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R2GC 300K, R2GC 1000

Installation and Operation Manual  
**HOT WATER STORAGE TANKS**  
**R2GC 300K, R2GC 1000**

**EN**



**R2GC 300K, R2GC 1000**

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# 1 - Description

R2GC Hot Water Storage Tank (further “tank”) with two enamelled heat exchangers, G 5/4“ connections (e.g. for connecting a solar thermal system and 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

Two models of 282 and 966 l capacity enabling installation of an electric heating element or another heat source.

## 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

R2GC 300K tanks come in a hard polyurethane insulation 80 mm thick with a metal mantle, white painted. R2GC 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

- 4 side tapings with G 5/4“ F to heat exchangers circuits
- 2 side tapings with G 5/4“ F for cold water inlet and hot water outlet
- 3 side tapings 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

#### R2GC 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          | 16 089   |

| Energy Efficiency Data (as per EC Regulation No. 813/2013) |                   |
|--|-------------------|
|  | <b>R2GC 300 K</b> |
| Energy efficiency class                                    | <b>C</b>          |
| Standing loss  | <b>88 W</b>       |
| Storage volume   | <b>266 l</b>      |

| Technical data                    |                    |
|-----------------------------------|--------------------|
| Total tank volume                 | 282 l              |
| Fluid volume in tank              | 267 l              |
| Upper heat exchanger (HE) volume  | 6 l                |
| Lower heat exchanger volume       | 9 l                |
| Upper heat exchanger surface area | 0,9 m <sup>2</sup> |
| Lower heat exchanger surface area | 1,3 m <sup>2</sup> |
| 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             |

| Hot water heating from 10 °C to 45 °C at heating water temp. of 60 °C |                    |
|---|--------------------|
| Upper heat exchanger  | 760 l/h (30,8 kW)  |
| Lower heat exchanger  | 1110 l/h (45,0 kW) |

| 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                                    |

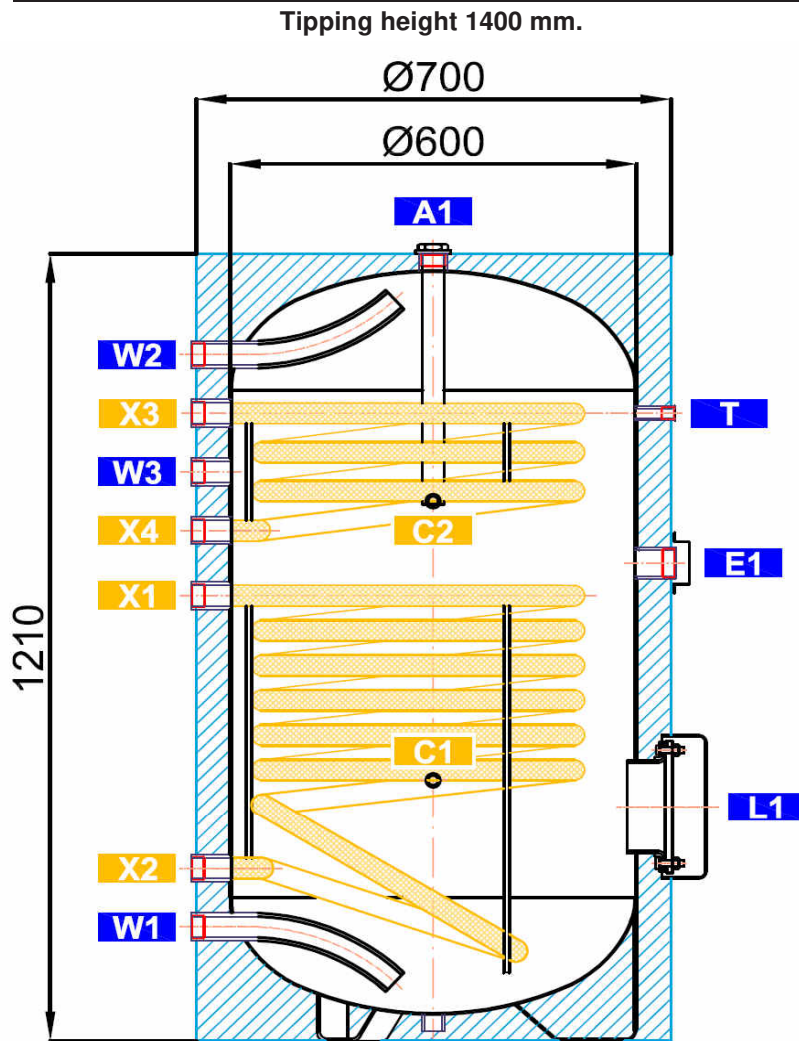
| Dimensions, Tipping height, Weight |         |
|------------------------------------|---------|
| Tank diameter                      | 600 mm  |
| Tank diameter with insulation      | 700 mm  |
| Tank overall height                | 1210 mm |
| Tipping height                     | 1400 mm |
| Empty weight                       | 118 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 17 147 |

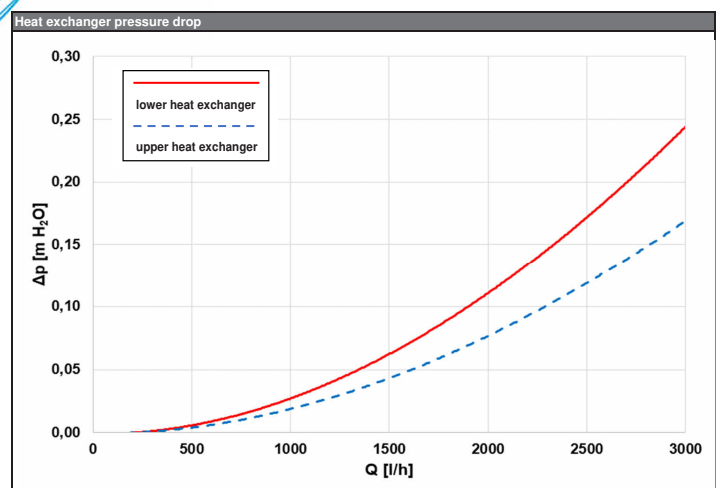
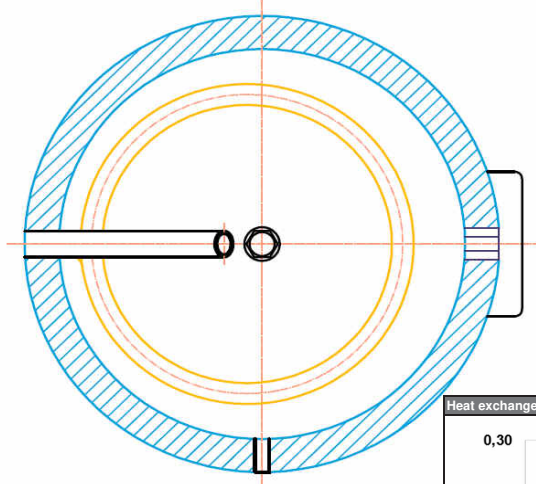
# R2GC 300 K

## Dimensions



## 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   | 830         |
| T                    | G 1/2" F   | 965         |
| Solar thermal system |            |             |
| X1                   | G 5/4" F   | 685         |
| X2                   | G 5/4" F   | 265         |
| X3                   | G 5/4" F   | 965         |
| X4                   | G 5/4" F   | 785         |
| Flange               |            |             |
| L1                   | 8 x M10    | 360         |
| Magnesium anode rod  |            |             |
| A1                   | G 5/4" F   | 1210        |



## R2GC 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          | 16 090   |

| Energy Efficiency Data (as per EC Regulation No. 813/2013) |                  |
|--|------------------|
|  | <b>R2GC 1000</b> |
| Energy efficiency class                                    | <b>N/A</b>       |
| Standing loss  | <b>194 W</b>     |
| Storage volume   | <b>934 l</b>     |

| Technical data                    |                    |
|-----------------------------------|--------------------|
| Total tank volume                 | 966 l              |
| Fluid volume in tank              | 934 l              |
| Upper heat exchanger (HE) volume  | 11 l               |
| Lower heat exchanger volume       | 21 l               |
| Upper heat exchanger surface area | 1,6 m <sup>2</sup> |
| Lower heat exchanger surface area | 3,0 m <sup>2</sup> |
| 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             |

| Hot water heating from 10 °C to 45 °C at heating water temp. of 60 °C |                     |
|---|---------------------|
| Upper heat exchanger  | 1360 l/h (55,1 kW)  |
| Lower heat exchanger  | 2510 l/h (101,8 kW) |

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

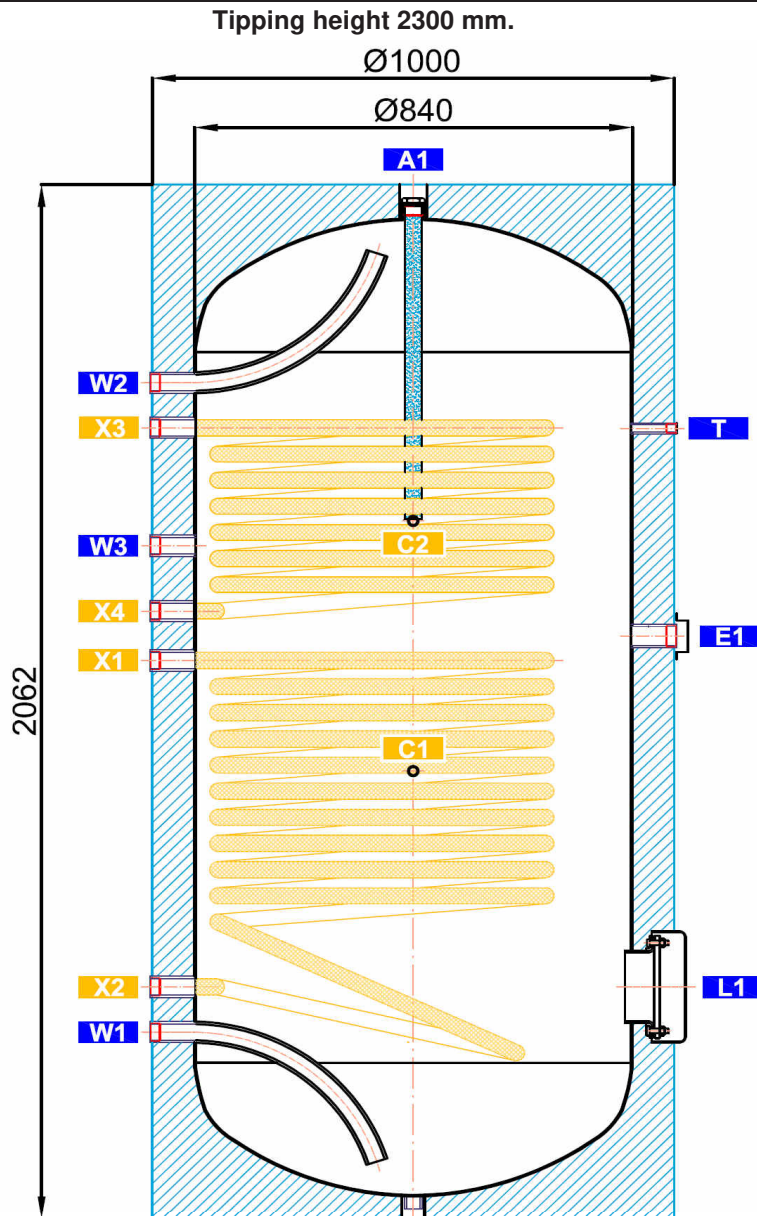
| Dimensions, Tipping height, Weight |         |
|------------------------------------|---------|
| Tank diameter                      | 840 mm  |
| Tank diameter with insulation      | 1000 mm |
| Tank overall height                | 2062 mm |
| Tipping height                     | 2300 mm |
| Empty weight                       | 290 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 9 174               |

| Spare parts (magnesium anode rods) |             |
|------------------------------------|-------------|
| Mg anode r. (A1), G 5/4"           | code 464    |
| Mg anode r. - chain type, G 5/4"   | code 13 112 |

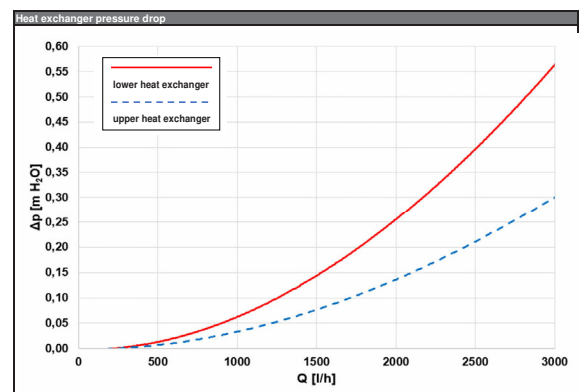
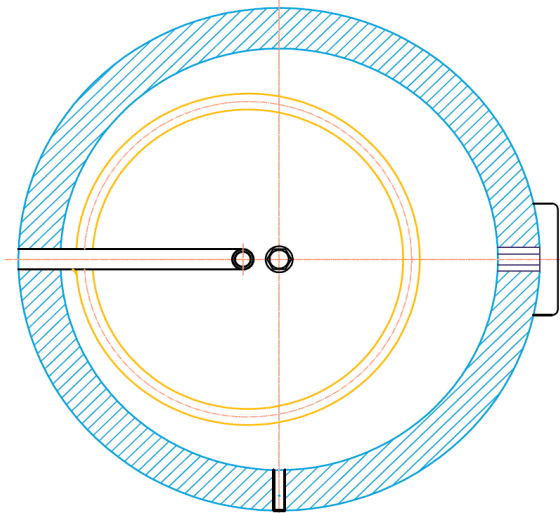
# R2GC 1000

## Dimensions



## 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   | 1162        |
| 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         |
| X3                   | G 5/4" F   | 1577        |
| X4                   | G 5/4" F   | 1212        |
| 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 exchangers (heating coils) inside the tank from several possible heat sources like various kinds of heating boilers, renewable energy sources (heat pumps, 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.<br>with a gas boiler    | Example II.<br>with a boiler and thermal store |
|----------|------------------------------------|--|
| W1       | cold water inlet                   | cold water inlet                               |
| W2       | hot water outlet                   | hot water outlet                               |
| W3       | recirculation                      | recirculation                                  |
| E1       | plug                               | electric heating element                       |
| C1       | temperature sensor                 | temperature sensor                             |
| C2       | temperature sensor                 | temperature sensor                             |
| T        | thermometer                        | thermometer                                    |
| X1       | inlet to solar thermal system      | inlet to solar thermal system                  |
| X2       | outlet from a solar thermal system | outlet from a solar thermal system             |
| X3       | inlet to a gas boiler              | inlet to a thermal store                       |
| X4       | outlet from a gas boiler           | outlet from a thermal store                    |
| 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 |



with a gas boiler and solar thermal system



## 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

Connect heating circuits to the inlets to and outlets from the heat exchangers with G 5/4" couplers.

### 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 R2GC 300K, 35 l volume for R2GC 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 R2GC hot water storage tanks

| Code | El. anode rod length [mm] | For hot water storage tanks |
|------|---------------------------|-----------------------------|
| 9174 | 500 (350/150)             | R2GC 300K                   |
| 9175 | 750 (550/200)             | R2GC 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.

| <b>Magnesium Anode Rod Code</b> | <b>Connection</b> | <b>For HW storage tanks</b> |
|---------------------------------|-------------------|-----------------------------|
| 17147                           | G 5/4"            | R2GC 300K                   |
| 464                             | G 5/4"            | R2GC 1000                   |
| 13112, chain type               | G 5/4"            | R2GC 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!

