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# OX-46

## 46 SCFH Oxygen Concentrator



## Installation and Operation Manual

# Table of Contents

|  |    |
|--|----|
| Cautions, Warnings and Hazards .....             | 3  |
| Introduction .....                               | 4  |
| Pressure Swing Adsorption (PSA) Technology ..... | 5  |
| Specifications.....                              | 6  |
| Mechanical Specifications.....                   | 6  |
| Oxygen Concentrator Component Diagram .....      | 7  |
| Oxygen Concentrator Component Description .....  | 8  |
| Installation .....                               | 9  |
| Start-Up .....                                   | 10 |
| Operation.....                                   | 10 |
| Environment.....                                 | 11 |
| Maintenance .....                                | 11 |
| Filters .....                                    | 11 |
| Solenoid Valve.....                              | 11 |
| ATF-Modules .....                                | 11 |
| Maintenance Table .....                          | 11 |
| Contact Information .....                        | 12 |
| Ozone Solutions Limited Warranty.....            | 13 |

## **Cautions, Warnings and Hazards**

Oxygen Generators are self-contained systems for the production of high concentration oxygen. Although oxygen itself is not combustible, it can be very dangerous. It greatly accelerates the burning of combustible materials.

- Precautions should be taken to avoid a fire in the area of the generator.
- Smoking should not be permitted in the area where the generator is located.
- *All oxygen connections and hoses should be kept clean and free of grease, oil and other combustible materials.*
- Valves controlling oxygen flow should be opened and closed slowly to avoid the possibility of fires or explosions that can result from adiabatic compression.
- When bleeding a tank or line, stand clear and do not allow oxygen to embed itself within clothing. A spark could ignite the clothing violently.
- High-pressure gasses may be present within the system. Valves should be opened and closed slowly, and safety glasses and hearing protection should be worn at all times while gasses are being vented.
- *Do not attempt to modify or enhance the performance of a Generator in any way.*

## **Introduction**

The OX-46 Oxygen Concentrator concentrates oxygen gas from a compressed air source to ~93-95% purity. All nitrogen is purged from the compressed air source via Pressure Swing Absorption (PSA). 9 CFM compressed air @ 25 PSI is fed into the 2 ATF modules to remove nitrogen and provide up to 46 SCFH oxygen at 95% purity at 7 PSI of pressure.

## **Pressure Swing Adsorption (PSA) Technology**

The OX-46 is an on-site oxygen-generating machine capable of producing oxygen on demand in accordance with your requirements. It requires less than 125 Watts of electrical power to control its operation.

In effect, it separates the Oxygen (21% of air) from the air it is provided and returns the Nitrogen (78% of air) to the atmosphere through a waste gas muffler. The separation process employs a technology called Pressure Swing Adsorption (PSA). At the heart of this technology is a material called Molecular Sieve.

This Molecular Sieve is an inert, ceramic-like material that is designed to adsorb Nitrogen more readily than Oxygen. Each of the beds that make up the generator contains this sieve. As air is fed into one of the beds, the sieve in that bed holds the Nitrogen to it and allows the Oxygen to flow through it and out to the surge tank as product gas. Eventually the sieve becomes saturated with Nitrogen. When this occurs, the feed air is directed to the other bed where the oxygen production/separation process continues. While the second bed is being fed air, the first is depressurized and safely releases the Nitrogen it has trapped through the waste gas muffler. This regenerates the sieve in the first bed and prepares it to accept feed air again continuing the process. The two beds continue to work in this alternating fashion to provide a continuous supply of Oxygen.

This air separation process is reliable and virtually maintenance free. The Molecular Sieve will last indefinitely, as long as it does not become contaminated with water and oil vapors. This is why regular filter element replacement is critical to trouble free operation. The filter elements are very inexpensive, semi-annual maintenance.

## **Specifications**

### **Oxygen Output**

46 SCFH Oxygen – 7 PSI

### **Feed Gas Requirements:**

9 CFM Compressed air @ 25 PSI or higher – must be clean filtered air dried to a dew point of 39-deg F or lower.

### **Maximum Oxygen Pressure**

7 PSI

### **Electrical Input**

120 VAC, single phase, 60 Hz, 1.0 Amps, 125 Watts

220 VAC, single phase, 50 Hz, 0.5 Amps, 125 Watts (optional)

## **Mechanical Specifications**

Dimensions: 22-in H x 20-in W x 10-in D

Weight: 75-lbs

## Oxygen Concentrator Component Diagram

### OX-46 Oxygen Concentrator



## Oxygen Concentrator Component Description

1. **Compressed Air Inlet** – Compressed air inlet bulkhead, connect incoming compressed air here.
2. **Pressure regulator/filter** – pressure regulator will regulate incoming pressure to 25 PSI, pressure gauge will indicate regulated air pressure, 5-micron filter will filter all incoming air.
3. **Air filter** – 0.5 micron dust and oil filter will filter all air to ensure long zeolite life.
4. **Water/dust drain** – auto drains on filters will drain trapped moisture through these fittings.
5. **Compressed air solenoid valve** – compressed air supply will be turned ON and OFF via this solenoid valve.
6. **Air inlet to ATF module** – compressed air inlet into ATF modules.
7. **ATF Module** – uses PSA technology to purge nitrogen from the compressed air source and concentrate oxygen gas.
8. **Oxygen Outlet from ATF Module** – oxygen outlets from ATF modules.
9. **Oxygen tee** – oxygen from both oxygen concentrator ATF modules is teed here.
10. **Oxygen pressure gauge** – rear of oxygen pressure gauge is shown, oxygen pressure gauge will indicate oxygen pressure exiting the OX-46.
11. **Oxygen flow meter in/out** – rear of oxygen flow meter is shown, oxygen flow is indicated and adjusted via this flow meter.
12. **Oxygen outlet** – oxygen outlet, connect oxygen fitting for flow to this fitting.
13. **Wall mounting tabs** – can be used to mount OX-46 to a wall.
14. **Mounting feet** – can be used to mount OX-46 to a bench or shelf.





## **Installation**

**IMPORTANT:** *Choose a location for the Oxygen Concentrator that does not allow rain or condensation to contact the unit. The Oxygen Concentrator is not weather proof. It must be operated indoors or in an enclosure in a non-condensing environment.*

Be certain there is sufficient access space around the OX-46 to perform normal maintenance and service. Also ensure there will be a free flow of cooling air around the unit. Connect the unit to a grounded power source rated for the voltage and current requirements.

If wall mounting the OX-46, the wall mount tabs on the top of the OX-46 can be used. Ensure the wall or support system can support the weight of the OX-46.

The OX-46 can be mounted on a shelf or bench using the mounting feet on the bottom. The wall mount tabs can also be used to secure the OX-46 to the wall when mounting to a bench or shelf.

### **Air/Oxygen Hookup:**

Connect to the Air inlet and oxygen outlet fittings on the side of the OX-46. The air fitting is a 1/2" Female NPT brass bulk-head fitting. The oxygen fitting is a 1/4" Female NPT brass bulk-head fitting. Ensure that a high quality oxygen resistant tubing is used. Spray the fitting with soapy water when oxygen is flowing through the unit to ensure no leakage.

**IMPORTANT:** Ensure that the oxygen flow is measured and controlled to rates that do not exceed rated capacity of the Oxygen Concentrator.



## Start-Up

Before initial startup of the Oxygen Concentrator ensure compressed air supply is connected. Compressed air source should be clean, and dry. Adjust compressed air pressure via internal pressure regulator to 7 PSI.

Ensure the downstream systems where oxygen is to be used have no leaks or other open lines that may cause excess oxygen to escape into the ambient atmosphere. It is important that the oxygen will not escape in any areas where personnel is located.

To start the Oxygen Concentrator, connect the unit to a grounded power source rated for the voltage and current requirements. Turn the switch on the front panel to the ON position. The "ON" light will illuminate indicating oxygen production.

## Operation

While the Oxygen Concentrator is operating the main power switch will be illuminated. There will a purging sound made from the ATF-modules as the nitrogen is purged from the oxygen concentrators.

### Oxygen flow and pressure:

Adjust the oxygen flow and pressure to the necessary values for the the application used. Ensure oxygen flow does not exceed 46 SCHF of total oxygen flow

**IMPORTANT:** *When setting the flow and pressure of the Oxygen Concentrator it is important to know that pressure will have a factor on the flow displayed on most flow meters. If the actual discharge pressure is substantially above atmospheric pressure, the reading can be adjusted to determine the precise flow rate, according to the following formula (using psig):*

$$(\text{adjusted flow}) = (\text{measured flow}) \times \sqrt{\frac{\text{oxygen pressure} + 14.7}{14.7}}$$

*Please contact Ozone Solutions if additional assistance is required.  
Do not allow the oxygen or ozone to vent freely.  
Do not exceed rated capacity.*

The pressure gauge on the unit can be used to calculate actual adjusted flow of the OX-46. The Pressure gauge and flow meter are installed before the corona cell and may not be 100% ozone resistant. It is important not to allow ozone to flow in the reverse direction when the oxygen flow is turned off. A check valve after the Oxygen Concentrator is strongly recommended to prevent back flow.



## **Environment**

The Oxygen Concentrator is not weather proof; it must be operated indoors or in an enclosure in a non-condensing, dust free environment. Sufficient ventilation must be provided to prevent the accumulation of oxygen in the event of a leak. Approximately 3 air changes per hour are recommended.

Ensure that the Oxygen concentrator is in a well-ventilated area. If the space is occupied, sufficient ventilation must be provided to prevent the accumulation of low oxygen concentration waste gas in the space.

Temperature (Operating): 40°F to 95°F

Temperature (Storage): -20°F to 170°F

No dust or debris may be in the area, must be clean dry environment.

## **Maintenance**

### **Filters**

The OX-46 oxygen concentrator uses 2 air filters to filter incoming air and protect the oxygen concentrator sieve beds from moisture, dust, and oil. These filters should be checked periodically and replaced as necessary. Replacement filters can be obtained from Ozone Solutions

### **Solenoid Valve**

There is an air solenoid valve used on the OX-46 to start and stop air flow. This solenoid valve should be rebuilt at necessary. If used frequently expect a 1 year life-span for this filter.

### **ATF-Modules**

The ATF module has no serviceable components. With dry air feed gas the ATF-modules should last ~5 years. After this time the ATF-modules should be replaced.

### **Maintenance Table**

| <b><i>Component</i></b> | <b><i>Action</i></b> | <b><i>Time Interval</i></b> | <b><i>Part Number(s)</i></b>      |
|-------------------------|----------------------|-----------------------------|-----------------------------------|
| Filters                 | Replace              | 3 months                    | CF-8: Replacement Filter          |
| Filters                 | Replace              | 3 months                    | PR-8 + Filter: Replacement Filter |
| Solenoid Valve          | Rebuild              | 1 year                      | SVB-6-GC Rebuild Kit              |
| ATF-Modules             | Replace              | ~5 years                    | ATF-23                            |



## **Contact Information**

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## **Ozone Solutions Limited Warranty**

Ozone Solutions warrants all equipment assembled, manufactured, and sold to be free from defects in material and workmanship under normal use and service for a period of one (1) year after date of sale to the original purchaser.

Some products may have a specific warranty period other than what is outlined in this document. For such products, the manufacturer warranty will supersede this warranty. Ozone Solutions will honor the manufacturer's warranty, but if and when advised by the manufacturer, may have the customer deal directly with the manufacture.

This warranty covers all parts that are not outlined in a product maintenance schedule. This warranty will be void if any piece of the equipment is used in a manner other than what is explicitly outlined in the product manuals.

If any part of the equipment manufactured by Ozone Solutions proves to be defective during the warranty period, please contact Ozone Solutions at 1-888-892-0303, or [tech@ozonesolutions.com](mailto:tech@ozonesolutions.com). Prior authorization is required before working on or shipping a product back to us. Failure to get prior authorization may result in denial of your claim. Once authorized, you may return the defective equipment to Ozone Solutions with the transportation charges prepaid. If Ozone Solutions finds the equipment to be defective, it will be repaired or replaced at our discretion, free of charge, to the original purchaser (F.O.B. factory). This warranty shall not place any liability on Ozone Solutions for any transportation charges, labor, or cost for, or during the replacement of any parts. The replaced part(s) or product will then continue the original warranty duration. The replaced parts will not start a new one (1) year coverage period.

The purchaser by acceptance of the equipment will assume all liability for the consequences of its use or misuse by the purchaser, employees, or others. This warranty shall not apply to any piece of equipment, or part thereof sold by this company which has been subject to any accident caused in transit, alterations by unauthorized service, negligence, abuse, or damage by flood, fire, or act of God.

This warranty shall constitute the entire warranty and/or agreement between Ozone Solutions and the original purchaser, and in lieu of all other warranties, expressed or implied, either oral or written, including the warranty of merchantability and fitness for a particular use and of all other obligations or liabilities on our part. Ozone Solutions neither assumes nor authorizes any other person or entity to assume for us any liability associated with the sale of its products or equipment.

The term "original purchaser," as used in this warranty, means whom the product was originally sold to by Ozone Solutions or by an authorized dealer.

Ozone Solutions reserves the right to make changes in its products without notice. Because of this, Ozone Solutions is not obligated to replace warranty defective part(s) and/or product with the same original part or product.

