Owners Manual

ACCUMULATION TANKS
PS 200, PS 300, PS 500, PS 650, PS 800, PS 1000, PS 1500, PS 2000, PS 3000, PS 4000, PS 5000

CE

Regulus®

EN
v. 1.1

CONTENTS

1. Description

PS Accumulation Tanks are intended for accumulation 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 rods of 2-12 kW output can be installed directly into the 6/4” sleeves and power supplied either with 230V or 3 x 230V/400V. Tanks are fitted with nine sleeves for connection to heat sources and 3 sleeves for sensor sheaths. 100mm thick insulation for these tanks is sold separately.

1.1 Models

Eleven models of 200, 300, 500, 650, 800, 1000, 1500, 2000, 3000, 4000 and 5000 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

For tanks of volume up to 1000 l inclusive, the type of insulation can be selected. For the sake of easier handling, both the types available are installed on the spot. The insulation is either made of hard polystyrene with a plastic surface or melanin, or made of soft polyurethane foam. For tanks of bigger volumes (model PS1500 and over) only the soft polyurethane insulation with a leatherette surface is available. The insulation is also 100 mm thick and is fitted with with a zippered outer leatherette jacket.

1.4 Connection points on the tank

8x sleeve with lateral connection in a 90° sector (PS 200 6x sleeve), G 6/4“ inner thread
1x sleeve with upwards connection, G 6/4“ inner thread
3x sleeve for installation of lateral sensor sheaths (PS 200 4x sleeve), G 1/2“ inner thread

1.5 Packing

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

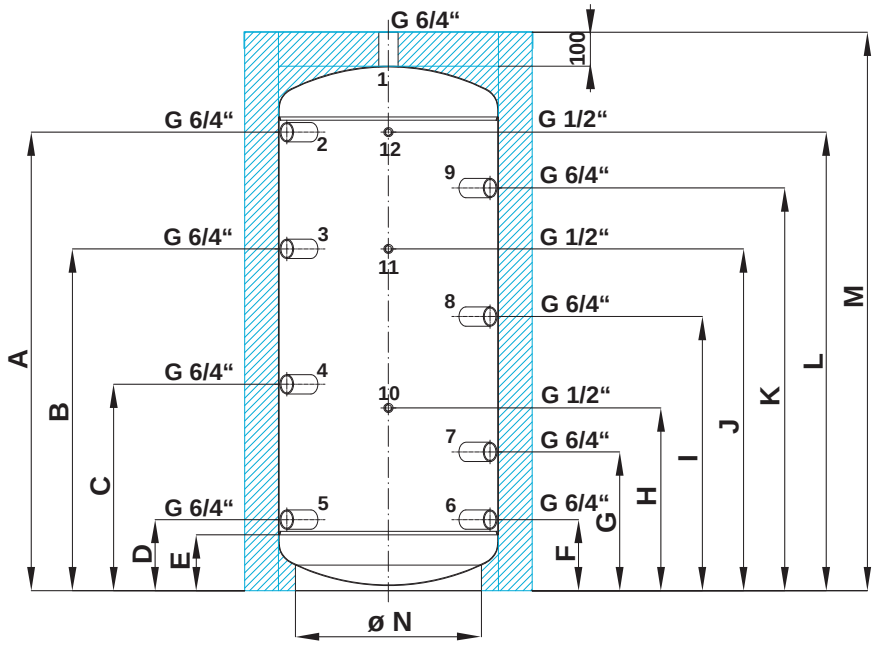
2. General Information

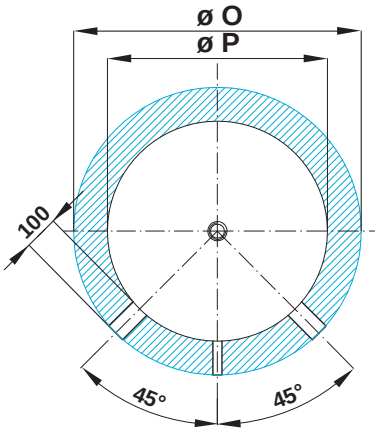
This Owners Manual is an integral and important part of the product and must be handed over to the User. Read carefully the instructions in this Manual as they contain important information concerning safety, installation, operation and maintenance. Keep this Manual for later reference. The appliance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

This appliance is designed to accumulate heating water and distribute it subsequently. It must be connected to a heating system and heat sources. This appliance is not intended for heating domestic hot water.
Using the accumulation tank for other purposes than above described is forbidden and the manufacturer accepts no responsibility for damage caused by improper or wrong use. The accumulation tank is not permitted to be used as a hot water storage!

The appliance shall be installed by a qualified person according to valid rules, otherwise the warranty becomes null and void.

3. Technical Data and Dimensions of PS Line of Tanks





Tank code ..... **a**
Hard insulation code ..... **b**
Soft insulation code ..... **c**
Tank total volume ..... **d**
Empty weight ..... **e**
Max. working pressure -
PS200 to PS500, PS800 and PS1000..... **6 bar**
PS650, PS1500 to PS5000 ..... **4 bar**
Max. working temperature ..... **95 °C**

Model		PS200	PS300	PS500	PS650	PS800	PS1000	PS1500	PS2000	PS3000	PS4000	PS5000
Tank code	a	8458	5445	5446	11727	5447	5699	5858	5859	5860	5861	5681
Hard insulation code	b	-	6557	6558	-	6560	6562	-	-	-	-	-
Soft insulation code	c	8531	5538	5539	11776	5540	5761	5862	5863	5864	5865	5866
Tank volume [l]	d	200	300	500	650	800	1000	1500	2000	3000	4000	5000
Empty weight [kg]	e	52	60	79	118	108	120	198	323	-	-	-
Dimensions [mm]	A	1160	1215	1355	1620	1410	1730	1975	1925	1815	1840	2335
	B	710	885	1010	1170	1020	1240	1420	1400	1350	1365	1705
	C	-	550	610	670	620	740	865	875	885	910	1075
	D	220	210	210	220	250	250	310	350	420	445	445
	E	170	160	165	170	200	200	225	260	340	370	370
	F	220	210	210	220	250	250	310	350	420	445	445
	G	-	380	410	450	435	495	590	610	650	675	760
	H	350	490	540	560	520	570	730	740	770	790	920
	I	645	720	810	920	820	990	1145	1135	1115	1140	1390
	J	810	885	1010	1170	1020	1240	1420	1400	1350	1365	1705
	K	1050	1050	1190	1400	1215	1485	1700	1660	1580	1605	2020
	L	1160	1215	1355	1620	1410	1730	1975	1925	1815	1840	2335
	M	1440	1510	1650	1930	1730	2050	2340	2335	2295	2355	2855
	ø N	340	450	550	600	700	700	850	1000	1300	1500	1500
	ø O	650	750	850	900	990	990	1150	1300	1600	1800	1800
	ø P	450	550	650	700	790	790	950	1100	1400	1600	1600

4. Operation

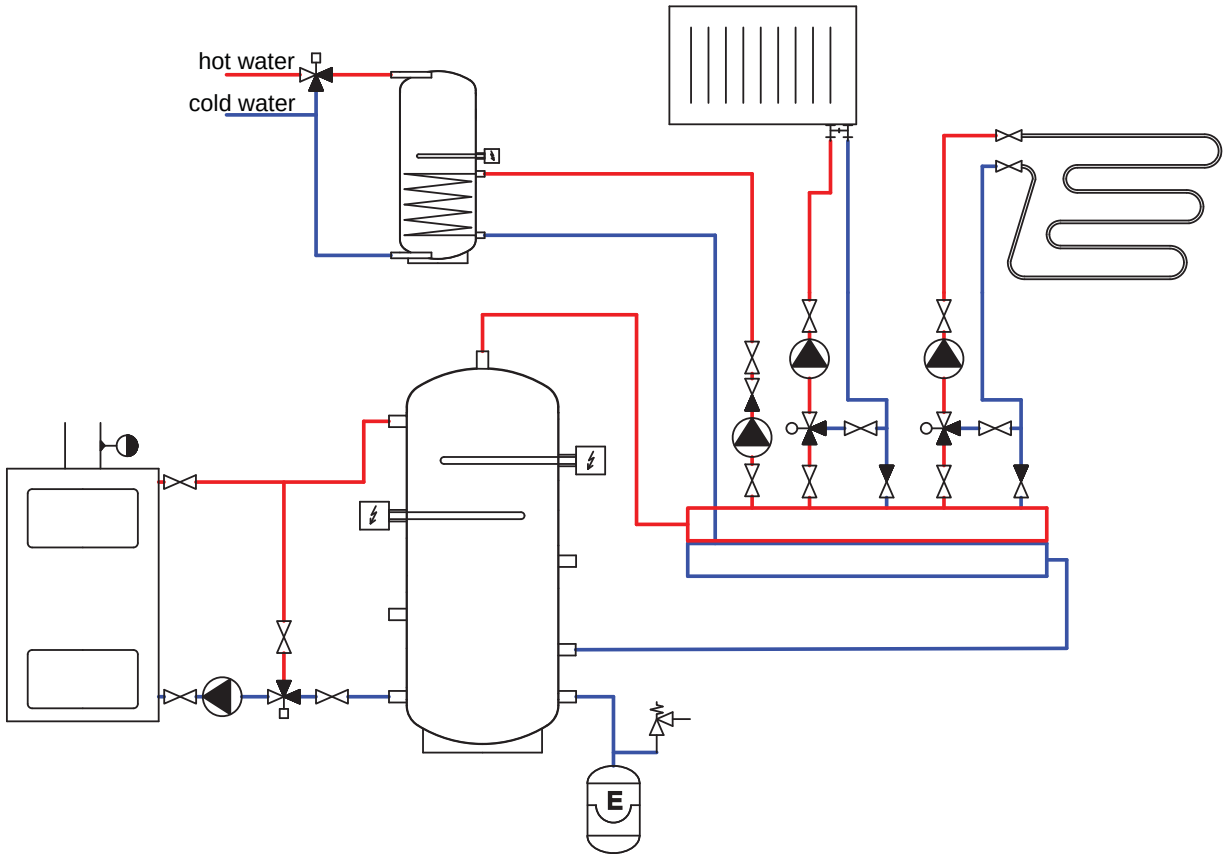
In the accumulation tank heating water is heated up from several heat sources like various types of hot-water boilers, renewable energy sources (heat pumps, solar collectors), or electric heating rods.
The accumulation tank shall be connected to a heat source through G 6/4” threaded fittings. Should 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, the following chapter describes just some examples.

5. Examples of Assigning Connection Points

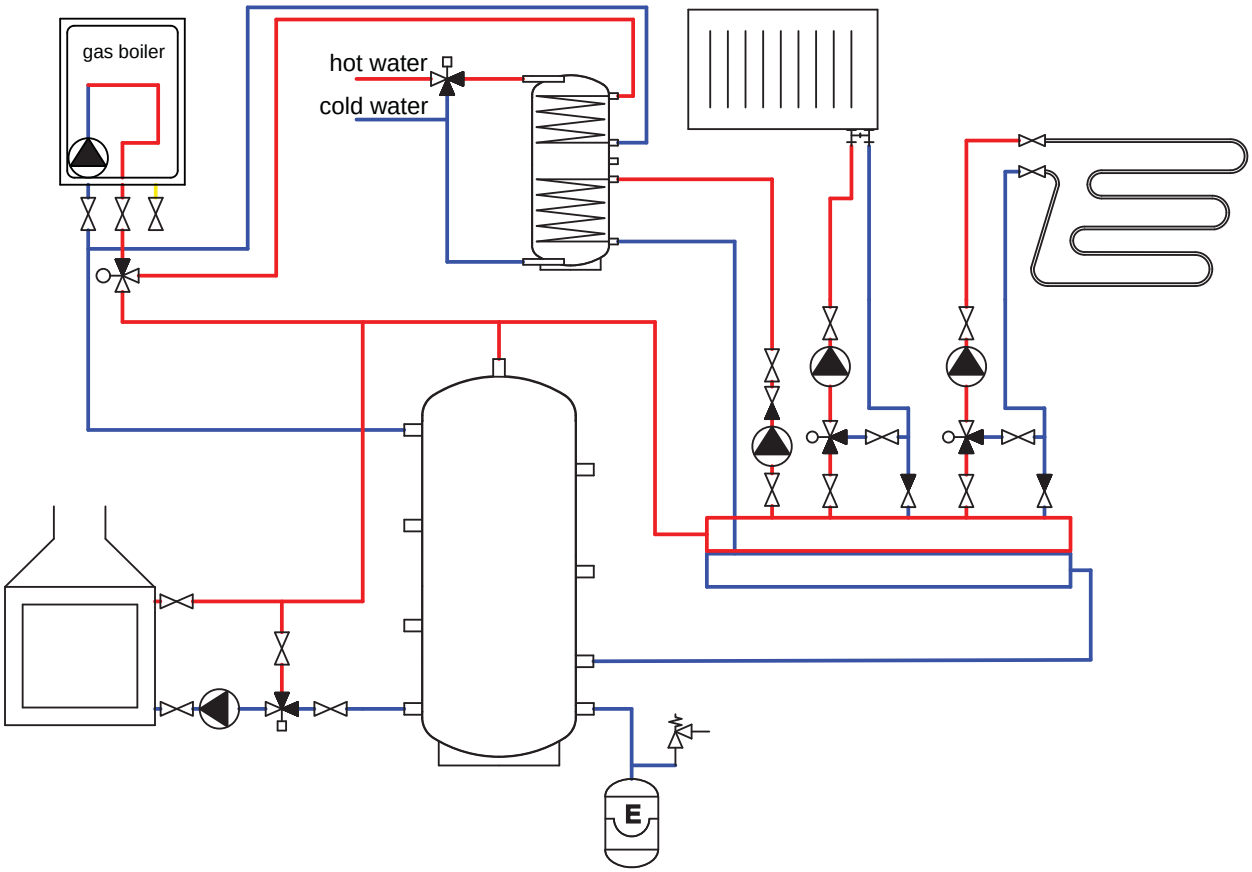
Connection point	Example I. solid-fuel boiler + el.	Example II. fireplace + gas boiler	Example III. heat pump + el.
1	outlet to a heating system	outlet to a heating system	outlet to a heating system
2	inlet from a solid-fuel boiler	outlet to a gas boiler	electric heating rod
3	electric heating rod	plug	inlet from a heat pump
4	plug	plug	plug
5	inlet to a solid-fuel boiler	inlet to a fireplace	return line to a heat pump
6	drain cock, expansion vessel	drain cock, expansion vessel	drain cock, expansion vessel
7	return line from a heating system	return line from a heating system	return line from a heating system
8	plug	plug	plug
9	electric heating rod	plug	electric heating rod
10,11,12	sheaths for OTC, thermometer, thermostat...		

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

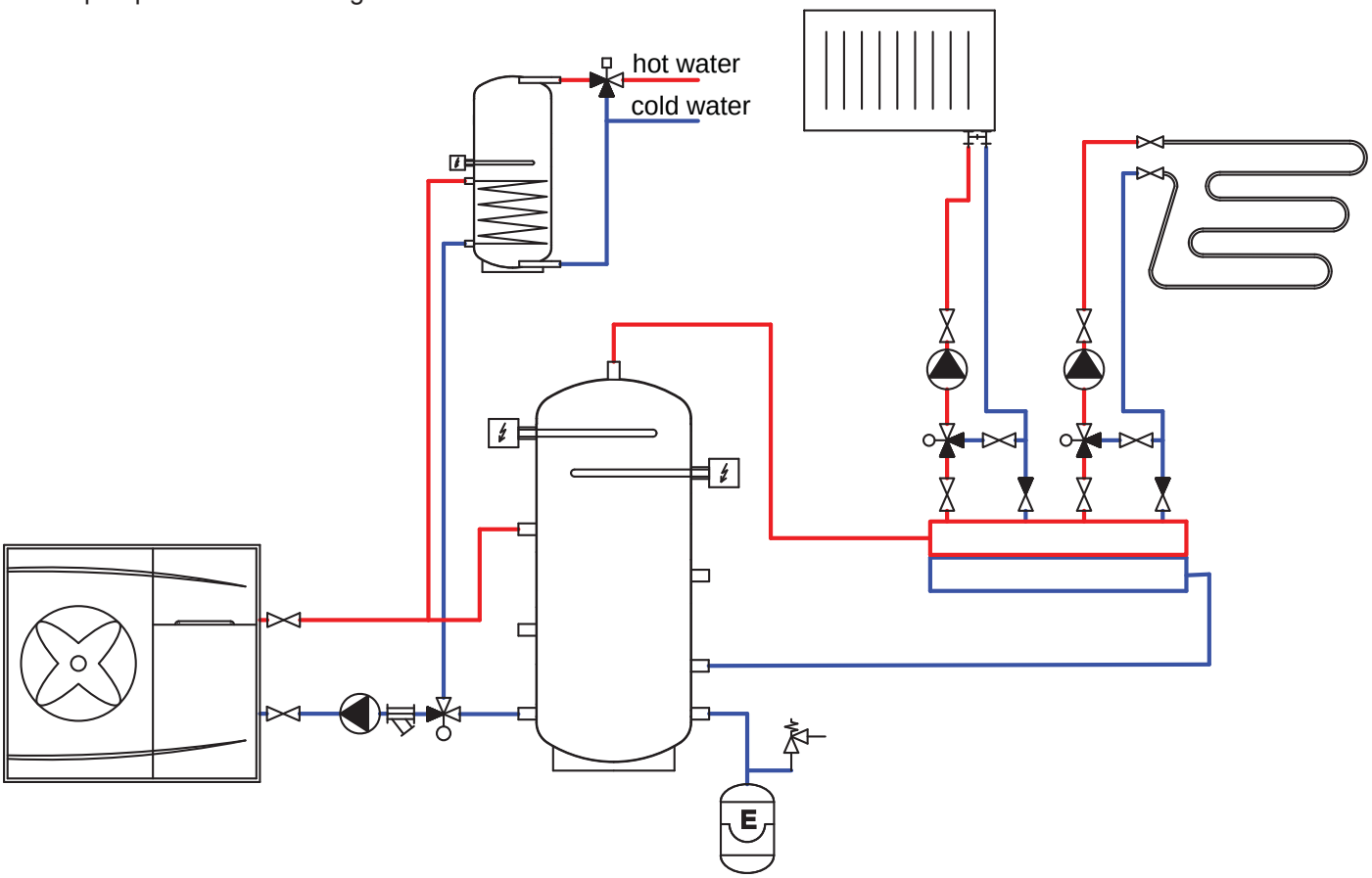
Example I.
A solid-fuel boiler and an el. heating rod.



Example II.
A gas boiler and hot water fireplace.



Example III.
A heat pump and an el. heating rod.



6. Installation and Commissioning

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

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.
The tank may be fitted with electric heating rods 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.

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.

Commisioning

This tank is not designed for heating domestic hot water.
The tank shall be filled up 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.
The quality of top-up and heating water is set by ČSN 07 7401/1992Sb.

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 adjusting elements.

7. Installing Insulation on the Tank

Instructions

Product description

Thermal insulation of soft polyurethane foam with a zipped PVC layer, or melamine or polystyrene boards with a batten and hard PS sheet, with a lid and a set of rosettes.

Warning

Insulation installation shall be done in two or three persons, depending on its size. The zippered soft-foam 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.

How to install soft foam insulation with a PVC layer

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, see pics.
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.

How to install insulation with a hard PS foil

1. Fix the tank following installation instructions.
2. Apply the self-adhesive spacer strips on the tank in a top, middle and bottom positions, if supplied. Cut away the overlapping pieces.
3. Place soft-foam inserts into the holes for sleeves.
4. Place the insulation on sleeves, flanges etc. and wrap it around the tank evenly. For insulation consisting of 2 parts, lock the battens on one side and secure them with two (top and bottom) auxiliary plastic clamps. Rubbing and patting the insulation by hand will make it adhere to the tank's surface completely, leaving no bubbles.
5. Press the surface of the insulation slowly, pushing the batten to interlock with its counterpart. Make the lock as tight as possible. For a two-piece insulation, remove the auxiliary clamps and push the batten to interlock in its tightest position.
6. Put on the upper insulation and the lid.
7. Glue the cover rosettes respecting the sleeve sizes, put on insulated flange cover(s) where needed.
6. 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.

Pictures showing how to mount soft-foam insulation with a PVC sheet on a storage water heater.

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. Recommended Accessories

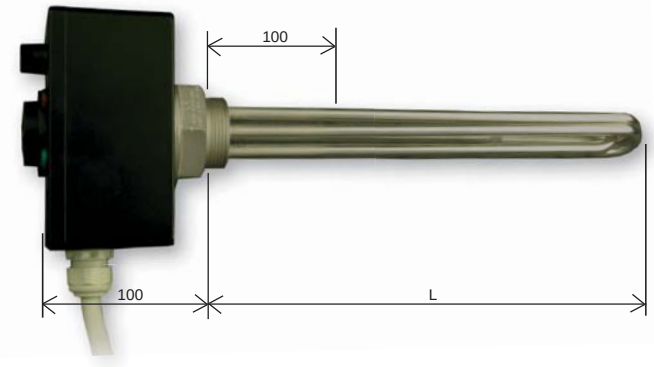
10.1 Thermal insulation

Thermal insulation is a necessary complement to tanks that prevents heat losses. For these types of accumulation tanks, insulation is supposed to be installed on the spot for easier handling. As there are at least two types of insulation for the most common sizes, they are sold separately. More on insulation see Chapter 7.

10.2 Electric heating rods

Electric heating rods can be used in storage water heaters and accumulation tanks. They can be power supplied either by 230V or 3x230V/400V. Heating rods of output 2-12 kW can be installed into accumulation tanks, into the sleeves with G 6/4” inner thread (the right type should be selected with respect to its length and the tank diameter). Electric heating rods are currently made of nickel-plated copper. They can be also supplied in a copper or stainless-steel version. Heating rods with an integrated electronic thermostat and a safety thermostat are also available.

G 6/4” thread, nickel-plated copper	power output (kW)	voltage (V)	length l (mm)	code
	2	3 x 230	245	8935
	3	3 x 230	305	8935
	4.5	3 x 230	370	8937
	6	3 x 230	495	8938
	7.5	3 x 400	585	8939
	9	3 x 400	680	8940
	12	3 x 400	815	8941



G 6/4” thread, stainless steel, thermostatic head, adjustable by a knob	power output (kW)	voltage (V)	length l (mm)	code
	2	230 V	315	10267
	3	230 V	350	11784
	2	3 × 230 V	225	11787
	3	3 × 230 V	285	11788
	4.5	3 × 230 V	383	11789
	6	3 × 400 V	478	11216
	7.5	3 × 400 V	570	11215
	9	3 × 400 V	665	11214
	12	3 × 400 V	825	8467

10.3 Additives for heating systems

MR-501/F

Protective liquid made of organic compounds, intended for use in heating and cooling systems, solar collectors and heat pumps. It prevents corrosion of metals (iron, copper, aluminum etc.) and their alloys by creating a film on the surface that is in touch with the heating liquid. It can be mixed with antifreeze fluids. Recommended use: after cleaning the system with M 501/R.

MR-501/96P

Liquid agent of balanced efficiency for underfloor heating, solar panels and plastic piping. It creates a protective film and prevents growth of algae and gas formation. The system is also protected against calcareous sediments. This well-balanced mixture of corrosion inhibitors and protective film creating compounds ensures a max. protection of underfloor heating and solar panel circuits.

MR-501/R (1kg)

Concentrated alkaline anti-corrosion liquid removing scale and calcareous sediments from heating systems. It dissolves scale and rust and makes it possible to remove them by flushing the system. 2 liters of MR-501/R shall be added to every 80-100 l of heating water and let to act for 2-3 weeks depending on the degree of sedimentation. Then the heating system shall be drained and flushed. When filling new water, it should be treated by adding the protective liquid MR 501/F.

WARRANTY CERTIFICATE

for PS Accumulation Tank

Model: .....

Serial number: .....

WARRANTY CONDITIONS

1. The warranty period is 60 months from the date of purchase.
2. When claiming warranty, this Warranty Certificate must be submitted together with the purchase receipt.
3. The warranty is valid only when the technical conditions set by this Manual are maintained and installation is done by an authorized person (confirmed in the Warranty Certificate).
4. The claimed defect must not be caused by tampering, improper installation and operation, using the product for other purposes than intended, placing the product in improper environment, or by a natural disaster.
5. Claims shall be settled by your dealer at the address shown below.

Date of purchase:.....

Stamp print, signature of the salesman and address of the shop:

Date of a professional installation by plumber: .....

Stamp print, signature and address of the authorized person:

03/2012

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