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RBC 200 HP - 1500 HP

Installation and Operation Instructions
HOT WATER STORAGE TANKS
RBC 200 HP, RBC 300 HP, RBC 400 HP, RBC 500 HP,
RBC 750 HP, RBC 1000 HP, RBC 1500 HP

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RBC 200 HP - 1500 HP

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1 - Description

RBC HP Storage water heater (further "tank") with one upsized enameled heating coil with a G 5/4" connection (750, 1000 and 15000 l tanks have a G 6/4" connection). These tanks (except for the 1000 and 1500 l models) facilitate installation of an electric heating element into the G 6/4" sleeve.

These tanks with an upsized heating coil are especially suitable for use with a heat pump.

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

Seven models of 205, 299, 407, 509, 764, 884 and 1516 l capacity enabling installation of an electric heating rod or another heat source.

1.2 - Tank protection

Enameled inner surface and coil guarantee long service life. Enamel is done according to DIN 4753 standard. Further qualitative improvement is reached thanks to a magnesium anode rod installed inside the tank (bigger tanks are fitted with more anode rods). From 400 l upwards the tanks are fitted with 2 magnesium anode rods, tanks of 750, 1000 and 1500 l volume with 3 magnesium anode rods.

1.3 - Thermal insulation

Tanks up to 500l are supplied with a hard polyurethane insulation 55 mm thick with a white PVC surface. 750 and 1000l tanks are supplied with a hard polyurethane insulation 75 mm thick with white PU leather surface. 1500 l tank features 100 mm thick insulation.

1.4 - Connection points on the tank

2× lateral with G 5/4" inner thread, for the heating coil (750, 1000 and 1500 l tanks have a G 6/4" thread)

2× lateral with G 5/4" inner thread, for cold water inlet and hot water outlet (200, 300 and 400 l tanks have a G 1" thread, 1500 l tank has a G 2")

2× lateral with G 1/2" inner thread, for a temperature sensor and thermometer (RBC 1000 HP and RBC 1500 HP tanks have one extra sheath)

1× lateral with G 1" inner thread, for circulation (200, 300 and 400 l tanks have a G 3/4" thread)

1× top with G 5/4" inner thread, for a magnesium anode rod (750, 1000 and 1500 l tanks have 2 upper anode rods)

1× lateral with G 6/4" inner thread, for an el. heating rod (not in RBC 1000 HP and RBC 1500 HP)

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

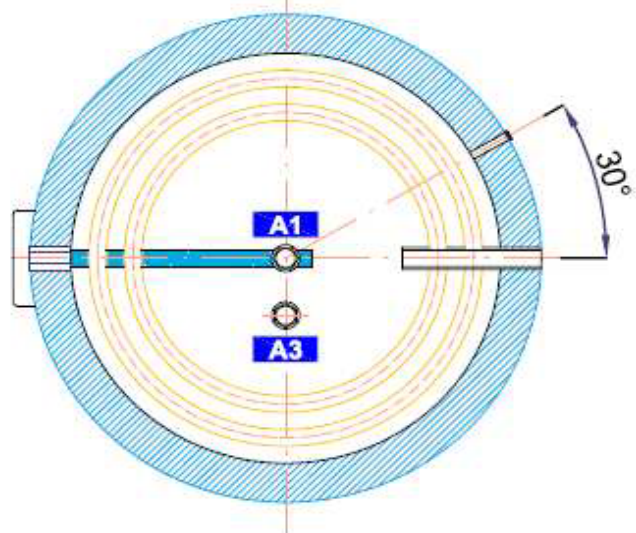
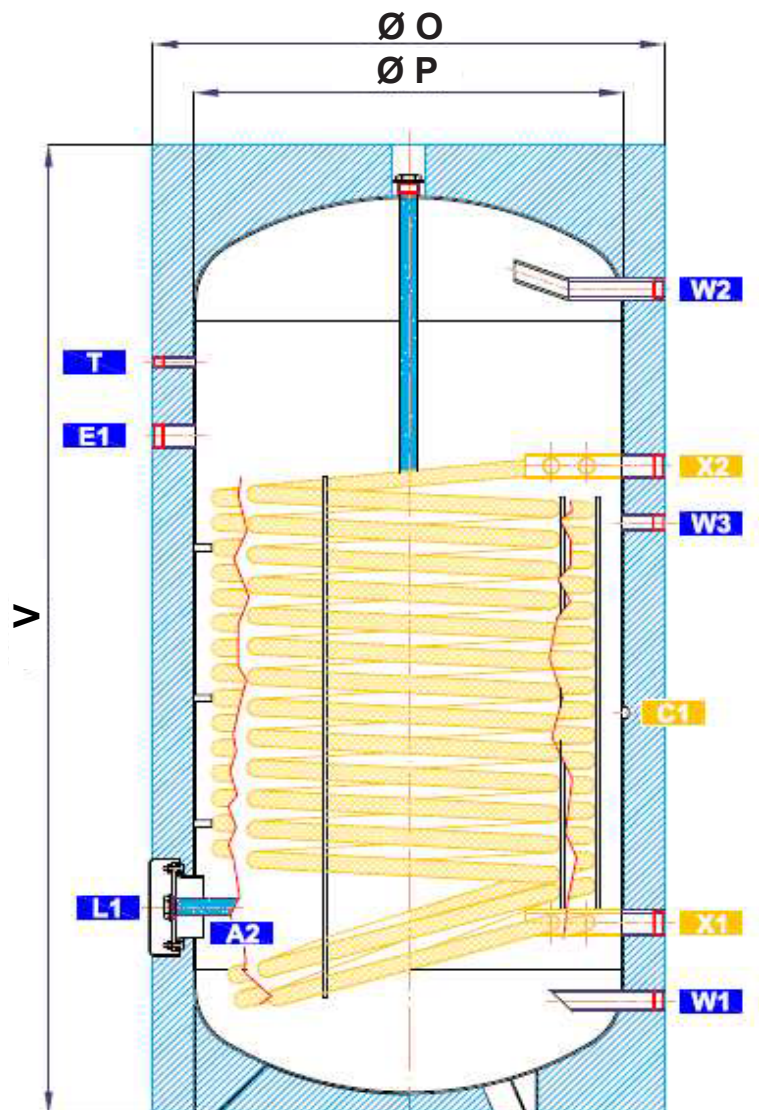
The appliance shall be installed by a qualified person according to valid rules and Manufacturer's Instructions.

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 - Technical Data and Dimensions of a RBC HP Storage Water Heater



Tank code	a
Total tank volume	b
Heating coil volume	c
Heating coil surface area	d
Empty weight (transport)	e
Max. working temperature - tank	95 °C
Max. working temperature - heating coil	110 °C
Max. working pressure - tank	10 bar
Max. working pressure - heating coil	10 bar
DHW heating $\Delta t = 35$ °C (80/60 - 10/45) - coil	f

Model		RBC 200 HP	RBC 300 HP	RBC 400 HP	RBC 500 HP	RBC 750 HP	RBC 1000 HP*	RBC 1500 HP*
Tank code	a	10534	10535	10536	8546	10537	7883	16714
Tank volume [l]	b	200	300	400	500	750	1000	1500
Heating coil volume [l]	c	13.5	23.1	30	36.3	46.2	63	70
Heating coil surface area [m ²]	d	3	3.8	5	5.9	7.5	10	11
Empty weight (transport) [kg]	e	128	155	187	220	290	320	344
DHW heating $\Delta t=35\text{ }^{\circ}\text{C}$ (60/40 - 10/45) [l/h] ([kW])	f	934 (38)	1179 (48)	1572 (64)	1880 (75)	2334 (95)	3186 (127)	3432 (140)
Dimensions [mm]	V	1265	1710	1655	1785	1870	2120	2205
	ø O	610	610	710	760	950	950	1200
	ø P	500	500	600	650	790	790	1000
Tipping height [mm]	-	1410	1820	1810	1950	2100	2330	2590
Magnesium anode rod (code)	-	464	3698	3698	3698	2 x 3698	2 x 3698	2 x 3698
Magnesium anode rod for the lower flange (code)	-	-	-	4025	4025	448	448	448
Magnesium anode rod, chain type (code)	-	-	-	-	-	13112	13112	13112

*RBC 1000 HP and RBC 1500 HP tanks have no G 6/4" sleeve for a heating element but they have an extra G 1/2" tapping for a control & safety sensor.

TAPPINGS														
	RBC 200 HP		RBC 300 HP		RBC 400 HP		RBC 500 HP		RBC 750 HP		RBC 1000 HP		RBC 1500 HP	
pos.	conn.	height [mm]	conn.	height [mm]	conn.	height [mm]	conn.	height [mm]	conn.	height [mm]	conn.	height [mm]	conn.	height [mm]
DHW heating														
W1	G 1" F	67	G 1" F	67	G 1" F	79	G 5/4" F	175	G 5/4" F	220	G 5/4" F	220	G 2" F	315
W2	G 1" F	1164	G 1" F	1609	G 1" F	1541	G 5/4" F	1595	G 5/4" F	1590	G 5/4" F	1840	G 2" F	1935
W3	G 3/4" F	990	G 3/4" F	1200	G 3/4" F	1205	G 1" F	1375	G 1" F	1140	G 1" F	1235	G 5/4" F	1460
El. heating elements														
E1	G 6/4" F	940	G 6/4" F	1150	G 6/4" F	1165	G 6/4" F	1335	G 6/4" F	1300	-	-	-	-
Control and safety														
C1	G 1/2" F	593	G 1/2" F	653	G 1/2" F	690	G 1/2" F	825	G 1/2" F	775	G 1/2" F	1193	G 1/2" F	1260
C2	-	-	-	-	-	-	-	-	-	-	G 1/2" F	542	G 1/2" F	870
T	G 1/2" F	1040	G 1/2" F	1430	G 1/2" F	1385	G 1/2" F	1475	G 1/2" F	1450	G 1/2" F	1730	G 1/2" F	1825
Solar thermal system														
X1	G 5/4" F	210	G 5/4" F	230	G 5/4" F	250	G 5/4" F	295	G 6/4" F	370	G 6/4" F	345	G 6/4" F	1620
X2	G 5/4" F	890	G 5/4" F	1080	G 5/4" F	1100	G 5/4" F	1235	G 6/4" F	1250	G 6/4" F	1685	G 6/4" F	450
Flange														
L1	8 x M10	257	8 x M10	270	8 x M10	280	8 x M10	360	8 x M10	400	8 x M10	400	8 x M10	530
Magnesium anode rod														
A1									G 5/4" F	1790	G 5/4" F	2040	G 5/4" F	2205
A2	-	-	-	-	G 5/4" F	280	G 5/4" F	360	G 5/4" F	400	G 5/4" F	400	G 5/4" F	530
A3	G 5/4" F	1230	G 5/4" F	1675	G 5/4" F	1620	G 5/4" F	1750	G 5/4" F	1790	G 5/4" F	2040	G 5/4" F	2205

4 - Operation

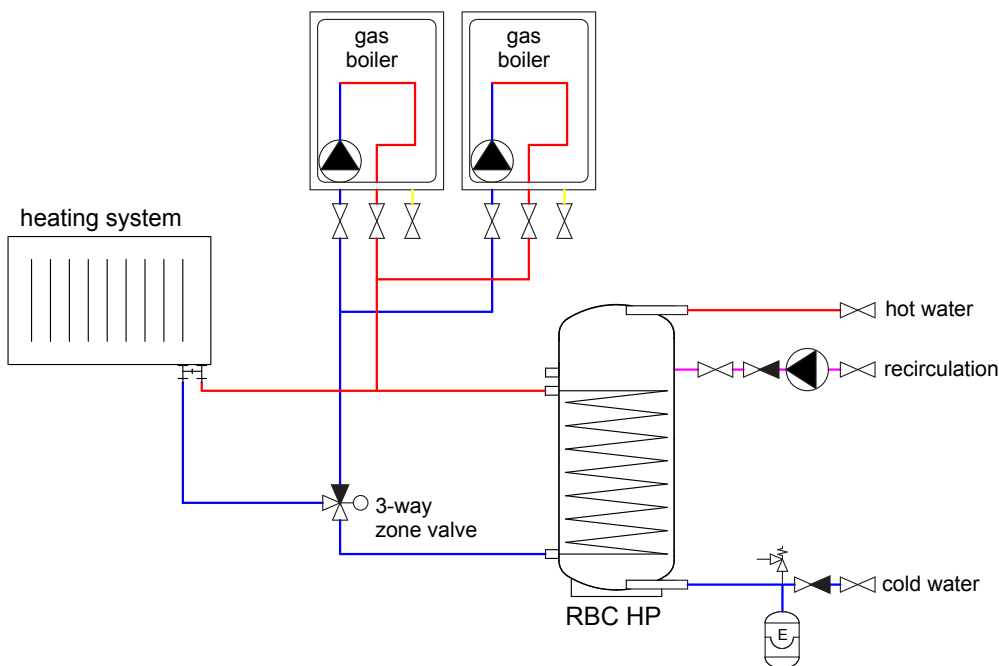
This tank is designed for operation in closed pressure circuits. Hot water is heated in the tank via the integrated heat exchanger (heating coil) from several possible heat sources like various kinds of heating boilers, renewable energy sources (heat pumps, solar collectors). An electric heating rod 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.

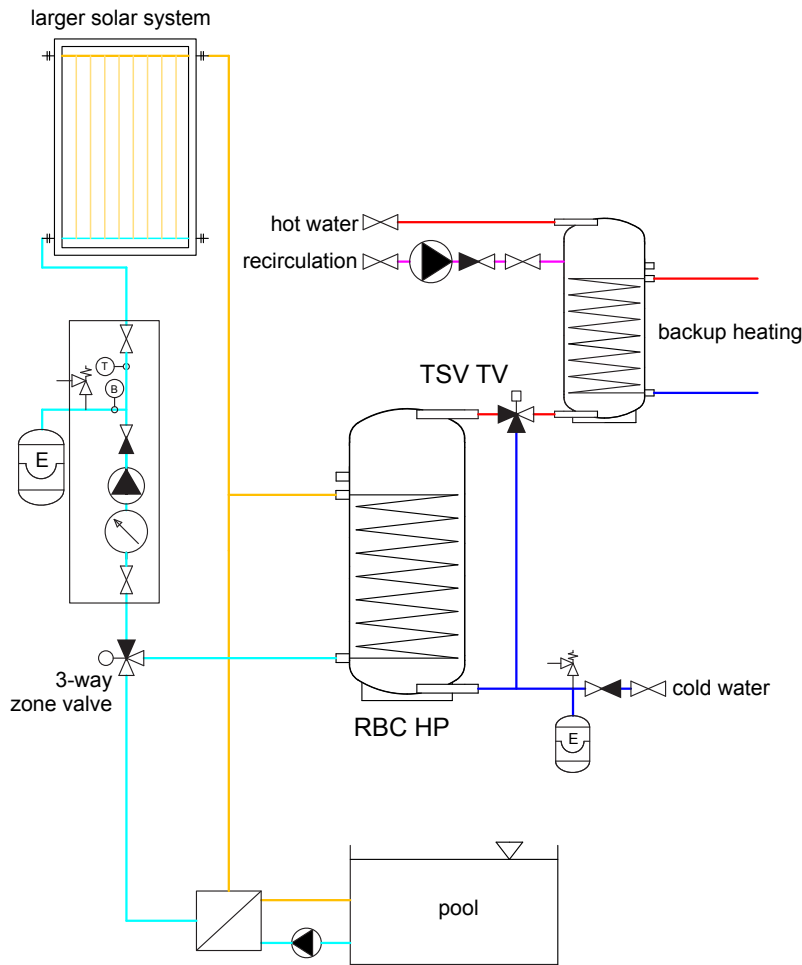
5 - Examples of Assigning Connection Points

Conn. point	Example I. with a series of gas boilers	Example II. with a solar thermal system	Example III. with a heat pump
A1	magnesium anode rod	magnesium anode rod	magnesium anode rod
T	thermometer	thermometer	thermometer
E1	plug	plug	electric heating rod
W1	cold water inlet	cold water inlet	cold water inlet
X1	outlet to a boiler	outlet to a solar thermal system	outlet to a heat pump
X2	inlet from a boiler	inlet from a solar thermal system	inlet from a heat pump
C1	temperature sensor, thermostat	temperature sensor	temperature sensor
W3	recirculation	plug	recirculation
W29	hot water outlet	hot water outlet	hot water outlet
L1 - flange	blinded	blinded	blinded

Example I. - with a series of gas boilers



Example II.
- with a solar thermal system



Example III.
- with a heat pump

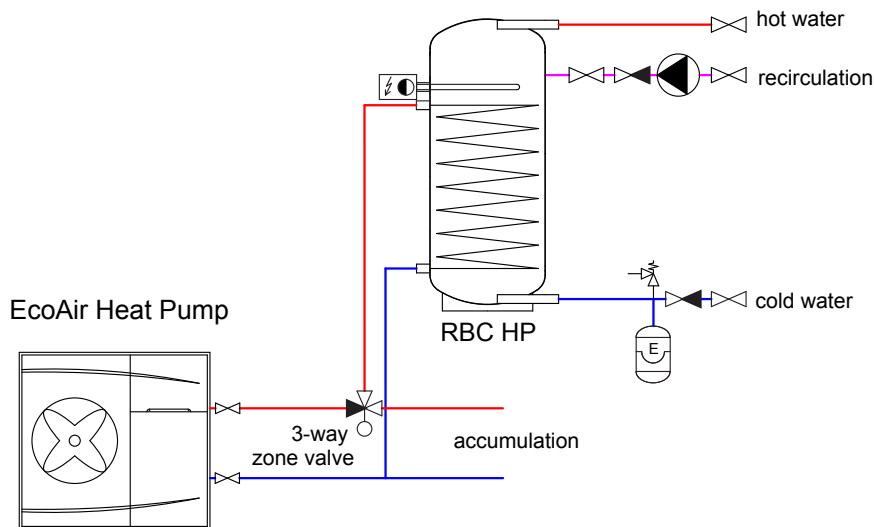


Table of limit values for total dissolved solids in hot water

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

6 - Installation and Commissioning

Installation shall 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 heating circuits to the inlet and outlet of the heating coil. The heat source for the tank - an enameled coil - connect with G 5/4" couplings.

6.2 - Connection to a solar thermal system

The tank can be used with a solar thermal system. In such a case, the inlet for hot heat-carrying liquid coming from the solar thermal system shall be connected to the G 5/4" upper sleeve and the lower outlet connects to the return piping to the solar thermal system. Insulate all the piping between the tank and the solar thermal system.

6.3 - Heating rod installation

The G 6/4" side sleeve is designed to accommodate an electric heating rod (RBC 1000 HP and 1500 HP tanks have no sleeve for a heating rod). Heating rods of output up to 12 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. 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 (8 l volume for RBC 200HP, 12 l volume for RBC 300HP and 400HP, 18 l for RBC 500HP, 24 l for RBC 750HP, 35 l for RBC 1000HP and 60 l for RBC 1500 HP).

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. In such a case, just visual check of the indication lamp is sufficient, without having to take it out from the tank for check.

All magnesium anode rods shall be removed from the tank prior to installing an electronic anode rod.

Sufficient free space is needed above the tank top to install the electronic anode rod, see the table below with recommended anode lengths.

Electronic Anode Kits for RBC HP Hot Water Storage Tanks

For tanks	El. Anode Kit code - replacement	Anode rod length	El. Anode Kit code w. lower flange*	Anode rod length
RBC 200 HP, RBC 300 HP	17375	750 (550/200)	17434	750 (550/200) + 350(200/150)
RBC 400 HP, RBC 500 HP	17376	750 (550/200) + 350 (200/150)	17434	750 (550/200) + 350(200/150)
RBC 750 HP, RBC 1000 HP	17377	800 (550/250) + 450 (200/250)	17428	800 (550/250) + 450 (200/250)
RBC 1500 HP	14377	800 (550/250) + 450 (200/250)	17435	800 (550/250) + 600 (350/250)

* The Kit shall be used when an electric heating element needs to be installed in the lower flange.

6.6 - Commissioning

Fill the heating circuits with the appropriate fluids and air-bleed the entire system. Check all connections for leaks and verify the system pressure.

The quality of top-up and heating water is set by ČSN 07 7401:1992. **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.**

Fill the heating circuits with the appropriate fluids and air-bleed the entire system. Check all connections for leaks and verify the system pressure. 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 - Tank Insulation

Product description

Thermal insulation is a component of tanks that prevents heat losses. Thermal insulation of polyurethane foam with zipped PVC layer is used.

Warning

Insulation dismantling and installation shall be done in two or three persons. The foam insulation with a PVC foil and zipper must not be dismantled/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 a lower temperature, there is a risk of damage, esp. to the zipper.

Do not use any tools for installation.

Keep away from open fire.

Warranty on insulation

- Warranty shall become null and void if:
 - the product was used for other purposes than intended.

- Warranty does not cover:
 - usual wear and tear,
 - damage caused by fire, water, electricity or another 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.

8 - 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 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. 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. Indication of proper working of the Electronic Anode is described in its User's 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.

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 - 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!

