Regulus

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R2DC 160 - 300

Installation and Operation Manual

# HOT WATER STORAGE TANKS
# R2DC 160, R2DC 200, R2DC 250 and R2DC 300

EN

CE

## R2DC 160 - 300

# 1 - Description

R2DC Storage water heater (further “tank“) with two enameled heating coils (e.g. for connecting a solar system and a heat pump), enabling 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 sources and heating circuits, valves, non-return valves etc.

## 1.1 - Models

Four models of 144, 218, 255 and 295 l total capacity enabling installation of an electric heating rod or another heat source.

## 1.2 - Tank protection

Enamel on the inner surface and on coils guarantees a long service life. Further qualitative improvement is ensured by a magnesium anode rod installed inside the tank.

## 1.3 - Thermal insulation

Tanks are supplied with a CFC-free hard polyurethane insulation 42 mm thick (R2DC 300 - 48.5 mm thick). R2DC 160, 200 and 250 models have a mantle of sheet metal, white painted. The R2DC 300 model has a white PVC surface. Tanks are fitted with 3 height-adjustable legs enabling compensation of max. 10 mm height difference.

## 1.4 - Connection points on the tank

4× lateral with G 3/4“ M thread, for the heating coils
2× lateral with G 3/4“ M (R2DC 160 - G 3/4“ F) thread, for cold water inlet and hot water outlet
2× lateral with G 1/2“ inner thread for temperature probes
1× lateral with G 3/4“ outer thread (R2DC 160 - G 3/4“ F), for circulation
1× upper with G 5/4“ inner thread, for magnesium anode rod (R2DC 300) or upper flange for magnesium anode with M8 thread (R2DC 160, R2DC 200 and R2DC 250)
1× with G 6/4“ inner thread, for el. heating rod
1× flange for lateral inspection hole (R2DC 300 only)

## 1.5 - Packing

Tanks are delivered standing, each on its pallet, R2DC 160, R2DC 200 and R2DC 250 are packed in a cardboard wrap with polystyrene filling. R2DC 300 is screwed to its pallet, wrapped in foil and protected by a cage of wooden laths. The tanks shall not be transported/stored in a horizontal position.

# 2 - General Information

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

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.

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

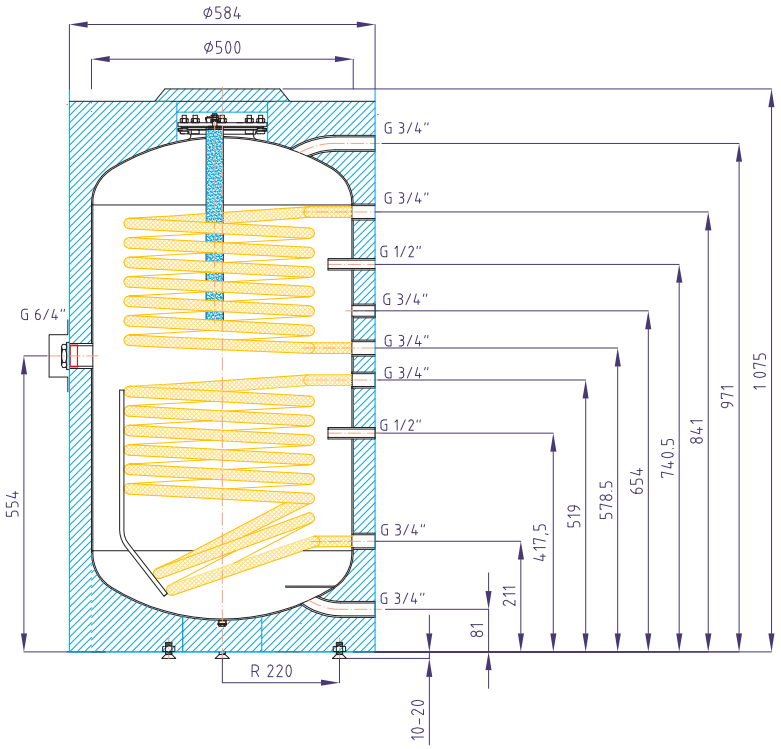
This tank is designed for operation in closed pressure circuits. Hot water is heated in the integrated hot-water heat exchangers (heating coils) inside the tank by several possible heat sources like various kinds of hydronic boilers, renewable energy sources (heat pumps, solar collectors). An electric heating rod can be installed into the tank for DHW backup 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.

# 4 - Technical Data and Dimensions

## Regulus R2DC 160

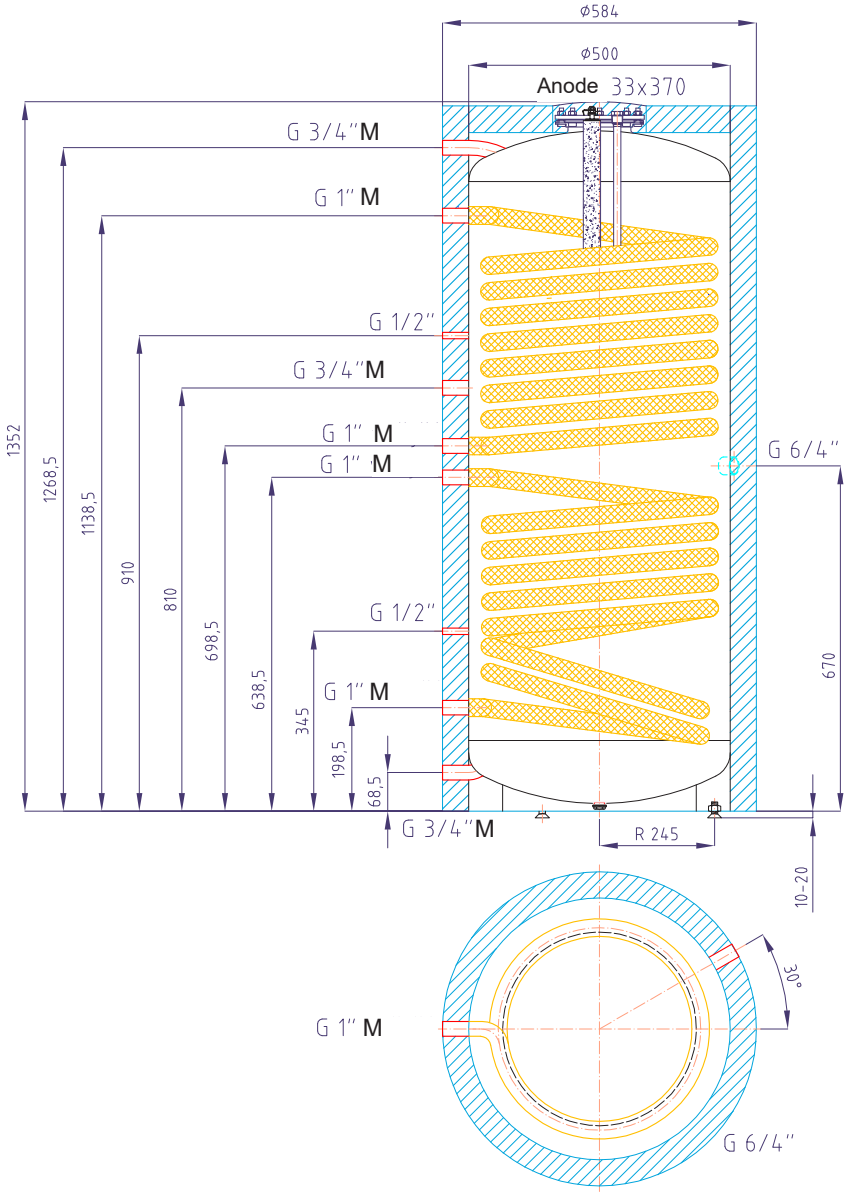
code: 13490




| | |
|---|---|
| Total tank volume: ..... | 144 l |
| DHW volume in tank: ..... | 135 l |
| Upper heating coil volume: ..... | 4.0 l |
| Lower heating coil volume: ..... | 5.0 l |
| Upper heating coil surface area: ..... | 0.7 $m^2$ |
| Lower heating coil surface area: ..... | 0.8 $m^2$ |
| Max. working temperature of the tank: ..... | 95 °C |
| Max. working temperature of the heat exchanger: ..... | 110 °C |
| Max. working pressure of the tank: ..... | 10 bar |
| Max. working pressure of the heat exchanger: ..... | 10 bar |
| DHW heating Δt=35 °C (80/60 - 10/45) - upper heating coil: ..... | 418 (17) l/h (kW) |
| DHW heating Δt=35 °C (80/60 - 10/45) - lower heating coil..... | 467 (19) l/h (kW) |
| Empty weight: ..... | 76 kg |

# Regulus R2DC 200

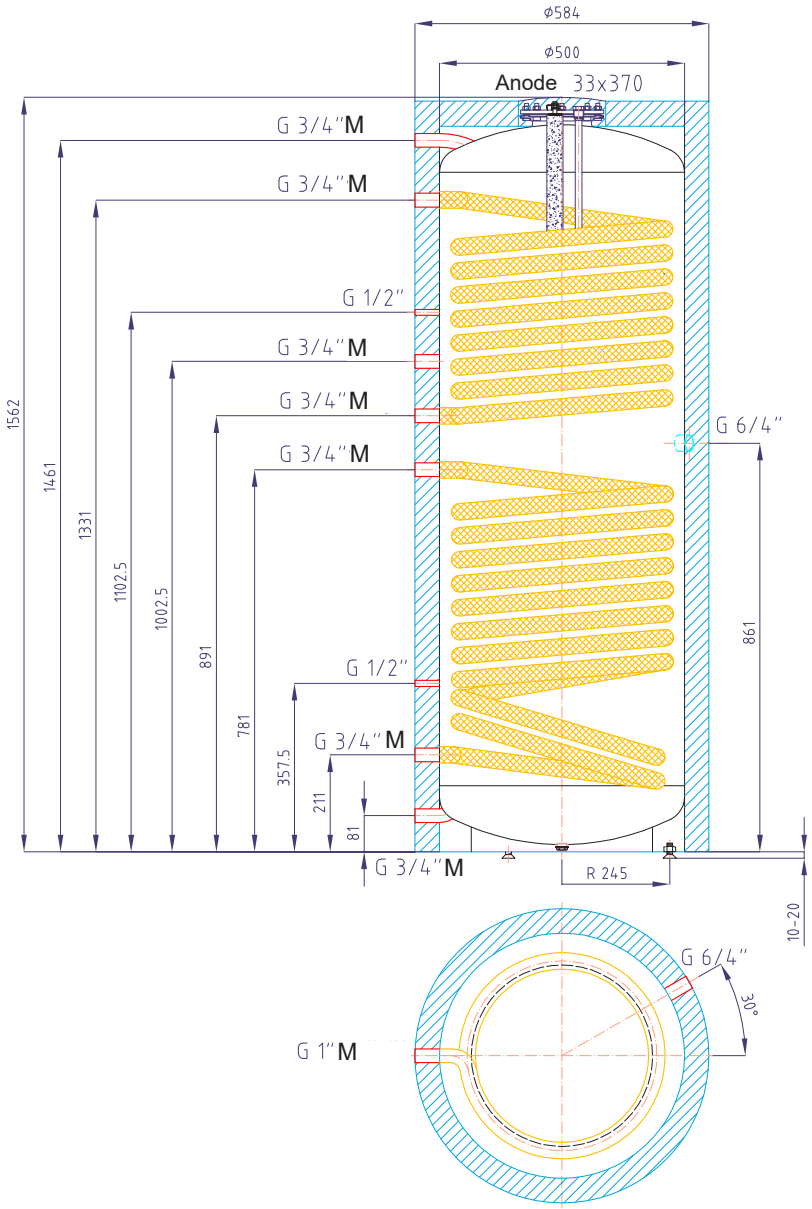
code: 11351




| | |
|---|---|
| Total tank volume: | 218 l |
| DHW volume in tank: | 204 l |
| Upper heating coil volume: | 7.0 l |
| Lower heating coil volume: | 7.0 l |
| Upper heating coil surface area: | 1.0 $m^2$ |
| Lower heating coil surface area: | 1.0 $m^2$ |
| Max. working temperature of the tank: | 95 °C |
| Max. working temperature of the heat exchanger: | 110 °C |
| Max. working pressure of the tank: | 10 bar |
| Max. working pressure of the heat exchanger: | 10 bar |
| DHW heating Δt=35 °C (80/60 - 10/45) - upper heating coil: | 590 (24) l/h (kW) |
| DHW heating Δt=35 °C (80/60 - 10/45) - lower heating coil: | 590 (24) l/h (kW) |
| Empty weight: | 105 kg |

# Regulus R2DC 250

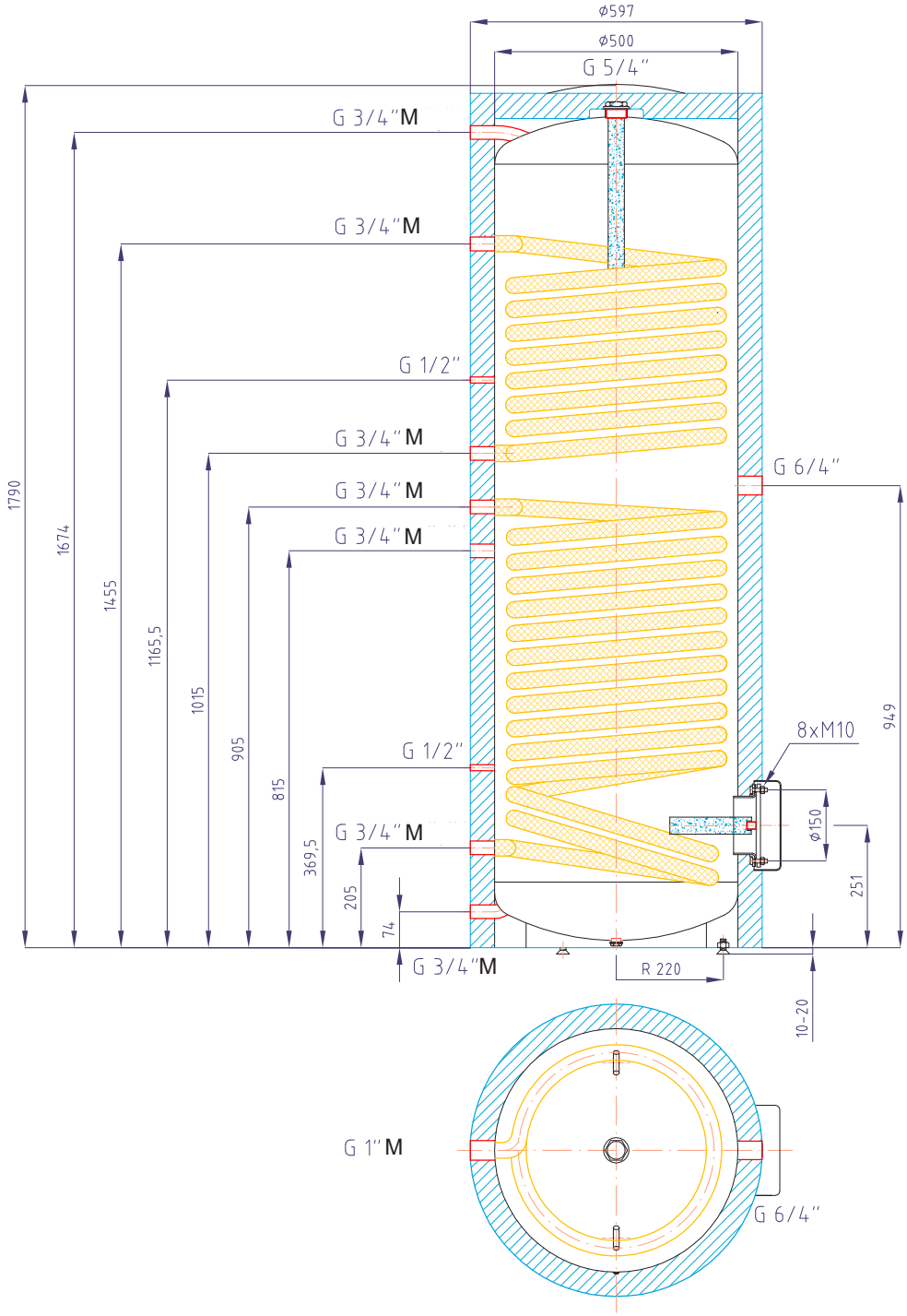
code: 12051




| | |
|---|---|
| Total tank volume: ..... | 255 l |
| DHW volume in tank: ..... | 238 l |
| Upper heating coil volume: ..... | 7.0 l |
| Lower heating coil volume: ..... | 9.5 l |
| Upper heating coil surface area: ..... | 1.0 $m^2$ |
| Lower heating coil surface area: ..... | 1.45 $m^2$ |
| Max. working temperature of the tank: ..... | 95 °C |
| Max. working temperature of the heat exchanger: ..... | 110 °C |
| Max. working pressure of the tank: ..... | 10 bar |
| Max. working pressure of the heat exchanger: ..... | 10 bar |
| DHW heating Δt=35 °C (80/60 - 10/45) - upper heating coil: ..... | 590 (24) l/h (kW) |
| DHW heating Δt=35 °C (80/60 - 10/45) - lower heating coil..... | 786 (32) l/h (kW) |
| Empty weight: ..... | 120 kg |

# Regulus R2DC 300

code: 11352



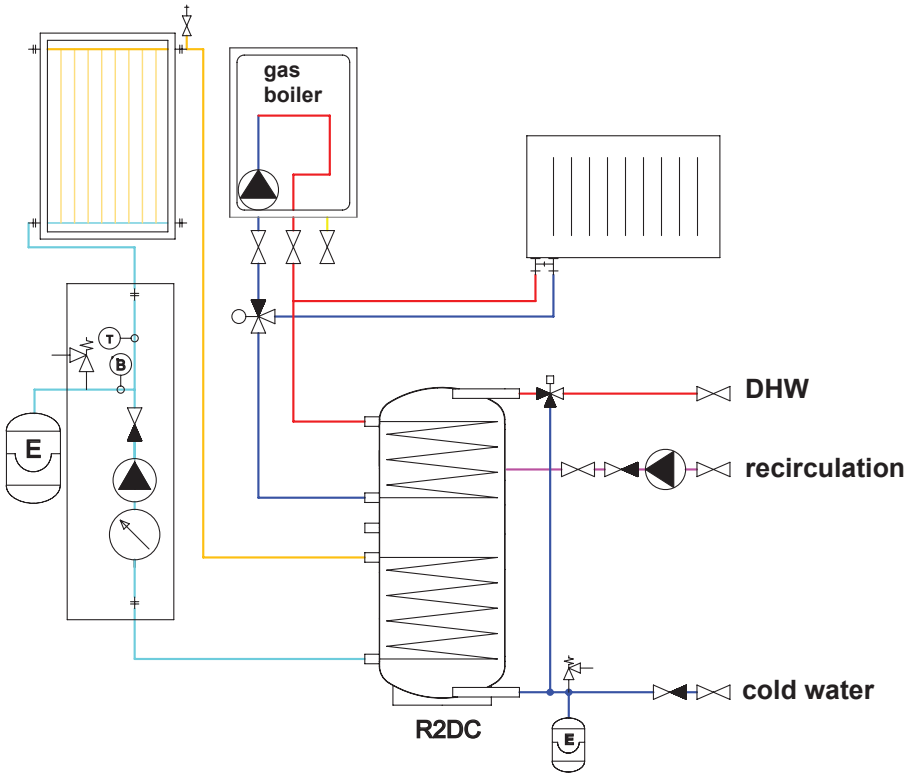

| | |
|---|---|
| Total tank volume: | 295 l |
| DHW volume in tank: | 278 l |
| Upper heating coil volume: | 7.0 l |
| Lower heating coil volume: | 10.0 l |
| Upper heating coil surface area: | 1.0 $m^2$ |
| Lower heating coil surface area: | 1.5 $m^2$ |
| Max. working temperature of the tank: | 95 °C |
| Max. working temperature of the heat exchanger: | 110 °C |
| Max. working pressure of the tank: | 10 bar |
| Max. working pressure of the heat exchanger: | 10 bar |
| DHW heating Δt=35 °C (80/60 - 10/45) - upper heating coil: | 590 (24) l/h (kW) |
| DHW heating Δt=35 °C (80/60 - 10/45) - lower heating coil: | 860 (35) l/h (kW) |
| Empty weight: | 125 kg |

**Table of limit values for total dissolved solids in hot water**

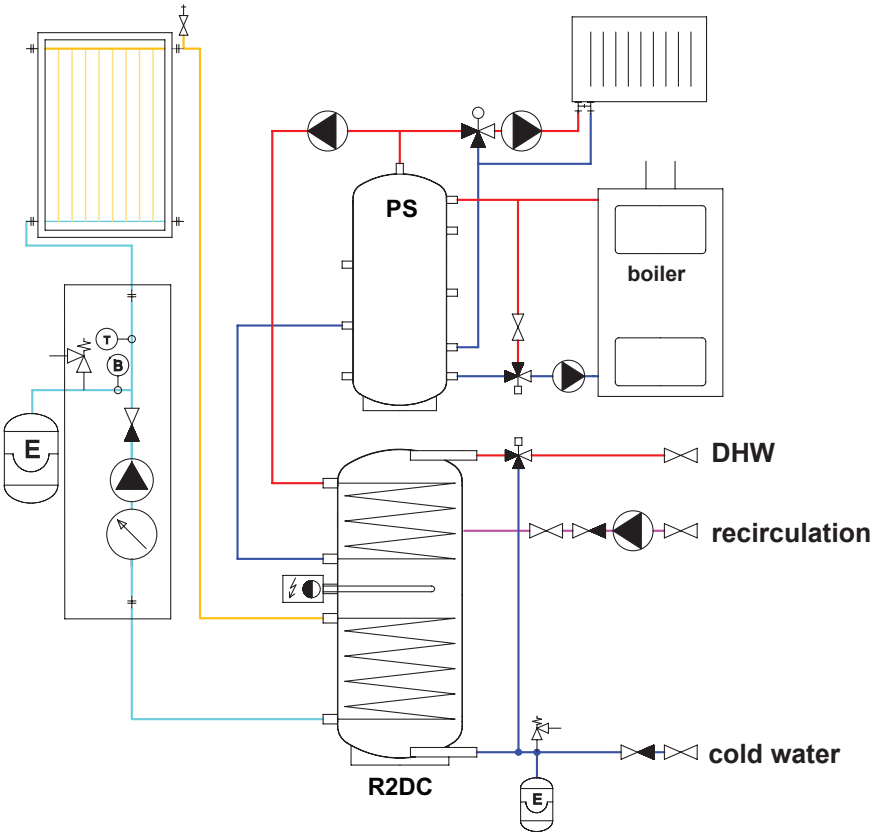
| Description | pH | Total dissolved solids (TDS) | Ca | Chlorides | Mg | Na | Fe |
|---|---|---|---|---|---|---|---|
| Max. value | 6,5 - 9,5 | 600 mg/l | 40 mg/l | 100 mg/l | 20 mg/l | 200 mg/l | 0,2 mg/l |

# 5 - Typical Installation Examples

**Example I.**
gas boiler and solar system




**Example II.**
solid-fuel boiler, solar system and accumulation tank



# 6 - Installation and Commissioning

Installation must meet valid rules and may be done by qualified staff only. 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 circuits to the inlets to and outlets from heating coils. The heat source for the tank - 2 enameled coils - connect using G 3/4” nipples.

## 6.2 - Connection to a solar system

The tank can be used with a solar system. In such a case, the inlet for hot heat-carrying liquid coming from the solar system shall be connected to the G 3/4” upper sleeve of the heating coil and the lower outlet to the return piping to the solar system. Insulate all the piping between the tank and the solar system.

## 6.3 - Heating rod installation

The G 6/4“ side sleeve is designed to accommodate an electric heating rod. Heating rods of output up to 6 kW can be used (depending on the tank diameter and rod length), connected either directly to the mains (thermostat-equipped rods), or to a heating system controller. The installation may be done by qualified staff only.

***Warning: Electric heating elements shall be protected by a safety thermostat.***

## 6.4 - Connection to water mains

DHW piping shall be done according to valid rules. G 3/4” 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 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 (8l volume for R2DC 160, R2DC 200 and R2DC 250, 12l volume for R2DC 300).

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 thermostatic mixing 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 for R2DC tanks. Its principle advantage is that it doesn’t need to be taken out for function check. In this case, just visual check of the electronic anode indication lamp is sufficient.

**Kits for R2DC hot water storage tanks.**

| For tanks | El. Anode Kit code - replacement | Anode rod length |
|---|---|---|
| R2DC 160 | 9173 | 350 (200/150) |
| R2DC 200, R2DC 250 | 9174 | 500 (350/150) |
| R2DC 300 | 17378 | 500 (350/150) + 350 (200/150) |

Should an electronic anode rod or ran electric heating rod be installed, an interconnection shall be done, i.e. the metal mantle of the storage tank shall be wired to the protective neutral.

## 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 sequence:

- open the shut-off valve at the tank inlet
- open the hot water tap/outlet point, as soon as hot water starts flowing, filling is complete; close the tap
- check all connections for leaks and 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 7 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 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 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 every 6 months. If more than 1/3 of its total volume is consumed, the anode shall be replaced with a new one. Disregarded of its state, the anode rod shall be replaced with a new one within 24 months from commissioning.

| | R2DC 160 | R2DC 200 | R2DC 250 | R2DC 300 |
|---|---|---|---|---|
| Magnesium anode rod (code) | 4025 | 448 | 448 | 448 |
| Magnesium anode rod with upper flange and gasket (code) | 15846 | 15847 | 15847 | - |
| Magnesium anode rod for the lower flange (code) | - | - | - | 1998 |

In case an electronic anode is used, the above described procedures are not necessary. Then only a visual check of the indication lamp is necessary every 3 months. Proper working of the Electronic Anode Rod is described in its Installation Manual.
If damage to a tank occurs due to neglected substitution of a magnesium anode rod or a non-working electronic anode, the warranty cannot be claimed.

# 8 - 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.

# 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 a warranty violation!

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