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RGC 300K, RGC 1000

Installation and Operation Manual
HOT WATER STORAGE TANKS
RGC 300K, RGC 1000

EN

CE

RGC 300K, RGC 1000

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1 - Description

RGC Hot Water Storage Tank (further “tank“) with one enamelled heat exchanger (e.g. for connecting a solar thermal system or a gas boiler), 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

Two models of 283 and 970 l capacity enabling installation of an electric heating element.

1.2 - Tank protection

Enamelled inner surface and coil heat exchanger guarantee 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

RGC 300K tanks come in a hard polyurethane insulation 80 mm thick with a metal mantle, white painted. RGC 1000 tanks come in a soft PU foam insulation 80 mm thick with white PU leather surface. These insulations are non-detachable.

1.4 - Connection points on the tank

2 side tappings with G 5/4“ F to heat exchanger circuits
2 side tappings with G 5/4“ F for cold water inlet and hot water outlet
3 side tappings with G 1/2“ F, for temperature sensors and thermometer
1 side tapping with G 1“ F for recirculation
1 top tapping with G 5/4“ F, for a magnesium anode rod
1 side tapping with G 6/4“ F, for an el. heating element
1 flange for the lateral inspection hole

1.5 - Packaging

Tanks are delivered standing, each screwed to its pallet, packed in bubble wrap. It is forbidden to transport and/or store the storage 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 - Technical Data and Dimensions

RGC 300 K

Main features	
Application	DHW heating
Description	hot water storage tank with integrated enamelled heat exchanger, permitting installation of an el. heating element
Working fluid	water (tank), water, water/glycol mixture (max. 1:1) or water/glycerine (max. 2:1) (heat exchanger)
Code	**16 087**

Energy Efficiency Data (as per EC Regulation No. 813/2013)	
	RGC 300 K
Energy efficiency class	**C**
Standing loss	**86 W**
Storage volume	**272 l**

Technical data	
Total tank volume	283 l
Fluid volume in tank	272 l
Heat exchanger (HE) volume	11 l
Heat exchanger surface area	1,6 m²
Max. working temperature in tank	95 °C
Max. working temperature in HE	110 °C
Max. working pressure in tank	10 bar
Max. working pressure in HE	10 bar

Materials	
Tank material	S235JR, inner surface enamelled (DIN 4756)
Heat exchanger material	S235JR+N, outer surface enamelled (DIN 4756)
Tank perimeter insulation	PU foam (hard)
Insulation's outer surface	PVC / ABS

Hot water heating from 10 °C to 45 °C at heating water temp. of 60 °C	
Heat exchanger	1360 l/h (55,1 kW)

Dimensions, Tipping height, Weight	
Tank diameter	600 mm
Tank diameter with insulation	700 mm
Tank overall height	1210 mm
Tipping height	1400 mm
Empty weight	109 kg

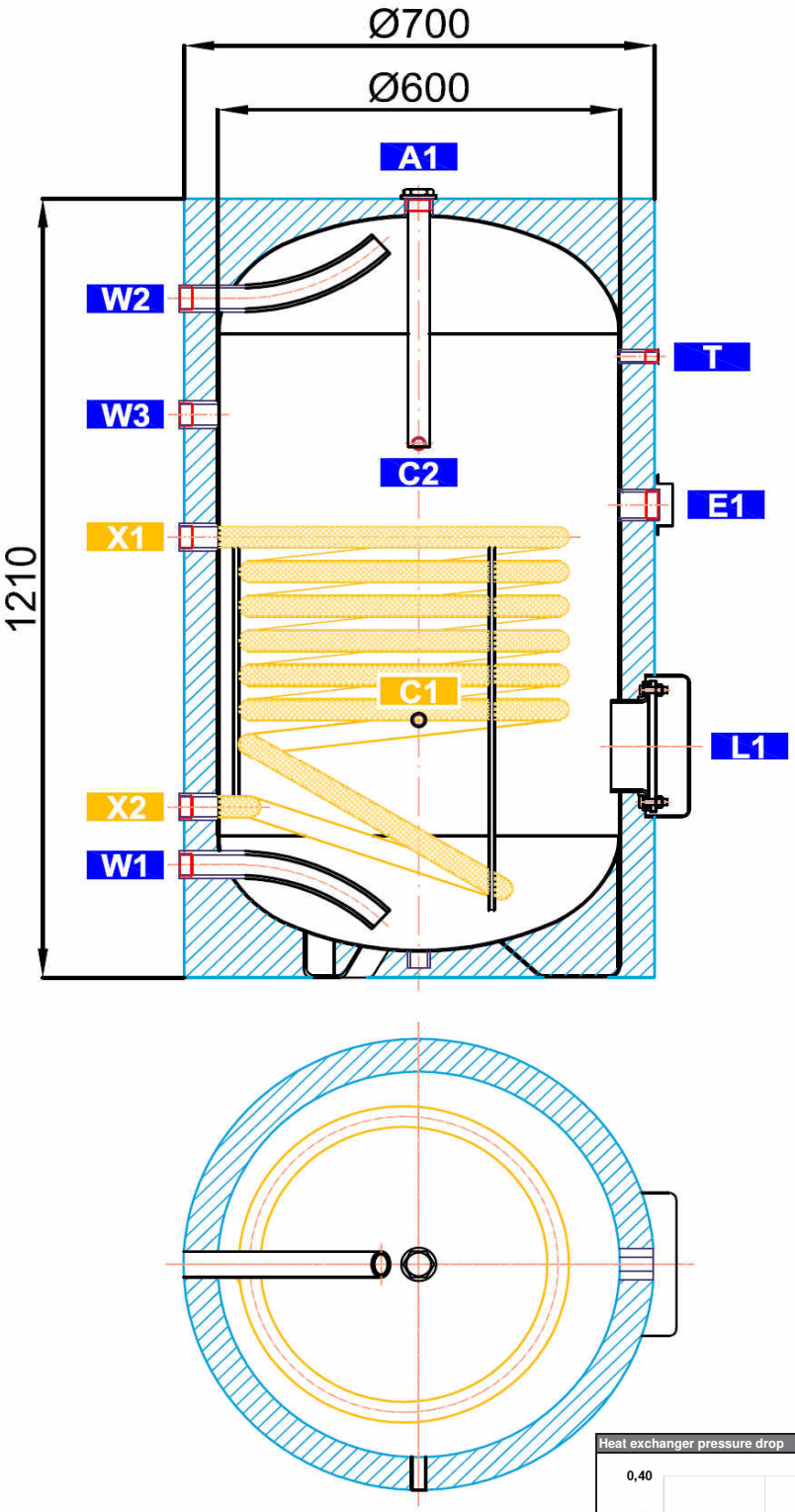
Accessories	
El. heating element	models ETT-A, D, F, G, M
Heating elem. max. length / output	495 mm / 6,0 kW
Electronic anode rod	code 9 173

Spare parts (magnesium anode rods)	
Mg anode r. (A1), G 5/4"	code 17147

RGC 300 K

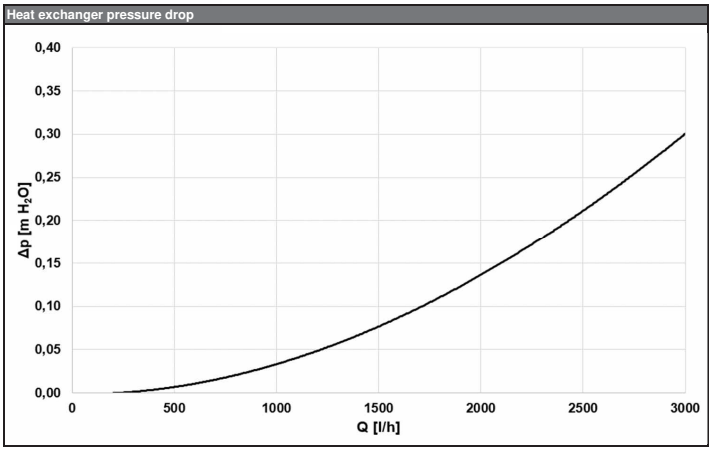
Dimensions

Tipping height 1400 mm.



TAPPINGS		
pos.	connection	height [mm]
DHW heating		
W1	G 5/4" F	175
W2	G 5/4" F	1055
W3	G 5/4" F	875
El. heating elements		
E1	G 6/4" F	735
Control and safety		
C1	G 1/2" F	400
C2	G 1/2" F	835
T	G 1/2" F	965
Solar thermal system		
X1	G 5/4" F	685
X2	G 5/4" F	265
Flange		
L1	8 x M10	360
Magnesium anode rod		
A1	G 5/4" F	1210

Heat exchanger pressure drop



RGC 1000

Main features	
Application	DHW heating
Description	hot water storage tank with integrated enamelled heat exchanger, permitting installation of an el. heating element
Working fluid	water (tank), water, water/glycol mixture (max. 1:1) or water/glycerine (max. 2:1) (heat exchanger)
Code	**16 088**

Energy Efficiency Data (as per EC Regulation No. 813/2013)	
	RGC 1000
Energy efficiency class	**N/A**
Standing loss	**193 W**
Storage volume	**949 l**

Technical data	
Total tank volume	970 l
Fluid volume in tank	949 l
Heat exchanger (HE) volume	21 l
Heat exchanger surface area	3,0 m²
Max. working temperature in tank	95 °C
Max. working temperature in HE	110 °C
Max. working pressure in tank	10 bar
Max. working pressure in HE	10 bar

Materials	
Tank material	S235JR, inner surface enamelled (DIN 4756)
Heat exchanger material	S235JR+N, outer surface enamelled (DIN 4756)
Tank perimeter insulation	PU foam (hard)
Insulation's outer surface	PVC / ABS

Hot water heating from 10 °C to 45 °C at heating water temp. of 60 °C	
Heat exchanger	2510 l/h (101,8 kW)

Dimensions, Tipping height, Weight	
Tank diameter	840 mm
Tank diameter with insulation	1000 mm
Tank overall height	2062 mm
Tipping height	2300 mm
Empty weight	255 kg

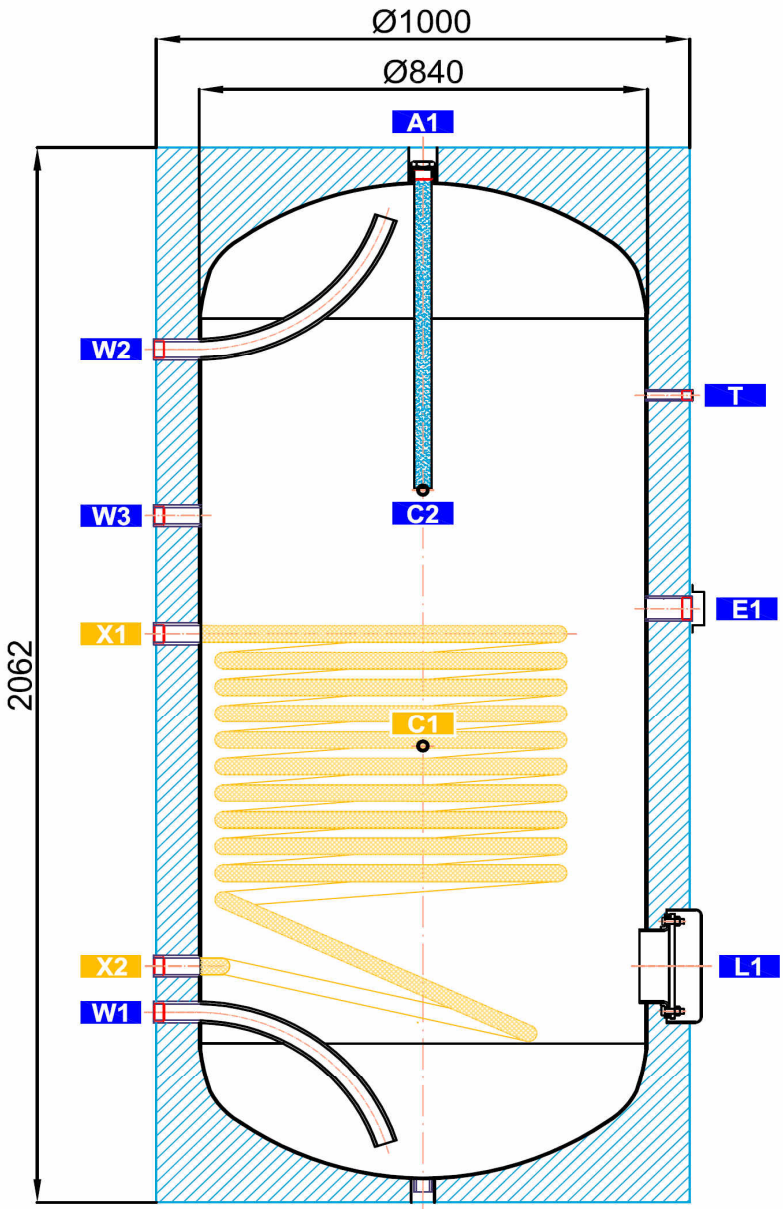
Accessories	
El. heating element	models ETT-A, D, F, G, M
Heating elem. max. length / output	815 mm / 12,0 kW
Electronic anode rod	code 9 175

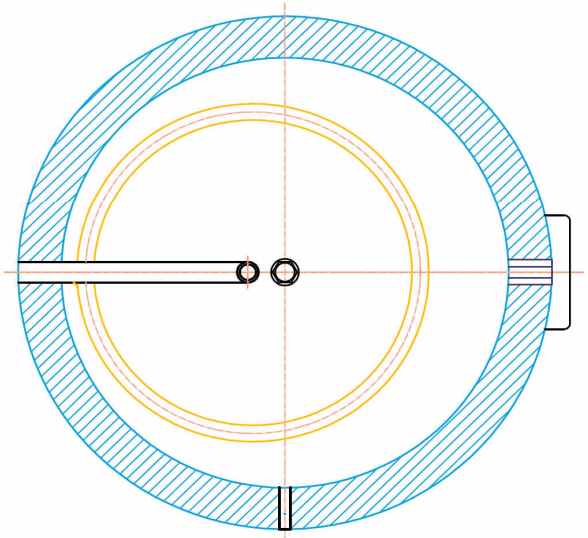
Spare parts (magnesium anode rods)	
Mg anode r. (A1), G 5/4"	code 448
Mg anode r. - chain type, G 5/4"	code 13112

RGC 1000

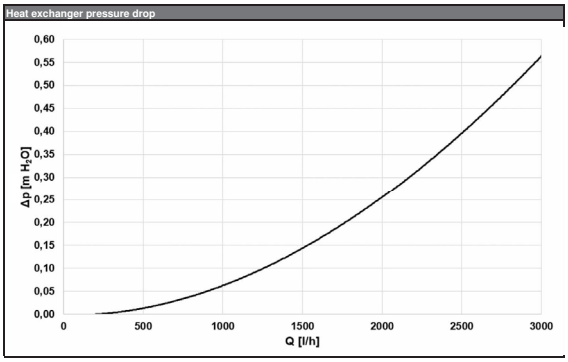
Dimensions

Tipping height 2300 mm.





TAPPINGS		
pos.	connection	height [mm]
DHW heating		
W1	G 5/4" F	372
W2	G 5/4" F	1667
W3	G 5/4" F	1342
El. heating elements		
E1	G 6/4" F	1192
Control and safety		
C1	G 1/2" F	892
C2	G 1/2" F	1392
T	G 1/2" F	1667
Solar thermal system		
X1	G 5/4" F	1112
X2	G 5/4" F	462
Flange		
L1	8 x M10	462
Magnesium anode rod		
A1	G 5/4" F	2062



4 - Operation

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

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

5 - Examples of Assigning Connection Points

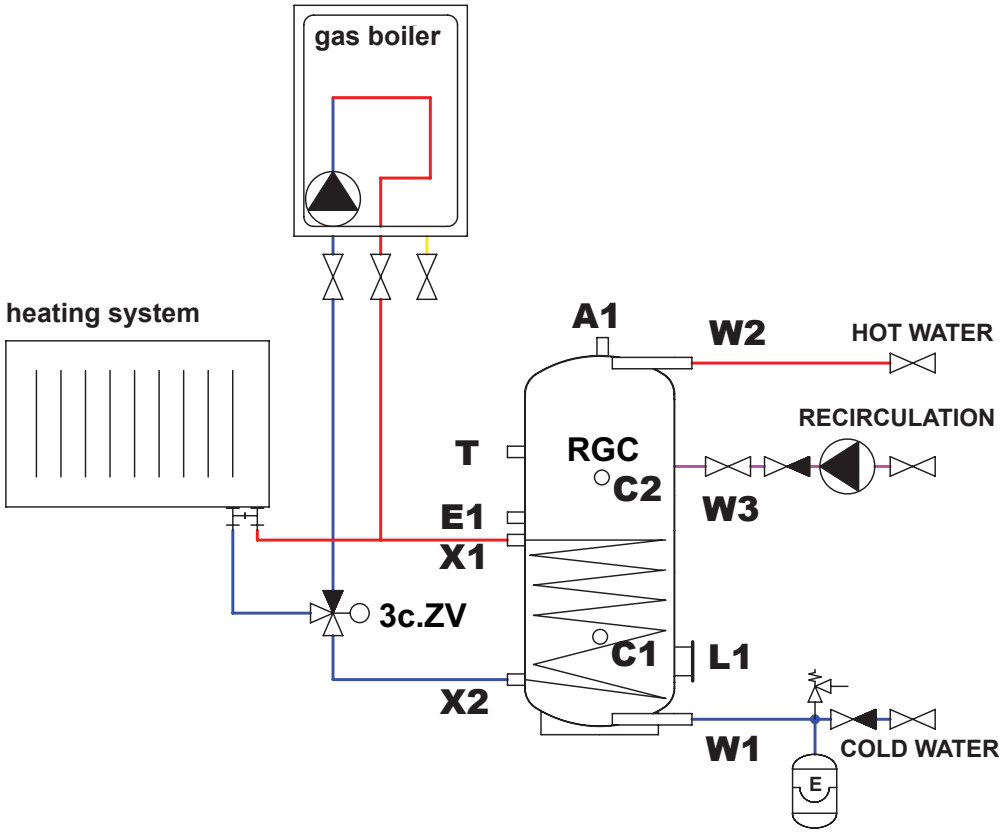
Tappings	Example I. - with a gas boiler	Example II. - solar thermal system + el. aux. heating
W1	cold water inlet to tank	cold water inlet to tank
W2	hot water outlet from tank	hot water outlet from tank
W3	recirculation	recirculation
E1	plug	electric heating element
C1	temperature sensor	temperature sensor
C2	temperature sensor	temperature sensor
T	thermometer	thermometer
X1	heating water out to gas boiler	heating water out to solar thermal system
X2	heating water in from gas boiler	heating water in from solar thermal system
L1	flange	flange
A1	anode rod	anode rod

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

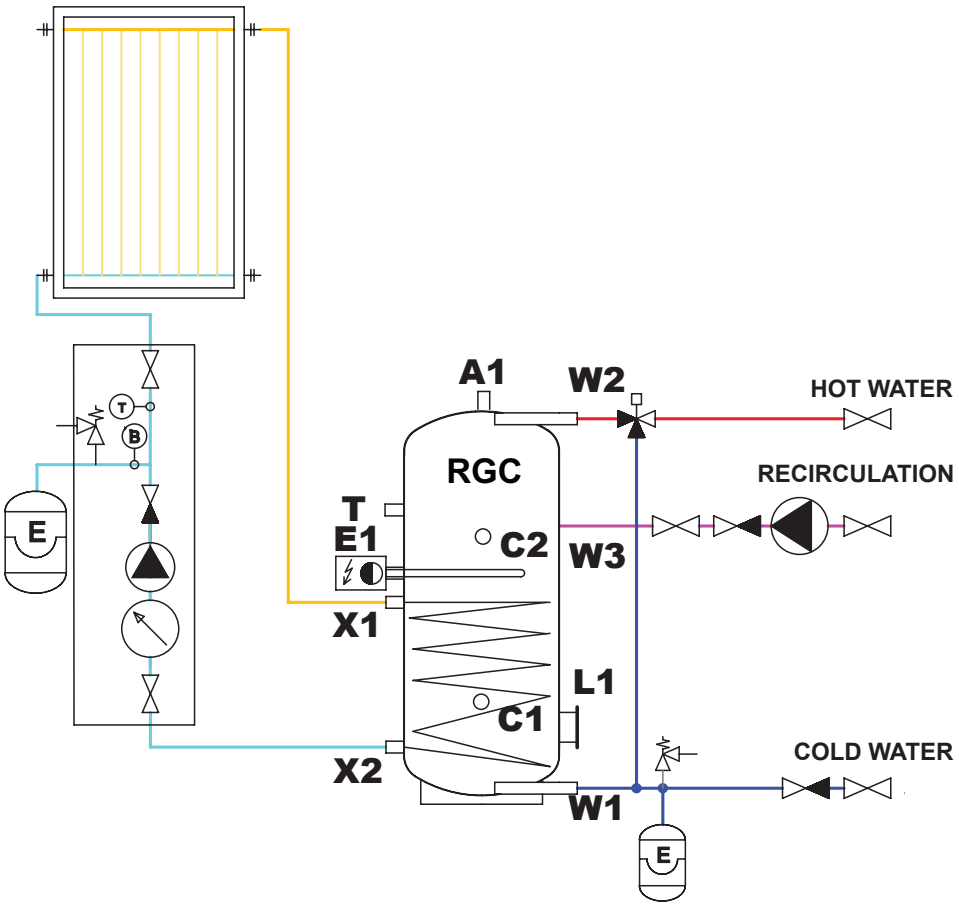
Table of limit values for total dissolved solids in hot water

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

Example I.
with a gas boiler .



Example II.
with a solar thermal system + el. aux. heating



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.

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

6.1 - Connection to heat sources

Topné okruhy připojte na vstup a výstup výměníku, který se připojuje pomocí šroubení G 5/4“.

6.2 - Connection to a solar thermal system

The tank can be well used with a solar thermal system. In such a case, the inlet for hot heat transfer fluid coming from the solar thermal system shall be connected to the upper tapping of the heat exchanger (G 5/4”) and the lower outlet to the return piping to the solar thermal system. Insulate meticulously all the piping between the tank and the solar system.

6.3 - Heating element installation

The G 6/4“ side tapping 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 may be done by qualified staff only.

6.4 - Connection to water mains

DHW piping shall be done according to valid rules. G 5/4” threaded couplers are used to connect the tank to a cold water inlet and hot water outlet. 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 should be installed at the cold water inlet as well (12 l volume for RGC 300K, 35 l volume for RGC 1000).
Should the water be too hard, install a water softener before the tank. In case the water contains mechanical impurities, install a strainer.
A suitable anti-scald valve should be installed at the hot-water outlet from the tank, preventing too hot water from entering the taps.
Install a drain valve to the lowest point of the tank.
Complete DHW piping shall be properly insulated.

6.5 - Electronic anode rod installation

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.

Kit for RGC hot water storage tanks

Code	El. anode rod length [mm]	For hot water storage tanks
9173	500 (350/150)	RGC 300K
9175	750 (550/200)	RGC 1000

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.

6.6 - Commissioning

Fill the heating circuits with the appropriate fluids 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

Hot water quality must meet the conditions shown in the Table of limit values for total dissolved solids in hot water, page 8 of this Manual.

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 Rod

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 are equipped with an anti-corrosion sacrifice magnesium anode rod. 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 shall be replaced with a new one within 24 months from commissioning.

Magnesium Anode Rod Code	Connection	For HW storage tanks
17147	G 5/4“	RGC 300K
448	G 5/4“	RGC 1000
13112, chain type	G 5/4“	RGC 1000

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!

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