

OPERATING AND INSTALLATION MANUAL



INDIRECT WATER HEATER

OKC 300 NTR/HP
OKC 400 NTR/HP
OKC 500 NTR/HP

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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:

The product is recommended for use indoors with air temperature from +2 °C to +45 °C and relative humidity up to 80%.

1. APPLICATION

Indirect stationary heater OKC 300 (400, 500) NTR / HP is designed for water heating in conjunction with a heat pump. Reheat can be carried out by the electric heater TJ 6 / 4“.

2. PRODUCT DESCRIPTION

The heater vessel is welded from a steel plate and as a whole is protected by enamel resistant to hot water. Magnesium anode is added in the vessel as an additional protection against corrosion, which regulates the electric potential of the inside of the vessel and thus reduces the effects of corrosion. Inside the vessel there is a welded heat exchanger made of steel pipe with enamelled outer coating, and connections of hot and cold water, circulation and thermostat tank. ***The pipe heat exchanger is only intended for the heating circuit.***

On the side of the heater there is a cleaning and inspection aperture ending with a flange of 110 mm diameter, the pitch of eight M8 bolts is 150 mm. The heater is equipped with a G 1 ½ " aperture for screwing an additional heater. This option is used, if the heater is connected into the system with a heat pump, for water reheating at the top of the heater to the desired temperature. The tank is insulated by 50 or 60 mm of polyurethane foam not containing CFCs and the casing of the heater is made of plastic.

3. IMPORTANT NOTICES

Without a proof issued by a professional company about performed electrical and plumbing fixture the warranty shall be void.

It is necessary to check the protective magnesium anode periodically and replace it if necessary.

No stop valves can be put between the heater and the safety valve.

All outlets of hot water must be equipped with combination faucets.

Before the first filling of water heater it is recommended to tighten the nuts of the flange joint of the tank.

4. PUTTING THE HEATER INTO OPERATION

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

Procedure:

- a) Check the plumbing and electrical installation, including the connection to 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.
- b) Open the hot water valve on the combination faucet;
- c) Open the cold water inlet valve to the heater.
- d) When the water starts to flow through the hot water valve, the filling of the heater is finished and the valve needs to be closed.
- e) Should a leak (of the flange lid) occur, we recommend tightening the screws of the flange lid.
- f) When heating the water with thermal energy from hot water heating system, turn off the electricity and open the valves at the inlet and outlet of heating water or bleed the exchanger. When commencing operation, flush the heater until the cloudiness in the water is gone.
- g) Make sure to fill in properly the warranty certificate.

5. TECHNICAL DATA AND DESCRIPTION OF THE HEATER

Chart 1

Type		OKC 300 NTR/HP	OKC 400 NTR/HP	OKC 500 NTR/HP
Capacity	l	295	356	440
Height of the heater	mm	1580	1631	1961
Diameter of the heater	mm	670	700	700
Maximum weight of the heater	kg	138	172	203
Maximum operating pressure in the tank	MPa	1		
Maximum operating overpressure in the exchanger	MPa	1	1,6	1,6
Maximum heating water temperature	°C	110		
Maximum temperature of HSW (Hot Service Water)	°C	90		
Exchanger heat surface	m ²	3,2	5	6,2
Exchanger volume	l	24	36	43
Heat losses	kWh / 24 h	1,86	2,8	3,2

Fig. 1

OKC 300 NTR/HP

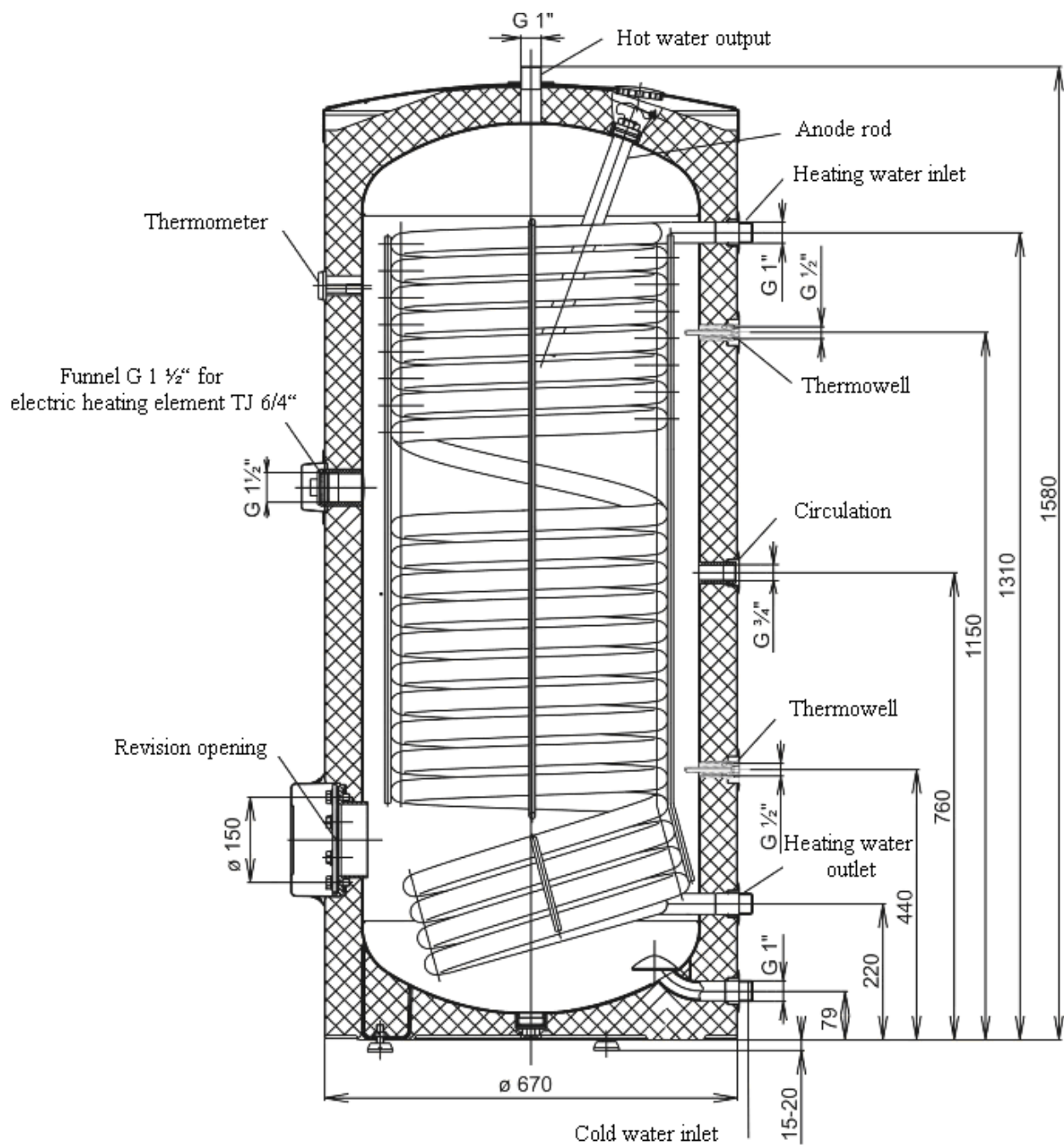
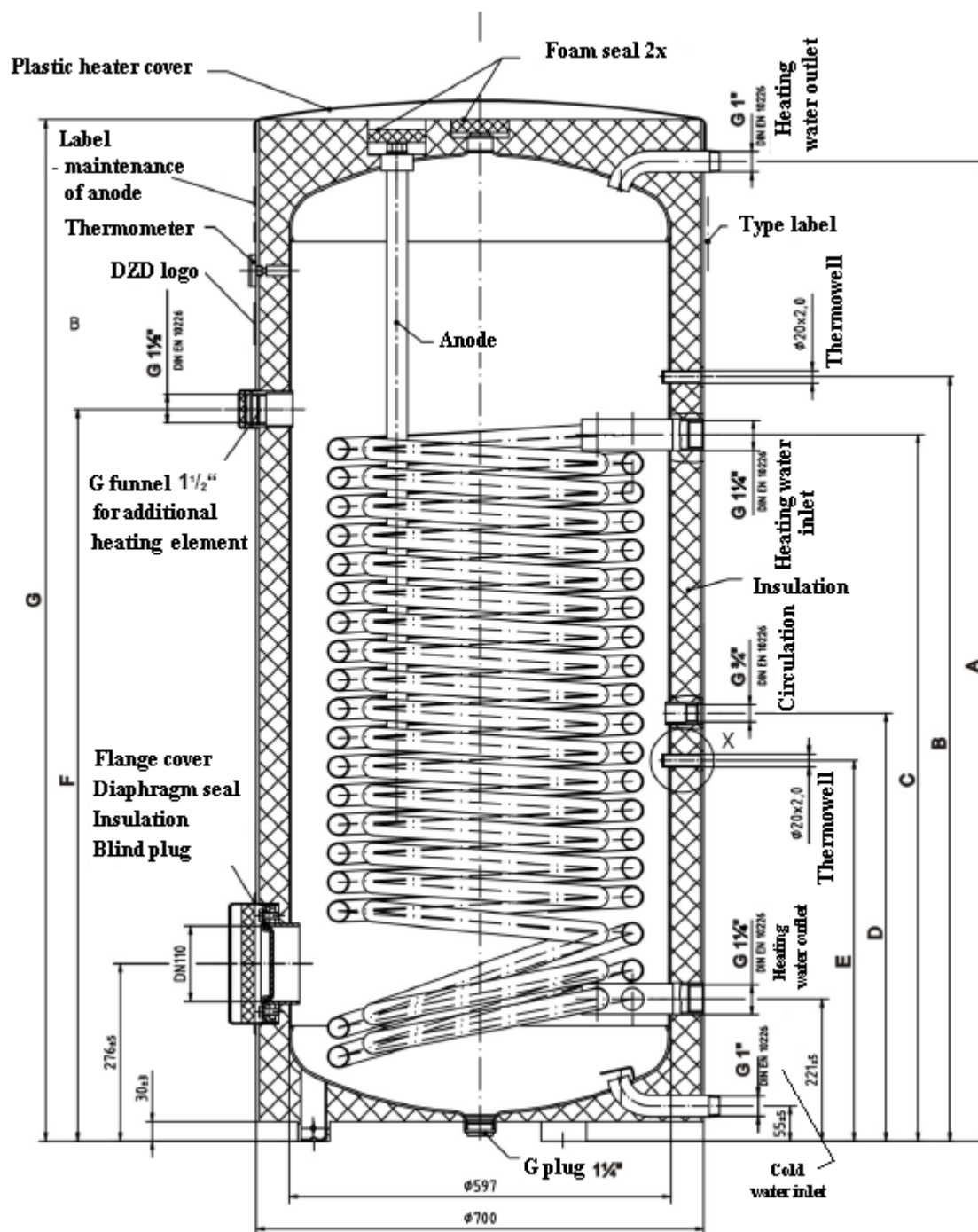


Fig. 2

OKC 400-500 NTR/HP

Chart 2

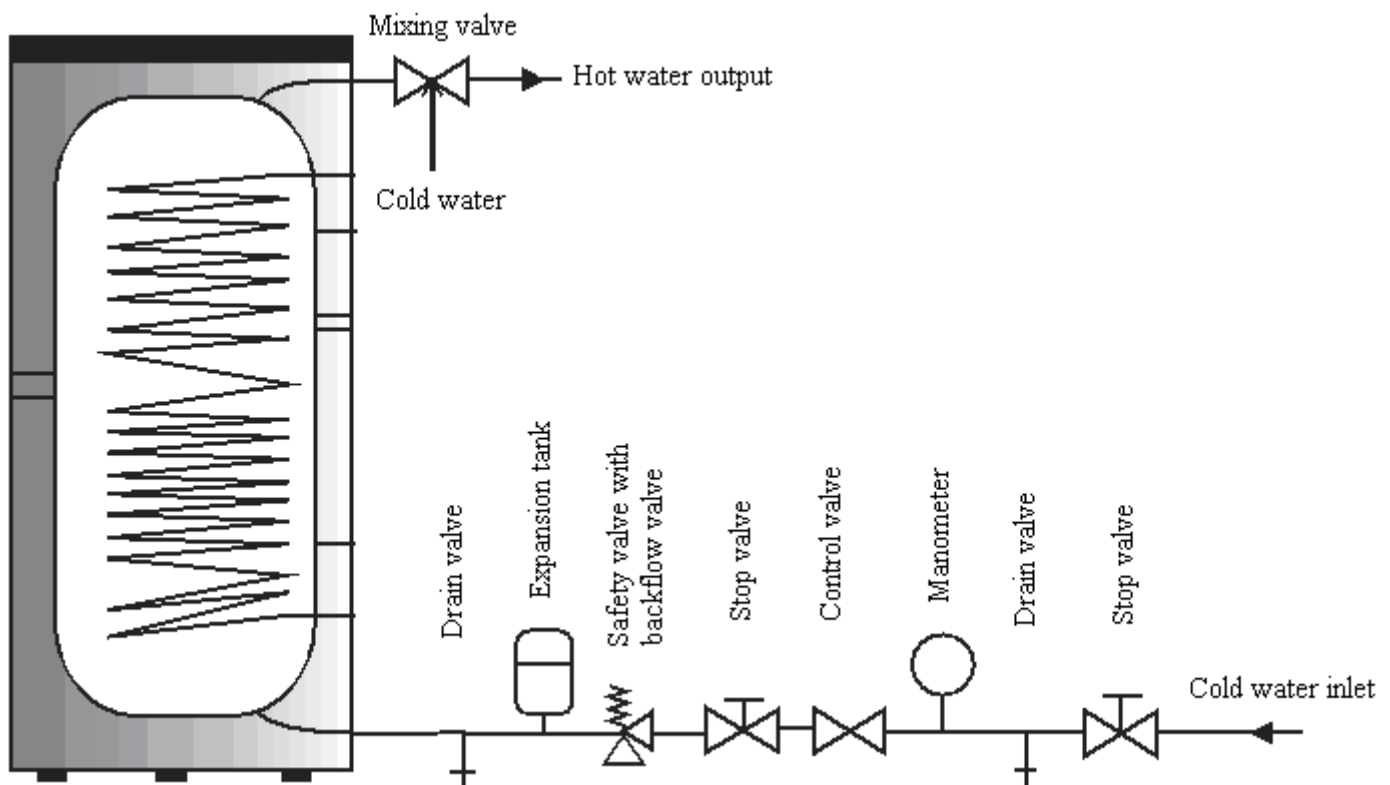


Dimension (mm)	A	B	C	D	E	F	G
OKC 400 NTR/HP	1526	1190	1100	666	592	1140	1591
OKC 500 NTR/HP	1853	1369	1279	1035	699	1319	1921

All dimensions ± 5 mm.

6. CONNECTING A HEATER TO A HOT WATER DISTRIBUTION

Fig. 3



The heater's cold water inlet must be fitted with a T-fitting with a discharge valve for any discharge of water from the heater (see Section No.11).

Each individually lockable heater must also be equipped at the hot water inlet with a test cock, check valve, safety valve and level gauge.

7. 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 0 60830 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. 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 input 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.

8. SPARE PARTS

- Magnesium anode
- contact thermometer

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

9. HEATER CLEANING AND ANODE ROD EXCHANGE

Repetitive water heating causes limestone sediment on both the enamelled 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 discharging water from the heater, the combination faucet hot water valve must be open in order to avoid creating underpressure that would prevent water discharge.

10. INSTALLATION REGULATIONS

Regulations and instructions that must be obeyed during heater assembly:

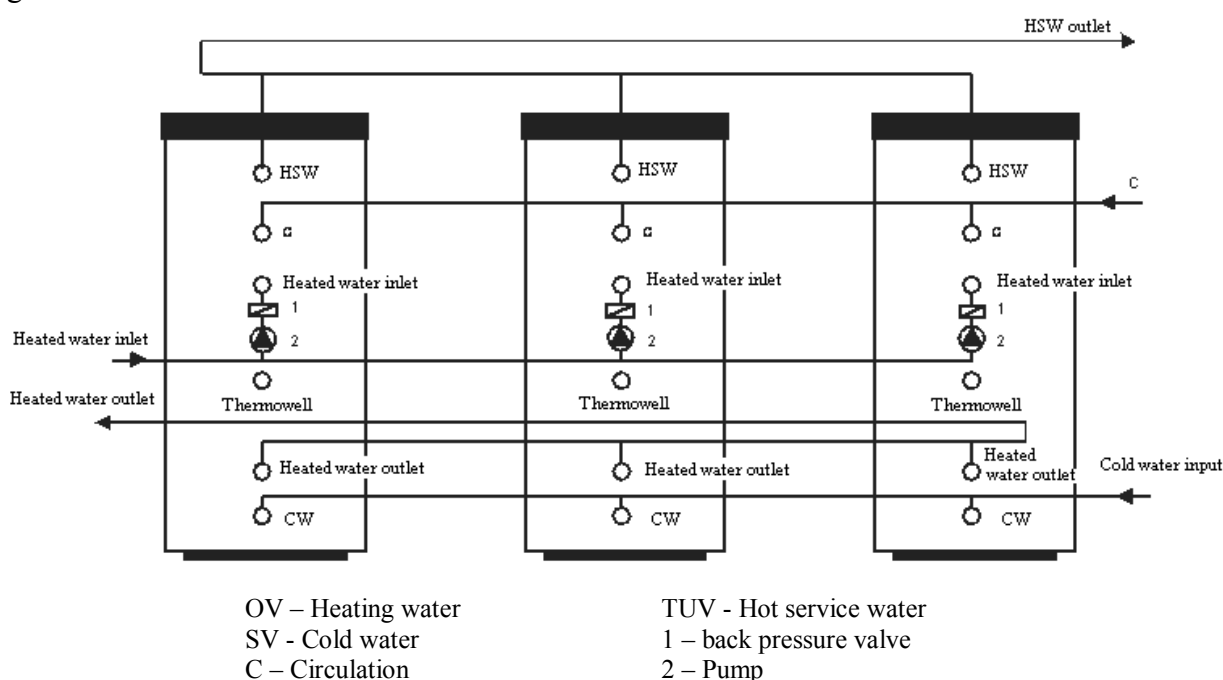
- to the heating system
 - ČSN 06 0310 – Thermal systems in buildings – Designing and Installation
 - ČSN 06 0830 – Thermal systems in buildings – Protecting devices
- to the electrical network
 - ČSN 33 2180 - Connecting of electric devices and appliances
 - ČSN 33 2000-4-41 - Low voltage electric installations 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 hot service water heating system
- 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 mains
 - 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 EN 12897 – Water supply – Indirectly heated closed tank-type water heaters

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

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

The heater is placed on the ground, next to the heating source, or in its vicinity. The heating circuit is connected to marked inputs and outputs of the heater exchanger; the deaerating valve is mounted in the highest place. It is necessary to install a filter into the circuit in order to protect the pumps, the three-way valve, and backflow flaps, and the exchanger from sedimentation. It is recommended to flush the heating circuit before the assembly. All wiring connections must be properly insulated from heat. If the system works with priority heating of HSW using a three-way valve, always follow the installation instructions of the three-way valve's manufacturer.

Fig. 3



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