

AOP ADVANCED OXIDATION PROCESS (AOP) OPERATION AND MAINTENANCE MANUAL



Please Read The Manual Carefully Before Use.



WARNING

Before installing and using this product, please read the entire contents of the instruction manual carefully and strictly abide by the relevant requirements in the instruction manual. Ignoring safety warnings and instructions may result in serious consequences, such as serious injury: property damage, endangerment of life, etc.!

First of all, thank you very much for choosing this disinfectant product. In order to obtain the best use results and prevent possible accidental injuries, please read the user installation instructions carefully and keep them properly!

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AOP is an environmentally friendly electrical product that manufactured by our company to produce high-concentration ozone water. It integrates functions such as power protection, current and return water alarm. High concentration ozone water has the functions of sterilization, deodorization, detoxification, bleaching, beautifying and eliminating diseases, And widely used in swimming pool, food, cosmetic raw material cleaning, fruit and vegetable cleaning, purification, disinfection and sterilization, toilet cleaning to remove odor, space ozone water spraying sterilization and many other fields.

The application scope of ozone water:

Sterilization: micro-bacteria, botulinum, bacillus, intestinal bacteria, coliform bacteria, bacillus spores, staphylococcus, viral and poliovirus, etc.

Detoxification: carbonic acid, ABS, BOD, sulfide, potassium cyanate, equipment disinfection, sulfite, various chemical components and decomposition of pesticide residue toxins.

Decolorization: fiber bleaching, food bleaching, dyeing and finishing wastewater, pulp wastewater, feces and urine decolorization, industrial wastewater and water supply and drainage decolorization, etc.

Deodorization; fishy smell, meat smell, seafood smell, fruit smell, sweat smell, excrement smell, sulfide smell, sulfide smell, imitating, irritating smell of lower fatty acids and disinfectant smell (such as chlorine, formalin).

Others: algae removal, removal of inorganic matter, removal of suspended matter, rich in dissolved oxygen, activation of minerals, etc.

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IMPORTANT SAFETY INSTRUCTIONS

Read this manual completely before attempting installation. If the installation instructions and yellow warning signs on the equipment are not followed, it may result in ineffective warranty or personal injury.

2.1 THE OZONE INSTRUCTION

- (1) Observation of the regulations by the owner and/or user.
- (2) Compliance with local, national and international regulations.
- (3) Access restrictions to the "Ozone Generator-- access only for trained personnel.
- (4) Training of the authorized personnel regarding
 - Safety regulations
 - Particular dangers associated with the handling of ozone
 - Procedures in case of failures and accidents
 - Provision of efficient ventilation systems and well-marked escape routes in areas where ozone generators are installed
 - Have suitable breathing apparatus available on-site. Put on the breathing apparatus before entering areas into which ozone has escaped or is suspected to have escaped.



WARNING

- 1) Even after the OXIDIZER system has been switched off, the OXIDIZER-generating installations still contain oxidizer gas. Therefore, before opening equipment or piping, flush the equipment thoroughly until no oxidizer can be detected.
- 2) Identification of areas into which oxidizer could escape, with appropriate warning signs.
- 3) In order to be able to safely switch off the equipment in cases of danger, an EMERGENCY STOP SWITCH that disconnects the electrical supply to the equipment should be provided in a location that can be easily reached at any time.

Operation switch	
OFF	ON



2.2 UV STERILIZER SAFETY INSTRUCTION

In addition to the ozone system, the equipment also includes a UV sterilizer: When the UV sterilizer is running, do not appear to expose the body to ultraviolet radiation and do not look directly at the light source. If prolonged exposure occurs, this can cause serious physical injury or burns, and may even lead to vision loss.

2.3 INSTALLATION REQUIREMENT

- (1) Ambient Temperature: 5°C~40°C
- (2) Humidity: ≤75%
- (3) The installation location does not allow explosive medium, and the surroundings should not contain gas and conductive medium that corrode metal insulation.
- (4) The plane of the machine base should be flat, and the equipment should be placed on the ground or on the support stably.
- (5) Keep the surroundings of the equipment ventilated and dry, and install a fan or air conditioner if necessary.

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THE AOP TECHNICAL DATA

The AOP is a combination of oxidizer gas and Photon to form highly reactive hydroxyl free radicals, which enhances the decomposition of organic pollutants, and offers excellent pathogen control through the inactivation of chlorine resistant organisms. The Photon will photo-chemically destroy any residual oxidizer in the water, thus removing the need for de-ozonation equipment. The AOP process is a unique and chemical free technology, operating under full vacuum for the comfort and safety of swimmers and pool staff in terms of reduction of eye irritation, skin and hair damage and swimming pool smell". The process combines the disinfection and oxidation properties of oxidizer and Photon making the AOP the most advanced pool water purification system available.

Compared with similar disinfection products on the market, the AOP has the following design features:

- (1) The cooling method adopts air-cooling design; and adopts air inlet from the bottom and exhaust from the top side to further effectively prevent dust and mosquitoes from entering the inside of the equipment and affecting the normal operation of the equipment.
- (2) This AOP is equipped with concentration regulator to adjust the ozone concentration output as required.
- (3) This equipment is designed with a fault alarm function for important accessories such as water pumps/UV/ozone to effectively monitor the operating status of key components. It is also designed with a series of protection control functions such as low air pressure protection, low return water flow protection, and low exhaust temperature protection, which can effectively protect the equipment.
- (4) The ozone generation tube has features of high conversion efficiency, low energy consumption and long service life.
- (5) PSA technology to produce oxygen sources

(6) High concentration of ozone water, good bactericidal efficiency.

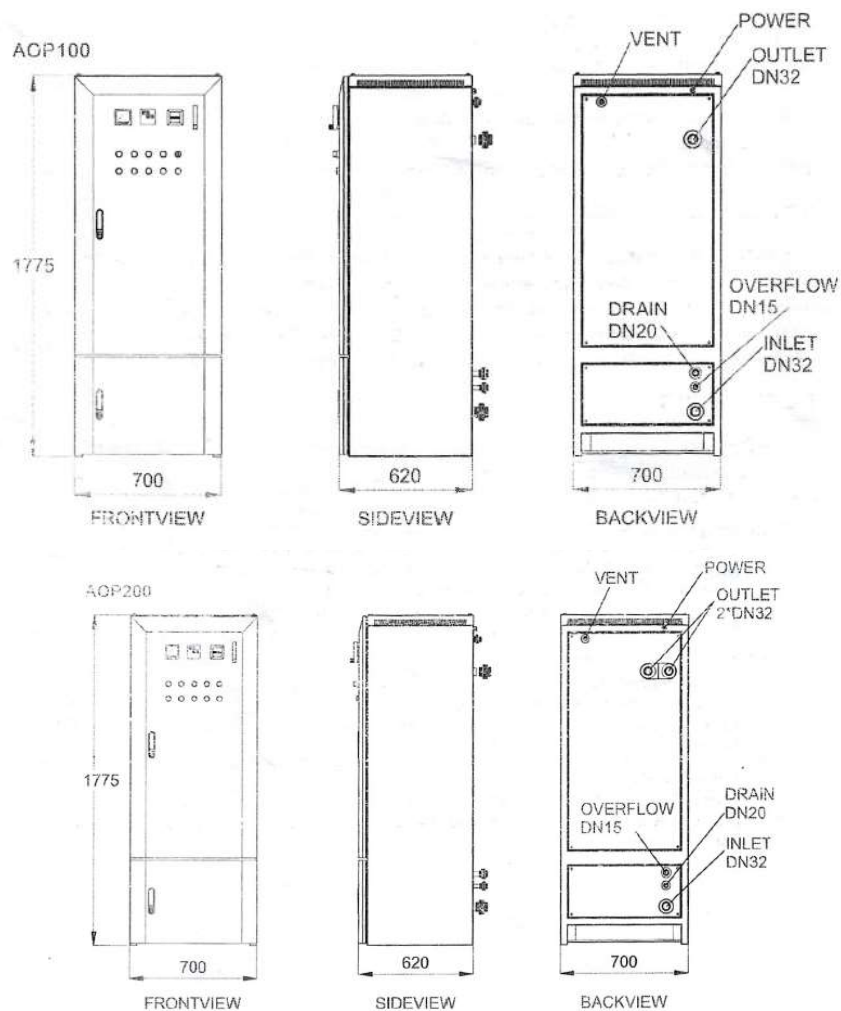
(7) Equipped with ultraviolet germicidal lamp, double sterilization, better effect.

TECHNICAL DATA	Pool Volume	Bypass Flow Rate	Oxidizer Production	Feed Gas Production	Power Consumption	Power Supply
Model	M ³	M ³ /h	g/h	L/min	kW	v/hz
AOP100	100	5	5	3	1.2	220-240/50
AOP200	200	8	8	3	1.3	220-240/50

Table 1: THE AOP TECHNICAL DATA

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PRODUCT STRUCTURE



5.1 POOL PREPARATION

To achieve optimal performance from the AOP, the pool must be as clean as possible to start with.

1. Test pool chemistry and adjust pH between 7.2 and 7.8. Adjust total alkalinity between 80-120 ppm.
2. Run pool filtration continuously for 24 hours before starting the AOP.

5.2 LOCATION

The AOP unit is designed for floor mounting. Locate the unit in a clean, protected area, either indoors or outdoors (preferably out of direct sunlight).

If possible, locate the unit out of reach of sprinklers or drainage spouts. Allow sufficient access for maintenance 1.2 meters clearance above and 0.8 meters around the unit and all plumbing and electrical hookups.

5.3 PLUMBING

The AOP can easily be added to the pool's plumbing loop. All the components are contained inside the enclosure so only the water inlet and outlet need to be installed into the pool's return line.

(1) Plumbing the AOP

The AOP must be installed in the pool's main return line after all other pool requirements (pump, filter and cleaner). Figure 2 shows the most basic installation. The AOP will come with one-half of a union fitting installed on Inlet and Outlet, the other half of the fittings will be located in the AOP parts bag. Use the union fittings provided to connect the AOP inlet and outlet to your pool's plumbing.

(2) AOP drainage, overflow pipe installation

Before installation, confirm the position of the drainage point and check whether the elevation of the drainage point meets the requirements to prevent sewage from flowing back into the AOP device. Connect the AOP drain and overflow ports (as shown in Figure :) to the actual drain points using the connectors provided by the device.

(3) AOP exhaust pipe installation

Check the location of the ventilation point before installation. Use the connector provided with the equipment to lead the AOP exhaust outlet connection pipe to an outdoor or ventilated area.

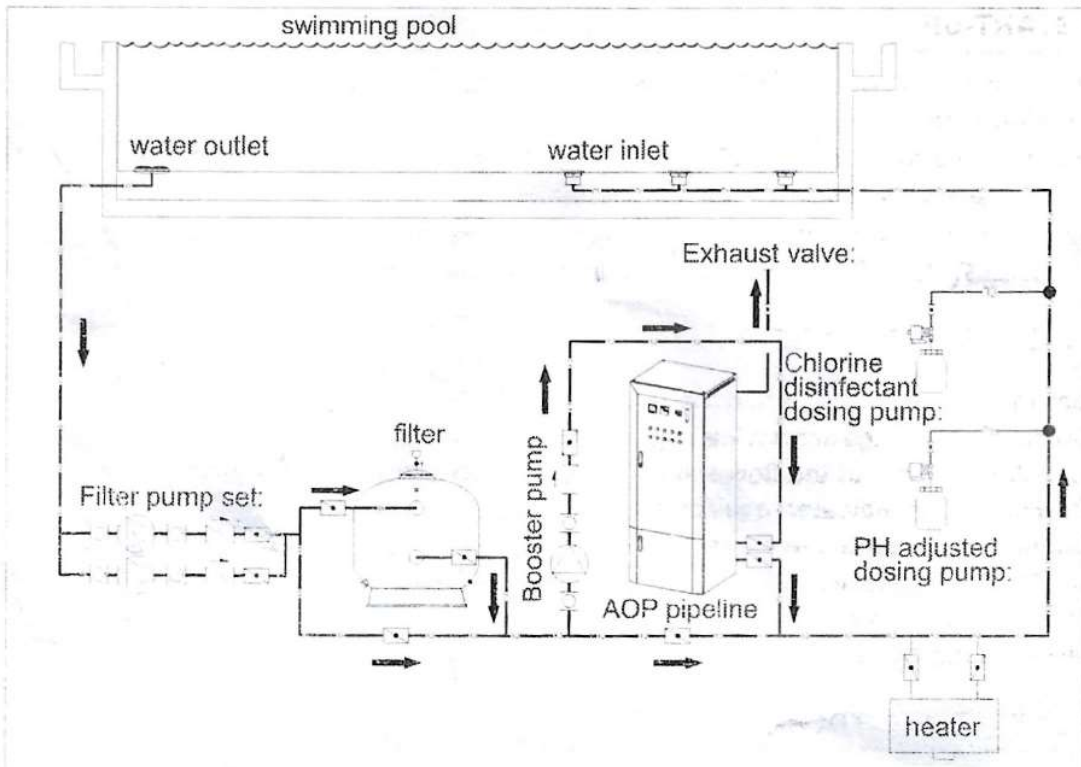


Figure 2: AOP pipeline docking diagram

(4) Water Backflow Check valve

if the pool equipment is mounted above the water line, a check valve must be installed between the pump outlet and the Injector Manifold to prevent the pump from draining and losing its prime (when not in use).

6.1 INITIAL SYSTEM START UP

Upon completing all of the system connections and cleaning the pool as outlined in SECTION4, you are ready to start the AOP

1. Check electrical connections.
2. Turn on the pool circulation system and verify the AOP has power.
3. Confirm that fittings are not leaking, contact Tech Support if leaks are found.
4. Check the flow meter through inspection windows and set it at Bypass Flow Rate (refer to Technical Data).
5. Set the VOD temperature at 240 °C

6.2 START-UP

1. Rotate the stop switch operating handle on the panel 90°~ clockwise, and the unit is in the standby state.
2. Press the button SYSTEM ON-OFF, the indicator Light (green) will illuminate. Thus, the Je! Pump, UV, ozone destroyer and heater start up.
3. When the Ozone destroyer temperature achieves the set temperature (> 240°C), the OXIDIZER starts to work, and the whole unit will be in normal operation.

6.3 NORMAL OPERATION

Check the following items when the unit is operating.

1. Confirm the Fittings are not leaking.
2. Check the status of the flow switch indicator to determine whether the incoming water flow meets the indicator requirements.
3. Confirm the operating temperature of the Ozone destroyer is between 240°C to 270°C.
- 4 O₂ flow is 4.5-5 L/min.
5. All fault indicators are off.
6. All operating indicators are on.

6.4 SYSTEM SHUTDOWN

The following sequence of steps must be followed for servicing or for storage.

1. Press the ON-OFF button, and the indicator light (green) will go out and the unit stop working.
2. Shut off the water to the unit.
- 3 Disconnect all electrical, plumbing, and mounting connections for storage, if don't use the device in a long time.

6.5 WINTERIZING

If the pool will be shutting down for the winter months and the AOP will remain exposed to freezing temperatures, the unit must be drained to prevent freeze damage to the wetted components. To drain the AOP, see the following steps.

1. If the AOP is mounted below the water level, water inlet valves must all be CLOSED to prevent excess water from draining into the unit.
2. Open the door.
3. Locate the Drain Plug (Refer to Figure 1) and drain the remaining water in the AOP into the drainage ditch without backflow.

7.1 LOW FLOW RATE

The indicator light is on when the flow rate is too low or the booster pump is faulty.



7.2 TAIL TEMPERATURE IS TOO LOW

The indicator light is on, when the unit is started, if the ozone destroyer does not reach the set temperature or the ozone destroyer heater or temperature control meter is damaged



7.3 UV STERILIZER FAULT

This indicator light is on when the UV sterilizer is in fault.



7.4 OZONE SYSTEM FAULT

This indicator light is on when the ozone system is in fault.



7.5 LOW PRESSURE

This indicator light is on when the air source pressure does not reach the set pressure



7.6 OZONE SYSTEM WORKS PROPERLY

This indicator light is on when the ozone system is operating normally.



7.7 UV STERILIZER WORKS NORMALLY

This indicator light is on when the UV sterilizer is operating normally.



7.8 JET PUMP RUNS NORMALLY

This indicator light is on when the jet pump is operating normally.



The specific layout of the electric control panel is shown in Figure 3 below:

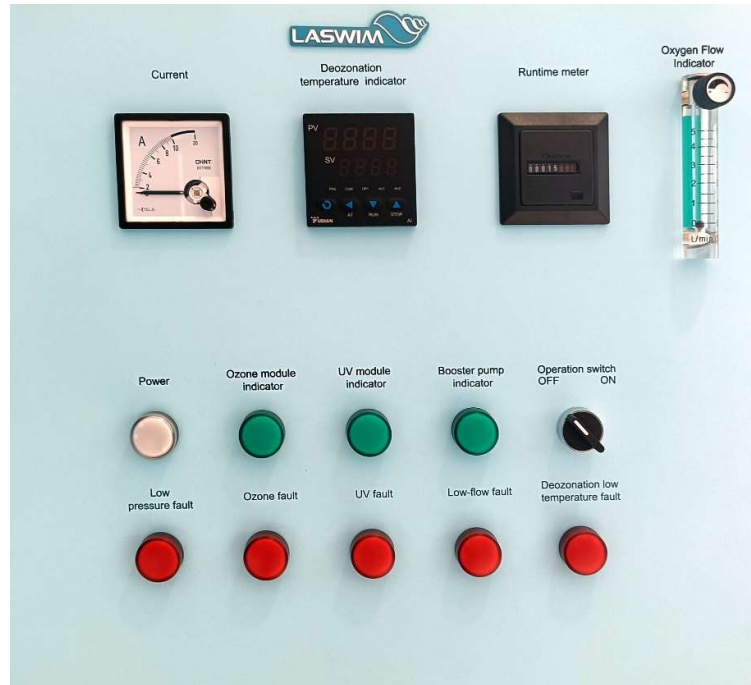


Figure 3: System distribution diagram of AOP

7.9 ELECTRICAL CONTROL PRINCIPLES AND SAFETY INSTRUCTIONS

When it is necessary to perform electrical operations or to solve machine faults, please ensure that the operator has professional electrical knowledge and has understood the following equipment electric control schematic drawings (Figure 4, Figure 5), otherwise contact LASWIM technical support first.

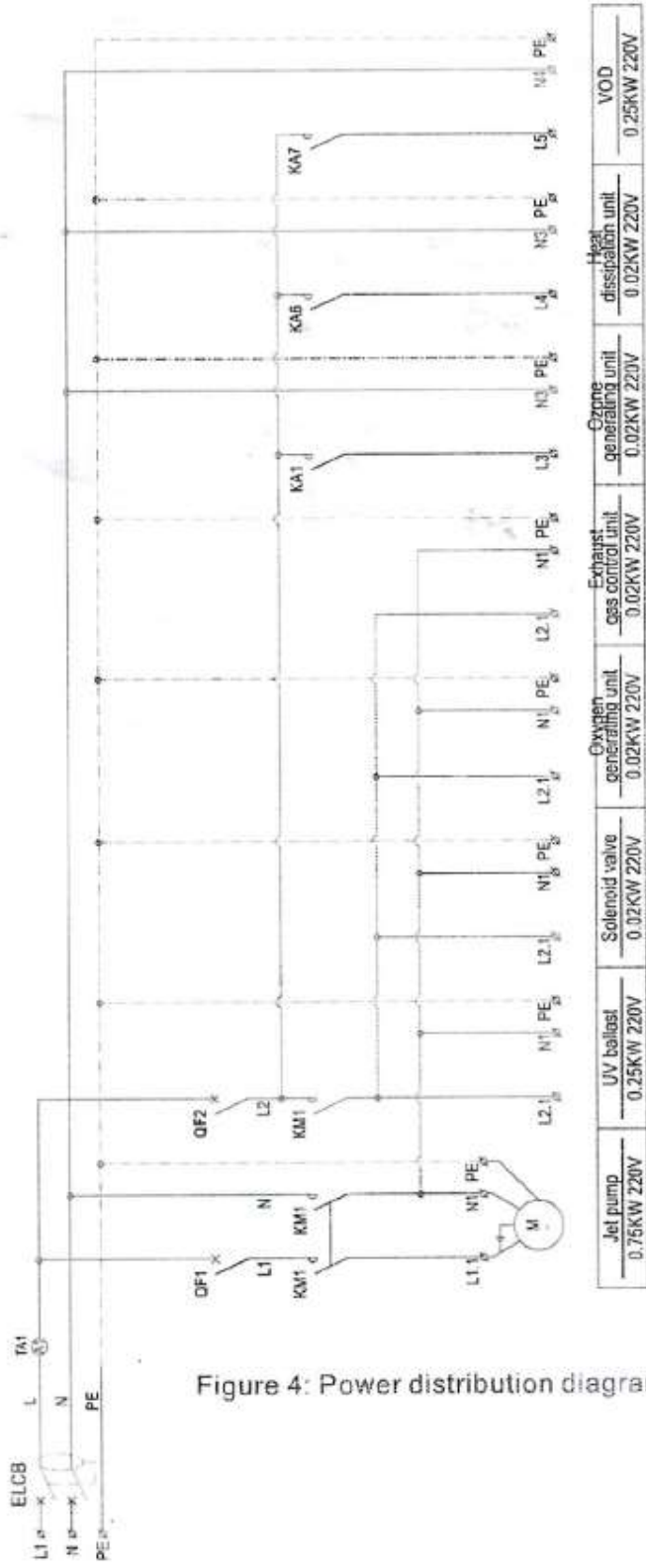


Figure 4: Power distribution diagram of AO

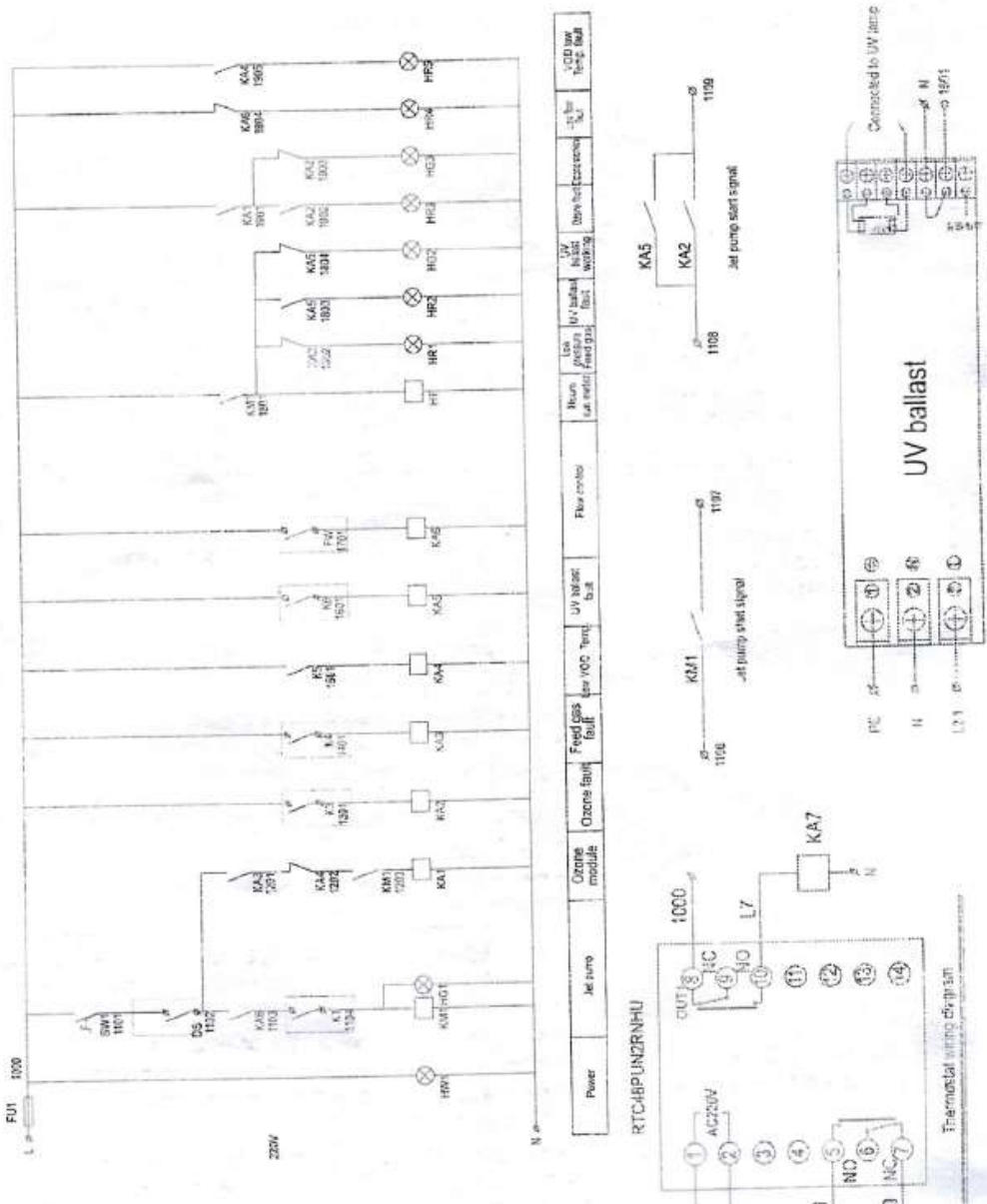


Figure 5. Electrical schematic diagram of AOP

1. Thermostat desinovatoren: SV 101 (p. 28, 27) - 1000 (p. 14) - 1000 - 1501 (p. 14) - 1000

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TROUBLE SHOOTING

NO	Failures/Problem	Solution
1	Unable to turn on/Tripping at startup	<ul style="list-style-type: none"> a) The power plug is not plugged in b) The voltage does not meet the requirements C) The fuse is blown d) Water ingress causes electricity to leak e) The device door was not closed
2	The current is too large and small, and there is no current	<ul style="list-style-type: none"> a) The circuit board is not well debugged b) The circuit board burns out c) The ammeter is broken, or not zeroed
3	The device housing is electrified	<ul style="list-style-type: none"> a) The ground wire is not securely connected b) The humidity of the working environment is too high
4	Insufficient ozone concentration	<ul style="list-style-type: none"> a) The use environment has poor ventilation and heat dissipation b) The temperature inside the unit is too high and the cooling effect is insufficient. c) There is air leakage in the trachea d) The purity of the PSA oxygen tank decreases (oxygen source)
5	Water pipes leaking	<ul style="list-style-type: none"> a) Pressure of the inlet water is too high b) The pipe fitting joint is not sealed properly c) Aging and corrosion of water pipes
6	Backflow occurs in the ejector air pipe and flows to the generating pipe	<ul style="list-style-type: none"> a) The water outlet pressure is higher than the air outlet pressure b) The electric valve device to prevent back flow is damaged

NO	Failures/Problem	Solution
7	Exhaust gas destroyer not working or malfunctioning	<p>a) The working life of the heating tube of the breaker has expired and needs to be replaced with a new heating</p> <p>b) The system leaks, and water enters the heating pipe of the breaker, causing a short circuit and burning out. It is necessary to replace the accessories and check the leakage point.</p> <p>C) The heating tube is a wearing part and needs to be inspected regularly. If any damage is found during the inspection, spare parts must be replaced in time.</p>
8	UV sterilizer not working or malfunctioning	<p>a) The working life of the UV lamp has expired and needs to be replaced with new accessories.</p> <p>b) The UV lamp is damaged and needs to be inspected and replaced.</p>