Regulus

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PS N

Installation and Operation Manual

THERMAL STORES
PS 800 N and PS 1000 N

EN

PS N

CONTENTS

1 Description 3
1.1 Models 3
1.2 Tank Protection 3
1.3 Thermal Insulation 3
1.4 Connection points on the tank 3
1.5 Packaging 3
2 General Information 3
3 Dimensions and Other Technical Data 4
4 Operation 6
5 Typical Layout Examples with Thermal Store 6
6 Installation and Commissioning 8
6.1 Connection to heat sources 8
6.2 Connection to a solar thermal system 8
6.3 El. heating element installation 8
6.4 Commissioning 8
7 Installing Insulation on the Tank 9
8 Maintenance 11
9 Disposal 11
10 Warranty 11

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. These tanks do not enable installation of tube heat exchangers. 230V or 3x230V/400V heating elements (2-12 kW output) can be installed directly into the 6/4” connections. Tanks are fitted with nine connections for heat sources and a heating system, four connections for installing sensor sheaths and one connection for a safety valve. A 100mm thick insulation for these tanks can be purchased as a separate item.

1.1 - Models
Two models of 780 and 960 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
Thermal insulation is available as a separate item. For easier handling, the insulation shall not be fitted on the tank until it reaches its definite place of installation. The insulation is made of fleece, 100 mm thick, with a hard polystyrene surface. It is closed by a quick lock.

1.4 - Connection points on the tank
8× side connections in a circular section of 90°, G 6/4“ F thread
1× top connection, G 6/4“ F thread“
4× side connections for sensor sheaths, G 1/2“ F thread
1× connection for installation of a 3bar safety valve, G 1/2“ F thread

1.5 - Packaging
Thermal stores are delivered standing, each screwed to its separate pallet, packed in bubble wrap.

2 - General Information

This 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 thermal energy of heating water and distribute it subsequently. It must be connected to a heating system and heat sources.
Using the thermal store 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 must not be used as a hot water storage tank!

3 - Dimensions and Other Technical Data
PS 800 N
Thermal store code: 19492
Insulation code: 19499

Energy Efficiency Data (as per EC Regulation No. 812/2013)	
	valid for a thermal store with insulation
Energy efficiency class	N/A
Static loss	115 W
Storage volume	780 l

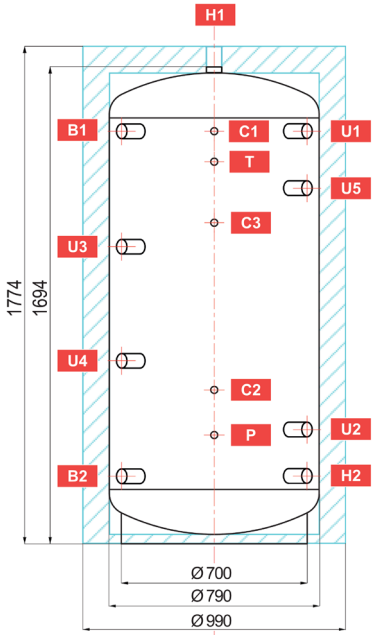
Technical data	
Total thermal store volume	780 l
Max. working temperature in thermal store	95 °C
Min. working temperature in thermal store	7 °C
Max. working pressure in thermal store	4 bar
Thermal store diameter	790 mm
Thermal store diameter with insulation	990 mm
Thermal store overall height with insulation	1774 mm
Tipping height without insulation	1730 mm
Thermal store perimeter insulation thickness	100 mm
Thermal store bottom insulation thickness	50 mm
Thermal store top insulation thickness	100 mm
Empty weight without insulation	101 kg

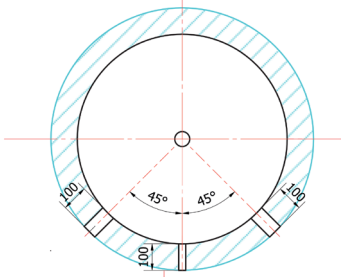
Materials	
Thermal store material	S235JR
Thermal store perimeter insulation	fleece
Thermal store outer surface insulation	hard polystyrene
Top and bottom thermal store insulation	fleece

Insulation thermal conductivity λ ≤ 0.037 W/mK, thermal resistance (short/long term) 150/100 °C, fire class E.

Accessories	
Electric heating element	ETT-A, C, D2, M, R, U, F2, P, S
Heating element max. length	815 mm

Dimensions





CONNECTIONS			
pos.	description	connection	height [mm]
Heat sources			
B1	Supply from heat source	G 6/4" F	1455
B2	Return to heat source	G 6/4" F	255
Heating system			
H1	Flow to heating system	G 6/4" F	1694
H2	Return from heating system	G 6/4" F	255
Control and safety			
C1	Temperature sensor	G 1/2" F	1455
C2	Temperature sensor	G 1/2" F	580
C3	Temperature sensor	G 1/2" F	1110
T	Thermometer	G 1/2" F	1340
P	Safety valve	G 1/2" F	410
Universal inlet/outlet			
U1	Universal inlet/outlet	G 6/4" F	1455
U2	Universal inlet/outlet	G 6/4" F	430
U3	Universal inlet/outlet	G 6/4" F	1055
U4	Universal inlet/outlet	G 6/4" F	655
U5	Universal inlet/outlet	G 6/4" F	1240

PS 1000 N
Thermal store code: 19489
Insulation code: 19496

Energy Efficiency Data (as per EC Regulation No. 812/2013)	
	valid for a thermal store with insulation
Energy efficiency class	N/A
Static loss	131 W
Storage volume	960 l

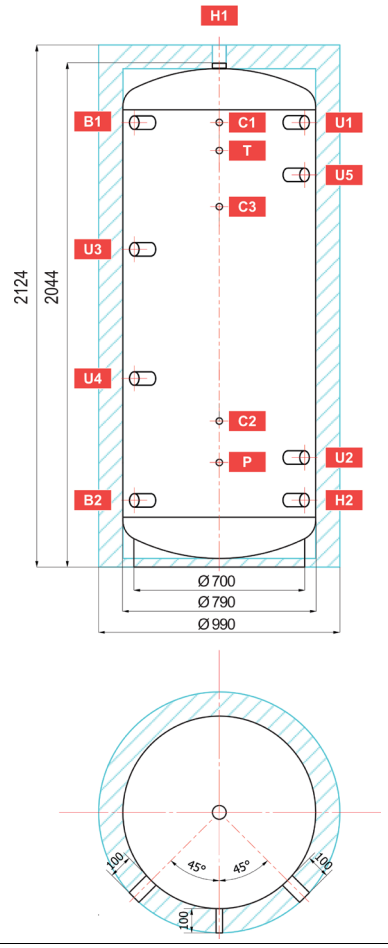
Technical data	
Total thermal store volume	960 l
Max. working temperature in thermal store	95 °C
Min. working temperature in thermal store	7 °C
Max. working pressure in thermal store	4 bar
Thermal store diameter	790 mm
Thermal store diameter with insulation	990 mm
Thermal store overall height with insulation	2124 mm
Tipping height without insulation	2075 mm
Thermal store perimeter insulation thickness	100 mm
Thermal store bottom insulation thickness	50 mm
Thermal store top insulation thickness	100 mm
Empty weight without insulation	112 kg

Materials	
Thermal store material	S235JR
Thermal store perimeter insulation	fleece
Thermal store outer surface insulation	hard polystyrene
Top and bottom thermal store insulation	fleece

Insulation thermal conductivity λ ≤ 0.037 W/mK, thermal resistance (short/long term) 150/100 °C, fire class E.

Accessories	
Electric heating element	ETT-A, C, D2, M, R, U, F2, P, S
Heating element max. length	815 mm

Dimensions



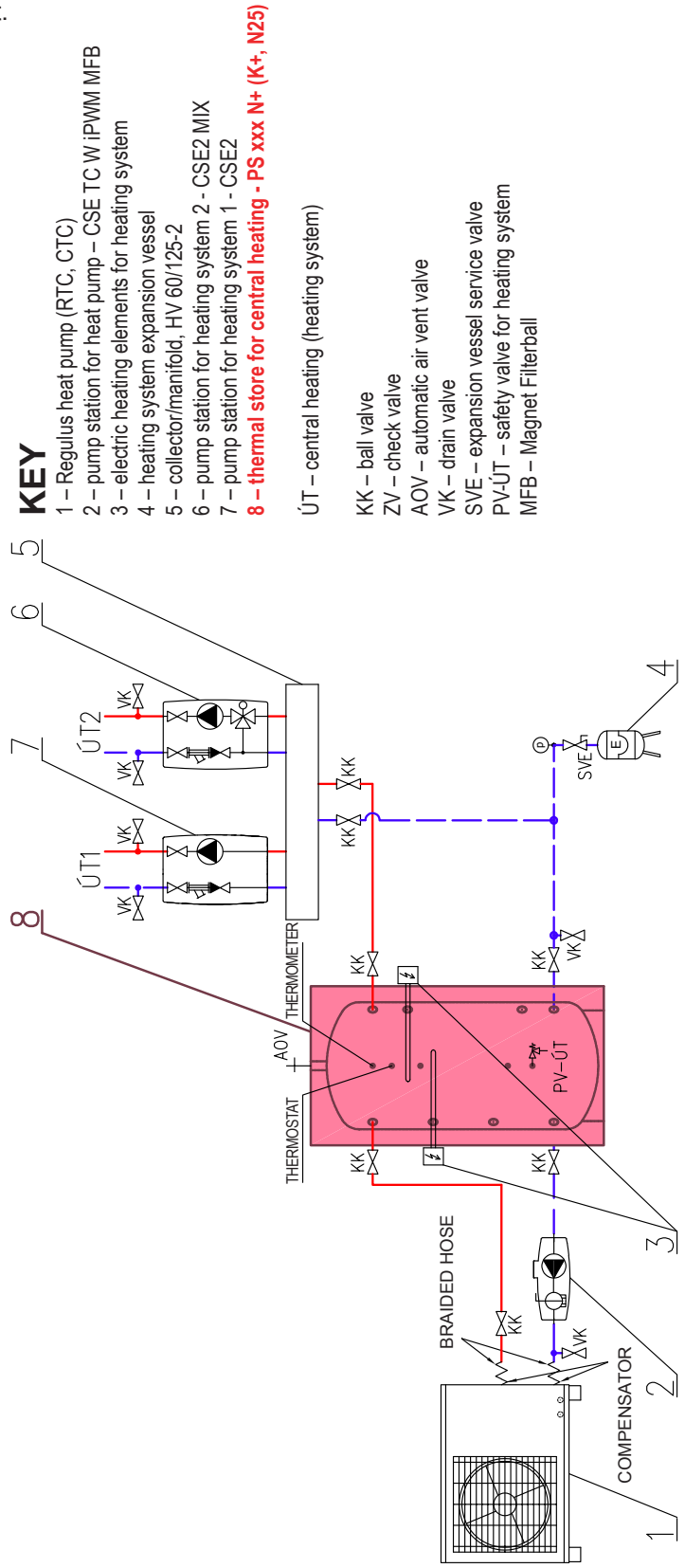
CONNECTIONS			
pos.	description	connection	height [mm]
Heat sources			
B1	Supply from heat source	G 6/4" F	1805
B2	Return to heat source	G 6/4" F	255
Heating system			
H1	Flow to heating system	G 6/4" F	2044
H2	Return from heating system	G 6/4" F	255
Control and safety			
C1	Temperature sensor	G 1/2" F	1805
C2	Temperature sensor	G 1/2" F	580
C3	Temperature sensor	G 1/2" F	1460
T	Thermometer	G 1/2" F	1690
P	Safety valve	G 1/2" F	410
Universal inlet/outlet			
U1	Universal inlet/outlet	G 6/4" F	1805
U2	Universal inlet/outlet	G 6/4" F	430
U3	Universal inlet/outlet	G 6/4" F	1285
U4	Universal inlet/outlet	G 6/4" F	755
U5	Universal inlet/outlet	G 6/4" F	1590

4 - Operation

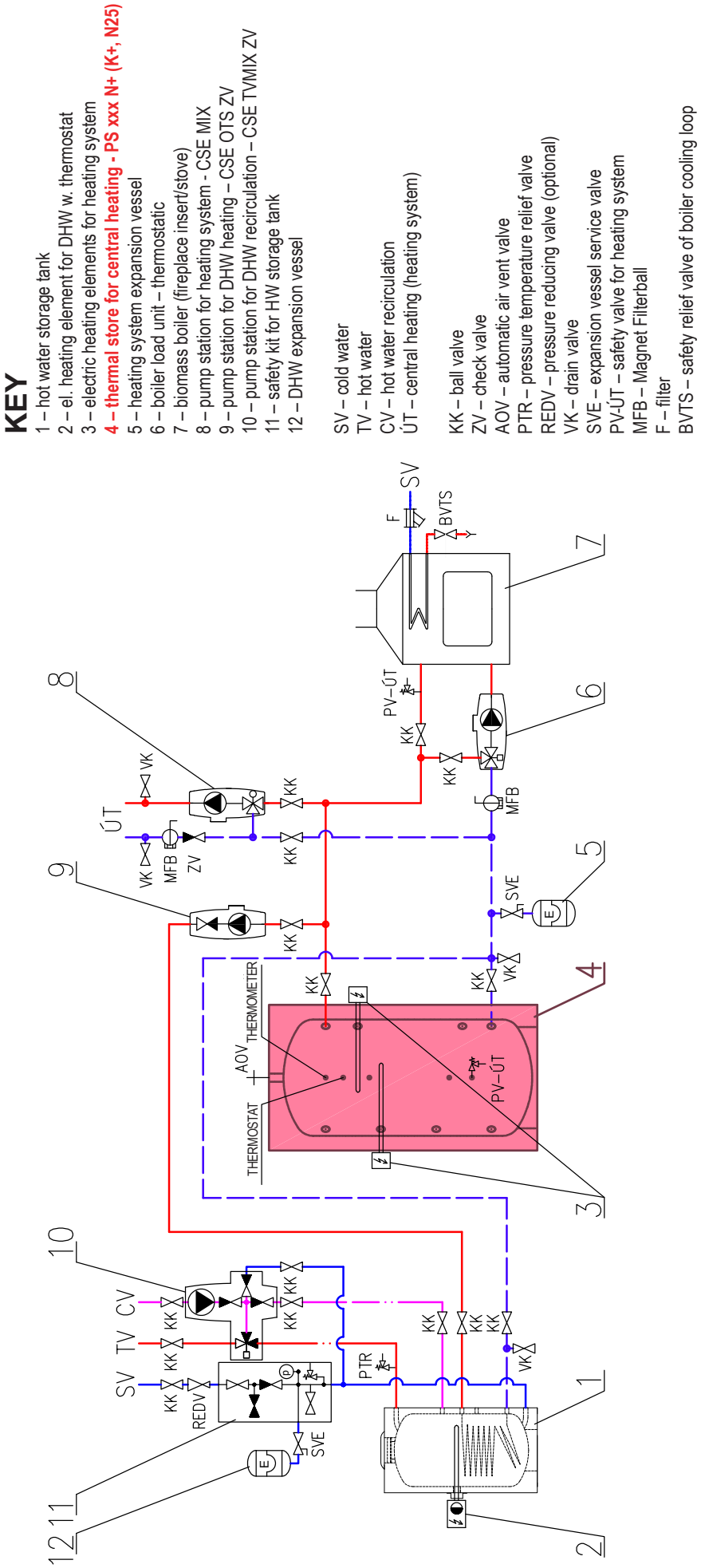
In a thermal store, heating water can be heated up by various types of hot-water boilers, renewable energy sources (heat pumps, solar collectors), or possibly also by electric heating elements.
The thermal store is connected to the energy source using a G 6/4“ connection fitting. Should the tank be connected to a solar thermal system, a heat exchanger shall be used for the connection because heating water is not used as the heat transfer fluid in a solar thermal system. The individual tank outlets are fitted according to the circuits to be connected.

5 - Typical Layout Examples with Thermal Store

Example I.
Heat pump and electric heating element.



Example II.
Biomass boiler (fireplace insert/stove) 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 heatingsystem using a suitable cleaning agent, e.g. BP 400 PLUS.
Anti-corrosion protective liquid should be also used, e.g. BP 400 PLUS.

6.1 - Connection to heat sources

Place the tank on the floor, as close to your heat source as possible. Fit the insulation, cf. Installing Insulation on the Tank. Connect the heating system according to the recommended connection layout - see Chap. 5.Install a drain valve at the lowest point of the system. Install an air vent valve at the highest point of the system. Install a safety valve in the connection P (see the dimensional diagram). There must not be any shut-off valve between the thermal store and the safety valve. Insulate all the connecting piping.

6.2 - Connection to a solar thermal system

This thermal store is primarily not designed to be connected to a solar thermal system. However, when needed, such a connection can be done by means of a heat exchanger between the solar thermal system and the thermal store. In such an event, all the connecting piping between the tank and this heat exchanger shall be thoroughly insulated.

6.3 - El. heating element installation

These thermal stores can be equipped with electric heating elements - see the table of max. output of heating elements in hot water tanks and thermal stores. They can be connected either directly (elements with integrated thermostat) or via the controller of the entire heating system.
All electric heating elements shall be protected by a safety thermostat.
The electric heating element shall be wired by a professionally qualified person only.

6.4 - Commissioning

Ground the tank before 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 quality 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

Product description
Fleece insulation with a hard polystyrene surface, closed by a quick lock.

Warning
Insulation installation shall be done in two or three persons, depending on its size. The PU leather surface coated fleece 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.
Do not use any tools for installation.
Keep away from open fire.

Installing insulation
1. Put the bottom insulation under the tank and place 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 centre evenly in both directions until the insulation adheres to the tank's surface completely and no bubbles are left.
3. Use the holes for connections 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 quick lock from the other side
5. Put on the upper insulation and cover.
6. Push on the covering plastic rosettes depending on the size of connections, 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 another 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.

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2
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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 tank connections for leaks.

9 - Disposal

Packaging 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 Centre. Insulation shall be recycled as plastic and the steel vessel as scrap iron.

10 - Warranty

This product is covered by warranty according to the conditions described in this Manual and according to the Warranty Certificate. A Warranty Certificate is an integral part of the supply

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REGULUS spol. s r.o.
E-mail: sales@regulus.eu
Web: www.regulus.eu