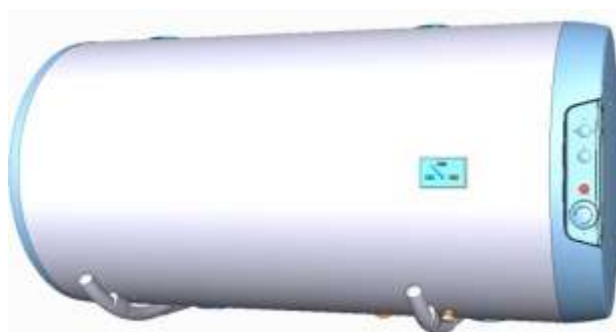


# Operation and Installation Manual



## TANK-TYPE WATER HEATERS FOR HORIZONTAL MOUNTING



OKCV 125  
OKCV 160  
OKCV 180  
OKCV 200

OKCEV 100  
OKCEV 125  
OKCEV 160  
OKCEV 180  
OKCEV 200

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# Read carefully the below instructions prior to the installation of 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.

**The manufacturer reserves the right for engineering modification of the product.**

**The product is designed for permanent contact with drinkable water.**



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## Environment Type:

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%.

## 1. FUNCTION DESCRIPTION

**The heater is designed for accumulation heating of service water** using electricity or thermal energy via an exchanger (for the combined design only).

**Water is heated by an electric element (or a heat exchanger)** in an enamelled thermally insulated accumulator 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. 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. Hot water flows out through the top part, and water flowing in remains in the bottom part of the heater. Pressure principle allows hot water withdrawal at any place from the heater (Fig. 1).

## 2. MESSAGE FOR CUSTOMERS

### 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.

### 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.

### 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 442/2004 and Appendix No 7

Heater types	Energy efficiency class	Heat losses Wh/24hr/l	Nominal capacity (l)	Time of content heating (hours)	Electricity consumption for heating of the contents from 15°C to 65°C in kWh	Heat losses kWh/24hr
OKCV 100 ; OKCEV 100			100	3	6	
OKCV 125 ; OKCEV 125			125	3,8	7,5	
OKCV 160 ; OKCEV 160			152	5	9,5	
OKCV 180 ; OKCEV 180			180	5	10,6	
OKCV 200 ; OKCEV 200			200	5,5	12	

## 3. TECHNICAL DESCRIPTION

The heater tank is made of a steel plate and tested by 0.9 MPa overpressure. The heat exchanger is tested with a pressure of 0.6 Mpa. The inside of the receptacle 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.

Thermowells for placing a heating element and sensors of regulation thermostat and safety fuse are located in the flange lid. Anode rod is mounted on 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.

In combined versions, a heat exchanger is **welded** in the pressure tank. The heat exchanger is only intended for the heating circuit.

## 4. 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 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.

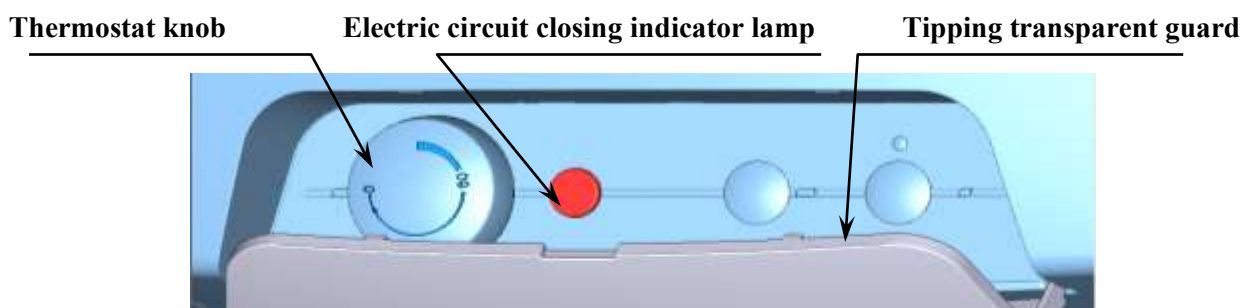
In combined versions, the stop valve on the inlet to the exchanger has to be closed, which prevents heating water in the hot water heating system.

### b) *Service water heating via thermal energy through heat exchanger*

Closing valves of the heat exchanger must be opened which ensures heating water flow from the hot water heating system. Together with a 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 (Fig. 2) as needed, in particular before the beginning of the heating season. The time of heating using the heat exchanger depends on the temperature and flow of water in the hot water heating system. A combined heater is made in universal design – depending on the need of connecting the closing valves to the heating element either from the right, or from the left (Fig.2).

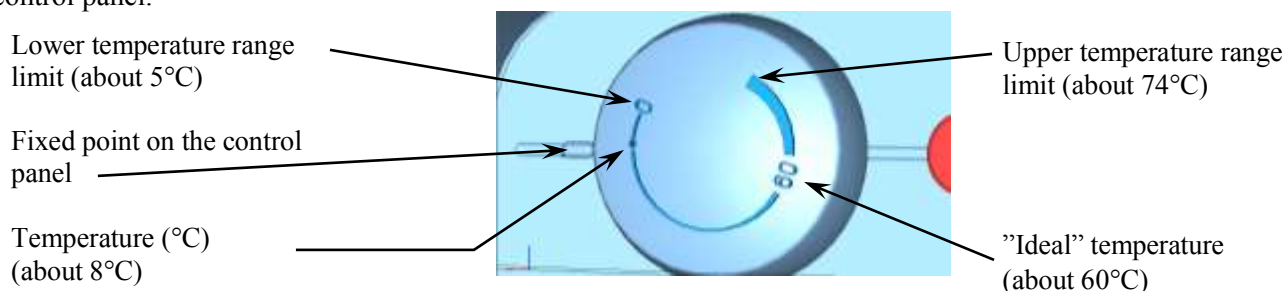
## 5. SERVICING

Service devices of heaters of 100 to 200 l capacity are located under the transparent guard of the control panel.



### Temperature setting

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



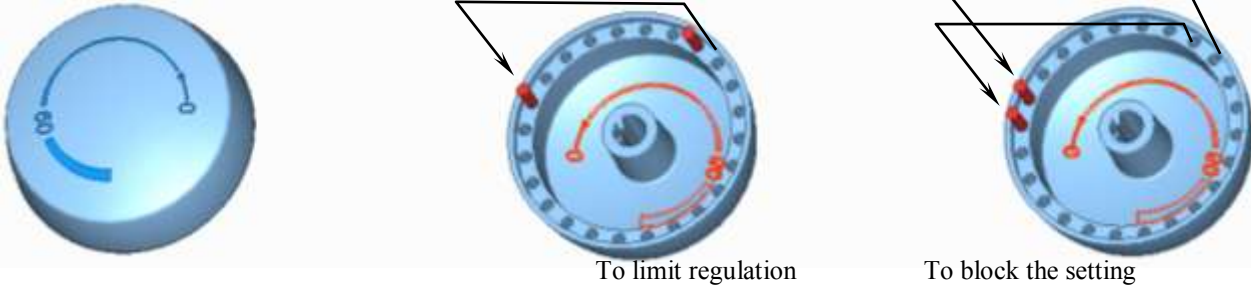
**Notice:** Adjusting the thermostat selector at the left backstop does not mean permanent shutoff of the heating element. When the heater is in use without blocking the daily rate, we do not recommend the temperature to be set above 60°C. The maximum value to select is “60”.

## 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**.

To limit regulation - pull off the thermostat knob (it will be tough at first) and you will find two cylindrical pins  $\phi 2,15\text{mm}$  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.

## 6. WALL MOUNTING

Prior to mounting, check the loading capacity of the wall and, depending on the type of masonry, choose a suitable anchorage material, or reinforce the wall, if needed. Mount the water heater only in horizontal position so that, from the front view, the right edge of the heater was placed at least 600mm from the opposite wall (Fig. 3, 4). In combined and electric heaters, elbows have to be attached to the hot service water inlet and outlet prior to their suspension in brackets right under the ceiling and, by turning these elbows, mounting left has to be determined - either from the right, or from the left (Fig. 1; 2).

With regard to various types of carrying masonry and broad assortment of special anchorage material available at the market, we do **not provide** heaters with this material. The anchorage system has to be selected individually, depending on the conditions. We recommend an **authorised company** perform **mounting on the wall** and anchorage, or discuss the **anchorage with a professional**.

## 7. PLUMBING FIXTURE

Connection of heaters to plumbing fixtures is illustrated on Figures 1 and 2. For potential disconnection of the heater, the service water inlets and outlets must be provided with screw coupling Js 3/4". For operation, the heater must be equipped with a safety valve. Safety valve is mounted on the cold water inlet identified with a blue ring.

**The heaters must be equipped with a drain valve.**

Each hot service water pressure heater must have a membrane spring loaded 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. 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 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.

When draining the heater, use a recommended drain valve. First, close water inlet into the heater. Find necessary pressure values in the following table.

Safety valve starting pressure (MPa)	Admissible operating water heater pressure (Mpa)	Max. pressure in the cold water pipe (Mpa)
0.6	0.6	do 0.48
0.7	0.7	do 0.56
1	1	do 0.8

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.

**When assembling the security equipment, follow ČSN 06 0830.**

## RECOMMENDATIONS:

To set the pressure control valve correctly, we recommend that the pressure in the tank was **20% lower than the opening overpressure of the safety valve.**

We recommend that the hot water distribution from the heater was as short as possible to minimise heat losses.

## 8. CONNECTION OF COMBINED HEATER TO HOT WATER HEATING SYSTEM (Fig. 1, 2)

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.

## 9. ELECTRIC INSTALLATION

The electric wiring scheme is attached to the water heater on the side of the electric installation guard.

Connection, repairs, and wiring inspections may only be implemented by a company (person) authorised to such activity.

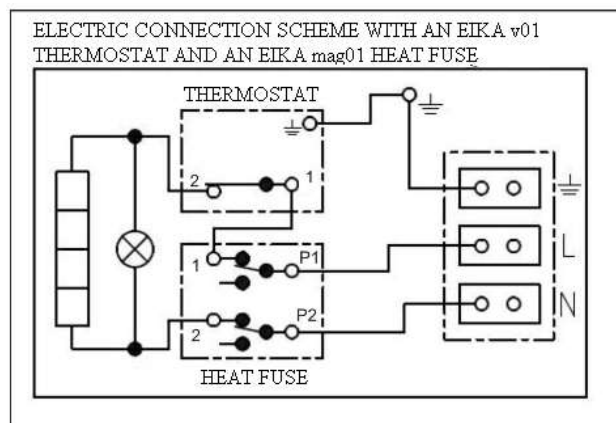
Expert connection must be confirmed on the warranty certificate.

The heater is connected to the 230 V/50 Hz electrical network using a fixed moving conductor with a switch that turns off all network poles and the circuit breaker (protector).

Installations in bathrooms, summer rooms, rest rooms and showers must comply with ČSN 33 2000-7-701.

The degree of protection of electric parts of the heater is IP 44.

Respect the rules of protection against electrical injuries in accordance with ČSN 33 2000-4-41.



## 10. PUTTING THE HEATER INTO OPERATION

After connecting a heater to the water main, 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.

### Procedure:

- 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.
- Open the hot water valve on the combination faucet;

- c) Open the cold water inlet valve to the heater.
- d) As soon as the water starts running through the hot water valve, the heater is filled and the valve closes.
- e) In case of a leakage (flange lid), we recommend fastening the flange lid bolts.
- f) Fasten the electric installation cover.
- g) 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).
- h) 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.
- i) When commencing operation, flush the heater until the cloudiness in the water is gone.
- j) Make sure to fill in properly the warranty certificate.

## 11. HEATER CLEANING AND ANODE ROD EXCHANGE

Repetitive water heating causes limestone sediment on both the tank walls and chiefly the flange lid.

The sedimentation depends on the hardness of water heated, its temperature, and amount of hot water consumed.

**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. Have the company in charge of service affairs clean and exchange 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.

## 12. IMPORTANT NOTICES

- **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.
- 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.
- 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.
- As an exception, the thermal fuse may also switch off due to water overheating caused by overheating the hot water heating system boiler (in case of a combined heater).
- **We recommend you operate the heater with one type of energy.**

### 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.





### 13. FIRE-FIGHTING REGULATIONS FOR INSTALLATION AND USE OF HEATER

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

### 14. INSTALLATION REGULATIONS

#### Regulations and instructions that must be obeyed if the heater is connected

- a) to the heating system
    - ČSN 06 0310 – Thermal systems in buildings – Designing and Installation
    - ČSN 06 0830 – Thermal systems in buildings – Protecting devices
  - b) to the electrical network
    - ČSN 33 2180 – Connecting of electric devices and appliances
    - ČSN 33 2000-4-41 – Low voltage electric installations Protective measures to ensure safety – Protection against electric shock
    - ČSN 33 2000-7-701 – Low voltage electric installations Single-purpose devices and devices in special premises – Premises with tub or shower to hot service water heating system
  - c) to the hot water heating system
    - ČSN 06 0320 – **Thermal systems in buildings – Hot water preparation – Design and Project Engineering**
    - ČSN 06 0830 – Thermal systems in buildings – Protecting devices
    - ČSN 73 6660 – Internal water conduits
    - ČSN 07 7401 – Water and steam for thermal energy equipments with working steam pressure up to 8 Mpa
    - ČSN 06 1010 – Tank water heaters with water and steam heating; and combined with electric heating. Technical requirements. Testing.
- ČSN 75 5455 – Calculation of water installations inside buildings  
 ČSN EN 12 897 – Water supply – Indirectly heated closed tank type heaters

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

### 15. MOST FREQUENT FUNCTION FAILURES AND THEIR CAUSES

Water is cold	LED is on	The temperature set on the thermostat is too low Heating element failure
	LED is not on	No supply voltage; thermostat failure; Safety thermostat shut off probably due to failed operation thermostat
Water is not warm enough	LED is on	failure of one of the coils in the element (contains 2)
Temperature of water is not corresponding To block the setting:		Defective thermostat
Water is constantly dripping off the safety valve	LED is not on	Input pressure too high; faulty safety valve

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.



## 16. PRODUCT ACCESSORIES

The product is supplied with a safety valve, thermometer, elements to be used for suspension of the heater on the wall, i.e. brackets (bended stiffened tubes) – see Fig. 3, 4. The above parts are packed and placed in the packaging in the top part of the heater.

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

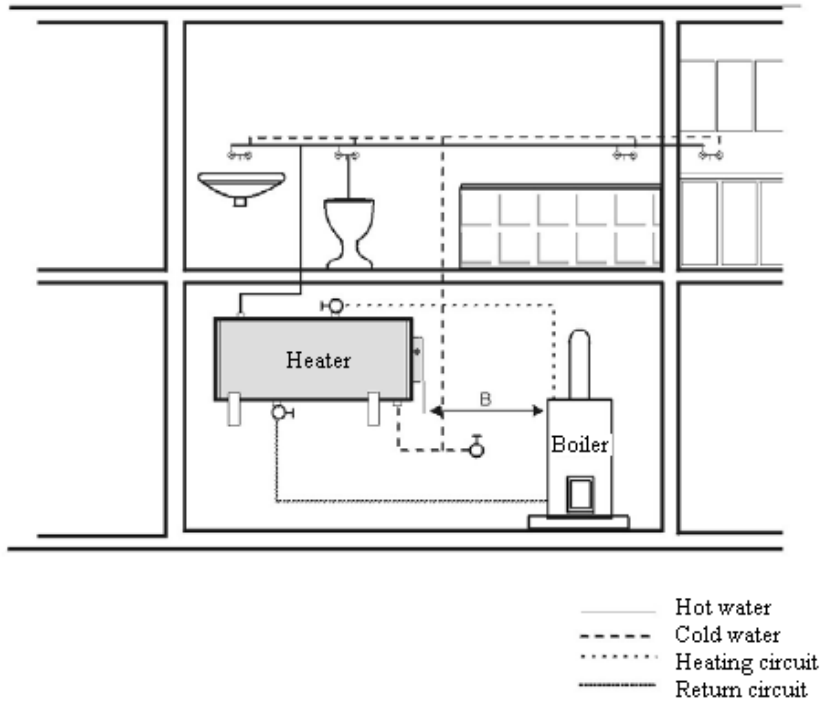
Also additional fastening elements – hinges (Fig. 5) – can be purchased with the heater. It is a set of two hinges and bolts to fasten them to the heater, and an earthing bolt. The catalogue number of this set is 102000702..

Type				OKCV 125	OKCV 160	OKCV 180	OKCV 200
		OKCEV 100	OKCEV 125	OKCEV 160	OKCEV 180	OKCEV 200	
Capacity	l	100	125	152	180	200	
Max operating overpressure in the tank	MPa	0,6					
Maximum operating overpressure in the excha	MPa	-	0,4				
Electric connection	V	1 PE-N 230V/50Hz					
Power input	W	2000			2200		
El.protection		IP 44					
Max temperature of HSW	°C	80					
Recommended HSW temperature	°C	60					
Height of the heater	mm	881	1046	1235	1187	1287	
Diameter of the heater	mm	524	524	524	584	584	
Max weight of the heater without heater	kg	41	59/47	68/56	80/69	84/73	
Time of el.heating from 10°C to 60°C	hod	3	3,8	5	5	5,5	
Heat losses/energy efficiency class	kWh/24h						
Type				OKCV 125	OKCV 160	OKCV 180	OKCV 200
Exchanger heat surface	m <sup>2</sup>	-	0,7	0,7	0,75	0,75	
Rated thermal output at heating water temperature of 80°C and flow 720 l/h	W	-	16800	16800	18000	18000	
Time of heating by exchanger from 10°C to 60	min	-	26	35	38	43	
Rated thermal output at heating water temperature of 80°C and flow 310 l/h	W	-	10260	10260	11000	11000	
Time of heating by exchanger from 10°C to 60	min	-	43	53	63	72	

\*The OKCEV series heaters do not have a heat exchanger.

Fig. 1

**TANK TYPE COMBINED WATER HEATER;  
HOT WATER DISTRIBUTION**



**TANK TYPE ELECTRIC WATER HEATER;  
HOT WATER DISTRIBUTION**

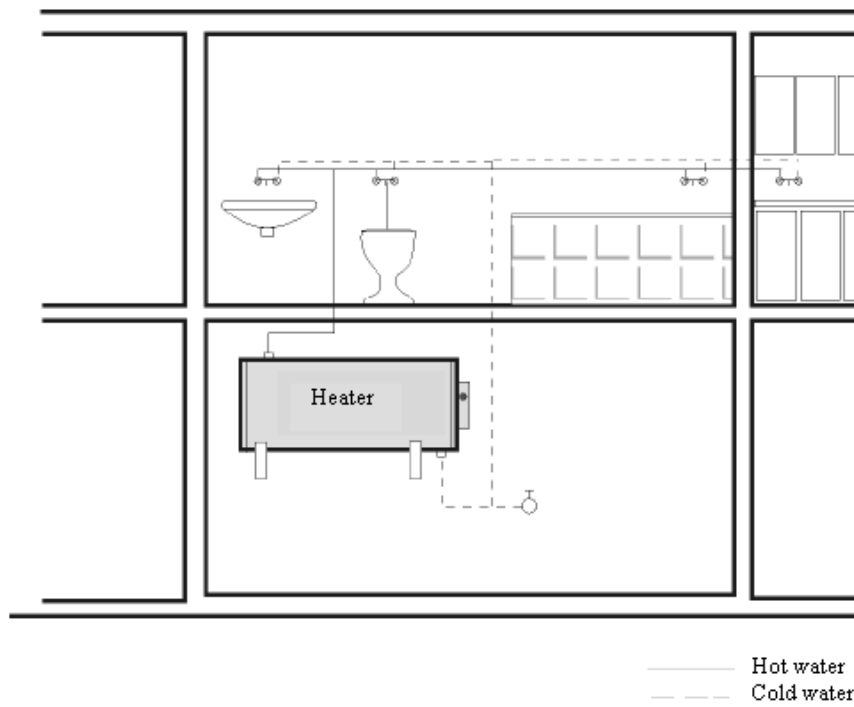
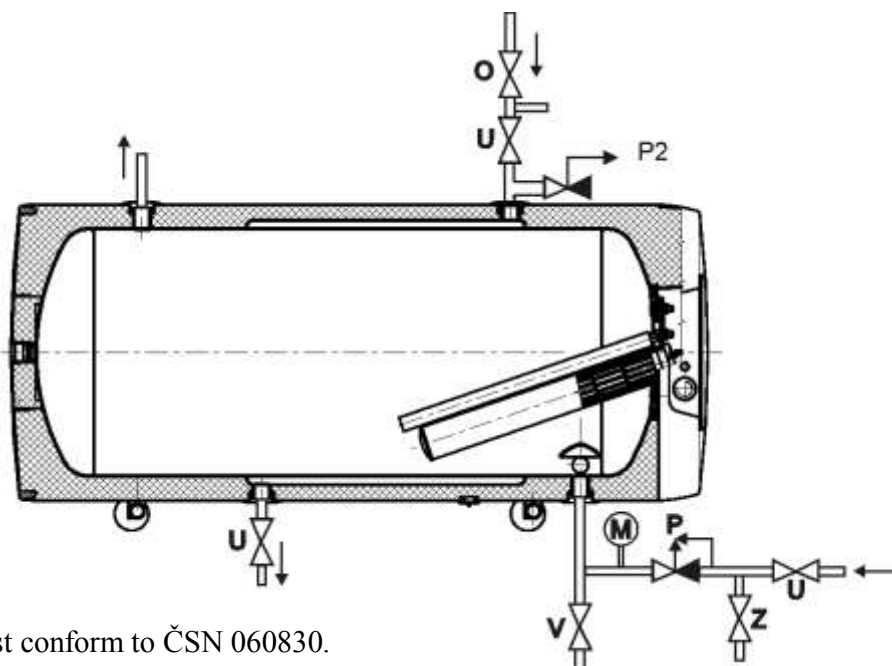


Fig. 2

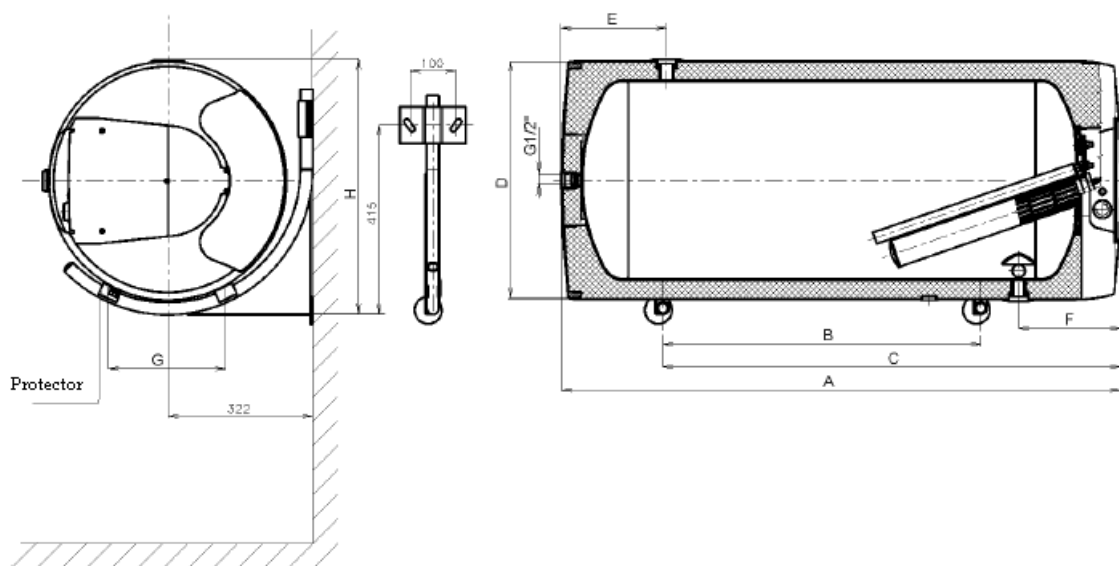
- 0 - Air outlet valve
- U – Shut-off valve
- P1 - Safety valve with backflow flap
- P2 - Safety valve for heating circuit
- M - Manometer
- Z – Test valve
- V - Drain valve



Connection on the cold water inlet must conform to ČSN 060830.

Fig. 3

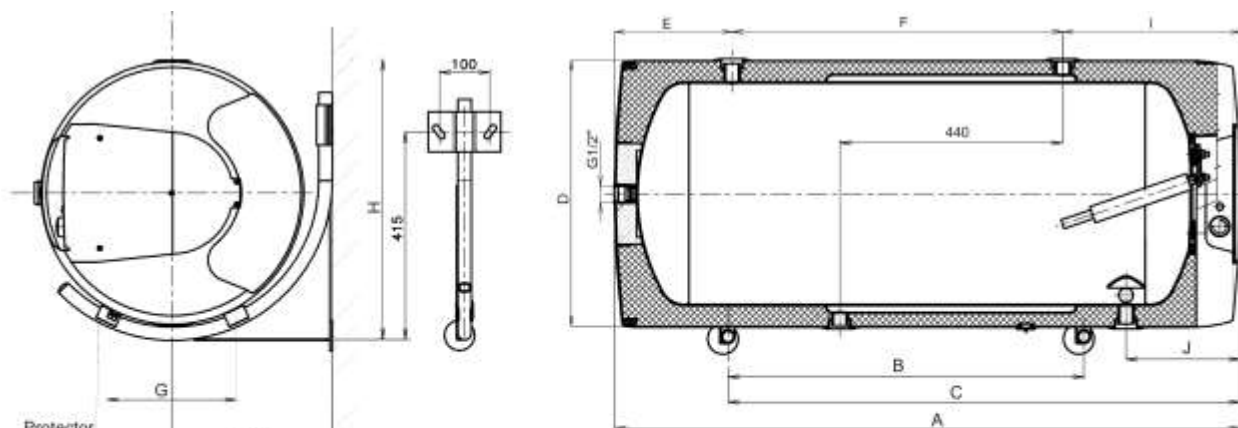
**OKCEV 100, OKCEV 125, OKCEV 160, OKCEV 180, OKCEV 200**



Type	OKCEV 100	OKCEV 125	OKCEV 160	OKCEV 180	OKCEV 200
A	881	1046	1235	1187	1287
B	435	600	750	600	600
C	758	908	1008	907	907
D	524	524	524	584	584
E	185	184	230	254	254
F	225	225	225	252	252
G	200	200	200	240	240
H	559	559	559	616	616

Fig. 4

OKCV 125, OKCV 160, OKCV 180, OKCV 200



TYP	OKCV 125	OKCV 160	OKCV 180	OKCV 200
A	1046	1235	1187	1287
B	600	750	600	600
C	908	1008	907	907
D	524	524	584	584
E	184	230	258	255
F	513	650	570	670
G	200	200	240	240
H	559	559	616	616
I	350	350	358	362
J	225	225	252	252

Fig. 5  
Fitting of hinges and indicator onto the heater  
- the hinges can be purchased as accessories

Insert the indicator into the opening in the shell in the direction of the arrow  
(The indicator is packed with the heater, and is placed in the top part of the packaging.)

