

Owners Manual

**ACCUMULATION TANKS PS2F 300,
PS2F 500, PS2F 800, PS2F 1000, PS2F 1500,
PS2F 2000, PS2F 3000, PS2F 4000, PS2F 5000**



CE

EN
v. 1.1

Regulus[®]

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 Packing	3
2. General Information	3
3. Technical Data and Dimensions of PS2F Models	4
4. Operation	5
5. Examples of Assigning Connection Points	5-6
6. Installation	7
7. Installing Insulation on the Tank	8-9
8. Maintenance	10
9. Disposal	10
10. Recommended Accessories	10
10.1 Thermal Insulation	10
10.2 Electric heating rods	10
10.3 Finned tube heat exchangers	11
10.4 Flanges for heat exchangers	12
10.5 Additives for heating systems	12

1. Description

PS2F Accumulation Tanks are intended for accumulation and subsequent distribution of thermal energy from solid-fuel fired boilers, heat pumps, solar collectors, electric boilers etc. The accumulation tank shall be always connected to a closed heating circuit. A PS2F tank is fitted with two flanges, each of them can be used to accommodate a suitably sized tube heat exchanger. Flanges for installation of heat exchangers with either G 1" or G 3/4" connection are supplied with the tank. When no heat exchanger is to be used, a blind flange shall be installed. Heat exchangers consist of copper pipes with fins that increase their overall surface and improve heat transfer. The tanks are further fitted with nine G 6/4" sleeves for connection to heat sources and four G 1/2" sleeves to accommodate probe sheaths. The G 6/4" sleeves can be used for direct installation of el. heating rods.

This means that e.g. the lower heat exchanger can be connected to a solar system and the upper one to domestic hot water, or the lower heat exchanger can be connected to a heat source and the upper act as a tankless hot water heater. Heating domestic hot water in this manner limits significantly the risk of Legionella formation.

1.1 Models

Nine models of 300, 500, 800, 1000, 1500, 2000, 3000, 4000 and 5000l 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 1000l 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 melamin, or made of soft polyurethane foam. For tanks of bigger volumes (model PS2F 1500 and over) only the soft polyurethane insulation is available. The insulation is also 100mm thick and is fitted with a zippered outer leatherette jacket.

1.4 Connection points on the tank

2x flange of 210mm inner diameter

8x sleeve with a lateral connection in a 90° sector, G 6/4" inner thread

1x sleeve with upward connection, G 6/4" inner thread

4x sleeve for installation of lateral sensor sheaths, G 1/2" inner thread

1.5 Packing

Tanks are delivered standing, each screwed to its pallet, packed in bubble wrap. Gaskets and screws for fixing a flange are enclosed.

2. General Information

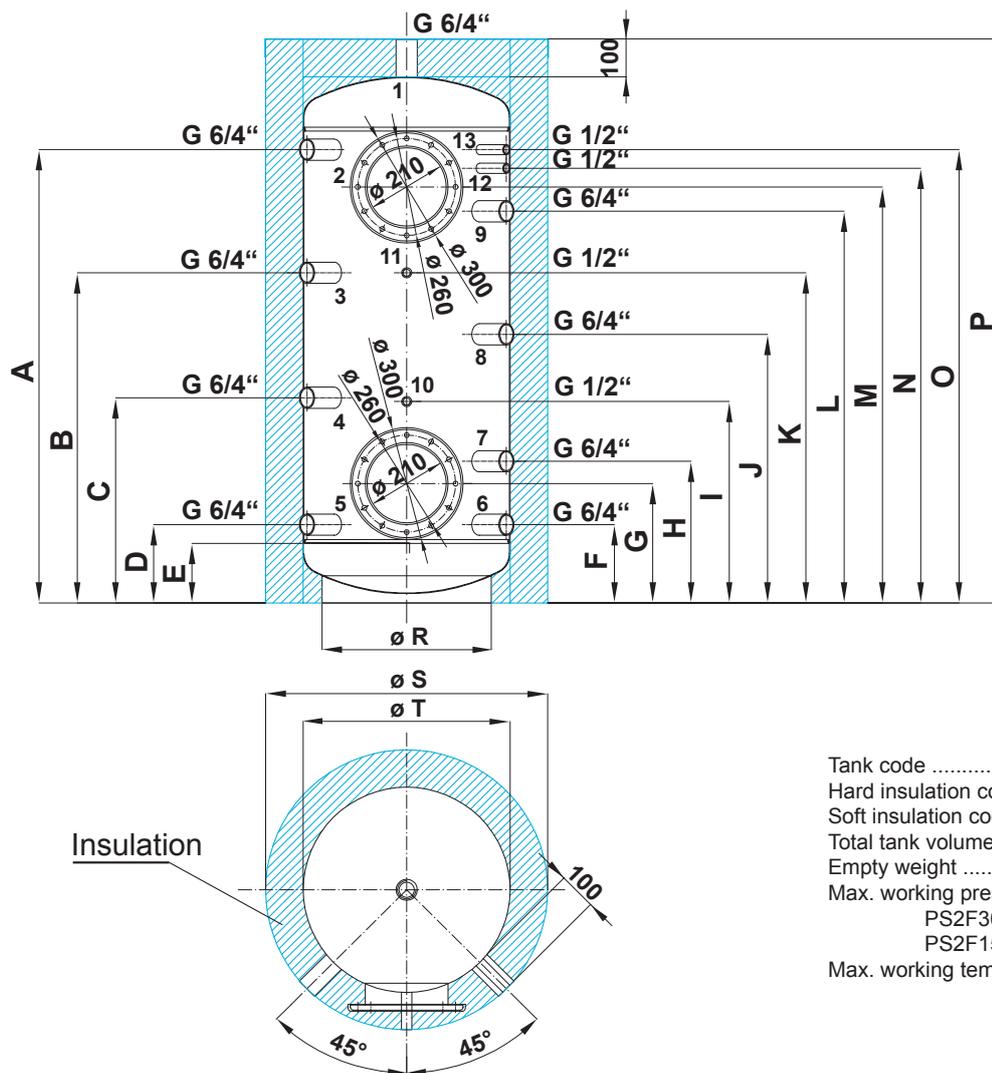
This Owners Manual is an integral and important part of the product and must be handed over to the User. Read carefully the instructions in this Manual as they contain important information concerning safety, installation, operation and maintenance. Keep this Manual for later reference. The appliance 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 also suitable for continuous heating of domestic hot water. For this purpose a suitably sized heat exchanger is needed as an accessory that shall be installed to the upper flange.

Using the accumulation tank for other purposes than above described (e.g. as a storage water heater) 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, otherwise the warranty becomes null and void.

3. Technical Data and Dimensions of PS2F Models



- Tank code a
- Hard insulation code b
- Soft insulation code c
- Total tank volume d
- Empty weight e
- Max. working pressure -
- PS2F300 to PS2F1000 **6 bar**
- PS2F1500 to PS2F5000 **4 bar**
- Max. working temperature **95 °C**

Model		PS2F300	PS2F500	PS2F800	PS2F1000	PS2F1500	PS2F2000	PS2F3000	PS2F4000	PS2F5000
Tank code	a	6267	6268	6269	6270	6272	6273	6274	6275	6276
Hard insulation code	b	6526	6525	6555	6556	-	-	-	-	-
Soft insulation code	c	6188	6189	6190	6191	6192	6193	6194	6195	6196
Tank volume [l]	d	300	500	800	1000	1500	2000	3000	4000	5000
Empty weight [kg]	e	69	84	116	134	208	240	317	394	461
Dimensions [mm]	A	1215	1355	1410	1730	1975	1925	1815	1840	2335
	B	885	1010	1020	1240	1420	1400	1350	1365	1705
	C	550	610	620	740	865	875	885	910	1075
	D	210	210	250	250	310	350	420	445	445
	E	160	165	200	200	225	260	340	370	370
	F	210	210	250	250	310	350	420	445	445
	G	320	325	360	360	430	470	540	565	565
	H	380	410	435	495	590	610	650	675	760
	I	540	540	570	570	650	690	760	785	785
	J	720	810	820	990	1145	1135	1115	1140	1390
	K	885	1010	1020	1240	1420	1400	1350	1365	1705
	L	1050	1190	1215	1485	1700	1660	1580	1605	2020
	M	1115	1240	1300	1620	1855	1805	1695	1720	2115
	N	1165	1305	1360	1680	1925	1875	1765	1790	2285
	O	1215	1355	1410	1730	1975	1925	1815	1840	2335
	P	1510	1650	1730	2050	2340	2335	2295	2355	2855
	ø R	450	550	700	700	850	1000	1300	1500	1500
	ø S	750	850	990	990	1150	1300	1600	1800	1800
	ø T	550	650	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.

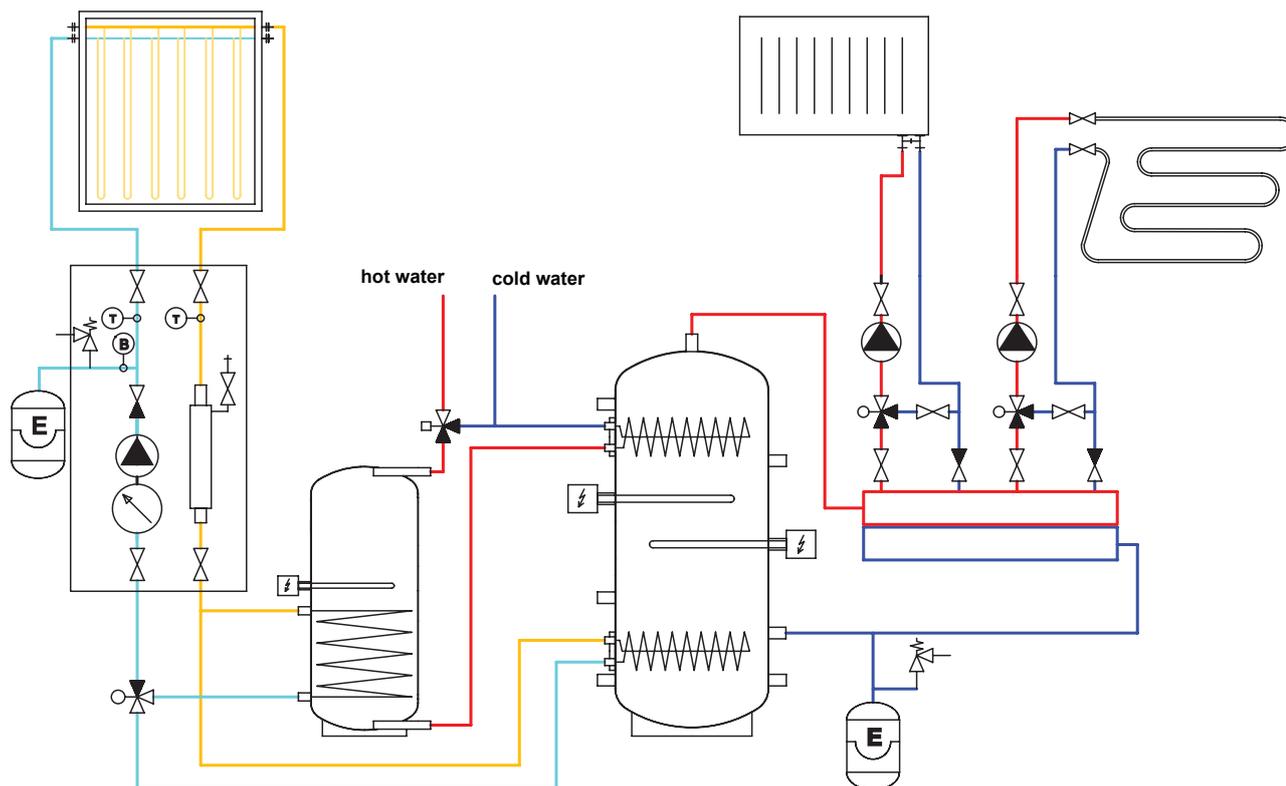
The accumulation tank shall be connected to a heat source through G 6/4" threaded fittings. Should the tank be connected to a solar system, this must be done through a properly sized heat exchanger installed into the lower flange.

5. Examples of Assigning Connection Points

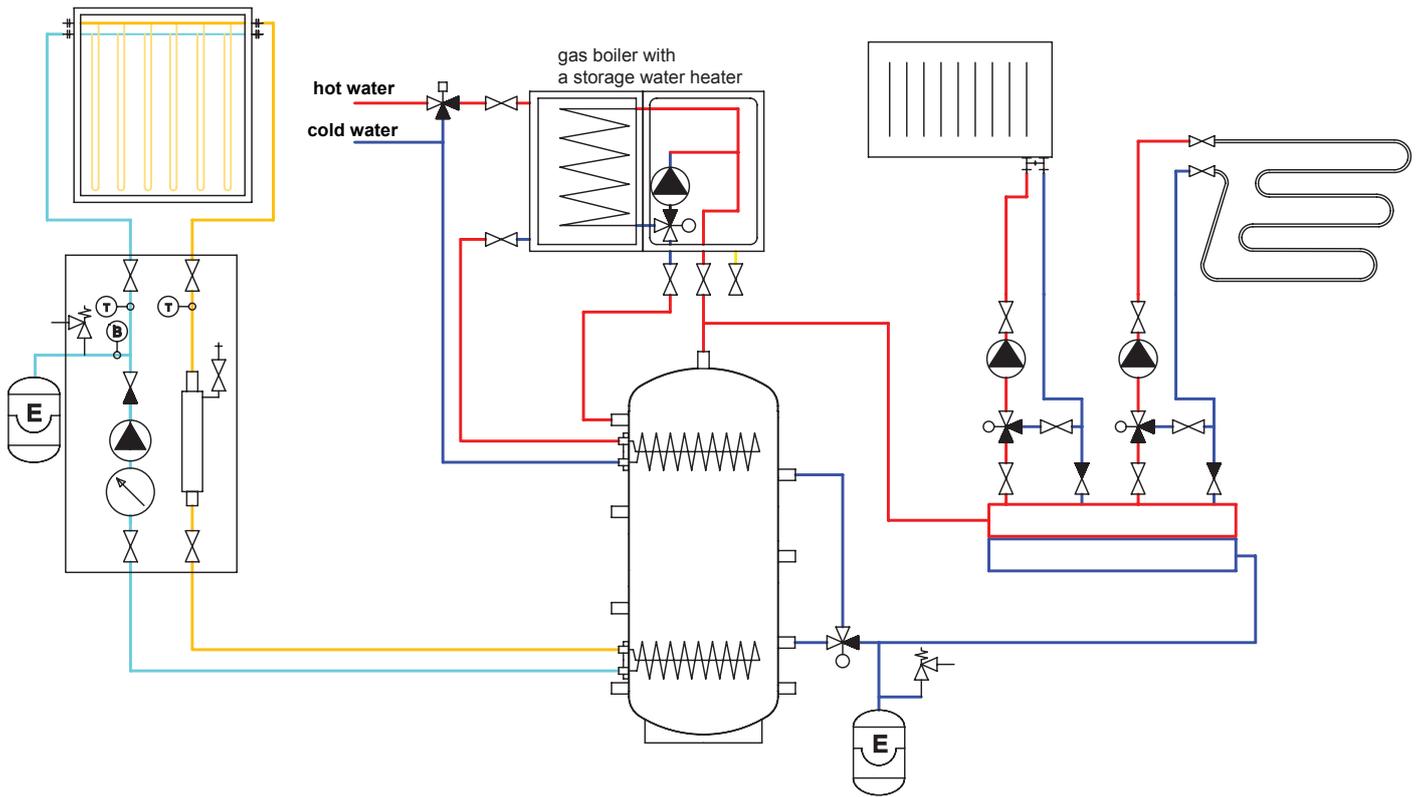
Connection point	Example I. Solar collectors + el. heating rods	Example II. Solar collectors + gas boiler	Example III. Solar collectors + solid fuel boiler + el. heating rods
1	outlet to a heating system	outlet to a heating system	outlet to a heating system
2	plug	inlet to a gas boiler	inlet from a solid-fuel boiler
3	electric heating rod	plug	electric heating rod
4	plug	plug	plug
5	plug	plug	outlet to a solid-fuel boiler
6	electric heating rod	electric heating rod	electric heating rod
7	inlet from a heating system	inlet from a heating system	inlet from a heating system
8	electric heating rod	plug	electric heating rod
9	plug	inlet from a heating system	plug
10	temperature sensor for solar control	temperature sensor for solar control	temperature sensor for solar control
11	thermometer	thermometer	thermometer
12	heating rod thermostats (adj.+safety)	temperature sensor for heating control	heating rod thermostats (adj.+safety)
13	OTC sensor	OTC sensor	OTC sensor
upper flange	pre-heat coil for sanitary water heater	pre-heat coil for sanitary water heater	pre-heat coil for sanitary water heater
lower flange	solar heating coil	solar heating coil	solar heating coil

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

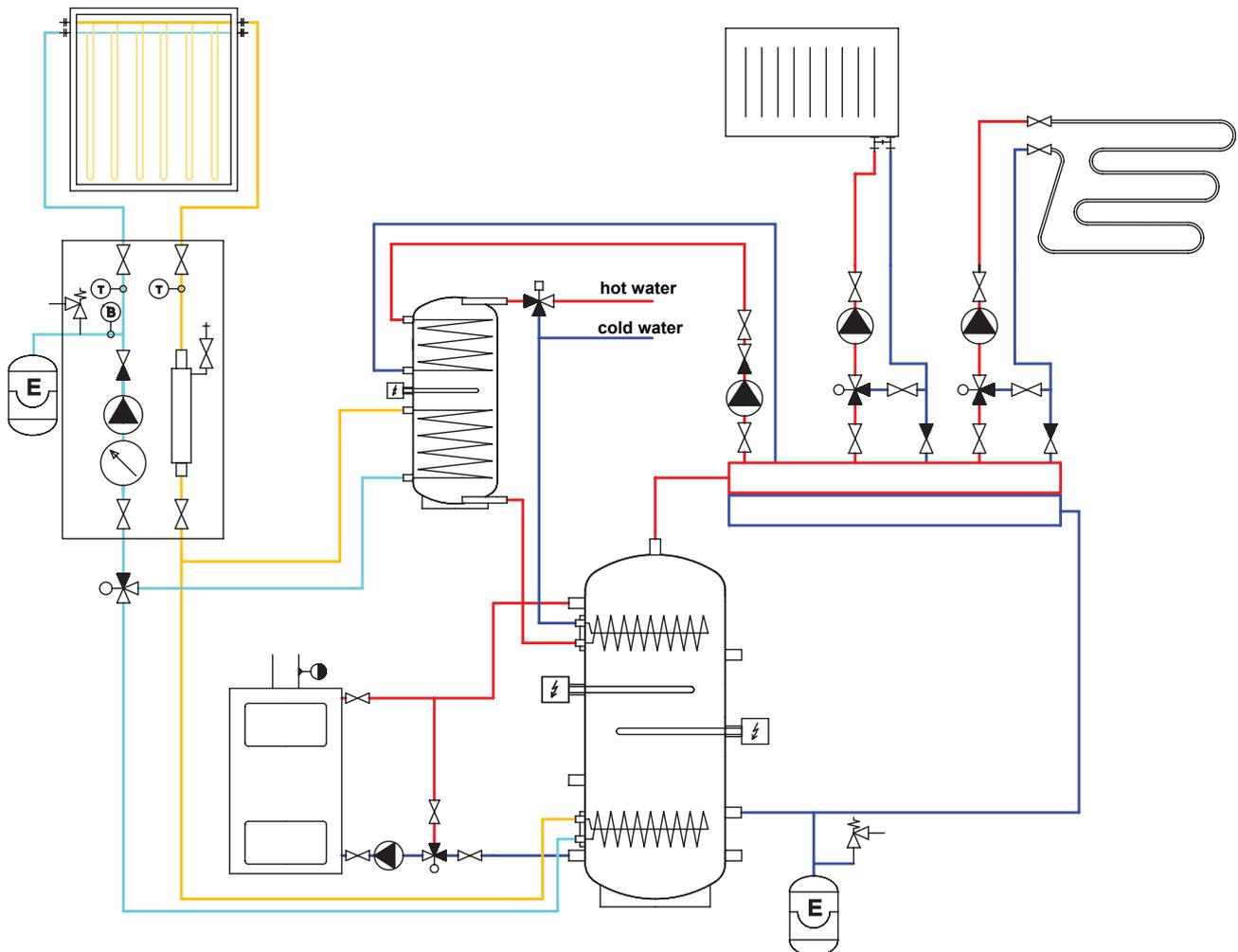
Example I.
Solar collectors and el. heating rods.



Example II.
Solar collectors and a combination gas boiler.



Example III.
Solar collectors, a solid fuel boiler and el. heating rods.



6. Installation

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.

The quality of top-up and heating water is set by ČSN 07 7401.

A. Connection to a heat source

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 circuit 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.

B. Connection to a solar system

The tank can be used with a solar system. In such a case, a suitably sized heating coil shall be installed into the lower flange. Insulate all the piping between the tank and the solar system.

C. Connection to water mains

When the upper flange is fitted with a suitably sized heating coil, this tank is ready for continuous domestic water heating. The tank shall be filled up together with the heating system respecting valid standards and rules.

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. Stick on the cover rosettes respecting the sleeve sizes, put on insulated flange cover(s) where needed.
8. 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 tank.

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.

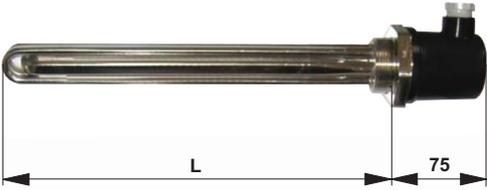
10. Recommended Accessories

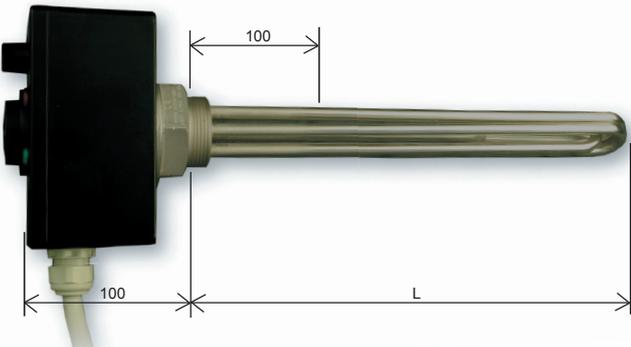
10.1 Thermal insulation

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 (with the exception of the PSWF 300 tank where heating rods of 9 and 12 kW cannot be mounted because of their length). 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	230	270	6146
	3	230	240	6063
	4.5	3 x 230	333	6064
	6	3 x 230	428	6065
	7.5	3 x 400	520	6066
	9	3 x 400	615	6067
	12	3 x 400	750	7032

G 6/4" thread, stainless steel, thermostatic head, adjustable by a knob	power output (kW)	voltage (V)	length l (mm)	code
	2	230 V	473	8932
	3	230 V	350	8933
	2	3 x 230 V	225	8930
	3	3 x 230 V	285	8931
	4.5	3 x 230 V	382	8464
	6	3 x 400 V	478	8465
	7.5	3 x 400 V	570	8582
	9	3 x 400 V	665	8466
	12	3 x 400 V	825	8467

10.3 Finned tube heat exchangers

These heat exchangers are intended to transfer heat in accumulation tanks. They are manufactured for the best heat transfer from finned copper tubes. They differ in their size of heat-transfer surface, length, connection size, manner of winding and number of tubes.

heat exchanger	surface (m ²)	coil length (mm)	coil diameter (mm)	connection	number of tubes	code
	0.6	410	145	3/4"	1	6150
	1.06	420	145	3/4"	1	6151
	1.8	470	170	3/4"	1	6152
	2.63	600	185	3/4"	1	6154
	3.15	560	185	1"	2	6157
	3.6	630	190	1"	2	6155
	4.5	750	190	1"	2	6156



3/4"



1"



Details of the screw joint with one and two tubes

Details of a two-pipe heat exchanger winding

10.4 Flanges for heat exchangers

These flanges are used with respect to the screw joint diameter, see the table of heat exchangers. First of all, the heat exchanger shall be installed into the flange, then this assembly with a gasket shall be mounted into the tank. If no tube heat exchanger is desired, a blind flange with a gasket shall be mounted.



blind flange
code 6230



with a 3/4" fixing
code 6231



with a 1" fixing
code 6232



gasket
code 6732



fitting the
heat exchanger

10.5 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 PS2F 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:

08/2008



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