Regulus

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HSK 220 TV

Installation and Operation Manual

HSK 220 TV Hot Water Storage Tank with stainless-steel tube DHW heat exchanger

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HSK 220 TV

CONTENTS

1 - Description

HSK 220 TV Hot Water Storage Tank with an integrated stainless-steel heat exchanger is designed for continuous DHW heating. It is suitable for installation with a heat pump and a RegulusBOX indoor unit.

1.1 - Models
One model of 222 l total capacity, with a stainless-steel DHW heat exchanger.

1.2 - Tank Protection
The tank has no surface finish, its outer surface is lacquered in gray. The DHW heat exchanger is made of stainless steel.

1.3 - Thermal Insulation
Thermal insulation is available as a separate item. For easier handling, the insulation shall not be fitted on the tank untilit reaches its definite place of installation. The insulation is made of fleece, 100 mm thick, with a hard polystyrene surface. After installation on the tank, the insulation is compressed to a thickness of 80mm.

1.4 - Packaging
Hot water tanks are delivered standing, each screwed to its separate pallet, packed in bubble wrap. The insulation is packed separately in plastic foil.
It is forbidden to transport and/or store the tank in a horizontal position.

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.

This appliance is designed for continuous DHW heating.

Using the hot water tank for other purposes than above described is forbidden and the manufacturer accepts no responsibility for damage caused by improper or wrong use.

The appliance shall be installed by a qualified person according to valid rules and Manufacturer‘s Instructions, otherwise the Warranty is null and void.

3 - Dimensions and Other Technical Data

Main Features	
Description	A hot water tank designed for continuous DHW heating in an integrated stainless-steel heat exchanger. It can be easily placed under RegulusBOX.
Working fluid	Water (DHW heat exchanger), water, water/glycol mixture (max. 1:1) or water/ glycerine mixture (max. 2:1) (tank).

Code	
Hot Water Storage Tank	**19617**
Insulation	**19619**

Energy Efficiency Data (as per EC Regulation No. 812/2013)	
	HSK 220 TV with insulation
Energy efficiency class	B
Standing loss	62 W
Storage volume	222 l

Technical Data	
Total tank volume	222 l
Fluid volume in tank	201 l
DHW heat exchanger volume	21 l
DHW heat exchanger surface area	6 m^2
Max. working temperature in tank	95 °C
Max. working temperature in DHW HX	95 °C
Max. working pressure in tank	4 bar
Max. working pressure in DHW HX	10 bar

Tank Materials	
Tank material	S235JR
DHW heat exchanger material	AISI 316 L

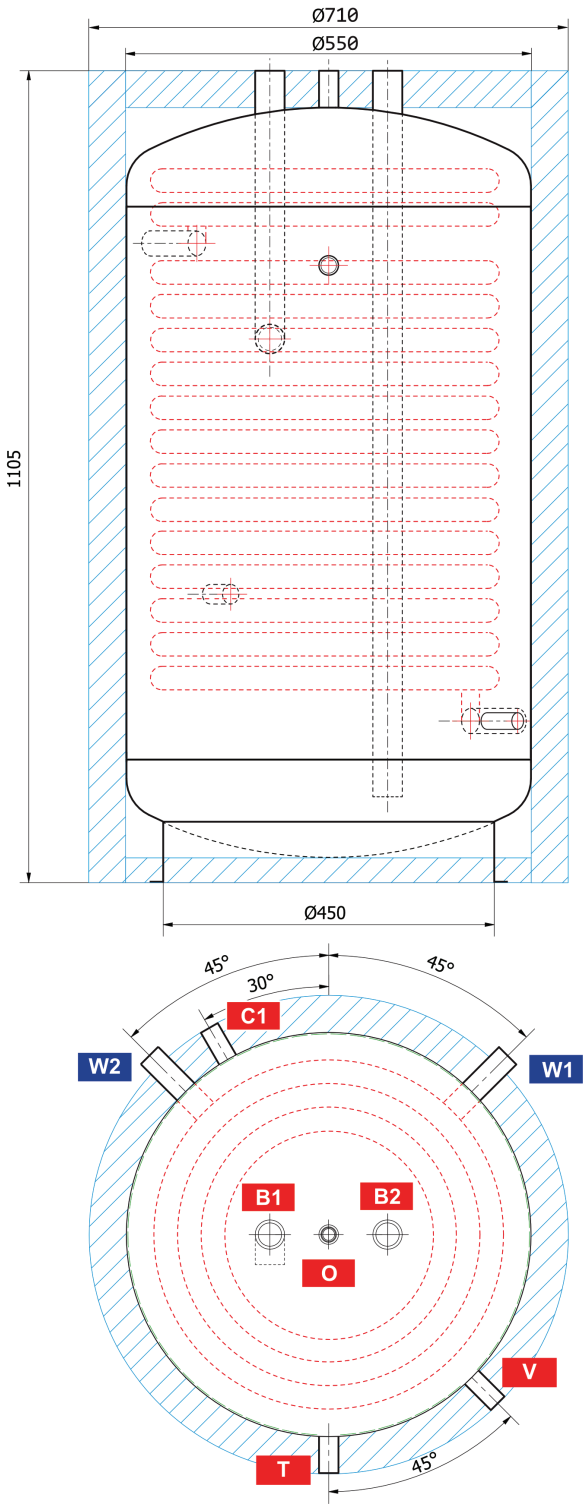
Insulation Materials	
Tank perimeter insulation	fleece
Tank perimeter insulation outer surface	hard polystyrene
Top tank insulation	polystyrene + fleece
Bottom insulation	fleece

Dimensions, Tipping height, Insulation thickness, Weight	
Tank diameter	550 mm
Tank diameter with insulation	710 mm
Tank overall height	1105 mm
Tipping height without insulation	1152 mm
Tank perimeter insulation thickness	100 mm
Bottom insulation thickness	50 mm
Top insulation thickness	50 mm
Empty weight without insulation	60 kg

Volume of supplied DHW (heated from 10 °C to 40 °C)												
Heated volume	entire			entire			entire			entire		
Temperature in tank	50 °C			50 °C			60 °C			60 °C		
Backup heater	10 kW			none			10 kW			none		
Flow rate [l/min]	8	12	20	8	12	20	8	12	20	8	12	20
Hot water volume [l]	**144**	**129**	**114**	**138**	**110**	**98**	**286**	**236**	**205**	**233**	**226**	**176**

Dimensions

Tipping height without insulation 1152 mm



CONNECTIONS			
pos.	description	connec-tion	height [mm]
Heat sources			
B1	Incoming from heat source	G 1" F	1105
B2	Return to heat source	G 1" F	1105
DHW heating			
W1	Cold water	G 1" M	220
W2	Hot water	G 1" M	870
Control and safety			
C1	Temperature sensor	G 1/2" F	390
T	Thermometer	G 1/2" F	840
V	Drain valve	G 1/2" F	220
Air release			
O	Air vent valve	G 1/2" F	1105

4 - Operation

This tank is designed for continuous DHW heating.
The tank is suitable for installation with a heat pump and a RegulusBOX indoor unit.

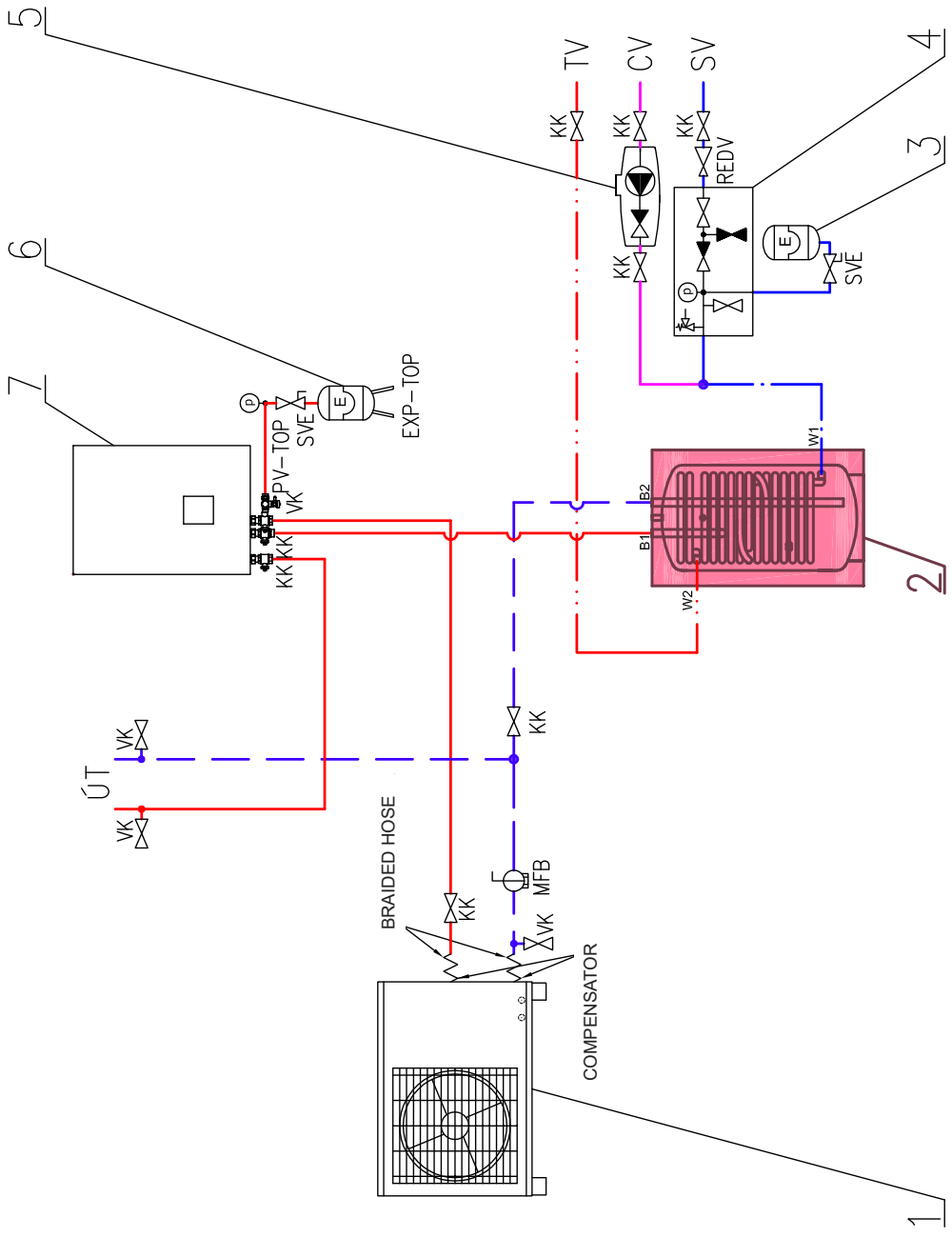
5 - Typical Layout Example with Hot Water Storage Tank

KEY

1 – Regulus heat pump (RTC, CTC)
2 – hot water tank for DHW - HSK 220 TV
3 – DHW expansion vessel
4 – safety kit for HW storage tank
5 – pump station for DHW recirculation – CSE TV ZV
6 – heating system expansion vessel
7 – RegulusBOX indoor unit

SV – cold water
TV – hot water
CV – hot water recirculation
ÚT – central heating (heating system)

KK – ball valve
ZV – check valve
AOV – automatic air vent valve
PTR – pressure temperature relief valve
PV – safety valve
REDV – pressure reducing valve (optional)
VK – drain valve
SVE – expansion vessel service valve
PV-ÚT – safety valve for heating system
MFB – Magnet Filterball



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. BP 400.
Anti-corrosion protective liquid should be also used in the heating system, e.g. BP 100 Plus.

6.1 - Connection to heat sources

Place the tank on the floor and level it. Fit the insulation, cf. Installing Insulation on the tank. Connect the heating system according to the recommended connection layout to connections B1 and B2 - see Chap. 5. Install a drain valve into the connection V. Install an air vent valve at the highest point of the system and into the connection O. Insulate all the connecting piping.

6.2 - Connection to water mains

DHW piping shall be done according to valid rules. Tank connections incl. the fittings (connections W1 and W2) is shown in the diagram of the recommended connections – see Chap. 5. A pressure reducing valve and a safety kit should be installed at the cold water inlet. If the pressure from water mains exceeds 6 bar, a reducing valve is necessary. It is also recommended to install an expansion vessel at the cold water inlet with a minimum volume of 4% of the total water volume in the DHW piping incl. heat exchangers, recirculation pipes etc. (usually 8 l). Should the water be too hard, install a water softener upstream of the tank. In case the water source contains mechanical impurities, install a filter.

6.3 - 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 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.
Quality of DHW shall meet the conditions shown in the Table of limit values for total dissolved solids in hot water on this page of this Manual.

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.

Table of limit values for total dissolved solids in hot water

Description	pH	Total dissolved solids (TDS)	Ca	Chlorides	Mg	Na	Fe
Max. value	6.5 - 9.5	600 mg/l	40 mg/l	100 mg/l	20 mg/l	200 mg/l	0.2 mg/l

7 - Installing Insulation on the Tank

Product description

Thermal insulation is a part of the hot water tank, preventing its heat loss. For easier handling, the insulation shall not be fitted on the tank until it reaches its definite place of installation.
The insulation is 100 mm thick, after installation on the tank it is compressed to a thickness of 80mm.

Warning

Insulation installation shall be done in two persons. Do not use any tools for installation. Keep away from open fire.

Installing insulation

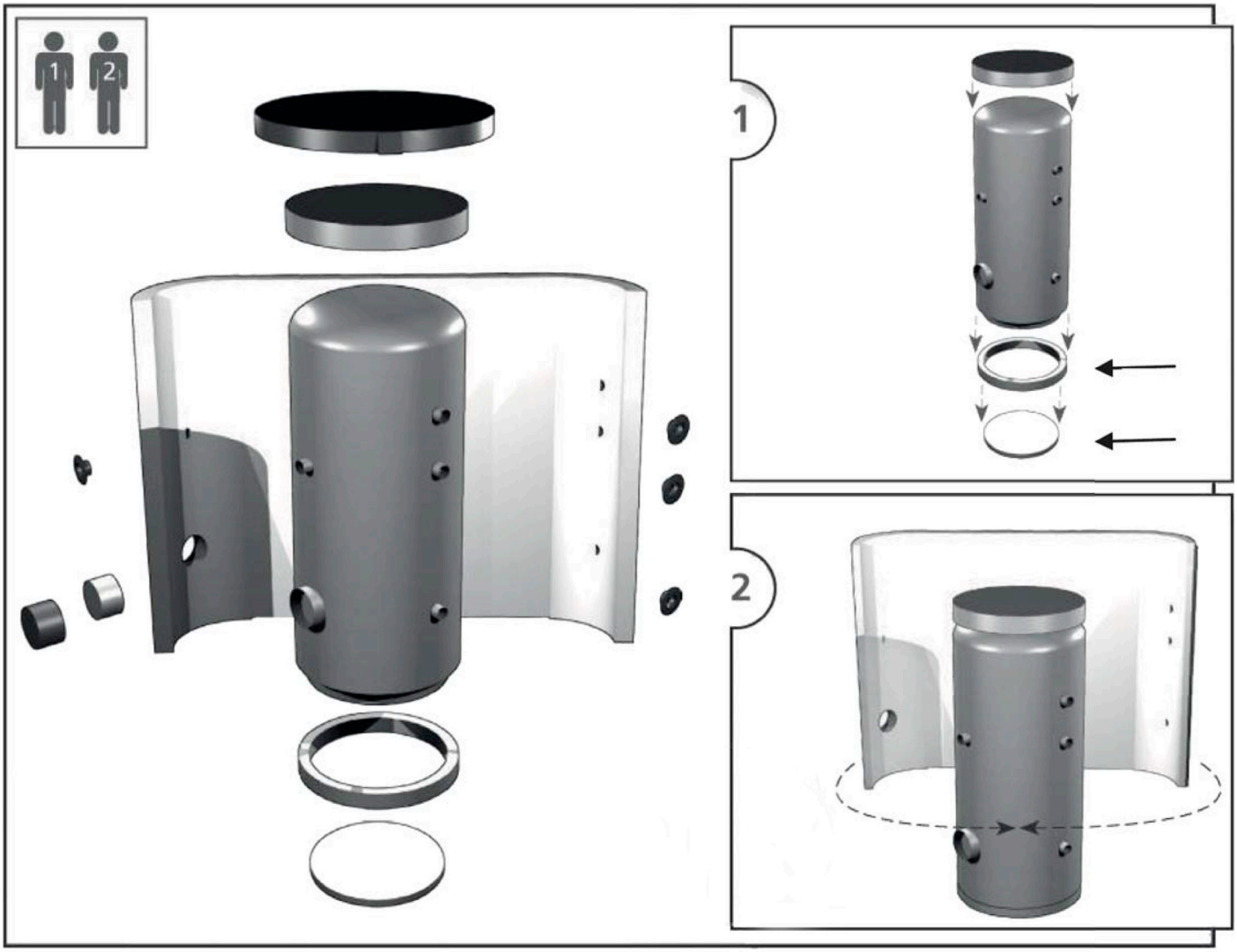
1. Put the bottom insulation under the tank and place the tank following installation instructions.
2. Wrap the insulation around the tank carefully. Check that the insulation adheres to its body perfectly. This can be reached by rubbing and patting the insulation by hand from its centre evenly in both 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 side.
5. Put on the upper insulation and cover.
6. Push on the covering plastic rosettes depending on the size of connections.
7. Finish the tank installation in compliance with the respective instructions and valid standards and rules.

Warranty on insulation

□ 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.



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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