

EMERALD[®]

OPERATING MANUAL

EMERALD HOME 20 OFFICE B DEVICE

FOR PURIFICATION AND ELECTRICAL TREATMENT
OF FRESH WATER



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Important! Before using the EMERALD HOME 20 OFFICE B Device (hereinafter referred to as «EMERALD Device» or «Device»), please carefully study this Operating Manual. With careful use and compliance with the requirements specified in this Operating Manual, the EMERALD Device will serve you for many years.

1. INTRODUCTION

Congratulations on your purchase of the EMERALD HOME 20 OFFICE B Device for water purification and electrochemical treatment. You have invested wisely in the well-being of your family, and you have also taken a very important step towards improving your health!

EMERALD HOME 20 OFFICE B Device is a professional compact system to produce from ordinary tap water in flow-through mode pure drinking water with antioxidant properties (CATHOLYTE), purified from microbes and microbial toxins, iron, manganese, hydrogen sulfide, heavy metal ions and harmful organic compounds (including herbicides, pesticides, hormones, antibiotics, antidepressants). Antioxidant water enriched with molecular hydrogen using electrochemical activation (ECA) technology, has a beneficial effect on the entire body, normalizing metabolism and the functioning of internal organs, cleansing them from toxins, strengthening the immune system, and toning up the whole body.

EMERALD HOME 20 OFFICE B Device is used in apartments, office buildings, government agencies, fitness and spa centers, kindergartens, schools and universities, catering facilities, medical and preventive institutions to obtain clean and biologically beneficial antioxidant drinking water.

EMERALD HOME 20 OFFICE B Device is certified both in Russia and abroad, including European CE certificate of conformity, European ROHS declaration (environmental certificate), ISO 9001 quality management system certificate, hygiene certificate (expert report) of Rospotrebnadzor, EAC certificate of conformity, GOST R certificate of conformity.

EMERALD HOME 20 OFFICE B Device is developed jointly with the Vitold Bakhir Institute of Electrochemical Systems and Technologies, which is the world's main scientific center in the field of electrochemical activation. Many years of experience and modern discoveries, as well as the direct participation of V.M. Bakhir, Doctor of Technical Sciences, professor, have made it possible to combine the most advanced water purification and activation technologies in the EMERALD HOME 20 OFFICE B Device.

2. INFORMATION ABOUT ANTIOXIDANT WATER - CATHOLYTE

Theoretical concepts

Electrochemically activated catholyte is antioxidant water with pronounced electron-donor properties. Catholyte is obtained from fresh water, in which powerful unipolar action (in the double electric layer at the cathode of the electrochemical module) causes formation and storing of metastable products of cathode electrochemical reactions, in particular, molecular ions HO_2^- , O_2^- , OH^- .

Electrochemically activated catholyte exhibits an electron-donor ability, i.e., it is a strong reducing agent and reduction catalyst in various physicochemical reactions, including biochemical ones. Catholyte provides for effective neutralization of toxic forms of active oxygen, including free radicals, and restoration of the optimal balance of oxidative and reduction reactions (REDOX-status) of the body in the intercellular fluid and in cells, which is directly related to the correct course of all fundamental life processes of the body.

Practical application of catholyte

Electrochemically activated catholyte is one of the best antioxidants. Antioxidants found in foods, vitamins or dietary supplements do not give a person proper protection. Due to their large size, their molecules are not able to penetrate into cells and neutralize toxic oxidants (including free radicals).

Antioxidant water from EMERALD HOME 20 OFFICE B Device has a beneficial effect on the entire body, normalizing metabolism and the functioning of internal organs, cleansing toxins, and also strengthening the immune system, improving memory and toning up the body.

Antioxidant water has a positive effect on the body when consumed as part of a regular diet and protects against the action of strong toxic oxidants. The mechanism of action of antioxidant water is based on the transfer of protective electron-donor properties to the body's internal environments, helping the body's internal antioxidant system to cope with excessive exposure to various oxidative factors of technogenic origin (polluted air, poor quality of drinking water and food, stress and overwork, alcohol and cigarettes). Catholyte stimulates tissue respiration, which enhances the action of vitamins and chemical antioxidants in the body. Antioxidant water also weakens the effect of ionizing radiation, i.e. exhibits radioprotective properties characteristic of antioxidants. Antioxidant water improves passive immunity and general condition of the body, improves the functioning of the gastrointestinal tract and urinary tract, and normalizes blood counts.

Water treated in EMERALD HOME 20 OFFICE B Devices, like any natural antioxidant water, retains its electron-donor properties for no more than a day from the date of obtaining. After this period, the redox potential (ORP) of the treated water returns to the original ORP values of non-activated water, on average, in the range $(+100) \div (+250)$ mV, SCE. When boiling, the electron-donor properties of antioxidant water also decrease. Antioxidant water produced in the EMERALD Device should be stored for no more than a day in glass containers with a closed lid, away from direct sunlight and heat sources.

SOME APPLICATIONS OF CATHOLYTE

Consuming as part of a normal diet - The human body is more than 70% water. Water plays the most important role in the life of the human body. An adult needs to consume about 2 or 3 liters of water per day to maintain the normal functioning of the body.

Cooking - food on antioxidant water is cooked faster and retains more beneficial properties. Antioxidant water is great for soaking fruit, vegetables, fish and meat - due to its strong extraction properties, catholyte actively removes harmful chemicals from foods, such as growth hormones and antibiotics.

Making drinks - in addition to drinking antioxidant water from EMERALD Device, you can enhance the antioxidant effect due to synergistic phenomena and make antioxidant drinks using natural antioxidants - freshly squeezed juices of carrots, apples, various berries, by adding antioxidant water from EMERALD Device to them. Herbal teas prepared with this water acquire a special taste and aroma. Ice cubes made of frozen antioxidant water will give the drink an extra benefit.

Air humidification - antioxidant water is useful in the form of a mist when used in humidifiers. Humidified air with microdrops of antioxidant water, having the properties of a reducing agent, produces a beneficial effect on the respiratory and cardiovascular systems, prevents asthma attacks and allergic diseases.

Cosmetic purposes - for cosmetic purposes, antioxidant water is useful for washing, in the form of ice cubes for wiping the face, or in the form of a spray to moisturize the skin. Moisturizing masks based on antioxidant water will have a special effect.

Pets, plants and seeds - pets will prefer antioxidant water to regular tap or bottled water. The use of water from the EMERALD Device for watering houseplants or germinating seeds will promote their accelerated growth and development.

Important!

The latest technology in the EMERALD Device allows you to get clean and healthy antioxidant water while maintaining a neutral acid-base balance (pH level). pH neutral antioxidant water is suitable for regular consumption as part of a normal diet. Due to the similarity with the internal environment of a human, such water is instantly absorbed by the body and holistically restores it.

EMERALD HOME 20 OFFICE B Device is not a medical device. Before using catholyte for preventive or therapeutic purposes, consult a specialist. The information on the properties and methods of using catholyte presented in this section is for reference only and does not apply to medical reports.

3. PRINCIPLES OF WATER TREATMENT

The EMERALD Device is high performance and runs on cold tap water, producing up to 20 liters of purified antioxidant drinking water (catholyte) per hour.

EMERALD Device ensures high quality of drinking water purification due to the consistent combination of water activation in electrochemical modules and the use of auxiliary environmentally friendly filter elements. The main elements of the EMERALD Device are 2 (two) MB-11 type electrochemical modules (diaphragm flow-through electrochemical Bakhir modular elements), in which oxidation reactions take place at the anode and reduction reactions at the cathode (Fig. 1). Auxiliary elements in the Device are a catalytic filter and an electrokinetic filter. A distinctive feature of EMERALD Device is the absence of replaceable and wear parts.

All processes of water purification and electrical treatment in Device are as close as possible to what happens to water in wildlife. It has become possible to repeat the natural processes of water purification and treatment due to the creation of reliable electrochemical modules, which are the main elements of the system. The modules consist of two flow-through chambers: anode and cathode. It is in these chambers that, under the influence of a positive current on the anode and a negative current on the cathode, the water treatment processes suggested by nature are reproduced.

In the anode chamber of the module oxidative reactions take place, during which microbes and microbial toxins are destroyed. In nature, a similar process of antimicrobial protection, phagocytosis, has been occurring in all living organisms for millions of years without any failures. Also, in the anode chamber, harmful organic compounds (including hormones and antibiotics), iron, manganese and hydrogen sulfide are oxidized.

In the cathode chamber, reduction reactions take place during which water again acquires useful antioxidant properties due to enrichment with hydrogen. In nature, similar processes occur during the contact of spring water with rocks, as well as during phase transitions in the process of melting glaciers. Also, cathode water treatment can effectively remove heavy metals.

The auxiliary catalytic filter consisting of natural coal of the highest standard (grade A hydroanthracite) is used to purify water from oxidized organic and organochlorine compounds (including herbicides, pesticides, surfactants, phenols, antibiotics, antidepressants, hormones).

The auxiliary electrokinetic filter, consisting of the purest natural mountain quartz, is an environmentally friendly analogue of a mechanical fine filter and serves to purify water from mechanical impurities, heavy metal hydroxides, oxidized forms of iron, manganese, hydrogen sulfide.



Fig. 1. A new generation MB-11 type electrochemical module, appearance.

Useful information!

All water purification and activation processes in EMERALD Devices are as close as possible to what happens to water in living Nature, since the mechanism of fresh water purification in Nature is represented by two main processes: redox reactions and filtration.

Therefore, in EMERALD Devices the combination of electrochemical anode and cathode water treatment with environmentally-friendly filter elements requiring no replacement provides deep water purification from microbes, microbial toxins, biofilms, heavy metals, iron, manganese, hydrogen sulfide and harmful organic compounds.

The safety of water treatment using ECA technology is ensured by the complete absence of any chemicals in EMERALD Devices. MB-11 type electrochemical modules in which electrical treatment of water takes place, exchange only electrons with water, taking them from the water in the anode chamber, where oxidative reactions take place and the water is enriched with oxygen, and introducing the electrons into the water in the cathode chamber, where reduction reactions take place and the water gets enriched with hydrogen.

This allows the catalytic and electrokinetic filters to work in «clean condition». In the hydraulic scheme of the EMERALD Device, they are located after the anode destruction of microbes, microbial toxins and biofilms, which significantly increases their efficiency and service life. Therefore, the filter elements in the EMERALD Device are protected from microbial growth, fouling with harmful biofilms and water pollution by microbial toxins!

It is important to note that EMERALD Device has no consumables or wear parts. Electrochemical modules and auxiliary filter elements (catalytic filter and electrokinetic filter) do not require periodic replacement under the operating conditions described in this Operating Manual.

The main stages of water treatment in EMERALD Device



Fig. 2. Anode chamber.

Stage 1. Anode chamber of the MB-11 electrochemical module

- ◆ Destruction of microorganisms, microbial toxins and biofilms in the water flowing through the anode chamber of the electrochemical module;
- ◆ Oxidative destruction of organic compounds, such as herbicides, pesticides, antibiotics, hormones, antidepressants, surfactants, phenols, petroleum products;
- ◆ Water purification from iron, manganese and hydrogen sulfide due to instant oxidation and subsequent filtration;
- ◆ Water enrichment with oxygen.



Fig. 3. Catalytic filter.

Stage 2. Catalytic filter

- ◆ Water purification from a wide range of organic and inorganic dissolved impurities after oxidative destruction in the anode chamber of the module;
- ◆ Water purification from free chlorine and organochlorine compounds;
- ◆ Water taste improvement and elimination of unpleasant odors, including through the anode removal of phenols and hydrogen sulfide.



Fig. 4. Cathode chamber.

Stage 3. Cathode chamber of the MB-11 electrochemical module

- ◆ Water treatment in the cathode chamber of the electrochemical module imparting antioxidant (electron donor) properties to water, reducing the water redox potential to the zone of reduction values;
- ◆ Water purification from heavy metal ions converted into insoluble hydroxides to be subsequently removed on an electrokinetic filter;
- ◆ Microelements useful and necessary for human body are preserved in water: calcium, magnesium, sodium, potassium, lithium, iodine;
- ◆ Water enrichment with hydrogen;



Fig. 5. Electrokinetic filter.

Stage 4. Electrokinetic filter

- ◆ Final purification of water from mechanical impurities, hydroxides of heavy metals, iron, manganese, hydrogen sulfide;
- ◆ Guaranteed water clarity, removal of turbidity and impurities.

4. PRECAUTIONARY MEASURES

- ◆ For normal operation of EMERALD Device, it is necessary to comply with the requirements for its operation and maintenance specified in this Operating Manual.
- ◆ Before you start using the Device, please read this manual carefully. If you have any questions regarding the connection or operation of the EMERALD Device, please contact our authorized dealers for advice or call our customer service.
- ◆ The device is designed for purification and electrical treatment of cold drinking water from centralized water supply systems in accordance with SanPiN 2.1.4.1074-01 and/or cold drinking water packaged in a container in accordance with SanPiN 2.1.4.1116-02!
- ◆ In case drinking water does not meet the requirements of SanPiN 2.1.4.1074-01 or SanPiN 2.1.4.1116-02, as well as if there are visible suspensions, turbidity and rust flakes in the drinking water, before supplying water to the Device, it is necessary to use a preliminary water purification system you can purchase immediately with the Installation (see Table 6), or order separately.
- ◆ Do not use the Device to purify microbiologically unsafe water or water of unknown origin without proper pre-disinfection. If you have a weakened immune system or if you need absolutely pure water for medical reasons, please consult your doctor before using the Device.
- ◆ To ensure the specified characteristics of the purified water, when the Device is idle for a long time (more than 24 hours), the first 2 liters of water (approximately 1 minute) coming out of both the cold water tap and the hot water tap should be drained before using the Device.
- ◆ Do not leave the heating or cooling functions switched on during long breaks in the operation of the Device (more than 24 hours)!
- ◆ Do not collect warm or hot water in the original bottle for subsequent cleaning in the Device, as this may damage the internal components of the system (see DEVICE OPERATION Section).
- ◆ Do not use for food purposes the first 2 liters of water coming out of both the cold water tap and the hot water tap immediately after the Device is connected for the first time.
- ◆ The water purification system is not intended for use by children, people with physical and mental disabilities, lacking the necessary experience and knowledge, except in cases of direct instruction by a person responsible for their safety.
- ◆ When using the electrical appliance, basic safety precautions should always be observed to reduce the risk of fire, electric shock, and/or personal injury.
- ◆ Before operating the Device, make sure that all hydraulic and electrical connections are secure. Do not leave the operating Device unattended.
- ◆ No materials a plumber uses to seal joints should get inside the system. Avoid adding vegetable oil, petroleum jelly, or other lubricants, solvents, ammonia, alcohols, or strong cleaning solutions to the system. They can seriously damage the Device.
- ◆ It is necessary to carry out regular maintenance of the EMERALD Device for washing the filter elements and electrochemical modules (see DEVICE MAINTENANCE Section).

Electrical safety measures:

- ◆ The assemblage of the electrical outlet to connect the Device to the electric network must be carried out by qualified electricians in accordance with the laws in force in your country of residence.

- ◆ To prevent the risk of electric shock, do not place the Device near water or other liquid substances. The socket should not be located directly above the sink or in any other place where water can enter it. Before connecting to the power supply, make sure that the Device and all its elements are dry. During operation, all elements of the EMERALD Device must be dry and not leaking.

- ◆ For the proper functioning of the EMERALD Device, your outlet must be uninterrupted, have a working ground contact and be connected through a residual current device (RCD) or a differential circuit breaker with a rated leakage current of 30 mA!

- ◆ Be sure to disconnect the Device from the power supply during long breaks in operation. Do not use any other power supply or adapter in place of the supplied power cord. Check the power cord, power plug, and the Device itself for damage. If any damage is found, please contact the nearest service center for examination or repair of the Device.

- ◆ Incorrect connection to the electric network supply can lead to the risk of electric shock.

- ◆ In order to avoid accidents, it is strictly forbidden to carry out any repair/maintenance work without disconnecting the Device from the electric network!

Additional Security Measures:

- ◆ Use only spare parts approved by the manufacturer.

- ◆ Do not use the Device for purposes other than those intended. Do not use the Device outdoors. Do not use the Device for water desalination.

- ◆ Do not disassemble or repair the Device yourself. Contact an authorized service center. In order to reduce the risk of fire or electric shock, it is strongly recommended not to disassemble the electronic components of the Device.

- ◆ Avoid rough handling of the Device, do not drop or hit it. Do not store or transport the Device with residual water at an ambient temperature below 0°C. Use Device only in vertical position.

5. DEVICE FEATURES

Table 1. Specifications

Recommended productivity, no more than, liters per hour	20
Water cooling productivity (5–10 C°), l / h	3
Water heating productivity (85–95 C°), l / h	5
Power consumption during water treatment, no more than, W	10
Power consumption during water cooling, W	50
Power consumption during water heating, W	500
Specific electricity consumption, not more than W* h/l	1.5
Supply voltage - standard socket with grounding (for adapter), V.	110 - 220
Power supply frequency, Hz	50 - 60
The number of electrochemical modules of MB-11 type, pieces	2
Overall dimensions (excluding inlet and protruding parts), WxHxD, mm	260x995x324
Net weight, kg	10.8
Gross weight, kg	13.0

Table 2. Processing parameters of water purification *

Efficiency of anode oxidation of divalent iron ions at their concentration in source water of 3 mg/l, %	92 - 95
Efficiency of catalytic conversion of chlorine-oxygen oxidants into hydroperoxides in the catalytic filter, %	60 - 70
Efficiency of conversion of trivalent iron ions into hydroxide at their concentration in source water of 0.1 mg/l, %	80 - 90
Reduction of permanganate oxidizability of water at the concentration in the source water of 10 mg/l, %	70 - 85
Efficiency of removal of hydroxides of heavy metals and iron on the electrokinetic filter at their concentration in source water of 0.5 mg/l,%	80 - 90
Disinfection of water at 300 colony-forming units (CFU) per 1 ml in source water, %	99

Table 3. Parameters of catholyte and anolyte in terms of ORP and pH *

The reduction of the ORP of the catholyte relative to the ORP of the source water, mV, SCE	(-250)...(-700)
The increase in the pH of the catholyte relative to the pH of the source water, pH units	0.5 - 2.0

Table 4. Operating conditions

Ambient temperature, °C	+5...+40
Relative air humidity (at 25 °C), no more than, %	80
Tap water temperature, °C	+1...+30
Temperature of flushing solution of citric acid, not more than, °C	+70
Total dissolved solids (TDS) of supplied tap water, mg/l	100 - 400
pH of supplied tap water	6 - 9

* The averaged parameters are given. In each specific case, the results of water treatment are individual in nature and differ from each other due to the different physical and chemical composition and the level of contamination of the treated water.

6. CONTENTS OF DELIVERY

Table 5. Contents of Delivery

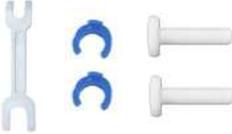
No.	Item	Number, pc.	Overall view
1.	EMERALD HOME 20 OFFICE B Device.	1	
2.	Network cable with an IEC320 C14 plug for connecting the Device to the electrical network (the network cable is built into the Device casing).	1	
3.	EMERALD HOME flushing tank with connection fittings.	1	
4.	A set of connecting tubes: 1/4" tube for quick-release fittings, 4 meters; PVC tube for connection to the drain valve, with a clamp, 1 meter.	1	
5.	A set for working with fittings: a wrench for fittings and tubes, a set of spare clips and plugs for 1/4" fittings.	1	
6.	A holder for glasses, with a platform and fixing screws.	1	
7.	Operation Manual.	1	

Table 6. Auxiliary items purchased separately

No.	Name	Number, pcs.	Appearance
Add. 1	Activated carbon post filter, replaceable, with quick-release fitting for 1/4" tube with the connection set: fixing clips for fastening the post filter, 2 pcs.; self-tapping screws for mounting fixing clips, 2 pcs.	1	
Add. 2	Slim Line 10" flask for water pre-treatment cartridges with a bracket, a wrench and a set of fittings for connection. The kit includes 2 pcs. of M G1/2" - 1/4" tube fittings, for connecting the flask with water supply line and the Device.	1	
Add. 3	Mechanical polypropylene filter, 5 microns, replaceable, for Slim Line 10" flask	1	
Add. 4	Activated carbon filter, replaceable, for Slim Line 10" flask	1	
Add. 5	Filter with ion-exchange resin for water softening (removal of hardness salts), replaceable, for Slim Line 10" flask	1	
Add. 6	Water iron removal filter, replaceable, for Slim Line 10" flask	1	
Add. 7	Water mineralizer filter (to increase the electrical conductivity of water), replaceable, for a 1/4" tube	1	

7. DEVICE CONNECTION

Description of the main elements on the EMERALD Device casing

Fig. 6 shows the main elements of the EMERALD HOME 20 OFFICE B Device, located in the front and rear parts of the casing. For user convenience, the numbering of elements in Fig. 6 and subsequent connecting diagrams is the same.



Fig. 6. Main elements on the EMERALD HOME 20 OFFICE B Device casing.

1. EMERALD HOME 20 OFFICE B Device; 1.1. Water cooling on/off button; 1.2. Water heating ON/OFF button; 1.3. Connector with a plug for draining cold water; 1.4. Connector with a plug for draining hot water; 2. Network cable for connecting the Device to the electrical network; 4. LED Indicator; 5. Water heating indicator; 6. Water cooling indicator; 7. ACTIVATION button to turn on the OPERATION mode; 8. Hot water outlet tap; 9. Cold water outlet tap; 13. FLUSHING INLET fitting for supplying flushing solution to the Device (in FLUSHING mode); 14. FLUSHING OUTLET fitting for flushing solution outlet from the Device (in FLUSHING mode); 15. FLUSHING ON/OFF button to turn on/off FLUSHING mode; 16. FLUSHING REGULATOR valve for switching liquid flows in OPERATION and FLUSHING modes; 17. Electronic display with ammeter and voltmeter.

General rules for handling John Guest® type quick-release fittings

The connection of the 1/4" tubes to the fittings is done manually. John Guest® type quick-release connections allow you to repeat the procedures for connecting/disconnecting the tubes and fittings if necessary. When properly connected, the tube enters the fitting hole by 15-18 mm. Correctness and reliability of the connection is checked by the return movement of the tube, after connecting to the fitting. With a force of 8 to 10 kgf, the tube should not be pulled out of the fitting.

Important! Do not apply force when performing these procedures! Proper connection/disconnection of John Guest® tubes and fittings does not require excessive force!

CONNECTING TUBES AND CLOSING PLUGS TO QUICK-RELEASE FITTINGS.

Connecting tubes or plugs to fittings is to be performed in accordance with Fig. 7.1:

- ◆ Insert the tube by hand into the fitting hole (1) as far as it will go. When properly connected, the tube enters the fitting hole by 15-18 mm;
- ◆ Insert a fixing clip-lock (2,3) into the gap between the sliding collet ring and the base of the fitting;
- ◆ Check that the connection is secure by moving the tube back. With a force of 8 to 10 kgf, the tube should not be pulled out of the fitting.

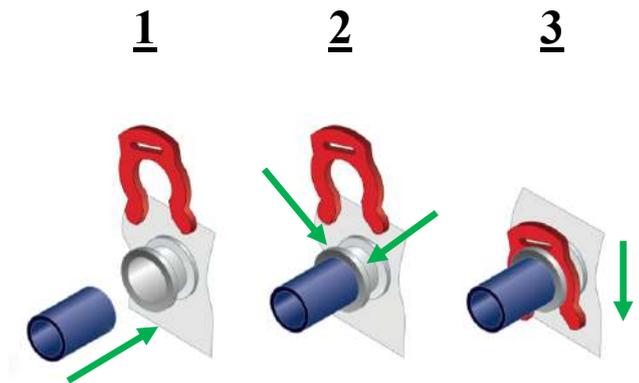


Fig. 7.1. Connecting tubes and closing plugs to quick-release fittings on the Device casing.

DISCONNECTING TUBES AND CLOSING PLUGS FROM QUICK-RELEASE FITTINGS.

Disconnecting tubes or plugs from fittings is to be performed in accordance with Fig. 7.2:

- ◆ Remove the fixing clip-lock from the fitting (2);
- ◆ Using a hand or a special wrench (9, Tab. 5), press the collet ring of the fitting to its base (3);
- ◆ While holding the collet ring of the fitting in the pressed position (3), pull the tube or plug out of the fitting by hand (4).

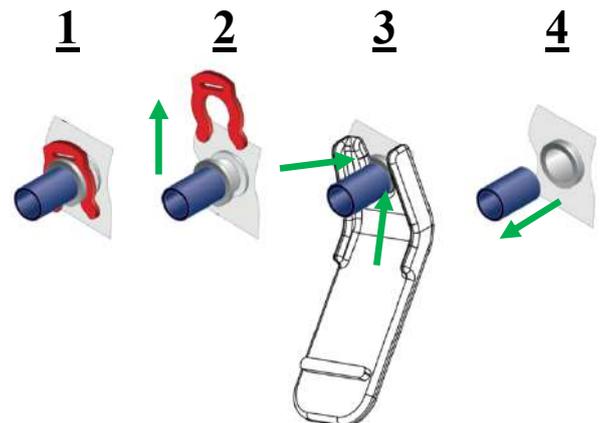


Fig. 7.2. Disconnecting tubes and closing plugs from quick-release fittings on the Device casing.

EMERALD Device Connection

This section describes the basic EMERALD Device connection method recommended by the manufacturer. If you use an alternative method of EMERALD Device connecting, you must make sure that the method you choose does not contradict other conditions of this Operating Manual. In case of violation of the EMERALD Device installation and operation conditions, warranty claims may be rejected. In the event of any mechanical damage to a connection node due to improper installation and use, warranty claims may be rejected.

In case drinking water does not meet the requirements of SanPiN 2.1.4.1074-01 or SanPiN 2.1.4.1116-02, as well as if there are visible suspensions, turbidity and rust flakes in drinking water, it is necessary to use a preliminary water purification system (purchased separately) before collecting source water into the bottle (3, Fig. 8) for subsequent supply to the Device.

Please keep the tubes and plugs included in the delivery set! You will need them to carry out the FLUSHING mode (see the DEVICE MAINTENANCE section), as well as to transport the Device!

Important! EMERALD HOME 20 OFFICE B Device is designed for purification and electrical treatment of cold water lines only. Thus, when the ACTIVATION button (7, Fig. 8) is pressed, only the water leaving the cold water supply tap (9, Fig. 8) goes through the complete cycle of filtration and electrical treatment in the Device, described in the section PRINCIPLES OF PURIFICATION AND ELECTRIC WATER TREATMENT and, respectively, acquires antioxidant properties.

Hot water coming out of the hot water supply tap (8, Fig. 8) is supplied to the user directly from the bottle, bypassing the stages of filtration and electrical treatment in the Device, since the catholyte loses its antioxidant properties when heated.

CONNECTION DIAGRAM OF EMERALD DEVICE IN OPERATION MODE

The EMERALD Device is placed without fastening on a horizontal flat smooth surface. The EMERALD Device connecting procedure in the OPERATION mode is carried out in accordance with the diagram in Fig. 8 and consists of the following stages:

- ◆ Installation of the initial drinking water bottle (3);
- ◆ Connecting the Device to the electrical network (2).

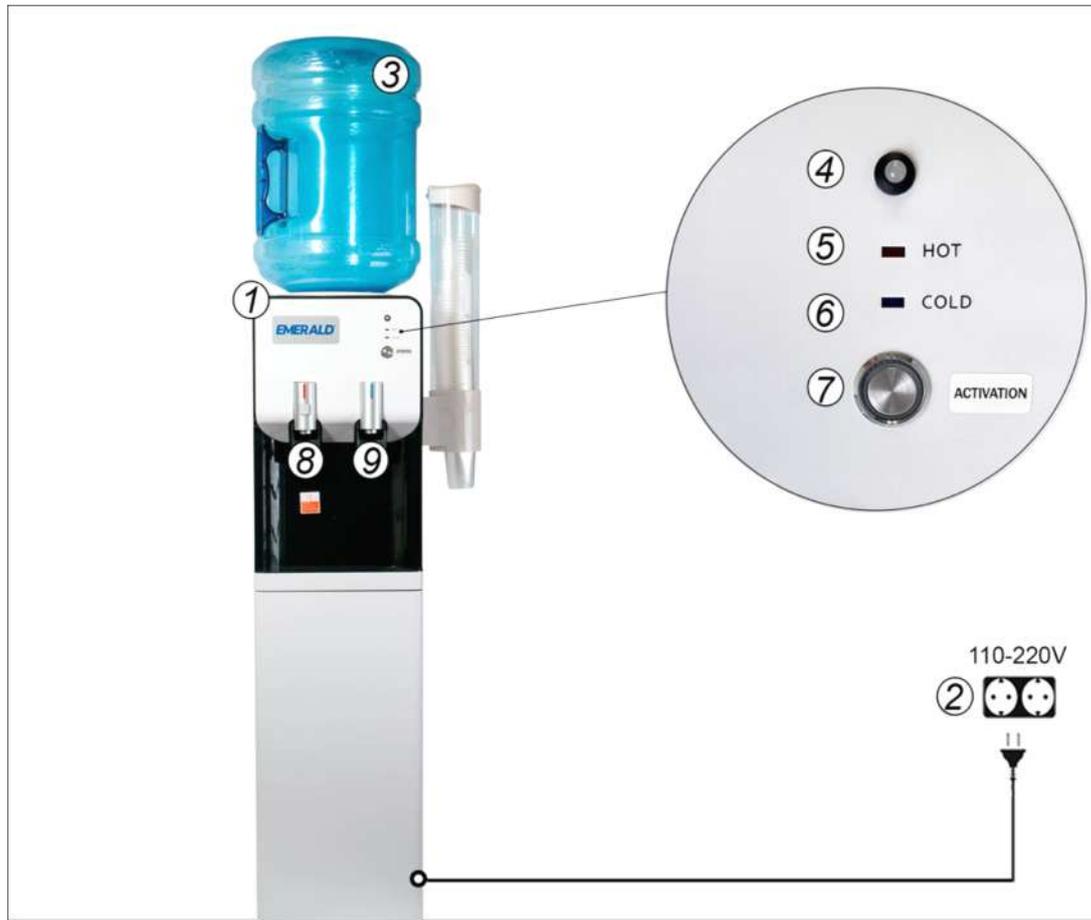


Fig. 8. EMERALD Device Connecting Diagram in OPERATION Mode. *

1. EMERALD HOME 20 OFFICE B Device;
2. Network cable for connecting the Device to the electrical network;
3. Plastic bottle with source water (bottled or tap water);
4. LED Indicator;
5. Water heating indicator;
6. Water cooling indicator;
7. ACTIVATION button to turn on the OPERATION mode;
8. Hot water outlet tap;
9. Cold water outlet tap;

Connecting the EMERALD Device to the electrical network

To connect the EMERALD Device to the electrical network, plug the power cable built into the Device case into the electrical socket (2, Fig. 8).

After connecting the Device to the electrical network, the LED indicator (4, Fig. 8) will sequentially turn on all three main indicator colors (red, green, blue) to check their operability, after which the LEDs will turn off and the Device will switch to STANDBY mode. For the description of the main modes, see *Basic operating modes* paragraph, DEVICE OPERATION section).



Fig. 9. Connecting the network cable of the EMERALD Device to the electrical network.

Important!

Disconnecting the electric power cable plug from the power socket is allowed only when the Device is turned off (when the Device is in STANDBY mode). Do not disconnect the electric power plug while the Device is in OPERATION mode.

Make sure the Device is connected in a safe and secure manner to an electrical network with suitable characteristics (see PRECAUTIONARY MEASURES and DEVICE SPECIFICATIONS Sections).

To comply with electrical safety measures, the electrical outlet the EMERALD Device is connected to must be uninterrupted, have a valid ground contact, and be connected through a residual current device (RCD) or differential circuit breaker (RCBO) with a rated leakage current of 30 mA!

8. DEVICE OPERATION

Basic operating modes

STANDBY Mode

In STANDBY mode, the Device is connected to the electrical network. The source water bottle is installed in the appropriate slot at the top of the Device. The LED is not lit. The electronic display is off.

OPERATION Mode

To turn on the Device in the OPERATION mode, press the ACTIVATION button (7, Fig. 8) 1 (one) time. After pressing the ACTIVATION button, in a 4 (four) minutes period, cold water is purified and electrically treated: the built-in circulation pump starts working, a sound signal occurs, the LED indicator lights up green, the electronic display starts showing voltage and current.

After **4 (four) minutes**, the water treatment is automatically turned off and the Device switches back to STANDBY mode: the circulation pump turns off, the LED indicator and the electronic display with ammeter and voltmeter go out.

4 minutes of the OPERATION mode is enough for the Device to prepare, on average, 1 liter of cold water catholyte (about 4 standard 250 ml glasses). A reservoir with catholyte of about 1 liter in volume is located immediately before the outlet of the cold water supply tap (9, Fig. 8), so pressing this tap with a glass, the user will immediately receive about 1 liter of freshly prepared cold water catholyte. If it is necessary to collect catholyte in a volume exceeding 1 liter at a time, one should first drain the already prepared 1 liter of catholyte, and then press the ACTIVATION button again to prepare a new catholyte portion.

Important! The user can draw ordinary non-activated water (original water from a bottle) at any time both in STANDBY mode and in OPERATION mode from both water supply taps. If there is initial water in the bottle, the water supply from the taps (8 and 9, Fig. 8) will always be carried out.

The water heating (1.1, Fig. 6) and cooling (1.2, Fig. 6) functions can also be switched on/off in either of the two modes. Most importantly, before turning on the heating and/or cooling of water, please make sure there is source water in the bottle and bleed air from both water outlet taps. To do so, press each tap in turn with a glass and wait for the moment when water starts to come out of the tap. This procedure must be carried out with both water outlet taps each time after installing the bottle with source water.

Water heating and cooling functions operate automatically and maintain the preset water temperature in the respective tanks. **However, it is not recommended to leave the heating and cooling functions on during long breaks in the Device operation (more than 24 hours)!**



Fig. 10. LED (top) and ACTIVATION button to turn on the Device in OPERATION mode (bottom).

Some features of the OPERATION mode.

- ◆ **After 1200 liters** (approximately 28 hours of operation) of purified water in the OPERATION mode, the LED will turn orange when the Device is turned on, indicating that it is DESIRABLE to flush the Device with an acid solution.
- ◆ **After 1500 liters** (approximately 35 hours of operation) of purified water in the OPERATION mode, the LED will turn red when the Device is turned on, indicating that the Device MUST be flushed with an acid solution. Using the Device in the OPERATION mode with red color is not allowed by the rules of this operating manual.

The Device operation indication

The electronic display consists of a voltmeter and an ammeter and allows you to visually evaluate the Device efficiency. The voltmeter (upper numerical scale) indicates the voltage in volts (V) applied to the electrochemical modules. In the EMERALD Device, the voltage is stable and is 24V. The ammeter (lower numerical scale) indicates the current in amperes (A) that flows in the electrochemical modules during water treatment.

The optimal values of the ammeter in the OPERATION mode should be in the range **0.2A – 1.0A**.

If the current value is below this range, it means either a low total mineralization of the source water (in this case you need to increase the mineralization of the source water in the bottle, for example by installing an additional mineralization filter before filling the bottle), or a high degree of contamination of the Device (in this case you should flush it, see the *DEVICE MAINTENANCE* section).

A decrease in the current strength on the ammeter in the OPERATION mode **by more than 3 times** relative to the initial values (provided the Device is operating on the same water) indicates that it is necessary to flush the Device (see the *DEVICE MAINTENANCE* section).



Fig. 11. Electronic display with voltmeter (top) and ammeter (bottom).

9. DEVICE MAINTENANCE

To achieve the maximum quality of water purification and electrical treatment in the EMERALD HOME 20 OFFICE B Device, as well as to ensure drinking water quality standards, the user must regularly flush the Device with a solution of citric acid. With timely and uncomplicated maintenance, your Device will produce clean, high quality antioxidant drinking water with the required characteristics for many years.

Internal parts of the Device (electrochemical modules and auxiliary filter elements) are not fast-wearing and are regenerated with a citric acid flushing solution.

Important! The activated carbon post filter is a replaceable filter. For the most efficient water treatment, it is recommended to change this filter every time after carrying out the FLUSHING procedure. Before starting the FLUSHING mode, the post filter must be disconnected. Only after the full completion of the FLUSHING mode a new post filter can be connected. After connecting of a new post filter, be sure to drain the first 15 liters of water without its usage.

The EMERALD Device maintenance consists in regular flushing of the entire system (including electrochemical modules and filter elements) with a citric acid solution to remove accumulated contaminants. The frequency of maintenance of the Device and EMERALD depends on the quality of the source water and the operation mode. On average, when Device operates on tap drinking water that complies with SanPiN 2.1.4.1074-01, The Device should be flushed at least once every 2 months or after 1500 liters of purified water (whichever comes first).

The EMERALD Device automatically monitors the consumption of treated water and alerts the user when flushing is required:

- ◆ **After 1200 liters** (approximately 28 hours of operation) of purified water in the OPERATION mode, the LED will turn orange when the Device is turned on, indicating that it is DESIRABLE to flush the Device with an acid solution.

- ◆ **After 1500 liters** (approximately 35 hours of operation) of purified water in the OPERATION mode, the LED will turn red when the Device is turned on, indicating that the Device MUST be flushed with an acid solution.

Important! LED indicator allows the user to evaluate only the maximum allowable amount of treated water, after which it is necessary to flush the Device. Given the large difference in the quality of the source water in different regions, the need for flushing may occur earlier (before the red color of the LED in the OPERATION mode).

To more accurately determine the Device pollution degree and the need to flush it, the user should focus on the following factors:

- ◆ Reduction of the current strength indicated on the electronic display (Fig. 11) **by more than (three) 3 times** relative to the initial values (provided the Device operates on the same water with the same total mineralization);
- ◆ Degradation of organoleptic qualities of the treated water;

Preparing EMERALD Device for FLUSHING Mode

Before connecting the Device to the FLUSHING mode, in accordance with the connection diagram in fig. 14, you need:

- ◆ Move the FLUSHING REGULATOR valve to horizontal position;
- ◆ Remove the clips and plugs from the FLUSHING INLET and FLUSHING OUTLET fittings for subsequent connection of tubes and flushing tank;

Important! The FLUSHING REGULATOR valve must be in the HORIZONTAL (closed) position throughout the FLUSHING mode procedure!



Fig. 12. FLUSHING REGULATOR valve in horizontal (closed) position in FLUSHING mode.

Preparing the citric acid flushing solution

To carry out the EMERALD Device flushing procedure, it is necessary to prepare one liter of citric acid flushing solution in the EMERALD HOME flushing tank (10, Fig. 14). The citric acid flushing solution is prepared at the rate of 100 grams of citric acid per one liter of water. It is recommended to dilute citric acid crystals in hot water, and flush with a solution with a temperature of 60-70 ° C (not higher!).

Important! It is not allowed to flush the EMERALD Device with a citric acid solution with a temperature of more than 70°C. This can damage the hydraulic elements of the system! In this case warranty claims may be rejected. Use temperature gauges to accurately determine the temperature of the flushing solution.

All work related to the preparation of the flushing solution, as well as the entire flushing process of the Device, should be carried out using personal protective equipment for the skin and eyes!



FLUSHING Mode

To start the FLUSHING mode, the EMERALD Device must be connected according to the diagram in fig. 14 and be in STANDBY mode. All hydraulic and electrical connections must be securely fixed. The circulating flushing tank must be placed on a level and stable surface (e.g. on the worktop next to the sink, on the floor or on the bottom shelf of the sink cabinet).

FLUSHING Mode is carried out in a semi-automatic mode and consists of three main stages:

1) **CIRCULATION** of the flushing solution inside the Device. At this stage, the pump built into the casing is turned on and the process of pumping and circulating the solution through all the main hydraulic elements of the system begins.

2) **HOLD-UP** of the flushing solution inside the Device. At this stage, the circulation pump is turned off and the flushing solution is kept inside the hydraulic elements of the system to more effectively dissolve the accumulated contaminants.

3) **WASHING-OUT** of the Device with ordinary cold tap water. At this stage, the Device is connected according to the diagram in Fig. 15 for washing out dissolved contaminants and residues of flushing solution from the Device with water into a drainage tank or sewer.

CIRCULATION AND HOLD-UP STAGES

To turn on the FLUSHING mode, press the FLUSHING ON/OFF button (15, Fig. 14) once. After pressing the button, the LED turns blue, and the built-in flushing pump starts working and circulates the flushing solution through the system. Then, for **20 minutes**, the Device operates in automatic mode, alternating between the CIRCULATION and HOLD-UP stages. This procedure consists of 4 similar consecutive cycles, each lasting for 5 minutes, and includes:

- ◆ CIRCULATION stage - **4 min.**
- ◆ HOLD-UP stage - **1 min.**

In 20 minutes, after completion of all the 4 cycles, the LED in the Device starts flashing blue, signaling that the CIRCULATION and HOLD-UP stages are finished.



Fig. 13. Connection example of EMERALD Device in FLUSHING mode, CIRCULATION and HOLD-UP stages.

WASHING-OUT STAGE

After completion of the CIRCULATION and HOLD-UP stages, the user needs to turn off the flushing tank and connect the Device according to the FLUSHING mode diagram, the WASHING-OUT stage (Fig. 15). At this point, the Device should be washed out with cold tap water to wash out dissolved contaminants and flushing solution residues from the internal hydraulic elements of the Device. The water coming out of the FLUSHING OUTLET fitting (14, Fig. 15) must either be immediately drained into the sewer, or drained into any convenient plastic or glass container (18, Fig. 15, not included in the delivery set) with a volume of at least 5 liters, followed by draining the liquids in the sewer.

WASHING-OUT stage is carried out for **4 minutes**. To do so:

- ◆ Make sure there is water in the bottle (3, Fig. 15);
- ◆ Press 1 (one) time the ACTIVATION button (7, Fig. 15);

After pressing the button, the main circulation pump will turn on for 4 minutes and the WASHING-OUT mode will start. In this mode, water is taken from the source water bottle, washes out all the internal hydraulic elements of the Device and goes to the drainage tank (or directly to the sewer). At the same time, during 4 minutes of the WASHING-OUT stage, the full-fledged OPERATION mode does not start, the LED flashes green, no voltage is applied to the electrochemical modules, the current strength indicator on the ammeter is close to zero. At the end of this period, the WASHING-OUT mode is automatically turned off, the green LED stops flashing.

At the end of the FLUSHING mode, the user needs to connect the Device according to the OPERATION mode scheme (Fig. 8). To do so:

- ◆ Disable the drain tank;
- ◆ Install the white plugs into FLUSHING INLET and FLUSHING OUTLET fittings;
- ◆ **Move the FLUSHING REGULATOR valve back to the VERTICAL position!**

FLUSHING mode is over and the Device is ready for use again in OPERATION mode!

Some features of the FLUSHING mode.

- ◆ The user can always use the FLUSHING mode on/off button (15, Fig. 14), pause the FLUSHING mode (press once) and start it from the beginning (press once again). This function allows the user to pause the FLUSHING mode if necessary (for example, if there is a problem with pumping the flushing solution into the Device) and resume this mode again.
- ◆ After activating/deactivating the FLUSHING mode, when water is subsequently added, the WASHING-OUT phase always starts for the first 4 minutes, regardless of whether the FLUSHING program has been completed or not. This function is non-volatile and has priority. This allows for protecting the user and the Device itself in case of violation of the FLUSHING mode (for example, in the event of a power failure of the Device and during the FLUSHING mode).
- ◆ If any malfunction occurs during the FLUSHING mode, you should repeat this procedure from beginning to end before using the Device in the OPERATION mode.
- ◆ To increase the useful life of the EMERALD HOME flushing tank and connecting tubes, we recommend that after the FLUSHING mode, wash out thoroughly with warm tap water, dry and remove these elements before the next flushing.
- ◆ Please note that a small amount of water or flushing solution may leak from the tubes and fittings of the Device during connection/disconnection in the FLUSHING mode.

Connecting diagram of the EMERALD Device at the CIRCULATION and HOLD-UP stages

The procedure for connecting the EMERALD Device in the FLUSHING mode is performed in accordance with the diagram in fig. 14 and consists of the following stages:

- ◆ Preparing a flushing solution of citric acid in a container (10);
- ◆ Connecting the flushing solution supply tube to the Device (11,13);
- ◆ Connecting the outlet tube of the flushing solution from the Device (14,12);
- ◆ Connecting the Device to the electrical network (2).

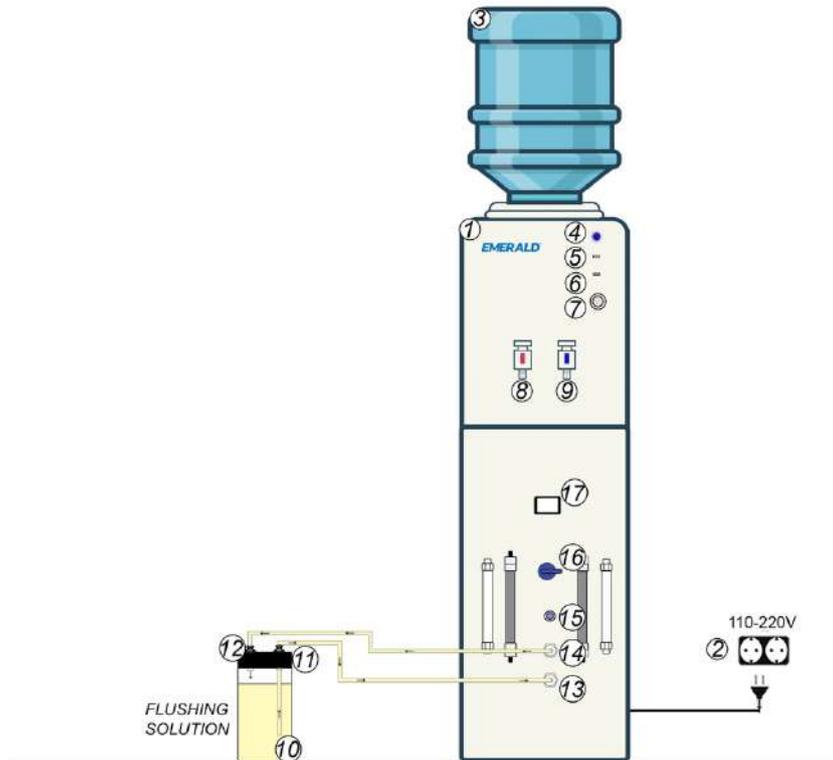


Fig. 14. Connecting diagram for EMERALD Device in FLUSHING mode, CIRCULATION and HOLD-UP stages.

1. EMERALD HOME 20 OFFICE B Device;
2. Network cable for connecting the Device to the electrical network;
3. Plastic bottle with source water (bottled or tap);
4. LED Indicator;
5. Water heating indicator;
6. Water cooling indicator;
7. ACTIVATION button to turn on the OPERATION mode;
8. Hot water outlet tap;
9. Cold water outlet tap;
10. Flushing tank;
11. Fitting for the intake of flushing solution from the tank;
12. Fitting for returning the flushing solution to the container;
13. FLUSHING INLET fitting for supplying flushing solution to the Device;
14. FLUSHING OUTLET fitting for the outlet of the flushing solution from the Device;
15. FLUSHING ON/OFF button to turn on/off FLUSHING mode;
16. FLUSHING REGULATOR valve for switching liquid flows in OPERATION and FLUSHING modes (it must be CLOSED during the entire FLUSHING mode - horizontal position!);
17. Electronic display with ammeter and voltmeter.

Connecting diagram for EMERALD Device at the WASHING-OUT stage

The procedure for connecting the EMERALD Device at the WASHING-OUT stage is carried out in accordance with the diagram in fig. 15 and consists of the following stages:

- ◆ Installing a bottle of cold tap water (3);
- ◆ Installing a Plug in the FLUSHING INLET Fitting (13);
- ◆ Connecting the flushing solution outlet pipe from the Device to a drainage tank (14, 18) or directly to a drain into the sewer;
- ◆ Connecting the Device to the electrical network (2).

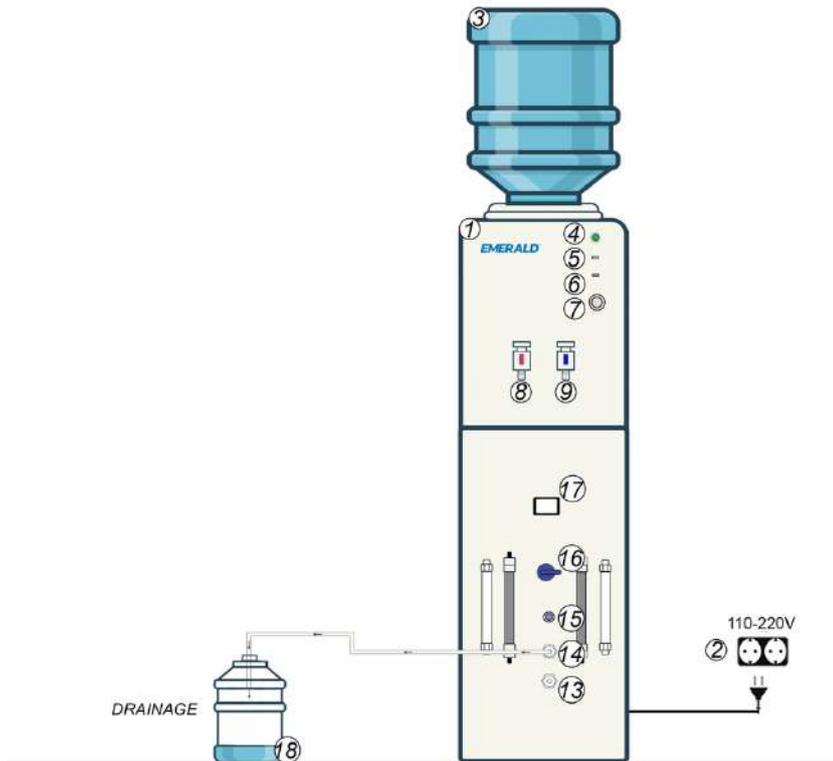


Fig. 15. Connecting diagram for EMERALD Device in FLUSHING mode, WASHING-OUT stage.

1. EMERALD HOME 20 OFFICE B Device;
2. Network cable for connecting the Device to the electrical network;
3. Plastic bottle with source water (bottled or tap);
4. Indicator LED;
5. Water heating indicator;
6. Water cooling indicator;
7. ACTIVATION button to turn on the OPERATION mode;
8. Hot water outlet tap;
9. Cold water outlet tap;
10. Flushing tank;
11. Fitting for the intake of flushing solution from the tank;
12. Fitting for returning the flushing solution to the tank;
13. FLUSHING INLET fitting for supplying flushing solution to the Device;
14. FLUSHING OUTLET fitting for the outlet of the flushing solution from the Device;
15. FLUSHING ON/OFF button to turn on/off FLUSHING mode;
16. FLUSHING REGULATOR valve for switching water flows in OPERATION and FLUSHING modes (it must be CLOSED during the entire FLUSHING mode - horizontal position!);
17. Electronic display with ammeter and voltmeter.
18. Drainage tank (volume not less than 5 liters, not included in the delivery).

10. TROUBLESHOOTING GUIDE

Table 7. Troubleshooting Guide

Problem	Probable Cause	Remedy
<p>Device does not turn on.</p> <p>LED and electronic display do not light up after pressing the ACTIVATION button.</p>	<p>1. The hydraulic and electrical connections of the Device are connected incorrectly.</p> <p>2. No water in the bottle on top of the Device.</p> <p>3. No electrical contact/power supply in the network.</p> <p>4. The FLUSHING REGULATOR valve is in the horizontal (closed) position.</p>	<p>1. Connect the hydraulic and electrical connections according to the DEVICE CONNECTION section.</p> <p>2. Make sure there is enough source water in the top bottle.</p> <p>3. Check for electrical contact/power supply in the network.</p> <p>4. In OPERATION mode, the FLUSHING REGULATOR must be in the vertical (open) position.</p>
<p>Weak change in the redox potential (ORP) parameter of the cold water catholyte relative to the source water.</p> <p>The current on the ammeter is below normal.</p>	<p>1. Insufficient total mineralization of source water.</p> <p>2. The filter elements are dirty and/or deposits of hardness salts have formed in the cathode chambers of the electrochemical modules.</p>	<p>1. Increase the mineralization of the source water in the bottle, for example, by using an additional mineralizer filter.</p> <p>2. Flush the Device with citric acid solution and replace cartridge-type filters if present (see Section 9 DEVICE MAINTENANCE).</p>
<p>The citric acid wash solution is not pumped into the Device.</p> <p>It is necessary to pause the FLUSHING mode for troubleshooting.</p>	<p>1. The hydraulic and electrical connections of the Device in FLUSHING mode are connected incorrectly.</p> <p>2. Pause the FLUSHING mode using the FLUSHING mode on/off button..</p>	<p>1. Connect hydraulic and electrical connections in FLUSHING mode. Pay attention to the fact that the connection tubes pass freely along the radii without kinks.</p> <p>2. To pause the FLUSHING mode, press the FLUSHING ON/OFF button once. To start the FLUSHING mode again, press the button one more time.</p>

11. WARRANTY

The manufacturer guarantees that the Device complies with the requirements of the technical specifications, subject to observing the conditions of operation, transportation, storage and installation specified in this Operating Manual. The period of free warranty service for EMERALD Device is 2 (two) years from the date of its sale, but not more than 3 (three) years from the date of manufacture. In the absence of the date of sale and the stamp of the trading organization, the period of free warranty service is calculated from the date of production.

The manufacturer warrants that the EMERALD Device (excluding accessory and replacement filters/cartridges) will be free from defects (as defined below) under correct use for a period of 2 years from the date of purchase. A product is considered to be defective if the defect is due to defective material or workmanship, or if such a defect interferes with or impairs the end customer's use of the EMERALD Device.

Warranty obligations are valid only in the presence of correctly completed payment documents and this Operating Manual.

The warranty does not cover:

- ◆ EMERALD Device, which has been used for other purposes or in a way that is contrary to the instructions in this Operating Manual;

- ◆ Any EMERALD Device that has been used incorrectly, crashed, physically damaged, improperly installed or misused, altered, mishandled, or exposed to adverse external factors (including but not limited to, lightning, flood or fire);

- ◆ Any EMERALD Device that has been damaged due to improper repair, modification, alteration or service by anyone other than an authorized warranty and service representative of the manufacturer or an authorized sales partner;

- ◆ Any EMERALD Device found to be defective or degraded due to the use of any non-original spare parts or accessories (including non-original water pre-treatment filters) not intended for use with the EMERALD Device;

- ◆ Any EMERALD Device not installed using the original kit supplied with the pack.

The manufacturer is also released from liability in the following cases: EMERALD Device or its parts have external mechanical damage; EMERALD Device has not been serviced in a timely manner (in accordance with the instructions of this Operating Manual); the filter elements (if they are included in the delivery and the specific Device model) have exhausted their resource, but have not been replaced or serviced in a timely manner; this Operating Manual with the dates of production and/or sale are lost and there are no other ways to determine the service life of the product; when the consumer uses spare parts from other manufacturers that are different from the original components included in the kit; when installing and operating the Device in excess of the limits established by the technical requirements for the operating conditions of the product; under the influence of force majeure circumstances; in other cases provided for by law.

Legal disclaimers

The design of EMERALD Devices is constantly being improved, so the product you have purchased may differ slightly from that described in this Operating Manual while maintaining all the declared performance properties. The manufacturer reserves the right to make changes and improvements to the Device design that do not impair the Device operational properties and the quality of the resulting product;

Although all necessary measures have been taken to verify the text of this Operating Manual, the manufacturer does not guarantee its completeness or the absence of errors.

Claims

EMERALD ECOTECHNOLOGIES LLC is the authorized company to receive all complaints and requests, including warranty claims for the EMERALD Device.

To make claims under this warranty, you can leave a claim on our official website www.emerald.eco, as well as call the company's service department at the unitary number: 8 (495) 928-77-71 or write to info@emerald.eco. You are kindly requested to contact us at the above contacts before you decide to send the Device for diagnostics.

In order to make a claim under this warranty, the buyer must notify EMERALD ECOTECHNOLOGIES LLC in writing of the defect found within two (2) months after the defect was discovered, but no later than two (2) months after the end of the relevant warranty period.

Important! The manufacturer and official trading partners are not responsible in case of problems caused by the condition of the water pipes and sanitary fittings of the buyer. The unsatisfactory condition of the supply water pipes, plumbing fittings and the buyer's failure to comply with the conditions necessary for connecting the Device and the conditions set forth in this Operating Manual are grounds for refusing to install the Device, as well as warranty service. In the case of independent connection and service maintenance of Device, the manufacturer and official trading partners are not responsible and do not accept claims in case of problems caused by violation of the rules for connection and maintenance of Device stated in this Operating Manual. The manufacturer and official trading partners are not responsible and do not accept claims if the EMERALD Device was used for other purposes or in a way that contradicts the instructions in this Operating Manual.

12. TRANSPORT AND STORAGE

EMERALD HOME 20 OFFICE B Device does not contain harmful, toxic, flammable or explosive substances. Transportation of the Device can be carried out by any type of land or air transport (except for unheated compartments during the cold season). The product is stored in a packed form, avoiding drying, freezing, direct sunlight, at a distance of at least 1 meter from heating Devices, at an ambient temperature of at least 5 °C and not above 40 °C, away from substances with a strong odor. EMERALD Device has a warranty period of 3 (three) years from the date of manufacture.

13. ACCEPTANCE AND SALE CERTIFICATE

EMERALD HOME 20 OFFICE B Device (shortened name EMERALD) complies with Tech. cond. № 28.29.12-001-19313776-2018 and is recognized as serviceable.

Factory number _____
Release date _____
Quality control test _____

MANUFACTURER:

EMERALD ECOTECHNOLOGIES Limited Liability Company (abbreviated name EMERALD ECOTECHNOLOGIES LLC)

600035, Russia, Vladimir city, Kuibysheva street, 26A



EMERALD HOME 20 OFFICE B Device (shortened name EMERALD) is manufactured by EMERALD ECOTECHNOLOGIES LLC. The company EMERALD ECOTECHNOLOGIES LLC has the exclusive rights to manufacture EMERALD Devices, as well as to carry out their service and warranty maintenance. The company EMERALD ECOTECHNOLOGIES LLC has the exclusive right to transfer to its official trading partners all the necessary powers for the sale of EMERALD Devices, as well as for their service and warranty maintenance.

For service and warranty issues, please contact:

EMERALD ECOTECHNOLOGIES Limited Liability Company

600035, Russia, Vladimir city, Kuibysheva street, 26A

Tel.: 8 (495) 928-77-71; E-mail: info@emerald.eco;

Website: www.emerald.eco

WARRANTY CARD

Date of sale _____

Shop stamp _____ L.S.

Electronic version of this document is available by the link below:



APPENDIX №1. CERTIFICATES

1. CE CERTIFICATE OF CONFORMITY OF THE EUROPEAN UNION

شهادة - 증명서 - Certificat - Сертификат - 證明書

Form QAT_10-M05, version 00, effective since March 25th, 2020

Certificate of Compliance

No. 0D201203.EEW054

Certificate's Holder: EMERALD ECOTECHNOLOGIES, LLC.
600026, Russia, Vladimir city, Kulbysheva street, 26A

Certification ECM Mark: 

Product: Devices for Purification and Electrochemical Treatment of Water and Aqueous Solutions

Brand: EMERALD

Model(s): PRO, HOME, OFFICE, COTTAGE, SPA, STEL, VENDING, ECO, BIO, AQUA

Verification to: Standard: EN 60335-1:2012/A13:2017, EN 55014-1:2017, EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013

related to CE Directive(s):
2014/35/EU (Low Voltage)
2014/30/EU (Electromagnetic Compatibility)

Remark: This document has been issued on a voluntary basis and is a product of the manufacturer. It is our opinion that the technical documentation received from the manufacturer is satisfactory for the requirements of the ECM Certification Mark. The certification mark above can be affixed on the products according to the ECM regulation about its use and its use.

Additional information: Additional information need classification about the marking.

CE The manufacturer is responsible for the CE-Marking process, and if necessary, must refer to a Notified Body. This document has been issued on the basis of the regulation on ECM Voluntary Mark for the certification of products. RG01_ECM rev.3 available at www.entecema.it

Issuance date: 03 December 2020
Expiry date: 02 December 2025

Reviewer: Technical expert Amanda Payne 

Approver: ECM Service Director Luca Bogazzi 

Ente Certificazione Macchine Srl
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☎ +39 051 6705141 | 📠 +39 051 6705156 | ✉ info@entecema.it | 🌐 www.entecema.it

2. RoHS EUROPEAN UNION DECLARATION OF CONFORMITY



EC Declaration of Conformity

No: DaC.047.2020 Dated «03» December 2020

RoHS Directive (2011/65/EU)
of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast).

Manufacturer: EMERALD ECOTECHNOLOGIES LLC
Legal address: 600026, Russia, Vladimir city, Kulbysheva street, 26A

Product: Devices for purification and electrochemical treatment of water and aqueous solutions

Brand: EMERALD

Type/Model: PRO, HOME, OFFICE, COTTAGE, SPA, STEL, VENDING, ECO, BIO, AQUA

Pb, Hg, Cd, Cr (VI), PBBs and PBDEs could not be detected over the limited by the European Directive 2011/65/EU (recast).

This is to certify that, on the basis of the tests, the above described object of the declaration corresponds to the "Directive" 2011/65 / EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast). It is possible to use RoHS marking demonstrate the compliance with protecting environment.

Signed for and on behalf of the manufacturer by

Authorized representative: Business Mission GmbH
Address: Loozener Straße 55, 30519 Hannover, Germany
Name and function: Director Julia Tsybulevska

Signature / Stamp:  

RoHS

