

EMERALD[®]

PASSPORT AND OPERATING MANUAL

EMERALD HOME 60

FOR PURIFICATION AND ELECTRICAL TREATMENT OF FRESH WATER



CONTENTS

| | |
|--|-----------|
| 1. INTRODUCTION..... | 2 |
| 2. INFORMATION ON ANTIOXIDANT WATER. | 2 |
| 3. WATER PURIFICATION AND ELECTRIC TREATMENT PRINCIPLE..... | 3 |
| The main stages of water purification and electric treatment in the EMERALD device. | 5 |
| 4. PRECAUTIONARY MEASURES..... | 6 |
| 5. DEVICE CONNECTION. | 8 |
| General rules for handling John Guest® -type quick fittings. | 8 |
| Connecting the EMERALD Device over the sink with a diverter..... | 9 |
| Connection of the EMERALD device under the sink with a pure water tap..... | 12 |
| Connection of the device to the electric network..... | 16 |
| 6. DEVICE OPERATION..... | 17 |
| The EMERALD device operation over the sink with a diverter..... | 17 |
| Operation of the EMERALD device under the sink with the pure water tap. | 18 |
| Water flow setting..... | 19 |
| System Operation Indication..... | 19 |
| Basic operating modes. | 20 |
| 7. DEVICE MAINTENANCE..... | 21 |
| Connection diagram of the device in the FLUSHING mode above the sink with a diverter. | 22 |
| Connection diagram of the device in the FLUSHING mode under the sink with a pure water tap. | 23 |
| Citric acid solution preparation..... | 24 |
| FLUSHING Mode..... | 24 |
| 8. TROUBLESHOOTING GUIDE..... | 26 |
| 9. WARRANTY. | 27 |
| 7. TRANSPORTATION AND STORAGE..... | 28 |
| 10. DEVICE SPECIFICATIONS..... | 29 |
| 11. CONTENTS OF DELIVERY..... | 30 |
| 12. ACCEPTANCE AND SALES CERTIFICATE. | 31 |
| APPENDIX No. 1. CERTIFICATES..... | 32 |

ATTENTION! Before using EMERALD HOME 60 Device (hereinafter referred to as "*EMERALD Device*", or "*Device*") please carefully study this passport and operating manual. With careful use and compliance with all requirements specified in this passport and operating manual, the EMERALD Device will serve you for many years.

1. INTRODUCTION.

Congratulations on your purchase of the EMERALD HOME 60 household water purification and electric water treatment device. You have invested wisely in the well-being of your family and also made a very important step towards improving your health!

The EMERALD device is designed to produce drinking water with antioxidant properties from ordinary tap water purified from microbes and microbial toxins, heavy metal ions and harmful organic compounds. Antioxidant water from the EMERALD device has a beneficial effect on the whole body, normalizes metabolism and the functioning of internal organs, cleanses them of toxins and wastes, and also strengthens the immune system, improves memory and increases the physical vigor.

The EMERALD device has been developed jointly with the Vitold Bakhir Institute, which is the main scientific center in the field of electrochemical activation of water. Many years of experience and modern discoveries of experts from the Vitold Bakhir Institute, as well as the direct participation of V.M. Bakhir, Doctor of Technical Sciences, professor, have allowed us to combine in the EMERALD device the most advanced water purification and electrical treatment technologies.

All processes of water purification and electric treatment in the device are as close as possible to what happens with water in living nature. Repeating the most complex natural processes of water purification and treatment has become possible due to the creation of highly 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 positive and negative currents on the anode and cathode, the processes of water electric treatment suggested by nature are reproduced.

2. INFORMATION ON ANTIOXIDANT WATER.

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 drink about 2 to 3 liters of water per day to maintain normal body activity.

Antioxidant water from EMERALD device has a positive effect on the body when used as part of a normal diet. EMERALD antioxidant water protects the body from the effects of strong toxic oxidizing agents. The mechanism of action of antioxidant water is based on the transfer of protective antioxidant properties to the internal media of the body, which helps to protect against toxic oxidizing agents present not only in water, but also in air and in food. Tissue respiration is stimulated, which enhances the action of vitamins and chemical antioxidants in the body. Antioxidant water also weakens the effect of ionizing radiation, i.e. it exhibits radioprotective properties characteristic of antioxidants. Antioxidant water improves passive immunity indicators and the general condition of the body, improves the functioning of the gastrointestinal tract and urinary tract, normalizes blood counts.

Water treated in EMERALD devices retains its antioxidant properties for no more than a day from the date of receipt. After this period, the redox potential (ORP) of the treated water returns to the initial ORP value of the tap water $+150 \div + 500\text{mV}$. Upon boiling, the ORP value of antioxidant water

decreases in absolute value, but the water continues to exhibit the properties of a reducing agent. The water obtained 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. Water treated in EMERALD devices meets the requirements of hygiene standards (see Appendix 1 “Certificates”).

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

Making drinks - in addition to drinking antioxidant water from the EMERALD device, you can enhance the antioxidant effect due to synergies and make antioxidant drinks using natural antioxidants - freshly squeezed juice of carrots, apples, various berries, by adding antioxidant water from the EMERALD installation to them. Herbal teas made with this water have a special taste and aroma. Ice cubes of frozen antioxidant water will give the drink an additional benefit.

Humidification - antioxidant water is useful as a mist when used in humidifiers. Humidified air with microdrops of antioxidant water, which has the properties of a reducing agent, has a beneficial effect on the respiratory and cardiovascular systems, prevents asthma attacks and allergic diseases.

Cosmetic applications - for cosmetic purposes, antioxidant water is useful for washing, in the form of ice cubes for rubbing the face or spraying water in the form of an aerosol to moisturize the skin. Moisturizing masks on antioxidant water will have a special effect.

Pets and plants - pets will prefer antioxidant water to plain tap or bottled water. Watering indoor plants with EMERALD water will contribute to their rapid growth and development.

3. WATER PURIFICATION AND ELECTRIC TREATMENT PRINCIPLE.

The EMERALD device is high-performance and works on cold tap water, able to produce from 40 to 60 liters of drinking antioxidant water per hour.

Electrochemical activation technologies in the EMERALD device have allowed combining highly effective water purification and treatment in order to restore its antioxidant properties.

The EMERALD device provides the highest quality of drinking water due to the sequential integration of the electric water treatment in the electrochemical module and the use of auxiliary filter elements. The main element of the EMERALD device is a special electrochemical module (Bakhr diaphragm flow-through electrochemical module), with oxidative reactions taking place at the anode and reduction reactions at the cathode. Auxiliary elements in the device are a catalytic filter and an electrokinetic filter. A distinctive feature of the EMERALD device is the absence of replaceable and wearing parts.

In the anode chamber of the module, oxidative reactions take place with the destruction of microbes and microbial toxins, as well as harmful organic compounds. In nature, a similar process of antimicrobial protection, phagocytosis, has been going on in all living organisms for millions of years without any failures.

Reduction reactions take place in the cathode chamber, during which water again acquires useful antioxidant properties (redox potential close to the internal medium of the body). In nature, similar processes occur during the contact of spring water with rocks, as well as during phase transitions in the process of glaciers melting.

The auxiliary catalytic filter, consisting of top-quality natural processed coal (grade A hydroanthracite), serves for the post-treatment of water from oxidized organic and organochlorine compounds (including herbicides, pesticides, surfactants, phenols, antibiotics, antidepressants, hormones).

An auxiliary electrokinetic filter, consisting of the purest natural mountain quartz, serves for the post-treatment of water from mechanical impurities, heavy metals, iron, manganese, hydrogen sulfide.

Helpful information!

Water purification and electric treatment in the anode and cathode chambers is highly efficient and safe. Water treatment processes are identical to natural ones, but at the same time they are accelerated by tens of thousands of times due to the use of the latest technologies and electrochemical modules.

Catalytic and electrokinetic filters operate in clean conditions. They are located after the anodic 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 against the growth of microbes, fouling with harmful biofilms and water pollution with microbial toxins!

The latest technologies in the EMERALD device allow producing clean and healthy antioxidant water, while maintaining a neutral level of acid-base balance (pH level). PH neutral antioxidant water is suitable for everyday use in regular diets. Due to the similarity with the internal medium of human body, such water is instantly absorbed by the body and holistically restores it.

The parameters of the purified antioxidant water are monitored by the instrumental method, by measuring the pH and the redox potential (ORP) of the treated water using appropriate instruments. These gages are purchased separately and are not on the delivery list.

The main stages of water purification and electric treatment in the EMERALD device.



Fig. 1 The anode chamber of the module

- Stage 1. The anode chamber of the Bakhir electrochemical module
- ◆ In water flowing through the anode chamber of the electrochemical module, microorganisms, microbial toxins and biofilms are destroyed;
 - ◆ There is oxidative destruction of organic compounds, such as herbicides, pesticides, surfactants, phenols, oil products, etc.;
 - ◆ Iron removal is carried out with the conversion of iron ions into light 3-valent form for mechanical cleaning;
 - ◆ Water is given the properties of an active oxygen carrier.



Fig 2 Catalytic filter

- Stage 2. Catalytic filter
- ◆ At this stage, water is purified from a wide range of organic and inorganic dissolved impurities that undergo oxidative degradation in the anode chamber of the module;
 - ◆ Water is purified from free chlorine and organochlorine compounds;
 - ◆ The taste of water improves and the unpleasant odor is eliminated, including due to the anode removal of phenols and hydrogen sulfide.



Fig. 3 The cathode chamber of the module

- Stage 3. The cathode chamber of the Bakhir module
- ◆ Water treatment in the cathode chamber of the electrochemical module gives antioxidant properties to water, reducing the redox potential of water;
 - ◆ Heavy metal ions are converted to insoluble hydroxides and subsequently removed on an electrokinetic filter;
 - ◆ At the same time, all minerals useful and necessary for a person are stored in water: calcium, magnesium, sodium, potassium, lithium, fluorine, iodine;
 - ◆ Water is given the properties of an active hydrogen carrier;



Fig. 4 Electrokinetic filter.

- Stage 4. Electrokinetic filter
- ◆ Water undergoes final cleaning from mechanical impurities, hydroxides of heavy metals, iron, manganese, hydrogen sulfide;
 - ◆ Guaranteed is transparency of water, removal of turbidity and impurities .

4. PRECAUTIONARY MEASURES.

- ◆ Important! For normal operation of the EMERALD device, all requirements for its operation and maintenance specified in this passport and in the operating manual must be observed.
- ◆ Before you start using the device, please read all the instructions carefully. If you still have questions about connecting or operating the EMERALD device, consult our authorized dealers or call our service department.
- ◆ When using an electric device, always follow basic safety precautions to reduce the risk of fire, electric shock, and/or people's injury.
- ◆ The device is designed for purifying and electric treatment of ONLY COLD DRINKING WATER FROM CENTRALIZED WATER SUPPLY SYSTEMS CORRESPONDING TO SANPIN 2.1.4.1074-01!
- ◆ In the event the tap water does not meet the requirements of SanPiN 2.1.4.1074-01, as well as in the presence of visible suspensions, turbidity and flakes of rust in the tap water, it is necessary to use a preliminary water treatment system before inlet in the device.
- ◆ Do not use the device for the treatment of microbiologically unsafe water or water of unknown origin without proper prior disinfection. If you have a weakened immune system or if for medical reasons you need absolutely clean water, please consult a professional doctor before using the device.
- ◆ Do not run warm or hot water through the device, as this may damage it (see the "DEVICE OPERATION" section).
- ◆ Do not use the first 30 liters of purified water for food immediately after connecting the system or after flushing the system with citric acid. For prolonged shutdowns of the device (more than 1 day), the first 30 liters of purified water should also be drained.
- ◆ To prevent electric shock, do not place electronic components near water or other liquid substances. The outlet should not be located directly above the sink or any other place where water can enter it. Before connecting to the power supply network, make sure that the device and all its elements are dry. During operation, all components of the EMERALD Device must be dry and not leak.
- ◆ The water purification system is not intended for use by children, people with physical and mental disabilities, with a lack of necessary experience and knowledge, except in cases of direct instruction by the person responsible for their safety.
- ◆ Use only spare parts approved by the manufacturer. Do not use the device with damaged electrical wires of the power source after breaking their integrity.
- ◆ Do not use this device for other purposes. Do not use the device outdoors. The device is intended for domestic use only. 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 categorically not recommended to disassemble the electronic components of the system.
- ◆ 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 the device in an upright position only.
- ◆ Before starting the device operation, make sure all hydraulic and electrical connections are secure. Do not leave the running device unattended;
- ◆ Be sure to disconnect the device from the power supply during prolonged interruptions in operation. Do not use any other power supplies or adapters in place of the enclosed power supply. Check the power cord, power plug and the device itself for damage. If any damage is found, contact the nearest service center for inspection or repair of the device.
- ◆ Do not let materials the plumber uses to seal the joints to enter the system. Avoid vegetable oil, petroleum jelly or other lubricants, solvents, ammonia, alcohols or powerful cleaning solutions getting into the system. They can seriously damage the device.
- ◆ Avoid any liquids (including water) getting on the electrical components of the system.

- ◆ To connect the power cord, you need a grounded power outlet (socket). If you need to install a new outlet, this must be done by an electrician with the appropriate permission or certificate issued in accordance with the current legislation of your country of residence.
- ◆ For the proper functioning of the EMERALD Device, your socket must work without interruption and must have EARTHING!
- ◆ Incorrect connection to the power supply can result in a risk of electric shock. Do not replace the plug yourself.
- ◆ Regularly perform maintenance on the EMERALD Device for flushing the filter elements and the electrochemical module (see the DEVICE MAINTENANCE section).

5. DEVICE CONNECTION.

ATTENTION! This section describes the main methods for connecting the EMERALD Device above and below the sink, which are recommended by the manufacturer. If you use an alternative method of connecting the EMERALD Device, you must make sure that the method you choose does not contradict other provisions of this Passport and operation manual. In case of violation of the installation and operation regulations of the EMERALD Device, claims for warranty may be rejected.

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

Manually connect white tube ¼ to fittings. John Guest® quick fittings allow you to repeatedly connect/disconnect tubing and fittings.

Important! Do not use force when performing these procedures! Correct connection/disconnection of John Guest® tubes and fittings is effortless!

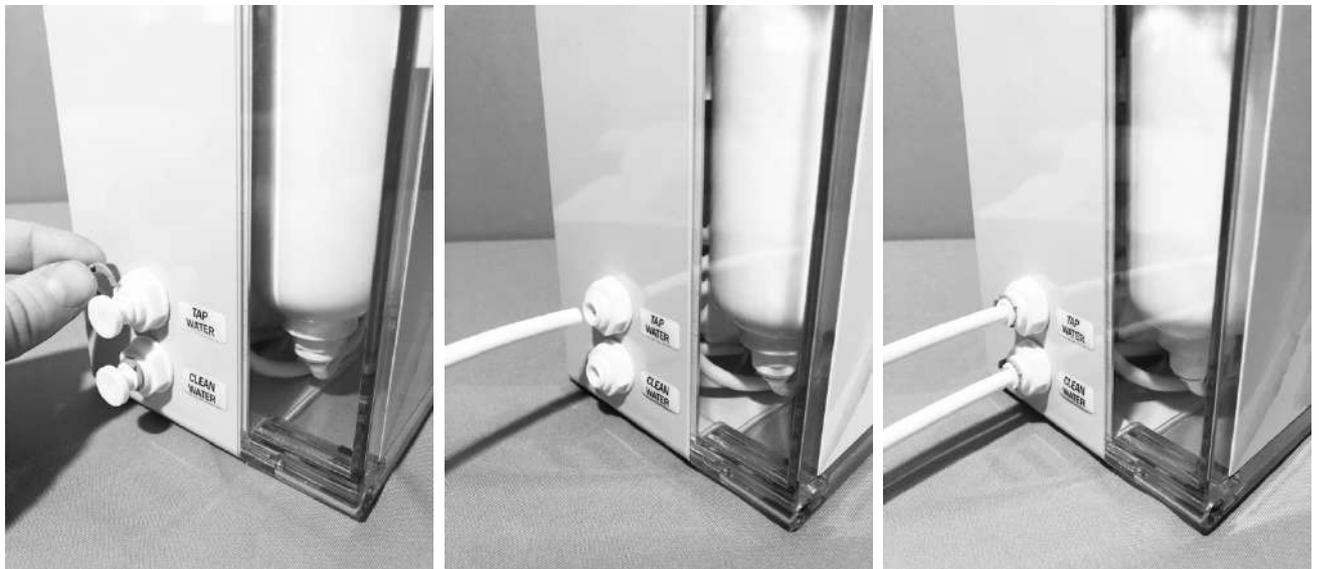


Fig. 5. General guidelines for connecting tubing to John Guest®-type quick fittings

- ◆ To connect the tube to the fitting:
- ◆ Insert the white tube all the way into the fitting hole. With proper connection, the tube enters the fitting hole by 15-18 mm;
- ◆ Check the connection by returning the tube. When the tube moves back, the end ring (collet) of the fitting extends from the base;
- ◆ The fixing lock (blue clip) is inserted into the gap between the end ring (collet) and the base of the fitting.

- ◆ To disconnect the tube from the fitting:
- ◆ Temporarily remove the lock (blue clip) of the fitting;
- ◆ Press the end ring (collet) of the fitting with the hand or a special key to the base of the fitting and hold it in this position while pulling the white tube;
- ◆ Pull the tube out of the fitting hole.

Connecting the EMERALD Device over the sink with a diverter.



Fig. 6. EMERALD device mounting option with fixing on the wall near the sink*

The EMERALD device can be located without fastening on the worktop, or it can be fixed to the wall with screws, for which there are special suspensions on the rear wall of the device casing (see Fig. 6). To connect the EMERALD Device above the sink, you must use the connecting tubes (white tube $\frac{1}{4}$ made of food-grade plastic) and the parts included in the kit. Connect the device in accordance with the diagram in Fig. 7.

ATTENTION! Before starting the device connection procedure, be sure to read through the basic principles of connecting a white tube with fittings described in the paragraph *General rules for handling John Guest®"-type quick fittings*.

Connecting the EMERALD Device requires certain skills in working with plumbing equipment. We recommend using the services of authorized specialists of the EMERALD ECOTECHNOLOGIES LLC, a representative of the dealer network or the services of a qualified plumber of the housing and communal services organization at your place of residence. Do not install the system in a place where

maintenance is difficult.

Before starting the connection, turn off the cold water supply tap, and then open the cold water tap on the kitchen faucet to relieve pressure in the pipe. Avoid direct sunlight on the surface of the system casing.

* The presented mounting option is for informational purposes only. The arrangement of elements on the device may differ from those shown on the photo.

EMERALD HOME 60 DEVICE CONNECTION OVER THE SINK DIAGRAM.

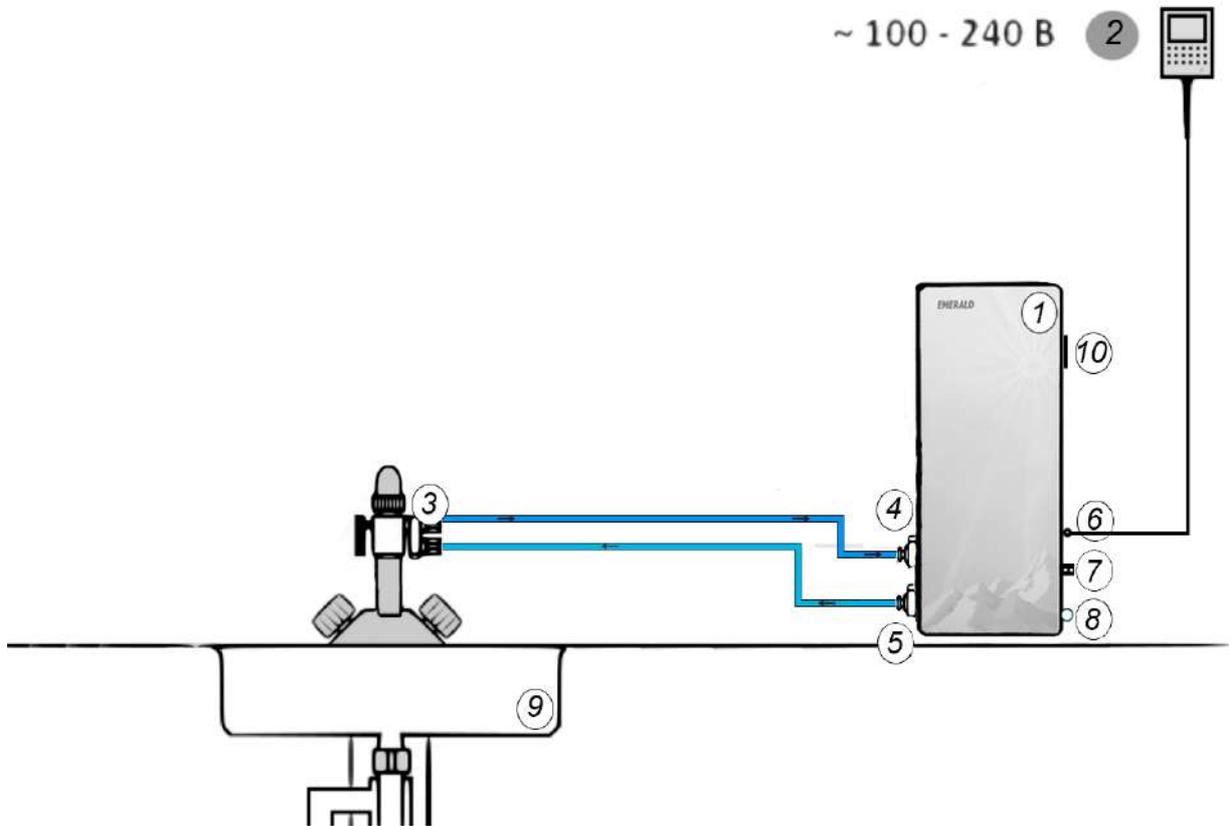


Fig. 7. EMERALD Device wiring diagram in OPERATION mode

1. Installation of EMERALD HOME 60 above the sink; 2. Power supply (adapter); 3. A diverter on the tap with a control; 4. Tap water inlet fitting; 5. Purified water outlet fitting; 6. Plug for connecting a power source; 7. Plug for connecting the power of the flushing unit; 8. On/off button of the flushing unit; 9. Sink/worktop. 10. Electronic ammeter / voltmeter

INSTALLING THE DIVERTER ON THE TAP.



Fig. 8. Tap diverter with a set of nozzles

- ◆ To connect the diverter to the tap:
- ◆ Remove the regular aerator from the tap;
- ◆ Using the necessary nozzles from the delivery set, install the diverter on the tap;
- ◆ To fix the diverter on the tap, press it against the tap and tighten the ring at the base of the diverter by hand.
- ◆ Check that all connections are secure and tight.

During installation, the connecting white tube that comes with the connection kit is cut into 2 parts (the length of the parts is selected on the spot). In accordance with the diagram in Fig. 7, the first segment of the tube connects the diverter to the Water Inlet fitting on the side of the system; the second segment of the tube connects the Pure Water fitting on the side of the system to the diverter.

After fully connecting the device, make sure all connections are tight. If you notice water leakage at the points where the diverter is connected to the tap, at the points where the connecting tubes are connected to the diverter, or at the places where the tubes are connected to the water inlet and outlet fittings, disconnect and reconnect them. During installation, pay attention to the fact that the inlet and outlet tubes pass freely along radii that exclude kinks.

Connection of the EMERALD device under the sink with a pure water tap.



Fig. 9. EMERALD device placing option on the lower shelf of the sink cabinet.

The EMERALD device is located without fastening on the lower shelf of the washing cabinet (see Fig. 9), or it is attached to one of its walls with screws, for which there are special suspensions on the rear wall of the device casing. To connect the EMERALD device under the sink, you must use the connecting hoses (white tube $\frac{1}{4}$ made of food-grade plastic) and the parts included in the kit to connect the device in accordance with the diagram in (Fig. 10).

ATTENTION! Before starting the device connection procedure, be sure to read through the basic principles of connecting the white tube with fittings described in the paragraph *General rules for handling John Guest®-type quick fittings*.

Fixed installation of the EMERALD device requires certain skills in working with plumbing equipment. We recommend using the services of authorized specialists of the company EMERALD ECOTECHNOLOGIES LLC, a representative of the dealer network or the services of a qualified plumber of the housing and communal services organization at your place of residence. Do not install the system in a place where maintenance is difficult.

Before starting the connection, turn off the cold water supply tap, and then open the cold water tap on the kitchen faucet to relieve pressure in the pipe. Avoid direct sunlight on the surface of the system casing.

After fully connecting the device, make sure all connections are tight. During installation, pay attention to the fact that the inlet and outlet tubes pass freely along the radii that exclude kinks.

EMERALD HOME 60 DEVICE CONNECTION UNDER THE SINK DIAGRAM.

The procedure for connecting the EMERALD device (Fig. 10) consists of the following steps:

- ◆ Connection to the cold water supply line (3) and (4);
- ◆ Installation and connection of a clean water tap (5) and (9);
- ◆ Connection of the device to the electric network (2) and (6)

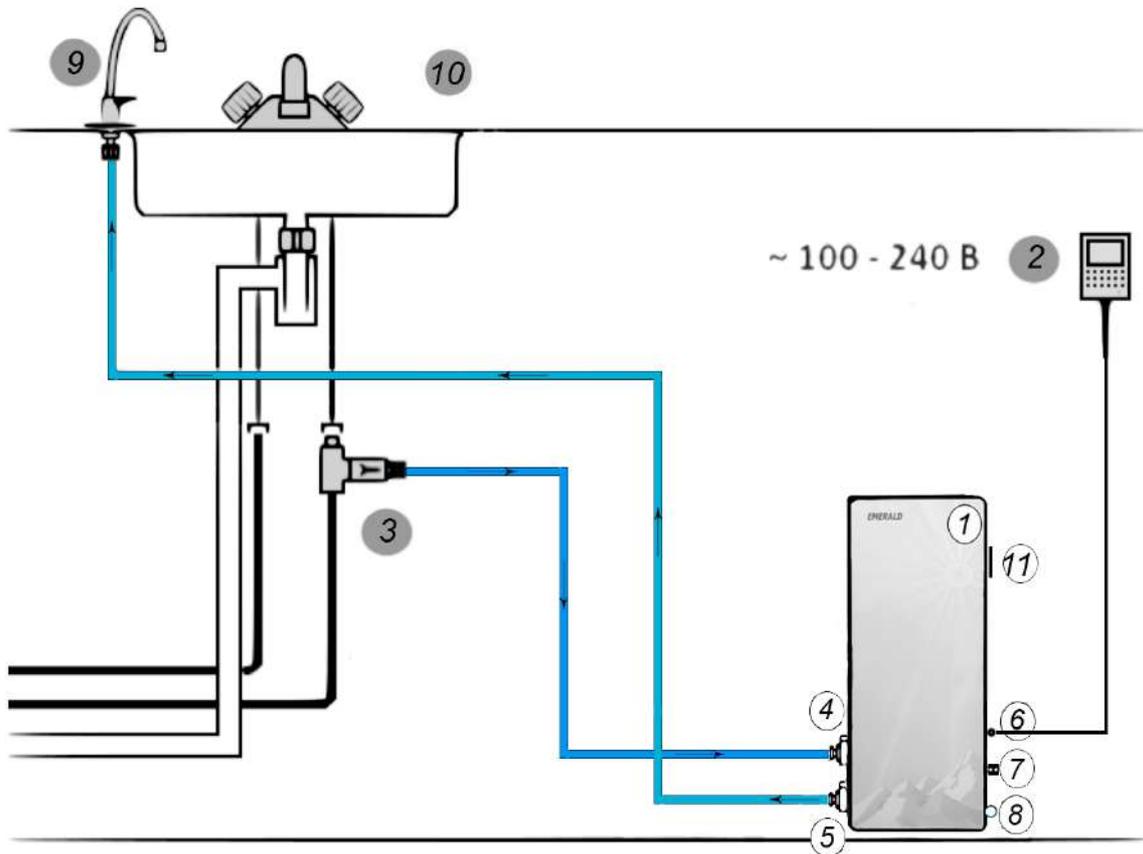


Fig. 10. Wiring diagram of the EMERALD device under the sink

1. Installation of EMERALD HOME 60 under the sink; 2. Power supply (adapter); 3. T-bend with a ball valve, for supplying water to the device; 4. Tap water inlet fitting; 5. Purified water outlet fitting; 6. Plug for connecting the power source; 7. Plug for connecting the power of the flushing unit; 8. On/off button of the flushing unit; 9. A tap for clean drinking water; 10 sink/worktop; 11. Electronic ammeter / voltmeter

During installation, the connecting white tube that comes with the connection kit is cut into 2 parts (the length of the parts is selected on the spot). In accordance with the diagram (Fig. 10): the T-bend (3) is connected with the first tube section to the “Water inlet” fitting (4) on the side of the system; the second tube section connects the Pure Water fitting (5) on the side of the system with a clean water tap (9) installed on the sink/worktop (10).

CONNECTING TO THE COLD WATER SUPPLY LINE.

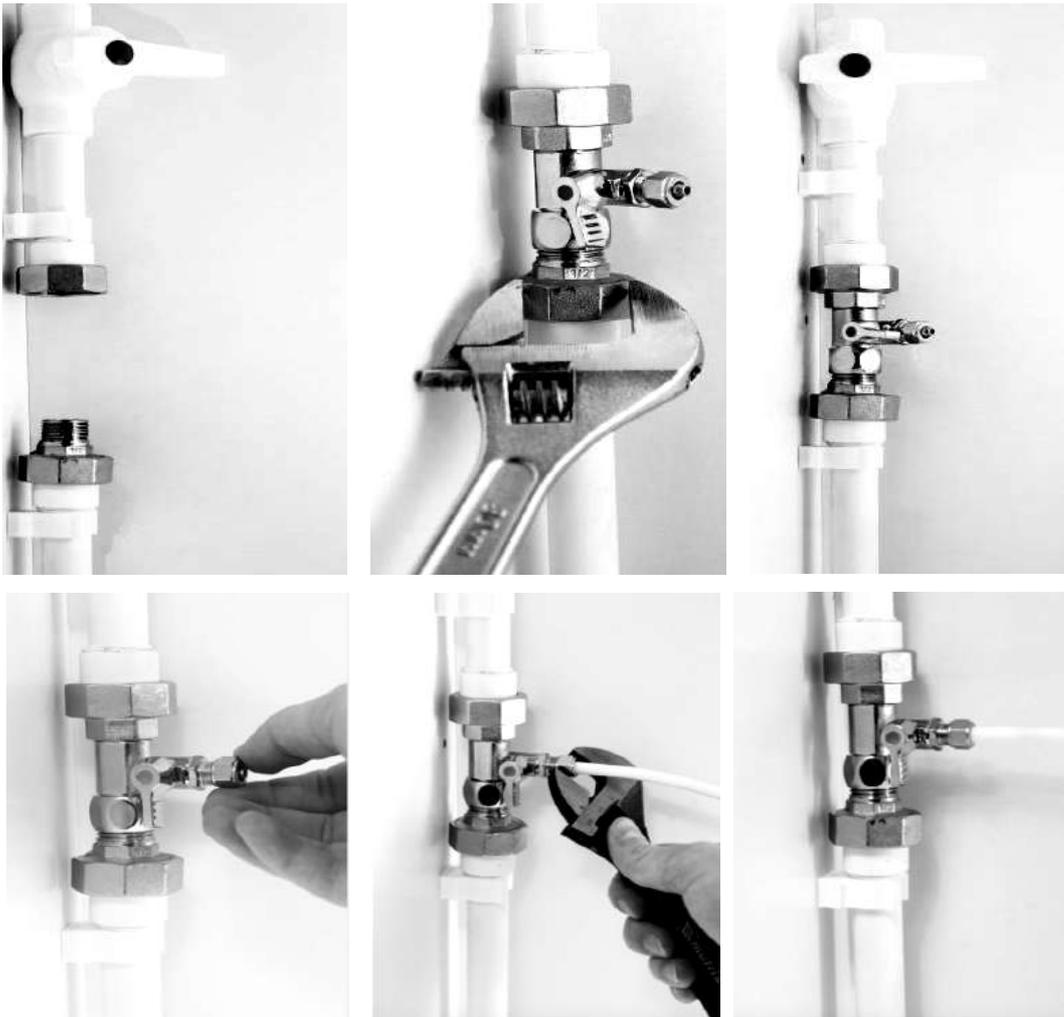


Fig. 11. Connection to the cold water supply line

- ◆ Block the flow of cold water to the sink, and then open the cold water tap on the faucet to relieve pressure in the pipe;
- ◆ If necessary, tighten threaded connections.
- ◆ Unscrew the nut on the T-bend and put it on the connecting tube;
- ◆ Fit the pipe tightly onto T-bend fitting and tighten the nut;
- ◆ Check that all connections are secure.

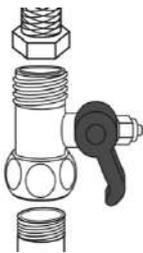


Fig. 12. Ball T-bend with water supply control tap

Attention! When connecting these elements, do not overtighten the connections! This can lead to the destruction of the T-bend or tap, including a hidden defect (with long-term consequences). The amount of waterproofing material used (FUM tape, etc.) should not be excessive! Consult a professional plumber to install these items on a cold water main. In case of any mechanical damage to the connection unit due to improper installation and use, warranty claims may be rejected.

MOUNTING AND CONNECTING THE PURE WATER TAP.

Drill a hole with a diameter of 12 mm for the tap in the sink/worktop and install the tap into it (see Fig. 13). Drilling the hole in the sink should only be done if you are sure the sink will not be destroyed by this procedure. Particular care should be taken when drilling holes in ceramic, porcelain, granite, marble, Teflon sinks, as well as in sinks made of artificial stone and so on. If it is not possible to make a hole in the sink, the tap can also be installed on the worktop.

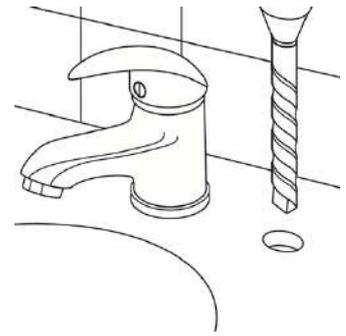
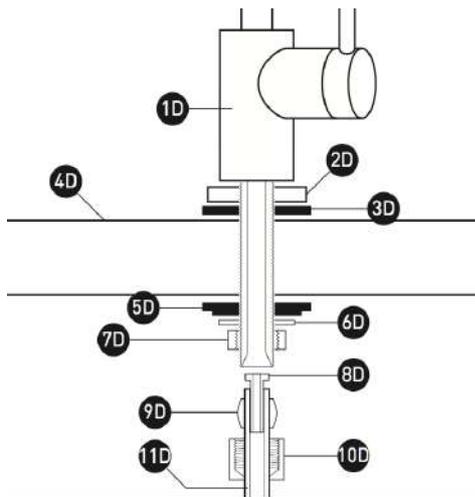


Fig. 13. A sample of drilling a hole for the pure water tap

Method 1. The classic version



1D- кран для чистой воды; 2D - диск-подставка; 3D - резиновая опора; 4D - мойка / столешница; 5D - прижимное крепление; 6D - шайба; 7D - гайка; 8D - вставка; 9D - обжимное кольцо; 10D - гайка; 11D - пластиковая трубка.

Fig. 14. Assembly diagram of hydraulic elements of the pure water tap

Method 2. Express version using a quick fitting (recommended option).

- ◆ Connect the pure water tap according to the diagram in Fig. 14 down to item 7D;
- ◆ To connect the plastic tube in this version, use a quick fitting for a tap of the type $\frac{1}{4}$ thread - tube $\frac{1}{4}$ (see Fig. 15). To do this, screw the fitting onto the tap after the 7D nut, and on the other side of the fitting, insert the plastic tube into the quick fitting. Do not forget to insert the fixing clip into the sliding ring of the fitting;
- ◆ Check that all connections are secure.



Fig. 15. Sample assembly of the pure water tap with quick fitting

Connection of the device to the electric network.

The EMERALD device is connected to the electric network in several stages - see Fig. 16. First you need to connect the power supply (adapter) to the network cable. Then you need to connect the power cable to an electrical outlet and insert the plug of the power supply into the power socket of the EMERALD device in the upper left corner of the side of the casing.

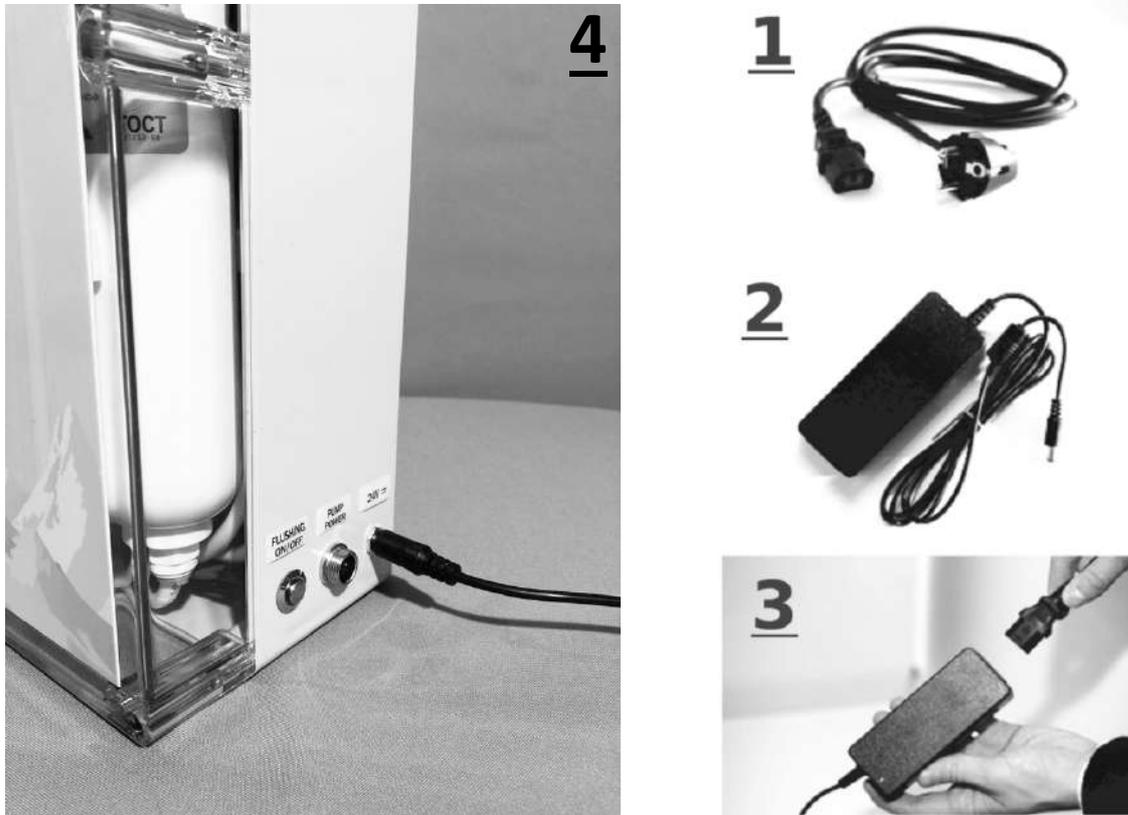


Fig. 16. General view of connecting the EMERALD installation to the mains

Important!

Make sure that the device is connected to the power source of an electrical network with suitable characteristics (see the DEVICE SPECIFICATIONS section, Table 2).

For the EMERALD Device to function properly, your outlet must be uninterrupted and must be EARTHED!

It is forbidden to disconnect the working device from the network by pulling the plug of the power source from the device. This can lead to malfunctioning of the device. Disconnecting the device from the power supply should only be done by disconnecting the power plug from the outlet!

6. DEVICE OPERATION.

Important! After connecting the EMERALD device, it is necessary to study the operating rules in detail.

Important! Do not use the first 30 liters of purified water immediately after connecting the device for food purposes. After long downtimes of the device (more than 1 day), the first 30 liters of purified water should also be drained.

The device is designed for cleaning and electric processing of ONLY COLD WATER FROM CENTRALIZED WATER SUPPLY SYSTEMS! In the drinking water preparation mode, do not run warm or hot water through the system, as this may damage it.

Do not use the device for the treatment of microbiologically unsafe water or water of unknown origin without proper pre-filtration and disinfection.

The EMERALD device operation over the sink with a diverter.



Fig. 17. Water supply using the diverter control.

To turn on the device in the OPERATION mode, it is necessary to open the cold water supply on the tap, and then gently turn the control on the diverter to a horizontal position (see Fig. 17) so that cold tap water starts to flow into the device.

Vertical position of the control on the diverter - water is drained into the sink and is NOT supplied to the device;

Horizontal position of the control on the diverter - water is supplied to the device.

The device turns on automatically as soon as water begins to flow into it. When the device is switched on in the OPERATION mode, the multifunction LED lights up in one of the corresponding modes.

Turning off the device also occurs automatically immediately after the cessation of water supply (after the cessation of water flow in the device). When the device is turned off, the multi-function LED goes out.

Operation of the EMERALD device under the sink with the pure water tap.

WATER SUPPLY THROUGH THE T-BEND WITH A BALL VALVE

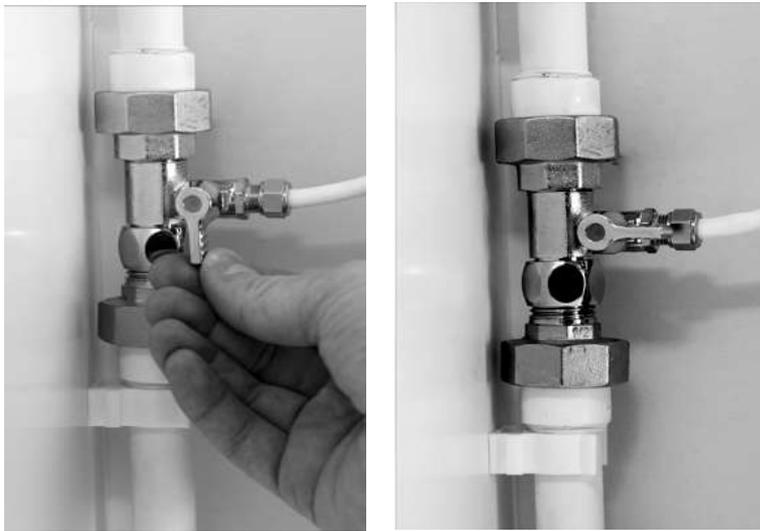


Fig. 18. Water supply using the T-bend with a ball valve.

To supply water to the device, it is necessary to smoothly open the tap on the T-bend (see Fig. 18) so that cold tap water begins to flow into the device.

Vertical tap position - no water supply.

Horizontal tap position - water is supplied to the device

Important! At high water pressure in the water supply system, a full opening the T-bend tap is optional. Partial opening of the tap on the T-bend will moderate the overall water flow rate and reduce the degree of load on the device hydraulic units.

USING THE PURE WATER TAP

To start operating, it is necessary to smoothly open the tap on the T-bend (see Fig. 18).

Next it is necessary:

- ◆ To turn on the device, open the shut-off valve on the pure water tap (see Fig. 10 - “9” and Fig. 19) so that cold water starts to flow into the device;
- ◆ To turn off the device, reverse the operation and close the shut-off valve so that water stops flowing into the device.

The device turns on automatically as soon as water begins to flow into it. When the device is switched on in the OPERATION mode, the multifunction LED lights up in one of the corresponding modes.

Turning off the device also occurs automatically immediately after the cessation of water supply (after the cessation of water flow in the device). When the device is turned off, the multifunction LED goes out.



Fig. 19. Shut-off valve on the pure water tap

Water flow setting.

BASIC WATER FLOW ADJUSTMENT

Basic adjustment of the water flow through the EMERALD HOME 60 device is carried out by regulating:

- ◆ Cold water shut-off valve on the common tap (use above the sink) - see Fig. 19;
- ◆ Shut-off valve on the pure water tap (use under the sink) - see Fig. 19;

Important! For high-quality water purification and electric treatment, set the water flow through the device in the range of 1 liter/min (60 liters/hour). Do not set the water flow too low (less than 50-60 liters/hour), as in this case the water flow sensor located in the device will not work and the device will not turn on.

During operation of the device, the water flow rate may gradually decrease. To restore normal flow rate, it is necessary to flush the system (see the **INSTALLATION MAINTENANCE** section).

If you are unable to set a sufficient level of water flow - see the **TROUBLESHOOTING GUIDE** Section, Tab. 1.

System Operation Indication.

The multifunctional LED

The first indicator of the proper functioning of the EMERALD device is the multifunctional LED integrated into the installation casing. The multifunctional indicator allows you to evaluate:

- ◆ Device resource, after which it is necessary to flush the system;
- ◆ Device flushing process, allowing the user to verify that all stages of the **FLUSHING** mode are correctly completed;
- ◆ Correct connection of hydraulic and electrical joints.

Electronic ammeter / voltmeter

This measuring device allows the user to see how efficiently the process of electrical water treatment in the device takes place. The voltmeter shows the voltage in volts (hereinafter "V") that is applied to the electrochemical modules. The ammeter shows the current strength in amperes (hereinafter "A"), which passes in the electrochemical modules during water treatment.

Voltmeter readings in **OPERATION** mode are always around 24V.

The ammeter readings in the **OPERATION** mode take on different values due to:

- 1) Different total mineralization (TDS) of the source water. The higher the TDS of the source water, the higher the passing current will be during its electrical treatment (and vice versa).
- 2) Different degrees of contamination of the electrochemical module and the device as a whole. The greater the degree of contamination, the weaker the passing current will be and, accordingly, the efficiency of water purification and activation.

Based on the readings of the current strength (A), the user can estimate:

- The efficiency of the device. The higher the current strength in the **OPERATION** mode, the more effective the processes of water purification and activation are (including the process of reducing the ORP of water).

- The device's contamination degree; The device must be flushed from accumulated contaminations if the current strength in the **OPERATION** mode has significantly decreased relative to the initial values;

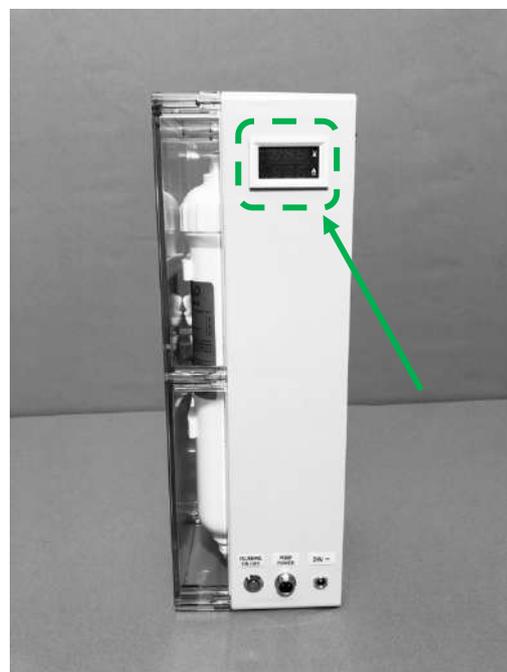


Fig. 20. Electronic ammeter / voltmeter

Basic operating modes.

STANDBY mode.

In STANDBY mode, the device is connected to the mains and to the water supply system, but is in the off state. Water does not run through the device. The LED is off. Voltmeter readings - 24V, ammeter readings - 0A.

OPERATION Mode.

In the OPERATION mode water is supplied to the device (see Fig. 17,18,19) and the LED lights up green, indicating that the device has entered a full-fledged OPERATION mode.

If the idle time of the device in the STANDBY mode is more than 8 hours, then when it is turned on, the green flashing LED lights up for a period of 60 seconds, indicating that stagnant water must be drained from the system during this time. After 60 seconds the green LED turns on, indicating that the device has entered the full-fledged OPERATION mode, and the drinking water quality has returned to normal.

In OPERATION mode, the voltmeter readings are always around 24V. Ammeter readings in the OPERATION mode take different values, characterizing the efficiency of the device. Normal values of the current strength in the OPERATION mode should be in the range of **0.5A - 3.2A**. If the passing current values are below this range, it means either a low TDS of the source water on which the device operates, or that the device is heavily contaminated and must be flushed (see the "DEVICE MAINTENANCE" section). If the current values are above this range, it means that the device operates on water with too high TDS, which can lead to overloading of the power supply. Overloading of the power supply will occur at passing current strength equal to or higher than 3.75A. *

Some features of the OPERATION mode.

- ◆ After 480 liters of purified water in the OPERATION mode, when the device is switched on, the LED will light up orange, indicating that the device SHOULD be flushed with a lemon acid solution.
- ◆ After 600 liters of purified water in the OPERATION mode, when the device is turned on, the LED will light up red, indicating that the device MUST be flushed with a lemon acid solution.

Important! It is forbidden to continuously use the device in the OPERATION mode for more than 30 minutes. This may result in malfunction of the control unit. Claims for warranty service in this case will not be accepted!

If you need to use the device for a longer time, you need to switch the device for 10 minutes to the STANDBY mode every 30 minutes after the OPERATION mode and then switch the device back to the OPERATION mode.

***Important!** The ammeter readings in the OPERATION mode should not go beyond the value of 3.75A. If in the OPERATION mode the current strength is equal to or greater than 3.75A, then the power supply will be overloaded and the device will be switching off and on for a short time. It is prohibited to use the device in the overload mode of the power supply (with constant switching on / off), as this can lead to the device's failure. In this case, claims for warranty service will not be accepted!

If this situation occurs regularly, it means that the total mineralization of the source water (TDS) is too high. In this case, it is necessary to install a water pre-treatment softening system (ion exchange filters) before the device and/or to purchase a more powerful power source. You can get consultation concerning this issue by phone 8 (495) 928-77-71 or by email service@emerald.eco

7. DEVICE MAINTENANCE.

To achieve the maximum quality of water purification and electric treatment in the EMERALD HOME 60 device, as well as to ensure water quality standards, the user should regularly flush the system with a solution of citric acid. With timely and uncomplicated maintenance, your system will produce drinking water of the highest quality with excellent taste for many years.

Important! EMERALD Device does not have consumables or wearing parts. The electrochemical module and auxiliary filter elements (catalytic filter and electrokinetic filter) do not require periodic replacement, subject to the above operating rules*.

Maintenance of the EMERALD Device consists in regularly flushing the entire system (including the electrochemical module and filter elements) with a solution of citric acid to remove accumulated contaminants and deposits. The regularity of maintenance of the EMERALD Device depends on the quality of the starting water, the operating mode, and is also based on user experience. On average, when using drinking water from municipal water supply systems, maintenance of the device should be carried out at least once every 3 months or after 600 liters of purified water (whichever comes first).

The EMERALD device automatically counts the amount of water which flows through and will warn the user about the need of flushing:

- ◆ After 480 liters of purified water in the OPERATION mode, when the device is switched on, the LED will light up orange, indicating that the device SHOULD be flushed with a lemon acid solution.
- ◆ After 600 liters of purified water in the OPERATION mode, when the device is turned on, the LED will light up red, indicating that the device MUST be flushed with a lemon acid solution.

Important! Color indication allows the user to estimate only the maximum allowable amount of purified water after which it is necessary to flush the device. Given the huge difference in characteristics of tap water among different regions, the need for flushing may come earlier than it will be specified by the LED indicator.

To determine the degree of contamination of the device and the need for flushing more accurately, the user needs to focus on the following factors:

- Indicators of the current strength in the OPERATION mode are significantly lower than the initial values (provided that the device operates on the same water with the same TDS);
- Significant decrease in the rate of outlet of purified water from the device (provided that the same pressure level in the cold water supply line is maintained);
- Deterioration of the organoleptic qualities of purified water;

Connection diagram of the device in the FLUSHING mode above the sink with a diverter.

Maintenance of the EMERALD device is carried out in accordance with the diagram in Fig. 22.

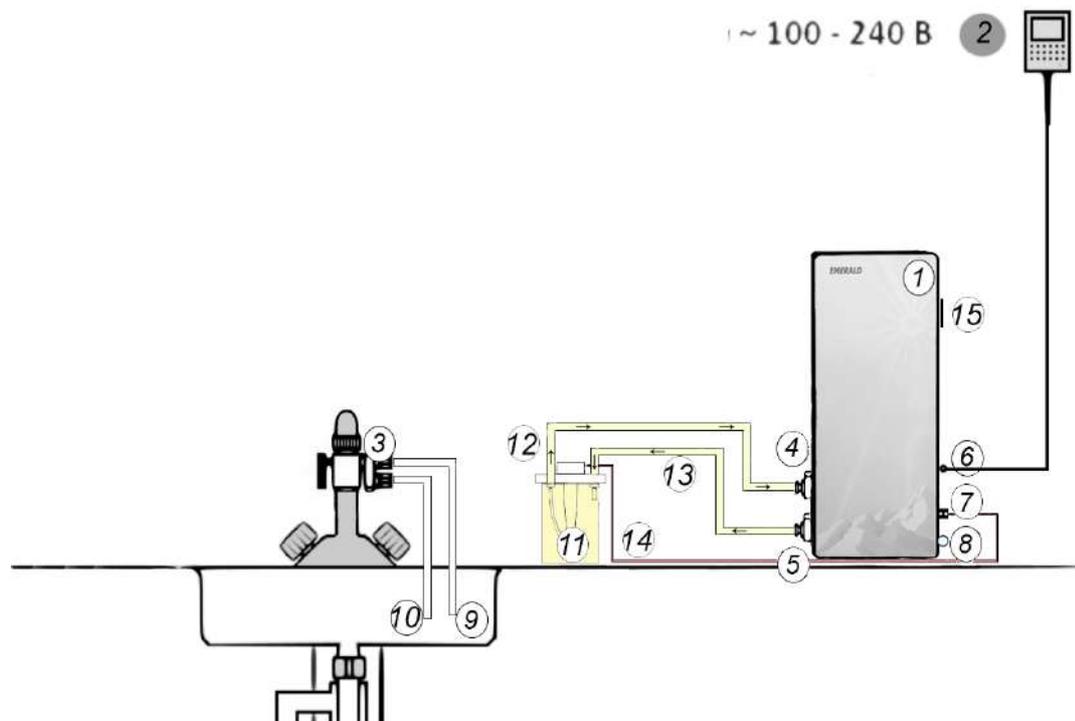


Fig. 22. Connection diagram of the device in the FLUSHING mode above the sink with a diverter

1. EMERALD HOME 60 Device over the sink; 2. Power supply (adapter); 3. A diverter on the tap with a control; 4. Tap water inlet fitting; 5. The outlet fitting of purified water; 6. Plug for connecting a power source; 7. Plug for connecting the power of the flushing unit; 8. On/off button of the flushing unit; 9. Tube for supplying tap water to the device (disconnected and not used during the FLUSHING mode); 10. Tube of the outlet of purified water from the device (disconnected and not used during the FLUSHING mode); 11. EMERALD flushing unit; 12. Hose for supplying citric acid solution from the flushing unit to the device; 13. Hose for returning the citric acid solution from the device back to the flushing unit; 14. EMERALD Flushing Unit Power Cord; 15. Electronic ammeter / voltmeter

To start the FLUSHING mode, it is necessary to disconnect the device from the electric network and from the hydraulic tubes. To do so, you must:

- ◆ Set the water supply control on the diverter to a vertical position (see Fig. 17). Turn off the cold water tap and then open the cold water tap on the kitchen faucet to relieve pressure in the pipe;
- ◆ Disconnect the piped water supply tube and the purified water outlet tube from the WATER INLET and PURE WATER fittings located on the side of the device casing (Fig. 7 - 4 and 5).

Connection diagram of the device in the FLUSHING mode under the sink with a pure water tap.

Maintenance of the EMERALD Device is carried out in accordance with the diagram in Fig. 23.

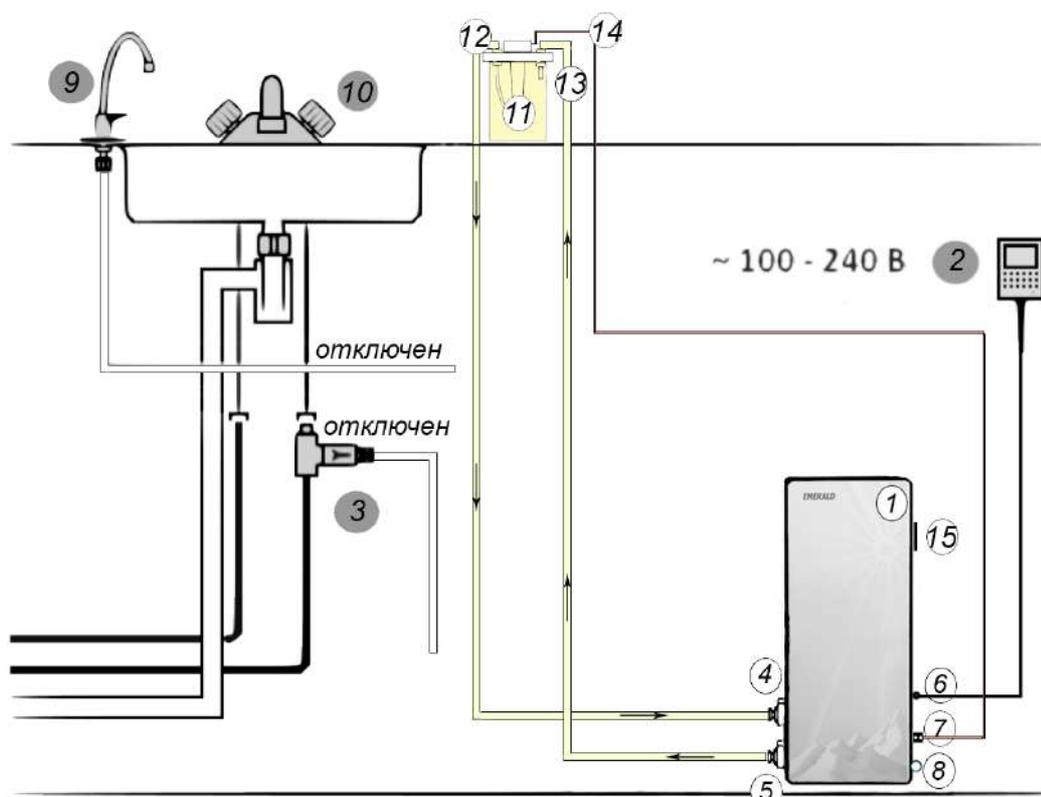


Fig. 23. Connection diagram of the EMERALD device in the FLUSHING mode under the sink with a pure water tap

1. Installing EMERALD HOME 60 under the sink; 2. Power supply (adapter); 3. A T-bend with a ball valve for supplying water to the device (Important! The tube for supplying tap water to the device is disconnected and is not used in the FLUSHING mode) 4. Fitting of the tap water inlet; 5. Outlet purified water fitting; 6. Plug for connecting the power source; 7. Plug for connecting the power of the flushing unit; 8. On/off button for the flushing unit; 9. Pure drinking water tap (Important! The tube for the purified water outlet from the device is turned off and is not used in the FLUSHING mode); 11. EMERALD flushing unit; 12. Hose for supplying citric acid solution from the flushing unit to the device; 13. Hose for returning the citric acid solution from the device back to the flushing unit; 14. EMERALD Flushing Unit Power Cord; 15. Electronic ammeter / voltmeter

Important! To start the FLASHING mode, it is necessary to disconnect the device from the electric network and from the hydraulic tubes. To do so, you must:

- ◆ Turn off the tap on the T-bend with a ball valve installed in the cold water supply line (see Fig. 18), and then open the shut-off valve on the pure water tap (see Fig. 19) to relieve pressure in the system;
- ◆ Disconnect the piped water supply tube and the purified water outlet tube from the WATER INPUT and PURE WATER fittings located on the side of the device casing (Fig. 10 - 4 and 5).

Citric acid solution preparation.

To carry out the flushing procedure of the EMERALD Device, it is necessary to prepare one and a half liters of citric acid flushing solution in the flushing unit tank (Fig. 22.23 - 11). The flushing solution of citric acid is prepared at the rate of 200 grams of citric acid per one and a half liters of water. Citric acid crystals are recommended to be diluted in hot water, and flushing should be carried out with a solution with a temperature of 60-70°C (not higher!).

Important! It is not allowed to flush the EMERALD Device with a solution of citric acid with a temperature of more than 70°C. This may cause damage to the system! Claims in this case will not be accepted. To accurately determine the temperature of the wash solution, use temperature control tools.

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

FLUSHING Mode.

To start the FLUSHING mode, the EMERALD device must be in STANDBY mode (The device is connected to the mains, but is in the off state. The LED is off).

The Device is connected in the FLUSHING mode according to the diagrams in Fig. 22 or 23 (the choice of connection diagram depends on the use of the device under or above the sink). In FLUSHING mode, the supplied PVC transparent hoses are used to connect the flushing unit to the device (instead of the standard white tubes used in OPERATION mode).

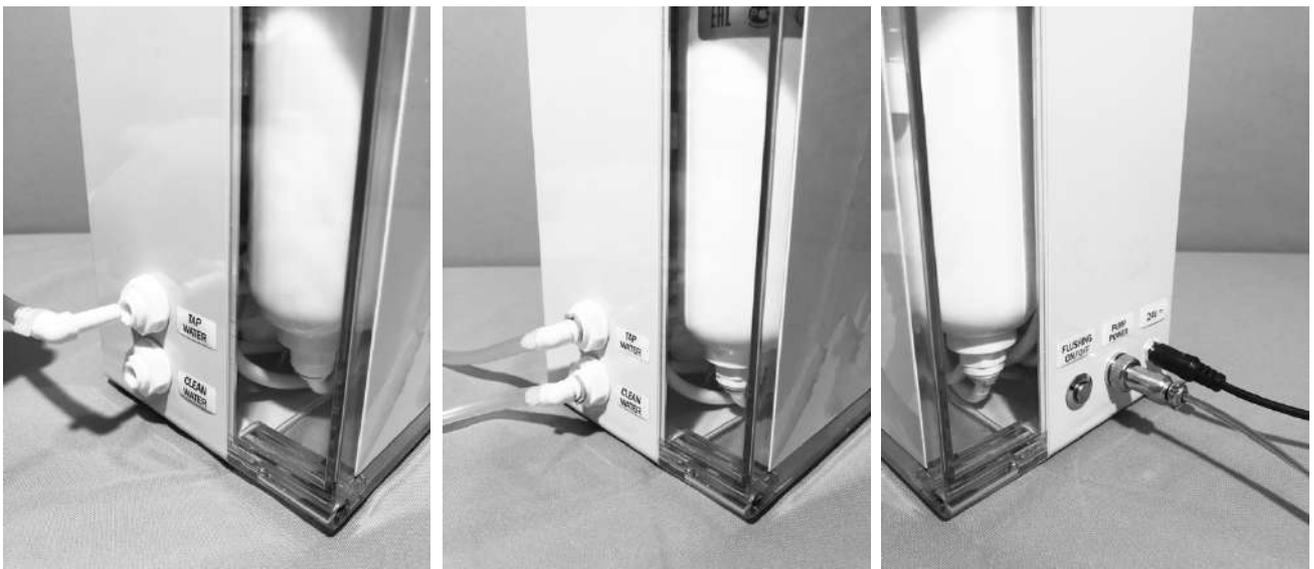


Fig. 24. General appearance of the connection in the FLUSHING mode

All hydraulic and electrical connections must be securely locked. The device must be in STANDBY mode and be connected to a power source. The flushing unit must be located on a flat and stable surface (on the worktop next to the sink, on the floor or on the lower shelf of the sink cabinet) and be connected to the device.

To turn on/off the flushing unit and start/end the FLUSHING mode, press the on/off button of the flushing unit (see Fig. 22,23 - 8, Fig. 24). After the first pressing of the button, the automatic procedure for PUMPING and HOLD-UP of the flushing solution of citric acid begins. During all stages of PUMPING and HOLD-UP of the flushing solution, the LED in the device lights up in blue.

The automatic flushing procedure takes 30 minutes and consists of six similar sequential steps, each of which includes:

- a) **1 minute** - pumping and circulation of flushing solution in the device (flushing unit included);
- b) **4 minutes** - hold-up of the flushing solution in the device (flushing unit is turned off);

After completion of all the six automatic flushing cycles, the LED in the device starts flashing in blue, indicating that the PUMPING and HOLD-UP procedures of the flushing solution are completed.

Next, the user needs to disconnect the flushing unit and connect the device according to the usual OPERATION scheme (see Fig. 7.10). In this mode, it is necessary to carry out the WASHING OUT procedure and rinse the device with cold tap water to wash out the dissolved contaminants and residues of the citric acid flushing solution from the device. The WASHING OUT procedure must be performed within 10 minutes. At this time, any electrical treatment of water is turned off (the electrochemical module is turned off), and the LED flashes green. After 10 minutes, the WASHING OUT mode is automatically turned off (the green LED flashes) and the device enters the normal OPERATION mode.

At this point, the FLUSHING procedure is complete!

The device is ready for normal use in OPERATION mode again!

Some features of the FLUSHING mode.

- ◆ The user can always pause the automatic FLUSHING mode and start it again by repeatedly pressing the on/off button of the flushing unit (Fig. 22.23 - 8). This function allows the user to pause the FLUSHING mode if there are problems with pumping the flushing solution into the device and resume this mode again.
- ◆ FLUSHING mode is non-volatile and priority. That is, when the network disappears and when it reappears, the device will automatically enter the stage of the FLUSHING mode from which it was removed by disconnecting the network. This protects the user from the risk of accidental ingestion of a citric acid flush solution in the body if the FLUSHING mode is violated.
- ◆ Important! If during the flushing of the device there were any malfunctions that could disrupt the FLUSHING mode, please repeat the flushing procedure before using the device. If faults are detected during the FLUSHING mode, it is necessary to additionally make sure that the flushing solution has been successfully washed out with tap water from the device for 10 minutes before using the device in normal mode.

Important! To increase the useful life of the flushing unit, we recommend that after maintenance of the device, thoroughly rinse the intake unit and the accumulation tank of the flushing unit, as well as the hoses for supplying the flushing solution with warm tap water, to clean them of residues of citric acid crystals. After flushing, all elements of the flushing unit must be dried and removed before the next flushing. The flushing procedure of the key elements of the flushing unit must also be repeated at the beginning of future flushing procedures to ensure the smooth operation of the flushing unit.

8. TROUBLESHOOTING GUIDE.

Table 1. Troubleshooting Guide

| Fault | Probable cause | Elimination method |
|---|---|--|
| The Device does not switch on. LED does not light up. | <ol style="list-style-type: none"> 1. Device hydraulic and electrical connections are incorrect. 2. The flow sensor does not work and does not turn on the device due to insufficient pressure in the tap water supply line and/or insufficient water flow rate in the device. 3. No electrical contact/mains power 4. No ground at outlet (socket). | <ol style="list-style-type: none"> 1. Connect hydraulic and electrical contacts in accordance with Section 5 DEVICE CONNECTION. 2. Provide the necessary pressure in the tap water supply line (see Table 5), and also set the water flow rate in the device to at least 1 liter per minute (60 liters/hour). 3. Check for electrical contact/mains power. 4. Make sure that there is grounding in the outlet. |
| Fail to increase the water flow rate. The water flow rate in the device is below normal. | <ol style="list-style-type: none"> 1. Inadequate pressure in the tap water line. 2. Excessive deposits have formed on the electrochemical module and filter elements. | <ol style="list-style-type: none"> 1. Ensure the required pressure in the tap water line (see Table 5). 2. Flush the device with citric acid solution (see the DEVICE MAINTENANCE Section). |
| The citric acid flushing solution cannot be pumped into the device. You need to suspend the FLUSHING mode for troubleshooting. | <ol style="list-style-type: none"> 1. In the citric acid supply hose (Fig. 22.23 - 11, 12) or in the intake part of the pump of the flushing unit, air blocks have formed or residues of citric acid have crystallized. 2. The citric acid supply hose is pinched (Fig. 22.23 - 12). 3. Suspending the FLUSHING mode is required if the flushing solution is not pumped to the device and the FLUSHING program is already running. | <ol style="list-style-type: none"> 1. Wash with warm tap water the flushing solution supply hose and the lower intake of the pump for 2 or 3 minutes. Then repeat the FLUSHING procedure. 2. Check for flushing hose if it is pinched; 3. It is possible to suspend the FLUSHING mode by pressing the flushing unit on/off button again (Fig. 22.23 - 8). After troubleshooting, press the button again and continue the FLUSHING mode. |

9. WARRANTY.

The manufacturer guarantees the compliance of the device with the technical specifications subject to the conditions of use, transportation, storage and installation set forth in this Passport and the instruction manual. The term of the free warranty service of EMERALD Device is 1 year from the date of its sale, but no more than 24 months from the date of its manufacture. In the absence of a sale date and a stamp of a trading organization, the term of a free warranty service is calculated from the production date.

The manufacturer guarantees that EMERALD Device (with the exception of auxiliary and replaceable filters / cartridges), provided that it is used correctly, will not be defective (as defined below) for 1 year from the date of purchase. It is believed that the product has a defect if it is associated with poor-quality material or improper manufacture, or if such a defect impedes the use or impairs the end customer's use of the EMERALD Device.

Warranty obligations are valid only if you have correctly completed payment documents, this passport and operation manual.

- ◆ The warranty does not apply to:
- ◆ EMERALD Device, which has been used for other purposes or in a manner that is contrary to the instructions in this passport and in the operation manual;
- ◆ Any EMERALD Device that has not been used for its intended purpose, has had an emergency, has been physically damaged, improperly installed or improperly operated, which has been remodeled, neglected, or exposed to adverse external factors (including, but not limited to due to lightning, flood or fire);
- ◆ Any EMERALD Device that has been damaged due to improper repair, modification, alteration or maintenance carried out by any other person, except for an authorized representative of the warranty and after-sales service of the manufacturer or official trading partner;
- ◆ Any EMERALD Device in which a defect has been detected or which has become worse working due to the use of any non-original spare or auxiliary parts (including non-original filters for water pre-treatment) that are not intended for use with the EMERALD Device, OR;
- ◆ Any EMERALD Device not installed with the original EMERALD Device kit that comes with the delivery set.

The manufacturer is also exempt from liability in the following cases: the product or its parts have external mechanical damage; filter elements (if available in the delivery and a specific configuration) have exhausted their resources, but have not been replaced or serviced in a timely manner; EMERALD Device has not been timely serviced (in accordance with the instructions of this passport and the operation manual); this passport and the operation manual with the dates of production and/or sale have been lost and there are no other ways to establish the terms of use of the product; in case the consumer uses spare parts of other manufacturers other than the original components that come with the kit; in case of installing and operating the system in excess of the limits established by the technical requirements for the operating conditions of the product; under force majeure circumstances; in other cases provided for by law.

Legal disclaimers.

The manufacturer reserves the right to make changes and improvements to the device design that do not impair the device's performance and product quality;

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

Claims.

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

To make claims under this warranty, you can leave a request on our official website www.emerald.eco, and also call the company's service department at the universal number: 8 (495) 928-77-71 or write to service@emerald.eco. We kindly ask you to contact us at the above contacts before you decide to send any product for troubleshooting.

To make a claim under this warranty, the buyer must first call EMERALD ECOTECHNOLOGIES LLC in writing to notify the company of the defect within two (2) months after the defect is discovered, but no later than two (2) months after the expiration of the corresponding warranty period.

Attention! The manufacturer and official trading partners are not liable in the event of problems caused by the condition of the water pipes and plumbing fixtures of the buyer. The unsatisfactory condition of the water supply pipes, plumbing fixtures and non-compliance by the buyer with the conditions necessary for connecting the device mentioned in this passport and the operation manual are the grounds for the representative of the manufacturer to refuse to connect the device, as well as maintenance and warranty service.

In the event of independent connection and service of the device, the manufacturer and official trading partners are not liable and do not accept claims in case of problems caused by a violation of the rules for connecting and servicing the device stated in this passport and in the operating manual.

The manufacturer and official trading partners are not liable and will not accept claims if the EMERALD Device has been used for other purposes or in a manner that contradicts the instructions in this passport and in the operation manual.

7. TRANSPORTATION AND STORAGE.

EMERALD PRO 20 Device is free of harmful, toxic, flammable and explosive substances. The Device can be transported by any type of ground or air transport (except for unheated compartments in the cold season). The product is stored in packaged form, preventing drying, freezing, direct sunlight, at a distance of at least 1 meter from heaters, at an ambient temperature of at least 5°C and no higher than 40°C, away from substances with a strong odor.

The warranty shelf life of the product is 2 years from the date of manufacture.

10. DEVICE SPECIFICATIONS.

Table 2. Technical Features

| | |
|--|---------------|
| Recommended performance in pure water, liters per hour | 60 |
| Power consumption, not more than, W | 90 |
| Specific energy consumption, W * h/l | 1,5 |
| Supply voltage - standard socket with grounding (for adapter), V. | 110 ÷ 220 |
| The frequency of the supply network, Hz | 50 ÷ 60 |
| Overall dimensions (excluding feed lines and protruding parts), mm | 140x353x121,5 |
| Gross weight, kg | 4,5 |
| Net weight kg | 3,0 |

Table 3. Technological features

| | |
|---|---------|
| The efficiency of the anodic oxidation of divalent iron ions with concentration in water 3 mg/l, % | 92 – 95 |
| The effectiveness of flotation water treatment after anode treatment, % | 55 – 80 |
| The efficiency of the catalytic conversion of chlorine-oxygen oxidants to hydroperoxide in the catalytic filter, % | 60 – 70 |
| The conversion efficiency of calcium ions to hydroxide with their concentration in water 5 mg/l, % | 40 – 45 |
| The conversion efficiency of ferric iron ions into hydroxide with their concentration in water 0.1 mg/l, % | 80 – 90 |
| The decrease in permanganate oxidation of water from the initial level in the starting water of 10 mg/l, % | 70 – 85 |
| The removal efficiency of heavy metals and iron hydroxides on an electrokinetic filter at a concentration of 0.5 mg/l in water, % | 80 – 90 |
| The effectiveness of water disinfection with total microbial count of 200% | 98 – 99 |

Table 4. Antioxidant Water Parameters

| | |
|--|-----------|
| The decrease in the ORP of the treated water relative to the ORP of the source water, mV | 150...450 |
| Change in pH of water relative to the pH of the starting tap water, pH units | ± 1 |

Table 5. Terms of Use

| | |
|---|-----------|
| Ambient temperature, ° C | +5 ÷ +40 |
| Relative humidity (at 25°C), % | up to 80 |
| The temperature of tap water, ° C | +1 ÷ +30 |
| Pressure of a pressure head water line, MPa | 0,1 ÷ 0,5 |
| Total mineralization of the supplied tap water, ppm | 100 ÷ 350 |
| pH of the supplied tap water | 6 ÷ 9 |

11. CONTENTS OF DELIVERY.

Table 6. Contents of delivery

| No. | Item | Number, pc. |
|--------|--|----------------|
| 1. | EMERALD HOME 60 Device | 1 |
| 2. | Power supply (adapter) | 1 |
| 3. | Network cable for power supply | 1 |
| 4. | EMERALD flushing unit with hose kit | 1 |
| 5. | Set of connecting tubes, size 1/4 "4 meters) | 1 |
| 6. | Passport and operation manual | 1 |
| Aux. 1 | Tap Diverter with a set of nozzles (<i>"over the sink" delivery option</i>) | 1 |
| Aux. 2 | Pure water tap with installation kit (<i>"under the sink" delivery option</i>) | 1 |
| Aux. 3 | Ball valve T-bend (<i>"under the sink" delivery option</i>) | 1 |
| Aux. 4 | The main mechanical filter with a flask for preliminary water purification with a replaceable (optional) element | 1 |



1



2



3



4



5



6



Aux. 1



Aux. 2



Aux. 3



Aux. 4



The presence of *Aux.* positions is determined by the terms of the product purchase

12. ACCEPTANCE AND SALES CERTIFICATE.

EMERALD HOME 60 Device (the abbreviated name EMERALD) complies with TU 28.29.12-001-19313776-2018 and is recognized as fit for use.

Serial Number _____
Date of issue _____
Quality Control _____
Representative _____

MANUFACTURER:

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

600026, Russia, Vladimir city, Kuibysheva street, 26A



EMERALD HOME devices are manufactured by EMERALD ECOTECHNOLOGIES LLC. The company has exclusive rights to manufacture EMERALD HOME devices, as well as to carry out their maintenance and warranty service. EMERALD ECOTECHNOLOGIES LLC has the exclusive right to transfer to its official trading partners all the necessary powers to sell EMERALD HOME devices, as well as to carry out their maintenance and warranty service.

For service and warranty issues, please contact:

EMERALD ECOTECHNOLOGIES, LLC

600026, Russia, Vladimir city, Kuibysheva street, 26A
Tel.: 8 (495) 928-77-71; Email: service@emerald.eco;

www.emerald.eco

WARRANTY CARD

Date of sale _____

Store stamp _____

Official Seal`

APPENDIX No. 1. CERTIFICATES

1. CE CERTIFICATE OF CONFORMITY OF THE EUROPEAN UNION

Form QAT_19-M05, version 00, effective since March 25th, 2020

شهادة – Certificate – 증명서 – 證明書 – Сертификат



Certificate of Compliance

No. 0D201203.EEW054

Certificate's Holder: EMERALD ECOTECHNOLOGIES, LLC.
600026, Russia, Vladimir city, Kuibysheva 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 upon request 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 conformity mark above can be affixed on the products according to the ECM regulation about its release and its use.

Additional information regarding classification about the Marking:
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.enitecema.it



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

Reviewer
Technical expert
Amanda Poyko



Approver
ECM Service Director
Luca Bogazzi



ente Certificatione Macchine Srl
Via Ca' Bella, 243 - Loc. Castello di Serravalle - 40053 Valsamoggia (BO) - ITALY
☎ +39 051 4705141 | 📠 +39 051 4705154 🌐 info@entececm.it 🌐 www.entececm.it

2. RoHS DECLARATION OF CONFORMITY OF THE EUROPEAN UNION



EC Declaration of Conformity

No: DoC.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, Kuibysheva 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

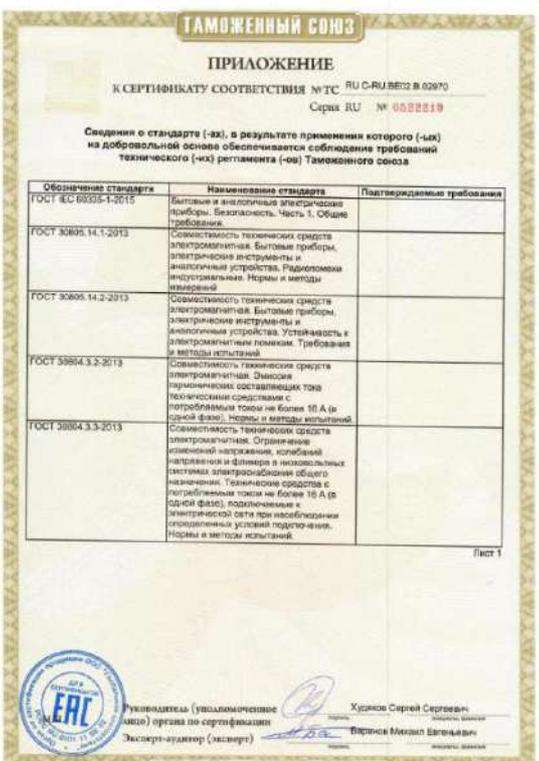
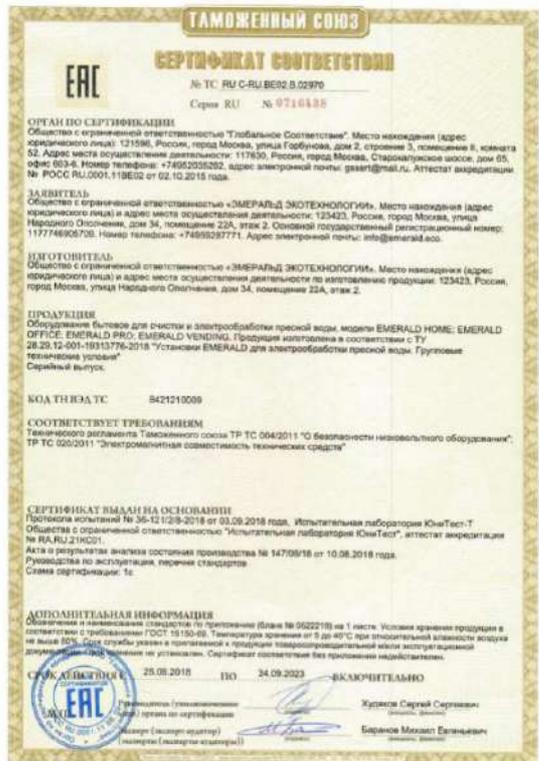
Authorized representative: Business Mission GmbH
Address: Locomer Straße 55, 30619 Hannover, Germany
Name and function: Director Julia Tsybulevska

Signature / Stamp:   **RoHS**

3. ISO 9001-2015 CERTIFICATE OF CONFORMITY OF QUALITY MANAGEMENT SYSTEM



4. EAC CERTIFICATE OF CONFORMITY OF THE EURASIAN ECONOMIC UNION



5. HYGIENIC CERTIFICATE, EXPERTS' REPORT FROM RUSSIAN GOVERNMENT OFFICIALS (ROSPOTREBNADZOR)


 Федеральная служба
 по надзору в сфере защиты прав
 потребителей и безопасности товаров
 (Роспотребнадзор)
 Федеральное бюджетное
 учреждение здравоохранения
 «Центр гигиены и эпидемиологии
 в Владимирской области»
 Толкарева ул., д.5, г. Владимир, 600003
 Тел./факс: (4922) 53-88-28
 E-mail: vlad@fscs.ru, vlad@fscs.ru
 ОГРН/ОГРНИП: 502701228243,
 ИНН/КПП: 3327819090/332601001
 Адрес в Едином государственном реестре юридических лиц: 50-01-39060
 дата внесения в реестр: 08.03.2018

УТВЕРЖДАЮ
 Главный врач
 ФБУЗ «Центр гигиены и эпидемиологии
 в Владимирской области»,
 директор филиала инспекции

 М.В. Буланов

№ 5712 от 22.11.2018 г.

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ № 907

1. Наименование продукции: Оборудование для очистки и электрообработки пресной воды, торговая марка «EMERALD», модели EMERALD HOME, EMERALD OFFICE, EMERALD PRO, EMERALD BUSINESS.

2. Организация-изготовитель: Общество с ограниченной ответственностью «ЭМЕРАЛД ЭКОТЕХНОЛОГИИ», 123423, г. Москва, ул. Народного Ополчения, дом 34, этаж 2, помещение 22А.

3. Палауатель заключения: Общество с ограниченной ответственностью «ЭМЕРАЛД ЭКОТЕХНОЛОГИИ», 123423, г. Москва, ул. Народного Ополчения, дом 34, этаж 2, помещение 22А.

4. Представленные материалы:

- ТУ 28.29.12-001-19313776-2018;
- Сертификат соответствия № ТС RU.CE.01.ВЛА.02970 от 25.09.2018;
- Декларация о соответствии ЕАЭС № RU.D-ВЛ.000116.00712/18 от 26.10.2018;
- Протокол лабораторных исследований Исламкановского лабораторного центра «Центр государственного санитарно-эпидемиологического надзора» Управления администрации Президента Российской Федерации (ФГУБУ «Центр государственного надзора»), АТТЕСТАТ № РОСС RU.0001.510440 Федеральной службы по аккредитации (Сред. действия с 26 октября 2013 г. по 26 декабря 2018 г.) № ИОП-П800С-11-18 от 13 ноября 2018 г.
- Протокол лабораторных исследований Исламкановского лабораторного центра «Независимый институт анализа и сертификации (группа аккредитации № РОСС, RU.0001.21115, срок действия до 24.02.2019 г.) № 124 С - 127 С от 02.04.2018 г.

5. Область применения продукции: доочистка пресной воды от органических примесей, микроорганизмы и ионов тяжелых металлов, снижение окислительно-восстановительного потенциала пресной воды.

Информация заключению № 907 от 22.11.2018 г., страница 1 из 4
08.03.2018

6. Цель экспертизы: установление соответствия (несоответствия) продукции требованиям раздела 3 «Требования к материалам, деталям, оборудованию, используемым для водочистки и водоподготовки», раздела 7 «Требования к продукции машиностроения, приборостроения и электротехнико» главы II Единых санитарно-эпидемиологических и гигиенических требований к товарам, подлежащим санитарно-эпидемиологическому надзору (контролю), утвержденных решением Комиссии Таможенного союза от 28.05.2010 г. № 299.

7. Основание проведения санитарно-эпидемиологической экспертизы: заявление-ходатайство № 1249 от 21.11.2018 г.

8. Проведение санитарно-эпидемиологической экспертизы поручено: эксперту, врачу по общей гигиене ОКГ и ГТ ФБУЗ «Центр гигиены и эпидемиологии в Владимирской области» Брылевскому А.А.

9. Порядок проведения работ: Санитарно-эпидемиологическая экспертиза проводится на соответствие требованиям раздела 3 «Требования к материалам, деталям, оборудованию, используемым для водочистки и водоподготовки» раздела 7 «Требования к продукции машиностроения, приборостроения и электротехнико» главы II Единых санитарно-эпидемиологических и гигиенических требований к товарам, подлежащим санитарно-эпидемиологическому надзору (контролю), утвержденных решением Комиссии Таможенного союза от 28.05.2010 г. № 299 на основании представленных результатов лабораторных исследований продукции, данных документально-технической документации изготовителя продукции.

10. Результаты лабораторных и (или) инструментальных исследований:

Исследования по 7 разделу:

- Напряженность электрического поля – не более 18 мВ/м;
- Напряженность электрического поля частотой 50 Гц – не более 0,5 кВ/м;
- Надвигая магнитного поля частотой 50 Гц, мГс, не более – 5;
- Эквивалентные уровни шума, дБА – не более 45;
- Выборки общие:
 - Корректированный уровень вибростороности, дБА – не более 62;
 - Корректированный уровень виброускорения, дБА – не более 20.

Исследования по 3 разделу:

Корпус (ИВУД):

- Исследование водной вытяжки (дистиллированная вода, температура 25°С, время экспозиции 3 суток): Запах, запах – не более 2; Мутность, ЕМФ – не более 2,6; Пеннообразование – отсутствие; стабильной крупнопузырчатой пены, высота мелкопузырчатой пены у стенок цилиндра – не выше 1 мм; Привкус – отсутствие; Цветность, градусы – 20; Наличие осадка – отсутствие; Волеводородный показатель (рН) в пределах 6 – 9; Величина перманганатной окисляемости, мг/л – не более 3;
- Миграция химических веществ в модельную среду (дистиллированная вода, температура 25°С, время экспозиции 3 суток), мг/л, не более:
 - Формальдегид – 0,05; Спирт метиловый – 3; Спирт этиловый – 0,1; Спирт изобутиловый – 0,15; Ацетальдегид – 0,2; Этанолсигнал – 0,2; Ацетин – 2,2.

Информация заключению № 907 от 22.11.2018 г., страница 2 из 4
08.03.2018

Распределитель (полиэтилен):

- Исследование водной вытяжки (дистиллированная вода, температура 25°С, время экспозиции 3 суток): Запах, запах – не более 2; Мутность, ЕМФ – не более 2,6; Пеннообразование – отсутствие; стабильной крупнопузырчатой пены, высота мелкопузырчатой пены у стенок цилиндра – не выше 1 мм; Привкус – отсутствие; Цветность, градусы – 20; Наличие осадка – отсутствие; Волеводородный показатель (рН) в пределах 6 – 9; Величина перманганатной окисляемости, мг/л – не более 3;
- Миграция химических веществ в модельную среду (дистиллированная вода, температура 25°С, время экспозиции 3 суток), мг/л, не более:
 - Формальдегид – 0,05; Спирт метиловый – 3; Спирт этиловый – 0,1; Спирт изобутиловый – 0,15; Ацетальдегид – 0,2; Этанолсигнал – 0,2; Ацетин – 2,2.

Противосадочный:

- Исследование водной вытяжки (дистиллированная вода, температура 25°С, время экспозиции 3 суток): Запах, запах – не более 2; Мутность, ЕМФ – не более 2,6; Пеннообразование – отсутствие; стабильной крупнопузырчатой пены, высота мелкопузырчатой пены у стенок цилиндра – не выше 1 мм; Привкус – отсутствие; Цветность, градусы – 20; Наличие осадка – отсутствие; Волеводородный показатель (рН) в пределах 6 – 9; Величина перманганатной окисляемости, мг/л – не более 3;
- Миграция химических веществ в модельную среду (дистиллированная вода, температура 25°С, время экспозиции 3 суток), мг/л, не более:
 - Турам Д - 1; Капазол - 3; Дибутилфталат - 0,2; Цинк - 5.

Мембрана (полиэтилэфон):

- Исследование водной вытяжки (дистиллированная вода, температура 25°С, время экспозиции 3 суток): Запах, запах – не более 2; Мутность, ЕМФ – не более 2,6; Пеннообразование – отсутствие; стабильной крупнопузырчатой пены, высота мелкопузырчатой пены у стенок цилиндра – не выше 1 мм; Привкус – отсутствие; Цветность, градусы – 20; Наличие осадка – отсутствие; Волеводородный показатель (рН) в пределах 6 – 9; Величина перманганатной окисляемости, мг/л – не более 3;
- Миграция химических веществ в модельную среду (дистиллированная вода, температура 25°С, время экспозиции 3 суток), мг/л, не более:
 - Бензол - 0,01; Фенол - 0,001.

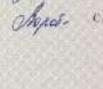
ВЫВОДЫ ЭКСПЕРТА:

По результатам проведенных испытаний типового представителю образца, экспертами представленной документации, модельная продукция «Оборудование для очистки и электрообработки пресной воды торговой марки «EMERALD», модели EMERALD HOME, EMERALD OFFICE, EMERALD PRO, EMERALD VENDING», соответствует требованиям главы II Единых санитарно-эпидемиологических и гигиенических требований к товарам, подлежащим санитарно-эпидемиологическому надзору (контролю), утвержденным решением Комиссии Таможенного союза от 28.05.2010 г. № 299 (раздел 3 и 7).

Информация заключению № 907 от 22.11.2018 г., страница 3 из 4
08.03.2018

Условия безопасного применения, хранения, транспортирования, маркировки, утилизации, периодического лабораторного контроля продукции должны быть в соответствии с действующим санитарным законодательством РФ, подлежащим Единых санитарно-эпидемиологических и гигиенических требований к товарам, подлежащим санитарно-эпидемиологическому надзору (контролю), требованиями нормативной документации изготовителя - ТУ 28.29.12-001-19313776-2018.

Эксперт, врач по общей гигиене
ФБУЗ «Центр гигиены и эпидемиологии
в Владимирской области»
Технический директор филиала инспекции


 А.А. Брылевский

 С.Е. Воробьева

Информация заключению № 907 от 22.11.2018 г., страница 4 из 4
08.03.2018

