

Instructions for electric boilers **ECONOMY**

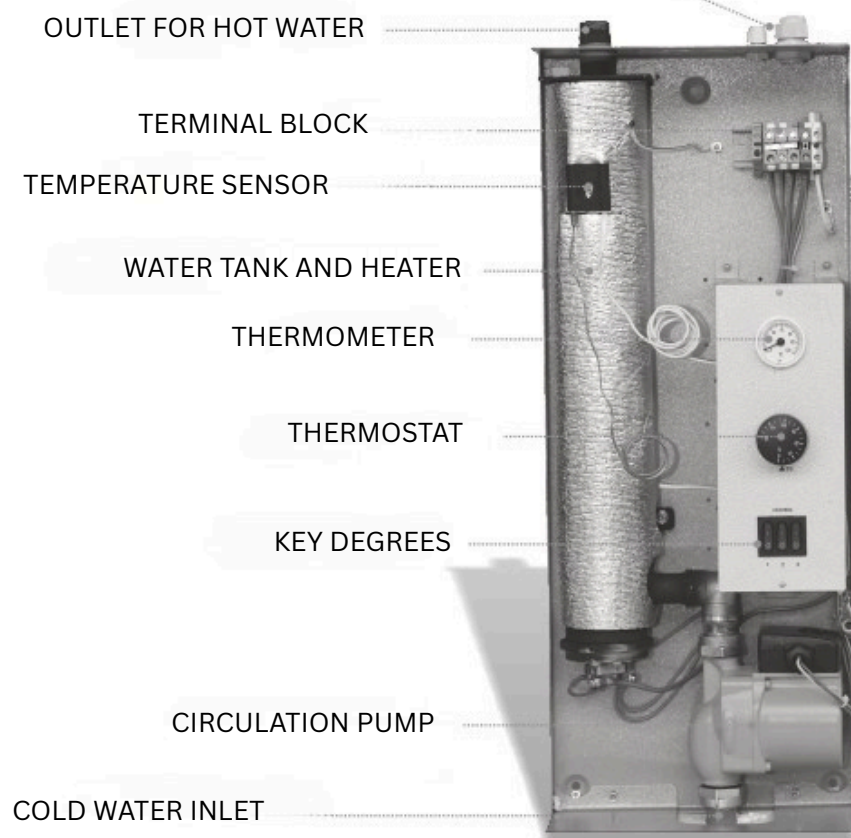


4.5-12 kW
with pump

Budget boiler with three-pole thermostat and IBO pump



CONNECTION INPUTS



1. GENERAL INSTRUCTIONS

This manual contains basic information about the design and operation of the electric water-heating boiler “Mini” (abbreviated as ECONOMY) and instructions for its operation. It specifies the sequence for installation and connection, as well as the adjustment methodology. Possible malfunctions are listed, along with recommendations for their elimination. Before installing and commissioning the ECONOMY boiler, you should carefully read this manual, as proper installation, adjustment, and maintenance of the ECONOMY will ensure safe and reliable long-term operation.

The ECONOMY boiler is not intended for use by persons (including minors) with reduced physical, sensory, or mental capabilities; it is also not recommended for use by individuals unfamiliar with its operation, except under the direct supervision of authorized personnel responsible for their safety, until proper instructions for using the appliance have been provided. Minors must be supervised by an adult to prevent playing with the device.

Follow the requirements of this manual and keep it for future reference!

1.1. The ECONOMY is designed for heating the heat carrier (water) in a heating system with forced circulation of the heat carrier. The permissible pressure of the heat carrier (water) in the system is 0.2 MPa (2 bar). The minimum gauge pressure before the circulation pump is 0.01 MPa (0.1 bar). The ECONOMY is intended for operation in residential and similar premises, in accordance with macroclimatic regions with moderate and cold climates.

1.2. It is recommended to operate the ECONOMY in rooms with the following working environmental conditions:

Atmospheric pressure: 84...107 kPa (630...800 mmHg);

Temperature: 10°C to 35°C (limit values: 5°C to 40°C);

Relative air humidity: 60% at 20°C.

The presence of dust, as well as aggressive or flammable gases and vapors, is not permitted in the air of the premises.

1.3. During operation, the performance of the ECONOMY must be regularly checked. Do not install the ECONOMY in locations where there will be no supervision by personnel responsible for the condition and functioning of the equipment!

1.4. The ECONOMY is manufactured by “Termogroup BG Ltd.” in accordance with the requirements of the European certificate TU U 28.2-31402141-001-2001.

1.5. Example of a conventional designation of the wall-mounted electric water-heating appliance:

ECONOMY-6/220, where

ECONOMY – model designation;

6 – rated power consumption, kW;

220 – rated supply voltage, V.

4. SAFETY REQUIREMENTS

4.1. The ECONOMY model complies with international safety standards regarding protection from hazards caused by electrical, mechanical, and thermal effects, as well as the risks of ignition and radiation during normal operating conditions, as specified in this manual.

4.2. It is strictly forbidden to perform maintenance or repairs on the ECONOMY while it is connected to the power supply. According to installation regulations, a circuit breaker (see Table 1) must be installed on the stationary wiring, ensuring that all poles of the power supply can be disconnected with a single action.

4.3. Before switching on the power supply of the ECONOMY, make sure there are no defects that could endanger life or health. Also, check the integrity of the grounding conductor and its secure connection to the grounding terminal. Verify the proper condition and voltage of the power network!

4.4. Attention! It is prohibited to turn on the ECONOMY before it has been filled with water, with closed connection valves (without water circulation), or if the water inside the ECONOMY and the heating system has frozen. The water from the system must not be used for drinking or domestic purposes.

4.5. To prevent damage to the strength and tightness of the heating system and the ECONOMY, and to avoid excessive internal pressure during installation, it is mandatory to install a pressure relief safety valve (included in the package) in the heating system at a convenient location for the user. If the supply water pressure exceeds 3.0 bar, a pressure reducer must be installed in the supply line.

4.6. It is strictly forbidden to install shut-off fittings between the ECONOMY and the safety group (expansion tank, safety valve, air vent valve, etc.).

4.7. It is forbidden to leave the ECONOMY operating unattended for long periods of time.

4.8. Attention! To prevent accidents, all activities related to the installation, connection, repair, and maintenance of the ECONOMY must be carried out only by qualified personnel with the necessary competence and authorization.

5. DESIGN AND OPERATING PRINCIPLE

5.1. The ECONOMY consists of separate units housed in a steel parallelepiped-shaped casing (see Diagram 2). The casing absorbs the loads arising during transportation and operation.

5.2. Main structural components of the ECONOMY include:

- a rectangular steel tank, thermally insulated on its outer surface, with threaded steel pipes for inlet and outlet of the heat carrier (water), and an installed heating element block (TEN);
- a power indicator light;
- a thermostat;
- switches for heating stages;
- a thermomanometer;
- a drainage system.

A self-resetting thermal relay is installed on the tank to limit the temperature in case of improper operating conditions. Once the temperature decreases sufficiently, heating resumes automatically. The front panel of the casing can be removed for installation work and visual inspection. To inspect or replace parts using the drainage system, the coolant must be drained from the boiler.

5.3. The operating principle of the ECONOMY is as follows:

A pump feeds cold water into the lower inlet pipe of the tank, where it is heated by the TEN block. The heated water then flows through the upper outlet pipe into the heating system. The desired water temperature is set using the thermostat knob located on the front panel. The set temperature is maintained automatically within a deviation range of 4–8°C.

The economical power consumption mode is selected by the user using the “heating” button and the thermostat knob.

6. PREPARATION FOR OPERATION AND METHOD OF USE

6.1. The installation of the ECONOMY on the wall, its connection to the electrical network and heating system, and the testing must be performed by qualified specialists in compliance with the project requirements and all installation and operating regulations. Before connecting the ECONOMY, the heating system must be thoroughly cleaned of possible contaminants.

ATTENTION! MANDATORY CONNECTION TO PROTECTIVE EARTHING!

Forced water circulation through the ECONOMY is achieved by means of a circulation pump. In the heating system (see Diagram 1), a pressure relief valve ($R_{max} = 1.5 R_{nom} = 3 \text{ bar}$) from the supplied set must be installed.

ATTENTION! THE ABSENCE OF A SAFETY DEVICE OR DAMAGE TO IT DURING INSTALLATION MAY LEAD TO MALFUNCTION OF THE ECONOMY AND INCORRECT OPERATING MODE!

6.2. Remove the front panel by unscrewing the fastening screws. Place the ECONOMY vertically at the prepared installation location, mark the positions for the two metal anchor bolts (the arrangement of the mounting holes is shown in Diagram 2). Set the ECONOMY aside and drill holes at the marked positions with a diameter of 8 mm and a depth of no less than 35 mm. Insert the anchor bolts into the holes and secure them by tightening the nuts.

Before the final installation of the ECONOMY, check the load-bearing capacity of the bolts and the wall (considering the weight of the ECONOMY filled with water). Mount the ECONOMY using the anchor bolts and fasten with M6 nuts and spring washers. Connect the ECONOMY to the heating system, and connect the power cable with a grounding wire according to the markings (F, N, PE/A, B, C, PE). Perform an external inspection of the components to detect and eliminate any possible defects.

6.3. After confirming the presence of the heat carrier in the heating system and ensuring its tightness, switch on the ECONOMY in the following sequence:

Set the thermostat knob to the position corresponding to the maximum temperature (turn fully clockwise), check the voltage in the network, and switch on the circuit breaker to supply electricity to the input line of the ECONOMY (the indicator light labeled “network” on the casing will illuminate). Then, sequentially (at intervals of 3–5 seconds), press the buttons of the heating stages: “1”, “2”, “3”. The TEN heating block will activate and the water will begin to heat. Monitor the heating process and circulation of the heat carrier.

6.4. The temperature adjustment of the heat carrier according to the thermometer readings is carried out using the thermostat knob and the buttons corresponding to the selected heating level. Further operation of the ECONOMY proceeds automatically, maintaining the set temperature within a deviation range of 4–8°C.

6.5. To turn off the ECONOMY, rotate the thermostat knob fully counterclockwise (position corresponding to T_{min}), press the “heating” button to switch it off, and after 3–5 minutes, turn off the circuit breaker on the stationary wiring.

7. MAINTENANCE

7.1. Before commissioning, as well as after two hours of operation from the initial start-up, and periodically—at least once a month—it is necessary to check the secure fastening of wires, cables, and threaded connections. If needed, tighten the connections carefully to avoid any damage that may affect the future operation of the ECONOMY.

MAINTENANCE OF THE “ECONOMY” UNIT MUST BE PERFORMED ONLY BY SPECIALLY TRAINED PERSONNEL AFTER DISCONNECTING THE ELECTRICAL POWER SUPPLY!

7.2. The company performing the installation and maintenance of the ECONOMY must possess the necessary permits to carry out this activity.

7.3. Only personnel who have studied the operating principle, design, and sequence of operation of the ECONOMY, have undergone safety training, and have received authorization to perform such work are allowed to service the unit.

7.4. To ensure proper operation of the device and the components of the heating system, and to prevent damage caused by scale deposits or metal corrosion, the circulating and make-up water must be properly treated in advance.

The quality indicators of the water must meet the following criteria:

- total hardness not exceeding 20 µg-eq/l;
- no mechanical impurities or free particles permitted.

The method for water treatment should be determined by the user of the appliance or, as applicable, by the system designer or installation company.

7.5. It is necessary to periodically check the functionality of the safety valve by testing water discharge at least once every six months.

8. STORAGE RULES

8.1. Before operation, the ECONOMY should be stored in its packaged state in rooms with a temperature between 5°C and 40°C and relative air humidity of 60% at 20°C. The air in the storage area must not contain aggressive or flammable vapors or gases.

8.2. An unpacked ECONOMY may be stored in the designated premises during maintenance or repair.

8.3. The ECONOMY should be transported in covered vehicles (such as trucks, containers, wagons, or similar).

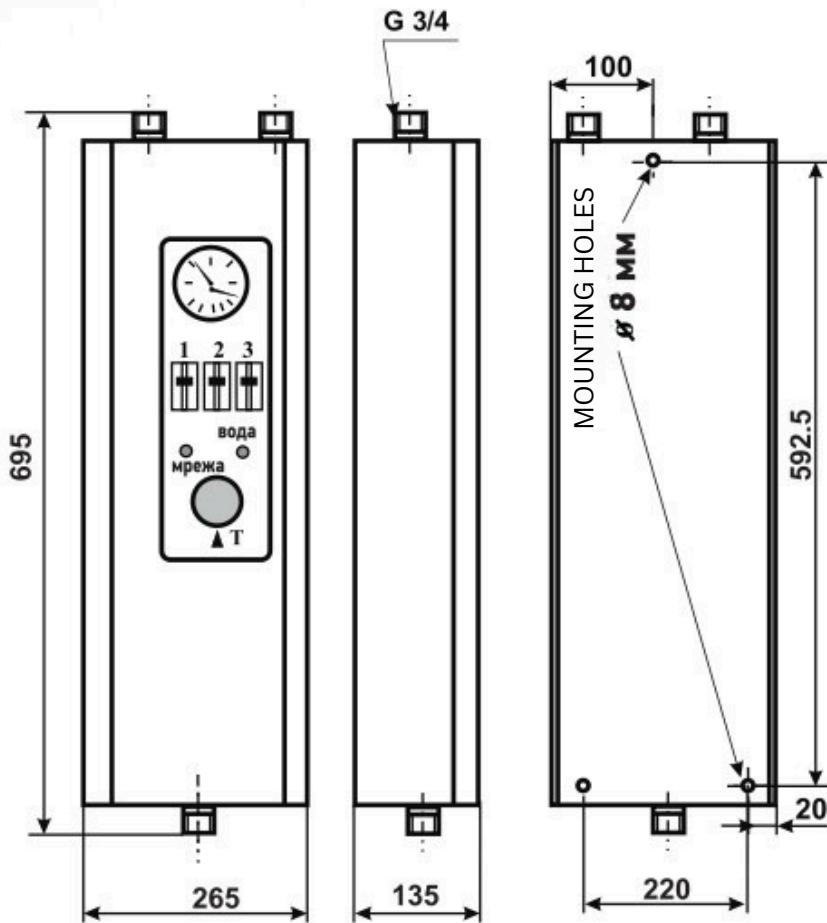
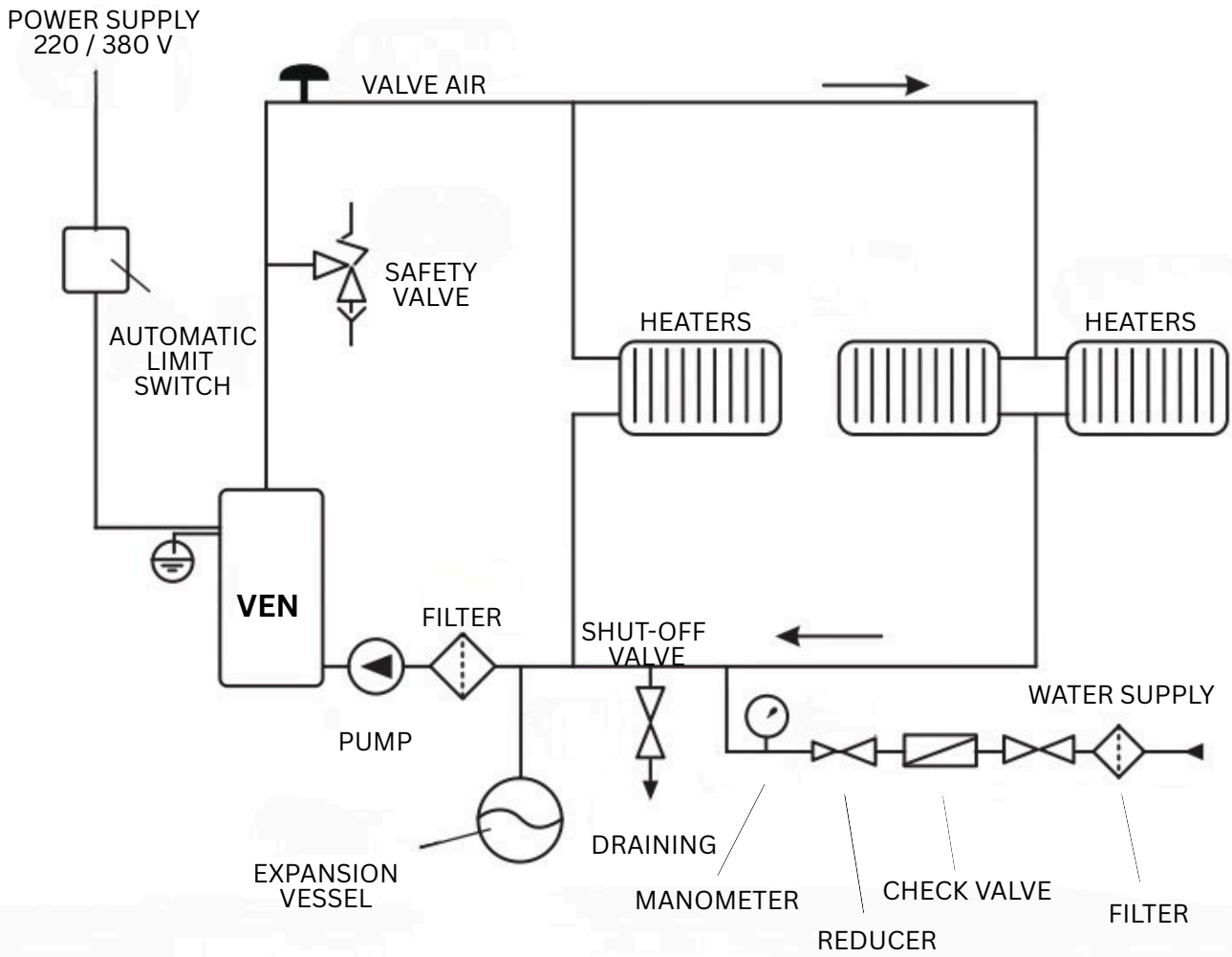
8.4. Ambient temperature during transportation should range from -10°C to +50°C, with relative humidity up to 80% at 25°C.

8.5. After decommissioning, the device and its packaging must be disposed of at appropriate collection points for paper and metal scrap.

POSSIBLE FAULTS AND REMEDIES

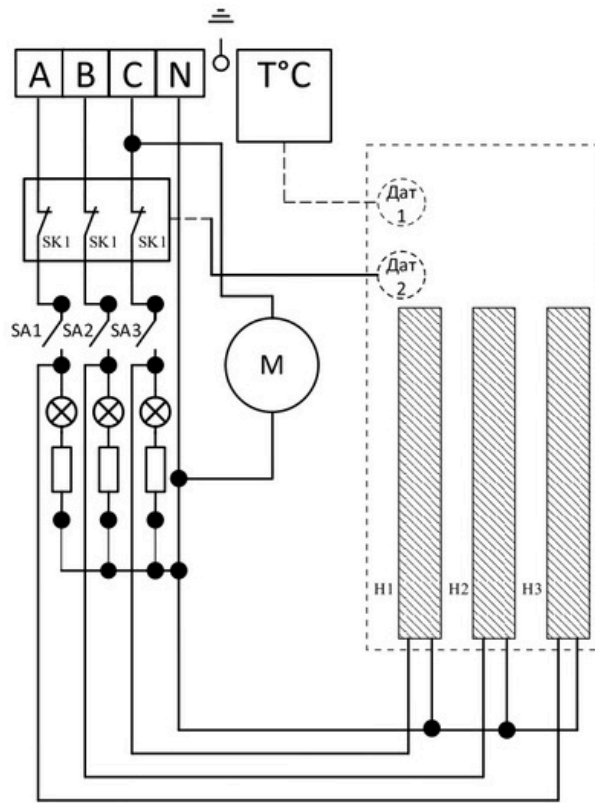
NAME OF THE FAILURE	PROBABLE CAUSE	REMOVAL METHOD	NOTE
When turning on the power supply, the "set - power" signal light does not work	1) there is no voltage in the network; 2) the lamp does not work	Check for voltage. Replace the faulty element.	Inspection and replacement are carried out by a specialist
When buttons "1", "2", "3" are turned on, ECONOMY does not develop nominal power	1) low voltage in the network; 2) faulty heating element; 3) interruption in the electrical circuit	Checking the voltage in the network Replacing the heating element Restoring the integrity of the circuit	Inspection and replacement are carried out by a specialist
Low temperature of the coolant in the heating system housing	1) the heating capacity of ECONOMY fails to compensate for the high heat losses of the room 2) lack of circulation of the heat carrier	Alignment of the heat output of ECONOMY and the heating system. Circulation check	The technical and economic calculation is carried out by specialists. The inspection is carried out by a specialist

**SCHEME 1
RECOMMENDED HEATING SYSTEM SCHEMATIC DIAGRAM**

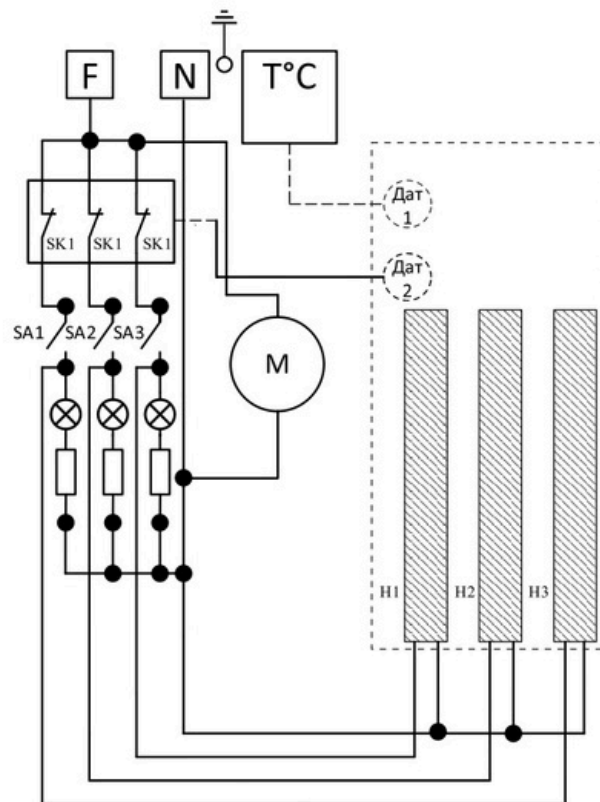


**SCHEME 2
ELECTRIC WATER HEATER
ECONOMY**

SCHEME 3



SCHEME 4



SCHEME 3 - BASIC ELECTRICAL DIAGRAM OF ECONOMY - 220 V

T - THERMOMETER

SK1 - THERMOSTAT CONTACTS

SA1-SA3 - HEATING SWITCHES "1", "2" AND "3"

H1...NZ - ELECTRIC HEATERS

M-CIRCULATION PUMP.

SCHEME 4 - BASIC ELECTRICAL DIAGRAM 4.5 - 15 KW (380V)

When connecting devices 4.5/380, 6/380, and 9/380 to a single-phase network with a voltage of 220 V, a jumper must be installed – see the diagram.

The power supply cables must comply with the requirements of the Electrical Installation Regulations.

Other symbols are the same as in Diagram 3.

11. MANUFACTURER'S WARRANTY

The product warranty is 2 years, and the average service life is 10 years, depending on the quality of the water used.

The warranty period begins from the date of commissioning but no later than 2 months after purchase. If commissioning takes place more than two months after purchase, the warranty period shall be counted from the date of the invoice.

The performance and functionality of the unit are guaranteed, provided that the installation and maintenance instructions described above are strictly followed.

Any faults or malfunctions arising from failure to comply with the installation and operating instructions are the sole responsibility of the user.

If the user fails to follow the operating manual and this leads to the malfunction of the device, the user shall bear the full cost of spare parts and repair services.

In the event of a warranty claim due to a defect, the service company (retailer) is obliged to resolve the issue within a period not exceeding 30 working days from the date the claim was submitted.

This warranty is valid only within the territory of the Republic of Bulgaria and applies exclusively to the ECONOMY model.

The user is required to ensure the necessary conditions for commissioning the equipment and to take into account its type and specific features in accordance with the standards and technical regulations in force, as follows:

1. Connection of the equipment to the installation and application of pressure for testing;
2. Filling with water and ensuring proper system ventilation;
3. Checking the physical and chemical properties of the water in accordance with EU boiler water quality standards, to avoid scale formation or corrosion;
4. Power supply in compliance with electrical protection standards;
5. Installation performed in accordance with safety and protection requirements, following the manufacturer's applicable instructions.

The warranty does not cover:

1. Installation or commissioning of a damaged unit due to lightning strikes in the electrical network or other natural disasters (earthquakes, floods, landslides, etc.); rough handling, scratches, cracks, or other mechanical and/or electrical damage;
2. Unauthorized interference by the user or third parties, use contrary to the instructions, interruptions in electricity or water supply; cases where the water does not meet domestic standards; corrosion due to condensation; use of any liquid other than water; defects caused by freezing of the water supply system; installation in premises with temperatures below 10°C; defects due to lack of water pressure; defects resulting from improper restoration of water circulation or poor electrical supply;
3. Use of unfiltered water, which may cause damage to boiler components and void the warranty.

The manufacturer's responsibilities and obligations are specified in the warranty certificate.