

OPERATING AND INSTALLATION MANUAL



WATER HEATERS STATIONARY ELECTRICAL



OKCE 100 S/2,2 kW
OKCE 125 S/2,2 kW
OKCE 160 S/2,2 kW
OKCE 160 S/3-6 kW
OKCE 200 S/2,2 kW

OKCE 200 S/3-6 kW
OKCE 250 S/2,2 kW
OKCE 250 S/3-6 kW



OKCE 300 S/1 MPa
OKCE 400 S/1 MPa
OKCE 500 S/1 MPa
OKCE 750 S/1 MPa
OKCE 1000 S/1 MPa

Družstevní závody Dražice-strojírna s.r.o.
(Works Cooperative - Dražice – Machine Plant, Ltd.)
294 71 Benátky nad Jizerou
tel.: 326 370 911, fax: 326 370 980
www.dzd.cz
dzd@dzd.cz

Read carefully the below instructions prior to the installation of the heater!

Data sheet pursuant to Directive No 442/2004 Coll. and Annex 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 volume from 15°C to 65°C (in kWh)	Heat losses (kWh/24hr)
OKCE 100 S/2,2 kW	C	8,8	100	3	6	0,88
OKCE 125 S/2,2 kW	C	8,7	125	3,5	7,5	1,09
OKCE 160 S/2,2 kW	C	8,7	160	4,5	9,5	1,39
OKCE 200 S/2,2 kW	B	7	200	5,5	12	1,4
OKCE 250 S/2,2 kW	B	6,9	250	7	15	1,73
OKCE 160 S/3-6 kW	C	8,7	160	3,2-2,5-1,6	9,5	1,39
OKCE 200 S/3-6 kW	B	7	200	4-3-2	12	1,4
OKCE 250 S/3-6 kW	B	6,9	250	5-3,8-2,5	15	1,73

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, placement, construction, maintenance, and other information about storage pressure water heater. Product's reliability and safety is proven by tests implemented by the Engineering Test Institute in Brno.

We believe you will be fully satisfied with our product.

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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1. USE

OKCE line water heaters use only electricity for heating. Their nominal performance provides sufficient amount of hot water for flat units, premises, restaurants, and similar establishments.

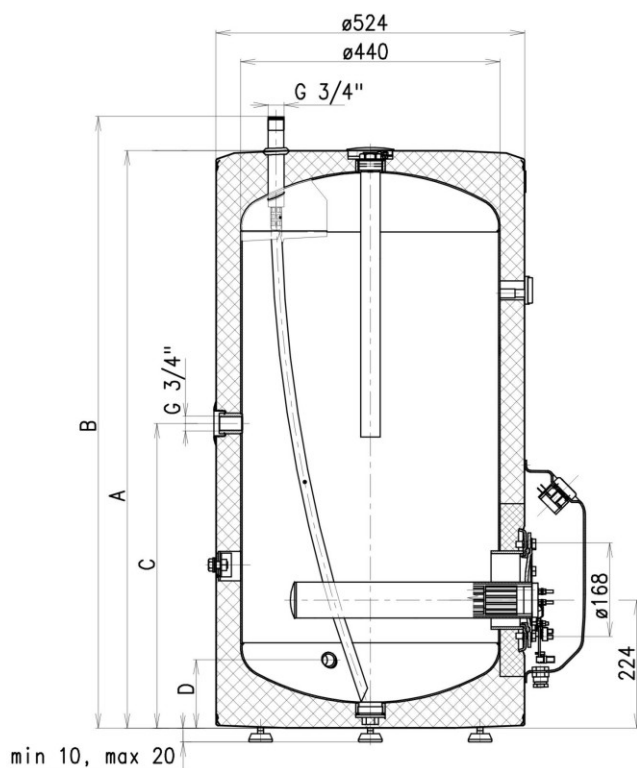
2. PRODUCT DESCRIPTION

The heater tank is welded from a steel sheet; it is entirely coated with hot water resistant enamel. For additional corrosion protection a magnesium anode is mounted in the upper part of the heater to adjust the electric potential inside the tank, lowering the risk of corrosion. All types have the outlets of hot and cold water and a circulation opening welded to them. The tank is insulated with 65 mm of polyurethane foam. The heater shield consists of a steel, powder-paint coated, sheet; the connecting parts are metal coated. Under a plastic cover on the side of the heater, there is a cleaning and revision opening ended with a flange; various performance heating units may be mounted into the opening. The heater is to be placed on the ground.

Tanks between 100 and 250 litres are tested with the pressure of 0.9 MPa; 300 litre tanks are tested with 1.5 MPa.

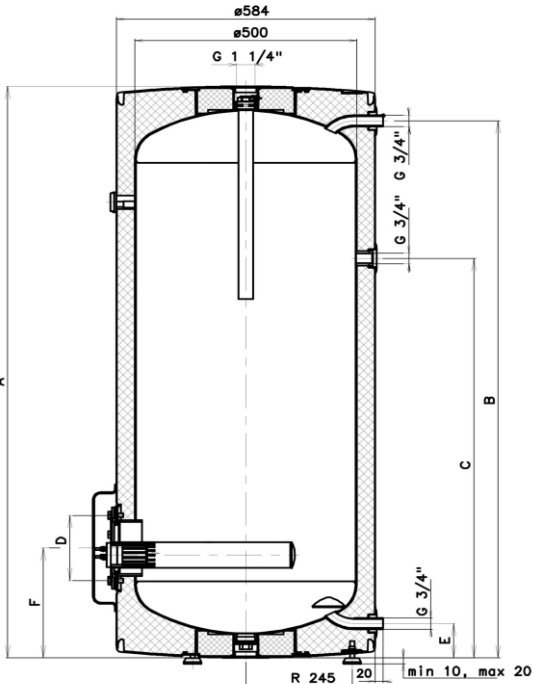
3. HEATER DIMENSIONS

OKCE 100 S/2.2 kW; OKCE 125 S/2.2 kW;



TYPE	OKCE 100 S/2,2 kW	OKCE 125 S/2,2 kW
A	815	980
B	865	1034
C	517	517
D	116	116

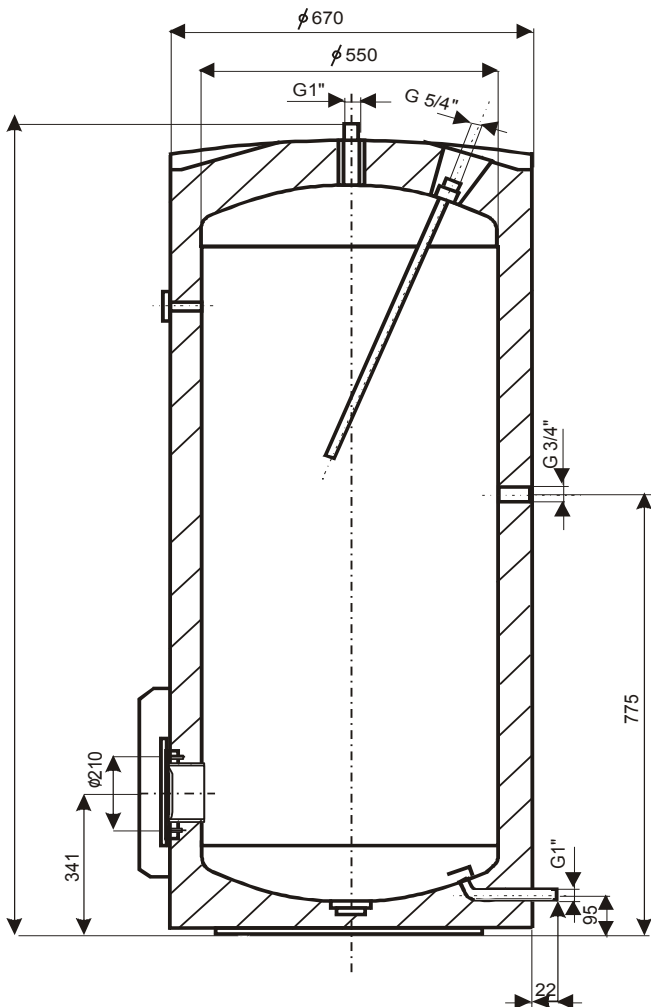
OKCE 160 S/2,2 kW, OKCE 200 S/2,2 kW, OKCE 250 S/2,2 kW
OKCE 160 S/3-6 kW, OKCE 200 S/3-6 kW, OKCE 250 S/3-6 kW



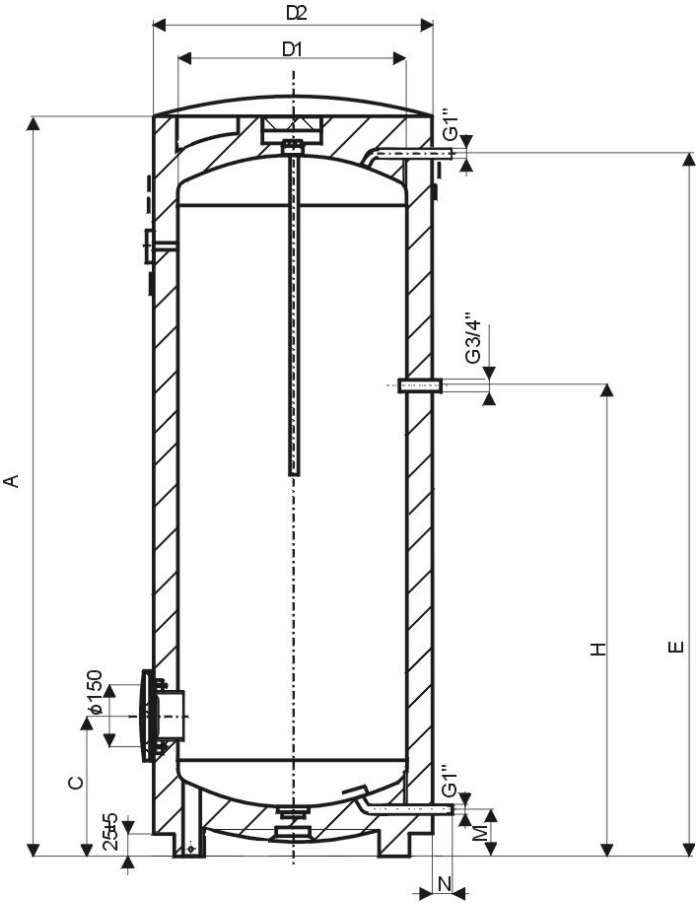
TYPE	OKCE 160 S/2,2 kW	OKCE 200 S/2,2 kW	OKCE 250 S/2,2 kW
A	1052	1362	1542
B	969	1281	1465
C	526	861	1065
D	168	168	168
E	82	82	82
F	265	265	265

TYPE	OKCE 160 S/3-6 kW	OKCE 200 S/3-6 kW	OKCE 250 S/3-6 kW
A	1052	1362	1542
B	969	1281	1465
C	526	861	1065
D	227	227	227
E	82	82	82
F	297	297	297

OKCE 300 S/1 MPa

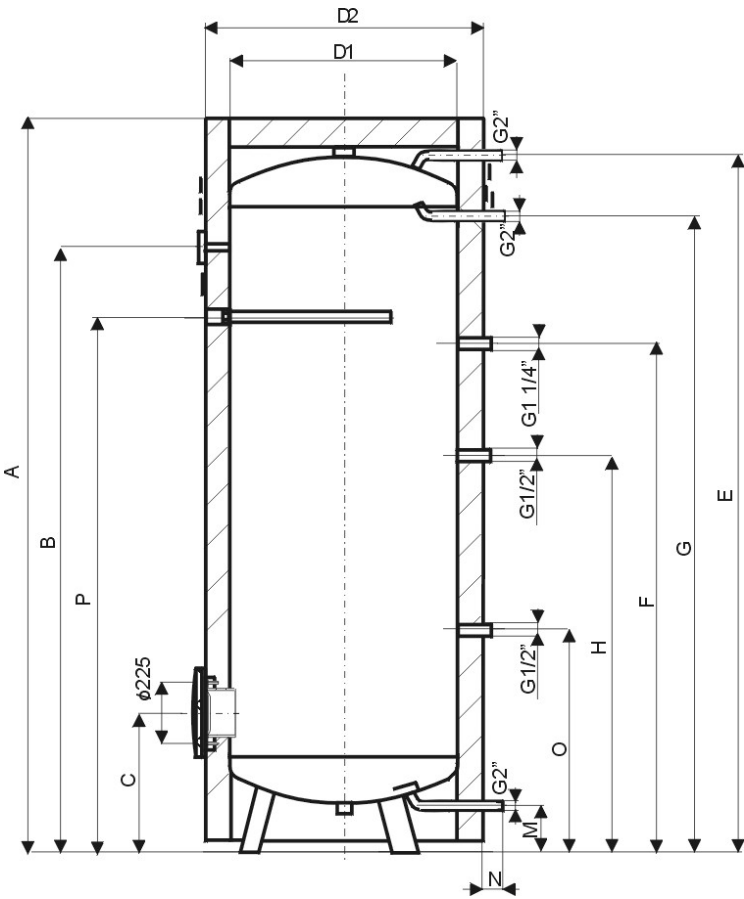


OKCE 400 S/1 MPa, OKCE 500 S/1 MPa



	OKCE 400/S 1 MPa	OKCE 500/S 1MPa
A	1591	1921
C	275	275
D1	597	597
D2	701,5	701,5
E	1523	1853
H	1111	1264
M	55	55
N	25	25

OKCE 750 S/1 MPa, OKCE 1000 S/1 MPa



	OKCE 750 S/1MPa	OKCE 1000 S/1MPa
A	1998	2025
B	1643	1671
C	378	386
D1	750	850
D2	910	1010
E	1908	1911
F	1143	1154
G	1638	1646
H	943	951
M	88	92
N	45	45
O	288	296
P	1473	1511

4. TECHNICAL PARAMETERS

		OKCE 100S/2,2 kW	OKCE 125S/2,2 kW	OKCE 160S/2,2 kW OKCE 160S/3-6 kW	OKCE 200S/2,2 kW OKCE 200S/3-6 kW	OKCE 250S/2,2 kW OKCE 250S/3-6 kW
Capacity	l	100	125	160	200	250
Weight	kg	44	52	58/67	72/81	80/89
Operating pressure of accum	MPa	0,6				
Max temperature of HSW	°C	80				
Heating time from 10 to 60°C	h	3	3,5	4,5 / 3,2-1,6	5,5 / 4-2	7 / 5-2,5
Heat losses/Energy efficiency class	kWh/24 h	0,88 / C	1,09 / C	1,39 / C	1,4 / B	1,72 / B

		OKCE 300S/1 MPa	OKCE 400S/1 MPa	OKCE 500S/1 MPa	OKCE 750S/1 MPa	OKCE 1000S/1 MPa
Capacity	l	300	400	500	750	1000
Weight	kg	90	103	121	162	211
Operating pressure of accum	MPa	1				
Max temperature of HSW	°C	80				
Heating time from 10 to 60°C	h	Based on selected power input of a heating unit				
Heat losses/Energy efficiency class	kWh/24 h	1,86 / B	2 / B	2,3 / A	3,6 / A	3,9 / A

5. WIRING

Wiring for: OKCE 100 S/2,2 kW, OKCE 125 S/2,2 kW, OKCE 160 S/2,2 kW, OKCE 160 S/3-6 kW, OKCE 200 S/2,2 kW, OKCE 200 S/3-6 kW, OKCE 250 S/2,2 kW, OKCE 250 S/3-6 kW

Water heater is equipped with a universal electric heating unit with either a set or adjustable heating elements' performance (except OKCE 300 S/1 Mpa). A heating unit consists of a flange, to which one or three wells for ceramic heating elements and one thermowell are welded (see fig.). A unit is attached by either 8 M 10 screws with a 168 mm clearance or 12 M 12 screws with a 210 mm clearance. In the wiring plastic cover, there is a thermostat and a safety fuse; heater operation control light; and a lead-in wire bushing.

The sensors must be inserted all the way in; first the thermostat and then the safety fuse.

The performance of heating unit may be adjusted based on either required heating time or connecting possibilities of electric energy distribution in the place of use.

Parameters of an electric heating unit for: OKCE 100 S/2,2 kW, OKCE 125 S/2,2 kW, OKCE 160 S/2,2 kW, OKCE 160 S/3-6 kW, OKCE 200 S/2,2 kW, OKCE 200 S/3-6 kW, OKCE 250 S/2,2 kW, OKCE 250 S/3-6 kW

Type	Performance (kW)	Voltage (V/Hz)	Build-up length l (mm)	IP Protection	Weight (kg)	Mounting
TPK 168 - 8/2,2 kW	2,2	1 PE-N ~ 230 V/50 Hz	405	IP 44	5	8 x M10

For: OKCE 300 S/1 MPa – the heating element has to be additionally purchased

Type	Performance (kW)	Voltage (V/Hz)	Build-up length l (mm)	IP Protection	Weight (kg)	Mounting
TPK 210 - 12/2.2 kW	2,2	1 PE-N ~ 230 V/50 Hz	440	IP 44	9	12 x M12
TPK 210 - 12/3-6 kW	3 - 4 - 6	3 PE-N ~ 400 V/50 Hz	440	IP 44	15	12 x M12
TPK 210 - 12/5-9 kW	5 - 7 - 9	3 PE-N ~ 400 V/50 Hz	550	IP 44	18	12 x M12
TPK 210 - 12/8-12 kW	8 - 10 - 12	3 PE-N ~ 400 V/50 Hz	550	IP 44	18	12 x M12

After the heater is connected to electric network, the heating element starts heating water. The element is turned on and off by a thermostat. Thermostat can be set as per your need within the range from 5°C to 74°C. We recommend setting service water to maximum temperature of 60°C. This temperature ensures an optimal operation of the heater, reduces heat losses and saves electricity. 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).

When shutting the heater out for an extended period, in winter you can set the thermostat to the snowflake sign preventing the water from freezing, or turn off the inlet of electricity to the heater.

Connection, repairs, and wiring inspections may only be implemented by company (person) authorised to such activity. Expert connection must be confirmed on the warranty certificate.

The heater is connected to the electric network using a solid moving conductor with a switch that turns off all network poles and the circuit breaker (protector).

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

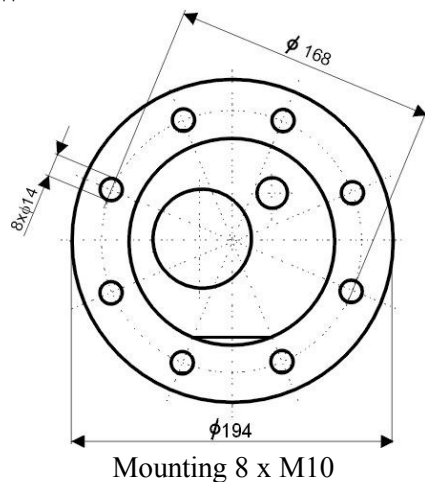
The degree of protection of electric parts of the heater is IP 44.

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

Heating unit - flanges

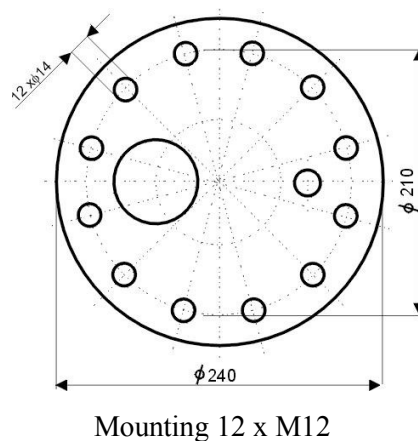
**OKCE 100 S/2.2 kW; OKCE 125 S/2.2 kW;
OKCE 160 S/2.2 kW; OKCE 200 S/2.2 kW;
OKCE 250 S/2.2 kW**

TPK 168-8/2.2 kW



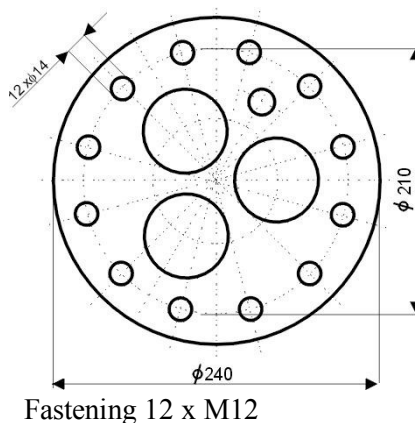
OKCE 300 S/1 MPa

TPK 210-12/2.2 kW



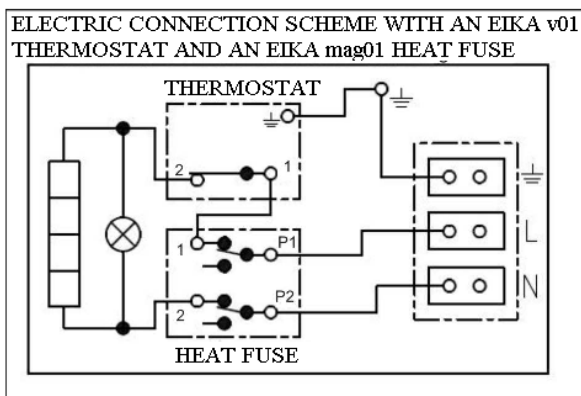
**OKCE 160 S/3-6 kW; OKCE 200 S/3-6 kW;
OKCE 250 S/3-6 kW; OKCE 300 S/1 MPa;
TPK 210-12/3-6 kW**

OKCE 300 S/1 MPa
TPK 210-12/5-9 kW
TPK 210-12/8-12 kW

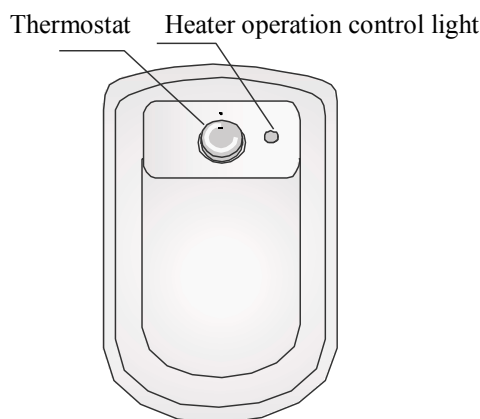


Wiring scheme

Notice: Factory connection must not be changed!
Heating unit 2.2 kW



Cover of wiring with control

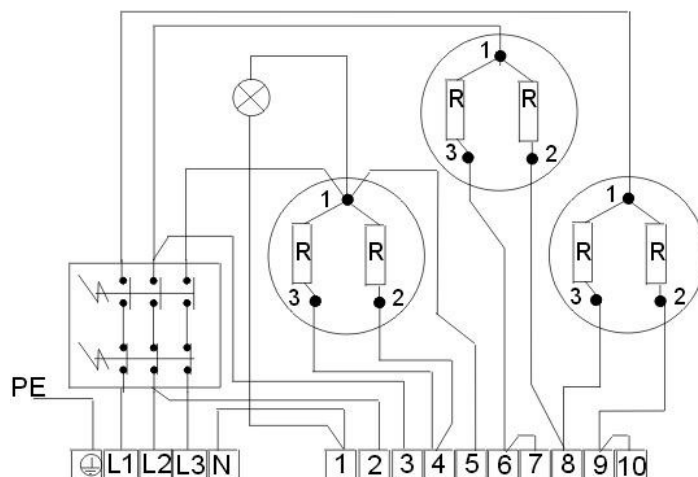


Heating unit 3-6 kW

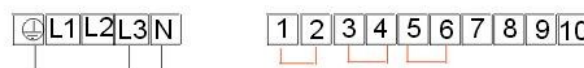
The 3-6 kW heating unit allows 4 types of connection based on either required time of heating or possibilities of electric network in the place of use.

TPK 3-6 kW R ~ 1 kW

To achieve chosen performance of the heating unit, connect the inlet conductor to L1, L2, L3, and N terminal board, and interconnect the clips on the 1-10 terminal board in accordance with the following schemes:



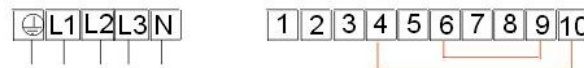
3 kW 1 PE - N AC 230 V / 50 Hz



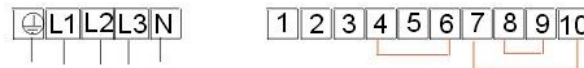
3 kW 2 PE - N AC 400 V / 50 Hz



4 kW 3 PE - N AC 400 V / 50 Hz



6 kW 3 PE - N AC 400 V / 50 Hz



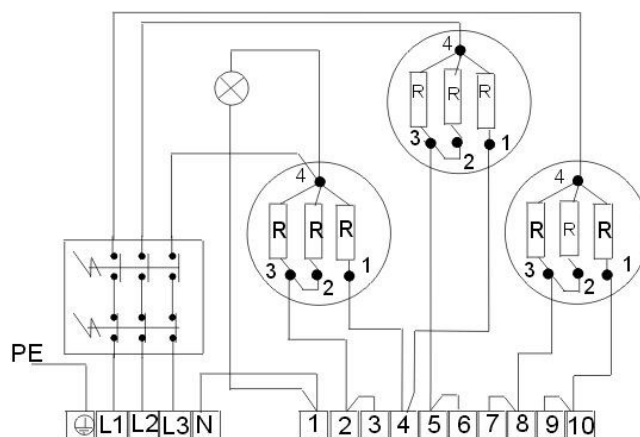
OKCE 300 S/1 MPa

TPK 210-12/5-9 kW

TPK 210-12/8-12 kW

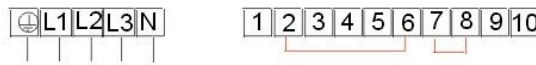
TPK 5-9 kW R ~ 1 kW

TPK 8-12 kW R ~ 1.33 kW

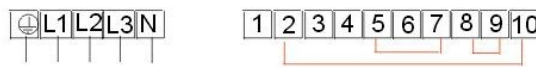


TPK 5-9 kW

5 kW 3 PE - N AC 400 V / 50 Hz



7 kW 3 PE - N AC 400 V / 50 Hz

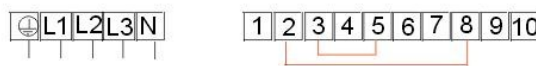


9 kW 3 PE - N AC 400 V / 50 Hz

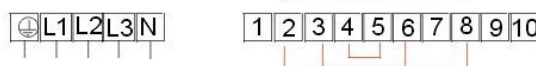


TPK 8-12 kW

8 kW 3 PE - N AC 400 V / 50 Hz



10,5 kW 3 PE - N AC 400 V / 50 Hz



12 kW 3 PE - N AC 400 V / 50 Hz



Wiring for:

OKCE 300 S/1MPa, OKCE 400 S/1MPa , OKCE 500 S/1MPa, OKCE 750 S/1MPa, OKCE 1000 S/1MPa

Heating units use

Capacity	Flange size	Time of heating from 10°C to 60°C (hours)							
l	mm	8	6	5	4	3	2,5	2	1,5
400	flange $\phi 150$	RDU 18-3	RDU 18-3,8	RDU 18-5	RDU 18-6	RDW 18-7,5	RDW 18-10	RSW 18-12	RSW 18-15
500	flange $\phi 150$	RDU 18-3,8	RDU 18-5	RDU 18-6	RDW 18-7,5	RDW 18-10	RSW 18-12	RSW 18-15	
750	flange $\phi 150$	RDU 18-6	RDW 18-7,5	RDW 18-10	RSW 18-12	RSW 18-15			
	flange $\phi 225$		SE 377-8	SE 378-9,5	SE 377-11	SE 378-14	SE 377-16	SE 378-19	
1000	flange $\phi 150$	RDW 18-7,5	RDW 18-10	RSW 18-12	RSW 18-15				
	flange $\phi 225$	SE 377-8	SE 378-9,5	SE 377-11	SE 378-14	SE 377-16	SE 378-19		

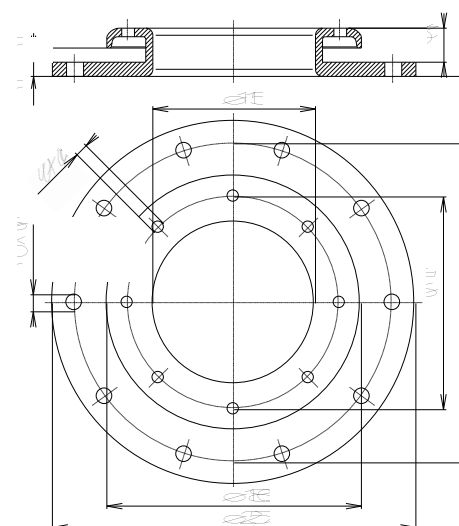
Capacity	Time of heating from 10°C to 60°C (hours)									
l	8	6	4,5	3,5	3	2,5	2,1	1,8	1,6	1,4
300	TPK 210/2,2	TPK 210/3-6	TPK 210/3-6	TPK 210/5-9	TPK 210/3-6	TPK 210/5-9	TPK 210/8-12	TPK 210/5-9	TPK 210/8-12	TPK 210/8-12
Connection	2,2 kW	3 kW	4 kW	5 kW	6 kW	7 kW	8 kW	9 kW	10 kW	12 kW

Reduction flange 225 / 150

Type	Performance	Connection	Element length (mm)	Weight (kg)
REU 18 - 2,5	2,5	1 PE-N AC 230 V / 50 Hz	460	3
RDU 18 - 2,5	2,5	3 PE-N AC 400 V / 50 Hz	460	3,3
RDU 18 - 3	3	3 PE-N AC 400 V / 50 Hz	460	3,4
RDU 18 - 3,8	3,8	3 PE-N AC 400 V / 50 Hz	460	3,5
RDU 18 - 5	5	3 PE-N AC 400 V / 50 Hz	460	3,5
RDU 18 - 6	6	3 PE-N AC 400 V / 50 Hz	460	3,5
RDW 18 - 7,5	7,5	3 PE-N AC 400 V / 50 Hz	460	3,7
RDW 18 - 10	10	3 PE-N AC 400 V / 50 Hz	460	4
RSW 18 - 12	12	3 PE-N AC 400 V / 50 Hz	530	4
RSW 18 - 15	15	3 PE-N AC 400 V / 50 Hz	630	4,2
SE 377*	8,0-11-16	3 PE-N AC 400 V / 50 Hz	610	8
SE 378*	9,5-14-19	3 PE-N AC 400 V / 50 Hz	610	11,5

* Only for 750 and 1,000 litre boilers

With a reduction flange, types REU, RDU, RDW, and RSW may be used for 750 and 1,000 litre boilers.



6. SECURITY EQUIPMENT

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 ČSN 06 0830 standard. 300 l 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 the branch led above the heater. 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 with 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.

Before putting the safety valve into operation it always needs to be checked by manual removal of the membrane from the valve seat and 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 can drip from the safety valve through the drain pipe; the pipe must be freely open to the atmosphere, placed vertically and shall be in an environment free of temperatures below freezing.

When draining the heater, use a recommended drain valve. First, close water supply into the heater.

Find necessary pressure values in the following table:

For proper safety valve operation, a backflow valve must be mounted on the input pipes, preventing spontaneous heater draining and hot water penetrating back into the water main.

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

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

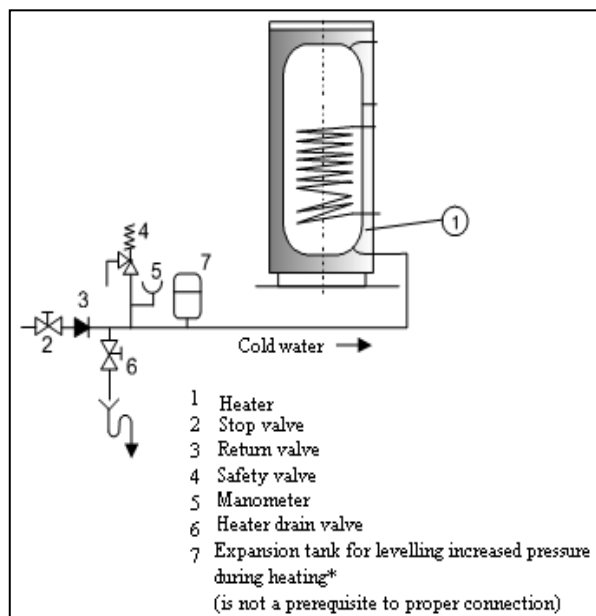
7. PUTTING THE HEATER INTO OPERATION

Cold Water Inlet Scheme

After connecting the heater to the water main, electrical power system, and after checking the safety valve (following the instructions attached to the valve), the heater can be put into operation.

Procedure:

- Check the water main and wiring; Check proper placement of thermostat sensors;
- Open the hot water valve on the combination faucet;
- open the cold water inlet valve to the heater;
- when the water starts flowing through the hot water valve, the filling of the heater is finished and the valve needs to be closed;
- If a flange lid leak is discovered, the flange lid bolts need to be tightened;
- Fasten the electric installation cover;
- When commencing operation, flush the heater until the cloudiness in the water is gone.
- Make sure to fill in properly the warranty certificate.



8. 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, if necessary, inspection and possible replacement of 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 discharging water from the heater, the mixing valve of the hot water tap must be open in order to avoid creating underpressure that would prevent water discharge.

9. IMPORTANT NOTICES

- Check and exchange the Mg anode regularly.
- No stop valves can be put between the heater and the safety valve.
- If the overpressure in the heater main exceeds 0.48 MPa, a reduction valve must be mounted before the safety valve.
- All outlets of hot water must be equipped with a combination faucet.
- 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, setting, and regulation feature exchange, may only be implemented by a service company.

Notice: To prevent formation of bacteria (e.g. *Legionella pneumophila*) within stack heating it is recommended, if absolutely necessary, to increase the temperature of HSW periodically for a transitional period of time to at least 70°C. It is also possible to make use of another way of HSW disinfecting.

10. SPARE PARTS

- | | | |
|-------------------------------|-------------------------------------|-----------------------------|
| - Flange lid | - flange lid seal | - set of M12 (or M10) bolts |
| - thermostat and thermal fuse | - Magnesium anode | - insulation flange lid |
| - control lights with wires | - control button for the thermostat | - capillary thermometer |

When ordering spare parts, give part name, type, and type number from the heater label.

11. INSTALLATION REGULATIONS

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

- to the heating system
 - ČSN 06 0310 – Thermal systems in buildings – Designing and Installation
 - ČSN 06 0830 – Thermal systems in buildings – Protecting devices
- 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 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 12897 – Water supply – Indirectly heated closed tank-type water heaters

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

12. FURTHER INFORMATION

Notice: 300-1000 litre capacity heaters are screwed onto the bottom wooden palette with M12 screws. When the heater is released from the palette and prior to its putting into operation, 3 adjustable legs supplied as the product accessories have to be installed. With these legs, the heater may be positioned vertically to the base, within 10 mm.

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. FUNCTIONAL DEFECTS

	Defect	Control light	Failure
1	Water in the tank is cold	is on	- Heating element failure - Some elements are not heating
2	Water in the tank is not warm enough	is on	- Failure of one of the elements - Failure of one of the heating coils in the element *
3	Water in the tank is cold	is not on	- Thermostat failure - The safety fuse turned off electricity supplye - Power supply outside the heater discontinued
4	Water in the tank does not correspond with temperature set	is on	- Thermostat failure

* Each heating element is made of two or more parallel connected coils. The element works but on lower output.

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.

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14. ASSEMBLY GUIDE FOR ZIP-FASTENER INSULATION (Only concerns heaters with the capacity of 750 and 1,000 litres)

Two people are enough to implement the insulation assembly; three people are required for larger boilers; the assembly must be implemented in areas with the temperature of at least 18 °C.

If the insulation includes tank bottom insulation, the latter must be mounted first. The insulation is then inserted around the boiler (heater), respecting the pre-pressed insulation openings. Pull gently in the direction of the arrows to put the two zip insulation sides together (see Fig. 6) so that the insulation does not draw down and the openings in the insulation fit the boiler inputs and outputs. It must be secured that, before closing, both halves of the zip-fastener are not further than 20 mm apart (see Fig.7). No foam must get into the zip-fastener on closing.

After the insulation coat is properly mounted and the zip-fastener closed, insert the top lid made of foam material and cover it with either a foil cover or a plastic lid. It is also possible to glue the outlet caps to connection places (see fig. 8). The insulation must be stored in dry areas only.

We take no responsibility for damages caused by not respecting this guide.

Fig. 6

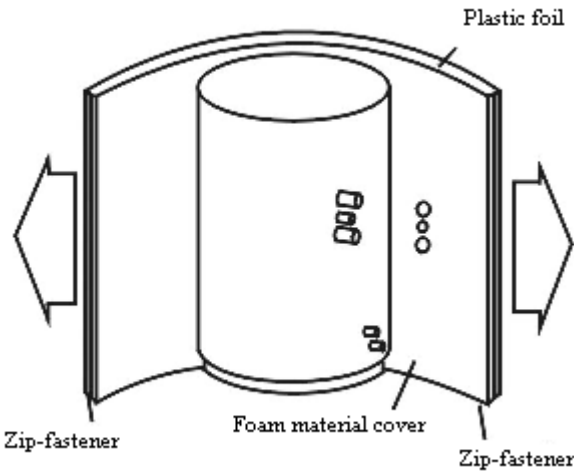


Fig. 7

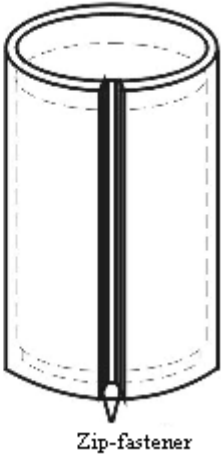
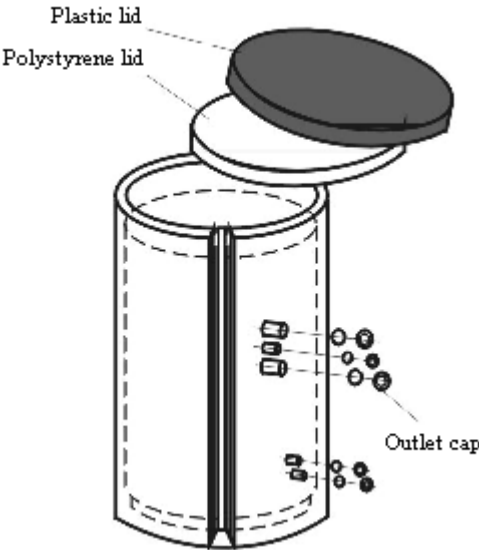


Fig. 8



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