 477, 560, 737, 861 and 1085 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.

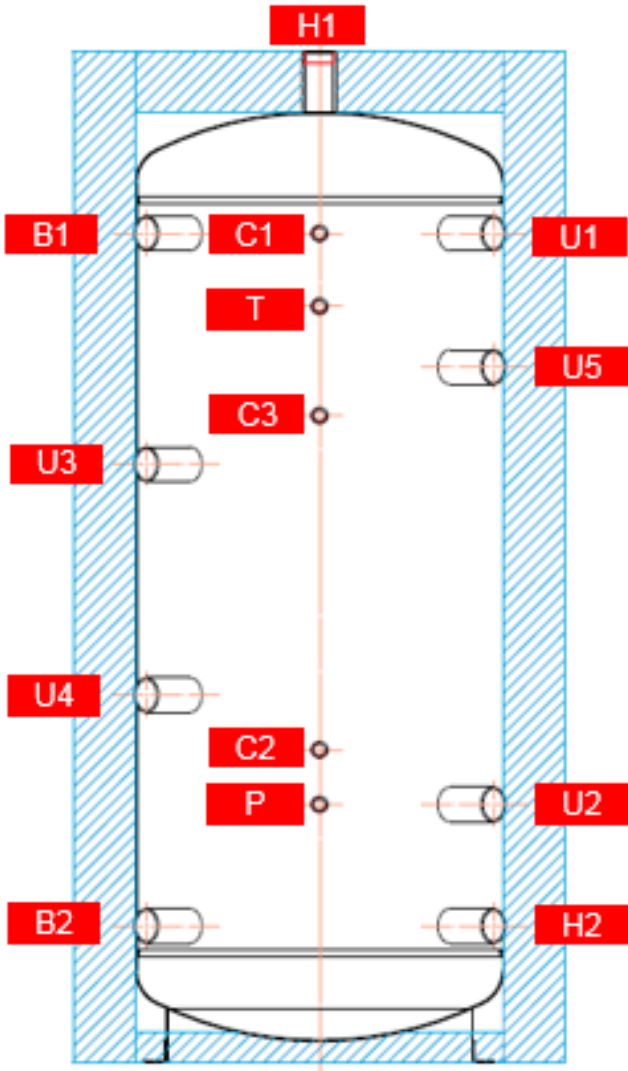
## 2 - General Information

This Owners Manual is an integral and important part of the product and must be handed over to the User. Read 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, 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



		PS 400 K+	PS 500 K+	PS 600 K+	PS 700 K+	PS 900 K+	PS 1100 K+
pos.	connection	height [mm]					
<b>heat sources</b>							
B1	G6/4" F	1365	1375	1385	1395	1415	1435
B2	G6/4" F	225	235	245	255	275	300
<b>heating system</b>							
H1	G6/4" F	1665	1685	1705	1725	1765	1815
H2	G6/4" F	225	235	255	255	275	300
<b>control and safety</b>							
C1	G1/2" F	1365	1375	1385	1395	1415	1435
C2	G1/2" F	515	570	535	545	565	585
C3	G1/2" F	1065	1075	1085	1095	1115	1135
T	G1/2" F	1245	1255	1265	1275	1295	1315
P	G1/2" F	425	425	425	425	425	445
<b>universal inlet/outlet</b>							
U1	G6/4" F	1365	1375	1385	1395	1415	1435
U2	G6/4" F	425	425	435	445	465	490
U3	G6/4" F	985	995	1005	1015	1035	1055
U4	G6/4" F	605	615	625	635	655	675
U5	G6/4" F	1145	1155	1520	1175	1195	1220

Thermal Store		PS 400 K+	PS 500 K+	PS 600 K+	PS 700 K+	PS 900 K+	PS 1100 K+
Code	Thermal Store	15 285	15 288	15 291	15 294	15 297	16 119
	Insulation (Accessories)	15 287	15 290	15 293	15 296	15 299	16 349
Application		Storage and subsequent distribution of thermal energy from solid-fuel boilers, heat pumps or other heat sources.					
Energy efficiency data (as per EC Regulation No. 813/2013)		with insulation					
Energy efficiency class		C	C	x	x	x	x
Standing loss		87 W	96 W	105 W	118 W	128 W	147 W
Storage volume		403 l	477 l	560 l	737 l	861 l	1085 l
Technical data							
Total tank volume		403 l	477 l	560 l	737 l	861 l	1085 l
Max. working temperature in tank		95 °C	95 °C	95 °C	95 °C	95 °C	95 °C
Max. working pressure in tank		4 bar	4 bar	4 bar	4 bar	3 bar	3 bar
Heating elem. max. length / output		680 mm / 9 kW	700 mm / 9 kW	755 mm / 9 kW	815 mm / 12 kW	815 mm / 12 kW	955 mm / 12 kW
Materials							
Tank material		S235JR					
Dimensions, tipping height and weight							
Tank diameter		600 mm	650 mm	700 mm	790 mm	850 mm	950 mm
Tank diameter with insulation		800 mm	850 mm	900 mm	990 mm	1050 mm	1150 mm
Tank overall height		1665 mm	1685 mm	1705 mm	1725 mm	1765 mm	1815 mm
Tipping height without insulation		1700 mm	1720 mm	1750 mm	1780 mm	1820 mm	1850 mm
Empty weight without insulation		65 kg	72 kg	76 kg	93 kg	114 kg	117 kg
Accessories							
El. heating element		ETT-A, C, D, F, G, H, J, L, M					

## 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.

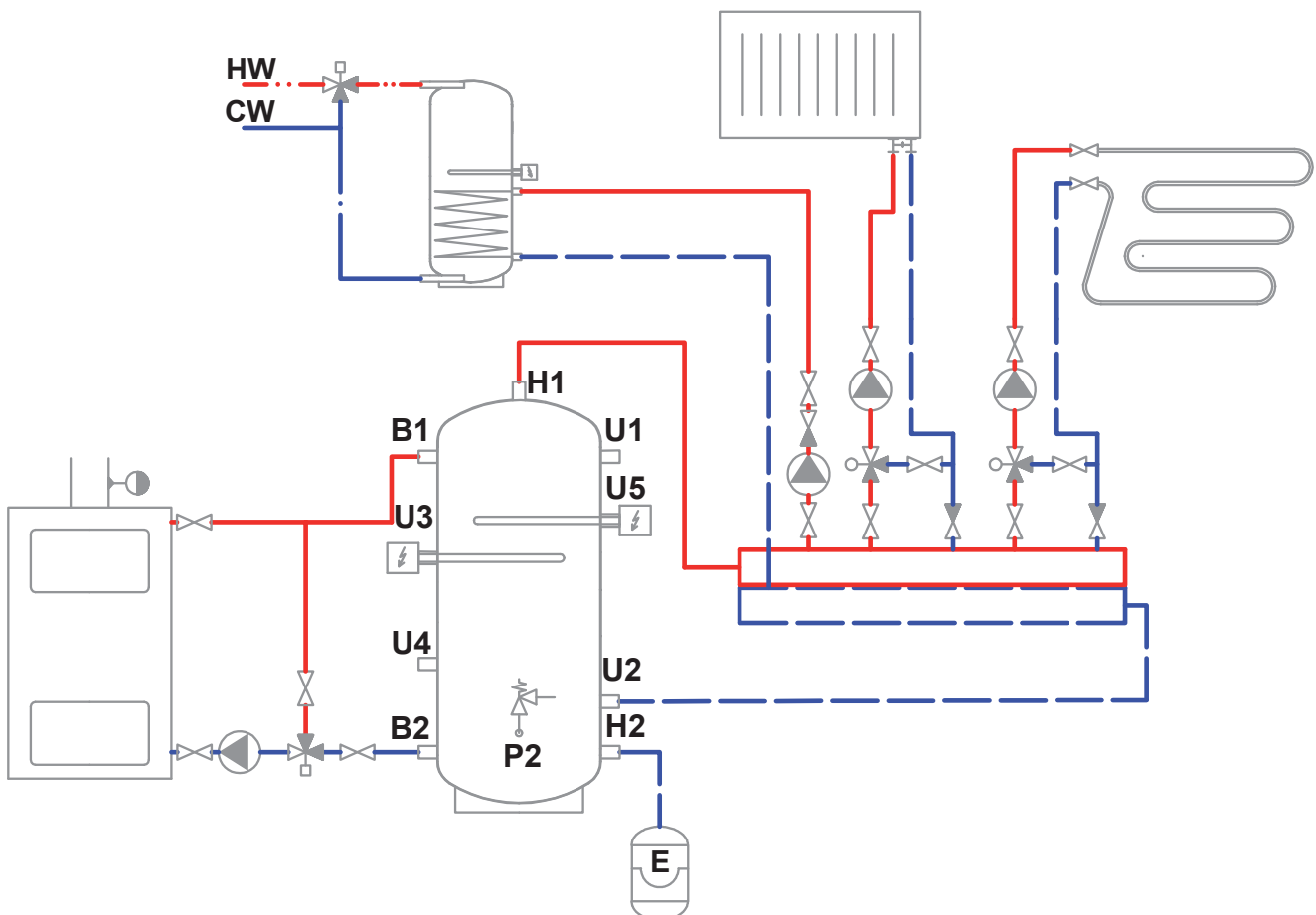
## 5 - Examples of ports allocation

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
44	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
P	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.

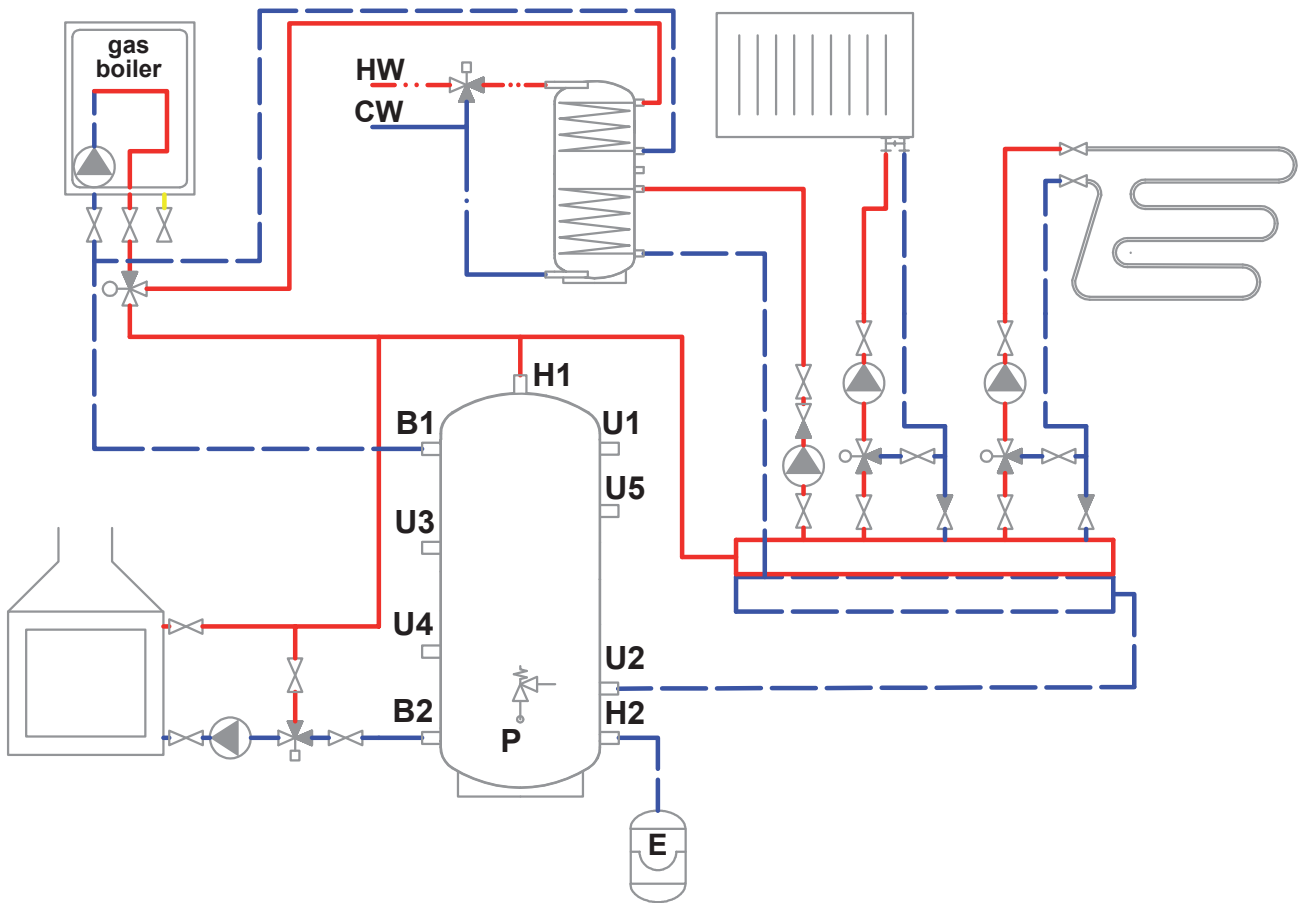
### Example I.

Solid fuel boiler and el. heating element.



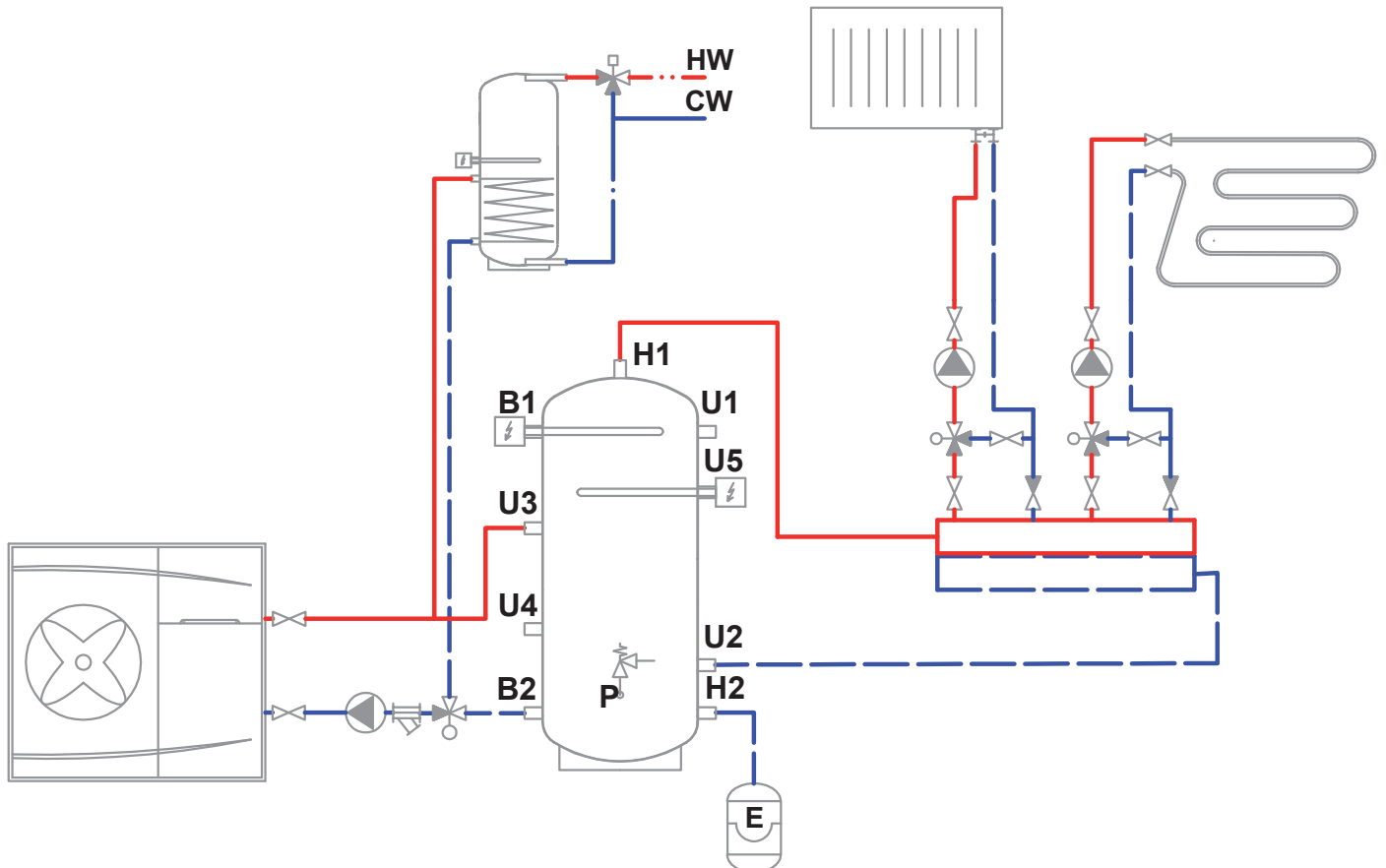
**Example II.**

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

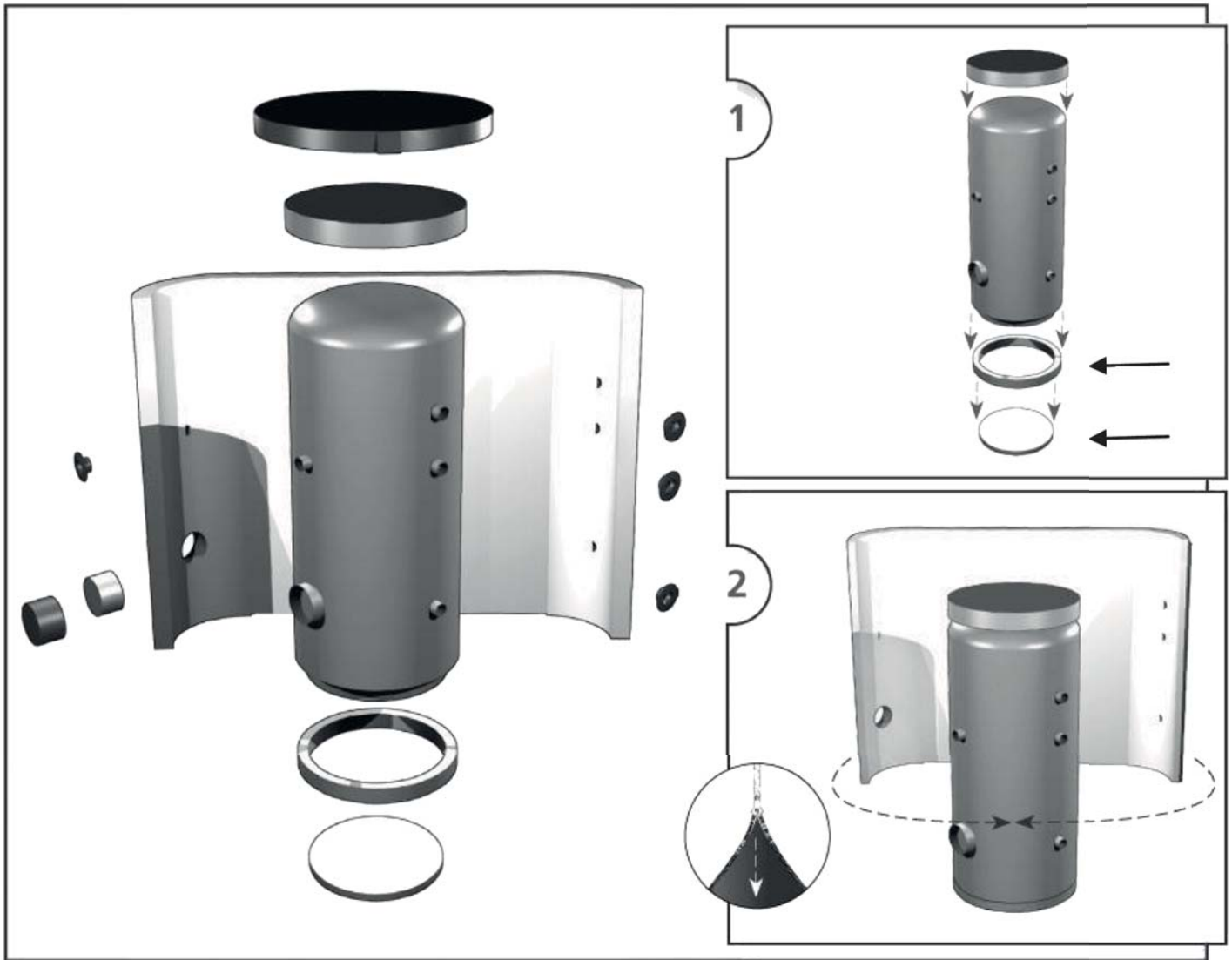
The insulation is covered by a 24-month warranty. This period starts the next day after the insulation is sold.

- 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.



