

OPERATING and INSTALLATION MANUAL

TANK-TYPE WATER HEATER FOR VERTICAL MOUNTING **OKHE 80, 100, 125, 160**



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CONTENTS

1	TECHNICAL SPECIFICATION OF PRODUCT	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	4
1.3	DESIGN AND GENERAL HEATER DIMENSIONS.....	5
2	OPERATION AND FITTING INSTRUCTIONS.....	6
2.1	OPERATING CONDITIONS	6
2.2	WALL MOUNTING.....	7
2.3	PLUMBING FIXTURE.....	7
2.4	ELECTRIC WIRING	9
2.4.1	ELECTRIC INSTALLATION GENERAL INFORMATION.....	9
2.5	FIRST HEATER COMMISSIONING	10
2.6	PUTTING OUT OF SERVICE, DISCHARGE	10
2.7	INSPECTION, MAINTENANCE & CARE FOR THE APPLIANCE	11
2.8	MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES	12
3.	OPERATION OF THERMOSTAT	12
3.1	OPERATING MODES.....	12
3.1.1	SERVICING.....	12
3.1.2	TEMPERATURE SETTING	13
3.1.3	LIMITING THE REGULATION RANGE; LOCKED SETTINGS.....	13
4	IMPORTANT NOTICES	14
4.1	INSTALLATION REGULATIONS.....	14
4.2	DISPOSAL OF PACKAGING MATERIAL AND FUNCTIONLESS PRODUCT	14

READ CAREFULLY THE BELOW INSTRUCTIONS PRIOR TO THE INSTALLATION THE 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%.

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

Meaning of pictograms used in Manual



Important information for heater users.



Recommendations of manufacturer, observance of which will ensure trouble-free operation and long service life of the product.



CAUTION!

Important notice to be observed.

1 TECHNICAL SPECIFICATION OF PRODUCT

1.1 FUNCTION DESCRIPTION

The heater is designed for accumulation heating of service water using electricity. Water is heated by an electric element in an enamelled thermally insulated tank at the time defined by the power supplier. 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 consumption.

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 a 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 electric element's pit.

1.2.3 EMERGENCY POWER CONSUMPTION



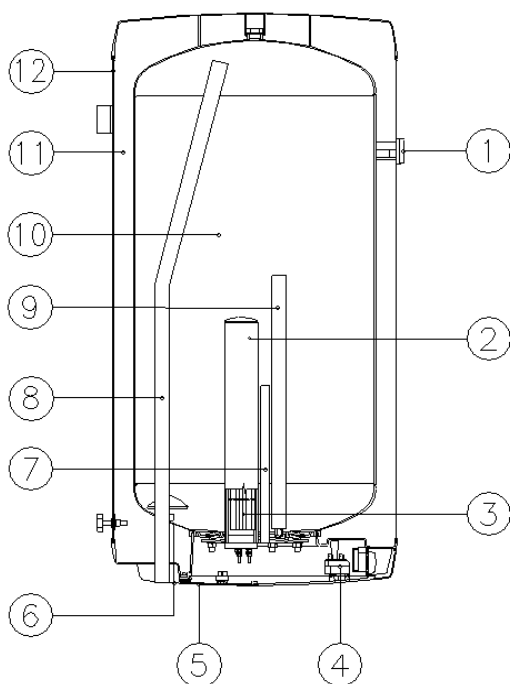
If no heated water is taken from the tank, a small amount of heat leaks. This loss is measured for a period of 24 hours at the temperature of 65°C in the heater, and at 20°C in its ambient area. The resulting value is expressed in [kWh/24h] and indicates the amount of power needed to maintain the set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

MODEL	OKHE 80	OKHE 100	OKHE 125	OKHE 160
UNIT HEAT LOSSES [kWh/24hr/l]	6.88	7	6.96	6.77
NOMINAL CAPACITY [l]	80	100	125	155
TIME OF WARMING UP CONTENT OF TEMPERATURE [hours]	2.5	3	3.8	5
ELECTRICITY CONSUMPTION FOR WARMING CONTENTS FROM 15°C TO 65°C [kWh]	4.8	6	8	9.5
ENERGY EFFICIENCY CLASS	B	B	B	B
TOTAL HEAT LOSSES [kWh/24hr]	0.55	0.7	0.87	1.05

Table 1

1.3 DESIGN AND GENERAL HEATER DIMENSIONS

The heater tank is made of a steel plate and tested by 0.9 MPa overpressure. The inside of the tank is enamelled. A flange is welded onto the bottom of the tank with a flange lid screwed to it. A sealing ring is inserted between the flange lid and the flange. Thermo well for placing a heating element and sensors of thermostat and safety fuse are located in the flange lid. Anode rod is mounted on M8 nut. Electric wiring is placed underneath the plastic removable cover. Description of basic parts of the heater – Figure 1. Heater dimensions - Figure 2 and Table 2.



1. thermometer
2. heating element well
3. ceramic heating element 2000W
4. operation thermostat with external control and safety thermostat
5. electric installation guard
6. cold water filling pipe
7. thermo well
8. hot water withdrawal pipe
9. Mg anode
10. enamelled steel receptacle

Figure 1

11. : polyurethane insulation

12. heater shell

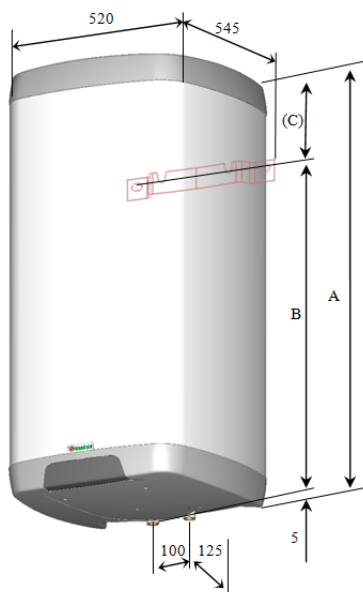


Figure 2

MODEL	OKHE 80	OKHE 100	OKHE 125	OKHE 160
A [mm]	742	887	1052	1237
B [mm]	610 (560)	700 (650)	850 (800)	1050 (1000)
C [mm]	127 (177)	182 (232)	197 (247)	182 (232)
Max weight without water [kg]	37	42	49	57

Table 2

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. If water is strongly calcareous we recommend that any of the common decalcifying devices was installed with the appliance, or the thermostat to be set to minimum operation temperature of 60°C (setting to position "60") – Figure 8.



If water is strongly calcareous we recommend that any of the common decalcifying devices was installed with the appliance, or the thermostat to be set to minimum operation 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 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. The minimum diameter of the bolts for suspending the heater is 12 mm. **When mounting the anchor bolts follow the guide provided by the anchor bolts' manufacturer.**

Mount the anchors by the dimensional drawing (Figure 3) in **350 mm** spacing, and screw firmly a steel hinge onto the wall. Check its proper vertical positioning. Recheck the torque of the suspension bolts on the heater and suspend the heater. If needed, the suspension bolts can be shifted by **50 mm** in vertical direction. Using the detent support in the bottom part of the heater make sure it runs in parallel with the wall!

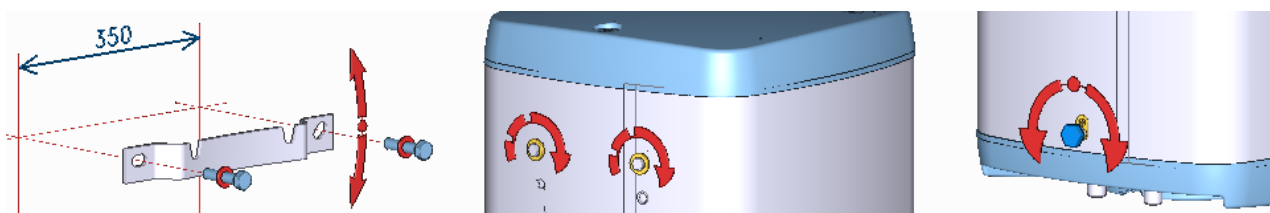


Figure 3



If the hot water heater is mounted in a **tight, small 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 **500 mm** from the bottom edge of the heater has to be available under the heater. When mounted directly under the ceiling, the distance from the ceiling has to be **50 mm** at least.

2.3 PLUMBING FIXTURE



Power water connects to pipes with 3/4" 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". Safety valve is mounted on the cold water inlet identified with a blue ring.



Each hot service water pressure heater must have a membrane spring loaded with a safety valve. Nominal clearance of safety valves is defined in the Standard. The heaters are not equipped with a safety valve. The safety valve must be easily accessible, as close to the heater as possible. The input pipes must have at least the same clearance as the safety valve. The 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. Starting pressure of a safety valve must be identical to the maximum allowed heater pressure, and at least 20% higher than the

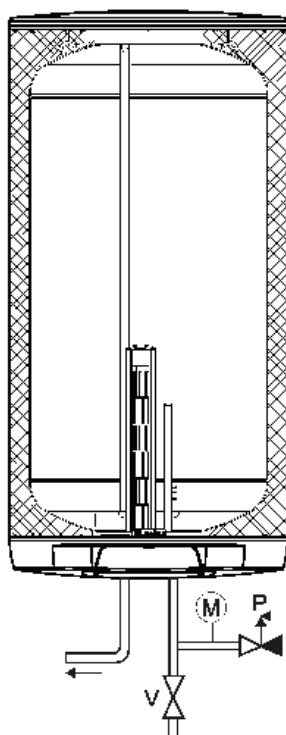
maximum pressure in the water main (Table 3). If the water main pressure exceeds such value, a reduction valve must be added to the system. No stop valves can be put between the heater and the safety valve. During the assembly, follow the guide provided by the safety equipment manufacturer.



It is necessary to check the safety valve each time before putting it into operation. It is checked by manually moving of the membrane from the seat, turning the make-and-break device button always to the right. 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.

When draining the heater, use a recommended drain valve. First, close water input into the heater. Find necessary pressure values in the following table. For proper safety valve operation, a backflow valve must be mounted on the inlet pipes, preventing spontaneous heater draining and hot water penetrating back into the water main. We recommend that the hot water distribution from the heater was as short as possible to minimise heat losses.

Required pressures – Table 3. We recommend that the hot water distribution from the heater was as short as possible to minimise heat losses.



- U - Closure
- P - Safety valve with backflow flap
- M - Manometer
- Z - Test valve
- V - Drain valve

SAFETY VALVE STARTING PRESSURE [MPa]	ADMISSIBLE OPERATING OVER-PRESSURE 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

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 Standards.

Figure 4

2.4 ELECTRIC WIRING

2.4.1 ELECTRIC INSTALLATION GENERAL INFORMATION

Perform the connection according to the scheme. Factory connection must not be changed! In the electric wiring casing remove the partition corresponding with the input wire diameter of $\phi 8$ or $\phi 10$. (Figure 5 and Figure 6). The degree of protection of electric parts of the heater is IP 45. Power input of electric element is 2000 W.

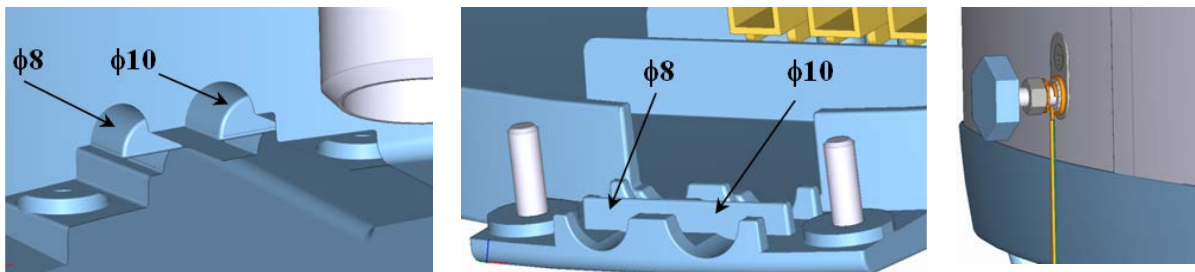


Figure 5

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



- Heater is connected to power supply 1 PEN AC 230V/50Hz via a fixed movable wire.
- 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**.
- To adjust the distance from the wall, connect the wire of the external protective bonding!
- Respect the rules of protection against electrical injuries in accordance with **standards**.

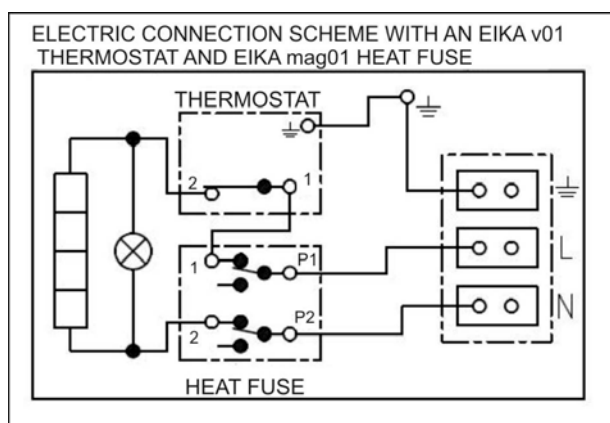


Figure 6

2.5 FIRST HEATER COMMISSIONING



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 a heater to the water main, hot water heating system, electric network, and after testing its safety valve (based on the valve manual attached), the heater may be put into operation

Procedure of putting the heater into operation:

1. Check both water and electric installation; for combined heaters, check the installation to a hot water heating system. Check proper placement of operating and safety thermostat 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 combination faucet.
3. Open the cold water inlet valve to the heater.
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 a leakage (flange lid), we recommend fastening the flange lid bolts.
6. Fasten the electric installation cover.
7. In case of service water heating by electric energy, turn on the electricity (for combined heaters, the heating water valve at the heating water entry to heating insert must be closed).
8. When heating service water with electric energy from the hot water heating system, turn the electricity off and open the valves of heating water input and output, possibly de-aerate the exchanger.
9. When commencing operation, flush the heater until the cloudiness in the water is gone.
10. Make sure to fill in properly the warranty certificate.

2.6 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 on 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 service 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. Water can also be drained through the safety valve. To do so, the safety valve knob shall be turned to the “control” position. **Be careful: 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) which is not jeopardised with 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.**

2.7 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 74°C) the volumetric water gain is approx. 3.5% of the tank content. 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.

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!



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 water pressure in the supply piping is either too high (if higher than 5.5 bars, a pressure control valve has to be fitted), 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. 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 or dye thinners to clean the outer shell of the heater (such as cellulose thinner, trichlor, and the like). For cleaning use a wet clout and add a few drops of liquid cleaning agent for households applications.

2.8 MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

Other potential failures – Table 4.

FAILURE SYMPTOM	LED	SOLUTION
Water is cold	<ul style="list-style-type: none">• LED is 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">• LED is not on	<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">• LED is on	<ul style="list-style-type: none">• failure of one of the coils in the element (2x 1000W)
Temperature of water is not corresponding with the temperature on the control		<ul style="list-style-type: none">• defective thermostat
Water is constantly dripping off the safety valve	<ul style="list-style-type: none">• LED is not on	<ul style="list-style-type: none">• input pressure too high• faulty safety valve

Table 4



Do not try 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 MODES

3.1.1 SERVICING

The service devices of the heater are located under the plastic guard of the control panel (Figure 7).

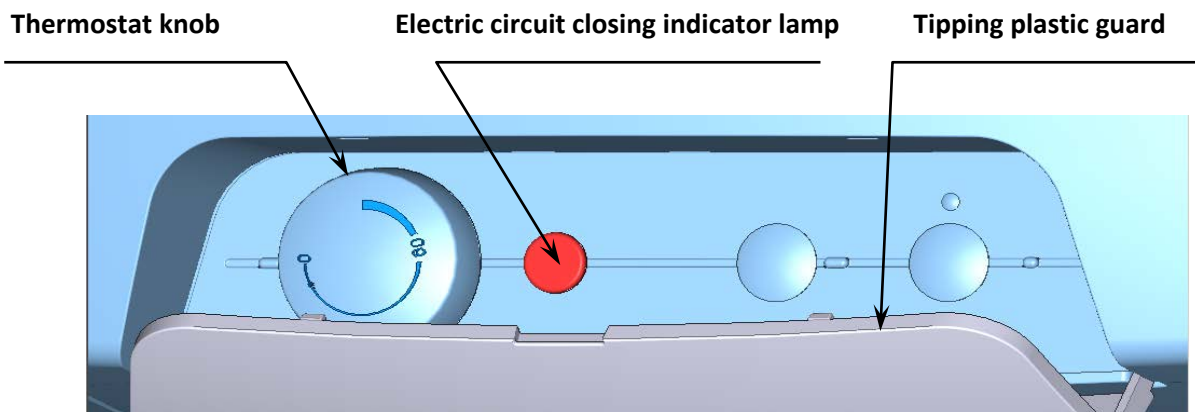


Figure 7

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 8).

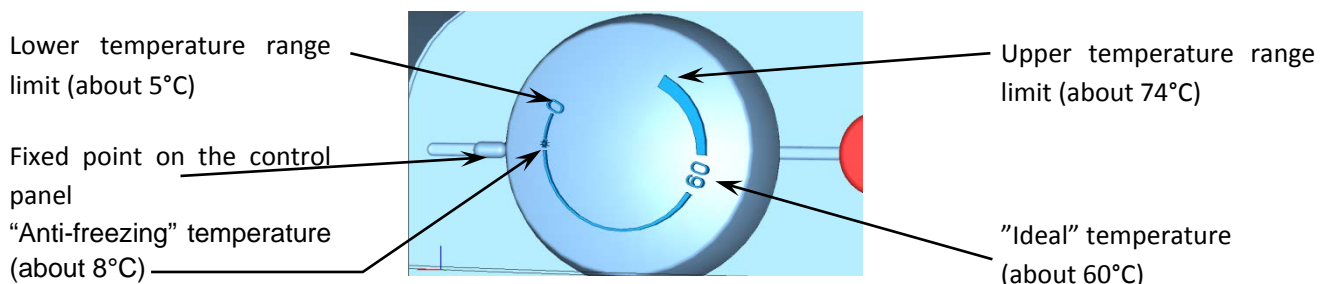


Figure 8



Adjusting the thermostat selector at 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. The maximum value to select is "60".

3.1.3 LIMITING THE REGULATION RANGE; LOCKED SETTINGS

For various safety reasons (unintentional scalding, preventing children or unauthorised person from handling), the regulation range can be **limited**, or the setting on the thermostat **blocked** (Figure 9).

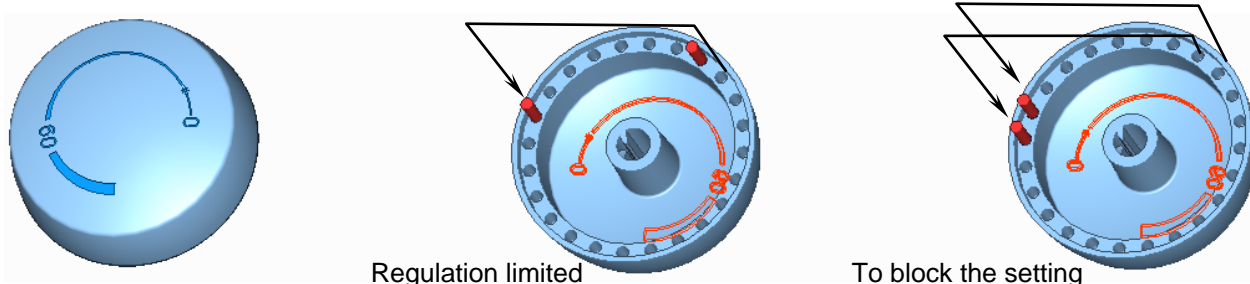


Figure 9

To limit regulation

- off the thermostat knob (it will be tough at first) and you will find two cylindrical pins $\varnothing 2,15\text{mm}$ on the back side of the knob
- pull off one pin and insert it to the corresponding hole of the selected maximum temperature.
- put the knob back on (to the stop).

To block the setting

- set the selected temperature pull off the thermostat knob without changing the setting, there are two pins on the back side of the knob
- Pull off both of them and fit them to the holes corresponding with the selected temperature so that the gap between the pins was without a hole, and the position was opposite the set temperature.

4 IMPORTANT NOTICES

4.1 INSTALLATION REGULATIONS



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

4.2 DISPOSAL OF PACKAGING MATERIAL AND FUNCTIONLESS PRODUCT

A service fee for providing return and recovery of packaging material has been paid for the packaging in which the water heater 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.



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