Regulus

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RDC 160 - 300

Installation and Operation Manual
HOT WATER STORAGE TANKS
RDC 160, RDC 200, RDC 250 and RDC 300

EN

CE

RDC 160 - 300

1 - Description

RDC Storage water heater (further “tank“) with one enameled heating coil (e.g. for connecting a solar system or a gas boiler), 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 157, 216, 274 and 302 l capacity enabling installation of an electric heating rod.

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. (RDC 300 - 42 mm).
The RDC 160, RDC 200 and RDC 250 models have a mantle of sheet metal, white painted. The RDC 300 tank has a surface of white PVC. Tanks are fitted with 3 height-adjustable legs enabling compensation of max. 10 mm height difference.

1.4 - Connection points on the tank

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

1.5 - Packing

Tanks are delivered standing, each on its pallet. RDC 160, RDC 200 and RDC 250 are packed in a cardboard wrap with polystyrene filling. RDC 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 sealed 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 (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

HOT WATER STORAGE TANK
Regulus RDC 160

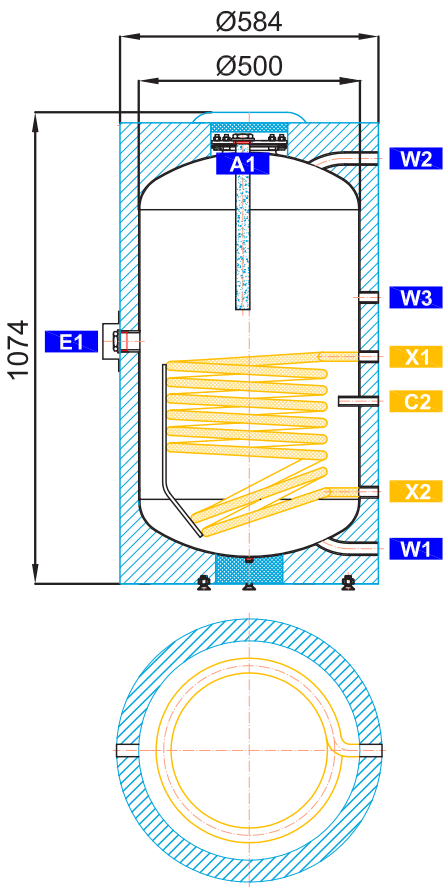
code: 12772

Dimensions			
pos.	**description**	**connection**	**height [mm]**
DHW heating			
W1	cold water	G 3/4" M	73
W2	hot water	G 3/4" M	964
W3	recirculation	G 3/4" F	647
Auxiliary heat source			
E1	electric heating element	G 6/4" F	547
Control and safety			
C2	temperature sensor-lower	G 1/2" F	411
Heat sources			
X1	supply from solar thermal collectors	G 3/4" M	512
X2	return to solar thermal collectors	G 3/4" M	204
Others			
A1	magnesium anode rod	G 5/4" F	1010

NOTE:

1) C1 and C2 tappings are supplied incl. adapter G 1/2" M - M12x1.5 and cable gland

2) earthing metal strip is run through the insulation next to the upper flange



Technical data	
Total tank volume	157 l
Fluid volume in tank	152 l
Heat exchanger (HE) volume	5 l
Heat exchanger surface area	0,8 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
Tipping height	1230 mm
Empty weight	70 kg
Hot water heating from 10 °C to 45 °C at heating water inlet temp. 60 °C	
Heat exchanger	13 kW (320 l/h)

HOT WATER STORAGE TANK
Regulus RDC 200

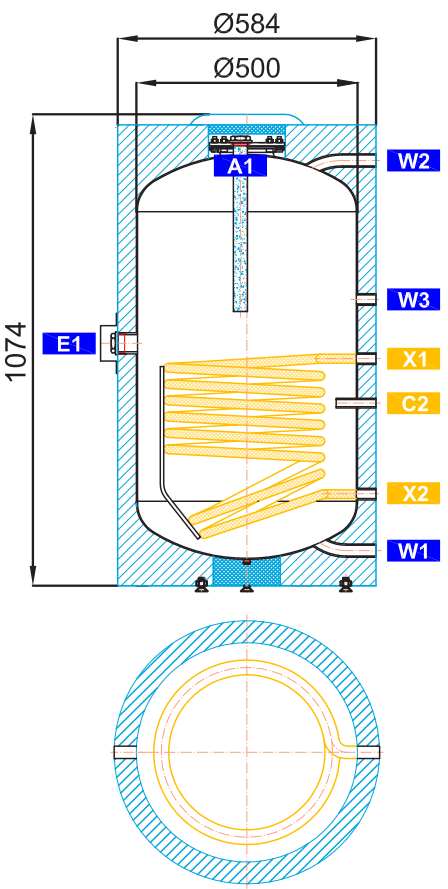
code: 12758

Dimensions			
pos.	**description**	**connection**	**height [mm]**
DHW heating			
W1	cold water	G 3/4" M	73
W2	hot water	G 3/4" M	964
W3	recirculation	G 3/4" F	647
Auxiliary heat source			
E1	electric heating element	G 6/4" F	547
Control and safety			
C2	temperature sensor-lower	G 1/2" F	411
Heat sources			
X1	supply from solar thermal collectors	G 3/4" M	512
X2	return to solar thermal collectors	G 3/4" M	204
Others			
A1	magnesium anode rod	G 5/4" F	1010

NOTE:

1) C1 and C2 tappings are supplied incl. adapter G 1/2" M - M12x1.5 and cable gland

2) earthing metal strip is run through the insulation next to the upper flange



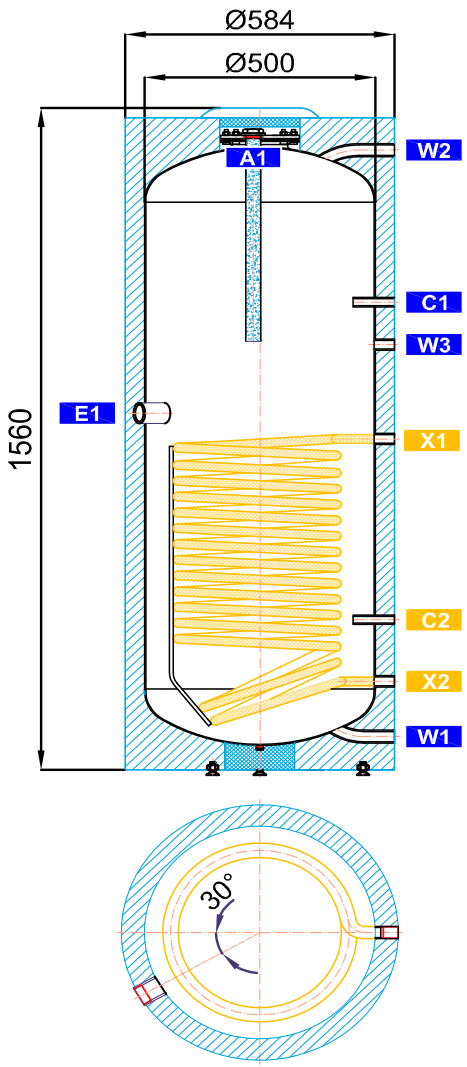
Technical data	
Total tank volume	216 l
Fluid volume in tank	208 l
Heat exchanger (HE) volume	8 l
Heat exchanger surface area	1,0 m²
Max. working temperature in tank	95 °C
Max.working temperature in HE	110 °C
Max. working pressure in tank	10 bar
Max. working pressure in HE	10 bar
Tipping height	1500 mm
Empty weight	97 kg
Hot water heating from 10 °C to 45 °C at heating water inlet temp. 60 °C	
Heat exchanger	16 kW (400 l/h)

HOT WATER STORAGE TANK
Regulus RDC 250

code: 15860

Dimensions

pos.	description	connection	height [mm]
DHW heating			
W1	cold water	G 3/4" M	74
W2	hot water	G 3/4" M	1454
W3	recirculation	G 3/4" F	996
Auxiliary heat source			
E1	electric heating element	G 6/4" F	835
Control and safety			
C1	temperature sensor-upper	G 1/2" F	1096
C2	temperature sensor-lower	G 1/2" F	349
Heat sources			
X1	supply from solar thermal collectors	G 3/4" M	774
X2	return to solar thermal collectors	G 3/4" M	204
Others			
A1	magnesium anode rod	G 5/4" F	1492



NOTE:

1) C1 and C2 tappings are supplied incl. adapter G 1/2" M - M12x1.5 and cable gland

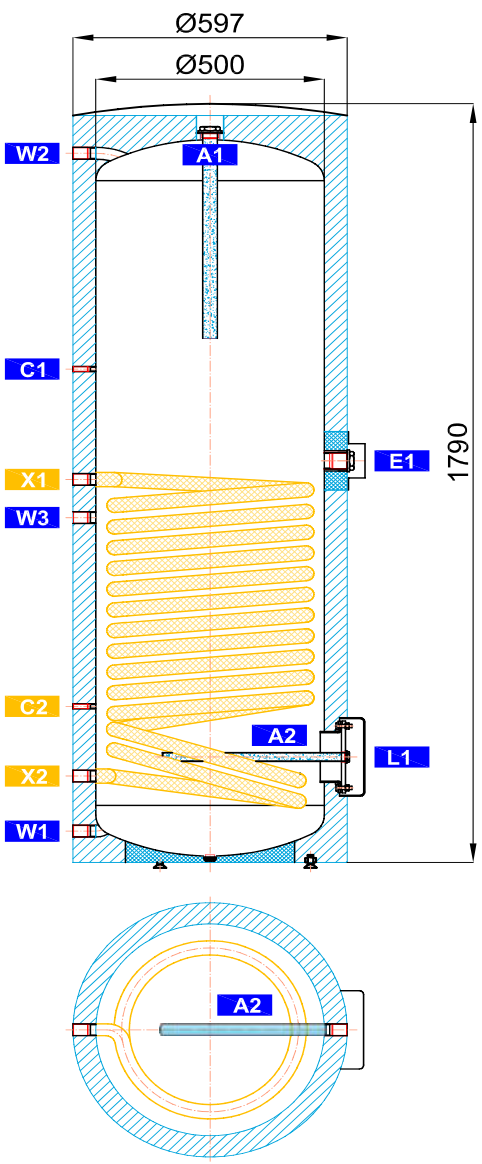
2) earthing metal strip is run through the insulation next to the upper flange

Technical data	
Total tank volume	274 l
Fluid volume in tank	264 l
Heat exchanger (HE) volume	10 l
Heat exchanger surface area	1,2 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
Tipping height	1670 mm
Empty weight	97 kg
Hot water heating from 10 °C to 45 °C at heating water inlet temp. 60 °C	
Heat exchanger	19 kW (470 l/h)

HOT WATER STORAGE TANK
Regulus RDC 300

code: 12759

Dimensions			
pos.	**description**	**connection**	**height [mm]**
DHW heating			
W1	cold water	G 3/4" M	74
W2	hot water	G 3/4" M	1670
W3	recirculation	G 3/4" F	814
Auxiliary heat source			
E1	electric heating element	G 6/4" F	948
Control and safety			
C1	temperature sensor-upper	G 1/2" F	1165
C2	temperature sensor-lower	G 1/2" F	369
Heat sources			
X1	supply from solar thermal collectors	G 3/4" M	904
X2	return to solar thermal collectors	G 3/4" M	204
Others			
A1	magnesium anode rod	G 5/4" F	1722
A2	magnesium anode rod	G 3/4" F	249
L1	flange	8 x M10	249



NOTE:

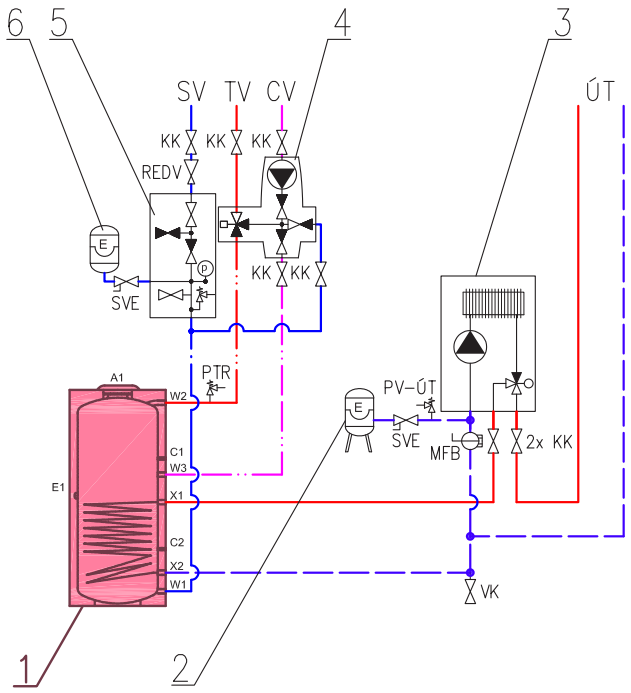
1) C1 and C2 tappings are supplied incl. adapter G 1/2" M - M12x1.5 and cable gland

2) earthing metal strip is run through the insulation next to the upper flange

Technical data	
Total tank volume	302 l
Fluid volume in tank	292 l
Heat exchanger (HE) volume	10 l
Heat exchanger surface area	1,5 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
Tipping height	1890 mm
Empty weight	114 kg
Hot water heating from 10 °C to 45 °C at heating water inlet temp. 60 °C	
Heat exchanger	24 kW (590 l/h)

5 - Typical Installation Examples

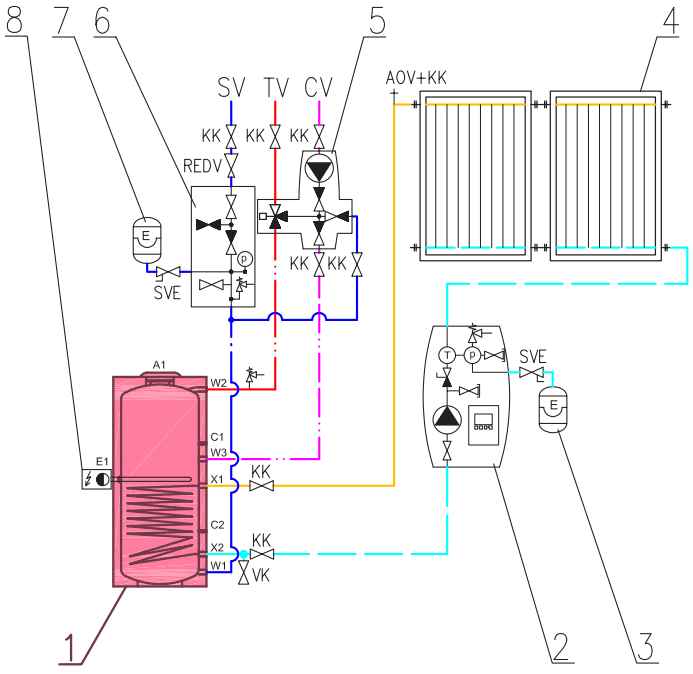
Example I.
With a gas boiler.



KEY

1	RDC hot water storage tank
2	HC expansion vessel
3	boiler (el./gas/…)
4	pump station for DHW recirculation – CSE TVMIX ZV
5	safety kit for HW storage tank
6	DHW expansion vessel
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	HC safety valve
MFB	Magnet Filterball

Example II.
With a solar thermal system and el. auxiliary heating.



KEY

1	RDC hot water storage tank
2	CSE SOL solar pump station
3	solar expansion vessel
4	solar collectors
5	pump station for DHW recirculation – CSE TVMIX ZV
6	safety kit for HW storage tank
7	DHW expansion vessel
8	el. heating element
SV	cold water
TV	hot water
CV	hot water recirculation
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

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 inlet to and outlet from heating coil 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: All 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 safety valve shall be installed at the cold water inlet, installation of a reducing valve is recommended. There must not be any shut-off valve between the tank and the safety valve. To facilitate installation, we recommend using a safety kit that includes also other elements (return valve, test valve, pressure gauge...) together with the safety valve. If the pressure from water mains exceeds 6 bar, a reducing valve is necessary. An expansion vessel should be installed at the cold water inlet (8l volume for RDC 160, RDC 200 and RDC 250, 12l volume for RDC 300). It can be connected directly to the safety kit, if used. Should the water be too hard, install a water softener before the tank. In case the water contains mechanical impurities, install a strainer.

A pressure temperature relief valve (PTR) shall be installed at the hot-water outlet from the tank with a connection kit (for the codes see the Catalogue). It is also recommended to install a corresponding anti-scald valve that prevents 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

Instead of the magnesium anode rod, an electronic anode rod can be installed in the hot water tank, which is maintenance-free and does not need to be removed from the tank to check its function. In such a case, just visual check of the electronic anode rod is sufficient.

The electronic anode rod can be installed separately (see the column "El. Anode Kit code" in the table below), or combined with another el. heating element in the flange (see the column "Code of the flange set for el. heating element with el. anode rod" in the table below), or combined with a tube heat exchanger (see the column "Code of the flange set for tube heat exchanger with el. anode rod" in the table below).

A space equal to the el. anode length is needed between the tank top and ceiling to install/replace the electronic anode rod, see the table below. In order to protect the tank properly and meet its warranty conditions, select the proper kit from the table below and install the anode rod in compliance with the instruction manual enclosed to it.

Kits for RDC storage water heaters.

Hot Water Storage Tank	El. Anode Kit code	El. anode rod length [mm]	Code of the flange set for el. heating element with el. anode rod.	Code of the flange set for tube heat exchanger with el. anode rod.	El. anode rod length [mm]
RDC 160	9173	350	-	-	-
RDC 200, RDC 250	9174	500	-	-	-
RDC 300	17378	500 + 350	21634	21636	750

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

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 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:

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

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.

	RDC 160	RDC 200	RDC 250	RDC 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 replacement 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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