UKRAINE, ODESSA
SPE ECONIKA
www.ozonetherapy.org

Automatic Ozone device
“BOZON N”

Users manual and technical description

The MAINTENANCE

List of Abbreviations

AOD - automatic ozonetherapy device

GMM – generation and measurement module

LCD - the liquid crystal display indicator

MOD - module of ozonation of distillate

MOO - module of ozonation of oil

MOS - module of ozonation of saline solution

OOM - ozone oxygen mixture

RCP – remote control panel

SS - saline solution

1. Introduction

The present description and the maintenance instruction contain necessary information for correct and safe operation of the automated ozone device "BOZON - N" (further along the text " AOD “BOZON N”).

2. Function

2.1. AOD “BOZON N is intended for:

−generating during set time of ozone oxygen mixture (further in text - OOM) with the set speed of a stream of OOM and ozone concentration in it;

−ozonization of the set volume of oil before the reach of the set prescribed value of peroxide number.

−preparation of the ozonized distillate with the set concentration of ozone in solution;

−receiving of the ozonized saline solution (OSS) with the set concentration of ozone.

Required valuations of ozone concentration in gas, volume of gas, speed of the consumption of gas, concentration in distillate and in a physiological saline solution are set by means of the keyboard located on the forward panel of the generating & measuring module (GMM)

2.2. The AOD BOZON N scope - medicine, biological, chemical, physical, chemical and biochemical researches, sanitary, laboratory business, other areas of science and practices, using ozone.

2.3. AOD “BOZON N “is intended for work in following conditions:

-temperature of air is 18-25 ^{0} C;

-relative humidity of air is to 80 %

-atmospheric pressure is 84-110 KPa;

-vibration in an installation place: frequency is from 5 to 25 Hz; - amplitude is not more than 0.1 mm;

-network voltage AC is 110 - 240 V, frequency is of 49-60 Hz;

-pressure of oxygen upon the input of the generator s 150-300 KPa (1,5-3 kgf/sm^{2});

-an oxygen dew-point on the input of the generator is not above than 0 ^{0}C.

3. Specifications

3.1. A range of set values of concentration of ozone in OOM is 0,5 - 160 mg/l.[1]

3.2. The basic relative error of the ±10 %. task of concentration of ozone in OOM does not exceed ±10%.

3.3. A range of prescribed values of speed of a stream of OOM on the exit of AOD "BOZON N is150 - 2000 ml/min.

3.4. The basic relative error of the assignment of speed of a stream of OOM on the exit of AOD BOZON N is not more then ±10%.

3.5 A range of the task of volume of OOM on the exit of AOD "BOZON N does not exceed 100 - 9999 ml.

3.6. The basic relative error of the received volume of OOM does not exceed ±10%.

3.7. The range of concentration of ozone in the distilled water or in SS makes 0,1-30mg/l. The quantity of prepared SS makes 200 ml, quantity of distilled water makes from 100 ml up to 800 ml.

3.8. The basic relative error of concentration of ozone in water does not exceed ±10%.

3.9. The maintenance of active forms of oxygen in oil is not normalised.

3.10. AOD "BOZON N complies with requirements of items 3.1-3.8 under following conditions:

-air temperature is 18-25^{0}C;

-relative humidity of air is to 80 %;

-atmospheric pressure is 84-110 кPa;

-vibration in an installation site should be absent;

-voltage of a network is 110 – 240 V , frequency is 49 - 60 Hz;

-pressure of oxygen upon the input of the generator is 150 - 300 KPa;

-an oxygen dew-point on a generator input is not above 0 ^{0}C.

3.11. Control of work of the generator and data collection from gauges of concentration and speed of the flow of OOM is carried out by the microcontroller of the integrated control system.

3.12. Time of an installation of indications of channels of measurement of speed of the consumption and concentration of ozone in OOM no more than 40 s.

3.13. Time of warming up of **AOD "BOZON N"** is not more than 20 min

---

[1] *Productivity of the generator on ozone output depends of the gas flow.*
At concentration of ozone in gas 100 mg/l the gas flow should not exceed 1000 ml/min

3.14. AOD BOZON N is executed by a modular principle. The following moduls are included in the structure of AOD BOZON N:

3.14.1. The generation and measuring module (GMM).

The sizes of the module are of 455*120*350 mm; Weight of the module is to 8kg.

3.14.2. The module of ozonization of the distilled water (MOD).

The sizes of the module are of 425*167*177 mm. Weight is no more than 2,0 kg.

3.14.3. The module for ozonization and infusion of saline solution (MOS).

The sizes of the module are of 350*165*107 mm; Weight is no more than 0,7 kg.

3.14.4 Module for oil ozonization (MOO)

The sizes of the module are of 270*140*107 mm; Weight is no more than 0,2 kg.

3.15. Power consumption is no more than 100 Vt

3.16. The period of work of the generator of an ozonizer before the major repairs of the reactor - 10000 hours.

4. The complete set of AOD BOZON N

The complete set of AOD BOZON N corresponds to table 1.

table 1

<table>
<tr><th>N</th><th>T the name</th><th>«Bozon N+»</th><th>«Bozon N+» remote control</th><th>«Bozon - audio»</th><th>«Bozon - NK»</th><th>«Bozon NK_{WEB}»</th><th>«Bozon - COLOR»</th></tr>
<tr><td>1</td><td>Generation and measuring module (GMM)</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>2</td><td>Module of ozonization of the distilled water MOD[2]</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>3</td><td>Module of ozonization of a saline solution MOS[3]</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>4</td><td>Module of ozonization of oil MOO</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>5</td><td>Manual</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>6</td><td>Cord of a network</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>7</td><td>Box with accessories</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>8</td><td>Console of remote control (CRC)</td><td rowspan="3">. Additional function [4]</td><td>1</td><td>Additional function</td><td rowspan="2">Additional function</td><td rowspan="3">Additional function</td><td rowspan="3">Additional function</td></tr>
<tr><td>9</td><td>Audio- help</td><td rowspan="2">Additional function</td><td>1</td></tr>
<tr><td>10</td><td>Referral service of user of AOD Bozon N (ISSO)</td><td>Additional function</td><td>1</td></tr>
</table>

[2] On additional request up to 5
[3] On additional request up to 10
[4] Activation of function is possible only after receiving of additional key

11	Internet-version of the referral service of user of AOD Bozon N (ISSO web)				Additional function	1	
12	Liquid-crystal indicator (coloured)						1

5. A principle of action and a design of AOD BOZON N

5.1. A principle of action of AOD BOZON N.

On a photo 1 is represented the general view of AOD BOZON N

Getting of OOM is based on the electrochemical reaction of formation of ozone from oxygen in low temperature (to the) plasma raised in the special reactor.

PHOTO 1

At the heart of AOD BOZON N functioning is loacted the principle of adaptive regulation of process of preparation of OOM and liquid solutions containing ozone lies.

Adaptability of work of AOD BOZON N is reached becauseof the presence of three loops of a feedback between the block of adjustment of productivity of the reactor, a regulator of speed of a stream, on the one hand, and gauges of the flow, concentration in gas and a liquid, on the other.

A regulating element of these loops of a feedback is the microprocessor block of control. Entrance parametres for adjustment (concentration of ozone in gas, concentration of ozone in liquids, the consumption of gas) are set by the operator in a menu mode on the keyboard located on obverse panel GMM, or by means of the remote control panel (RCP) keyboard.

5.2 Modifications of AOD BOZON N

Depending on the kind of giving out ozonetherapy procedure AOD BOZON N can be configured in four variants:

a**) GMM**.(see photo 1)

Module GMM can individually be used for realisation of procedures in which the OOM is used, applied out of AOD BOZON N, such as: aeration, insufflation, autohemotherapy.

PHOTO2

b)GMM+MOS .(See photo 2)

This variant is used for preparation OSS in module MOS.

After preparation OSS module MOS can be transferred to any distance from AOD BOZON N and can be used for intravenous infusion OSS to the patient.

PHOTO 3

c)GMM+MOD. (See photo 3)

This variant is used for preparation up to 800 ml of the ozonized distillate.

After preparation of the ozonized distillate MOD can be disconnected from GMM, and also transferred to the necessary distance and there can be used for instillation.

The ozonized distillate can be used also at a place, without disconnecting GMM and MOD**.**

PHOTO 4

d)GMM + MOO (See photo 4)

Is used for preparation of the ozonized oil in the module MOO.

5.3. The description of work of AOD “BOZON N”

PHOTO 5

Oxygen from a standard cylinder with medical oxygen through a reducer under pressure from 150 to 300 KPa (1.5 – 3.0 kgf/sm^2) arrives in AOD "Bozon N" through a flexible connecting highway and a input branch pipe, which is situated on the back side of the device. See photo 5

Further oxygen is exposed to additional clearing by the two-level filter.

The filter is supplied with the cover-stopper, on a cover of which there is a colour indicator of an exhaustion of the filter. When a colour of an indicator becomes pink the filter should be recycled by heating.

Under control of the program of microcontroller GMM AOD BOZON N gives out a stream of OOM with the set concentration, volume and speed of the consumption in demountable connection EXIT outlet of OOM from GMM.

At preparation OSS or the ozonized distillate OOM through connectors and internal highways of MOD and MOS arrives in volume of distillate or a saline solution accordingly.

Used OOM, formed at ozonization SS or distillate, arrives in sectional connection of the input of the used OOM, and further to destructor GMM. The exhaust outlet of the destructor is situated on the back panel of GMM.

The ozonized saline solution from a bottle placed in MOS, arrives itself flow out in optical cavity to a ditch compartment.

While using of MOD ozonized distillate also arrives in a ditch compartment by flowing itself.

In the process of ozonization modules of MOD and MOS are guided concerning GMM so that ditch compartments were established in optical gauge GMM.

Thus an optical ditch of a ditch compartment is established between a source and the receiver of the ultra-violet radiation which spectral structure corresponds to area of absorption of ozone in the water environment.

Equipment facilities of hard and software available in structure of the GMM give oppotunity to define concentration of ozone on degree of absorption of this radiation.

It allows to define concentration of ozone in an ozonized liquid in the course of saturation.

At achievement of demanded concentration operating program of GMM gives a signal of the end of ozonization and stops giving a OOM to the named modules.

6. Principles of action and design of modules of AOD BOZON N

6.1. Generation and measuring module (GMM)

The generator (photo1) consists of a power unit, the microcontroller of control of the generator and consistently switched on: a regulator of a stream of oxygen, a measuring instrument of speed of a stream of oxygen, the two-level filter of oxygen, the electrochemical reactor, the microporous filter of clearing of OOM, the ozone gauge in OOM and the block of electromechanical valves.

Besides, GMM contains the sensor of concentration of ozone in liquids, sensors of pressure of OOM on exit of GMM.

On obverse panel GMM (the Photo 6) located:

1-the liquid crystal indicator (LCD);

2-buttons of management by the cursor;

3-button "ENTER" of acknowledgement of the choice made buttons 5 or 6;

4-digital keyboard;

5-button "RESET" of cancellation of the set value;

6-buttons “ON” inclusions/deenergizings of a power supply of the generator;

7-the indicator of inclusion of a power supply .

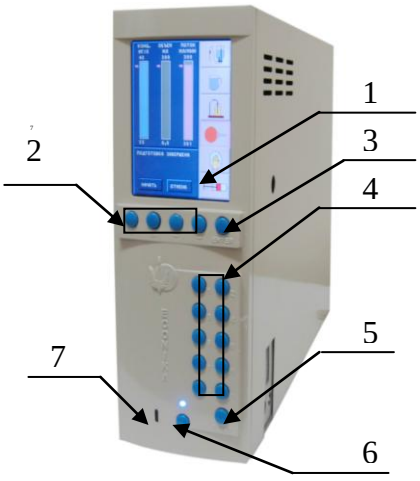


PHOTO 6

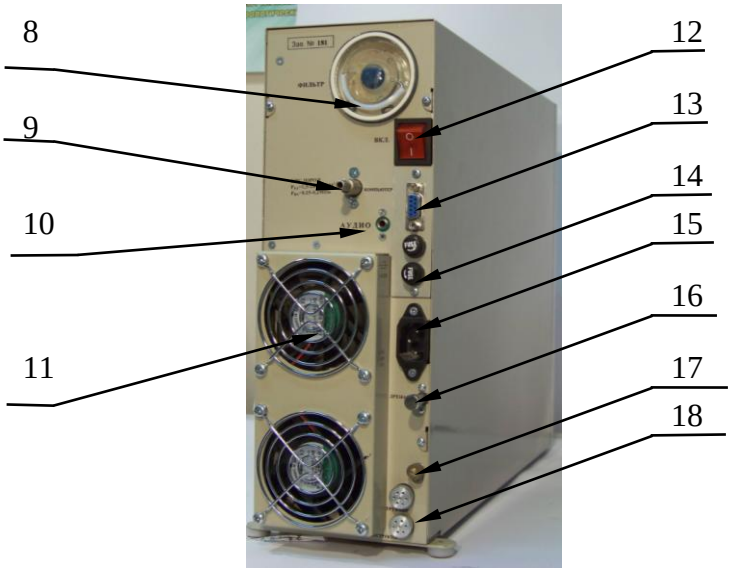


PHOTO 7

In a frame of GMM a destructor of ozone is installated. For prevention of getting of moisture to the destructor, in the module there is established a droppercatcer, supplied with the overflow gauge.A dropcatcher has the drainage line which is ended by a cork (the photo 7).

On back panel GMM (Photos 7) are:

12-the network switch

13-a socket for computer connection

14-network fuses

15-a socket for connection of a network cable

16–drenage outlet

18- exhaust outlets of destructor

17-a grounding clip

11 – fans

8-cover the filter for oxygen clearing

9- an input of connection of oxygen

10-a socket for connection of a column of audio

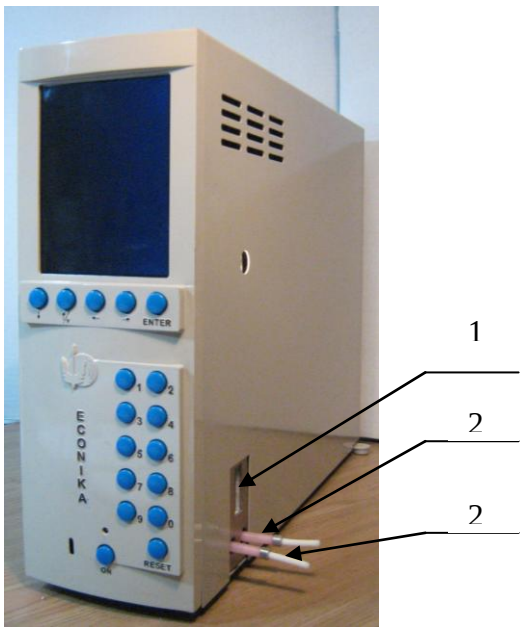


PHOTO 8

On lateral panel GMM are:

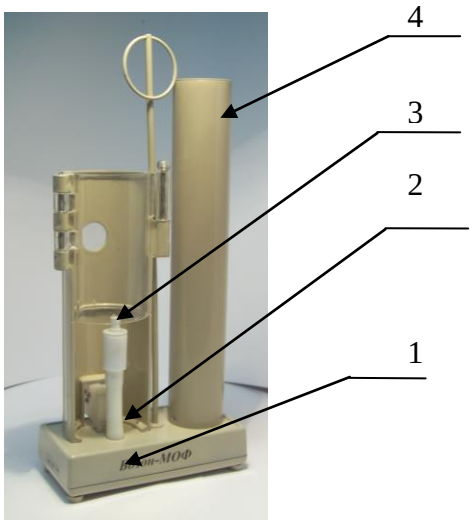
19-the input of the optical gauge (a cut in the frame of GIM into which ditch compartment MOS or MOD are moved);

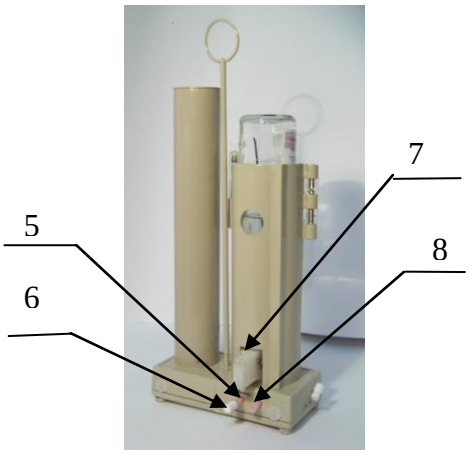
20-demountable connection of the input of OOM from GMM (an aperture into which at connection GMM with MOS or MOD entrance branch pipes of modules are moved);

21-demountable connection of the input in destructor of ozone GMM exausted OOM (an aperture into which at connection GMM with MOD or MOS target branch pipes of modules are moved).

The module is installed vertically on a desktop.

6.2. The module of ozonization of a saline solution (MOS).





PHOTO

PHOTO 9

MOS (the photo 9) consists of:

1-the basis;

4-the protective case of capacities in which there is a glass vessel with a OOM stock;

2-the main holder of a needle for OOM giving in a bottle and tap from a bottle;

7-a quartz ditch, it is presented by acting optical block which incorporates with a dith compartment of optical sensor 19 GMM;

8- an entrance branch pipe of the module through which the OOM with GMM arrives;

5-a target branch pipe through which it is taken away exausted OOM from the module;

3-a special stopper №1 (it is used for carrying out of procedure of sterilisation);

6-a special stopper №2 which is used during time in which procedure applied introductions of OSS to the patient.

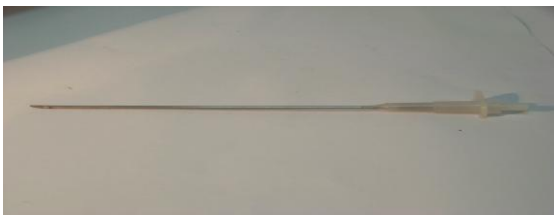


PHOTO 11

The needle with length of 150 mm with the conic kapron basis is applied to the module (the photo 11), there is a through-aperture with a diameter of 1,2 mm for giving of OOM and an aperture with diameter of 4 mm for OOM tap in a destructor of GMM.

The needle has by-pass a branch pipe for connection with the system for transfusion of solutions. The needle is supplied with a mandrin, which serves for clearing of a needle in case of corking it by crystals of salts.

It is necessary to observe that the aperture of a needle has appeared above liquid level in a bottle with a SS.

Procedure of preparation OSS consists of following stages:

-the OOM arrives in MOS through an entrance branch pipe of the module;

-further the OOM moves through a vessel with a OOM stock, through a ditch of the optical block, a needle in SS.

-used OOM through an aperture (with diameter of 4мм in the needle basis) , module MOS arrives in a target branch pipe of the module.

In the course of ozonization MOS is guided rather of GMM so that the ditch compartment was established in optical sensor inside the GMM.

Ozonization procedure consists of the following one after another the periods of increase of pressure and depressuarisation (pressure dump) in a bottle through an entrance branch pipe of the module.

An optical ditch is below level SS in a bottle, therefore for a lack of pressure of gas in branch pipe SS itself by flowing arrives in a ditch. In elevated pressure SS it is superseded from ditches.

After filling of a ditches the microprocessor system defines value of concentration of ozone in SS and begins the following period of saturation if concentration of ozone in SS has not reached the set level. When concentration is reached – preparation of OSS stops.

After saturation SS the module is disconnected from GMM. The target branch pipe is closed by a special stopper №2, (the photo 10), MOS moves to a place of carrying out of intravenous infusion.

During the infusion, following through the system (arrangement for intravenous infusion) OSS, creates a lack of pressure in a bottle that leads to restoration of pressure by receiption of an OOM from the spare capacity -cylinder.

Thus, reduction of concentration of ozone in OSS as a result of natural disintegration is filled up with a purge in the portions of OOM through a needle.

6.3. The module of ozonization of distillate (MOD).

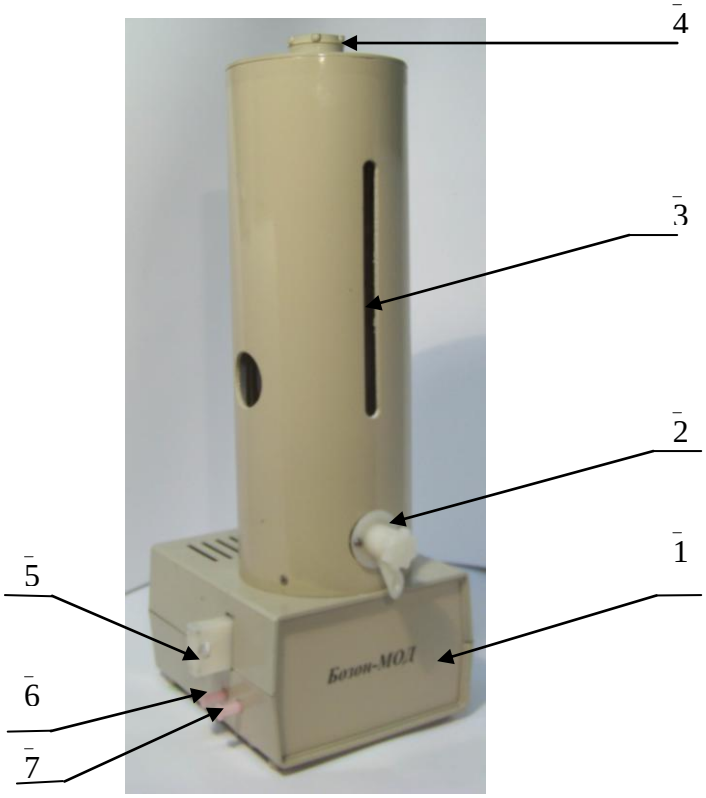


PHOTO 12

MOD (photo 12) consists of the glass capacity which is situated in the protective case 3, installed on the basis of 1.The glass capacity has an entrance aperture for the distillate pouring, closed by a stopper 4 and the crane for plum of the ozonized distillate 2.

The OOM arrives in MOD through an entrance branch pipe of the module 7 (Photo12).

Further the OOM moves through an U-shaped tube (on photo it is not showed), to a quartz ditch, fixed in ditch the block 5 (photo 12), a glass spray and arrives in the bottom part of a glass vessel with distillate.

Used OOM is taken away on an internal highway of MOD in a target branch pipe of the module 6 and further it arrives in demountable connection of an input of exhausted OOM of a destructor GMM.

An optical ditch is below a spray, therefore for lack of pressure of gas in an entrance branch pipe of the module distillate itself flowing in a ditch.

Procedure of saturation of distillate consists of the following one after another periods of increase and pressure dump in an entrance branch pipe 7. In an elevated pressure water is superseded from ditches. At pressure dump the ozonized water arrives in a ditch.

After filling ditches the microprocessor system defines value of concentration of ozone in the ozonized distillate and begins the following period of saturation if concentration of ozone has not reached the set level.

At reach of the set concentration of ozone, saturation procedure stops.

The received ozonized distillate can be pour out through the crane 2 (Photo13).

PHOTO 13

Attention!

It is prohibited to overflow distillate in the module above a sign “800 ml”.

It leads to a generator damage.

6.4. The module of ozonization of oil (MOO).

Module MOM (the photo 14) consists of the basis 1, the glass tube 2, capacity for oil

PHOTO 14

ozonization (it is applied in a complete set). Module MOO through an entrance branch pipe 3 by means of a tube of PVC with a pink adapter will incorporate to demountable connection of an exit of OOM from GMM. At the moment of the procedure beginning the glass tube should be shipped in the refined oil (the photo 4 see).

Attention! After the ending of the procedure capacity with the ozonized oil should be removed, and a glass tube should be cautiously to wiped by a napkin.

6.5. A console of remote control (CRC)

In modification «Bozon-N +RCP» is included a console of remore control into AOD BOZON N structure.

PHOTO 15

Buttons on the panel duplicate buttons on forward panel GMM and carry out the same functions (Photo 15).

To activate remote control function, it is possible only having received from the manufacturer a code of activation of service.

ATTENTION! The code for activation of each service – is unique for each device.

An order of introduction of a code:

- to pass in a mode «**viewing of modification**» from the basic menu, having pressed the button «**0**»;
- to choose by pressing a buttons «←», «↑», «→», «↓» type of modification;
- to press button "ENTER";
- on the screen there will be an inscription «ENTER the CODE»;
- Enter a code received from the manufacturer, upon termination press «ENTER»;
- if you have correctly entered a code, there will be an inscription «the CODE is accepted».

Switch off the device by button "**ON**" on forward panel of GMM or on the remote control panel (RCP)

Now the console of RC is active, and you can use it; in case of a wrong code or you have committed an error at its input, there will be an inscription «the INCORRECT CODE», and you can repeat an attempt.

It is allowed to enter the code no more then 10 times, then all types of service (the console of remote control, measurement of concentration of ozone in a liquid, the audiohelp, management of AOD BOZON N by means of the computer)will be deactivated

7. Service and regulations of AOD BOZON N

7.1 Connections of AOD BOZON N

1.To connect the exit of a reducer of an oxygen cylinder or an exit of an oxygen highway by means of a pure dry flexible hose to the entrance of oxygen connection, located on back panel of GMM (photo 7) of an AOD BOZON N.

To install a pressure upon the input of installation within 150kPa - 300 kPa (1,5-3 atm, 1,5-3 kgf/sm^2).

2. AOD BOZON N ground connection**.**

Before the first inclusion of the device to check up presence of earth/ground connection of the case of the generator.

Ground connection is carried out through earth/ground connection wire of a network cord.

In this connection, the socket for connecting a network cord and an electric network, should have the third conclusion, and this conclusion should be connected to the «dead earth».

7.2 Inclusion of AOD BOZON N

1. To turn on a network cord in an alternating current network 220±20v.

To turn on the network switch on back panel of GMM (the Photo 7 see) and the inclusion button «ON» on the front panel (see photo 6).

The light indicator on the obverse panel mean the sign of «Put on»(see photo 6) During this time the badges «*» are displayed on LCD, as a sign of working capacity of an AOD BOZON N

PHOTO 16

2. A transition on an AOD BOZON N operating conditions.

AOD BOZON N inclusion into work occurs after button "ON" pressing forward - panel GMM or buttons «ON» on the RCP.

Thus on LCD (see photo16) there will be an inscription "**DEVICE WARMING**",

PHOTO 17

and process of installation of operating conditions of gauges of concentration of ozone in gas and a liquid will begin.

Duration of this process depends on temperature and can be from 5 to 10 min. During this time the badges «*» are displayed on LCD, as a sign of working capacity of an AOD BOZON N

3. After the end of the process of an installation of operating conditions of AOD BOZON N, on LCD there is an image of the main menu of the user (the Photo 17):

4. By means of buttons on obverse panel GMM the necessary procedure is chosen. With the button "ENTER" the procedure inputting is confirmed.Buttons of the digital keyboard serve for inputting of numerical parametres in a procedure window. The second button at the left serves in a mode of the task of numerical parametres of procedure as a comma.

8. Generation of OOM of set concentration

8.1 Mode insufflation

1. In the main menu pressing of buttons the obverse panel we choose a procedure «INSUFFLATION» (See photo 18)

PHOTO 18

By failure to mention in a mode «INSUFFLATION» in the column "CONCENTRATION" value of 40 mg/l, in the column "VOLUME" – 300 ml is installed, in the column "STREAM" – 300ml/min

2.By means of buttons of the digital keyboard on the obverse panel enter required parametres. If the error was made in the process of an entering of a demanded, for its correction it is necessary to press the bottom button of a keyboard - "RESET".

For acknowledgement of entered parametres button "ENTER" is used.

PHOTO 19

3.After entering of necessary for procedure application parameteres - device adjustment begins, thus values of arranged parametres (concentration of ozone in gas and a stream) are displayed in the bottom line in a digital form and in a graphic kind in the corresponding to column. (see photo 19)

4.When preparation of the AOD BOZON N for procedure carrying out comes to the end, in the right bottom corner LCD an inscription appears:« PREPARATION IS OVER » (see photo 20)

PHOTO 20

5.After pressing the button “ENTER” a procedure of INSUFFLATION begins to be in progress.

During the procedure all parametres: concenration of ozone in gas, the gas volume, the gas consumption – are shown on the indicator in a digital and grafic form.

PHOTO 21

PHOTO 22

ATTENTION! After pressing the button" ON " «ENTER» OOM gas will start to arrive outside, watch, that connections of a target branch pipe with an intermediate tube and between an intermediate tube and the final receiver of OOM were tight, do not suppose outlet of OOM in a room!

6.Upon termination of procedure on LCD a message will appear:’’PROCEDURE IS OVER OZONE DOZE IS «____MG»

7.At this moment the procedure of INSUFFLATION is finished. Disconnect a patient .

Press the button «RESET» for correct termination of work of generator and passing to main menu (see photo 17)

To repeat a procedure of INSUFFLATION press the buton «ENTER».

8.2 Mode of aeration

1.In the main menu by pressing of buttons obverse panel GMM we choose procedure "AERATION". See photo 23

PHOTO 23

2.By means of buttons enter demanded parametres. If in the course of a set of demanded value an error was made - for its correction it is required to press the button "RESET".

For acknowledgement of entered parametres the button "ENTER" is used 3.After inputting the parametres device

PHOTO 24

adjustment begins, thus values of arranged parametres (concentration of ozone in gas and a stream) are displayed in the bottom line in a digital form and in a graphic kind in the corresponding column. See photo 24

4.When preparation of the Device for procedure carrying out comes to the end, in the right bottom corner of LCD appears an inscription: «TO **BEGIN - PRESS** «ENTER». See photo 25.

PHOTO 25

5.During procedure all parametres: concentration of ozone in gas, the gas volume, the gas flow - are displayed on the indicator in a digital and graphic kind.

6. During the procedure providing assigned parameters are reflected at the screen. See photo 26.

ATTENTION! After pressing the button" **ON** "gas will start to arrive outside. Look after the connections of a target branch pipe with an intermediate tube and between an intermediate tube and the final receiver for gas were tight, do not suppose gas receipt in a room

7. After the ending of the procedure there will be an information at the screen “The procedure is over. The draught of ozone is_ mg”. See photo 27. At this moment the procedure of

PHOTO 26

PHOTO 27

AERATION is finished.To disconnect a patient .

Press the button «RESET» for correct termination of work of generator and passing to main menu (see photo 17)

To repeat a procedure of AERATION press the button «ENTER»

8.2.1 Processing with OOM of extremities

For processing of extremities with OOM it is necessary to moisten a processed surface with a distillate, to put on a plastic bag (it is applied to AOD BOZON N).

Then to condense a cuff of bag by means of a belt with «fast belt». See photo 28

Tubes of a plastic bag through a pink adapter to connect to demountable connection of the exit of OOM from GMM

By means of buttons on the front panel enter required parametres.

PHOTO 28

After installation of a assigned parametres, press the button «ENTER» - OOM arrives into a bag

PHOTO 29

On termination of procedure connect a pink adapter to demountable connection of an input of OOM in GMM (into a destructor) and supersed OOM. See photo 29

Futher it's necessary to unbutton (unfast) a belt and to remove a plastic bag from a hand (foot), keeping the safety regulations.

8.2.2 Hypodermic introduction of OOM

Hypodermic (intraskin, intramuscular, etc.) OOM introduction is carried out by a syringe and additional module "Bozon-port". See photo 30

PHOTO 30

"Bozon-port" stabilises the set concentration of OOM during a procedure.

For carrying out of this technique it is necessary:

- according to item 6.3.2 to established demanded parametres (thus a stream size a constant of 300ml/min)

- to attach a "Bozon-port" by means of a tube of PVC and a pink adapter with demountable connection of an exit of OOM from GMM.

- to insert a syringe into a socket of a "Bozon-port"

- to press the button "ENTER" on obverse panel of GMM

-to select the necessary volume of OOM (the first volume of OOM is pour out)

-to take out a syringe, to put on a needle and to use it for the designated purpose

8.2.3 Application of OOM into ear pass

For application use auxiliary module "Bozon-LOR" see photo 31

For procedure carrying out it is necessary:

- according to 6.3.2 to install required parametres (the maximum stream 150-200 ml/min)

- to attach "Bozon-LOR" by means of a tube of PVC and a pink adapter with demountable connection of the exit of OOM from GMM

to put on densely ear-phones on a head of the patient, to adjust height - to press the button 7 «ENTER» on obverse panel GMM

PHOTO 31

- after the end of a purge of one acoustical bowl, to press button "ENTER" on obverse panel GMM.

After the AOD BOZON N will be on demanded parametres to rearrange ear-phones and to press «ENTER»

- after the procedure termination to wait for 1 minute, then to remove ear-phones with a movement to back.

Attention! - it is not supposed to remove or to adjust ear-phones during the procedure.

In case of strong, sharp, smell of ozone, irritating of a nose or eyes, immediately to press the button "RESET". Take off ear-phones with a movement to back.

8.3 Autohemotherapy mode

8.3.1 Procedure of small autohemotherapy

At carrying out small autohemotherapy we use module "Bozon-port".

1.In the main menu by pressing of buttons we choose procedure «**AUTOHEMOTHERAPY**». By means of buttons on obverse panel GMM enter required parametres (thus a stream size a constant of 300ml/min). See photo 33

If in the course of a entering of demanded value an error was made - for its correction it is necessary to press the button "RESET" at the keyboard.

2.to attach "Bozon-port" by means of a tube of PVC and a pink adapter with demountable

PHOTO 32

PHOTO 33
connection of an exit of OOM from GMM.

3.For acknowledgement of entered parametres button "ENTER"

4.After entering of parametres for chosen procedure - device adjustment begins, thus values of arranged parametres (concentration of ozone in gas and a stream) are displayed in the bottom line in a digital form and in a graphic kind in the corresponding column. See photo 34

5.When preparation of the AOD BOZON N for carrying out a procedure comes to the end, in the right bottom corner of LCD an inscription appears:

«**to BEGIN -PRESS**». See photo 35

- To insert a syringe into a socket "Bozon-port"
- to press the button "ENTER" on obverse panel GMM

- to select the necessary volume of OOM (the first volume of OOM is issued)

After the beginning of procedure an inscription in the right bottom corner LCD it is replaced by an inscription: See photo 36

During of the procedure all parametres: concentration of ozone in gas, the gas volume, the gas flow - are displayed on the indicator in a digital and graphic kind.

PHOTO 34

PHOTO 35

Press the button "**RESET**", take out a syringe, put on a needle and use for the designated purpose.

PHOTO 36

PHOTO 37

Attention! Joining to "Bozon-port" of a syringe with the selected blood in it, is strictly forbidden, in avoidance of getting the blood to the auxiliary module

On termination of procedure on LCD the inscription is highlighted See photo 37

Press the button "RESET" to finish the procedure.

Press «ENTER» to repeat the application of procedure

8.3.2 Procedure of big autohemotherapy

Procedure of big autohemotherapy is provided by means of auxiliary module "**Bozon-bagto-laser**"

- reversive peristaltic pump with the executive cam type mechanism and a microprocessor control system,
- and a package for a blood sampling.

The set for procedure carrying out is presented on a photo 38

Photo 38

Order of carrying out of procedure:

we prepare module "**Bozon-bagto-laser**" according to the operation manual «the peristaltic pump for carrying out big autohemotherapy with ozone « **Bozon-bagto-laser** »»

- At a blood sampling stage we prepare AOD BOZON N:
- We expose in the menu demanded parametres in a mode « **autohemotherapy** »
- At this stage of ozonization of blood, to connect demountable connection of an exit of OOM from GMM a tube of a package of module "Bozon-bagto-laser"
- Upon termination of OOM receipt in a package with blood to disconnect GMM from module "Bozon-bagto-laser" to terminate a finish procedure according to the operation manual «The peristaltic pump for carrying out big autohemotherapy with ozone « Bozon-bagto-laser »»

9. Ozonization of liquid

9.1 Ozonization of SS

9.1.1 Procedure of sterilisation of module MOS

By means of a syringe to blow through an entrance branch pipe of module MOS an optical ditch of the liquid

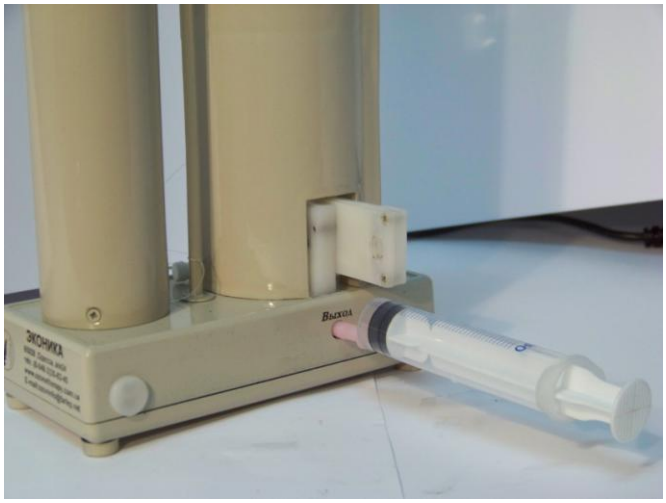
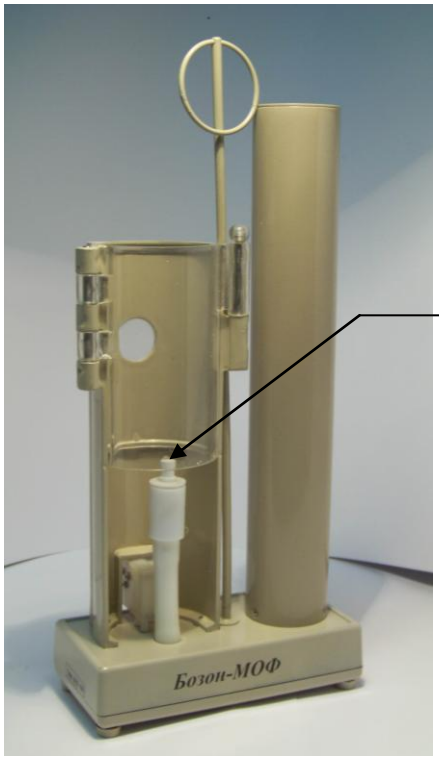


photo 39

Close the holder of a needle with a special stopper №1 See photo 40

- install a ditch module in MOS compartment in an input of the optical gauge (a cut in case GMM on the lateral panel) See photo 41



Special cork - stopper №1

PHOTO 40

PHOTO 41

In the main menu pressing the buttons on the obverse panel we choose the procedure «OZONIZATION OSS»

Press the button "ENTER" on obverse panel of GMM

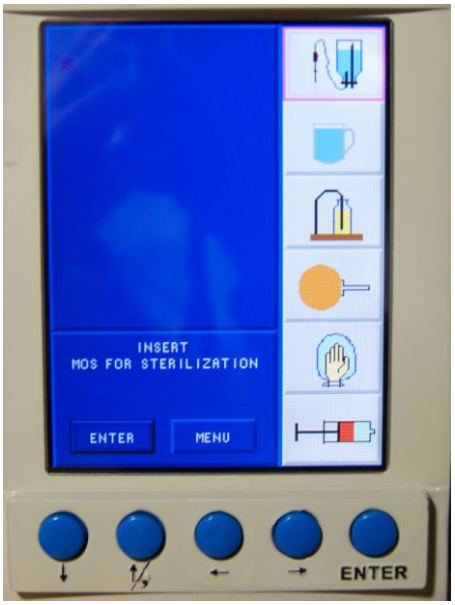


PHOTO 42

PHOTO 43

On LCD the information will appear: «To establish MOS for sterilisation» See photo 42.

Begin procedure by pressing the button "ENTER"

- the information is highlighted on LCD **«Attention ! High concentration of ozone»** See photo 43

After the procedure termination disconnect MOS from GMM

Remove a special stopper №1 from the holder of a needle

9.1.2 Procedure of ozonization of SS

1. A needle of double action and system for itravenous is inserted into a bottle with SS.

2. Install the bottle with SS and system for transfusions in MOS. Install the ditch compartment of the module MOS in the input of the optical gauge (a cut at the frame GMM on the lateral panel).

(See photo 44)

3. Operating by buttons on the obverse panel, consistently enter values of required concentration, volume of a liquid and number of module MOS (See photo 45)

Correction are accepted after pressing the button "RESET"

For acknowledgement of entered parametres the button "ENTER" is used.

4. After entering of parametres the device adjustment begins, thus values of arranged parametres (concentration of ozone in SS and volume) are displayed in the bottom line in a digital form and in a graphic kind in the corresponding column. (See photo 46)

PHOTO 45

PHOTO 46

PHOTO 47

5.When concentration of ozone in a liquid will reach of the set size, on LCD the message is displayed: See photo 47

6. Disconnect the module MOSS with ready OSS, close a branch pipe of an exit of

PHOTO 48

PHOTO 49

OOM of module MOSS with the special stopper №1. See photo 48

Attention! Look after the during time off of procedure of introduction OSS it was intravenously carried out flow up of OSS with OOM

Procedure of intrvenous infision is shown on photo 49

9.2 Procedure of ozonization of distillate

1. Take out a cork 4 (photo 12), with the help of a watering-can pour a distillate in a MOD (no more then 800 ml!) See photo 50

2. Close a cork –stopper 4 of a MOD

Photo 50

3.Install a ditch compartment 5 (see photo 12) of the module MOD in an input of the optical sensor 19 (a cut in case GMM on the lateral panel) See photo 51

PHOTO 51

4.Operating by buttons 2, 4 on front panel of the GMM in mode «DRINK», enter consistently the values of required concentration, volume of a liquid and number of the module of MOD (see photo 52)

Correction are accepted after pressing a button "RESET".

For acknowledgement of entered parametres button "ENTER" is used.

5. After entering of parameters the device setting began in process of it

value of ajustment parameters (concentration of ozone in SS and volume) will be displaied in digital and grahpical form in corresponding column (see photo 52)

6.When concentration of ozone in a liquid will reach up of the set size, on the LCD the message will be shown:

PHOTO 52

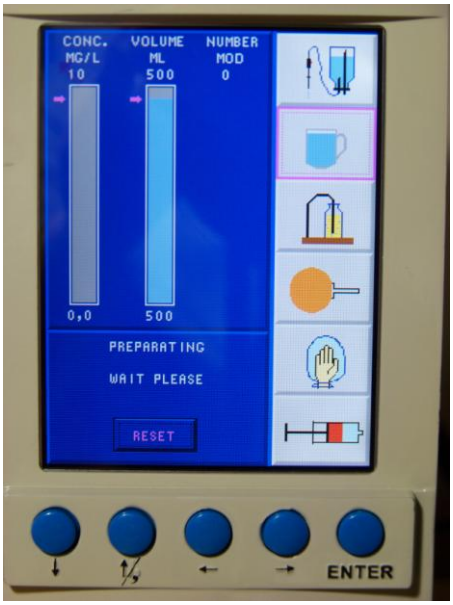


PHOTO 53

PHOTO 54

PHOTO 55

«The procedure is finished The dose of ozone is _mg»

7.Pour out the ozonized distillate through the crane 2 (see photo 12) photo 55

8.Repeat the procedure «Drink»» - pour out ozonized distillate from module MOD.

Repeat item 1 (see above) and press the button «ENTER» on obverse panel of GMM.

10. Ozonization of oil

1.Connect The entrance branch pipe of the module MOM by means of the PVC tube to the demountable connection of an exit 21 of OOM from GMM. (see photo 4)

PHOTO 56

2.Lower a glass tube into a bottle with the refined vegetable oil.

3.In the main menu by pressing of buttons on the obverse panel we choose the procedure «**OLEOOZON**"

4.Operating by buttons 2,4, enter consistently values of demanded concentration of ozone in oil, volume of oil

(see photo 57)

-correction are accepted after button "RESET" pressing. For acknowledgement of entered parametres button "ENTER" is used.

PHOTO 59

PHOTO 60

5.At reach of the set parameters in oil (photo 58), by presing the button «ENTER» we choose ozonising refined oil (see photo 59)

Concentration of ozone in oil is calculating , proceeding from concentration of ozone in OOM and oil volume.

6. At reach of the set concentration, a message will appear on LCD:

PHOTO 52

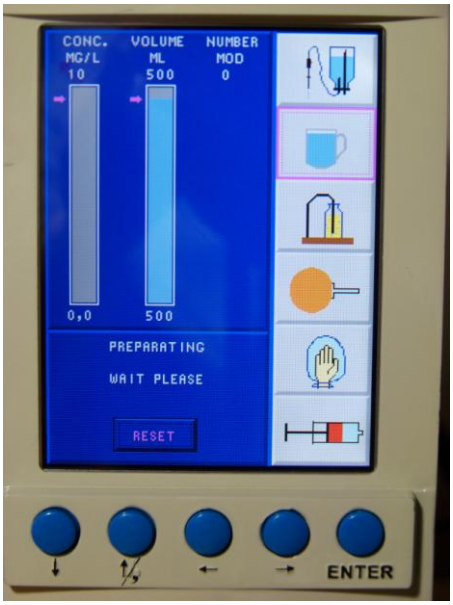


PHOTO 53

«The procedure is finished The dose of ozone is _mg»

PHOTO 57

PHOTO 58

7.After termninating of a procedure of ozonization of oil disconnect MOO from GMM

In order to make a procedure once more - repeat item 1-2 and press the button «ENTER»

11. Instructions for safety regulations.

11.1. To work with the device those persons are supposed, who have passed necessary instructing under safety precautions at work with electric devices and knowing the requirements of the present Instruction.

11.2. It is forbidden to include the device in a network without grounding.

11.3. At repair and carrying out of preventive works the device should be disconnected from a feeding electric network.

11.4. Operation of the device in the presence of obvious leaks of OOM in a working premise is forbidden.

11.5. Infringement of hermetic sealing of gas highways of the generator in an operating time is forbidden.

It is strictly forbidden to try to define ozone presence in gas highways by means of sense of smell.

This rule spreads also on idle devices.

12. Possible malfunctions and methods of their elimination

	The message about an error	**the possible reason**	**The method of elimination**
1	«The INSUFFICIENT STREAM of OXYGEN»	there is no pressure of oxygen upon the AOD BOZON N input.	Install pressure 1,5-3 кPa and restart an AOD BOZON N If the error message arises again - call or sent e-mail and invite the serviceman.
2	«The OZONE GENERATOR DOES NOT WORK »	there is no pressure of oxygen upon the AOD BOZON N input.	Install pressure 1,5-3 кPa and to restart installation. If the error message arises again - call or sent e-mail and invite the serviceman.
3	«Pour out the CONDENSATE FROM the MOISTURE STORE»		Turn on the cover of a branch pipe 16 (photo7) on the back panel of the generator and pour out ge a condensate. Restart the device.
4	«LOW LEVEL of the PHOTOCURRENT»-	the maximum capacity level of a photocurrent of a lamp is less than 60 % of the set size, there is a message on the screen.	Call or sent e-mail and invite the representative of manufacturer.
5	«CONCENTRATION of OZONE is not established »-	at adjustment of the generator the installation time of the set concentration of ozone in gas exceeds 4 min.	Switch off the device, check up correctness of connection of oxygen and pressure of oxygen on the AOD BOZON N input,

			restart the device. If the error message arises again - to call or sent e-mail and invite the serviceman.
6	«the OXYGEN STREAM is not installed»	at adjustment of the generator an installation time of the set channel of gas exceeds 1 min	Switch off the device, check up correctness of connection of oxygen and pressure of oxygen on the AOD BOZON N input, restart the device. If the error message arises again - to call or sent e-mail and invite the serviceman.
7	LOW CONCENTRATION of OZONE In WATER	preparation time of SSP or drink exceeds 30 min, and concentration of ozone in a liquid less than 70 % from the set concentration, bad quality SS or distillate (presence in them of organic impurity), or attempt of their repeated ozonization.	Switch off the device, replace a bottle with SS or distillate in MOD, restart the device. At the repeated message - to call the serviceman.

8	«there is no stream FLOW of Gas in the module" or "is not filled the ditch	the valve on an exit of a branch pipe 20 (photo 8) or not a flow of a gas through destructor is not opened.	Check up a pressure of oxygen upon a device input. Check up, whether needles in MOS have got littered. At repeated occurrence of an error – replace module MOS. If the error appears with the new module – call the serviceman
9	«the HIGH PRESSURE! DISCONNECT OXYGEN »	high pressure of an oxygen on the AOD BOZON N input.	Try to restart the device. If the error message appears again – call the serviceman.
10	«INSERT the MODULE AGAINST THE STOP END»	A ditch a compartment of MOD or MOS has entered or not up to the end, or shifted.	Put forward the module and insert it again. Basis 1 MOS (photo 9) or the basis of MOD 1 (photo 12) should adjoin densely to case of GMM (photo 2,3). Replace a liquid and repeat procedure, call the serviceman.
11	LIQUID is not ozonized	at long ozonization of a liquid concentration of ozone in a liquid less than 10 mg/l: for ozonization distillate or SS with a considerable quantity of organic impurity is used	Replace a liquid and to repeat procedure
12	«TOO HIGH	at long ozonization of a	

	CONCENTRATION of OZONE» is set	liquid concentration of ozone in a liquid already enough high (more than 20 mg/l), but has not reached the level set by the operator	
13	«is not present TUROMODE»	for reception of OOM with high concentration of ozone (more than 60 mg/l at the flow of OOM more than 1000 ml/min) do not join mode «TURBO"	Call the serviceman Before arrival of the serviceman it is possible to use the device for production of OOM with concentration of ozone to 40 mg/l and the flow no more than 800 ml/min
14	Fans of AOD produsedthe raised noise	deterioration of bearings of fans has exceeded admissible limits.	Call or sent e-mail and invite the serviceman and to replace fans.
15	Occurrence of a smell of ozone indoors	the cover of a vessel of MOD indoors is not closed, modules GMM and MOD or MOS are leaky connected, branch pipes-connectors are worn out.	Eliminate the named reasons. If the smell remains, it is necessary to call or to sent e-mail and invite the serviceman. .