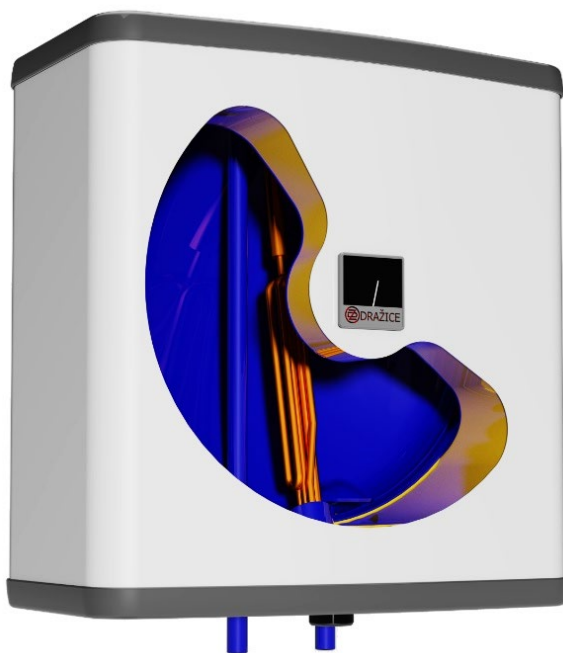


# OPERATING AND INSTALLATION MANUAL

## FLAT WATER TANK-TYPE WATER HEATER FOR VERTICAL MOUNTING

Electric water heaters

OKHE ONE20



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 **DRAŽICE**  
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## 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 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

Tank type water heater (the heater hereinafter) is designed for the accumulation heating of service water by electric energy. Water is heated by an electric element in an enamelled thermally insulated tank. The element is at the time of heating controlled by a thermostat the temperature of which can be adjusted continuously (within the range between 5°C and 74°C). Once the selected temperature is reached, heating interrupts automatically. Water accumulated in the tank is then used for the consumption. The tank keeps constant pressure of water from the water main. If the combination faucet hot water valve is opened, water from the water supply conduit pressed out by cold water pressure flows out of the heater. How water drains off the upper part, and incoming water stays in the bottom part of the heater. The pressure principle allows hot water withdrawal at any place away from the heater.

## 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



Even if no heated water is withdrawn from the heater, there is some minor leakage of heat. That 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		OKHE ONE 20
VOLUME	L	20
MAX OPERATING OVERPRESSURE IN THE TANK	MPa	0.6
ELECTRICAL CONNECTION	V	1/N/PE ~ 230V/50Hz
RECOMMENDED BREAKER		10 A
INPUT	W	2200
EL. PROTECTION		IP 44
MAX OPERATING TEMPERATURE OF HOT WATER (HW)	°C	80
RECOMMENDED HOT WATER (HW) TEMPERATURE	°C	60
HEIGHT OF THE HEATER	mm	591
SIZE OF THE HEATER width x depth	mm	523x301
MAX WEIGHT OF THE HEATER WITHOUT WATER	kg	17
TIME OF EL. HEATING FROM 10°C TO 60°C*	hrs	0.5
LOAD PROFILE		S
ANNUAL CONSUMPTION OF ELECTRIC ENERGY	kWh	485
MIXED WATER V40	l	14.24
ENERGY EFFICIENCY CLASS		A

Table 1

## 1.3 DESIGN AND GENERAL HEATER DIMENSIONS

The receptacles of the heater tank are made of steel plate and tested by 1.5 MPa multiple of operation pressure value. The inside of the receptacle is **enamelled**. In the bottom part of the tank there are wells for placing the heating, regulation and safety element of the water heater (heating element with right thread G 5/4", thermostat sensor and thermal fuses). A thermometer is installed in the top part of the heater that transmits information on heating the volume of service water. The receptacle of the heater is provided with a quality polyurethane insulation that ensures minimum heat losses.

Wiring is installed in the bottom part of the heater. Water temperature may be set by a thermostat in the range from 5 °C to 74 °C. Cold water inlet is marked with a blue circle, hot water is marked with a red circle. All other steel parts are protected against corrosion by paint and galvanic coating. To ensure protection against corrosion there is an anode rod installed in the head of the heating element that dissolves during the operation of the heater and must be replaced after 2 to 3 years of service (depending on the chemical composition of water).

Dimensions of heaters - Figure 1

### Technical description: OKHEONE20

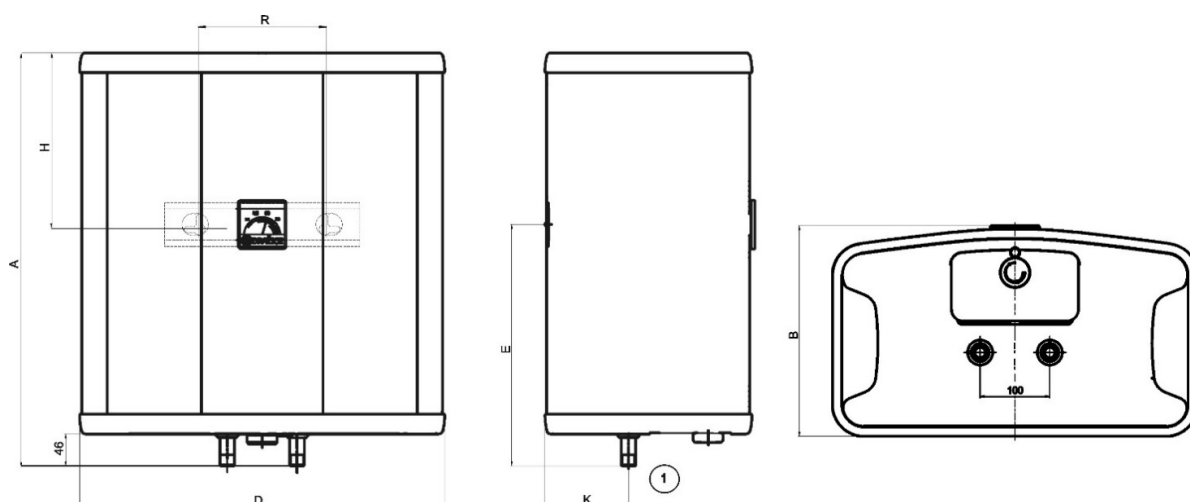


Figure 1

OKHE ONE 20		①
A	591	1/2" outer
B	301	
D	523	
E	345	
H	246	
K	120	
R	180	

Table 2

## 2 PERATION AND FITTING INSTRUCTIONS

### 2.1 OPERATING CONDITIONS



The heater may only be used in accordance with the conditions specified on the nameplate and the instructions contained in this manual. Besides the legally acknowledged national regulations and standards, also conditions for the connection defined in local electric and water works have to be adhered to, as well as the installation and operation manual.

The temperature at the place of heater installation must be higher than +2°C; and the room must not freeze. The heater has to be mounted at such a place that can be counted with as handy; it means that the appliance must be easily accessible for possibly necessary maintenance, repair or replacement, as the case may be.



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 60°C (Figure 6). For proper operation, drinkable water of adequate quality shall be used.

### 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. Should you have any doubts regarding the wall bearing capacity, consult the suspension with a building specialist.

**Neither the control knob of the thermostat, nor another part of the control panel is a bearing part which may be used for any handling of the heater!**



If the hot water heater 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 heater has to be left available under the heater. When mounted directly under the ceiling, the distance from the ceiling has to be **100 mm** at least.

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.

The heater is mounted in vertical position directly on the wall. Fastening **screws must have guaranteed spacing t = 180 mm**.

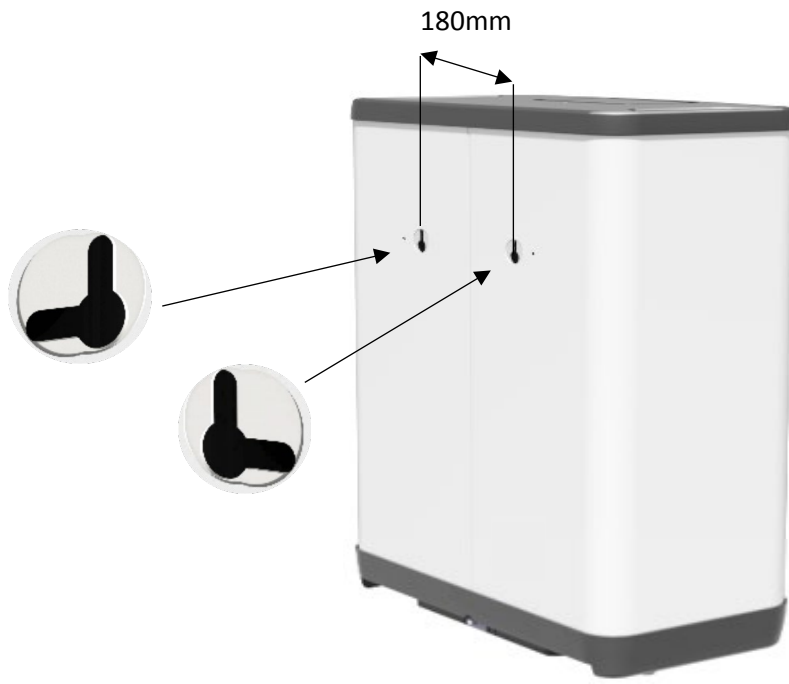


Figure 2

## 2.3 PLUMBING FIXTURES



The heater connects to water distribution tubes with G1/2" 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 1/2". 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 (Figure 3). **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.

**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 START-UP PRESSURE [MPa]	ALLOWABLE OPERATING OVERPRESSURE OF WATER HEATER [MPa]	MAXIMUM PRESSURE IN COLD WATER PIPES [MPa]
0.6	0.6	up to 0.48
0.7	0.7	up to 0.56
1	1	up to 0.8

Table 3

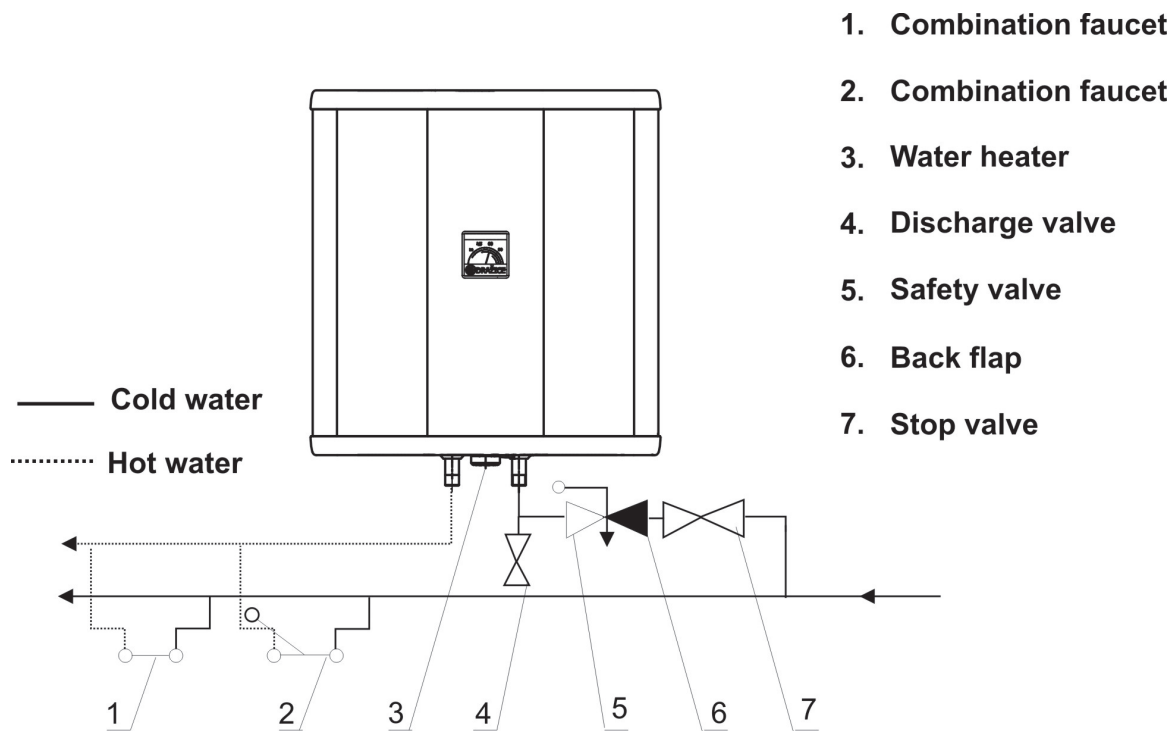


Figure 3

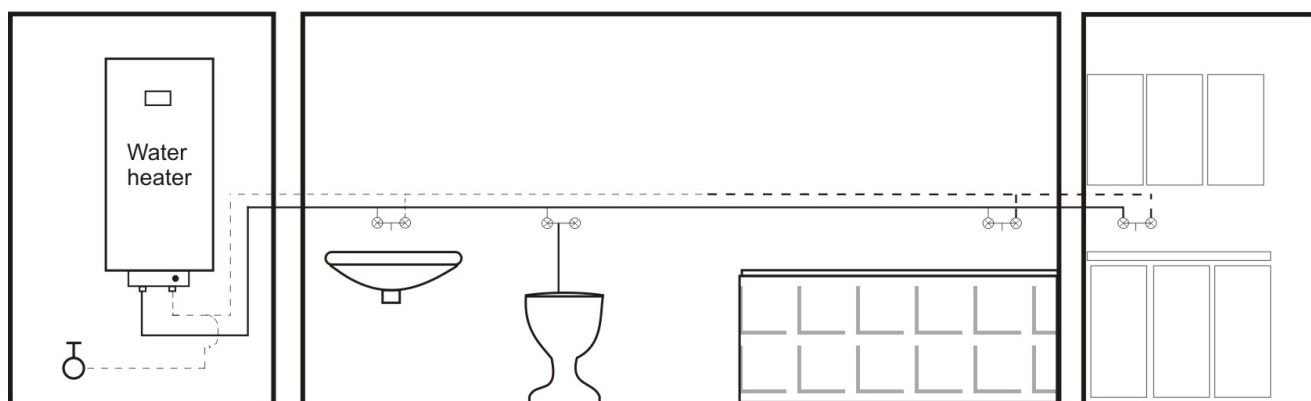


Figure 4

— Hot water  
- - - - - Cold water

## 2.4 ELECTRICAL INSTALLATION

### 2.4.1 GENERAL INFORMATION FOR ELECTRICAL INSTALLATION

Execute the connection as indicated in the wiring diagram. Factory connection must not be changed! The degree of protection of electric parts of the heater is IP 44. Power input of electric element is 2200 W.

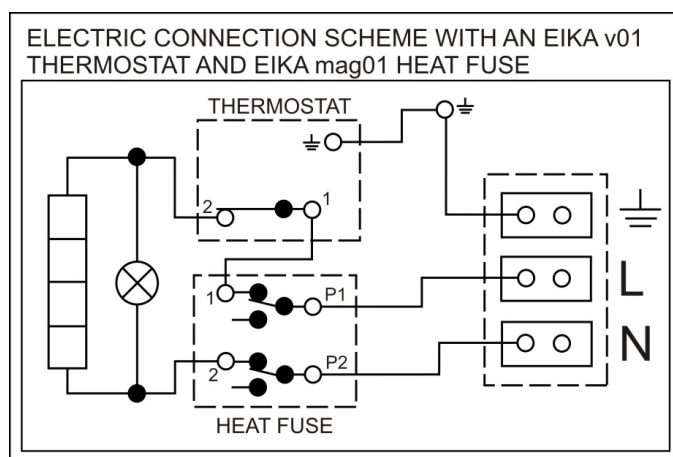


Figure 5

It is necessary to observe the below requirements during the electric wiring.



- Heater is connected to 230V/50Hz power supply via a fixed movable cable (depending on the method of wiring)
- The circuit must contain a breaker disconnecting all poles of the network, and a circuit breaker (protector).
- Installations in bathrooms, lavatories and showers must comply with the standards that require that the heater is fitted with a safety terminal for connecting via protective conductor of yellow-green colour of minimum cross section of 4 mm<sup>2</sup>.
- Access to the power section of the heater is only possible once the heater is disconnected from the power supply and the cover of the heater unscrewed.
- Adhere to the protection against electric shock injury according to standard.

## 2.5 OPERATION

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 thus 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 8°C (set the "snowflake" symbol on the thermostat selector) to avoid its freezing, or electricity supply to the heater has to be switched off. Setting the thermostat to the 0 symbol doesn't mean that the appliance has been turned off.

## 2.6 FIRST COMMISSIONING



Before connecting to the electricity, the heater 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 up process the water that increases its volume during the heating must visibly drip off the safety valve. When heating is finished, the set temperature and the actual temperature of consumed water should be roughly equal. When the heater is connected to a water piping, power grid and the safety valve has been tested, the heater can be put in operation.

Before the first putting into service or after a longer shutdown, the appliance has to be rinsed out and flushed yet before the heating is activated. Before the heating starts, the heater must be completely filled with water and the system properly flushed and vented. First heating of the heater has to be watched.

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

1. Check the water main and wiring. Check proper placement of the operating and safety thermostat (thermal fuse) sensors. The sensors must be inserted all the way in; first the operating and then the safety thermostat.
2. Open the hot water valve on the mixing faucet.
3. Open the cold water inlet valve to the tank.
4. As soon as the water starts running through the hot water valve, the heater is filled 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. Turn on the power supply.
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, EMPTYING



If the heater is put out of service for longer period, or is not going to be used for some time, we recommend it is disconnected from the power grid on all poles. The switch for the power cord or fuse machines must be shut down.

In locations that are permanently exposed to frost, hot water tank shall be emptied prior to the beginning of the cold season, if the appliance is not used for several days, and if the power supply is disconnected.



Drainage of service water shall be performed after closing the shut-off valve in the cold water supply piping (through the discharge valve for a combination of safety valves) and with simultaneous opening of all hot water valves of connected fittings (water can be also drained through the safety valve. **Hot water may outflow during the drainage!** If there is a risk of frost, be aware that not only the water in the hot water tank and the water in the hot water piping may freeze, but also the water in the entire cold water supply piping. It is therefore purposeful to discharge all fixtures and pipes where water flows all the way to the section of the house water meter (connection of the house to the water main) that is no longer threatened by frost. When the heater 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 contains no bubbles.**

## 2.8 INSPECTION, MAINTENANCE & CARE FOR THE APPLIANCE



During the heating process the water that increases its volume during the heating must visibly drip off the safety valve drain. At full heating (about 74°C) the volumetric water gain is approx. 3.5% of the heater's capacity. The function of the safety valve has to be checked regularly. If the safety valve control knob is lifted or turned to the "Control" position, the water must flow out easily, without any obstacles, from the safety valve element to the outfall line. 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.



**Attention!** The inlet cold water pipe and the connection fitting of the heater may heat up! 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 water pressure in the supply piping is either too high (if higher than 5.5 bar, a pressure control valve has to be fitted), or the safety valve in the inlet piping is malfunction. Please call a specialised plumber immediately!



Repetitive water heating causes lime scale sediment on both the tank walls and mainly on the heating body. Lime scale settling depends on hardness of heated water, its temperature and on the volume of hot water used. If water contains a lot of minerals, after one to two years of operation an expert must be called to remove scale forming inside the heater and the loose sediments. Cleaning takes place through the hole in the flange - dismantle the heating element and clean the heater. 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 decalcification pump. Remove the calcereous buildup with a timber or plastic tool and Hoover it up or wipe off with a cloth. Then the appliance must be thoroughly flushed and the heating process checked as on the first putting in operation. Do not use any abrasive cleaning agents (such as liquid sand, chemicals - acid, alkaline) or paint thinners (such as cellulose thinner, trichlor, and the like) to clean the outer shell of the heater. For cleaning of the outer shell of the heater use a wet cloth and add a few drops of liquid detergent commonly used in households.

**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. 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.

## 2.9 MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

FAILURE SYMPTOM	INDICATOR	SOLUTION
Water is cold	<ul style="list-style-type: none"> <li>• Light on</li> </ul>	<ul style="list-style-type: none"> <li>• The temperature set on the thermostat is too low</li> <li>• Heating element failure</li> </ul>
Water is cold	<ul style="list-style-type: none"> <li>• Light off</li> </ul>	<ul style="list-style-type: none"> <li>• No supply voltage!</li> <li>• Thermostat failure</li> <li>• Safety thermostat shut off probably due to failed operation thermostat</li> </ul>
Water is not warm enough	<ul style="list-style-type: none"> <li>• Light on</li> </ul>	<ul style="list-style-type: none"> <li>• heating element failure</li> </ul>
Temperature of water is not corresponding with the temperature set on the control		<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>• Light off</li> </ul>	<ul style="list-style-type: none"> <li>• high input pressure</li> <li>• defective safety valve</li> </ul>

Table 4



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 TEMPERATURE SETTING

Water temperature can be set by turning the knob of the thermostat between 0 °C to 74 °C by the symbol of the thermostat knob.

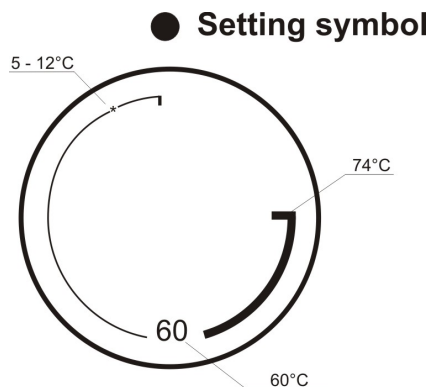


Figure 6

# 4 IMPORTANT NOTICES

## 4.1 INSTALLATION REGULATIONS

- **Without a confirmation of performed electrical installation issued by an authorised company, the warranty certificate shall be void.**
- Check and exchange the Mg anode regularly.
- Please make sure that for the connection of your heater you don't need an approval of the local electricity supplier.
- **No stop valves can be put between the heater and the safety valve.**
- With overpressure in the water distribution system higher than 0.48 MPa, it is recommended that a reduction valve is fitted 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.
- 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 authorised 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.
- If the heater or the facility with heater is without surveillance for longer period, shut off the cold water inlet and power supply to the heater. Empty the heater if there is a risk of frost.
- The tank may only be used in accordance with the conditions specified on the nameplate and with the instructions contained in this manual.

- The recommended operating pressure in the hot water circuit is 0.48 MPa. At the hot water discharge we recommend that a reverse flap and an expansion tank are installed (at least 4% of hot water volume in the manifold) to eliminate reverse pressure shocks.



**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.

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

The packaging that the product was delivered in has been paid for in form of a service fee for the provision of the return and recovery. The packaging that the product was delivered in has been paid for in form of a service fee for the provision of the return and recovery. Take the water heater packaging to a waste disposal place determined by the municipality. Disassemble the discarded and unserviceable product after the operation terminates, and transport it to a waste recycling centre (collecting yard), or contact the manufacturer.



## 5 PRODUCT ACCESSORIES

The product is supplied together with a safety valve. Safety valve is packed and placed in the upper section of the heater's packaging.

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

2-10-2018