

# OPERATING AND INSTALLATION MANUAL

## INDIRECT HOT WATER TANKS

**OKC 100 NTR**  
**OKC 125 NTR**  
**OKC 160 NTR**  
**OKC 200 NTR**

**OKC 200 NTRR**

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

**OKC 100.1 NTR/HV**  
**OKC 125.1 NTR/HV**



Družstevní závody Dražice-strojírna s.r.o.  
Dražice 69, 294 71 Benátky nad Jizerou  
tel.: +420 / 326 370 911  
e-mail: [export@dzd.cz](mailto:export@dzd.cz)

 **DRAŽICE**  
NIBE GROUP MEMBER

# CONTENTS

1	PRODUCT TECHNICAL SPECIFICATION .....	4
1.1	FUNCTION DESCRIPTION .....	4
1.2	ADVICE FOR CUSTOMERS.....	4
1.2.1	HOT WATER CONSUMPTION .....	4
1.2.2	ENERGY SAVING.....	4
1.2.3	EMERGENCY POWER CONSUMPTION .....	5
1.3	DESIGN AND GENERAL HEATER DIMENSIONS .....	5
2	OPERATION AND FITTING INSTRUCTIONS.....	13
2.1	OPERATING CONDITIONS.....	13
2.2	PLUMBING FIXTURE .....	13
2.3	CONNECTION OF INDIRECT TANK TO HOT WATER SYSTEM .....	19
2.4	FIRST COMMISSIONING .....	20
2.5	PUTTING OUT OF SERVICE, DISCHARGE.....	20
2.6	INSPECTION, MAINTENANCE & CARE FOR THE APPLIANCE .....	21
2.7	MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES.....	22
3	IMPORTANT NOTICES .....	23
3.1	INSTALLATION REGULATIONS .....	23
3.2	TRANSPORT & STORAGE INSTRUCTIONS .....	24
3.3	DISPOSAL OF PACKAGING MATERIAL AND NON-FUNCTIONING PRODUCT .....	24
4	PRODUCT ACCESSORIES .....	24

## CAREFULLY READ THIS MANUAL BEFORE INSTALLING THE WATER HEATER!

Dear Customer,

Družstevní závody Dražice - strojírna s.r.o., 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 product is not intended to be controlled by

- a) people (including children) with reduced physical, sensual or mental capacities, or
- b) people with insufficient knowledge and experiences unless supervised by responsible person, or unless properly instructed by such responsible person.

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 %.

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

Made in the Czech Republic.

### 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 7, Figure 8, Figure 9, Figure 10, Figure 11 - by the 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 suspended tank is made in a 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.

### 1.2.2 ENERGY SAVING



The heater is insulated with quality polyurethane Freon free foam. Set 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 electric body.

#### Benefits of using indirect heater:

- installation and connection to hot water supply
- very fast hot utility water heating
- enameled steel tank ensures compliance with all hygienic requirements for the quality of HUW
- integrated protective magnesium anode increases corrosion resistance
- quality polyurethane insulation ensures minimum heat losses
- smoothly settable HUW temperature up to 75 °C
- multiple supply points,
- light indication of the heater's run,
- HSW temperature control,
- possibility of connecting HUW 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.

TYPE	HEATING WATER FLOW [l/h]	PRESSURE LOSS [mbar]	HEAT LOSS [kW/24H]
OKC 100 NTR	720	33	0.9
OKC 125 NTR		46	1.05
OKC 160 NTR		46	1.4
OKC 200 NTR		46	1.8
OKC 200 NTRR		2 x 33	1.8

Table 1

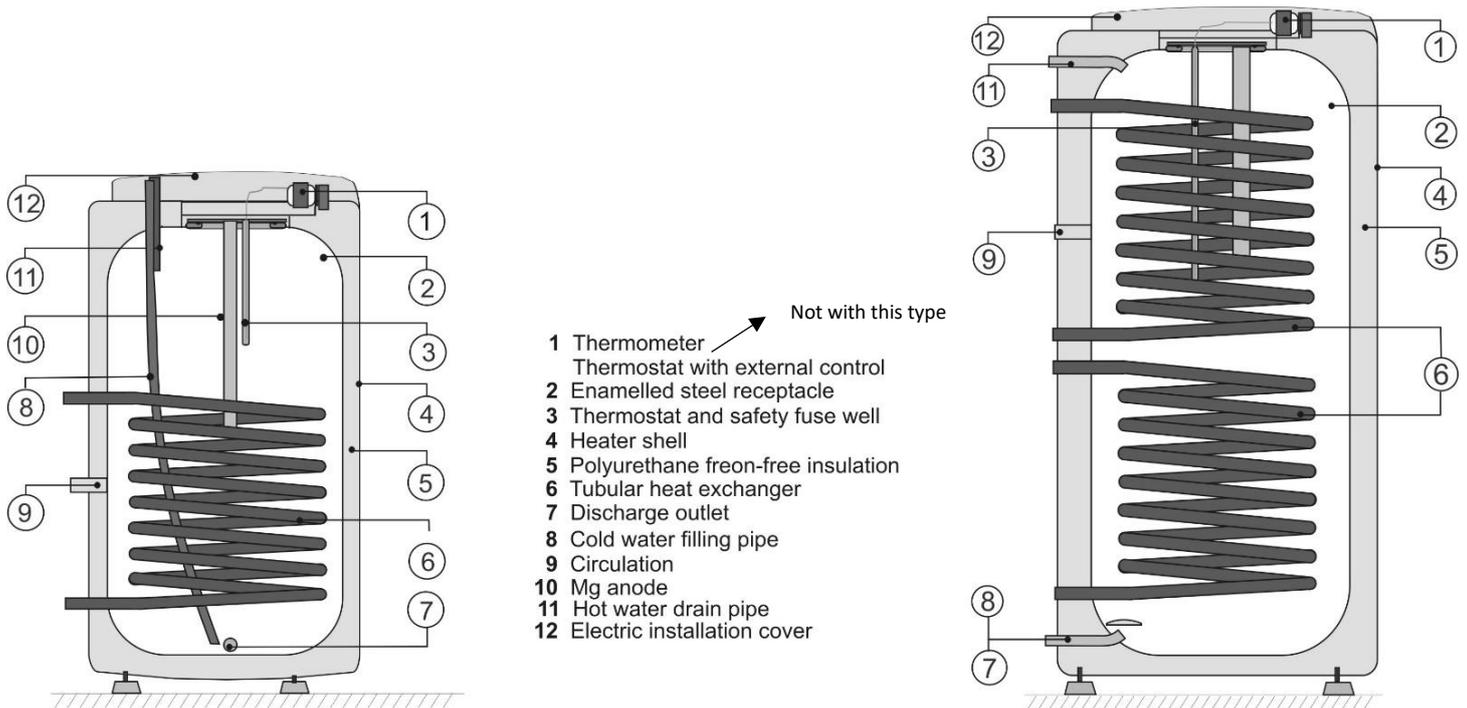
## 1.3 DESIGN AND GENERAL HEATER DIMENSIONS

The tank receptacle is made of steel plate and tested by 1.5 MPa multiple of operation pressure value. The inside of the receptacle is enameled. 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)

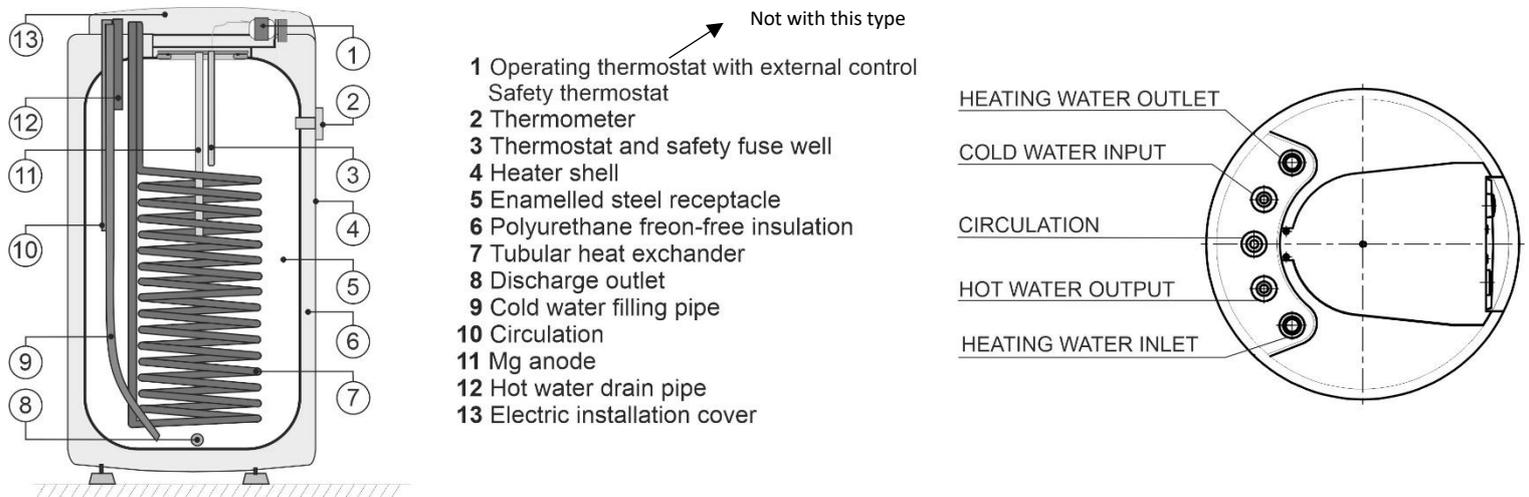
Heater dimensions - (Figure 3, Figure 4, Figure 5, Figure 6) and (Table 2, Table 3, Table 5, Table 6).

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



**Figure 1**

**Technical description:** OKC 100 NTR/HV, OKC 125 NTR/HV, OKC 160 NTR/HV  
 OKC 100.1 NTR/HV, OKC 125.1 NTR/HV



**Figure 2**



The thermometer is only for OKC 100 - 160 NTR/HV. Types OKC 100.1 - 125.1 NTR/HV are without thermometer.

# OKC 100 NTR, OKC 125 NTR, OKC 160 NTR

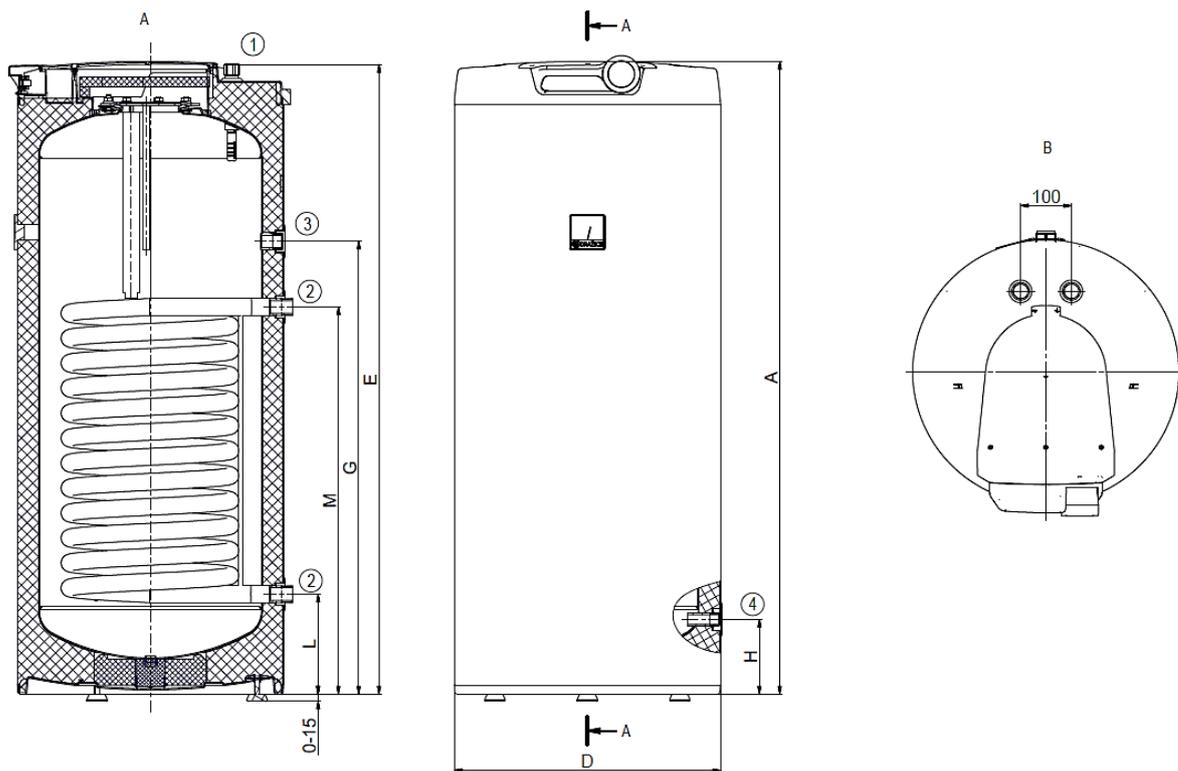


Figure 3

	OKC 100 NTR	OKC 125 NTR	OKC 160 NTR
<b>A</b>	902	1067	1255
<b>B</b>	565	565	565
<b>D</b>	524	524	524
<b>E</b>	893	1058	1246
<b>G</b>	535	635	897
<b>H</b>	145	145	145
<b>L</b>	195	195	195
<b>M</b>	635	765	765

Table 2

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

OKC 200 NTR, OKC 200 NTRR

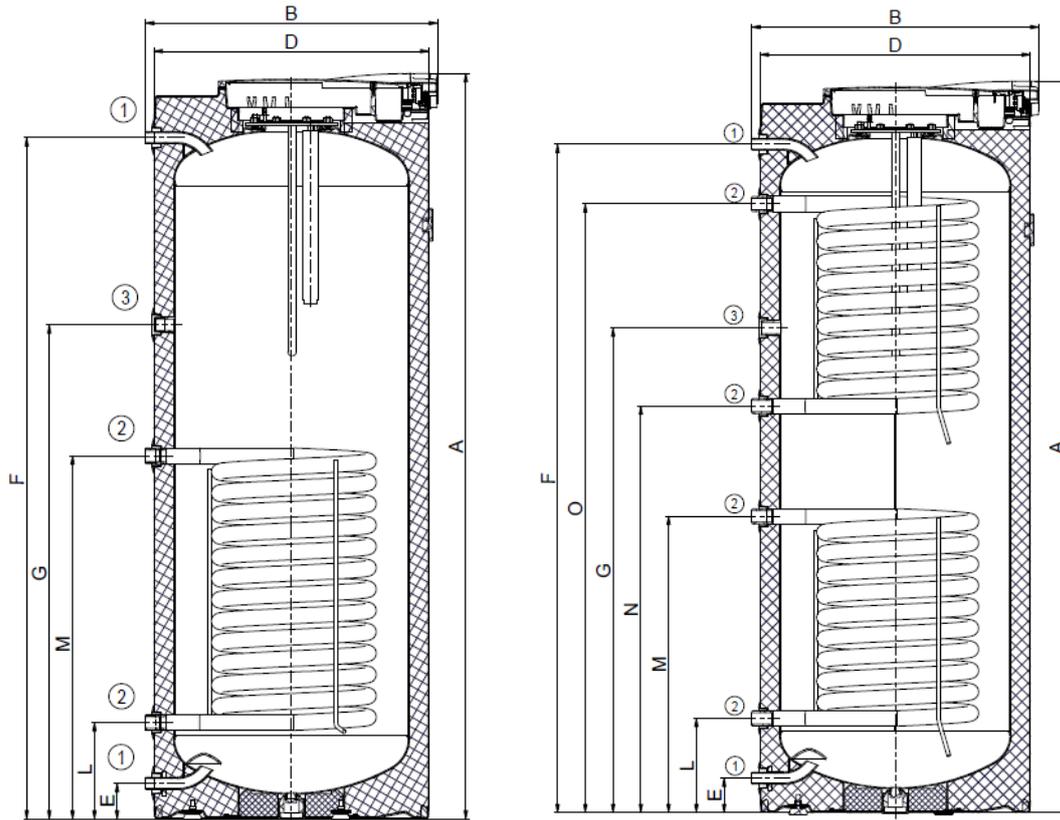


Figure 4

	OKC 200 NTR	OKC 200 NTRR
A	1412	1412
B	620	620
D	584	584
E	75	75
F	1275	1275
G	945	945
L	205	205
M	775	645
N	-	705
O	-	1145

①	3/4" outer
②	1" outer
③	3/4" inner

Table 3

TYPE		OKC 100 NTR	OKC 125 NTR	OKC 160 NTR	OKC 200 NTR	OKC 200 NTRR
VOLUME	L	87	113	148	208	200
MAX OPERATING OVERPRESSURE IN THE TANK	bar			6		
MAX OPERATING OVERPRESSURE IN THE EXCHANGER	bar			10		
EL. PROTECTION				IP 42		
MAX OPERATING TEMPERATURE IN THE TANK	°C			80		
MAX OPERATING TEMPERATURE IN THE EXCHANGER	°C			110		
RECOMMENDED HSW TEMPERATURE	°C			60		
MAX WEIGHT OF THE HEATER WITHOUT WATER	kg	53	66	73	88	102
EXCHANGER HEAT TRANSFER SURFACE	m <sup>2</sup>	1.08	1.45	1.45	1.45	2 x 1
RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE OF 80°C AND FLOW 720 L/H	W	24000	32000	32000	32000	2 x 24000
TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C	min	13	12	16	23	13 / 25
ENERGY EFFICIENCY CLASS		B	C	C	C	C
STATIC LOSS	W	42	54	75	82	82

Table 4

OKC 100 NTR/HV, OKC 125 NTR/HV, OKC 160 NTR/HV

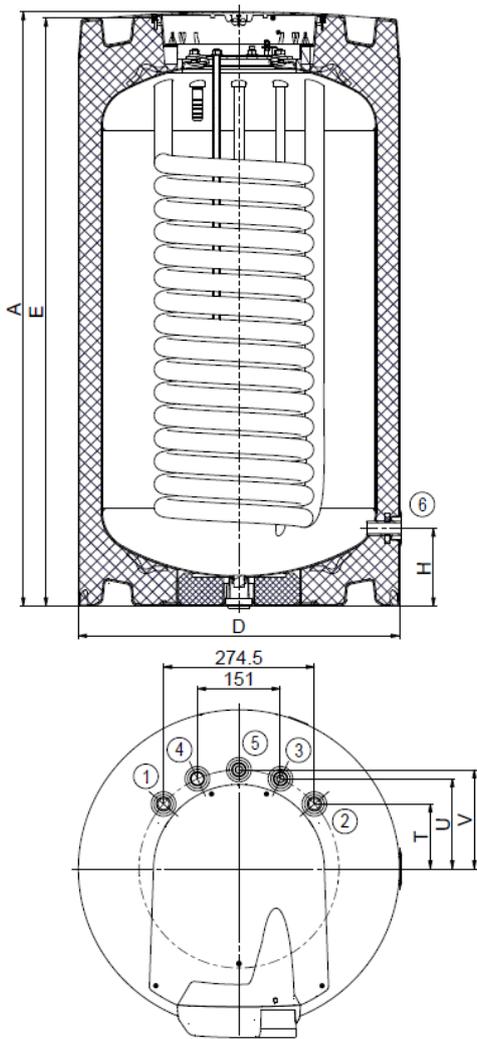


Figure 5

①	3/4" outer
②	3/4" outer
③	3/4" outer
④	3/4" outer
⑤	3/4" outer
⑥	1/2" inner

	OKC 100 NTR/HV	OKC 125 NTR/HV	OKC 160 NTR/HV
<b>A</b>	902	1067	1090
<b>D</b>	524	524	584
<b>E</b>	892	1057	1080
<b>H</b>	145	145	143
<b>T</b>	119	119	119
<b>U</b>	165	165	165
<b>V</b>	182	182	182

Table 5

OKC 100.1 NTR/HV, OKC 125.1 NTR/HV

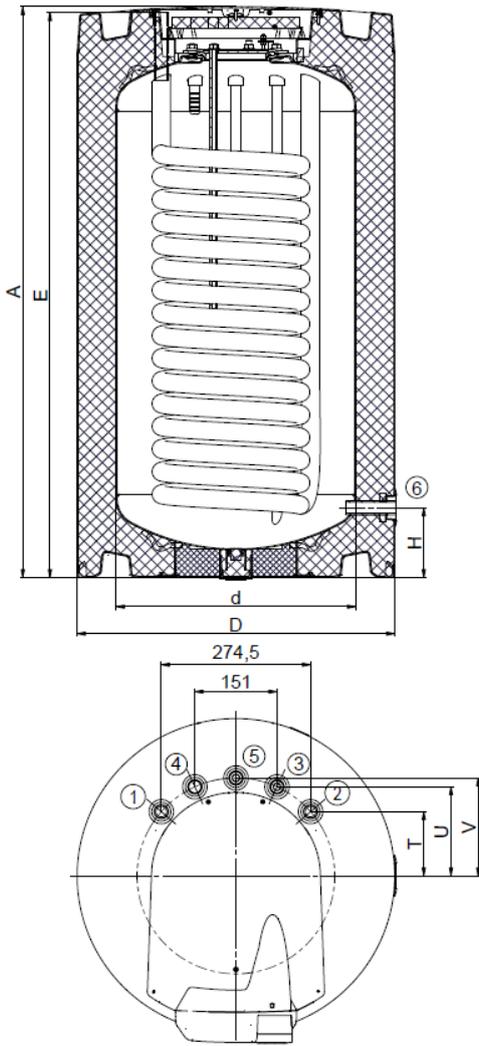


Figure 6

①	3/4" outer
②	3/4" outer
③	3/4" outer
④	3/4" outer
⑤	3/4" outer
⑥	1/2" inner

	OKC 100 NTR/HV	OKC 125 NTR/HV
A	895	1060
d	440	440
D	584	584
E	885	1050
H	130	130
T	119	119
U	165	165
V	182	182

Table 6

TYPE		OKC 100 NTR/HV	OKC 125 NTR/HV	OKC 160 NTR/HV	OKC 100.1 NTR/HV	OKC 125.1 NTR/HV
VOLUME	L	87	113	144	85	111
MAX OPERATING OVERPRESSURE IN THE TANK	bar			6		
MAX OPERATING OVERPRESSURE IN THE EXCHANGER	bar			10		
EL. PROTECTION				IP 42		
MAX OPERATING TEMPERATURE IN THE TANK	°C			80		
MAX OPERATING TEMPERATURE IN THE EXCHANGER	°C			110		
RECOMMENDED HSW TEMPERATURE	°C			60		
MAX WEIGHT OF THE HEATER WITHOUT WATER	kg	53	64	77	56	73
EXCHANGER HEAT TRANSFER SURFACE	m <sup>2</sup>	1.08	1.45	1.45	1.08	1.45
RATED THERMAL OUTPUT AT HEATING WATER TEMPERATURE 80°C AND FLOW 720 l/h	W	24000	32000	32000	24000	32000
TIME OF HEATING BY EXCHANGER FROM 10°C TO 60°C	min	13	12	16	13	12
ENERGY EFFICIENCY CLASS		B	C	C	A	A
STATIC LOSS	W	42	65	65	29	33

Table 7

## 2 OPERATION AND FITTING INSTRUCTIONS

### 2.1 OPERATING CONDITIONS



The tank shall only be used in accordance with the conditions specified on the power plate and in instructions for electric wiring. Besides the legally acknowledged national regulations and standards, also conditions for connection defined in the local electric and water works have to be adhered to, as well as the installation and operation manual. The cold water inlet of each individually closable heater must be fitted with a seal, test tap or plug to check the non-return valve, as well as a non-return valve and safety valve. Heaters with a volume of more than 200 liters must also be fitted with a pressure gauge.

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.



In the case of strongly calcareous water, we recommend that you place a conventional descaling device in front of the tank. For proper operation, it is necessary to use drinking water of appropriate quality. In order to avoid possible deposits, we recommend that you place a water filter in front of the tank.

### 2.2 PLUMBING FIXTURE



Connecting tanks to plumbing fixtures is shown in (Figure 7, Figure 8, Figure 9, Figure 10, Figure 11). For potential disconnection of the tank, utility water inlets and outlets must be provided with 3/4" screw coupling. If the hot utility water (HUW) 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 a drain outlet. A "T" plumbing with a drain valve has to be mounted in type 200 and NTR(R) on the HSW inlet. The tank shall be equipped with a safety valve to ensure the operation. The safety valve is mounted on the cold water inlet identified with a blue ring. We recommend that the hot water distribution from the heater was as short as possible to minimize heat losses. Tanks must be provided with a discharge valve mounted on the cold service water inlet into the heater for potential disassembly or repair.



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. Easier exchange without the necessity of draining water from the tank. 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 8). 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.



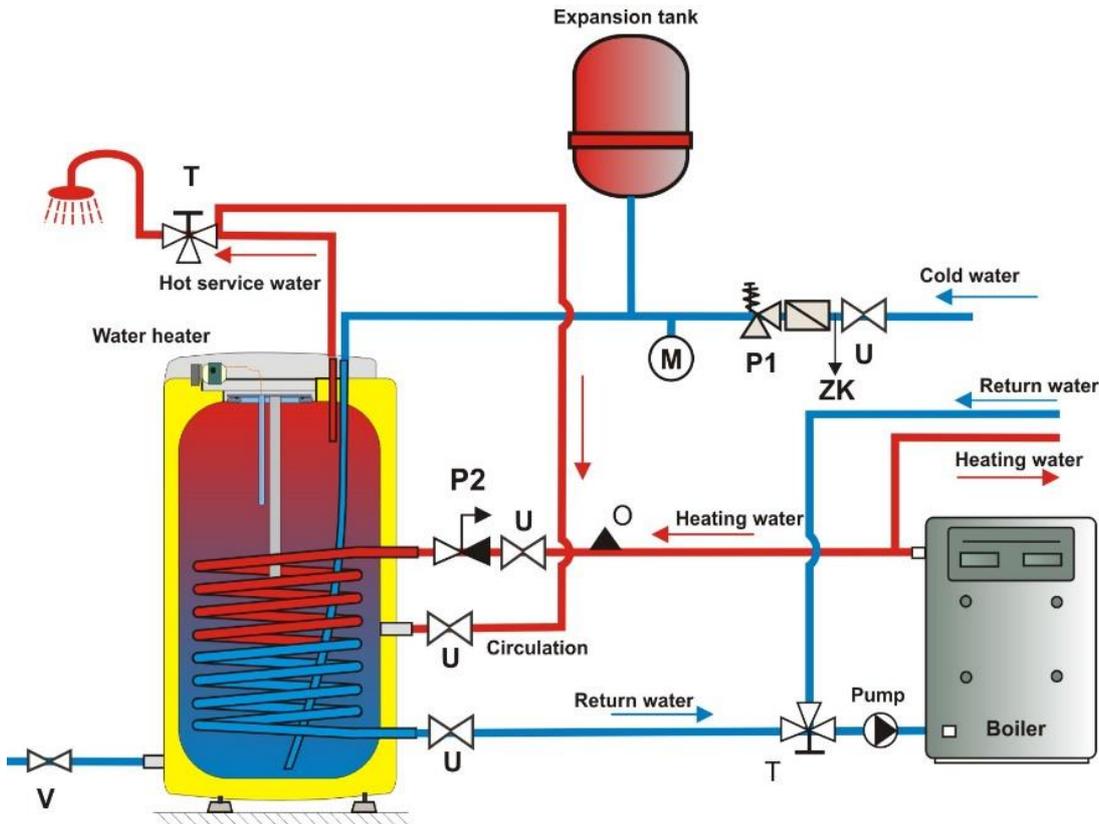
It is necessary to check the safety valve each time before putting it into operation. It is checked by manual moving of the membrane from the seat, turning the make-and-break device button always in the direction of the arrow. After being turned, the button must click back into a notch. Proper function 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.

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

Table 8

# CONNECTING A TANK TO A WATER AND HEATING SYSTEM

OKC 100 NTR, OKC 125 NTR, OKC 160 NTR



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

- U - Shut-off 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
- ZK - Test tap for monitoring the tightness check valve

Figure 7

OKC 200 NTR

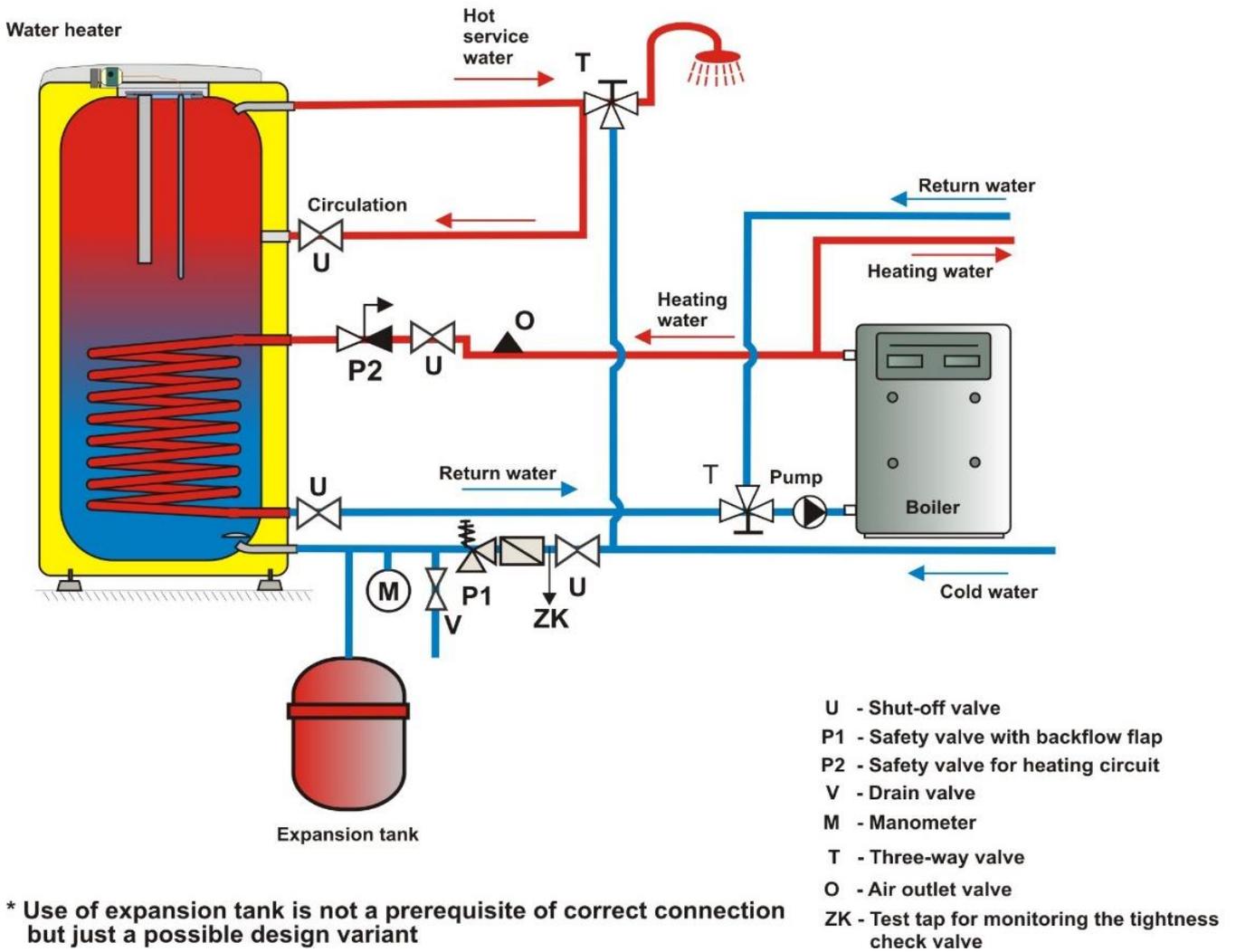


Figure 8



## OKC 200 NTRR

Two heating water sources

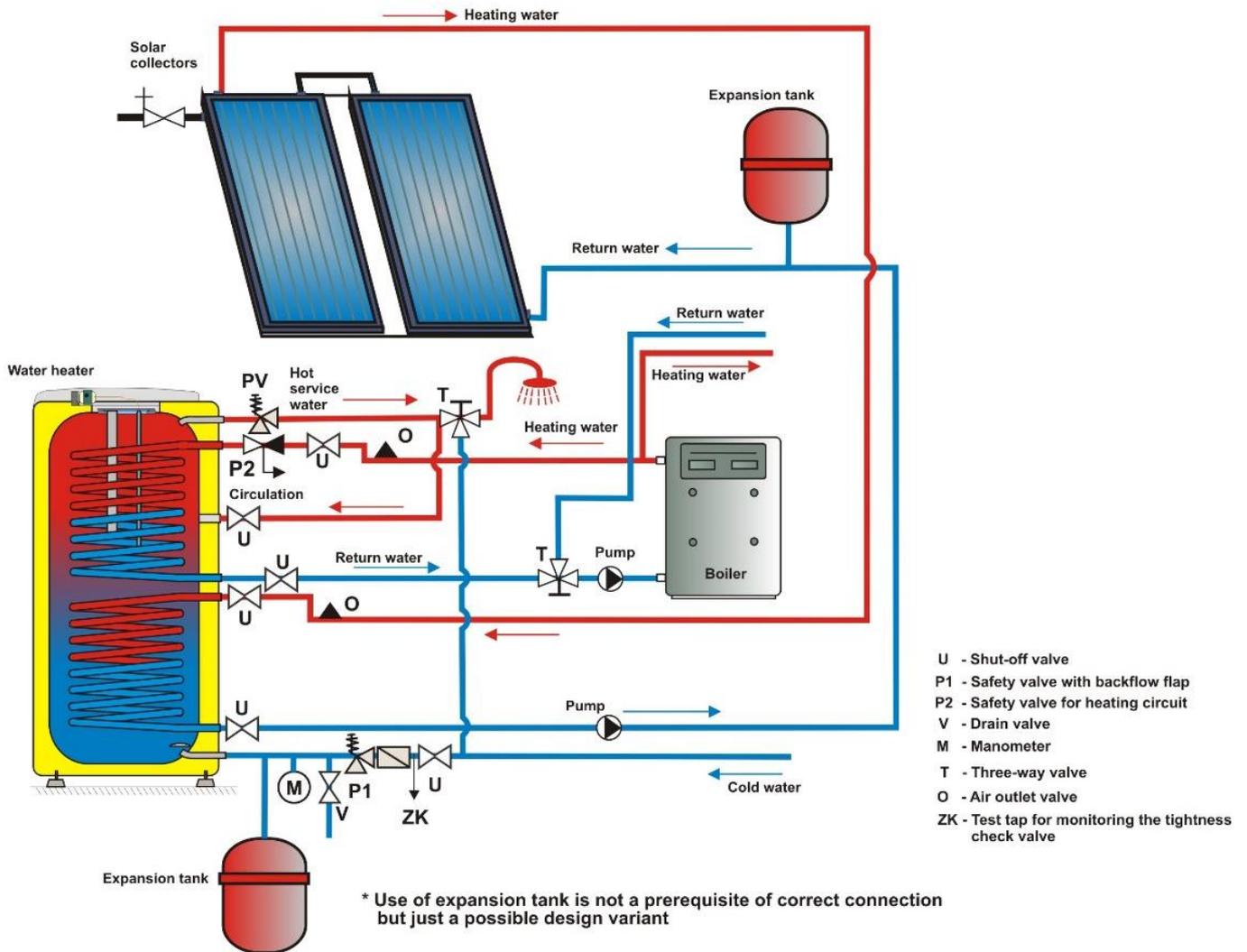


Figure 10

Heater with volume exceeding 200 liters at the outlet hot water piping provide combined temperature and pressure safety fittings according to ČSN EN 1490, or the temperature safety fittings fitted with water temperature sensor placed in the heater or other safety valves DN 20, and the opening overpressure compliant with the maximum operating overpressure of the heater vessel. The safety valve does not replace the safety valve on the cold water inlet. No closing, return armature, and filter may be mounted between the heater and the safety valve.

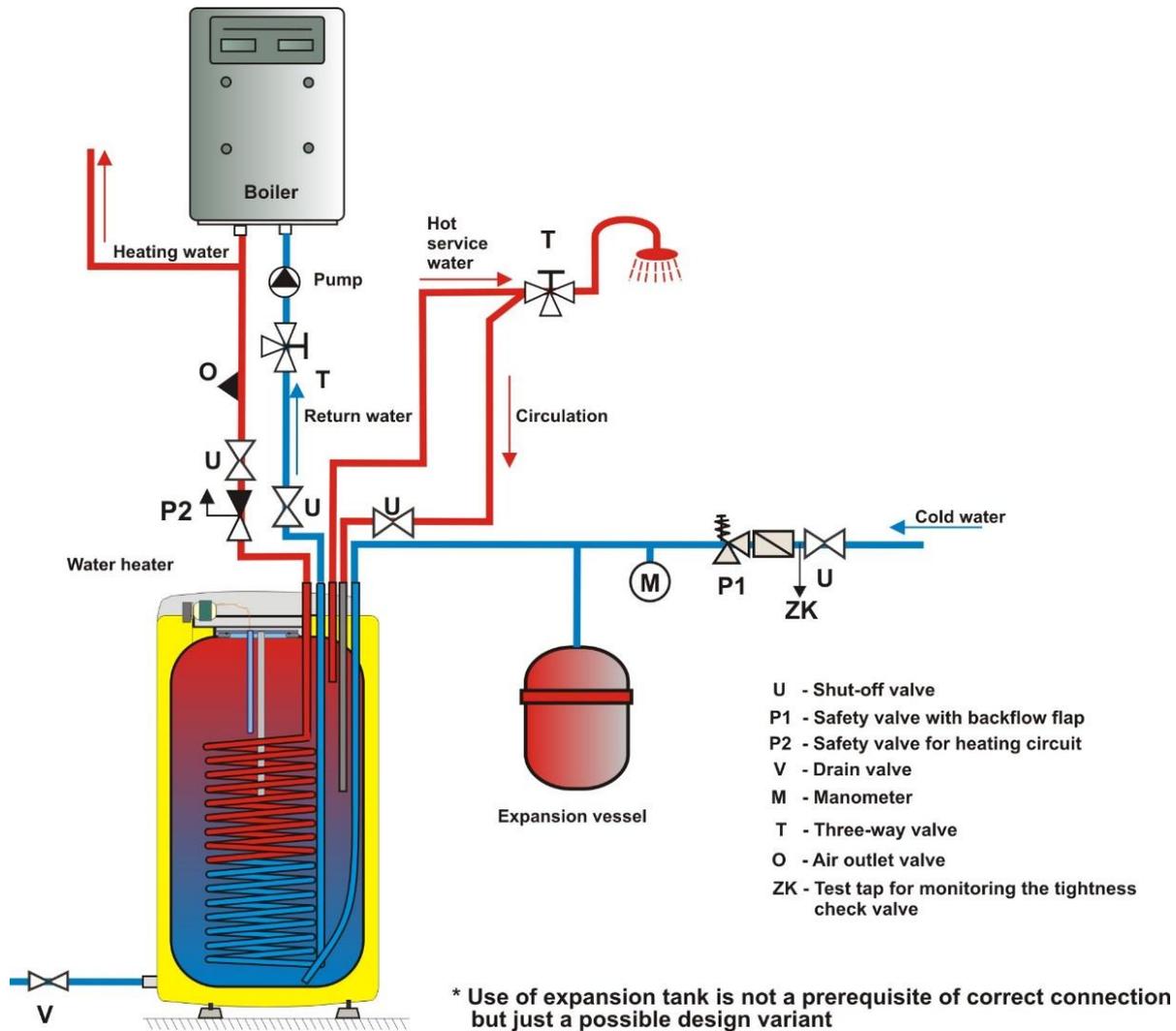


Figure 11

## 2.3 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 minimize heat losses.



When the tank is connected to water supply system, hot water heating system or power supply, and after 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.

## 2.4 FIRST COMMISSIONING



During the heating process the pressurized connection water that increases its volume due to heating must drip off the safety valve. In non-pressurized connection water drips off the overflow combination faucet. When heating is finished, the set temperature and the actual temperature of consumed water must be more-or-less the same. 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 the water supply installation and also the installation for the hot water heating system. Check the correct placement of the sensors.
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. Screws has to be tightened by cross, tightening moment 15Nm.
6. Screw down the electric installation guard.
7. When heating utility water with heat energy from the hot water heating system, open the heating water inlet and outlet valves, or de-aerate the 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.

## 2.5 PUTTING OUT OF SERVICE, DISCHARGE



The hot water tank must be emptied before the start of the cold season. It applies if the storage tank is not reheated by any energy source and there is a risk of the water in the storage tank freezing.



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 jeopardized 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.

## 2.6 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-pressurized connection this water drips off the combination faucet valve). In full heating (about 75 °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 specialized 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. The cleaning is carried out through the hole in the flange - dismantle the flange lid and clean the tank. A new sealing has to be used for re-fitting. Since the inside of the heater has special enamel, 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 (such as liquid sand, chemicals - acid, alkaline) or dye thinners (such as cellulose thinner, trichlor, and the like) to clean the outer shell of the heater. For cleaning use a wet clout and add a few drops of liquid cleaning agent for household applications. 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 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. If the anode is only blocked with sediments clean its surface and, if used up, mount a new one. Have a company in charge of service affairs deal with the cleaning and exchanging of the anode. When draining water from the heater, the combination faucet valve for hot water must be open, preventing occurrence of under-pressure in the heater tank which would stop the water from draining.

## 2.7 MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

FAILURE SYMPTOM	INDICATOR	SOLUTION
Temperature of water is not corresponding with the set value		<ul style="list-style-type: none"><li>• Defective thermostat</li></ul>
Water is constantly dripping off the safety valve		<ul style="list-style-type: none"><li>• High input pressure</li><li>• Defective safety valve</li></ul>

Table 9



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 organizing a repair, state the model designation and the serial number that is to be found on the power plate of your water heater.

## 3 IMPORTANT NOTICES

### 3.1 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 water main exceeds 0.48 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. Screws has to be tightened by cross, tightening moment 15Nm.
- If you don't use the heater (hot water tank) for longer than 24 hours, or if the facility with heater is unattended, close the cold water inlet to the heater.
- The heater (hot water tank) may be used exclusively in accordance with the conditions indicated on the rating plate.
- As a result of transport and thermal expansion, excess enamel may fall to the bottom of the container in heaters with an exchanger. This phenomenon is completely normal and does not affect the quality and service life of the heater. The determining factor is the layer of enamel that remains on the vessel. DZD has many years of experience with this phenomenon and it is not a reason for a complaint.



**Water installation must follow and meet the requirements and regulations relevant in the country of use!**

## 3.2 TRANSPORT & STORAGE INSTRUCTIONS

The appliance shall be transported and stored in a dry place, and protected from weather effects with a temperature ranging from -15 to +50 °C. During loading and unloading, the instructions stated on the packaging shall be observed.



Due to transport and thermal dilatations, excessive enamel may fall off on the bottom of the receptacle in heaters with exchanger. This phenomenon is very common and has no impact on the quality and service life of the heater. Decisive is the enamel layer that remains on the receptacle. DZD has long-term experience with this phenomenon, and it is not a reason for claim.

## 3.3 DISPOSAL OF PACKAGING MATERIAL AND NON-FUNCTIONING PRODUCT

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 center (collecting yard), or contact the manufacturer.



## 4 PRODUCT ACCESSORIES

G 3/4" safety valve is packed with the product and the OKC 100, 125 NTR and OKC NTR/HV types are additionally equipped with a discharge valve.

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

6-11-2024