

Regulus

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RGC 120 and RGC 170

Installation and Operation Manual
FLOOR STANDING HOT WATER STORAGE TANKS
RGC 120 and RGC 170

EN

CE

RGC 120 and RGC 170

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1 - Description

RGC 120 and RGC 170 Hot Water Storage Tanks (further “tank“) with one enamelled heat exchanger (e.g. for connecting a heat pump), permitting installation of an electric heating element.

In order to reach proper working of the tank, it is necessary to design optimum hydraulics of the whole system, i.e. position of circulation pumps for heat sources and heating circuits, valves, non-return valves etc.

1.1 - Models

The tanks are available in volumes of 114 and 166 litres.

1.2 - Tank protection

Enamelled inner surface of the tank and coil heat exchanger guarantee a long service life. Enamel is done according to DIN 4753 standard. Further qualitative improvement is reached thanks to a magnesium anode installed inside the tank.

1.3 - Thermal insulation

The tanks come with an ecologic polyurethane foam insulation 54 and 58 mm thick. Its outer mantle is made of white hard plastic. The insulation is not detachable.

1.4 - Connection points on the tank

2 connections with G 3/4“ M, to heat exchanger circuit

2 connections with G 3/4“ M, for cold water inlet and hot water outlet

1 connection with G 3/4“ M, for recirculation

1 connection with G 5/4“ F, for a magnesium anode rod

1 sheath, 15 mm diam.

1 connection with G 1/2“ F, for thermometer

1 connection with G 6/4“ M, for an el. heating element

1 connection with G 1/2“ F, universal inlet/outlet

1.5 - Packaging

Tanks are delivered standing, each screwed to its pallet, packed in a cardboard box. It is forbidden to transport and/or store the tanks in a horizontal position.

2 - General Information

The appliance shall be installed by a qualified person according to valid rules and Manufacturer’s Manual.

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.

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

3 - Operation

This tank is designed for operation in pressure circuits. Hot water is heated in the integrated hot-water heat exchanger (heating coil) inside the tank from several possible heat sources like heat pumps or various kinds of hot-water boilers. An electric heating element can be installed into the tank for DHW backup heating.

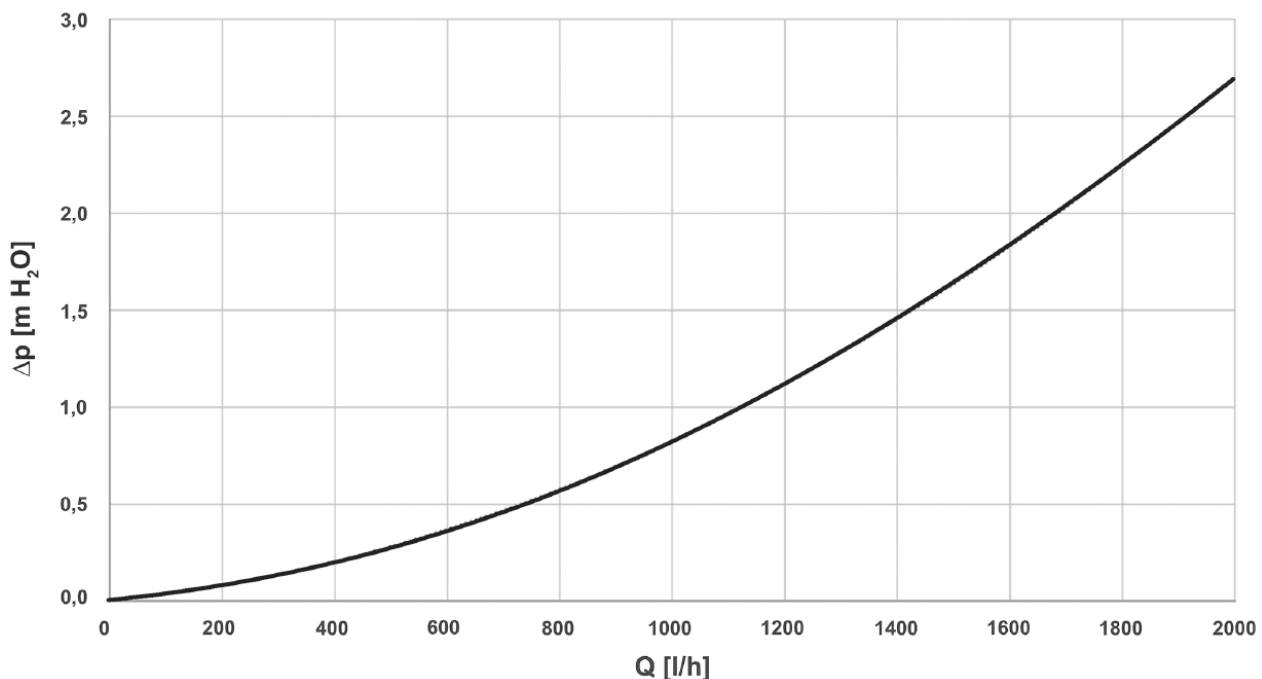
Hot water temperature should be kept between 60 and 65 °C. This temperature guarantees the best operation and at the same time, it prevents formation of Legionella bacteria.

4 - Technical Data and Dimensions of Hot Water Storage Tanks

- RGC 120

Dimensions			
pos.	description	connection	height [mm]
DHW heating			
W1	cold water	G 3/4" M	1075
W2	hot water	G 3/4" M	1075
W3	recirculation	G 3/4" M	1075
Auxiliary heat source			
E1	electric heating element for DHW	G 6/4" F	235
Control and safety			
C1	sheath	Ø 15 mm	990
T	thermometer	G 1/2" F	740
Heat sources			
X1	flow from heat source	G 3/4" M	1075
X2	return to heat source	G 3/4" M	1075
Other			
U1	universal inlet/outlet	G 1/2" F	100
A1	magnesium anode rod	G 5/4" F	960

HEAT EXCHANGER PRESSURE DROP



Main Features	
Application	Hot water tank with integrated heat exchanger and enamelled inner surface, intended for DHW heating. It comes fitted with non-detachable insulation and a magnesium anode rod that protects its inner surface from corrosion. As an option, an electronic anode rod can be installed instead of the magnesium one, for the codes see the Accessories table. If desired, an electric heating element can be installed into the hot water tank.
Working fluid	Water (tank), water, water-glycol mixture (max. 1:1) or water-glycerine mixture (max. 2:1) (heat exchanger).
Code	19441

Energy Efficiency Data (as per EC Regulation No. 812/2013)	
Energy efficiency class	C
Standing loss	65 W
Storage volume	114 l

Technical Data	
Ambient temperature	2 to 45 °C
Max. relative humidity	80%
Total volume	120 l
Heat exchanger volume	6 l
Max. working pressure in tank	6 bar
Max. working pressure in heat exchanger	6 bar
Max. temperature in tank	95 °C
Max. temperature in heat exchanger	100 °C
Heat exchanger surface area	1.4 m ²
Tank height	1045 mm
Tank diameter	Ø 457 mm
Tank dimensions w. insulation	Ø 565 mm
Tipping height	1143 mm
Empty weight	71 kg

Hot water heating from 10 to 45°C at heating water temp. of 60°C	
Heat exchanger	570 l/h (23 kW)

Materials	
Tank	S235JR, inner surface enamelled (DIN 4753-3)
Heat exchanger	S235JR+N, outer surface enamelled (DIN 4753-3)
Outer mantle	hard plastic
Insulation	PU foam

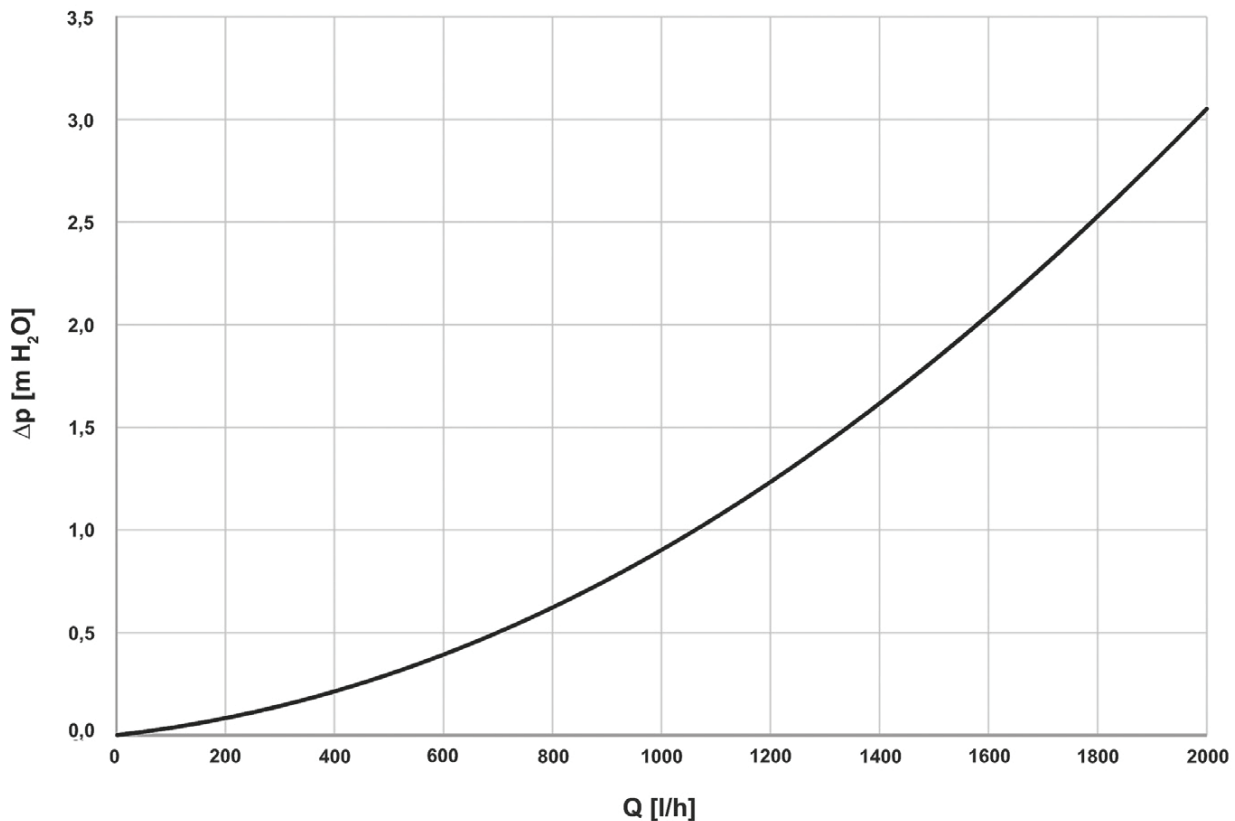
Accessories	
El. heating element	models ETT-A, D, F, P, M
Heating element max. length	370 mm
Electronic anode rod	code 9176

Spare parts (magnesium anode rods)	
Magnesium anode rod, l = 500 mm	code 448

- RGC 170

Dimensions			
pos.	description	connection	height [mm]
DHW heating			
W1	cold water	G 3/4" M	1030
W2	hot water	G 3/4" M	1030
W3	recirculation	G 3/4" M	1030
Auxiliary heat source			
E1	electric heating element for DHW	G 6/4" F	345
Control and safety			
C1	sheath	Ø 15 mm	980
T	thermometer	G 1/2" F	630
Heat sources			
X1	flow from heat source	G 3/4" M	1030
X2	return to heat source	G 3/4" M	1030
Other			
U1	universal inlet/outlet	G 1/2" F	110
A1	magnesium anode rod	G 5/4" F	930

HEAT EXCHANGER PRESSURE DROP



Main Features	
Application	Hot water tank with integrated heat exchanger and enamelled inner surface, intended for DHW heating. It comes fitted with non-detachable insulation and a magnesium anode rod that protects its inner surface from corrosion. As an option, an electronic anode rod can be installed instead of the magnesium one, for the codes see the Accessories table. If desired, an electric heating element can be installed into the hot water tank.
Working fluid	Water (tank), water, water-glycol mixture (max. 1:1) or water-glycerine mixture (max. 2:1) (heat exchanger).
Code	19196

Energy Efficiency Data (as per EC Regulation No. 812/2013)	
Energy efficiency class	C
Standing loss	80 W
Storage volume	166 l

Technical Data	
Ambient temperature	2 to 45 °C
Max. relative humidity	80%
Total volume	173 l
Heat exchanger volume	7 l
Max. working pressure in tank	6 bar
Max. working pressure in heat exchanger	6 bar
Max. temperature in tank	95 °C
Max. temperature in heat exchanger	100 °C
Heat exchanger surface area	1.6 m ²
Tank height	1030 mm
Tank diameter	Ø 600 mm
Tank dimensions w. insulation	Ø 715 mm
Tipping height	1210 mm
Empty weight	98 kg

Hot water heating from 10 to 45°C at heating water temp. of 60°C	
Heat exchanger	600 l/h (24 kW)

Materials	
Tank	S235JR, inner surface enamelled (DIN 4753-3)
Heat exchanger	S235JR+N, outer surface enamelled (DIN 4753-3)
Outer mantle	hard plastic
Insulation	PU foam

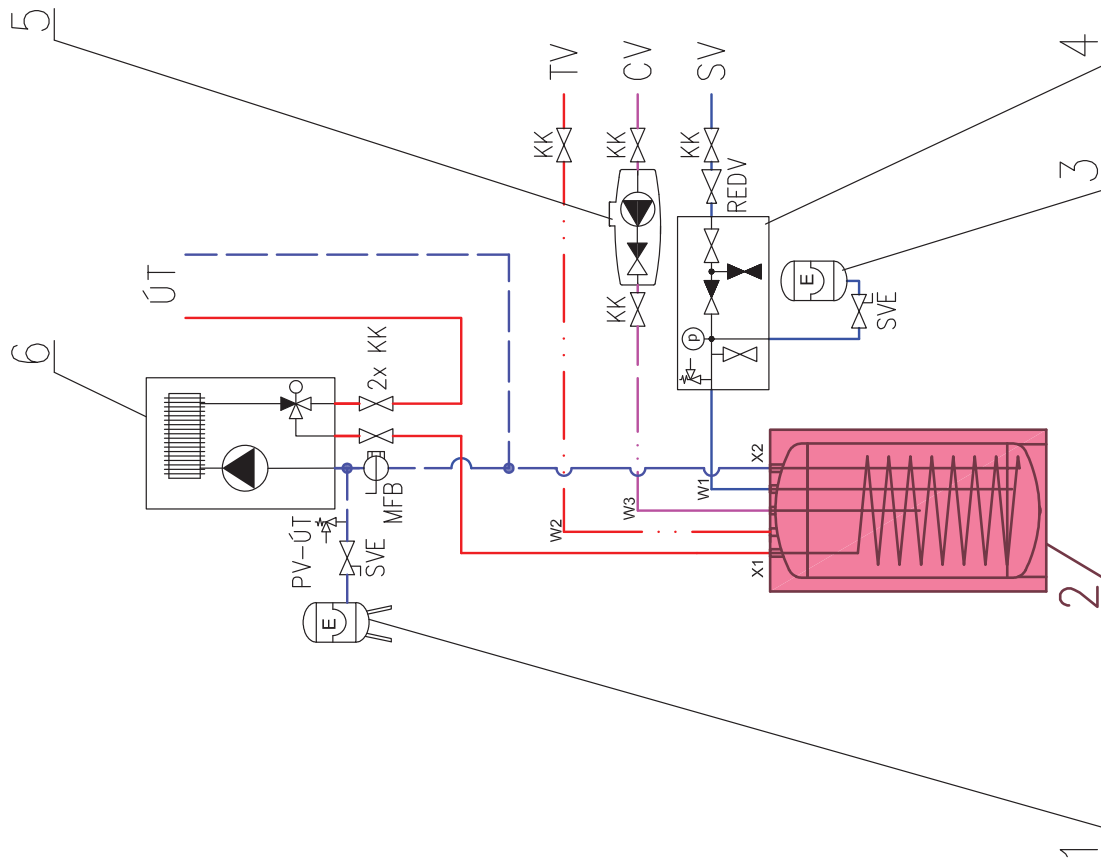
Accessories	
El. heating element	models ETT-A, D, F, P, M
Heating element max. length	500 mm
Electronic anode rod	code 9176

Spare parts (magnesium anode rods)	
Magnesium anode rod, l = 500 mm	code 448

5 - Example of Assigning Connection Points - RGC 120

Example:
With a hot-water boiler

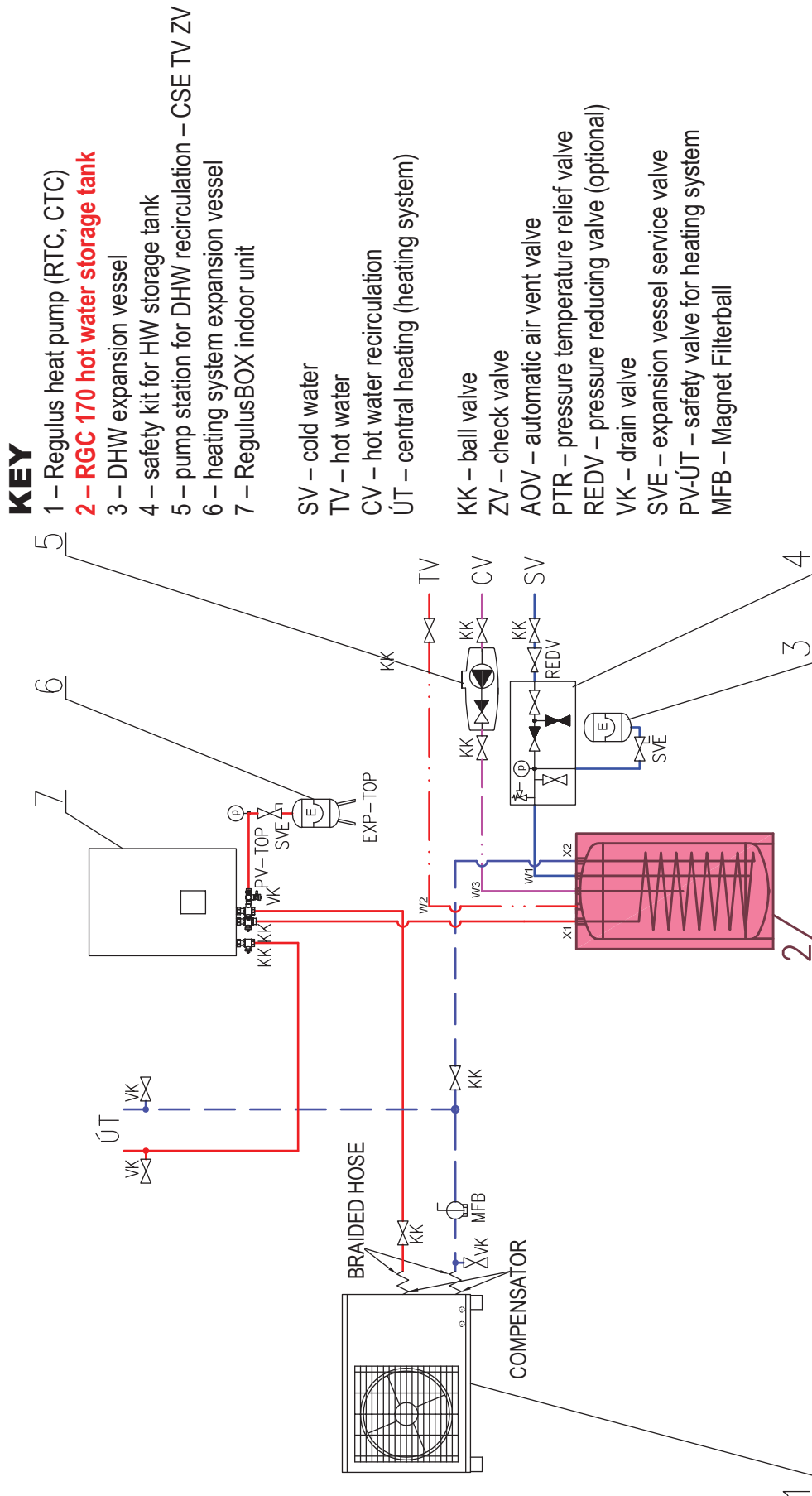
- KEY**
- 1 – heating system expansion vessel
 - 2 – **RGC 120 hot water storage tank**
 - 3 – DHW expansion vessel
 - 4 – safety kit for HW storage tank
 - 5 – pump station for DHW recirculation – CSE TV ZV
 - 6 – boiler (natural gas, electric...)
- SV – cold water
 - TV – hot water
 - CV – hot water recirculation
 - ÚT – central heating (heating system)
- KK – ball valve
 - ZV – check valve
 - AOV – automatic air vent valve
 - PTR – pressure temperature relief valve
 - REDV – pressure reducing valve (optional)
 - VK – drain valve
 - SVE – expansion vessel service valve
 - PV-ÚT – safety valve for heating system
 - MFB – Magnet Filterball



- RGC 170

Example:

With a hot-water boiler and RegulusBOX



6 - Installation and Commissioning

Installation must meet valid rules and may be done only by qualified staff. The tank shall be placed on the floor, as close to the heat source as possible.

Warning: Defects caused by improper installation, use or handling are not covered by warranty.

6.1 - Connection to heat sources

Connect the heating circuit to the inlet to and outlet from the heat exchanger (connection points marked X1 and X2) using G 3/4" fittings.

6.2 - Installation of an electric heating element

The G 6/4" side tapping marked E1 is designed to accommodate an electric heating element. The hot water storage tank can be equipped with an el. heating element depending on the tank diameter and the heating element length. It can be controlled either directly (thermostat-equipped elements), or by a heating system controller.

Warning: All electric heating elements shall be protected by a safety thermostat.

The installation of an electric heating element may be done by qualified staff only.

6.3 - Connection to water mains

DHW piping shall be done according to valid rules. Connect the tank to a cold water inlet (connection point marked W1), inlet from hot water recirculation (connection point marked W3) and to DHW outlet (connection point marked W2) using G 3/4" fittings. A 6bar safety valve shall be installed at the cold water inlet. Installation of a reducing valve to the tank inlet is recommended. If the pressure from water mains exceeds 6 bar, a reducing valve is necessary. In order to prevent water loss, an expansion tank of at least 5 l volume should be installed at the cold water inlet as well.

Should the water be too hard, install a water softener before the tank. In case the water contains mechanical impurities, install a filter.

A suitable anti-scald valve shall be installed at the hot-water outlet from the tank that prevents too hot water from entering the taps.

Install a drain valve to the connection point U1 of the tank.

Complete DHW piping shall be properly insulated.

6.4 - Instalace elektronické anody

A so called electronic anode rod can be used instead of the magnesium one. Its principle advantage is that it does not need to be taken out for check. Just a visual check of the electronic anode is sufficient.

Code	El. anode length [mm]	For hot water tanks
9176	600 (350/250)	RGC 120 and RGC 170

Should an electronic anode rod or an el. heating element be installed, it is necessary to make a connection between the metal tank casing and the PE line.

6.5 - Commissioning

Ground the tank before commissioning.

Fill the heating circuit with the appropriate fluid and air-bleed the entire system.

Fill the tank with cold water, following this procedure:

- open the shut-off valve at the tank inlet
- open a hot water tap, as soon as water starts flowing out, tank filling is finished, close the tap
- check all connections for leaks, check the system pressure

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

Hot water quality must meet the conditions shown in the following table.

Set the heating controller in compliance with the documentation and manufacturer's recommendations. Check regularly a proper function of all control and adjusting elements.

7 - Maintenance, Replacement of Magnesium Anode Bar

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.

The tanks come equipped with an anti-corrosion sacrifice magnesium anode rod as standard; it protects its inner parts against corrosion. The anode rod shall be checked within 12 months after commissioning and subsequently always not later than 12 months after the last check. In locations where water contains more ferrites or calcites, it is recommended to check the anode rod every 6 months. If more than 1/3 of its total volume is consumed, the anode rod shall be replaced with a new one. Disregarded of its state, the magnesium anode rod (code 448) shall be replaced with a new one within 24 months from commissioning. In case an electronic anode rod is used, the above described procedures are not necessary. Then only a visual check of its indication lamp is necessary every 3 months. The indication of proper working of the electronic anode rod is described in its Manual.

If damage to a tank occurs due to neglected replacement of a magnesium anode rod or a non-working electronic anode rod, the warranty cannot be claimed.

8 - 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.

9 - 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. Tank transport or storing in a horizontal position is considered warranty violation!

