

OPERATING AND INSTALLATION MANUAL

COMBINED WATER HEATERS FOR VERTICAL ASSEMBLY

OKHE 125 NTR/DV
OKHE 160 NTR/DV



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DRAŽICE
ČLEN SKUPINY **NIBE**

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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

Water heaters OKHE 125 NTR/DV and OKHE 160 NTR/DV are intended for the so-called storage heating of service water with electric energy or thermal energy via an exchanger. The water is heated by an electric body or a heat exchanger in an enameled heat-insulated tank. During heating, the body is controlled by a thermostat, on which the required temperature can be continuously set (in the range of 5 to 75 °C). Once the selected temperature is reached, the heating is automatically interrupted. The warm water accumulated in the heater is then used for consumption. There is constant water pressure in the container from the water supply system. When the hot water valve of the mixing battery is open, water flows out of the heater, forced out by the pressure of cold water from the water system.

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



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.

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.

According to current legislation, the standby consumption is stated in the value of annual consumption of electric energy (kWh), which is measured according to the corresponding load profile and calculated according to the formulas and requirements of EU Regulation No. 812/2013.

1.3 CONSTRUCTION AND BASIC DIMENSIONS OF THE HEATER

The heater tank is made of sheet steel and tested at 1.5 times the operating pressure. The inside of the container is enameled. A flange is welded to the bottom of the container, to which the flange lid is screwed. A sealing ring is inserted between the flange cover and the flange. In the lid of the flange there are wells for placing the heating element and the sensors of the regulation and safety thermostat. An anode rod is mounted on the M8 nut. The water tank is insulated with hard polyurethane foam. The wiring is located under a removable plastic cover. The water temperature can be adjusted with a thermostat. In the case of combined heaters, a heat exchanger is welded into the pressure vessel. This exchanger is only intended for the heating circuit. There is a circulation hole in the container, it must be closed when not in use.

Container dimensions: OKHE 125 NTR/DV, OKHE 160 NTR/DV

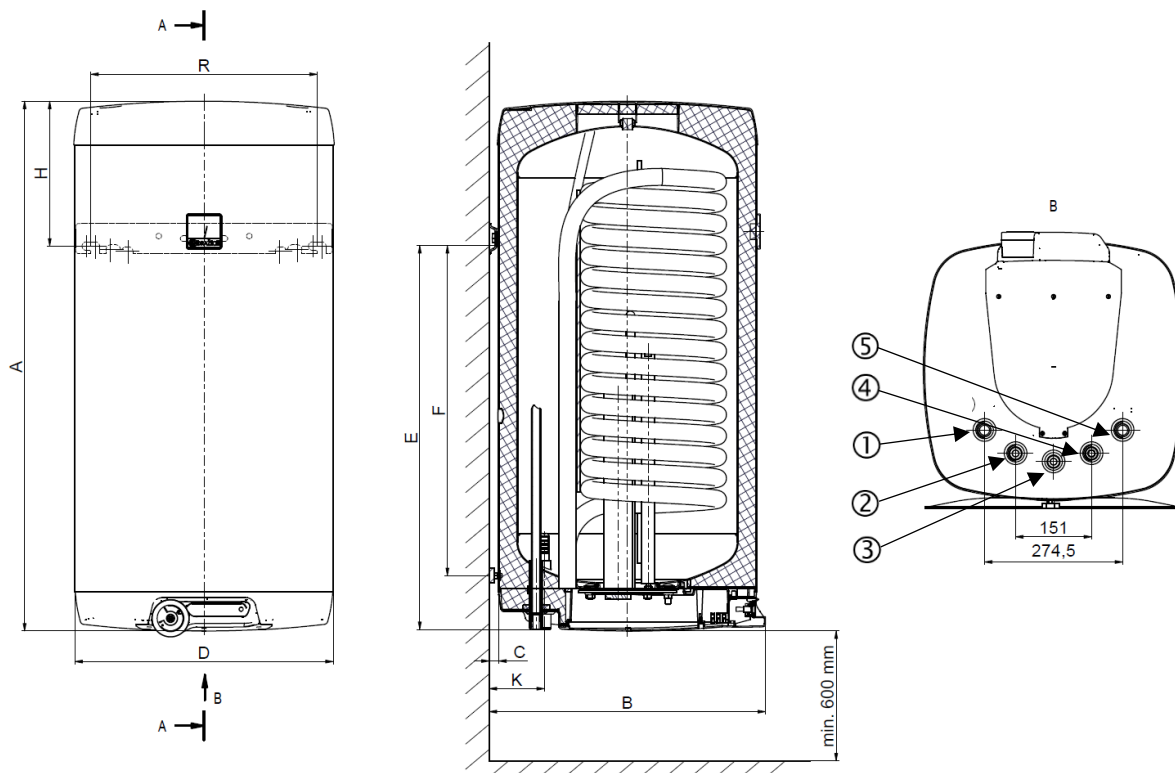


Figure 1

	OKHE 125/NTR/DV	OKHE 160/NTR/DV
A	1050	1235
B	550	550
C	19	19
D	520	520
E	757	1000
F	638	880
H	283	225
K	117	117
R	450	450

Table 1

①	Heating water inlet G 3/4" external
②	Hot water outlet G 3/4" external
③	Circulation G 3/4" external
④	Cold water inlet G 3/4" external
⑤	Heating water outlet G 3/4" external

Table 2

TYPE		OKHE 125/NTR/DV	OKHE 160/NTR/DV
VOLUME	l	113	141
MAX OPERATING OVERPRESSURE IN THE TANK	bar		6
MAX MAXIMUM OPERATING OVERPRESSURE IN THE EXCHANGER*	bar		10
ELECTRICAL CONNECTION		1/N/PE ~230 V / 50 Hz	
RECOMMENDED BREAKER	A		16
INPUT	W		2200
EL. PROTECTION			IP44
MAX TEMPERATURE OF HOT WATER	°C		80
MAX OPERATING TEMPERATURE IN THE EXCHANGER	°C		110
RECOMMENDED TEMPERATURE OF HOT WATER	°C		60
MAX. WEIGHT OF HEATER WITHOUT WATER	kg	69	78
TIME OF EL. HEATING FROM 10°C TO 60°C	hours	3,2	4
HEAT EXCHANGE SURFACE OF THE EXCHANGER *	m ²		1,45
EXCHANGER HEATING TIME FROM 10 °C AT 60 °C	min		13
ENERGY EFFICIENCY CLASS		B	C
INSULATION THICKNESS	mm		until 80
THERMAL CONDUCTIVITY INSULATION λ	W.m-1.K-1		0,022
EXCHANGER VOLUME	l		9,5
STATIC LOSS	W	49	55
PRESSURE LOSS IN THE EXCHANGER AT FLOW RATE 720 l/h (UP/DOWN)	mbar		-/46

Table 3

2 OPERATING AND INSTALLAT. INFORMATION

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 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 temperature in the heater installation location must not exceed +2 °C. The appliance has to be mounted at a convenient place; it means that the appliance must be easily accessible for potential necessary maintenance, repair or replacement, as the case may be.

We would like to emphasize that the heater must not be connected to power supply if work involving flammable liquids (petrol, spot remover) or gases, etc., is performed nearby.



If water is strongly calcareous we recommend that any of the common decalcifying device was installed with the appliance, or the thermostat to be set to the minimum operation temperature of 55 °C (setting to position „OPTIMUM“) - (see fig. 10). 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

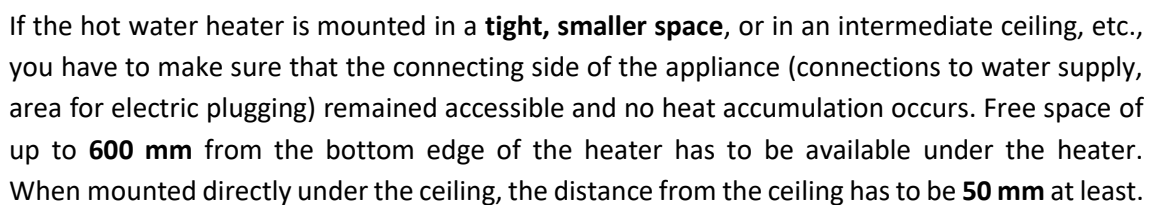


Prior to the mounting check the bearing capacity of the wall and the material it is made of, considering the weight of the heater filled with water. Depending on the wall material choose adequate fixtures. We recommend entrusting wall mounting and anchoring to a specialist company or consult the suspension with a building specialist. **When mounting the anchor bolts follow the manual provided by the anchor bolts' manufacturer.**

Fit the heater hanger anchors at 450mm intervals. Dimensions of the hinge (see fig. 3). After loosening the connection screws, the verticality of the heater can be adjusted by turning the hinge slightly. Check the tightening of the hanging screws on the heater and hang the heater. Using the locking support (see fig.2) in the lower part of the heater, ensure parallelism with the wall!



Figure 2



If the water heater is mounted in enclosed areas, inter-ceilings, built-in structures and recesses, ensure sufficient access to service fittings, electrical terminal boards, anodes and manholes. Minimum spacing from manhole is 600 mm.



2.3 PLUMBING INSTALLATION



The heater connects to water distribution tubes with G3/4" thread in the bottom part of the heater. Blue - cold water supply, red - hot water outlet. For potential disconnection of the heater, the service water inlets and outlets must be provided with screw coupling Js 3/4". The safety valve is mounted on the cold water inlet identified with a blue ring.



The heater must be equipped with a membrane, spring-loaded safety valve. Safety valves with fixed pressure settings from the manufacturer are used for the assembly. Each individually lockable heater must be fitted with a cap on the cold water inlet, a test valve or a stopper to check the operation of the check valve, with a check valve and a relief valve. **The safety valve with a check valve is supplied with the heater.**



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 common operation, such a check needs to be implemented at least once a month, and after each heater shutdown for more 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.

Find necessary pressure values in the below – (see Tab.4)

Heaters must be provided with a discharge valve mounted on the cold service water inlet to the heater for potential disassembly or repair. **When assembling the security equipment, follow the standard.**

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	do 0,48

Table 4

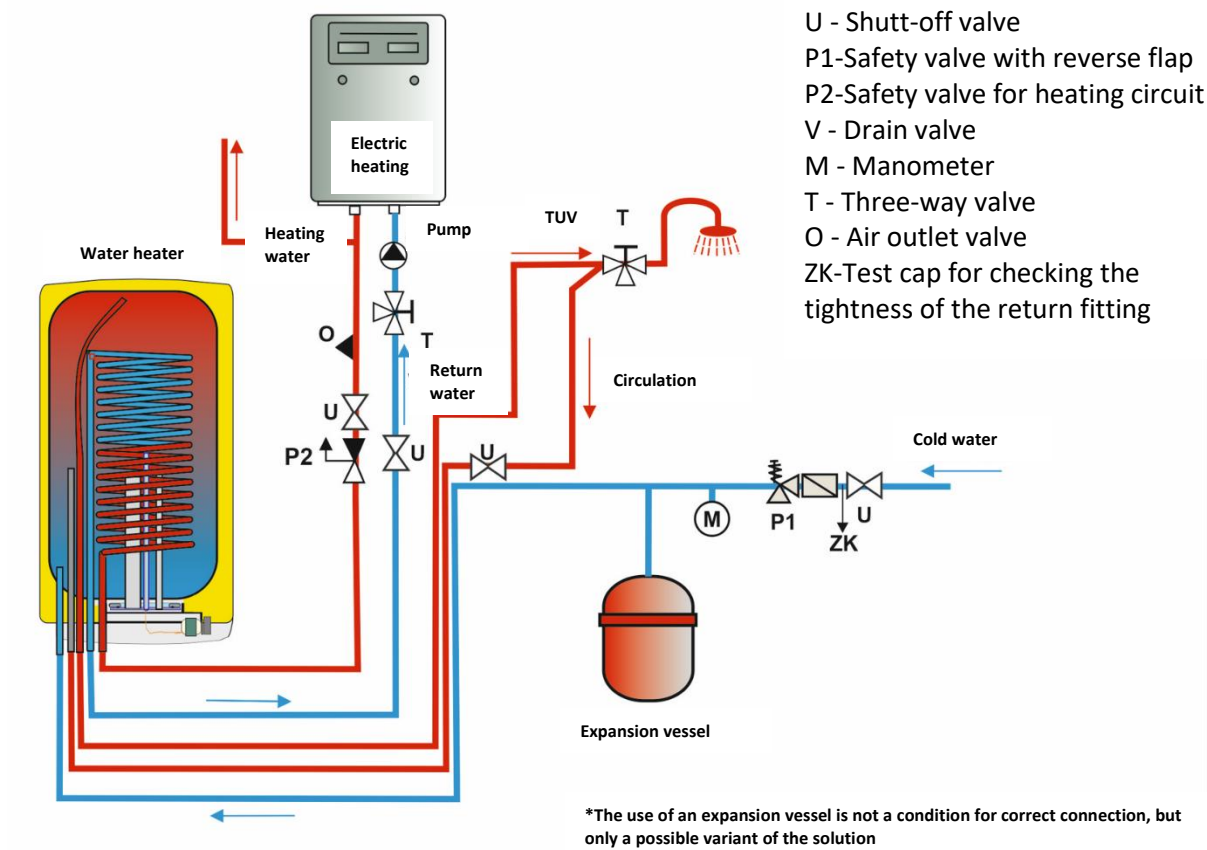


Figure 4



It is recommended to install stop valves on the heating water inlet and outlet (for possible dismantling of the heater). The valves have to be as close to the heater as possible to avoid higher thermal losses.

HOT AND COLD WATER DISTRIBUTION

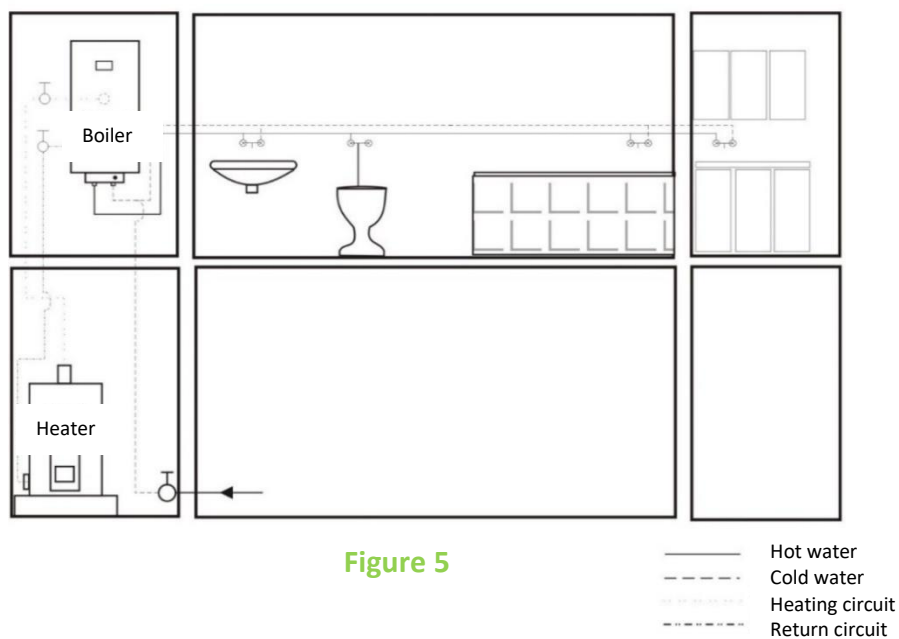


Figure 5

2.4 PRESSURE LOSS

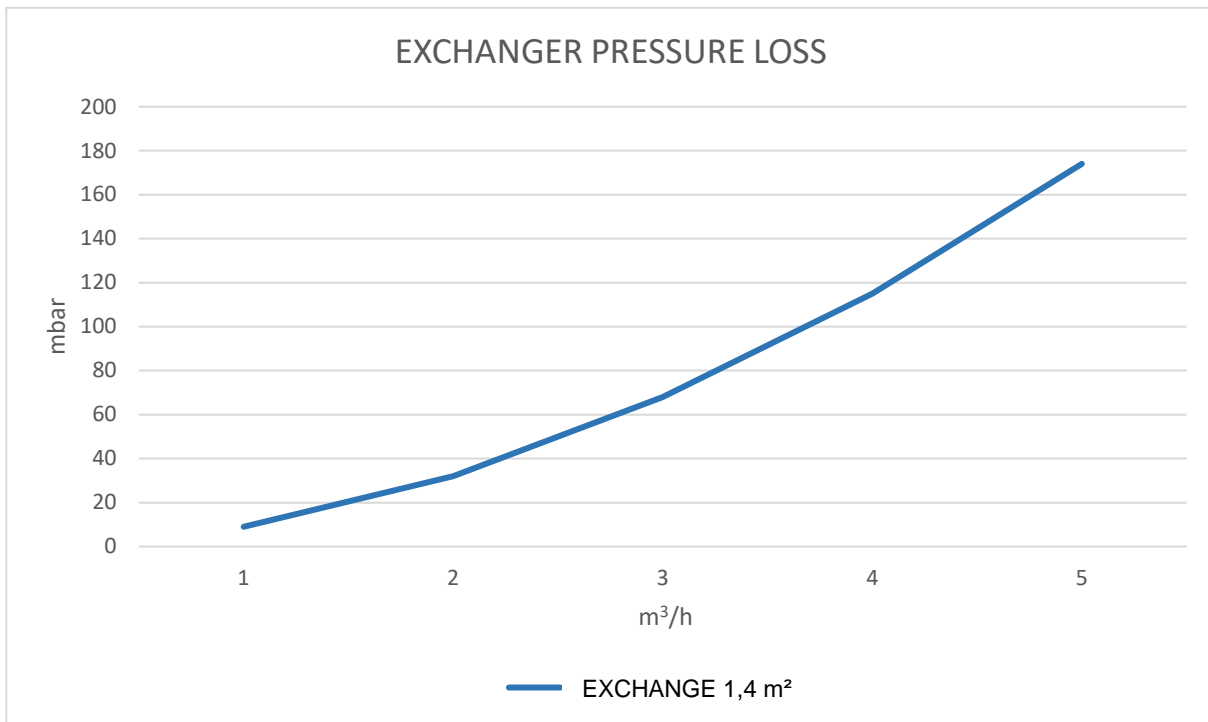


Figure 6

Type	Pressure loss mbar t _{HV} = 60 °C				
	Amount of heating water m³/h				
	1	2	3	4	5
Exchange 1,4m²	9	32	68	115	174

Table 5

2.5 ELECTRICAL INSTALLATION

Connect according to the connection diagram (Figure 8). The factory connection must not be changed!. In the wiring cover, remove the partition corresponding to the diameter of the supply wire $\phi 8$ or $\phi 10$ (Figure 7). The degree of protection of the electric parts of the heater is IP 44. The power consumption of the electric body is 2200 W.

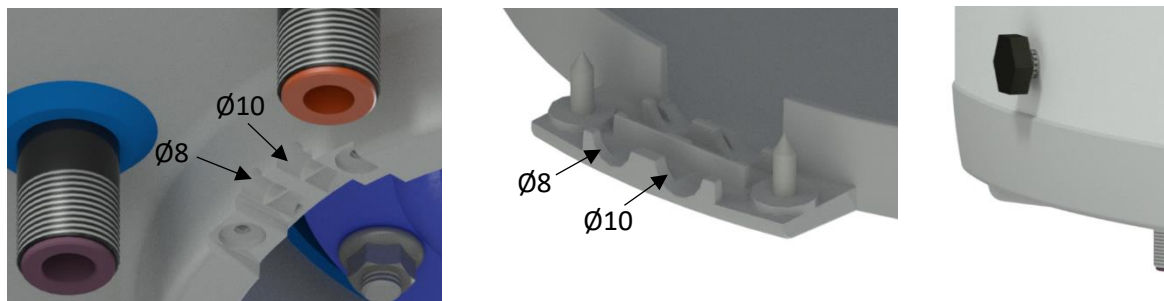


Figure 7

The following requirements must be observed during electrical installation.



- Connection, repairs and electrical checks installation can only be carried out by a company authorized for this activity.
- Professional involvement must be confirmed on the warranty card.
- The heater is connected to the electrical network 1/N/PE ~ 230V/50Hz with a fixed connection cable. A circuit breaker and a current protector are installed in the electrical circuit.
- For heaters, after hanging on the wall, the locking support is set so that the heater is parallel to the wall. Connect the ground wire (PE) to the locking support.
- When installing in bathrooms, laundries, washrooms and showers, it is necessary to follow the standard.
- Observe protection against electric shock according to the standard

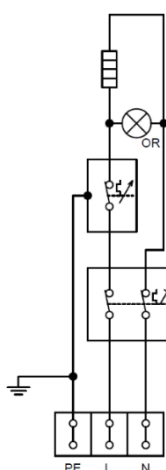


Figure 8

2.6 OPERATING ACTIVITY

a) Water heating by electric energy

After the heater is connected to electric network, the heating element starts heating water. The element is turned on and off by a thermostat. After reaching the temperature set, the thermostat switches off the electric circuit and discontinues water heating. The control light signals if the element is in operation (light is on) or if it is off (the light goes out). In case of longer operation without using the heated volume, the thermostat has to be set to position 5 °C to 10 °C (set the “snowflake” symbol on the thermostat selector) to avoid its freezing, or electricity supply to the heater has to be switched off. In combined versions, the stop valve on the inlet to the exchanger has to be closed at the inlet to the heat exchanger while which prevents heating the water in the hot water heating system.

b) Heating of utility water with thermal energy via an exchanger

The shut-off valves at the heat exchanger must be open and this ensures the flow of heating water from the hot water heating system. It is recommended to include a venting valve together with the shut-off valve on the supply to the heat exchanger, with which you can ventilate the heat exchanger as needed, especially at the start of the heating season. The heating time with the exchanger depends on the temperature and flow of water in the hot water heating system.

2.7 FIRST COMMISSIONING



After connecting the heater to the water supply, the hot water heating system, the electric network, and after testing its safety valve (based on the valve manual attached), the heater may be put into 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 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 both water and electric installation; for combined heaters, check also the installation to the hot water heating system. Check proper placement of thermostat sensors. Sensors has to be installed in to the sink as deep as possible - following the possibilities of each capillary, controlling thermostat has to be installed as first sensor in to the capillary, following by the safety thermostat as the second sensor installed in to the capillary.
2. Open the hot water valve on the combination faucet.
3. Open the cold water inlet valve to the heater.
4. Once water starts draining through the combination faucet valve for hot water, the filling of the heater 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.

2.8 PUTTING OUT OF SERVICE, DISCHARGE



If the hot water heater is put out of service for a longer time, or if it is not going to be used it has to be drained and disconnected from the electric supply network. 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 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.**

2.9 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.



Attention! 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 (if higher than 4.8 bars, a pressure control valve has to be fitted), 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.

2.10 MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

FAILURE SYMPTOM	INDICATOR	SOLUTION
Water is cold	<ul style="list-style-type: none"> Light on 	<ul style="list-style-type: none"> The temperature set on the thermostat is too low Heating element failure
Water is cold	<ul style="list-style-type: none"> Light off 	<ul style="list-style-type: none"> No supply voltage! Thermostat failure Safety thermostat shut off probably due to failed operation thermostat
Water is not warm enough	<ul style="list-style-type: none"> Light on 	<ul style="list-style-type: none"> Failure of one of the coils in the element
Temperature of water is not corresponding with the set value		<ul style="list-style-type: none"> Defective thermostat
Water is constantly dripping off the safety valve	<ul style="list-style-type: none"> Light off 	<ul style="list-style-type: none"> High input pressure Defective safety valve

Table 6



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 THERMOSTAT

3.1 OPERATING DEVICES OF THE HEATER

Electric installation

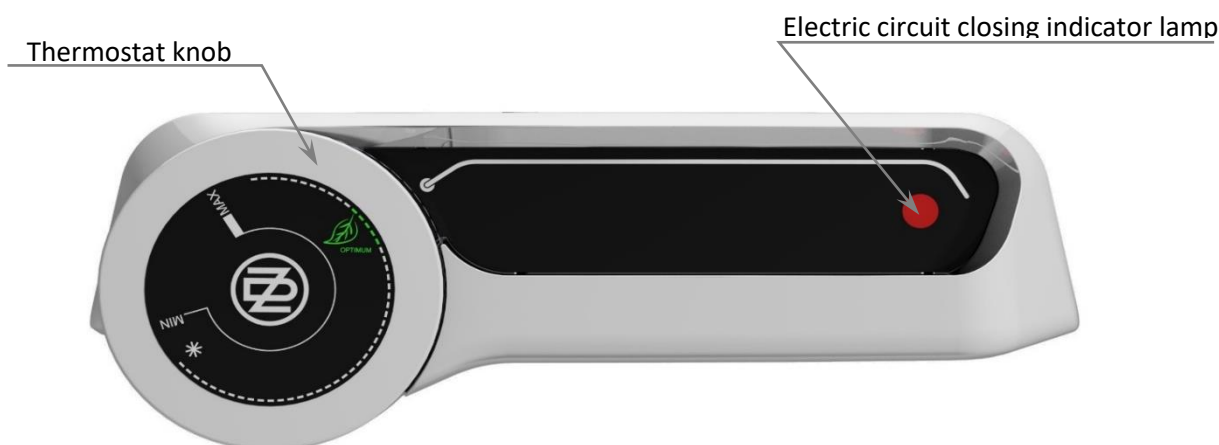


Figure 9



Thermostat and no other part of the control panel is not a bearing part which can be used for any handling with the heater.

3.1.1 TEMPERATURE SETTING

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

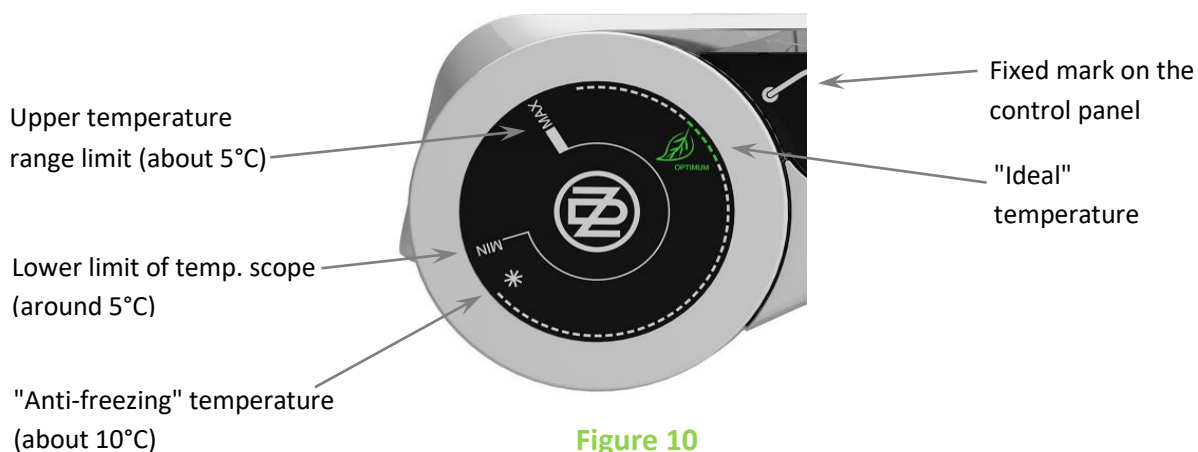


Figure 10



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 55 °C. Select the "OPTIMUM" symbol as the maximum (see fig.10).

4 IMPORTANT NOTICES

4.1 INSTALLATION REGULATIONS

- **Without a confirmation of performed electrical installation issued by an authorized company, the warranty certificate shall be void.**
- Check and exchange the Mg anode regularly.
- You have to apply for approval of a local power supplier to connect the heater.
- **No stop valves can be put between the heater and the safety valve.**
- If the overpressure in the water main exceeds 0.48 MPa, a pressure control valve must be mounted before the safety valve.
- All hot water outputs must have a combination faucet.
- Before filling the heater with water for the first time, it is recommended to fasten the flange connection nuts of the tank. Screws has to be tightened by cross, tightening moment 15Nm.
- It is not allowed to handle the thermostat, aside from temperature resetting with a control button.
- All electric installation handling, adjustment and replacement of the regulation elements shall only be performed by an authorized service company.
- **The thermal fuse must not be turned off!** In case of thermostat defect, the thermal fuse interrupts electric power input to the heating element if the water temperature in the heater exceeds 90 °C.
- As an exception, the thermal fuse may also switch off due to water overheating caused by overheating the hot water heating system boiler.
- We recommend you operate the heater with one type of energy.
- 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) shall be used exclusively in accordance with the conditions specified on the performance plate and in the instructions for electric wiring.



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

4.2 TRANSPORT & STORAGE INSTRUCTIONS

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



Due to the 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.

4.3 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.



21-8-2024