

# Operation and Installation Manual



## ELECTRIC WATER HEATER

BTO 5 IN/UP  
BTO 10 IN/UP



**Družstevní závody Dražice – strojírna s.r.o. (Works Cooperative - Dražice – Machine Plant, Ltd.)**

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

INFORMATION LEAFLET 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 (min) | Electricity consumption for heating of the contents from 10°C to 60°C in kWh | Heat losses kWh/24hr |
|--|-------------------------|-----------------------|----------------------|-------------------------------|--|----------------------|
| <b>Water heaters – suspended, vertical</b> |                         |                       |                      |                               |  |                      |
| BTO 5 IN/UP                                | G                       | 64                    | 5                    | 9                             | 0,3  | 0,32                 |
| BTO 10 IN/UP                               | G                       | 40                    | 10                   | 18                            | 0,6  | 0,4                  |

BTO 5, 10 UP– non-pressure heater of 5 (10) l capacity located above the supply point

BTO 5, 10 IN– non-pressure heater of 5 (10) l capacity located underneath the supply point

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

**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. PRODUCT ACCESSORIES

The product is packed together with service instructions and list of servicing organisations. For non-pressure connection, no safety valve is used; the function of it is performed by a non-pressure combination faucet. The package contains anchors and fasteners to mount the heater.

## 2. MESSAGE FOR CUSTOMERS

The electric heater is designed for preparation of hot water in households, cottages and various welfare facilities. It allows installation of only one hot water consumption point. Its benefit is that it heats up water by power in an unlimited all-day time range. The time of heating service water to the recommended temperature of 60°C is about 9 and 18 minutes, depending on the volume.

Environment Type:

It is recommended to use the product in an indoor environment with air temperatures from +2°C to 45°C and a max. relative humidity of 80%.

## 3. TECHNICAL DESCRIPTION

The heater tank is plastic for non-pressure connection, the electric heating element is copper. The heater tank is provided with a valuable polyurethane insulation, all is stored in an upper plastic container. Electric wiring is placed in the bottom (upper) part of the heater, under the removable guard of the heater. Temperature of water can be set by a thermostat within the range between 5°C and 75°C, using the symbols on the thermostat selector button (read more in chapter 13). Cold water inflow is indicated with a blue ring, hot water outflow is indicated with a red ring.

## 4. GENERAL TECHNICAL DATA

| Type                                |         | BTO 5 IN/UP      | BTO 10 IN/UP     |
|-------------------------------------|---------|------------------|------------------|
| Capacity                            | l       | 5                | 10               |
| Rated pressure                      | MPa     | 0                | 0                |
| Weight                              | kg      | 3,5              | 4                |
| Power input                         | W       | 2000             | 2000             |
| Time of heating from 10°C to 60°C   | min     | 9                | 18               |
| Electric connection                 | V       | 1 PE-N 230V/50Hz | 1 PE-N 230V/50Hz |
| IP Protection                       |         | IP 24            | IP 24            |
| Heat losses/energy efficiency class | kWh/24h | 0,32 / G         | 0,4 / G          |

## 5. OPERATING ACTIVITY

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 75°C. We recommend setting service water to max temperature of 55°C. This temperature ensures the optimal operation of the heater. 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 9°C (set the “snowflake” symbol on the thermostat button) to avoid its freezing.

## 6. WALL MOUNTING

Prior to mounting check the loading capacity of the wall. If needed, reinforce it. Mount the water heater in vertical position only. The fastening screws must have guaranteed spacing of 140 mm. Mounting dimensions are specified on Fig. 1.

## 7. PLUMBING FIXTURE

The heater is designed for flow (non-pressurised) plumbing system. This system enables water withdrawal from one point only. Connection has to be performed as indicated on the figure for connecting to water supply network. For flow connection system you need to use a combination faucet designed to this purpose. Water inflow and outflow is indicated with different colours on the heater tubes. Cold water inflow is indicated with blue, hot water outflow is indicated with red. Return valve has to be fixed on the inflow tube in front of the combination faucet in order to avoid water outflow from the boiler if there is a lack of water within the network.

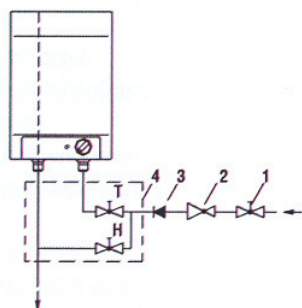
If the water pressure in the water supply network exceeds 5 bars, a reduction valve must be installed in front of the combination faucet.

When choosing a flow faucet pay special attention to the information provided by the manufacturer regarding pressure reduction due to resistance that occurs when water passes through the combination faucet. If the drain valve is fully opened, it must not exceed 0.2 bar. You are not allowed to fix any water driven device or a water disperser on the combination faucet drain tube since this might cause increase of the pressure in the heater boiler. Should you fail in adhering to these instructions, the heater may get damaged.

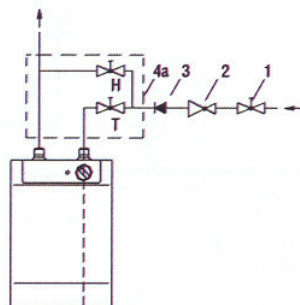
The “above-supply-point” version

The “below-supply-point” version

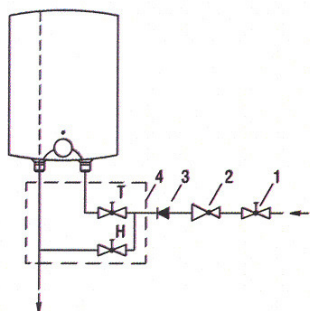
**BTO 5 UP**



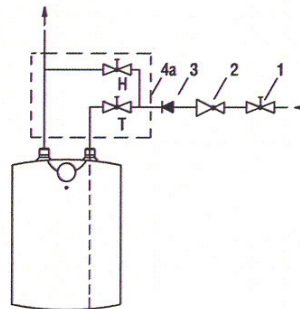
**BTO 5 IN**



**BTO 10 UP**



**BTO 10 IN**



Explanation:

- 1 – shut-off valve
- 2 – reduction valve
- 3 – back pressure valve
- 4, 4a – flow combination faucet

H – cold water

T – hot water

Before connecting to power supply, always have the heater filled with water. During the first filling open the hot water tap on the combination faucet. The heater is filled up when water drains through the combination faucet drain hose. If the heater is not filled with water before connecting, the thermal fuse will get damaged and the heater will not function. The thermal fuse is non reversible, it burns out. If damaged, it has to be replaced with a new functional one.

## 8. ELECTRIC INSTALLATION

The electric wiring scheme is attached in the manual to the water heater (Fig. 2). The heater has to be connected via a separate supply with a front-end main switch. The heater is connected to the 230V/50Hz electric network using a conductor with a contact plug fitted with a switch that turns off all network poles and the circuit breaker (protector). Electric installation must comply with valid electrotechnical standards. Connection of the heater to electric network shall be executed following the plumbing fixture. In order to enhance the protection of coupling in bathrooms and shower corners pursuant to ČSN 332000-7-701, the appliance is provided with a grounding terminal for connecting with a

yellow-green protective conductor on minimum section 4 mm<sup>2</sup>. Access to the electric part of the heater is enabled only upon disconnecting the heater from power supply and unscrewing the guard of the heater.

The degree of protection of electric parts of the heater is IP 24.

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

## 9. HEATER COMMISSIONING

Once connected to the water supply, the heater can be put in service.

Procedure:

- a) check the power and water main installation
- b) 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) using the front-end main switch open electricity and thus the heater activates.

## 10. IMPORTANT NOTICE

- Without a confirmation issued by an authorised company about performed electrical and plumbing fixture the warranty certificate shall be void.
- The hot water outlet must be equipped with a combination faucet.
- It is not allowed to handle the thermostat in any manner whatsoever, 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. The non-reversible thermal fuse discontinues electric power input to the heating element should the thermostat fail, if the water temperature in the heater exceeds 99°C.

### **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.

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 product packages to a waste disposal place designated to that purpose by the municipality. When the operation terminates, disassemble and transport the discarded and unserviceable heater to a waste recycling centre (collecting yard), or contact the manufacturer.



## 11. FUNCTIONAL DEFECTS

| Defect |  | Failure       |  |
|--------|--|---------------|--|
| 1.     | Water in the tank is cold  | LED is on     | - heating element failure  |
| 2.     | Water in the tank is not warm enough                             | LED is on     | - heating element failure  |
| 3.     | Water in the tank is cold  | LED is not on | - operating thermostat failure<br>- safety thermostat shut off<br>- power supply<br>- power supply outside the heater discontinued |
| 4.     | Water temperature in the tank does not correspond with value set | LED is on     | - thermostat failure   |

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.

## 12. 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.

## ■ 13. USE AND MAINTENANCE OF HEATER

Once connected to water and power network, the heater is ready for use.

By turning the thermostat knob located on the front side of the protective guard set the desired water temperature up to 75°C. We recommend that the knob was set to position "e". Such connection is most economic; temperature of water is about 55°C, thermal losses and scale formation will be lower than if set to higher temperature.

The electric heater operation is indicated by a control light that is on until the water in the heater heats up to the selected temperature, or until switched off as scheduled. Due to heating, the volume of water increases, which causes water dripping from the combination faucet pipes. You will not prevent water from dripping by strong tightening of the handle on the combination faucet but you may damage the faucet.

If you do not intend to use the heater constantly, you need to protect the water in the heater by not discontinuing the power totally and setting the thermostat selector to position "\*". At such setting the heater is maintained at the approximate temperature of 9°C. If you take the heater off the power supply, you have to drain the water from it if there is a risk that the water inside freezes. Clean the outer parts of the appliance with a mild detergent solution. Do not use thinners or other aggressive cleaning agents. Through regular service inspections you will ensure trouble-free operation and long service life of the heater. We recommend that the first inspection of the heater was performed by a specialist, approximately after two years following its putting in operation. During the inspection the scale, that will accumulate inside the heater depending on the quality, amount and temperature of the water consumed, will be removed as needed. During the inspection of the heating element, the service technician will advise of the date of the next inspection, taking into consideration the found condition of the appliance.

**WARNING: Prior to any intervention in the inside of the heating element, the appliance has to be disconnected from power supply!**

**Do not attempt to repair the heater by yourselves, call the nearest authorised service centre to do so.**

## 14. INSTALLATION REGULATIONS

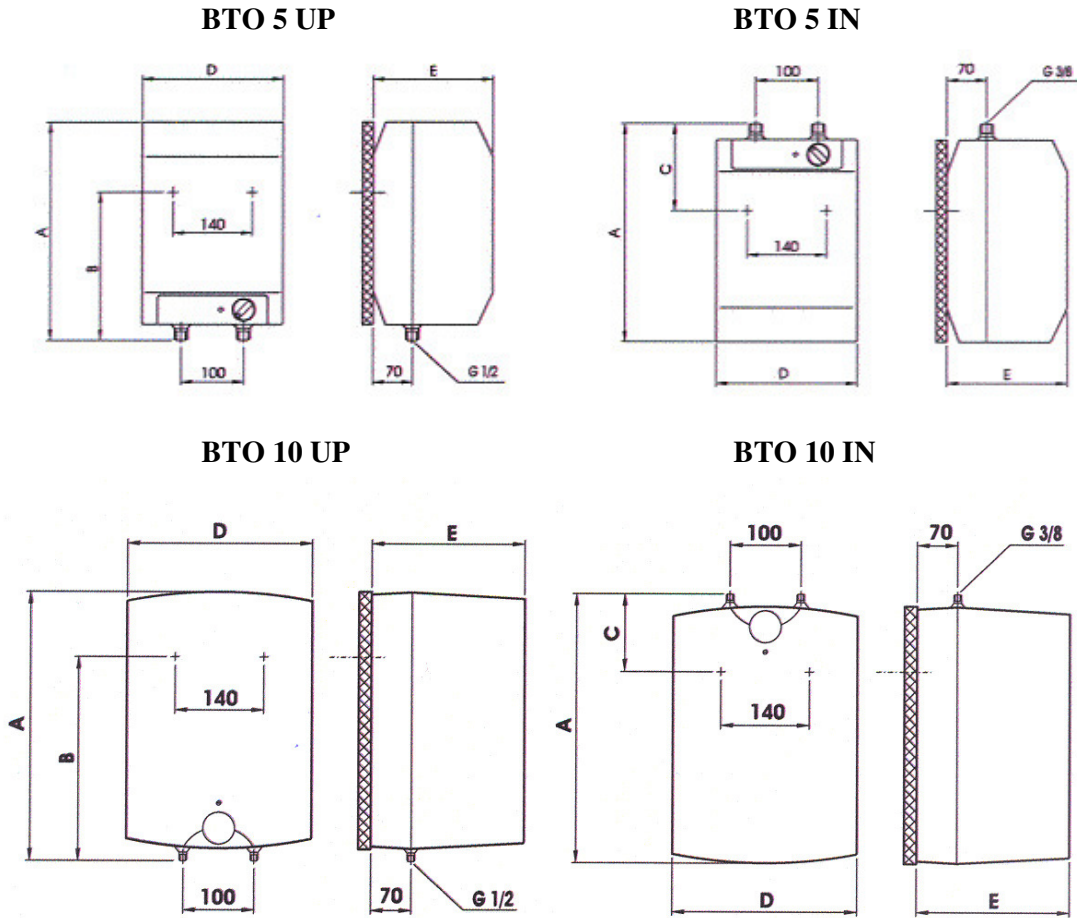
### Regulations and instructions that must be obeyed during mounting the heater to power network:

- a) For 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 2000-5-51 - Electric installations of buildings
  - 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
  
- b) For 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.

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

**Fig. 1**

**Heater Dimensions**



|           | A   | B   | C   | D   | E   |
|-----------|-----|-----|-----|-----|-----|
| BTO 5 UP  | 390 | 264 | -   | 256 | 213 |
| BTO 5 IN  | 390 | -   | 138 | 256 | 213 |
| BTO 10 UP | 500 | 398 | -   | 350 | 265 |
| BTO 10 IN | 500 | -   | 122 | 350 | 265 |

**Fig. 2**

**Wiring scheme**

Explanation:

- 1 - Thermostat failure
- 2 - Thermal fuse, non-reversible
- 3 - Heating element
- 4 - Operation indicator
- 5 - Terminal board

- L - Phase conductor
- N - Null conductor
- ⊥ - Earth conductor

