# OPERATING AND INSTALLATION MANUAL

## INDIRECT HOT WATER TANKS

**OKC 100 NTR**
**OKC 125 NTR**
**OKC 160 NTR**

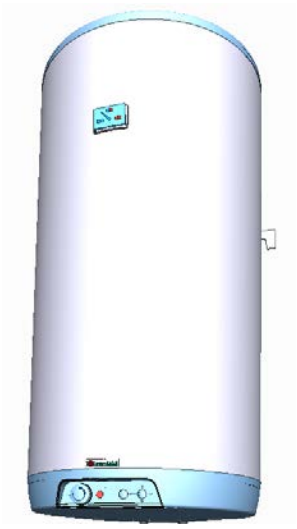
**OKC 200 NTR**
**OKC 250 NTR**
**OKC 200 NTRR**
**OKC 250 NTRR**

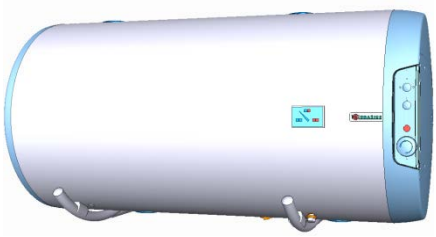
**OKC 100 NTR**/HV
**OKC 125 NTR**/HV
**OKC 160 NTR**/HV

**OKC 80 NTR/Z**
**OKC 100 NTR/Z**
**OKC 125 NTR/Z**
**OKC 160 NTR/Z**

**OKC 200 NTR/Z**

**OKCV 125 NTR**
**OKCV 160 NTR**
**OKCV 180 NTR**
**OKCV 200 NTR**





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DRAŽICE
ČLEN SKUPINY NIBE

# CONTENTS

# CAREFULLY READ THIS MANUAL BEFORE INSTALLING THE WATER HEATER!

Dear Customer,

The Works Cooperative of Dražice – Machine Plant, Ltd., would like to thank you for your decision to use a product of our brand. With this guide, we will introduce you to the use, construction, maintenance and other information on electrical water heaters.

The manufacturer reserves the right for engineering modification of the product. The product is designed for permanent contact with drinkable water.

It is recommended to use the product in indoor environment with air temperatures from +2°C to 45°C and a relative humidity up to 80%. 80%.

Product's reliability and safety is proven by tests implemented by the Engineering Test Institute in Brno.

## Meaning of pictograms used in the Manual

**Important information for heater users.**

**Abiding by the recommendations of the manufacturer serves to ensure trouble-free operation and the long service life of the product.**

**Caution!**

**Important notice to be observed.**

# 1 PRODUCT TECHNICAL SPECIFICATION

## 1.1 FUNCTION DESCRIPTION

Indirect stationary NTR and NTRR series TANKS are used to prepare HSW in combination with another hot water supply, mostly gas boiler; in NTRR types in combination of two hot water sources (gas boiler + solar system, heat pump). Their nominal performance provides sufficient amount of hot service water (HSW) even for large flat units - premises, restaurants and similar establishments. **In case of increased hot water consumption, these tanks heat water continuously, operating similarly to flow heaters.**

Closing valves of the heat exchanger must be opened which ensures heating water flow from the hot water heating system. Together with closing valve, it is recommended to install an air outlet valve at the inlet to the heat exchanger in order to bleed the heat exchanger as needed, in particular before the beginning of the heating season (Figure 1, Figure 2, Figure 3, Figure 4 - by type). The time it takes to heat up using the heat exchanger depends on the temperature and flow of water in the hot water heating system. A combined tank is made in universal design – depending on the need of connecting the closing valves to the heating element either from the right, or from the left.

## 1.2 ADVICE FOR CUSTOMERS

### 1.2.1 HOT WATER CONSUMPTION

Consumption of hot water in households depends on the number of people, amount of sanitary equipment, length, diameter and insulation of piping in the flat, or on individual habits of users. The cheapest option of water heating comes at the time when the electricity rate is reduced.

Find out in what time intervals your electricity supplier provides reduced tariff and, depending on that information, select relevant volume and power input of the heater so that your hot water consumption covered the needs of your household.

### 1.2.2 ENERGY SAVING

Hot utility water reservoir is insulated by means of top-quality polyurethane foam with zero CFCs content. Adjust the temperature of the heater's thermostat to that level only that you need to run your home. Thus you will reduce electricity consumption, as well as the amount of lime sediments on the walls of the receptacle and on the heat exchanger.

**Benefits of using indirect heater:**

- installation and connection to hot water supply,
- Very fast hot utility water heating,
- Enamelled steel tank ensures compliance with all hygienic requirements for the

quality of HSW,

- Integrated protective magnesium anode increases corrosion resistance,
- Quality polyurethane insulation ensures minimum heat losses,
- Smoothly settable HSW temperature up to 74°C,
- multiple supply points,
- in types with two exchangers, possibility of using two hot water supplies or, via a combination of those, obtain double heat-transfer surface,
- light indication of the heater's run,
- HSW temperature control,
- Possibility of connecting HSW circulation.

### 1.2.3 EMERGENCY POWER CONSUMPTION

If no heated water is taken from the tank, a small amount of heat leaks. This loss is measured for a period of 24 hours at the temperature of 65°C in the heater, and at 20°C in its ambient area. The resulting value is expressed in units [kWh/24h] and indicates the amount of power needed to maintain the set temperature. Data sheet - see Table 1.

| TYPE | Heating water flow (l/h) | Pressure loss (mbar) |
|---|---|---|
| **OKC 100 NTR** | | 33 |
| **OKC 125 NTR** | | 46 |
| **OKC 160 NTR** | | 46 |
| **OKC 200 NTR** | 720 | 46 |
| **OKC 250 NTR** | | 46 |
| **OKC 200 NTRR** | | 2 x 33 |
| **OKC 250 NTRR** | | 2 x 33 |

**Table 1**

# 1.3 DESIGN AND GENERAL HEATER DIMENSIONS

The tank receptacle is made of steel plate and tested at 0.9 MPa of overpressure. The inside of the receptacle is enamelled. A flange is welded onto the lower bottom of the receptacle with a flange lid screwed onto it. A sealing ring is inserted between the flange lid and the flange. Thermowells for thermostat sensors and thermometer installation are placed in the flange lid. An anode rod is mounted onto the M8 nut. The water reservoir is insulated by means of polyurethane foam. Electric wiring is placed underneath the plastic removable cover. The temperature of water can be set using the thermostat. Heat exchanger(s) is/are welded onto the pressure tank.

Description of basic parts of the tank – by individual types (Figure 1, Figure 2, Figure 3, Figure 4).

Heater dimensions (Figure 5, Figure 6, Figure 7, Figure 8) and (Table 2, Table 4, Table 6, Table 8).

**Technical description:** OKC 100 NTR, OKC 125 NTR, OKC 160 NTR, OKC 200 NTR, OKC 250 NTR, OKC 200 NTRR, OKC 250 NTRR

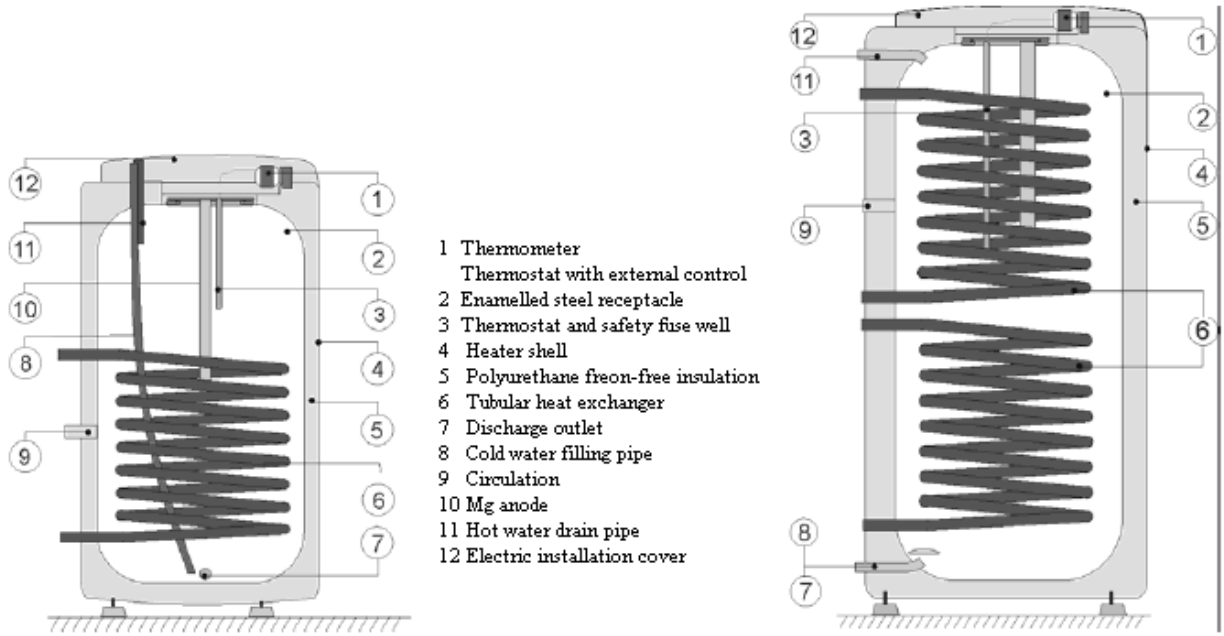



Figure 1

**Technical description:** OKC 100 NTR/HV, OKC 125 NTR/HV, OKC 160 NTR/HV

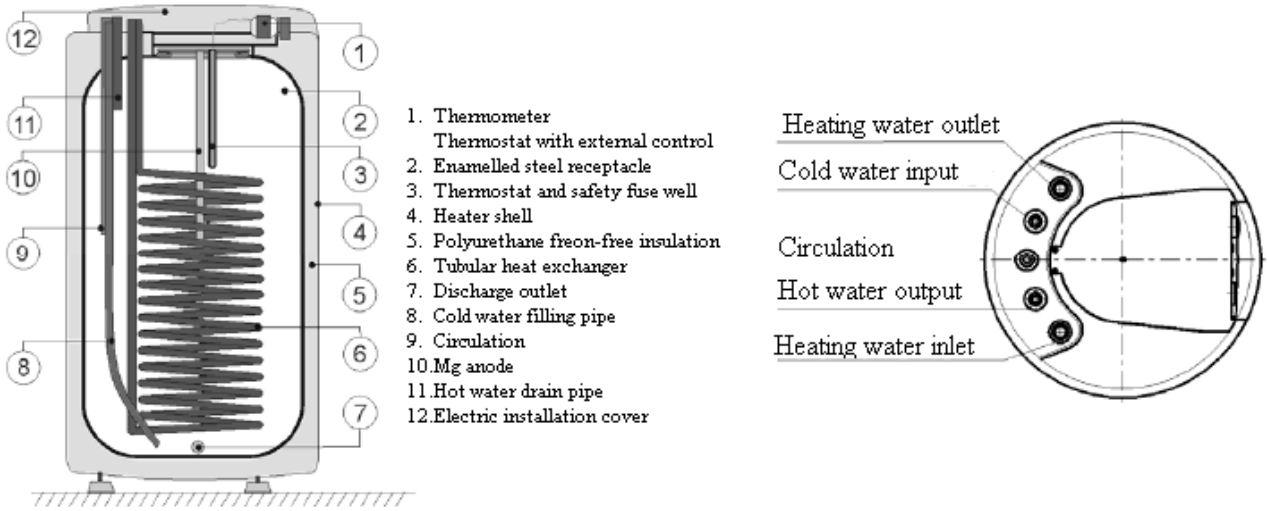



Figure 2

**Technical description:** OKC 80 NTR/Z, OKC 100 NTR/Z, OKC 125 NTR/Z, OKC 160 NTR/Z, OKC 200 NTR/Z

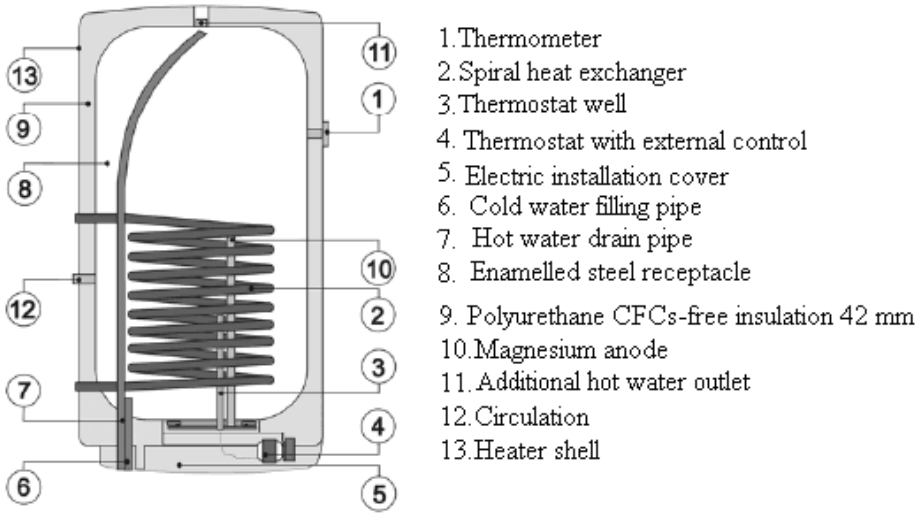
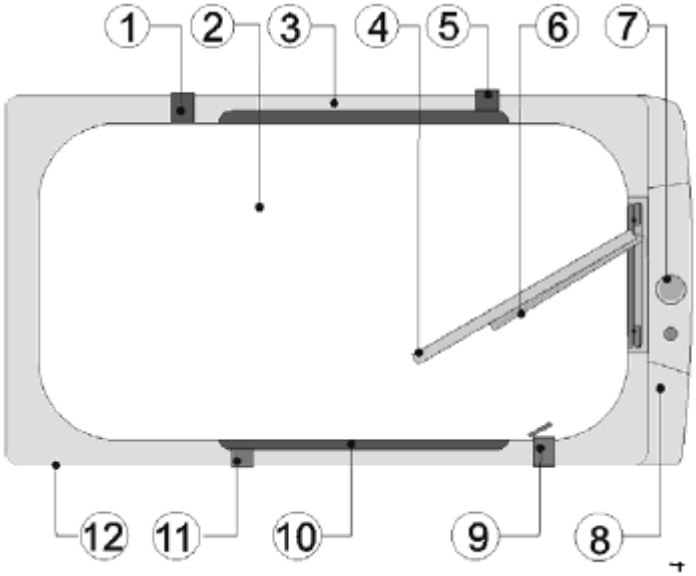



Figure 3

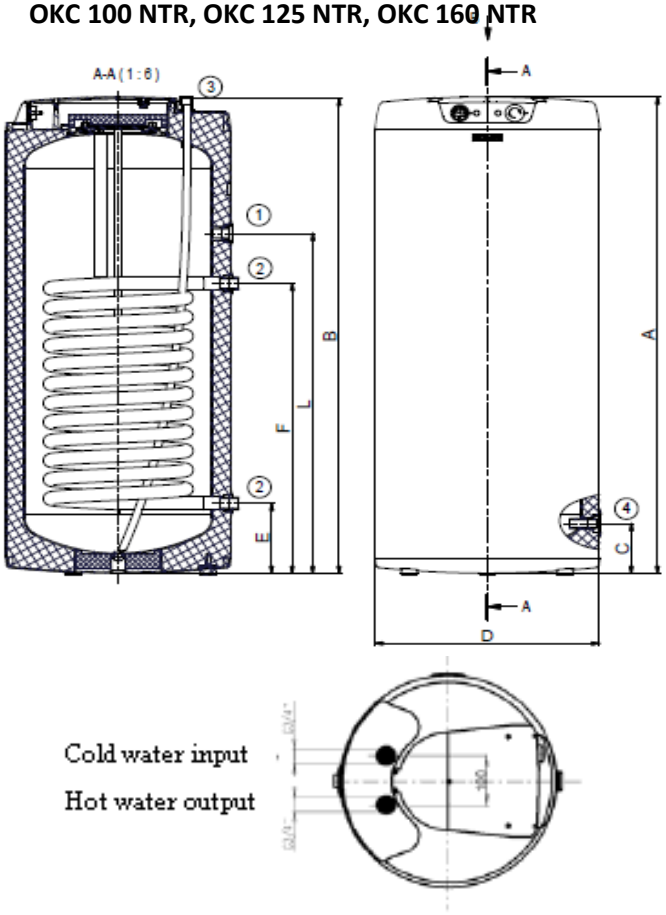
**Technical description:** OKCV 125 NTR, OKCV 160 NTR, OKCV 180 NTR, OKCV 200 NTR




1 - Hot water drain pipe
2 - Enamelled steel receptacle
3 - Polyurethane insulation 4.2 mm
4 - Mg anode
5 - Hot water inlet
6 - Thermowell and safety fuse well
7 - Thermostat with external control
Safety fuse
8 - Electric installation cover
9 - Cold water filling pipe
10 - Heat exchanger
11 - Heating water outlet
12 - Heater shell

Figure 4

**OKC 100 NTR, OKC 125 NTR, OKC 160 NTR**




**OKC 200 NTR, OKC 250 NTR, OKC 200 NTRR, OKC 250 NTRR**

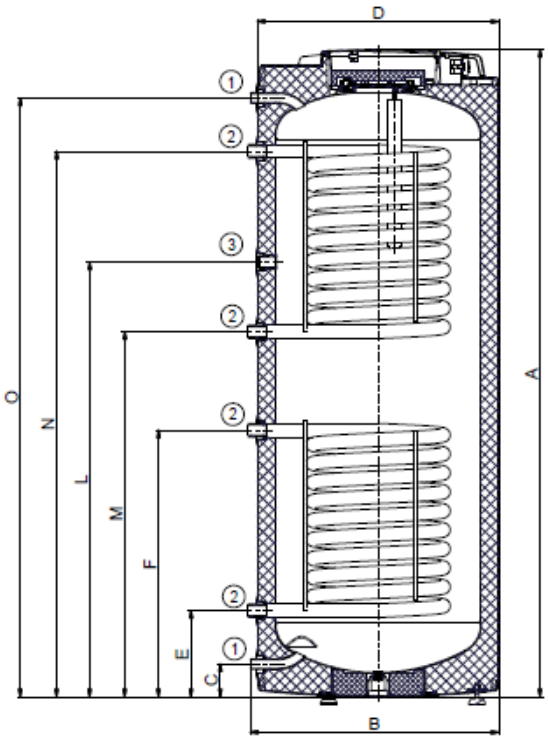



Figure 5

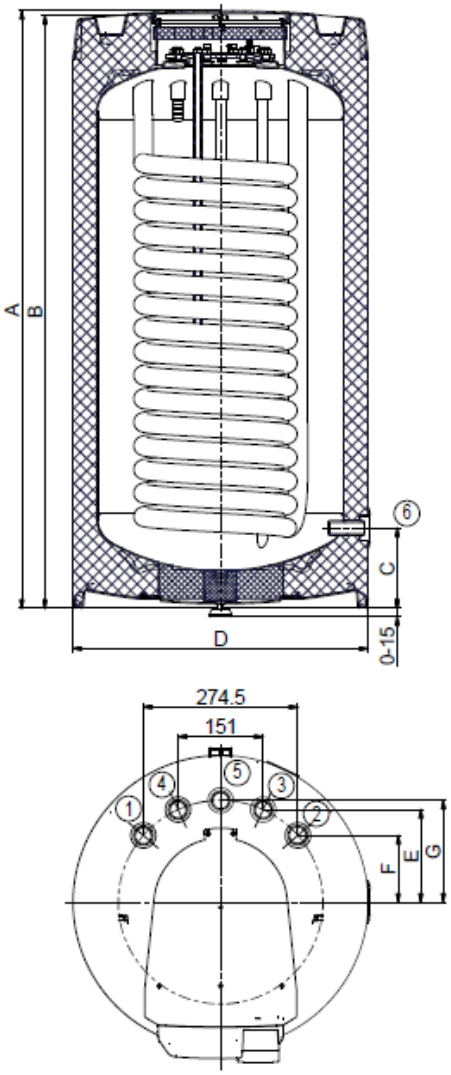
| | OKC 100 NTR | OKC 125 NTR | OKC 160 NTR | OKC 200 NTR | OKC 200 NTRR | OKC 250 NTR | OKC 250 NTRR |
|---|---|---|---|---|---|---|---|
| **A** | 902 | 1067 | 1255 | 1398 | 1398 | 1578 | 1578 |
| **B** | 891* | 1058* | 1249* | 603 | 603 | 603 | 603 |
| **C** | 147 | 147 | 147 | 80 | 80 | 80 | 80 |
| **D** | 524 | 524 | 524 | 585 | 585 | 585 | 585 |
| **E** | 197 | 197 | 197 | 210 | 210 | 210 | 210 |
| **F** | 637 | 767 | 767 | 780 | 650 | 780 | 650 |
| **L** | 537 | 637 | 897 | 950 | 950 | 1060 | 1060 |
| **M** | - | - | - | - | 710 | - | 890 |
| **N** | - | - | - | - | 1150 | - | 1330 |
| **O** | - | - | - | 1280 | 1280 | 1460 | 1460 |

*Height from the upper heater's edge to the end of the water inlet and outlet tubes.

Table 2

| TYPE | | OKC 100 NTR | OKC 125 NTR | OKC 160 NTR | OKC 200 NTR | OKC 200 NTRR | OKC 250 NTR | OKC 250 NTRR |
|---|---|---|---|---|---|---|---|---|
| **VOLUME** | L | 87 | 112 | 148 | 208 | 200 | 242 | 234 |
| **MAX OPERATING OVERPRESSURE IN THE TANK** | MPa | | | | 0,6 | | | |
| **MAX OPERATING OVERPRESSURE IN THE EXCHANGER** | MPa | | | | 1 | | | |
| **ELECTRICAL CONNECTION OF CONTROL ELEMENTS** | | | | | 1 PE-N 230V/50Hz | | | |
| **EL. PROTECTION** | | | | | IP 42 | | | |
| **MAX TEMPERATURE TUV** | °C | | | | 80 | | | |
| **RECOMMENDED HSW TEMPERATURE** | °C | | | | 60 | | | |
| **MAX WEIGHT OF THE HEATER WITHOUT WATER** | kg | 57 | 69 | 77 | 95 | 108 | 107 | 118 |
| **EXCHANGER HEAT TRANSFER SURFACE** | $m^2$ | 1,08 | 1,45 | 1,45 | 1,45 | 2 x 1.08 | 1,45 | 2x 1.08 |
| **RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE OF 80°C AND FLOW 720 L/H** | W | 24000 | 32000 | 32000 | 32000 | 2 x 24000 | 32000 | 2 x 24000 |
| **TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C** | min | 14 | 14 | 17 | 22 | 28 / 16 | 28 | 36 / 20 |
| **STATIC LOSS** | W | 42 | 54 | 75 | 82 | 82 | 87 | 87 |

Table 3




| | |
|---|---|
| neck #1 | 3/4" outer |
| neck #2 | 3/4" outer |
| neck #3 | 3/4" outer |
| neck #4 | 3/4" outer |
| neck #5 | 3/4" outer |
| neck #6 | 1/2" inner |

Figure 6

| TYPE | OKC 100 NTR/HV | OKC 125 NTR/HV | OKC 160 NTR/HV |
|---|---|---|---|
| **A** | 902 | 1067 | 1092 |
| **B*** | 893 | 1058 | 1079 |
| **C** | 144 | 144 | 146 |
| **D** | 524 | 524 | 584 |
| **E** | 165 | 165 | 165 |
| **F** | 119 | 119 | 119 |
| G | 182 | 182 | 182 |

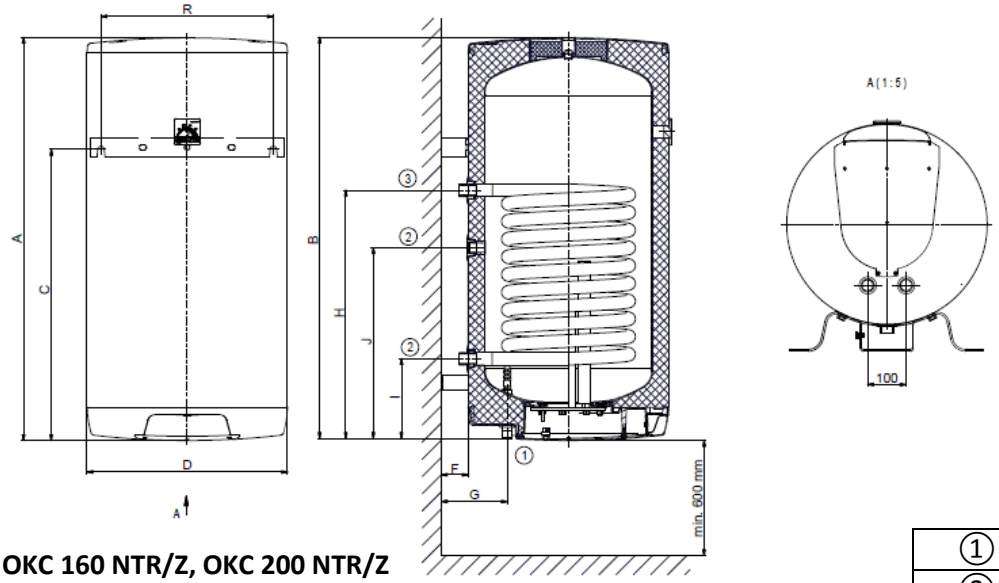
*Height from the upper heater's edge to the end of the water inlet and outlet tubes.

Table 4

| TYPE | | OKC 100 NTR/HV | OKC 125 NTR/HV | OKC 160 NTR/HV |
|---|---|---|---|---|
| **VOLUME** | L | 87 | 113 | 144 |
| **MAX OPERATING OVERPRESSURE IN THE TANK** | MPa | | 0,6 | |
| **MAX OPERATING OVERPRESSURE IN THE EXCHANGER** | MPa | | 1 | |
| **ELECTRICAL CONNECTION OF CONTROL ELEMENTS** | | | 1 PE-N 230 V/50Hz | |
| **EL. PROTECTION** | | | IP 42 | |
| **MAX TEMPERATURE TUV** | °C | | 80 | |
| **RECOMMENDED HSW TEMPERATURE** | °C | | 60 | |
| **MAX WEIGHT OF THE HEATER WITHOUT WATER** | kg | 56 | 70 | 78 |
| **EXCHANGER HEAT TRANSFER SURFACE** | $m^2$ | 1,08 | 1,45 | 1,45 |
| **RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE 80°C AND FLOW 720 l/h** | W | 24000 | 32000 | 32000 |
| **TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C** | min | 14 | 14 | 17 |
| **STATIC LOSS** | W | 42 | 65 | 65 |

Table 5

**OKC 80 NTR/Z, OKC 100 NTR/Z, OKC 125 NTR/Z**




| | |
|---|---|
| ① | 3/4" outer |
| ② | 1" outer |
| ③ | 3/4" inner |

**OKC 160 NTR/Z, OKC 200 NTR/Z**

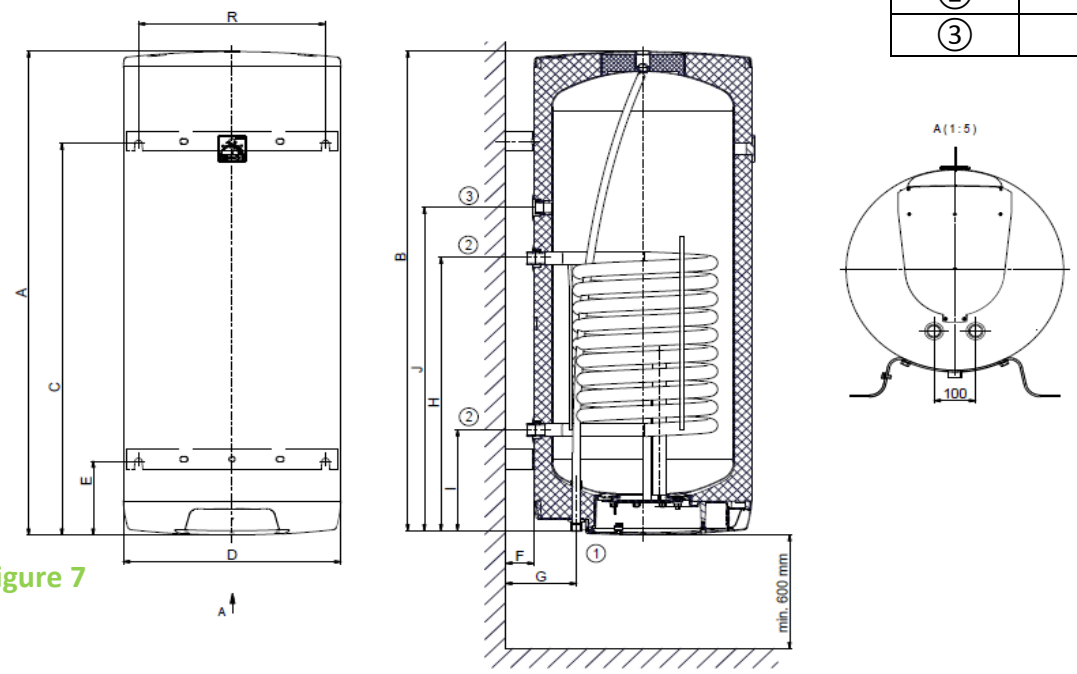


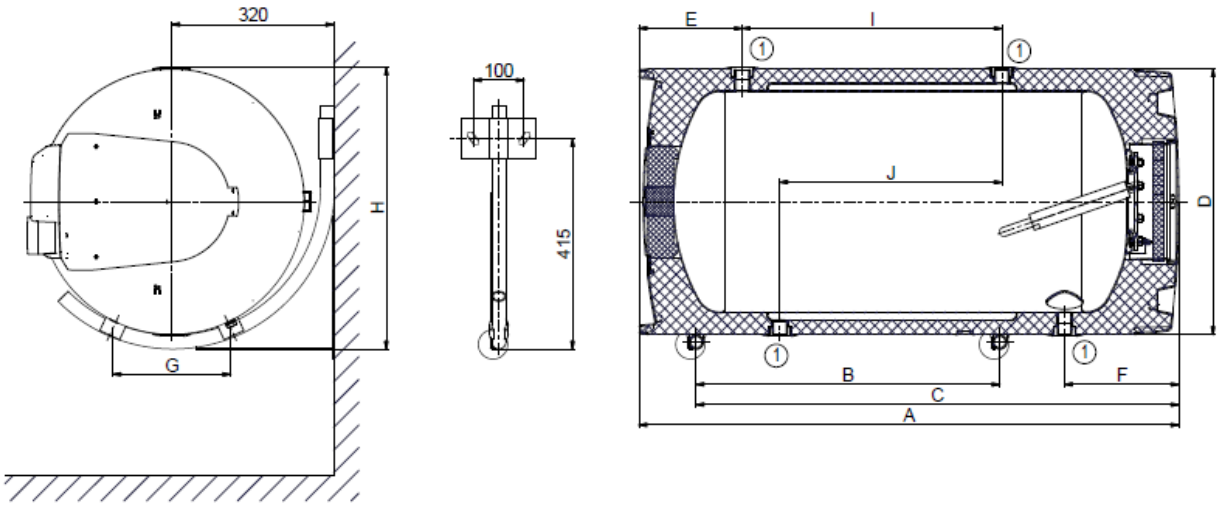

Figure 7

| TYPE | OKC 80 NTR/Z | OKC 100 NTR/Z | OKC 125 NTR/Z | OKC 160 NTR/Z | OKC 200 NTR/Z |
|---|---|---|---|---|---|
| **A** | 757 | 902 | 1067 | 1255 | 1287 |
| **B*** | 748 | 893 | 1058 | 1246 | 1277 |
| **C** | 615 | 765 | 763 | 1001 | 795 |
| **D** | 524 | 524 | 524 | 524 | 584 |
| **E** | - | - | - | 186 | 195 |
| **F** | 70 | 70 | 70 | 70 | 70 |
| **G** | 172 | 172 | 172 | 172 | 172 |
| **H** | 498 | 648 | 648 | 700 | 678 |
| **I** | 208 | 208 | 208 | 258 | 238 |
| **J** | - | 438 | 498 | 828 | 888 |
| **R** | 450 | 450 | 450 | 450 | 450 |

Table 6

| TYPE | | OKC 80 NTR/Z | OKC 100 NTR/Z | OKC 125 NTR/Z | OKC 160 NTR/Z | OKC 200 NTR/Z |
|---|---|---|---|---|---|---|
| **VOLUME** | L | 76 | 95 | 120 | 148 | 196 |
| **MAX OPERATING OVERPRESSURE IN THE TANK** | MPa | | | 0,6 | | |
| **MAX OPERATING OVERPRESSURE IN THE EXCHANGER** | MPa | | | 1 | | |
| **ELECTRICAL CONNECTION OF CONTROL ELEMENTS** | | | | 1 PE-N 230V/50Hz | | |
| **EL. PROTECTION** | | | | IP 44 | | |
| **MAX TEMPERATURE TUV** | °C | | | 80 | | |
| **RECOMMENDED HSW TEMPERATURE** | °C | | | 60 | | |
| **HEIGHT OF THE HEATER** | mm | 736 | 881 | 1046 | 1235 | 1287 |
| **DIAMETER OF THE HEATER** | mm | 524 | 524 | 524 | 524 | 584 |
| **MAX WEIGHT OF THE HEATER WITHOUT WATER** | kg | 39 | 56 | 62 | 70 | 87 |
| **EXCHANGER HEAT TRANSFER SURFACE** | $m^2$ | 0,41 | 1,08 | 1,08 | 1,08 | 1,08 |
| **RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE 80°C AND FLOW 720 l/h** | W | 9000 | 24000 | 24000 | 24000 | 24000 |
| **TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C** | min | 32 | 14 | 17 | 23 | 28 |
| **STATIC LOSS** | W | 40 | 47 | 57 | 67 | 72 |

Table 7




| | |
|---|---|
| ① | 3/4" inner |

Figure 8

| TYPE | OKCV 125 NTR | OKCV 160 NTR | OKCV 180 NTR | OKCV 200 NTR |
|---|---|---|---|---|
| **A** | 1067 | 1255 | 1187 | 1287 |
| **B** | 600 | 700 | 600 | 600 |
| **C** | 954 | 1013 | 936 | 936 |
| **D** | 524 | 524 | 584 | 584 |
| **E** | 204 | 254 | 258 | 258 |
| **F** | 226 | 226 | 246 | 246 |
| **G** | 232 | 232 | 256 | 256 |
| **H** | 556 | 556 | 618 | 618 |
| **I** | 513 | 649 | 570 | 670 |
| **J** | 439 | 439 | 439 | 439 |

Table 8

| TYPE | | OKCV 125 NTR | OKCV 160 NTR | OKCV 180 NTR | OKCV 200 NTR |
|---|---|---|---|---|---|
| **VOLUME** | **L** | 123 | 151 | 173 | 200 |
| **MAX OPERATING OVERPRESSURE IN THE TANK** | **MPa** | | 0,6 | | |
| **MAX OPERATING OVERPRESSURE IN THE EXCHANGER** | **MPa** | | 0,4 | | |
| **ELECTRICAL CONNECTION OF CONTROL ELEMENTS** | | | **1 PE-N 230 V/50Hz** | | |
| **EL. PROTECTION** | | | **IP 42** | | |
| **MAX TEMPERATURE TUV** | **°C** | | 80 | | |
| **RECOMMENDED HSW TEMPERATURE** | **°C** | | 60 | | |
| **MAX WEIGHT OF THE HEATER WITHOUT WATER** | **kg** | 55 | 65 | 76 | 80 |
| **EXCHANGER HEAT TRANSFER SURFACE** | **$m^2$** | 0,7 | 0,7 | 0,75 | 0,75 |
| **RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE 80°C AND FLOW 720 l/h** | **W** | 15000 | 16800 | 18000 | 18000 |
| **TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C** | **min** | 37 | 35 | 38 | 43 |
| **RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE OF 80°C AND FLOW 310 L/H** | **W** | 8000 | 10260 | 11000 | 11000 |
| **TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C** | **min** | 70 | 60 | 63 | 72 |
| **STATIC LOSS** | **W** | 70 | 77 | 98 | 93 |

Table 9

# 2 OPERATION AND FITTING INSTRUCTIONS

## 2.1 OPERATING CONDITIONS

The tank shall only be used in accordance with the conditions specified on the performance plate and in instructions for electric wiring. Besides legally acknowledged national regulations and standards, also conditions for connection defined in local electric and water works have to be adhered to, as well as the installation and operation manual. The room, in which the appliance will be operated, must be frost-free. The appliance has to be mounted at a convenient place, it means that the appliance must be easily available for potential necessary maintenance, repair or replacement, as the case may be.

**We emphasize that the tank shall not be connected to power supply if flammable liquids (benzine, stain cleaner) or gases, etc., are handled in its proximity.**

If water is strongly calcareous we recommend that any of the common decalcifying devices was installed with the appliance, or that the thermostat was set to the minimum operating temperature of 60°C. For proper operation, drinkable water of adequate quality shall be used. To avoid potential sediments we recommend that the device was installed together with a water filter.

## 2.2 WALL MOUNTING

Prior to mounting, check the loading capacity of the wall and, depending on the type of masonry, choose a suitable anchorage material, or reinforce the wall, if needed. The NTR/Z water heater shall only be mounted in vertical position so that the lower edge of the tank was placed at least 600 mm above the floor. The OKCV NTR water heater shall only be mounted in horizontal position so that from the front view, the right edge of the tank was placed at least 600 mm from the opposite wall. In combined tanks, elbows have to be attached to the heating water inlet and outlet and, by turning them, the mounting either from the right or from the left has to be determined (Figure 9). With regard to various types of bearing masonry and wide range of special anchorage material available at the market, we do not provide the tanks with that material. The anchorage system has to be selected individually, depending on the conditions. We recommend an authorised company perform mounting on the wall and anchorage, or discuss the anchorage with a professional.

If hot water tank is mounted in a **tight, smaller space**, or in an intermediate ceiling, etc., you have to make sure that the connecting side of the appliance (connections to water supply, area for electric plugging) remained accessible and no heat accumulation occurs. Free space of up to **600 mm** from the bottom edge of the tank has to be available under the tank.

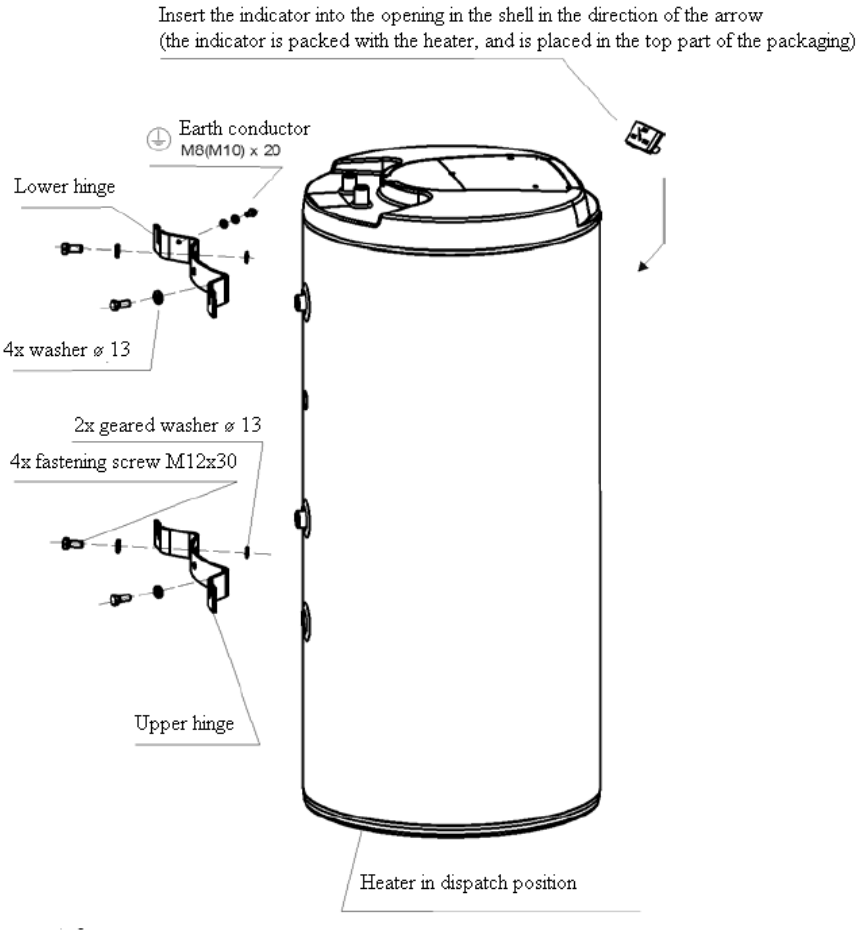



Figure 9

## 2.3 PLUMBING FIXTURE

Tanks are connected to plumbing fixtures as shown in (Figure 10, Figure 11, Figure 12). For potential disconnection of the tank, utility water inlets and outlets must be provided with Js 3/4“ screw coupling. If the hot utility water (HSW) distribution is equipped with circulation circuit, the reverse pipe is connected to the inlet identified as CIRCULATION. Types 100, 125, 160 NTR and 100, 125, 160 NTR / HV are equipped with drain outlet. In 200 and 250 NTR(R) types, the HSW inlet has to be provided with a “T” fixture with a drain valve. The tank shall be equipped with safety valve to ensure operation. The safety valve is mounted on the cold water inlet identified with a blue ring.

Every hot utility water pressure tank shall be equipped with membrane spring loaded with safety valve. Safety valve shall be easily accessible, fitted as close as possible to the tank. The inlet pipes must have at least the same clearance as the safety valve. Safety valve is placed high enough to secure dripping water drain by gravity. We recommend mounting the safety valve onto a branch pipe. This allows easier exchange without having to drain the water from the heater. Safety valves with fixed pressure settings from the manufacturer are used for the assembly. The starting pressure of the safety valve must be identical to the maximum allowed pressure of the tank, and at least 20 % higher than is the maximum pressure in the water main (Table 10). If the water main pressure exceeds such value, a reduction valve must be added to the system. No closing armature may be mounted between the tank and the safety valve. During assembly, follow the guide provided by the safety equipment manufacturer.

It is necessary to check the safety valve each time before putting it into operation. It is checked by manual moving of the membrane from the seat, turning the make-and-break device button always in the direction of the arrow. After being turned, the button must click back into a notch. Proper function of the make-and-break device results in water draining through the safety valve outlet pipe. In regular operation, such a check needs to be carried out at least once a month, and after each shutdown of the tank longer than 5 days. Water may be dripping off the drain pipe of the safety valve; the pipe must be open into the air, pointed down; environment temperatures must not drop below zero. When draining the tank, use the recommended drain valve. First of all, close water inlet in the tank. Find necessary pressure values in the following table. For proper safety valve operation, a backflow valve shall be mounted on the inlet pipes, preventing spontaneous heater draining of the tank and hot water penetration back into the water main.

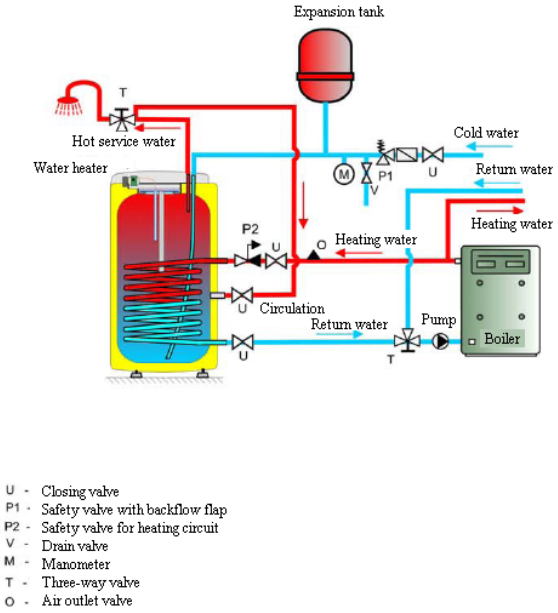
Required pressures - Table 10 - We recommend that the hot water distribution from the tank is as short as possible in order to reduce heat losses.

| SAFETY VALVE STARTING PRESSURE (MPa) | ACCEPTABLE OPERATING OVER-PRESSURE OF THE WATER HEATER (MPa) | MAX COLD WATER PRESSURE IN PIPING (MPa) |
|---|---|---|
| 0,6 | 0,6 | up to 0.48 |
| 0,7 | 0,7 | up to 0.56 |
| 1 | 1 | up to 0.8 |

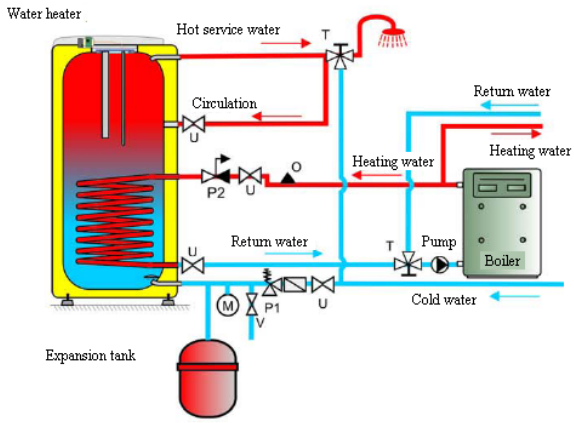
Table 10

**Tanks must be provided with a discharge valve** mounted on the cold service water inlet to the heater for potential disassembly or repair

OKC 100 NTR, OKC125 NTR,OKC 160 NTR
OKC 80 NTR/Z, OKC 100 NTR/Z, OKC 125 NTR/Z, OKC 160 NTR/Z




OKC 200 NTR, OKC 250 NTR

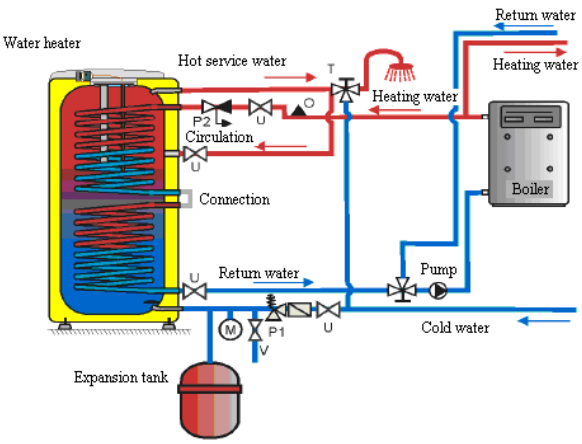



* Use of expansion tank is not a prerequisite of correct connection but just a possible design variant

FIgure 1

OKC 200 NTRR, OKC 250 NTRR

**Exchangers combined in a series**

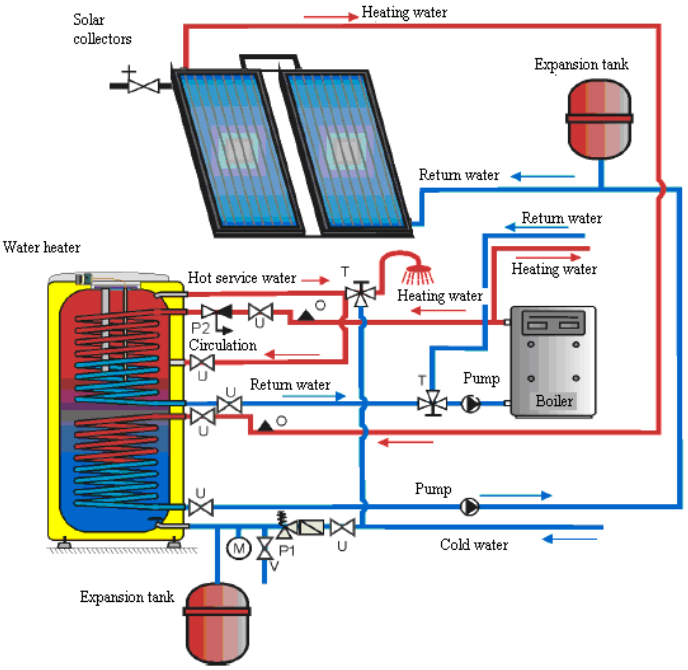


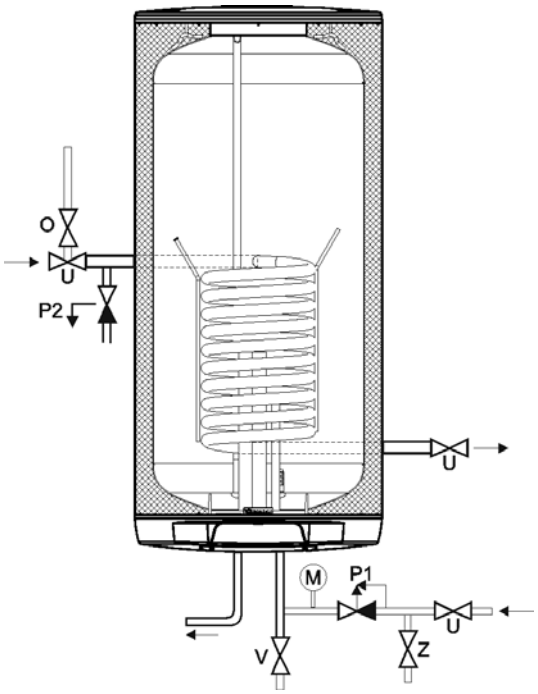

U - Closing valve
P1 - Safety valve with backflow flap
P2 - Safety valve for heating circuit
V - Drain valve
M - Manometer
T - Three-way valve
O - Air outlet valve

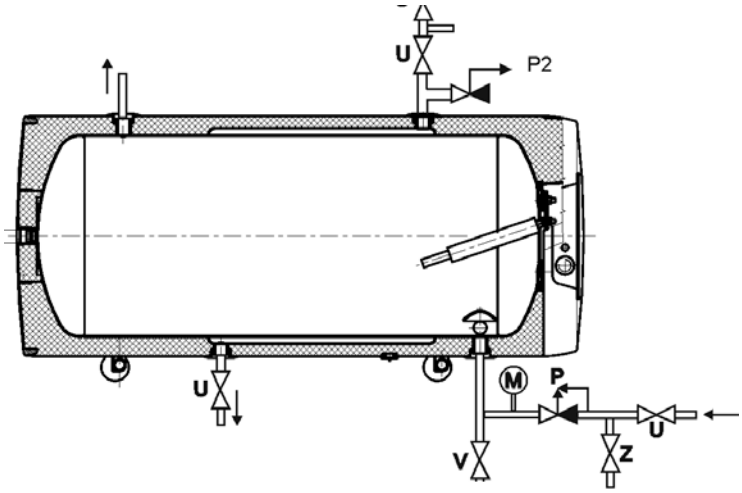
* Use of expansion tank is not a prerequisite of correct connection but just a possible design variant

OKC 200 NTRR, OKC 250 NTRR

**Two heating water sources**




O - bleeder valve
U - stop valve
P1 – safety valve with reverse flap
P2 - safety valve for heating circuit
M – manometer
Z - test valve
V - drain valve

Figure 2

# 2.4 ELECTRICAL INSTALLATION

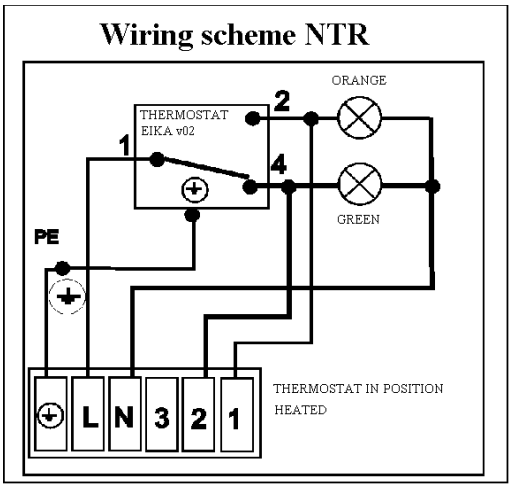
## 2.4.1 GENERAL INFORMATION FOR ELECTRICAL INSTALLATION

- Check the insertion of the thermostat sensor in the thermowell, the so-called insertion all the way.
- The tank can be connected to any hot water heating boiler up to the 50 kW power output. To adjust the distance from the wall, connect the wire of the external protective bonding!
- The tank is powered directly from boiler by control voltage 230 V/50 Hz.
- Elastic cable CYSY 4Cx0.75 can be used for cross connection.
- Connecting terminals are identified on the tank's terminal board.

## 2.4.2 ELECTRONIC THERMOSTAT WIRING METHODS

**Wiring of tanks of the below types:**

*OKC 100 NTR, OKC 125 NTR, OKC 160 NTR, OKC 200 NTR, OKC 200 NTRR, OKC 250 NTRR, OKC 100 NTR/HV, OKC125 NTR/HV, OKC160 NTR/HV*



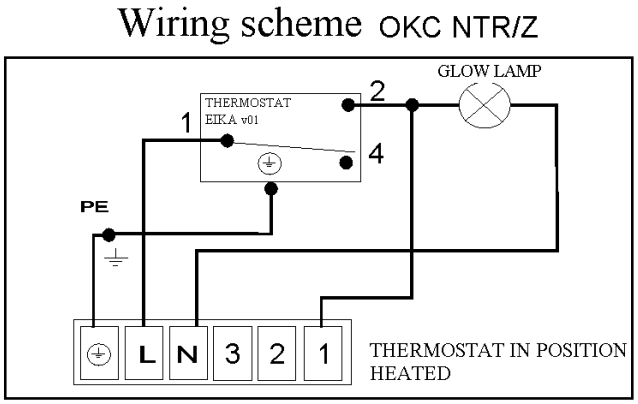

- there is voltage on terminal 2 if tank is heated

- there is voltage on terminal 1 if tank is not heated

Figure 13

Touch thermometer is installed on the control panel to control the temperature of water, additionally there is a capillary thermostat to set the desired water temperature and two signal lights: "green" = tank heated; "orange" = tank is getting heated.

**Wiring of tanks of the below types:**
**OKC 80 NTR/Z, OKC 100 NTR/Z, OKC 125 NTR/Z, OKC 160 NTR/Z, OKC 200 NTR/Z, OKCV 125 NTR, OKCV 160 NTR, OKCV 180 NTR, OKCV 200 NTR**




- there is voltage on terminal 1 if tank is not heated

Figure 14

The control panel accommodates a capillary thermostat knob to set the desired water temperature and an orange pilot light that is on when the tank's heating is on.

## 2.5 CONNECTION OF INDIRECT TANK TO HOT WATER SYSTEM

It is recommended to install stop valves on the heating water inlet and outlet (for possible dismantling of the heater). Valves should be as close as possible to the tank to minimise heat losses.

When the tank is connected to water supply system, hot water heating system or power supply, and when the safety valve is tested (accordingly with the manual attached to the valve), the heater can be put in operation. Before opening the power supply, the tank must be filled with water. The process of first heating must be executed by licensed professional who has to check it. Both the hot water outlet pipe and safety armature parts may be hot.

## 2.6 FIRST COMMISSIONING

To connect the tank to water supply system, hot water heating system, power supply and, after testing the safety valve (accordingly with the manual attached to the valve), the tank can be put in operation. Before opening the power supply, the tank must be filled with water. The process of first heating must be executed by licensed professional who has to check it. Both the hot water outlet pipe and safety armature parts may be hot.

During the heating process the pressurised connection water that increases its volume due to heating must drip off the safety valve. In non-pressurised connection water drips off the overflow combination faucet. When heating is finished, the set temperature and the actual temperature of consumed water should be roughly equal. After connecting the heater to the water main and electrical power system, and after checking the safety valve (following the instructions attached to the valve), the heater can be put into operation.

**Procedure of putting the heater into operation:**

1. Check both water and electric installation; for combined tanks, check also the installation to the hot water heating system. Check proper placement of thermostat sensors. The sensors in the thermowell have to be inserted all the way.
2. Open the hot water valve on the combination faucet.
3. Open the cold water inlet valve to the tank.
4. Once water starts draining through the hot water valve, filling of the tank is completed and the valve can be closed.
5. In case of leakage (of flange lid), we recommend that the flange lid bolts are fastened.
6. Screw down the electric installation guard.
7. When heating service water with electric energy from the hot water heating system, open the heating water inlet and outlet valves, possibly de-aerate the heat exchanger.
8. When commencing operation, flush the heater until the cloudiness in the water is gone.
9. Make sure to fill in properly the warranty certificate.

## 2.7 PUTTING OUT OF SERVICE, DISCHARGE

If the hot water tank is put out of service or is not used for longer time, it has to be emptied and disconnected from power supply at all poles. The switch for the supply lead or the fuse cut-outs have to be shut off.

At places with permanent risk of frost the hot water heater must be drained before the cold season starts if the appliance remains out of service for several days and if the power supply is disconnected.

Drainage of utility water shall be performed after closing the shut-off valve in the cold water supply piping (through the discharge valve for safety valve combination), and with simultaneous opening of all hot water valves of connected fittings. Hot water may outflow during the drainage! If there is a risk of frost it has to be considered that not only the water in the hot water heater and in the hot water piping may get frozen but also the water in the entire cold water supply piping. It is therefore advisable to drain all fittings and piping that carry water, up to the part where the house water meter is installed (connection of the house to water main) which is not jeopardised by frost. When the tank is to be used again, it has to be filled with water and one needs to make sure that the **water flowing out at the hot water valves did not contain any bubbles**.

# 2.8 INSPECTION, MAINTENANCE & CARE FOR THE APPLIANCE

During the heating process the water that increases its volume during the heating must drip off the safety valve outlet (in non-pressurised connection this water drips off the combination faucet valve). In full heating (about 65°C) the volumetric water gain is approx. 3% of the tank capacity. The function of the safety valve has to be checked regularly (based on the information contained in the attached safety valve manual). In common operation, such a check needs to be implemented at least once a month, and after each heater shutdown that exceeds 5 days.

**Caution!** In doing so, the cold water supply pipe and the connection fitting of the tank may get heated! If the hot water heater does not work, or if hot water is not withdrawn, no water shall drip off the safety valve. If water drips, then the pressure in the supply piping is either too high, or the safety valve is defective. Please call a specialised plumber immediately!

If water contains too many minerals, an expert has to come to remove the scale that forms inside the tank, as well as free sediments. This has to be performed after one or two years of operation. Repeated heating causes lime scale settling on the receptacle walls and mostly on the lid of the flange. Lime scale settling depends on hardness of heated water, its temperature and on the volume of hot water used.

**We recommend checking and cleaning the tank from lime scale and eventual replacement of the anode rod after two years of operation.** The anode life is theoretically calculated for two years of operation; however, it changes with water hardness and chemical composition in the place of use. Based on such an inspection, the next term of anode rod exchange may be determined. Have a company in charge of service affairs deal with the cleaning and exchanging of the anode.

When draining water from the tank, the combination faucet valve for hot water must be open, preventing the occurrence of under-pressure in the tank receptacle which would stop water from draining. Cleaning takes place through the hole in the flange by: draining the tank, dismantling the flange lid and cleaning the tank. A new sealing has to be used for re-fitting. Since the inside of the tank has special enamel the surface of which must not get in contact with the scale removing agent – do not work with a lime pump. Remove the lime layer with a timber and suck it off, or wipe it off with a clout. After that, the appliance must be rinsed thoroughly and the heating process is checked the same as during the initial putting in operation. Do not use any abrasive cleaning agents or dye thinners (such as cellulose thinner, trichlor, and the like) to clean the outer shell of the tank. For cleaning use a wet clout and add a few drops of liquid cleaning agent for household applications.

## 2.9 MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

**Other potential failures** – Table 11.

| FAILURE SYMPTOM | INDICATOR | SOLUTION |
|---|---|---|
| **Temperature of water is not corresponding with the set value** | | • Defective thermostat |
| **Water is constantly dripping off the safety valve** | • LED is not on | • high input pressure<br>• defective safety valve |

Table 11

Do not attempt to repair the failure yourselves. Seek either expert or service help. It does not take much for an expert to remove the defect. When making a repair appointment, report the type and serial number you find on the performance plate of your water heater.

# 3 OPERATION OF THEROMSTAT

## 3.1 SERVICING

### 3.1.1 OPERATING DEVICES OF THE TANK

**Panels of OKC NTR/Z and OKCV NTR tanks of 80 to 200 l volumes**

**Thermostat knob** **Electric circuit closing indicator lamp** **Tipping plastic guard**

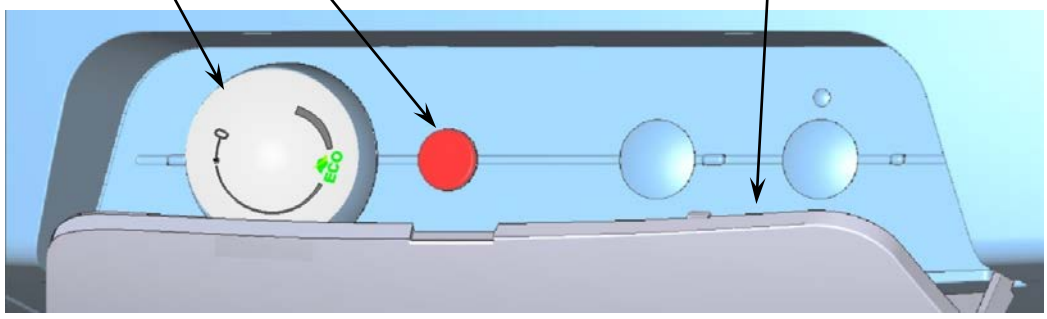
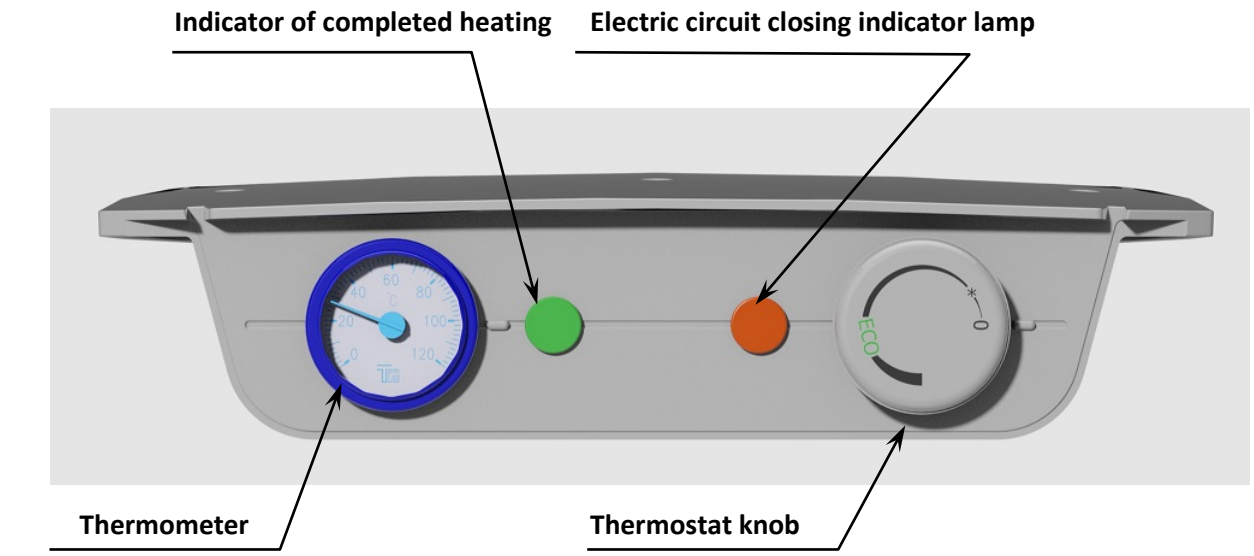



Figure 15

**Panel of OKC NTR,R and OKC NTR/HV tanks of 100 to 250 l volumes**



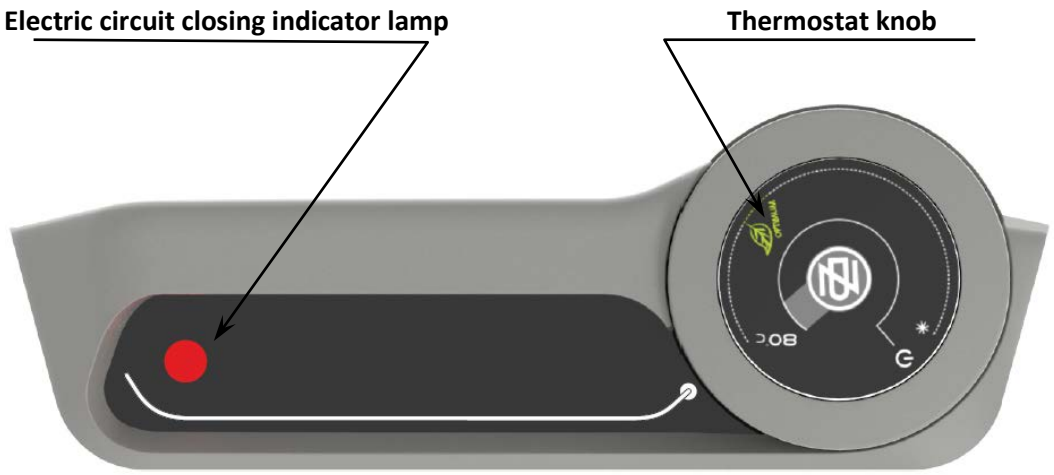




Figure 16

### 3.1.2 TEMPERATURE SETTING

Water temperature is set by turning the thermostat knob. The desired symbol is adjusted against the fixed point on the control panel (Figure 17).

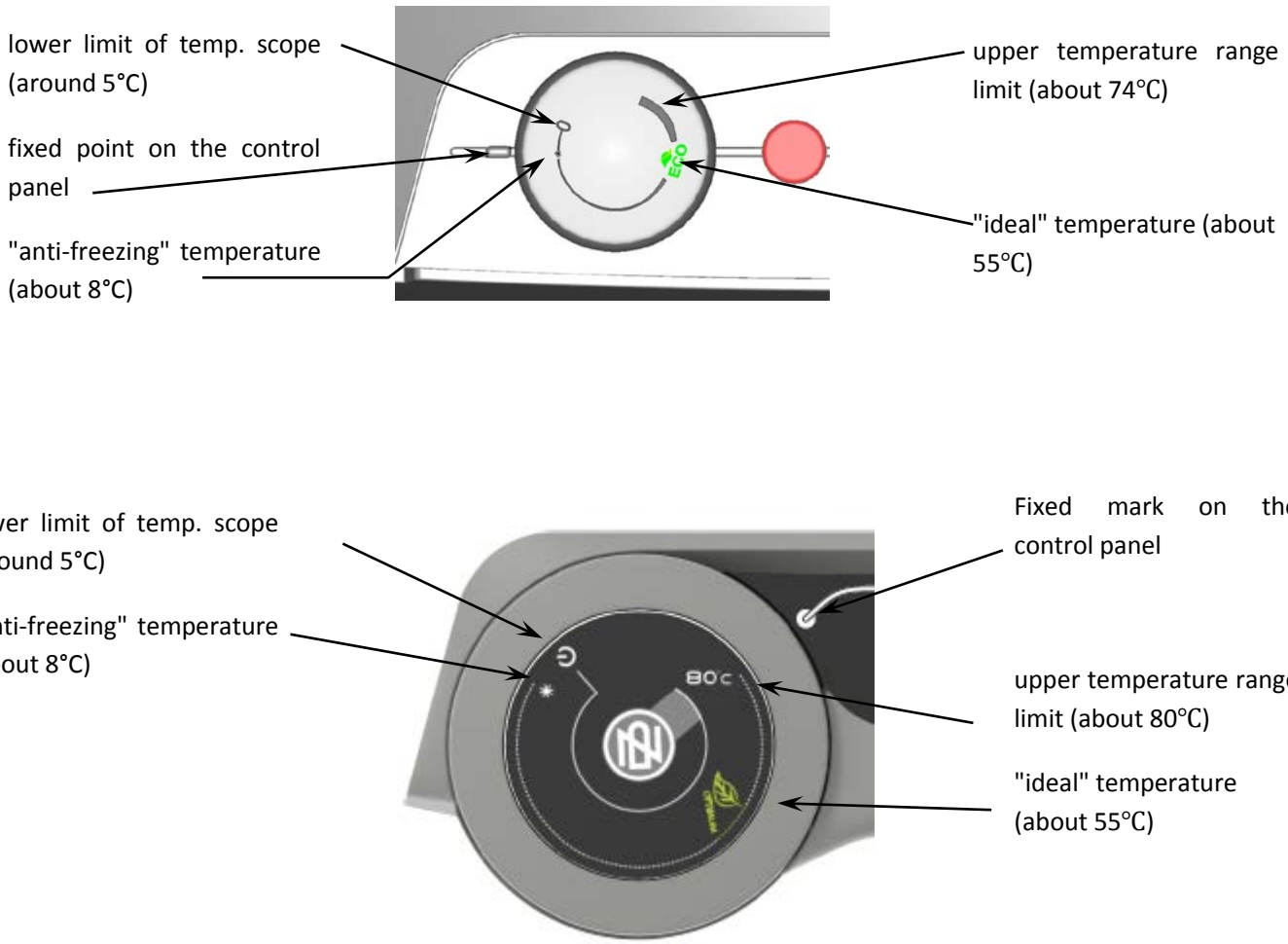



**Figure 17**

Adjusting the thermostat knob to the left backstop does not mean permanent shutoff of the heating element. When the heater is in use without blocking the daily rate, we do not recommend the temperature to be set above 65°C. Select the "**ECO**" symbol as the maximum.

# 4 IMPORTANT NOTICES

## 4.1 INSTALLATION REGULATIONS

- Check and exchange the Mg anode regularly.
- **No closing armature may be mounted between the tank and the safety valve.**
- If the overpressure in the eater main exceeds 0.6 MPa, a reduction valve must be mounted before the safety valve.
- All outlets of hot water must be equipped with a combination faucet.
- Prior to the first filling the tank with water we recommend that the receptacle's flange connection nuts are tightened.
- It is not allowed to handle the thermostat, aside from temperature resetting with a control button.
- All electric installation handling, setting, and regulation feature exchange, may only be implemented by a service company.

**Both the electric and water installation must follow and meet the requirements and regulations relevant in the country of use!**

## 4.2 SPARE PARTS

G3/4" safety valve is packed with the product and the OKC 100, 125 NTR and OKC 100, 125, 160 NTR/ HV types are additionally equipped with a discharge valve. The OKC NTR/Z and OKCV NTR types packaging include suspension elements and thermometer.

**It is in your own interest to check the completeness of the accessories.**

## 4.3 DISPOSAL OF PACKAGING MATERIAL AND NON-FUNCTIONING APPLIANCE

A service fee for providing return and recovery of packaging material has been paid for the packaging in which the product was delivered. The service fee was paid pursuant to Act No 477/2001 Coll., as amended, at EKO-KOM a.s. The client number of the company is F06020274. Take the water boiler packages to a waste disposal place determined by the town. When the operation terminates, disassemble and transport the discarded and unserviceable heater to a waste recycling centre (collecting yard), or contact the manufacturer.

30-3-2016