

INSTALLATION & OPERATION MANUAL

Model: EOS8131-CL [G3] EOS8132-CL [G6] EOS8134-CL [G9]



Thank you for purchasing BioSure Professional product

Please read the instructions carefully and follow the safety precautions when using this product.

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The illustrations used in this Instruction Manual may vary from the actual product that you have purchased.

IMPORTANT SAFETY INSTRUCTIONS READ AND FOLLOW ALL INSTRUCTIONS

Read this manual completely before attempting installation, operation or servicing.

- Follow all applicable electrical codes.
- Electric shock hazard. Be sure to turn power OFF before servicing. Failure to do so could result in serious injury or death.
- Do not operate with any panels or covers removed.
- Hazardous levels of ozone may be trapped in the system after a fault condition or when power is turned off during operation. Always ensure ozone has been purged by allowing Ozone Generator to complete its shutdown sequence before servicing.
- Short term inhalation of high concentrations of ozone and long term inhalation of low concentrations of ozone can cause serious harmful physiological effects. DO NOT inhale ozone gas produced by this device.
- Do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.

SAVE THESE INSTRUCTIONS

CAUTIONS AND GENERAL NOTES

This manual covers all BioSure Professional G Series Electrolytic Ozone Generators, Models G-3/6/9.

Any variations in system operation or configuration between models are noted in the text. BioSure Professional reserves the right to make changes to the product covered in this manual. Use this manual only with its original product. Although every effort has been made to ensure accuracy of the information contained in this manual, BioSure Professional assumes no responsibility for inadvertent errors.

WARRANTY SUMMARY

- Two (2) years on entire Ozone Generator.
- One (1) year on replacement parts.
- To prevent voiding warranty, follow all installation instructions and ensure that an authorized BioSure Professional technician has commissioned the unit prior to first startup. After commissioning, the end user is responsible for all routine maintenance outlined in Section 4 of this manual.

1.1 Production Description

The G series Ozone Generators described in this manual applies BioSure Professional's Indirect Electrolytic Ozone Generation (iEOG) technology to generate ozone gas in high concentrations. This advanced ozone technology enables ozone to be formed steadily from water with NOx-free and 28wt% high purity results. They are designed to support modular application so that they can be easily integrated into all types of systems for ozone applications.

The G series systems contain all elements necessary for the production ozone electrolytically from municipally treated and filtered tap water. They are designed to operate under vacuum, typically engaging with suction provided by a self-priming mixing pump or venturi injector in a side stream of the process flow.

Follow the instructions in this manual carefully to ensure safe and reliable operation of the G Series Ozone Generator Systems.

1.2 Ozone Generator Overview

Refer to Figure 1 & 2 below for an overview of the G Series Ozone Generator, system connections and panel descriptions. Labels are provided on the Ozone Generator near selected connections to assist in proper installation.



Figure 1. G Series Dimension Drawing Showing Connections

Captions

- 1. Operator Interface Panel (OIP)
- 2. iEOG Feed Water Inlet, 3/8"
- 3. Ozone Gas Outlet, 3/8"
- 4. Exhaust Outlet (Oxygen)
- 5. Drain Outlet, 7x10
- 6. Programming Port (DB9)
- 7. OWS Parallel Communication Port

- 8. External Signal Control Port (DC 5-12V)
- 9. External Circuit Control Port (ON/OFF)
- 10. Electrical Terminal Box
- 11. Mains Switch / Emergency Stop Switch
- 12. Side Air Inlet
- 13. Rear Air Outlet
- 14. Carry Handle(s)



Figure 2. G Series Operator Interface Panel (OIP) Descriptions

Captions

- 1. Service Indicator (Yellow)
- 2. Warning Indicator (Yellow)
- 3. Preparing Indicator (Green)
- 4. Service Code Screen
- 5. Operation Information Screen
- 6. Error Code Screen
- 7. Operation Indicator (Green)

- 8. [Cancelled Button]
- 9. Page-Down Key
- 10. Select/Enter Key
- 11. Page-Up Key
- 12. Setting Key
- 13. Setting Indicator (Green)

1.3 Ozone Generator Specifications

Engineering Configurations				
System Code		G3	G6	G9
Model Number		EOS8131-CL	EOS8132-CL	EOS8134-CL
Ozone Production		3 g/h	6 g/h	9 g/h
Output Proportion		20-28 wt% O ₃ (with 72-80 wt% O ₂)		
Type of Ozone Genera	tor	Indirect electro	olytic ozone gene	ration (iEOG)
Ozone Generation Source		Water (n	nunicipally treated	l water)
Principle of Setup		Central, Stationary Type (Point of Entry, POE)		
Start Control Method		Signal Control		
Off-gas handling		Built-in thermal catalytic process		
Cooling Configuration		Air cool		
IP Code		IP-X2		
Noise Level		Max. 45 bB (at 1 m or 3.3 ft)		
	Width	905 mm		
Dimensions	Depth	260 mm		
	Height	1079.5 mm		
Waight	Net	60 kg	68 kg	75 kg
weight	Gross	90 kg	98 kg	105 kg

Ambient Requirements		
Location	For use on a hard, level, and stable surface only	
Temperature	5 ~ 40°C (41 ~ 104°F)	
Ventilation	Min. 5 air changes per hour	
Clearance	Min. 10 cm (4") clearance around unit	

Power Requirements			
Applied Power		□ AC 220-240V, 50/60Hz	
	G3	300W	
Rated Power	G6	600W	
	G9	900W	

Input Water Requirements - iEOG Feed Water		
Conductivity ≤ 500µs/cm		
Temperature	5 ~ 35 °C (41 ~ 95 °F)	
Operating Pressure	2.0 - 7.0 kg/cm ² (28.5 - 99.5 psi)	
Flow Rate	≥ 300 LPH (1.3 GPM)	
Others	pH 6~8; chlorine residual \leq 0.1ppm; filtered to 1µm	

1.4 Functional Descriptions

Ozone (O_3) is an active and unstable molecule consisting of three oxygen atoms. It is a strong oxidizing agent, which is classed as particularly environmentally friendly as it breaks down into oxygen. It is used especially in water for sanitation and disinfection purposes.

The BioSure Professional G Series System produces ozone from water. The water in the system is purified by reverse osmosis and ion-exchange and then dissociated by electrolysis, the electrolysis cell uses a solid polymer membrane as electrolyte. Using this membrane technology ozone can be produced by electrolysis from demineralized water.

The main advantages of ozone production with a BioSure Professional's G-Series electrolytic ozone generator are as follows:

- Steady and concentrated ozone output promotes ozone dissolution and reactions.
- No feed gas preparation, as the ozone is produced from water by electrolysis.
- Performance independent to air (air quality, humidity and flow).
- No Nitric Oxides (NOx) formation (or formation of Nitrous Acid in water).
- No pure water input, as the pure water is self-prepared by the systems.
- No ionic contamination, as the water is dissociated using a solid polymer electrolyte.
- Easy integration and operation.

1.5 Ozone in Practice

Ozone itself is a colorless gas with a pungent smell. It is one of the strongest known oxidizing agents. It has an electrochemical oxidation potential of 2.08 V. The ozone molecule is only moderately stable and has a half-life in pure water and under normal operating conditions of about 20 minutes. In the absence of oxidizable substances, ozone decays to oxygen. In the presence of oxidizable substances, traces of CO₂ will also be formed.

Many years of experience show that an average ozone concentration of about 0.1 to 0.2 ppm (mg/L) is sufficient to maintain the colony forming unit (cfu) count in pure water systems below 1 cfu per 100 ml.

1.6 Physical Properties of Ozone

Molecular weight	47.9982	g/Mol
Density under normal conditions	2.144	g/L
Relative density	1.5582	g/L
Molecular volume under normal	22.387	m3/kMol
Boiling point (760 mm Hg)	-111.9 ± 0.3	°C
Melting point	-192.7 ± 0.2	°C
Critical temperature	-12.1 ± 0.1	°C
Critical pressure	54.6	atm.
Critical volume	111	cm ³ /Mol
Heat of vaporization	75.6	cal/g
Free energy (25 °C)	32.4	Kcal/Mol

*Normal conditions acc. to DIN1343: Pn = 1.01325 bar; Tn = 273.15°C, tn = 0° C

1.7 Intended Use

Applications

The BioSure Professional G Series ozone systems are used to produce ozone electrolytically from water with promoted dissolution and disinfection performance and is suitable for all types of industrial applications:

- Bottled Water Manufacturing
- Beverage Manufacturing
- Pharmaceutical Manufacturing
- Cosmetic Manufacturing
- Semi-Conductor Industry
- Personal Product Industry
- Foodstuffs Industry
- Industrial Cleaning Processes
- etc.

Ozone-containing gas or hydrogen should not be vented in an uncontrolled manner in buildings or to atmosphere. The operator is responsible for the process and ensuring that adequate safety precautions have been taken.

Consult your local BioSure Professional dealer for installation arrangements. The information described below in this section is intended for operator's reference.

The most common configurations for common installation sites are discussed in this section. For additional installation options or questions on your specific installation, please contact your regional BioSure Professional dealer.

1. Pre-installation

Inspect the location for installation. Check for:

- Space for the unit / Ventilation / ambient temperature
- Water supply flow and pressure
- Drain availability
- Power supply availability

Refer to the product specifications in Section 1.3 (P. 4-5) for all the requirements and detail.

2. Location

The G-Series Ozone Generator is designed for location on the floor or support plate. Place the unit on a flat and stable or similar placement surface to prevent toppling and falling. Locate the unit out of reach of water splash and airborne water with a degree of protection from dirt or other containments. Allow sufficient access for maintenance and all piping. Other key requirements of the location are as follows (Refer to Section 1.3, P. 4-5):

- Well ventilation min. 5 air changes per hour
- A 10 cm (4") minimum free air space must be maintained on all sides
- Climate-controlled, ambient temperature of 5° to 40°C (41° to 104°F)

3. iEOG Water Feed Pre-filtration

For water that enters the unit as input for iEOG water feed, the water quality must meet our standards as follows:

- Municipally treated tap water, 5 ~ 35 °C (41 ~ 95 °F)
- Water conductivity below 500 µs/cm, pH between 6 and 8
- $\circ~$ Filtered to 1 μm with chlorine residual less than 0.1 ppm ~

BioSure Professional recommends that pre-filtration be installed on our products for the input to the iEOG water feed. In most cases, treatment is needed to address the removal of dirt, debris, sediment and chlorine residual. This stabilizes the iEOG process resulting in maintained performance.

The type of pre-filtration may vary with local water quality. Please see your local BioSure Professional distributor for the best recommendation for your area.

Note: Filtration, or treatment, must be sized properly to be effective. Inadequate flow and pressure will cause problem with operation of the unit.

4. Electrical

The G-Series Ozone Generator is supplied with an electrical terminal box on the side for Power and Ground Connections. A hole underneath the box is provided for conduit fitting.

Refer to specifications of the unit (Refer to Section 1.3) and your local electrical codes for information on proper electrical connection. All permanent electrical connections should be made by a qualified electrician.

Note: The circuit must be protected by a GFCI (Ground fault Circuit Interrupter) installed in accordance with electrical codes.

5. Connections

Water Input and Ozone Output



Figure 3. G-Series Water Input and Ozone Output Connections

Electrical Connections



Refer to Figure 3 for illustration of the Power and Ground connections in the Electrical Terminal Box.

Figure 4. G-Series Electrical Terminal Box Power and Ground Connections

Control Connections Model 1 - Operated with BioSure Professional OWS Series



Figure 5. G-Series Control Connection - Connecting with BioSure Professional OWS-Series

Control Connections Model 2 - Operated with an External Signal DC 5-12V



Control Connections Model 3 - Operated with a Closed Contact Switch (ON/OFF)



6. Material Compatibility

In order to avoid ozone leaks, all materials coming into contact with ozone must be completely ozone compatible. Acceptable materials include stainless steel, glass, Hypalon, Teflon (PTFE), PVDF, etc.

As a general rule, the following minimum material qualities are recommended:

- Stainless steel ASTM 316 L for wet ozone gas
- PTFE, PVDF or Viton Gaskets for wet and dry ozone gas

3.1 Correct and Proper Use

- The G-Series Ozone Generator MUST remain connected to the supply of power and water AT ALL TIMES. This is because the stability and sustainability of the iEOG's performance is highly reinforced by the continuance of connected power and water supply to the system.
- Installation in an environment where temperatures may exceed 40°C can impair cooling performance and may result in system overheat. The system will shut down automatically for protection once inside temperature exceeds 44°C.

3.2 Descriptions of OIP Display and Button Functions



Captions

- 1. Service Indicator (Yellow)
- 2. Warning Indicator (Yellow)
- 3. Preparing Indicator (Green)
- 4. Service Code Screen
- 5. Operation Information Screen
- 6. Error Code Screen
- 7. Operation Indicator (Green)

- 8. [Cancelled Button]
- 9. Page-Down Key
- 10. Select/Enter Key
- 11. Page-Up Key
- 12. Setting Key
- 13. Setting Indicator (Green)

"Service" Indicator (Yellow)

At the top-left corner is the "Service Indicator", flashing in two modes to indicate the service is required and the degree of urgency to the requirement:

LED Mode	Interpretation
Slow Flashing Yellow [On 0.5S/Off 0.5S]	Servicing parts approaching the end of lifecycle (2% remaining).
Quick Flashing Yellow [On 0.1S/Off 0.2S]	Servicing parts reached the end of lifecycle.

"Warning" Indicator (Yellow)

At the top-right corner is the "Warning Indicator", flashing to indicate an error and the unit has stopped operating:

LED Mode	Interpretation
Quick Flashing Yellow [On 0.1S/Off 0.2S]	Error encountered and operation is stopped.

"Preparing" Indicator (Green)

The "Preparing Indicator" will light solid-on or flash to indicate three different status for iEOG's preparation conditions:

LED Mode	Interpretation
Solid ON Green	iEOG preparation in process (pure water refilling).
Slow Flashing Green [On 0.5S/Off 0.5S]	iEOG re-start protection (30 min suspended).
Quick Flashing Green [On 0.1S/Off 0.2S]	iEOG preparation failure (PS. plus flashing warning).

"Service Code" Screen

When service is due, together with flashing service indicator, this screen displays service code to notify the required item(s) for replacement.

In addition, it will also display a number from 1 to 6 together with display of "Operational Code" in "Operation Info" screen. As the "Operation Code" are divided and displayed in groups of 6, here this number from 1 to 6 is displayed for identification of the group numbers (Refer to Service Manual in addition).

Readings/Display	Display Conditions
Service Code	Indicate which part is required for replacement when Service Indicator starts flashing.
Operational Code Group Number	Associated with Operational Code, display numbers from 1 to 6 to identify the groups.

"Operation Info" Screen

In the middle of the three screens is for "Operation Information" that can provide information about various operational data:

Readings/Display	Display Conditions
Temperature	Under normal conditions (including normal standby and running), display water temperature inside the unit. Use "▲" (page-up) or "▼" (page-down) key under standby mode to switch between degree Celsius (°C) and Fahrenheit (°F) in the display based on preference.
Part's Remaining Life-span	Press "select" to display the remaining life span for each consumable part. Use "▲" (page-up) or "▼" (page-down) key under standby mode to roll up or down. Press "select" again to return.
Operational Code	Press "setting" (hold 15 sec) to display the Operation Codes for operating history. Refer to P.xx for further detail.

"Error Code" Screen

On the far right of the three screens is for "Error Code" that will display error codes to notify the occurrence of any self-detectable problems.

"ON" Indicator (Green)

At the right-bottom corner, on the "On/Boost" button is the "On" Indicator that will light solid on when the unit is running under normal conditions:

LED Mode	Interpretation
Solid ON Green	System running.

"Select" Key

This button is used for operators to switch the display between the "Temperature" and "Part Remaining Life-time". Also, it can be used to cancel the display of "Operational Code":

Function	Conditions / Outcomes
Part Remaining Life Span Display (Press 0.3S)	To display the Part Remaining Life-Time in the "Operation Info" screen. Use "▲" (page-up) or "▼" (page down) key to switch the display of between each part. Press the "select" again to return to standby with temperature display.
Operational Code Display Cancellation (Press 0.3S)	To cancel the Operational Codes display.

"Setting" Key

The "setting" button is used for operators to activate the display of "Operational Code":

Function	Conditions / Outcomes		
Operation Code (Press 15S)	Press and hold on the key for 15 seconds to activate the display of Operation Codes. Use "▲" (page-up) or "▼" (page down) key to switch between each displayed codes group (6 groups in total). Press "select" to return.		

"Setting" indicator (Green)

At the left-bottom corner, on the "setting" button is the "Setting Indicator" that will flash slowly when the "Operational Code" is displayed.

LED Mode	Interpretation
Slow Flashing Green [On 0.5S/Off 0.5S]	Indicate "Operational Code" is being displayed.

Summary of Button Functions

Functions	Operation Instructions
Switch temperature between °C and °F	 Press "▲" (page-up) or "▼" (page-down) key under standby mode.
Display part remaining life-time information	 Press "select" key under standby mode (Temperature display). Use "▲" (page-up) or "▼" (page-down) key to display data. Press "setting" key to return.
Display operational code	 Press and hold on the "setting" key for 15 seconds to display the system operation codes. Use "▲" (page-up) or "▼" (page-down) key to switch between each displayed codes group. Press "select" key to return.

3.3 Pre-Commissioning Check

Confirm all below points prior to start-up:

- All inputs, output and drain are correctly installed to their corresponding connections.
- The power supply meets the requirements as indicated in the product specifications.
- Input water pressure is 2-7 kg/cm².
- The area of operation is well ventilated (Min. 5 air changes per hour).

3.4 Initial Start-Up

The system is switched ON either controlled by OWS-Series or an external closed contact switch. To use the machine at the first time, connect the machine to your selected signal source for switching on and the "preparing" light will begin to flash slowly. At this point, the machine is in preparation stage refilling water for **iEOG start-up**. This process will take about 40 to 90 minutes depending on models, ambient and water temperature and on-site water pressure.

Note: System draining during this stage is normal.



Once this preparation phase is complete, the "preparing" light will go out automatically, and the system is now ready for normal operation. At this point, the panel displays the detected water temperature inside the system on the "Operation Info" screen.

However, if in two hours the initial water filling process for iEOG start-up cannot be completed, a "E45" error code will be displayed, indicating that the water filling process was unsuccessful. All functions will remain suspended. Please check the input water pressure and refer to the troubleshooting section on P.25 if the symptom is identified.

3.5 Shut-down, Re-Start & Power Disconnection Protection

The G-Series Ozone Generator is intended for being power connected and switched on at all times, unless in necessary situations, such as to stop the unit for service or relocation. The unit can be switched OFF by disconnecting the power supply or switching off the Mains Switch / Emergency Stop Switch. Before shutting down the unit, the water supply to the unit should be completely turned off.

Note: Disconnecting the power too often may cause unexpected impacts on the iEOG module, which may result in degradation to the product performance.

To re-start the unit, simply reconnect the unit to power or switching on the Mains Switch for switching on. However, after re-start all functions will be suspended for 30 minutes. This is a standard protection procedure to minimize the impacts on the iEOG-working module. During this "PROTECTION" period, system is running program for check and maintenance.

3.6 Operation States

Starting and Running

The G-Series units are signal-controlled systems. Once a selected signal is available (mastered by OWS-Series or a contact type ON/OFF circuit), the unit enters the "Running State" automatically, which is also indicated on the OIP with "On" indicator lighting solid on green. In this state, the electrolytic ozone generator module is running and ozone is being delivered to the output. This ozone delivery will continue unless the signal is off to. During the OFF period the ozone is destructed within the unit and discharged through exhaust in the form of oxygen.

The G-Series units measure system temperature inside the unit and displays it on the "Operation Info" screen for operator's

reference. This display under all states as a primary display comes as default in any new unit. You can press "▲" (page-up) or

"▼" (page-down) under standby mode to switch the unit between degree Celsius (°C) and Fahrenheit (°F).



Display of Parts Life Cycle

The G-Series units record **Remaining Life Cycle** of each consumable part for operator's reference. The information is displayed on the **"operation info"** screen. Under standby mode, press **"select"** button to switch the display for between the measured water temperature and **Remaining Life Cycle** Information of each consumable part. The first two codes represent the part and the following two indicate the **Remaining Life Cycle** in percentage (%). Press **"** \blacktriangle " (page-up) or **"** \checkmark " (page-down) to switch the display for each of the consumable parts equipped in the units for regular check purpose.



The coding system for the **Remaining Life Cycle** display is interpreted as follows:

Coding	Interpretation			
Operation info temp.("C/"F) life time (%) Operporing	Wording translation: OG99 Indicated part: EOG Cell(s) Interpretation: Remaining life 99% for EOG Cell(s)			
life time (%)	Wording translation: ro99 Indicated part: Reverse Osmosis (RO) Module Interpretation: Remaining life 99% for RO Module			
Operation info temp.("C/"F) life time (%) Opreporing	Wording translation: dl99 Indicated part: Resin Deionizer (DI) Module Interpretation: Remaining life 99% for DI Module			

life time (%)	Wording translation: du99 Indicated part: Off-Gas Destructor Interpretation: Remaining life 99% for Off-Gas Destructor
Operation info temp.(C/F) life time (%) preporing	Wording translation: PF99 Indicated part: iEOG Pre-filter Interpretation: Remaining life 99% for iEOG Pre-filter
operation info temp.(°C/°F) life time (%) preporing	Wording translation: Fn99 Indicated part: Fans (all fans) Interpretation: Remaining life 99% for Fan(s)
life time (%)	Wording translation: oF99 Indicated part: Ozone Gas Solenoid Valve (OF) Interpretation: Remaining life 99% for OF
operation info temp.('C/F) life time (%) preparing	Wording translation: FF99 Indicated part: Safety Valve Interpretation: Remaining life 99% for Safety Valve
operation info temp.("C/"F) life time (%) preparing	Wording translation: IP99 Indicated part: iEOG Water Feed Input Pipe (IP) Interpretation: Remaining life 99% for IP

3.7 Conditionally Shut-Down Procedures

The G-Series Ozone Generator is intended for constant power-on, unless in necessary situations, such as during machine servicing activities.

The following sequence of steps must be followed for manual shut-down:

- 1. Turn off the unit.
- 2. Shut off water supply for the iEOG feed.
- 3. Turn off the system by un-plugging the cord from the wall outlet.

4.1 Service Notification

The CDS Series units will display various Service Codes as notifications to operators when standard service is required. The information is displayed in the "Service Code" screen. Please contact your regional BioSure dealer for service arrangements when the code(s) are present.

For Remaining Lifecycle of any consumable part that is recorded, the unit will provide service notification once the service or replacement is required. The Service Notification will be displayed in two different modes according to the degree of urgency: "2% **Remaining Notification**" and "Life Ending Notification":

2% Remaining Notification

In this mode, **"Service Indictor"** is flashing in <u>slow mode</u>, and Service Code is displayed on the **"Service Code"** screen.

At this time, the operator should contact the local BioSure Professional service provider or dealer to schedule a service and part replacement within 3-week time.

Life Ending Notification

In this mode, all functions are suspended. 10 beeps alarm are sounded when one tries to operate the unit, **"Service Indictor"** is flashing in <u>quick mode</u>, and Service Code is displayed on the **"Service Code"** screen.

At this time, the operator should contact the local BioSure Professional service provider or dealer to schedule a service and part replacement immediately.

For the G-Series units, the coding system for each service requirement and the interpretation is listed as follows:

Service Codes	Interpretation			
	Wording translation: S11 Coding Interpretation: Replace iEOG Pre-filter			
service code	Wording translation: S12 Coding Interpretation: Replace Ozone Gas Solenoid Valve			
service code	Wording translation: S31 Coding Interpretation: Replace Reverse Osmosis (RO)			

	Wording translation: S32 Coding Interpretation: Replace Resin Deionizer (DI)
	Wording translation: S33 Coding Interpretation: Replace Gus-Liquid Buffer Tank
	Wording translation: S34 Coding Interpretation: Replace Off-Gas Destructor
	Wording translation: S37 Coding Interpretation: Replace Safety Valve
	Wording translation: S38 Coding Interpretation: Replace all Fans
service code	Wording translation: S39 Coding Interpretation: Replace iEOG Water Feed Input Pipe (iEOG Pre-filter pipes for both input & output)
	Wording translation: S71 Coding Interpretation: Coding Interpretation: Replace iEOG Generator Module Set

These codes are removed only if the parts are replaced and after an authorized BioSure Professional service technician resets the records.

4.2 Preventative System Maintenance

The following **Preventative Maintenance Schedule** is suggested according to various working environment and operator's quality control policy.

DAILY or WEEKLY

1. Make sure "warning" indicator is not illuminated and no buzzer sounds.

EVERY 3 or 6 MONTHS

- 1. Perform general cleaning of cabinet interior, remove visual dust and linen inside.
- 2. Check fans for proper operation and clean fans and fan screens.
- 3. Visual inspection of all plumbing works. Replace as required.

ANNUALLY:

- 1. Repeat the maintenance plan for every 6 months described above.
- 2. Follow Service Notification to replace the parts that are with one-year running cycle basis.

EVERY TWO - THREE YEARS:

- 1. Repeat the annual maintenance described above.
- 2. Follow Service Notification to replace the parts that are with two/three-year running cycle basis.

4.3 System Servicing

Regular service should be performed to avoid damage to the system, more costly repairs and to keep the warranty active.

Standard Replacement Cycle for the G-Series unit is a rule of thumb under the following conditions:

- System MUST remain connected to water and power supply at all times.
- Municipal water (or equivalent quality) is used for input.
- Operating room temperature is in accordance with products instructions.
- Operating input water temperature and the supply pressure are in accordance with products instructions.

The required standard service will be notified by the system through the display of the **"Service Notification**". The information is displayed on **"Service Code"** screen when the work is required. The operator should contact the local BioSure Professional service provider for service. The related items as replacement in the service and the servicing cycles are as follows:

G3

Every 5000 working hours consumable parts (or every year)

- 1. Ozone Gas Solenoid Valve
- 2. Pre-filter cartridge (for iEOG water input)

Every 15000 working hours consumable parts (or every 3-year)

- 1. Deionizer resin tank
- 2. 3.0g Ozone Generator (EOG EA3000)
- 3. RO membrane assembly (400gal)
- 4. Off-gas destructor (thermal)

Every 30000 working hours consumable parts (or every 6-year)

- 1. 1238 DC fan
- 2. 1725 AC fan, Qty=2

G6

Every 5000 working hours consumable parts (or every year)

- 1. Ozone Gas Solenoid Valve
- 2. Pre-filter cartridge (for iEOG water input)

Every 10000 working hours consumable parts (or every 2-year) 1. Deionizer resin tank

Every 15000 working hours consumable parts (or every 3-year)

- 1. 3.0g Ozone Generator (EOG EA3000), Qty=2
- 2. RO membrane assembly (400gal)
- 3. Off-gas destructor (thermal)

Every 30000 working hours consumable parts (or every 6-year)

- 1. 1238 DC fan
- 2. 1725 AC fan, Qty=2

G9

Every 5000 working hours consumable parts (or every year)

- 1. Ozone Gas Solenoid Valve
- 2. Pre-filter cartridge (for iEOG water input)
- 3. Deionizer resin tank

Every 15000 working hours consumable parts (or every 3-year)

- 1. 3.0g Ozone Generator (EOG EA3000), Qty=3
- 2. RO membrane assembly (400gal)
- 3. Off-gas destructor (thermal)

Every 30000 working hours consumable parts (or every 6-year)

- 1. 1238 DC fan
- 2. 1725 AC fan, Qty=3

5.1 Error Notification

For following detectable errors, once detected, the codes will be displayed on **"Error Code"** screen:

Error Codes	Interpretation
	Wording translation: E10 Error Interpretation: iEOG Generator module fails. All functions are suspended.
	Wording translation: E12 Error Interpretation: iEOG Cell module 2 fails. All functions are suspended.
	Wording translation: E14 Error Interpretation: iEOG Cell module 3 fails. All functions are suspended.
	Wording translation: E45 Error Interpretation: iEOG water refilling fails during preparation (2-hr timeout). All functions are suspended.
	Wording translation: E55 Error Interpretation: System internal temperature found too high (>44°C). All functions are suspended .

The OIP indicators and system buzzer are engaged in the warning notifications as well:

Error Code	EIA	EIZ	EIY	E4 5	E5 5
Warning Indicator	Flash Fast				
Preparing Indicator		NA		Flash Fast	NA
Buzzer			10 Beeps		

The OIP will provide immediate code notification of self-detectable system faults. The sections below list various faults that may be encountered during normal operation, along with typical causes and potential corrections.

5.2 Troubleshooting Procedures

Symptom: System do not start

CAUSE	SOLUTION
No Power	Verify that main supply conductors are properly connected and that correct voltage is present.
Bad Power Unit(s)	Contact your BioSure dealer or service provider for service.

Symptom: No ozone concentration in output; no error displayed

CAUSE	SOLUTION		
Loosen Connection	Open the removable covers and identify the leaking position. Fasten the connection.		
Cracking/Broken Component	Contact your BioSure dealer or service provider for service.		

Symptom: Ozone leakage detected

CAUSE	SOLUTION
Loosen Connection	Contact your BioSure dealer or service provider for service immediately.
Cracking pipes	
Bad Ozone Gas Solenoid Valve	
Bad Off-Gas Destructor	

Error Code: 610/612/614

All functions are suspended.

Error Message: Failures of iEOG Modules are detected with a major reason that the operating voltage is found too low.

CAUSE	SOLUTION
Bad iEOG Cell(s)	Contact your BioSure dealer or service provider for service and replacement.

Error Code: E45

All functions are suspended.

Error Message: iEOG water refilling timeout

CAUSE	SOLUTION
Low Pressure	Correct input water pressure and then re-start the unit.
iEOG Pre-filter jammed	Clean or replace as needed and then re-start the unit.
Others	Contact your BioSure dealer or service provider for service.

Note: Refer instructions in Section 3.5 for "Re-Start" procedures.

Error Code: ES 5

All functions are suspended.

Error Message: System temperature found too high (>44°C).

CAUSE	SOLUTION
High Ambient Temp.	Correct ambient temperature or enhance on-site air-cooling performance and then re-start the unit.
Bad fan(s)	Contact your BioSure dealer or service provider for service.

Note: Refer instructions in Section 3.5 for "Re-Start" procedures.