



260 Creekside Drive, Buffalo, NY 14228-2075 USA

# **Workhorse-23P Oxygen Generator**

**Model No.  
5755, 5759, 5763**

**Product Documentation Package  
for  
Domestic and International Units**

## **Cautions, Warnings and Hazards**

Oxygen is a powerful oxidizing agent; it can cause fire or explosion. Observe strict cleanliness procedures when fabricating and connecting the oxygen piping. ***It is imperative that oxygen systems be properly cleaned and inspected to insure that no combustible materials remain in the connecting piping and fittings.*** Do not allow the free flow of oxygen from the Workhorse Oxygen Generator or from any point on the oxygen manifold.

Ensure that the Workhorse Oxygen Generator 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. Approximately 6 air changes per hour are necessary.

Do not allow rain or condensation to contact the Workhorse Oxygen Generator. The Workhorse Oxygen Generator is not weather proof. The unit must be operated indoors or in an enclosure in a noncondensing environment.

The Workhorse Oxygen Generator should be installed and operated per the Compressed Gas Association Guide P-8.1 "Safe Installation and Operation of PSA and Membrane Oxygen and Nitrogen Generators."

## **Patents, Trademarks and Copyright**

The Workhorse Oxygen Generator is protected by the following US Patents:  
4,925,464    5,112,367    5,114,441    5,268,021    5,366,541    5,593,478  
5,730,778    Re. 35,099    Other patents pending.

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## **Introduction**

The operation of the Workhorse Oxygen Generator is based on the pressure swing adsorption (PSA) cycle using synthetic zeolite molecular sieve. The Workhorse Oxygen Generator is capable of delivering oxygen flows up to 23 standard cubic feet per hour (SCFH) at over 90% by volume oxygen concentration. The main components of the Workhorse Oxygen Generator are a AIRSEP ATF Oxygen Concentrator Module and an oilless air compressor.

Typical applications for the Workhorse Oxygen Generator include aquaculture and feed gas for ozone generation. AIRSEP can supply oxygen generators, sub-systems and components for generators in many capacities.

## **Installation**

**IMPORTANT:** There is a packaging insert that must be removed from the fan-side of the top cover and (2) ¼-20 screws that secure the compressor during shipping. Do not attempt to operate the Workhorse Oxygen Generator without removing this packaging insert *and* both screws as damage may result.

A wall bracket has been supplied with the system. Install the bracket on a sturdy vertical surface using a level. Attach the bracket with bolts or screws capable of supporting the unit. The backplate of the unit has large through holes for sighting in the wall bracket's hanger screws. If necessary, remove the top cover and use the through holes to assist the installer hanging the unit. Re-attach the cover. Do not lay items on the cover; it is not designed to carry heavy loads.

Be certain there is sufficient access space around the Workhorse Oxygen Generator 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 stated on the label on the unit.

**IMPORTANT:** The location of the Workhorse Oxygen Generator must be well ventilated. Refer to the recommendations in the Compressed Gas Association Guide P-8.1 "Safe Installation and Operation of PSA and Membrane Oxygen and Nitrogen Generators." Contact AIRSEP if further assistance is needed.

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

### Oxygen Hook-up

The oxygen outlet connection is 1/8 inch female National Standard Pipe Thread (NPT) and is located on the front of the Workhorse Oxygen Generator. The hex nut bulkhead fitting should be stabilized with a 7/8 inch wrench to prevent rotation when making your connection to the unit.

**IMPORTANT:** Oxygen is a powerful oxidizing agent; it can cause fire or explosion. Observe strict cleanliness procedures when fabricating and connecting the oxygen piping. *It is imperative that oxygen systems be properly cleaned and inspected to insure that no combustible materials remain in the connecting pipe and fittings.* If you are not familiar with oxygen cleaning procedures, refer to the Compressed Gas Association documents G-4.1 “Cleaning Equipment for Oxygen Service” and G-4.4 “Industrial Practices for Gaseous Oxygen Transmission and Distribution Piping Systems.”

**IMPORTANT:** Do not allow the free flow of oxygen from the Workhorse Oxygen Generator. Ensure that the oxygen flow is measured and controlled to rates that do not exceed rated capacity.

### Operation

To start the Workhorse Oxygen Generator, connect the unit to a grounded power source rated for the voltage and current requirements stated on the label on the unit. Push the toggle switch on the front panel to the up position. [The green LED on the front panel of the unit will light, indicating that power is applied to the system, and the red LED will light indicating low oxygen concentration.]

Set the outlet oxygen flow to 23 SCFH (10.8 SLPM) or less. [When the oxygen concentration achieves 70% the red LED will go out and a yellow LED will light. When the concentration is greater than 85%, the yellow LED will go out.]

[The visual LED alarms also correspond to two alarm outputs on the nine pin D-sub connector located under the LEDs. These outputs are Form A one amp dry contacts. In the event of an alarm, the contacts will close, otherwise they remain open. Only one set of contacts is closed at any time during an alarm. If the oxygen concentration falls below 85%, the yellow LED will light and pins 4 and 5 will close. If the concentration falls below 70%, these contacts will open and the yellow LED will turn off. The red LED will then light and pins 2 and 3 will close.]

[Pins 1 and 6 can be used to measure the concentration level to within  $\pm 2\%$  of concentration. Concentration is read by placing the negative lead of a digital voltmeter on pin 1 and the positive lead on pin 6. A 0-1 volt output is displayed with one volt relating to 100% concentration and zero volts relating to 0%. Audible and visual alarms, automatic phone dialers and digital oxygen purity displays that directly interface with the nine pin connector are available as accessories. Contact AIRSEP Customer Service for additional information.]

[ ] **Applies to models with optional oxygen monitor.**

**IMPORTANT:** Ensure that the Workhorse Oxygen Generator 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. Approximately 6 air changes per hour are necessary.

**IMPORTANT:** The flow meter installed on the Workhorse Generator is set to read accurately when the discharge is to atmospheric pressure. 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 AIRSEP Technical Support if additional assistance is required.

Do not allow the oxygen product to vent freely. Do not exceed rated capacity.

### **Maintenance**

The Compressor Inlet Filter should be changed every 4,000 hours. Filter change frequency is dependent on environmental conditions and may vary.

Compressors require a rebuild after 5,000 to 12,000 hours of operation, depending on environmental conditions.

See the Service Parts section for information on replacement air inlet filters and compressor rebuild kits.

### **Specifications**

#### **Compressed Air**

Pressure Relief Valve setting: 35 psig ±10%

#### **Oxygen Output**

23 SCFH (10.8 SLPM) at 90% +3%/-5% oxygen by volume at 7 psig minimum (at lab conditions, derated performance at higher temperature and humidity) 1/8" NPT Female Pipe connection

#### **Electrical Input**

Model No 5455: 120 VAC, single phase, 60 Hz, 5.0 Amps, 500 W

Model No 5763: 220 VAC, single phase, 50 Hz, 2.5 Amps, 500 W

Model No 5759: 230 VAC, single phase, 60 Hz, 2.5 Amps, 500 W

Environment

The Workhorse Oxygen Generator is not weather proof; it must be operated indoors or in an enclosure in a noncondensing environment. If the space is occupied, sufficient ventilation must be provided to prevent the accumulation of low oxygen concentration waste gas in the space.

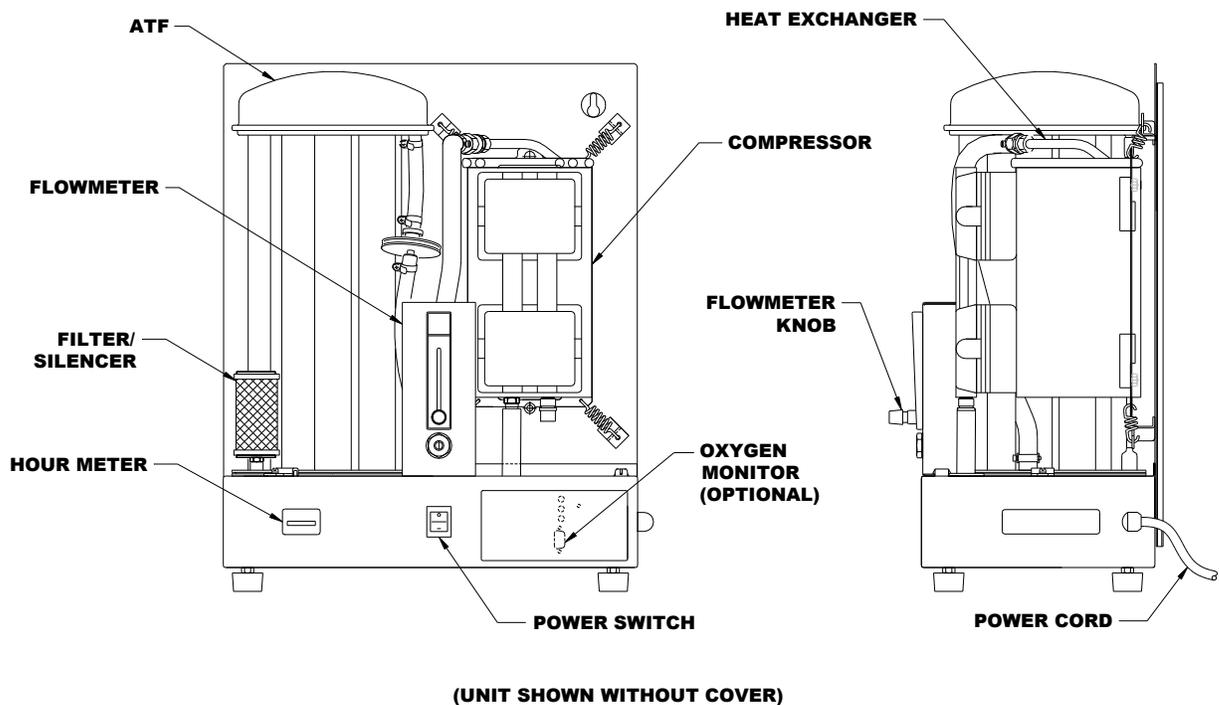
Temperature (Operating): 40°F to 110°F  
Temperature (Storage): -20°F to 170°F  
Humidity: 0 to 95% RH  
Barometric Pressure Range: 28 to 31 inches of Hg  
Ambient Oxygen Concentration: 20.0% minimum

Operation

The unit should be installed and operated per the Compressed Gas Association Guide P-8.1 “Safe Installation and Operation of PSA and Membrane Oxygen and Nitrogen Generators.”

Mechanical

Maximum Dimensions: 21.75"H x 17"W x 10"D  
Weight: 58 lb.



**Service Parts**

Service parts listed below can be obtained directly from AIRSEP. Hose can generally be obtained locally; specifications are listed below. Always replace hoses with equal or better specifications. Other parts are not considered regular service items. Please contact AIRSEP directly for further information on other parts.

Service Parts

Service Part	Part Number	Quantity Used
ATF Module 120/220VAC/60Hz	3161	1
Compressor 120VAC/60Hz	3238	1
Compressor 220VAC/60Hz	3312	1
Compressor Rebuild Kit	3197	1
ATF Module 220VAC/50Hz	3239	1
Compressor 220VAC/50Hz	3285	1
Compressor Rebuild Kit	3295	1
Compressor Inlet Filter	1407	1
Pressure Relief Valve	1368	1

Replacement Hose

Hose Size (ID x OD)	Construction	Working psi at 70°F	Temperature Range (°F)
1/2" x 7/8"	Reinforced silicone	141	-40 to 175
1/4" x 1/2"	PVC	70	-40 to 175

**How to Contact AIRSEP**

By mail:

AirSep - A Chart Industries Company  
260 Creekside Drive  
Buffalo, NY 14228-2075 USA

By telephone:

+1-716-691-0202

By facsimile:

+1-716-691-1255

By E-mail:

cpd@airsep.com