

Suggested List Price \$75.00 (U.S.D.)

**AirSep[®] Corporation
PSA Oxygen Generator
Models AS-20-1000**

Instruction Manual

MN011-1

A12/02



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Ownership Data

Please take a moment to note below important information about your AirSep® Corporation PSA Oxygen Generator. Retain this instruction manual, along with your invoice, to serve as a permanent record of your purchase.

PSA Oxygen Generator

Model Number:

Serial Number:

Invoice Date:

Start-up Date:

AirSep Representative

Company:

Contact:

Address:

City/Town: State: Zip:

Country: Fax:

Phone: Telex:



Before you attempt to install, operate, or repair the oxygen generator, read and thoroughly understand this instruction manual. Improper operation can result in severe bodily injury, damage to the oxygen generator, or poor performance.

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1.0 Introduction

1.1 General

This instruction manual provides descriptions of the AirSep Corporation PSA Oxygen Generator Models AS-20, AS-45, AS-80, AS-160, AS-250, AS-450, AS-750, and AS-1000, as well as instructions for their installation, operation, and maintenance. The Appendix of this instruction manual also includes pertinent drawings and component literature.

To ensure safe operation and proper maintenance of the oxygen generator, AirSep Corporation recommends that you keep this instruction manual readily available for reference.

1.2 Warnings, Cautions, and Notes

As you read this instruction manual, pay special attention to the WARNING, CAUTION, and NOTE messages. They identify safety guidelines or other important information as follows:



Provides information that can prevent severe bodily injury or death.

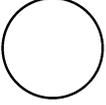


Cautions against the risk of electric shock.



Provides information important enough to emphasize or repeat.

1.3 Symbols

	IEC 417, No. 5019	Protective conductor terminal
	IEC 417, No. 5007	On (supply)
	IEC 417, No. 5008	Off (supply)
	ISO 3864, No. B.3.6	Caution, risk of electric shock
	ISO 3864, No. B.3.1	Caution (refer to accompanying documents)

1.4 References to Controls and Indicators with Tags or Labels

This instruction manual uses uppercase characters (e.g., ON/OFF switch) to refer to controls and indicators identified by tags or labels. Numbers inside parentheses (e.g., V-2) identify manually operated flow controls (e.g., manual valves). Refer to Chapter 4 for a description of the oxygen generator components.

2.0 Safety

2.1 General

Oxygen, the most abundant of the elements, makes up approximately 50 percent of the earth's crust. In its free state, oxygen forms approximately one-fifth of our air by volume. Although classified as a non-flammable gas, oxygen supports combustion. As an active element, it combines directly or indirectly with all elements except the rare gases. Oxygen is an invisible gas that is colorless, odorless, and tasteless.

To ensure your safety, thoroughly read and familiarize yourself with this entire section of this instruction manual. In addition, AirSep Corporation strongly recommends that you review this section periodically.

2.2 Potential Hazards



Oxygen vigorously accelerates the burning of combustible materials. In an oxygen-enriched atmosphere, many materials that do not burn in normal air require only a slight spark or moderate heat to set them aflame.

To reduce the risk of fire or explosion, keep gasoline, kerosene, oil, grease, cotton fibers, wood, paint, and other combustible material away from all parts of the oxygen generator.

Do not allow smoking, open flame, or usage of electronic devices that may generate sparks (e.g., cellular telephones) within 15 m (50 feet) of any part of the oxygen generator.

Post "NO SMOKING OR OPEN FLAMES" signs conspicuously near the location of the oxygen generator.



Take extreme care to keep all oxygen piping and vessels clean. To avoid fire or explosion, oxygen clean all surfaces that can come in contact with the product oxygen. Check all oxygen fittings for leaks with an oxygen-compatible, leak-detecting solution.



To prevent fire or electrical shock, locate the oxygen generator indoors, away from rain or any other type of moisture.



Before you attempt to install, operate, or repair the oxygen generator, read and thoroughly understand this instruction manual and the component manuals located in Appendix D of this instruction manual. Improper installation, operation, or repairs can result in severe bodily injury, damage to the oxygen generator, or poor performance.



The interior of the oxygen generator control cabinet contains electrical parts that can produce an electrical shock hazard if not handled properly. To prevent electrical shock, read and thoroughly understand Section 8 — Troubleshooting in this instruction manual before you service the oxygen generator.



AirSep oxygen generators are sold for use in industrial applications only. Contact AirSep Corporation or an authorized AirSep representative before you use this unit for any medical application.



Disconnect power before servicing oxygen generator.



Do not disconnect protective earth:



2.3 Safety Publications

The safety section of this instruction manual is not a complete summary of required safety precautions. Review the following publications for additional information on the safe handling of oxygen:

“Standard for Bulk Oxygen Systems at Consumer Sites;” NFPA No. 50; National Fire Protection Association; 1 Batterymarch Park; P.O. Box 9101; Quincy, Massachusetts 02269-9101 USA.

“Oxygen;” Pamphlet G-4; Compressed Gas Association; 1725 Jefferson Davis Highway; Arlington, Virginia 22202-4102 USA.

“Cleaning Equipment for Oxygen Service;” Pamphlet G-4.1; Compressed Gas Association; 1725 Jefferson Davis Highway; Arlington, Virginia 22202-4102 USA.

3.0 Plant Description

3.1 General

The AirSep Corporation PSA Oxygen Generator is a self-contained unit that utilizes Pressure Swing Adsorption (PSA) technology to produce oxygen on site. The oxygen generator uses compressed air as a feed gas to produce oxygen. The compressed air flows through a filter assembly before the air enters the adsorber vessels. A particulate filter removes condensed water, oil, dirt, scale, etc. from the feed air, then in most models, a separate coalescing filter removes additional oil and water vapor.

The oxygen generator uses in its adsorber vessels an inert ceramic material called molecular sieve to separate compressed air into oxygen and other gases. The unique properties of molecular sieve allow it to attract, or adsorb, nitrogen physically from air under pressure. This allows oxygen to exit the adsorbers as a product gas. The process valves on the oxygen generator then direct the oxygen to the oxygen receiver for storage until needed by your application.

While one adsorber produces oxygen, the other depressurizes to exhaust the waste gases it adsorbed (collected) during the oxygen production cycle. The entire oxygen generating process is completely regenerative, which makes it both reliable and virtually maintenance-free. The molecular sieve does not normally require replacement when maintained and used according to this instruction manual.

Refer to the illustrations, located in Appendix A of this instruction manual, for a detailed flow diagram, an electrical schematic, and general arrangement drawings of all oxygen generator models referenced in this instruction manual as well as typical cycle sequences and operating pressure levels.

4.0 Component Descriptions

The drawings in this section illustrate the location of the main components of the various oxygen generator models. All models include similar components unless noted otherwise; however, the location and size of these components varies among the different models. Refer to Appendix A of this instruction manual for general layout drawings and specifications for all oxygen generator models referenced in this instruction manual. In addition, the oxygen generator requires use of an oxygen receiver to provide stable flow and purity for short-term surges of feed oxygen above the rated capacity of the oxygen generator.

4.1 External Components

Figure 4-1 below illustrates on two models the external components viewed from the front of the oxygen generator.

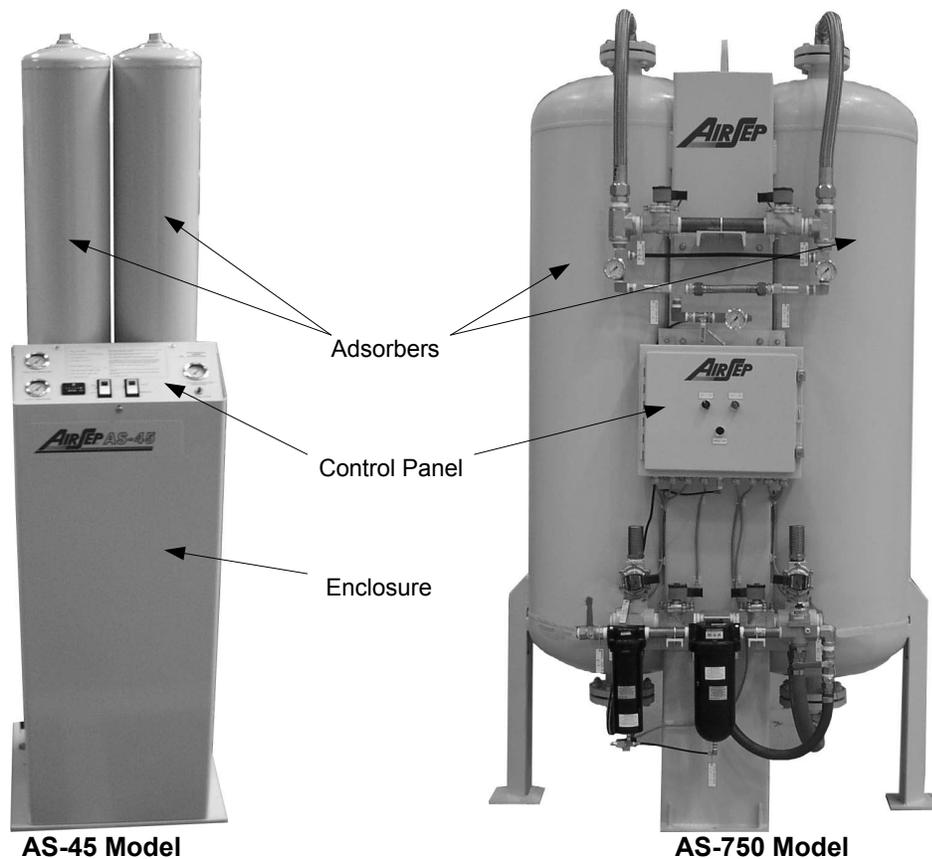


Figure 4-1 External Components — Front View

4.1.1 Adsorbers

The adsorbers, or beds, are vessels that contain the molecular sieve used to adsorb (attract) nitrogen from compressed air and allow oxygen to pass through as the product gas.

4.1.2 Enclosure

The enclosure protects the control system components of the unit (e.g., circuit board, pressure switch, fuses, and transformer).



Disconnect power before opening and/or removing enclosure.

Power Cord

(U.S. units) The power cord, and its grounded plug, connects the oxygen generator to a properly grounded electrical outlet to supply electrical power to the oxygen generator.

(CE units) A fully qualified electrician must install the appropriate electrical connection on the end of the power cord for a properly grounded electrical outlet to supply electrical power to the oxygen generator.

Fuse Holder

The fuse holders contain fuses to protect the electrical components of the oxygen generator. On the AS-450 through AS-1000 models, the fuse holders are mounted in the control panel.



Fuses must be replaced with the same type and amp rating as the original fuses.

4.1.3 Control Panel

The control panel on the oxygen generator contains the controls needed to operate the oxygen generator and monitor its operation. Examples of typical control panels are shown in figure 4-3. Not all components are available on every generator. On the AS-450 through AS-1000 models, the gauges are mounted directly on the manifolds and the hour meter is inside the control panel.

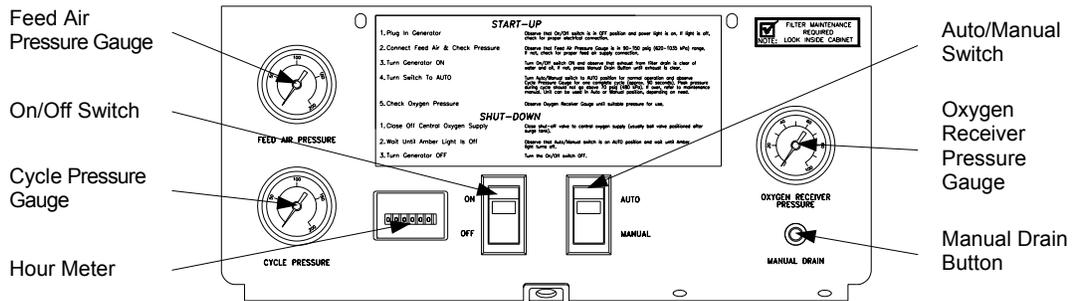


Figure 4-2 Control Panel — AS-45 and AS-80 Models

On/Off Switch

The I/O power switch starts and stops the operation of the unit. The green indicator light illuminates to indicate that the oxygen generator is receiving electrical power.

Auto/Manual Switch

The AUTO/MANUAL switch selects the operating mode for the oxygen generator. In the AUTO position, the oxygen generator cycles on and off to meet oxygen demand. In the MANUAL position, the oxygen generator cycles continuously. The amber indicator light on the AUTO/MANUAL switch illuminates only when the oxygen generator produces oxygen.

Manual Drain Button

The oxygen generator uses an automatic valve to periodically drain excess moisture extracted from the feed air. The manual drain button allows you to operate the automatic drain valve manually at any time during operation.

Hour Meter (Not available on AS-20 model)

The hour meter indicates the total number of hours the oxygen generator cycles.

FEED AIR PRESSURE Gauge (Not available on AS-450 — AS-1000 models)

The FEED AIR PRESSURE gauge indicates the pressure of the feed air as the air enters the generator prior to the feed air regulator.

CYCLE PRESSURE Gauge (Not available on AS-450 — AS-1000 models)

The CYCLE PRESSURE gauge indicates the pressure of the feed air before the air enters the adsorbers. The feed air regulator controls the pressure indicated on the CYCLE PRESSURE gauge.

ADSORBER PRESSURE Gauges (AS-450 — AS-1000 models only)

The adsorber pressure gauges indicate the pressure in the two adsorbers.

OXYGEN RECEIVER PRESSURE Gauge

The OXYGEN RECEIVER PRESSURE gauge indicates the oxygen pressure in the oxygen receiver.

4.1.4 Connections

The oxygen generator provides the connections described below.

Air Inlet

The feed air inlet provides a connection for the feed air hose from the air compressor.

Oxygen Outlet

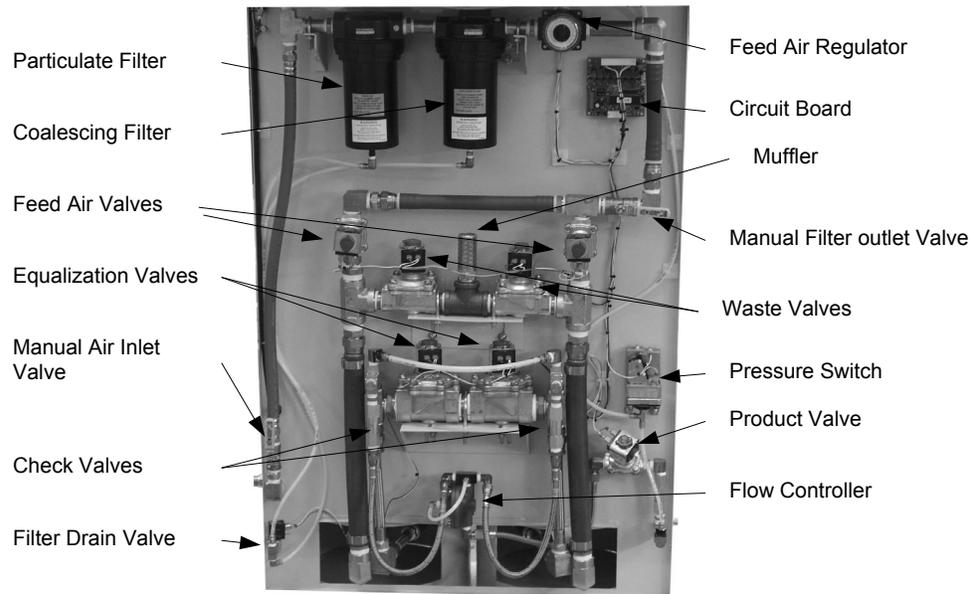
The oxygen outlet provides a connection for the oxygen hose to the oxygen receiver.

Condensate Drain Outlet

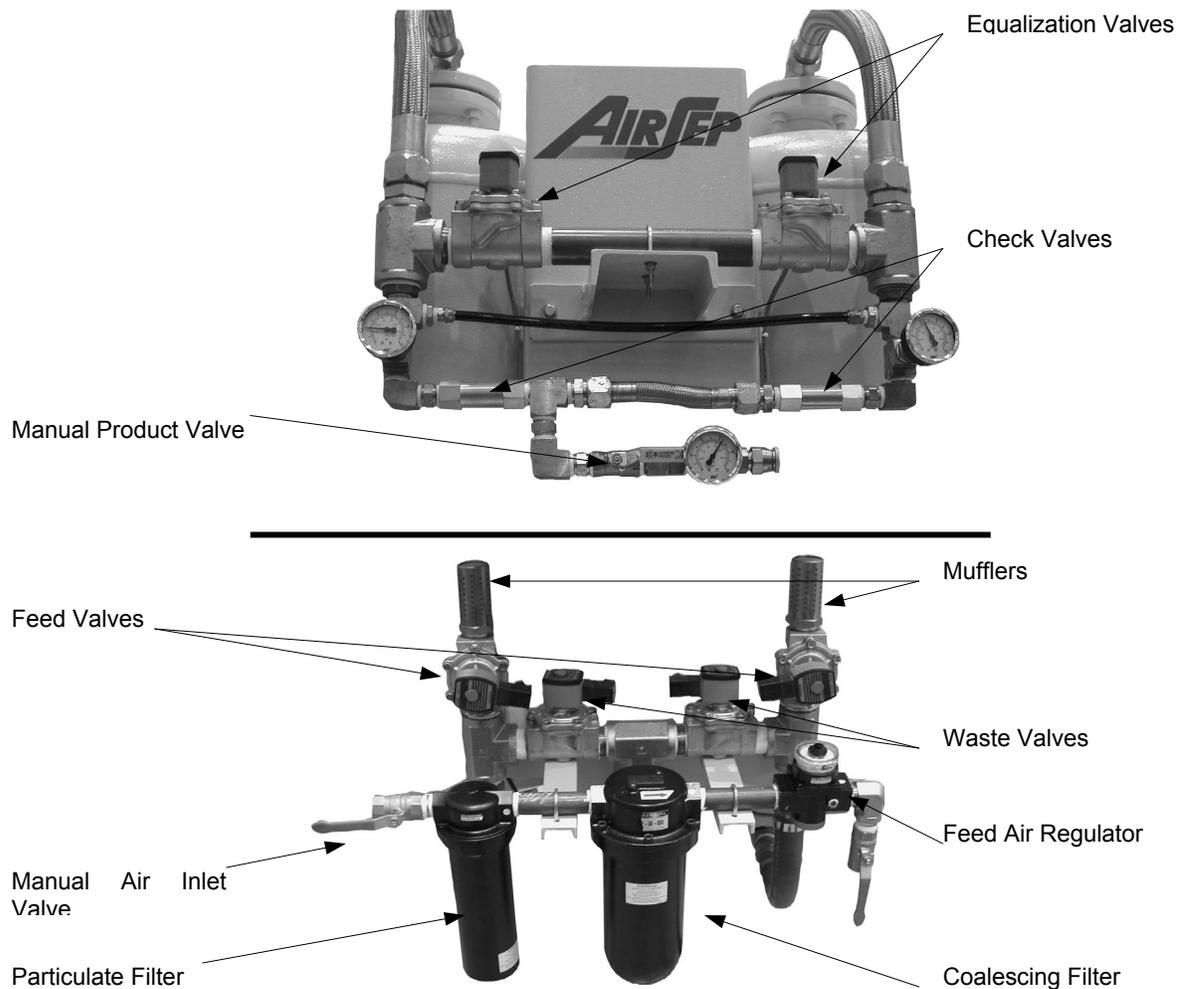
The condensate drain outlet provides a connection for a hose to drain condensate from the oxygen generator filters.

4.2 Manifold Components

Figure 4-4 below illustrates the manifold components of the oxygen generator. The location and presence of components may vary between the various models of generators.



**Figure 4-3 Manifold Components —
AS-160 and AS-250 Models**



**Figure 4-4 Manifold Components —
AS-750 Model**

Automatic Equalization Valves

The automatic equalization valves enable the pressure in the adsorbers to equalize after the product oxygen exits from one of the adsorbers.

Automatic Feed Air Valves

The automatic feed air valves control the flow of the feed air as the air enters the adsorbers.

Automatic Product Valve

The automatic product valve controls the flow of product oxygen from the adsorbers.

Automatic Waste Valves

The automatic waste valves control the flow of waste gas as it exits the adsorbers.

Check Valves

The check valves ensure that product gas does not flow back into the adsorbers.

Circuit Board

The circuit board controls the cycle time and sequence of operation of the solenoid and drain valves.

Coalescing Filter

The coalescing filter removes condensed water, oil vapor, and other contaminants from the feed air before the air enters the adsorbers.

Feed Air Regulator

The feed air regulator is set at the AirSep Corporation factory. The feed air regulator controls the amount of air pressure at which the oxygen generator cycles.

Filter Drain Valve

This automatic valve removes moisture from the filters through tubing connected to an outlet at the back of the oxygen generator.

Flow Controller (Not available on AS-20 and AS-450 — AS-1000 models)

The flow controller ensures consistent flow of the delivered product oxygen.

Manual Filter Outlet Valve

This manual valve controls the flow of feed air from the feed air regulator after the filters to the automatic feed air valves.

Manual Inlet Valve

This manual valve controls the flow of feed air from the air compressor to the filter assembly.

Particulate Filter (Not available on AS-20 model)

The particulate filter, or prefilter, removes particulates from the feed air before the air enters the coalescing filter and then the adsorbers.

Pressure Switch

When the oxygen generator operates in Auto mode, the pressure switch monitors the oxygen pressure in the oxygen receiver. When the pressure in the oxygen receiver increases to approximately 380-415 kPa (55-60 psig), the pressure switch circuit closes and the oxygen generator starts a timed shutdown that stops the unit at the end of the shutdown sequence. When the pressure in the oxygen receiver decreases to approximately 310 kPa (45 psig), the pressure switch opens to activate the oxygen generator, and oxygen production begins. When the oxygen generator operates in Manual mode, the pressure switch circuit remains open and the oxygen generator cycles continuously.

Relief Valves (not shown)

The relief valves, one on each adsorber, ensure that the pressure in the adsorbers does not exceed the rated maximum pressure of the adsorbers.

Transformer

The transformer provides the proper voltage for the electrical components of the oxygen generator.

5.0 Installation

5.1 Handling and Unpacking

AirSep Corporation ships the oxygen generator on a wooden skid covered by a container. The container also includes an accessory box containing all the accessories for the unit and an instruction manual needed to install the unit properly. The oxygen receiver, if supplied, is shipped on a separate skid.

To unpack the oxygen generator, follow these guidelines:

- 1) Inspect the shipping container, and open it immediately upon receipt.
- 2) If the exterior of the carton is severely damaged, note it on the freight bill before you sign it.



You must submit a damage claim **within 24 hours of receipt**. In the case of concealed or hidden damage, a claim must be filed **within 15 days of receipt**. A claim can be filed only by the consignee. The AirSep Product Warranty does **not** cover shipping damage.

- 3) Unpack the unit, and remove any protective wrapping and packaging. Retain the carton and packaging to facilitate future shipping and transporting of the unit.
- 4) Place the unit in an upright position, and thoroughly inspect the enclosure and all external components (e.g., control panel) for damage.
- 5) Open the enclosure or control panel, and inspect the interior for loose or damaged parts.



To prevent electrical shock, make sure the main power supply is disconnected when you remove the enclosure, inspect the internal components, and install the oxygen generator and oxygen receiver.

- 6) Inspect all wiring to ensure that no wires are broken and no push-on connector is off its terminal. If a wire is disconnected, reconnect the wire to the most obvious terminal.
- 7) After inspecting the interior, close the enclosure or control panel on the unit.
- 8) Locate the instruction manual inside the accessory box. Read the entire manual before installing and operating the unit.

5.2 Pre-installation Guidelines

Before you install the oxygen generator, and oxygen receiver, if supplied, refer to the Specifications section in Appendix A of this instruction manual to determine applicable floor space, feed air, and power requirements for your particular model.



The oxygen generator may use feed air at specifications outside those shown in Appendix A of this instruction manual; however, use of such feed air may require modification of the oxygen generator at the AirSep Corporation factory to ensure the product oxygen meets the specifications shown in Appendix A. Consult your sales representative to determine whether your oxygen generator requires modifications for your application.



Locate the oxygen generator in an area where the ambient air temperature remains between 4°C (40°F) and 44°C (111°F) to prevent damage not covered under the AirSep Corporation Product Warranty.



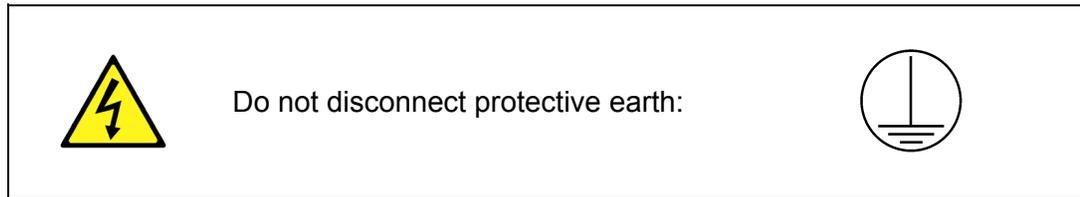
To prevent fire or electrical shock, locate the oxygen generator away from rain or any other type of moisture.



Make sure the area that surrounds the oxygen generator is well ventilated, and provide sufficient space around the unit [at least one meter (three feet)] to allow for cool air flow as well as to allow safe operation and maintenance.



AirSep oxygen generators are sold for use in industrial applications only. Contact AirSep Corporation or an authorized AirSep representative before you use this unit for any medical application.



5.3 Installation Instructions

Refer to Figure 5-1 below for the recommended installation arrangement for the oxygen generator. The numbers in the drawing correspond to the step numbers in this section.

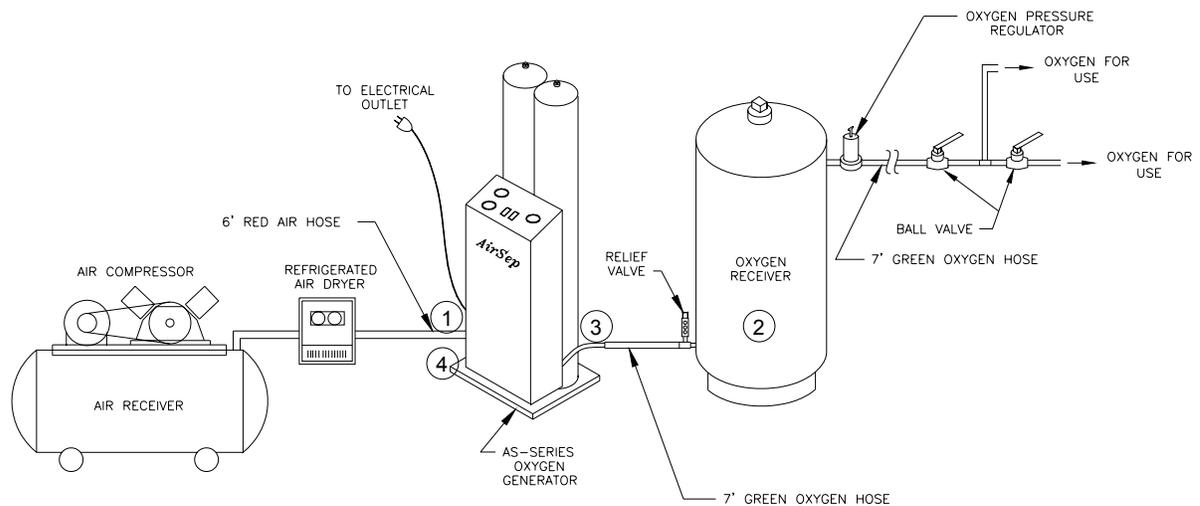


Figure 5-1 Typical Installation Arrangement

- 1) Connect the red air hose provided with the oxygen generator accessories from the on-site air supply to the feed air inlet connection on the oxygen generator. Refer to the Table 5.1 to determine the proper size for the feed air inlet connection and feed air hose for your model.

Model	Feed Air Inlet Connection Size	Feed Air Hose Size
AS-20, AS-45	¼" NPT female bulkhead fitting with a ¼" NPT male x ¼" NPSM ball-end joint adapter	¼" ID minimum
AS-80	¼" NPT female bulkhead fitting with a ¼" NPT male x ⅜" NPSM ball-end joint adapter	⅜" ID minimum
AS-160, AS-250	½" NPT female bulkhead fitting with a ½" NPT male x ¾" NPSM ball-end joint adapter	½" ID minimum
AS-450	¾" NPT female bulkhead fitting with a ¾" NPT male x ¾" NPSM ball-end joint adapter	¾" ID minimum
AS-750	1" NPT Female fitting next to V-2	1" ID minimum
AS-1000	1" NPT Female fitting next to V-2	1" ID minimum

Table 5-1 Feed Air Connection Sizes and Hose Sizes

- 2) Install your oxygen receiver. If AirSep Corporation provided your oxygen receiver, assemble the receiver as follows (See Figure 5-2.):

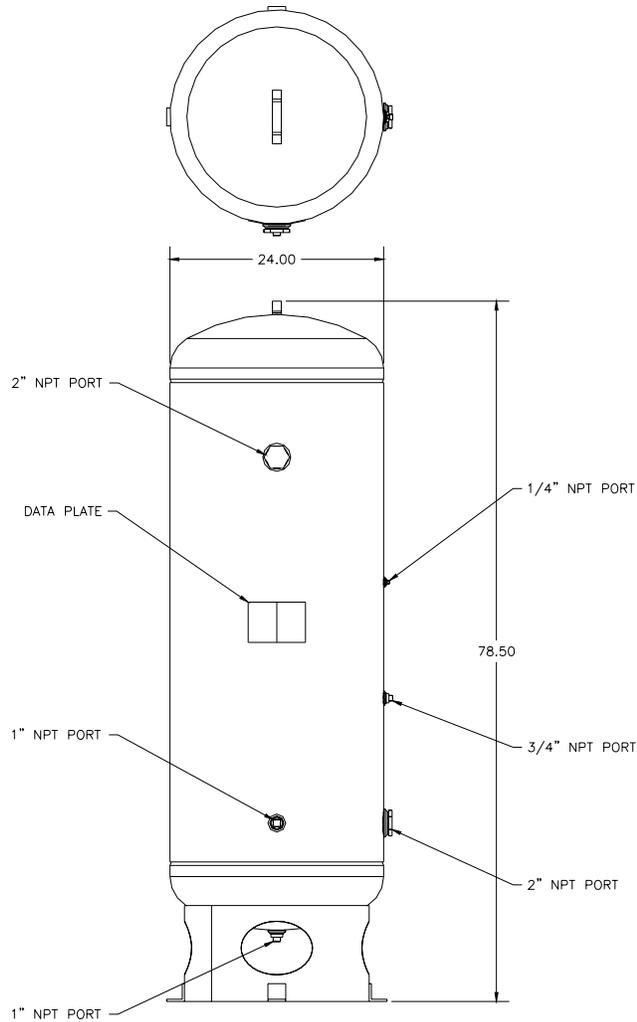


Figure 5-2 120 Gallon Oxygen Receiver

- a) Connect the relief valve assembly to the oxygen inlet port on the oxygen receiver. Tighten the connection fully.
- b) Connect the hex nipple to the oxygen outlet port on the oxygen receiver. Tighten the connection fully.
- c) Connect the oxygen regulator to the hex nipple at the oxygen outlet port on the oxygen receiver. Tighten the connection fully.



Use Teflon™ tape to seal the threaded connections on the oxygen receiver. If AirSep Corporation provided your oxygen receiver, the threaded connections in the accessory kit were shipped with Teflon™ tape wrapping already applied.

If AirSep Corporation did not provide your oxygen receiver, make sure your oxygen receiver is sized properly as specified in Appendix A of this instruction manual to meet the requirements of your oxygen generator model. In addition, AirSep Corporation recommends that the oxygen inlet on the oxygen receiver contain a relief valve and that the oxygen outlet on the oxygen receiver contain a pressure regulator and pressure gauge or a manual ball valve and pressure gauge.

- 3) Connect the green oxygen hose provided with the oxygen generator accessories from the oxygen outlet connection on the oxygen generator to the relief valve assembly at the oxygen inlet port on the oxygen receiver. Refer to the following table to determine the proper size for the oxygen outlet connection.

Model	Oxygen Outlet Connection Size
AS-20, AS-45, AS-80	1/4" NPT female bulkhead fitting with a 1/4" NPT male x B size oxygen adapter
AS-160, AS-250	3/8" NPT female bulkhead fitting with a 3/8" NPT male x B size oxygen adapter
AS-450	3/8" NPT female bulkhead fitting with a 3/8" NPT male x C size oxygen adapter
AS-750	3/4" NPT Female on tee behind PI-3
AS-1000	3/4" NPT Female on tee behind PI-3

Table 5-2 Oxygen Outlet Connection Sizes

- 4) Connect the 3/8" ID nylon tubing provided with the oxygen generator accessories to the condensate outlet at the rear of the oxygen generator.



Make sure the condensate outlet and nylon tubing do not become obstructed at any time. This may require a daily drain system check.

- 5) Connect the power cord to a grounded electrical outlet. On CE units, a qualified electrician should install the appropriate grounded electrical connector on the end of the power cord.



Provide proper voltage from a grounded outlet to the oxygen generator. Improper voltage causes damage not covered under the AirSep Corporation Product Warranty.

The oxygen generator is now ready for operation. Refer to Chapter 6 of this instruction manual before you operate the oxygen generator.

6.0 Operation

When you complete installation as described in the previous section, the oxygen generator is ready for easy start-up and operation. This section of this instruction manual provides the procedures for start-up and shutdown of the oxygen generator. Before you start the oxygen generator, read and thoroughly understand any literature or instruction manuals for the air compressor that will provide the feed air to the oxygen generator.

6.1 Initial Start-up

To start the oxygen generator for the first time or after an extended or unexpected shutdown, follow the steps below:

- 1) Make sure the ON/OFF switch on the control panel is set to *OFF*.
- 2) Set the AUTO/MANUAL switch on the control panel to *MANUAL*.
- 3) Connect the grounded power cord to a grounded electrical outlet. Make sure the power circuit cannot be turned off accidentally.



If the power is turned off unexpectedly, the unit will stop cycling. If your application is using oxygen when the power is off, the oxygen receiver will depressurize. Refer to Appendix A of this instruction manual for the length of time you can expect the oxygen receiver to repressurize.

- When you connect the oxygen generator's plug to a power circuit, the green light on the ON/OFF switch illuminates to indicate that the oxygen generator is receiving electrical power.
- 4) Provide feed air that meets the specification for your model to the oxygen generator. Make sure the FEED AIR PRESSURE gauge on the control panel registers pressure within the range of feed air pressures specified in Appendix A of this instruction manual.
 - 5) Set the ON/OFF switch on the control panel to *ON*.
 - 6) **For AS-450 through AS-1000 models ONLY:** Close the manual product valve (refer to Figure 4-4 for location of valve). The manual product valve on these units has been configured to enable a predetermined amount of flow through the valve when closed. This allows the product pressure to build up even when the valve is closed.



NOTE

When you start the oxygen generator, air exhausts for 3–5 seconds from the filter drain port on the rear of the unit to remove any condensate that may be present in the filter bowls. This removes condensate from the feed air before the feed air enters the adsorbers. During normal operation, air exhausts from the filter drain for 3–5 seconds every 10 minutes.

- 7) Make sure the exhaust from the filter drain does not contain water or oil. If the exhaust contains water or oil, press the manual drain button on the control panel until the exhaust no longer contains liquid.
- 8) To purge oxygen at less than design purity from the oxygen receiver, while the oxygen generator is running in manual mode, open a manual valve on the oxygen receiver to vent gas until the gas no longer discharges from the oxygen receiver, then fully close the manual valve.



Always vent oxygen outside. While venting oxygen, do not allow smoking or open flame. Do not allow venting oxygen to come in contact with clothing or hydrocarbon-based materials.

- 9) Allow the oxygen generator to operate until the OXYGEN RECEIVER PRESSURE gauge on the control panel registers approximately 380–415 kPa (55-60 psig).
- 10) Set the AUTO/MANUAL switch on the control panel to *AUTO*.



NOTE

When the oxygen generator cycles, i.e., it produces oxygen; the amber light on the AUTO/MANUAL switch illuminates. When the unit enters standby, i.e., it remains on but does not produce oxygen; the amber light on the AUTO/MANUAL switch shuts off.

- 11) **For AS-450 through AS-1000 models ONLY:** Open the manual product valve
- 12) Observe the FEED AIR Pressure and CYCLE PRESSURE gauges on the control panel for at least one cycle (approximately 180 seconds). As the unit cycles, the feed air pressure should not decrease below 480 kPa (70 psig) and the peak cycle pressure should not exceed 480 kPa (70 psig). On the AS-450 through AS-1000 models, observe the readings on the two bed pressure gauges.



If the feed air pressure decreases below 480 kPa (70 psig) or the peak cycle pressure exceeds 480 kPa (70 psig), refer to the troubleshooting chapter of this instruction manual.

- 13) Observe the OXYGEN RECEIVER PRESSURE gauge on the control panel. When the pressure in the oxygen receiver increases to approximately 380–415 kPa (55–60 psig), the oxygen generator stops producing oxygen and enters standby. When delivery of product oxygen reduces the pressure in the oxygen receiver below 310 kPa (45 psig), the oxygen generator begins to cycle and the amber light on the AUTO/MANUAL switch illuminates.



Under normal use, the pressure switch in the oxygen generator does not require adjustment. If you need to adjust the pressure switch, refer to the maintenance chapter of this instruction manual.

- 14) After the oxygen receiver pressurizes, adjust the pressure regulator at the outlet of the oxygen receiver until the pressure of the product oxygen meets the needs of your application.

At this point, the oxygen is ready for use by your application.

6.2 Operation

The oxygen generator can be operated in auto or manual mode depending on the requirements of your application. To use product oxygen that meets the specifications for your model listed in Appendix A of this instruction manual, set the AUTO/MANUAL switch to *AUTO* to produce oxygen only during times of oxygen demand. To obtain maximum oxygen purity at less than maximum flow or to obtain a delivery pressure of 345 kPa (50 psig), set the AUTO/MANUAL switch to *MANUAL* to force continuous operation of the unit regardless of the pressure in the oxygen receiver.

6.3 Shutdown

- 1) Stop the flow of product oxygen from the oxygen receiver to your application by fully closing all manual valves between the outlet of the oxygen receiver and the inlet to your application.
- 2) Make sure the AUTO/MANUAL switch on the control panel is set to *AUTO*.
- 3) Allow the oxygen receiver to repressurize fully. When the oxygen receiver repressurizes, after a time delay of five cycles, the oxygen generator stops cycling and the amber indicator light on the AUTO/MANUAL switch shuts off.



Allow the oxygen generator to enter standby during shutdown to ensure that the oxygen receiver contains oxygen at design purity during the subsequent restart and also ensure that the unit shuts down at the proper point in the cycle. Failure to wait until the oxygen generator enters standby results in temporarily reduced purity oxygen during the subsequent restart.

- 4) Set the ON/OFF switch on the control panel to *OFF*.
- 5) Set the AUTO/MANUAL switch on the control panel to *MANUAL*.

6.4 Normal Start-up



To perform a normal start-up, the oxygen generator first requires a shutdown as described in Section 6.3 — Shutdown. If the oxygen generator shuts down due to a power loss, follow the procedure in Section 6.1 — Initial Start-Up to restart the oxygen generator.

- 1) Provide feed air that meets the specification for your model to the oxygen generator. Make sure the FEED AIR PRESSURE gauge on the control panel registers pressure within the range of feed air pressures specified in Appendix A of this instruction manual.
- 2) Set the ON/OFF switch on the control panel to *ON*.
- 3) Make sure the exhaust from the filter drain does not contain water or oil. If the exhaust contains water or oil, press the manual drain button on the control panel until the exhaust no longer contains liquid.
- 4) Set the AUTO/MANUAL switch on the control panel to *AUTO*.

6.5 Extended Shutdown

To shut down the oxygen generator for 24 hours or longer, complete all the steps in Section 6.3 — Shutdown. In addition, perform the following steps:

- 1) Fully close all manual valves on the oxygen receiver to isolate the oxygen in the oxygen receiver, to prevent the loss of pressure in the oxygen receiver and enable a normal start-up.
- 2) Turn the oxygen generator off and disconnect power.

6.6 Start-up after an Extended Shutdown

After an extended shutdown or an unexpected shutdown, such as a loss of electrical power, you must purge the oxygen receiver of any low purity oxygen

before the oxygen generator can supply oxygen within purity specifications. To purge the oxygen receiver, follow all the steps in Section 6.1 — Initial Start-Up.

7.0 Maintenance

The most important maintenance you can perform on the oxygen generator is to make sure the automatic drain valve for the filters functions properly. Routinely monitor the operation of this drain valve to ensure the long life of the oxygen generator. Follow the procedures described in this section of the instruction manual for daily, semi-annual, and annual maintenance.

Use the following chart as a guide to perform maintenance on a regular schedule:

Time Period	Action
Daily	Make sure automatic drain functions properly.
Monthly	Inspect filters and bowls. Clean bowls or replace filters as necessary.
Six Months	Replace particulate filter element.
Annually	Replace coalescing filter element. Check performance of automatic valves and actuators. Clean and lubricate feed air regulator.

Table 7-1 Maintenance Chart

7.1 Daily Monitoring

- 1) Make sure the condensate outlet and tubing for the drain valve is not obstructed. Condensate should discharge from this outlet or tubing for approximately three to five seconds every 10 minutes when the ON/OFF switch on the control panel is set to *ON* and the green indicator light on the switch illuminates.
- 2) Press the MANUAL DRAIN button on the control panel and observe the discharge. The discharge should flow freely and be clear of oil and water within five seconds.

7.2 Monthly Monitoring

Monthly monitoring requires inspection of the filters and testing the performance of the automatic drain valve. To perform this procedure, remove the front cover of the enclosure, depressurize the unit and remove the filter bowls as described in the following procedures. (See Section 7.3, Removing the Front Cover of the Enclosure, Section 7.4, Depressurizing the Filters, and Section 7.5, Changing Filter Elements.) When the filter bowls have been removed and cleaned, perform the following steps:

- 1) Inspect the filter element(s). Replace any element(s) that appear damaged or excessively dirty.
- 2) Reconnect the drain tubing to the bottom of the bowls.
- 3) Add approximately two ounces of water to the filter bowls.
- 4) Re-install the filter bowls, making sure the bowls lock firmly into place.

- 5) Slowly open fully the manual inlet valve to pressurize the filter bowls.
- 6) While observing the drain tubing, set the ON/OFF switch on the control panel to *ON* and determine whether the automatic drain valve discharges moisture.
- 7) Fully close the manual inlet valve and depressurize the unit as described below. (See Section 7.4, Depressurizing the Filters.)
- 8) Remove the filter bowls as described below. (See Section 7.5, Changing Filter Elements.) Observe whether the water drained from the bowls.

If the filter bowls still contain water, refer to the troubleshooting chapter of this instruction manual. If the bowls do not contain water, re-install the bowls, repressurize the system, and replace the front cover of the enclosure as described below. (See Section 7.5, Changing Filter Elements.)

7.3 Removing the Front Cover of the Enclosure (Not available on AS-450 — AS-1000 models)



Disconnect power to the oxygen generator before removing the front cover of the enclosure.



The front cover of the enclosure protects the components of the unit from damage and dirt. The cover should remain on the enclosure at all times and should only be removed for maintenance or servicing as described in this chapter.

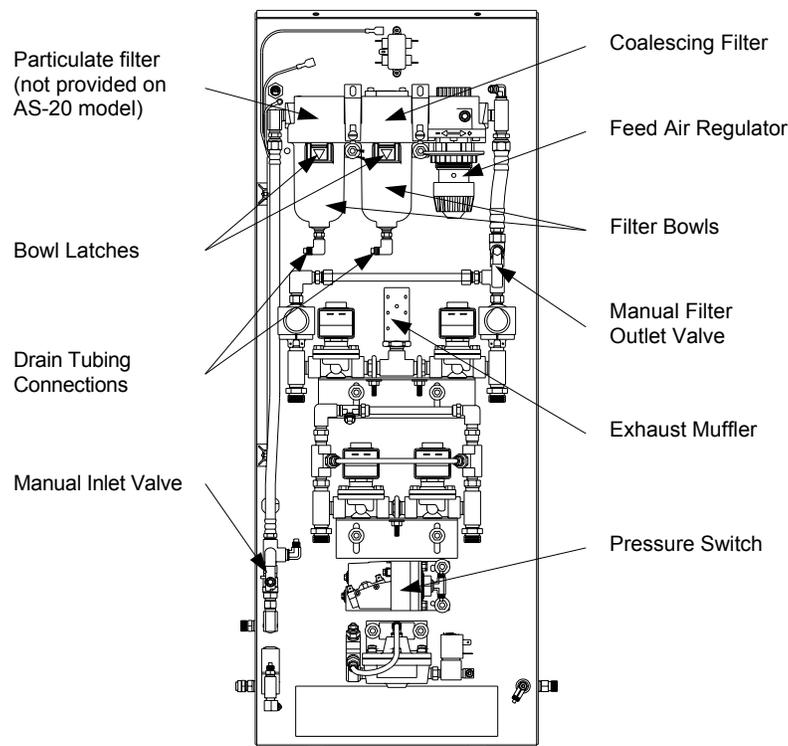
- 1) Remove the slotted screws that connect the top of the cover to the bottom of the control panel.
- 2) Release the four latches on the sides of the cover by pulling the release levers towards the front of the unit.
- 3) Carefully grasp the cover and slide it off the unit towards the front of the unit. The cover is freestanding, so it can be set aside in any location.

7.4 Depressurizing the Filters



The oxygen generator filters contain pressurized air. To perform monthly maintenance or change filter elements safely, fully depressurize the filter assembly as described in the procedure in this section. To safely depressurize all oxygen generator components, refer to the procedure described later in this chapter. (See Section 7.6, Depressurizing the Oxygen Generator.)

- 1) Make sure the AUTO/MAN switch is set to *AUTO* and allow the oxygen generator to stop cycling when the oxygen receiver pressurizes fully.
- 2) Disconnect the oxygen generator from the power supply.
- 3) Remove the front cover of the enclosure, if applicable. (See Section 7.3, Removing the Front Cover of the Enclosure.)
- 4) Fully close the manual inlet valve and manual filter outlet valve. (See Figure 7-1.)



**Figure 7-1 Interior View
of AS-45 and AS-80 Models**

- 5) Shut off the feed air supply at the air compressor or air header.
- 6) Re-install the front cover of the enclosure, if applicable.
- 7) Reconnect the oxygen generator to the power supply.
- 8) Press the MANUAL DRAIN button on the control panel until the CYCLE PRESSURE gauge indicates zero pressure.



If the pressure gauge does not decrease to zero, shut down the unit and call the AirSep Corporation Commercial Products Division.

- 9) Set the ON/OFF switch on the control panel to *OFF*.

7.5 Changing Filter Elements

The following procedure describes how to change the filter elements for either the particulate filter (not available on the AS-20 model) semi-annually or the coalescing filter annually.

- 1) Depressurize the filter assembly and shut down the oxygen generator. (See Section 7.4, Depressurizing the Filters.)



Do not attempt to remove the filter bowls until the filter assembly fully depressurizes as described in Section 7.4.

- 2) While the unit is depressurized and the power supply is disconnected, remove the front cover of the enclosure. (See Section 7.3, Removing the Front Cover of the Enclosure.)
- 3) To remove the bowl from either filter, push down the bowl latch and rotate the bowl slight right or left while pulling down on the bowl.
- 4) When the bowl is free, disconnect the drain tubing from the bottom of the bowl.
- 5) Wash the bowl in warm, soapy water, then rinse the bowl.
- 6) Gently unscrew the old filter element and discard it.
- 7) If you are replacing a coalescing filter element, remove and discard the black gasket where the top of the filter element connects to the filter housing.
- 8) If you are replacing a coalescing filter element, make sure a black gasket is attached to the top of the new element.

- 9) Taking care not to touch the filter portion of the new filter element, screw it into the position from which the old filter was removed.
- 10) Reconnect the drain tubing to the bottom of the bowl.
- 11) Re-install the filter bowl, making sure the bowl locks firmly into place.
- 12) Slowly open fully the manual inlet valve and manual filter outlet valve.
- 13) Turn on the feed air at the air compressor or air header.
- 14) Re-install the front cover of the enclosure.
- 15) Connect the oxygen generator to the power supply.
- 16) Set the ON/OFF switch on the control panel to *ON* to operate the oxygen generator.

7.6 Depressurizing the Oxygen Generator



The oxygen generator operates with pressurized air and oxygen. To perform maintenance on the unit safely, fully depressurize the oxygen generator components as described in the procedure in this section.

- 1) Shut down the oxygen generator and disconnect the power supply. (See Section 6.3, Shutdown.)
- 2) Remove the front cover of the enclosure. (See Section 7.3, Removing the Front Cover of the Enclosure.)
- 3) Fully close the manual inlet valve. (See Figure 7-1.)
- 4) Re-install the front cover of the enclosure.



To fully depressurize the oxygen generator components, make sure the manual filter outlet valve remains fully open.

- 5) Connect the oxygen generator to the power supply.
- 6) Set the ON/OFF switch to *ON* and set the AUTO/MAN switch to *MAN*.
- 7) Allow the unit to operate until gas no longer exhausts from the muffler and both the FEED AIR and CYCLE PRESSURE gauges indicate zero pressure.



If the pressure gauges do not decrease to zero, shut down the unit and call the AirSep Corporation Commercial Products Division.

- 8) If the unit is depressurized, power down the unit if required and proceed to perform the maintenance.

7.7 Adjusting the Feed Air Regulator

If the feed air regulator requires adjustment, perform the following procedure. If applicable, remove the front cover of the enclosure to gain access to the regulator. (See Section 7.3, Removing the Front Cover of the Enclosure.)



Use extreme caution when performing this procedure since it requires removal of the front cover of the enclosure while the unit receives electrical power.

- 1) Unlock the lock nut on the adjustment knob.
- 2) To increase feed air pressure, rotate the knob clockwise. To decrease feed air pressure, rotate the knob counterclockwise.



Make slight adjustments and allow the unit to run through at least one cycle before making another adjustment. If pressure readings remain incorrect after the cycle completes, continue making slight adjustments and cycling the unit until the pressure is within the manufacturer's specifications.

7.8 Adjusting the Pressure Switch

Although preset at the AirSep Corporation factory to the pressure switch minimum and maximum pressures specified in Appendix A of this instruction manual, the pressure switch may require adjustment if the pressure of the oxygen in the oxygen receiver registers outside the range specified in Appendix A. Follow the procedures in this section to adjust the pressure switch settings when required.



Use extreme caution when performing this procedure since it requires removal of the front cover of the enclosure while the unit receives electrical power.



Refer to Appendix D of this instruction manual for additional information on the pressure switch.

- 1) Set the ON/OFF switch on the oxygen generator control panel to ON.
- 2) Open the front cover of the enclosure and locate the pressure switch. (See Figure 7-1.)

Locate the two adjustment screws on top of the pressure switch. The adjustment screw closest to the rear of the cabinet controls the high pressure setting. The adjustment screw closest to the front of the cabinet controls the low pressure setting. Use a ¼-inch wrench or screwdriver to make adjustments.



The adjustment screw normally requires less than a ¼ turn.



Turn either the high or low adjustment screw ¼-turn clockwise to increase its pressure setting. Turn either screw counterclockwise to decrease its pressure setting.



To prevent damage to the pressure switch, do not force the adjustment screws past their stopping points.

- 3) Set the AUTO/MAN switch on the oxygen generator control panel to *AUTO*.

- 4) Close the oxygen outlet valve on the oxygen receiver. (This valve controls oxygen flow from the oxygen receiver to your application.)
- 5) Observe the AUTO/MAN switch. When the amber indicator light on the switch shuts off to indicate when the oxygen generator stops cycling, note the pressure on the OXYGEN RECEIVER PRESSURE gauge. If the oxygen generator continues to cycle and the amber indicator light remains illuminated when the oxygen receiver pressure exceeds the pressure switch maximum pressure of 380-415 kPa (55-60 psig), proceed to step 8. If the oxygen generator stops cycling at approximately the pressure switch maximum pressure, proceed to step 9. Otherwise, proceed to step 6.
- 6) Turn the high pressure adjustment screw ¼-turn clockwise to increase the pressure setting.
- 7) Repeat step 5.
- 8) Turn the high pressure adjustment screw ¼-turn counterclockwise to decrease the pressure setting.



If the oxygen generator stops cycling after five minutes, proceed to step 9. If the oxygen generator does not stop cycling after five minutes, repeat step 8.

- 9) Open the oxygen vent valve on the oxygen receiver.
- 10) Observe the AUTO/MAN switch on the oxygen generator control panel. When the amber indicator light on the switch illuminates to indicate when the oxygen generator starts to cycle, note the pressure on the OXYGEN RECEIVER PRESSURE gauge. If the oxygen generator does not start to cycle when the oxygen pressure in the oxygen receiver decreases below the pressure switch minimum pressure of 310 kPa (45 psig), proceed to step 13. If the oxygen generator starts to cycle while the oxygen pressure remains greater than the pressure switch minimum pressure, proceed to step 11. If the oxygen generator starts to cycle at approximately the pressure switch minimum pressure, the pressure switch is adjusted properly. Proceed to step 14.
- 11) Turn the low pressure adjustment screw ¼-turn counterclockwise to decrease the pressure setting.
- 12) Repeat step 10.
- 13) Slowly turn the low adjustment screw clockwise in ¼-turn increments until the oxygen generator starts to cycle and the amber indicator light on the AUTO/MAN switch illuminates.
- 14) Fully close the oxygen vent valve on the oxygen receiver.

- 15) Close the front cover of the enclosure and resume normal operation of the oxygen generator.

8.0 Troubleshooting

Use the following chart as a guide to troubleshoot the oxygen generator. For assistance in troubleshooting or repairing the unit, or to order replacement parts, contact the AirSep Commercial Products Service Department by telephone Monday through Friday between 7:30 a.m. and 4:30 p.m. Eastern Time. In the USA or Canada, call 1-800-320-0303. Outside the USA or Canada, call (716) 691-0202. Send fax inquiries anytime to (716) 691-1255. Address written inquiries to: AirSep Corporation, 260 Creekside Drive, Buffalo, NY 14228-2075 USA, Attention: Commercial Products Service Department.

Problem	Probable Cause	Solution
Oxygen generator does not cycle. Green light on ON/OFF switch does not illuminate.	No electrical power to control cabinet or blown fuse on unit.	Make sure unit is plugged into wall outlet and that wall outlet receives power.
	Blown fuse on unit.	Replace fuse in unit.
Oxygen generator operates. Green light on ON/OFF switch does not illuminate.	Light bulb on ON/OFF switch burned out.	Replace switch or replace the bulb in AS-160 – AS-1000.
	Loose or defective wire to switch.	Repair or replace wire.
Oxygen generator does not operate and green light on ON/OFF switch illuminates. AUTO/MAN switch set to MAN and amber light on AUTO/MAN switch does not illuminate.	ON/OFF switch set to OFF.	Set ON/OFF switch to ON.
	Defective ON/OFF switch.	Replace switch.
	Loose or defective power wire to circuit board.	Repair or replace wire.
	Defective circuit board.	Replace circuit board.
Oxygen generator cycles with AUTO/MAN switch set to MAN. Amber light on AUTO/MAN switch does not illuminate.	Low voltage.	Check power supply.
	Light bulb on AUTO/MAN switch burned out.	Replace switch or replace the bulb in AS-160 – AS-1000.
	Loose or defective wire to switch.	Repair or replace wire.
	Defective circuit board.	Replace circuit board.

Problem	Probable Cause	Solution
Oxygen generator does not operate and green light on ON/OFF switch illuminates. Amber light on AUTO/MAN switch does not illuminate and switch set to <i>AUTO</i> . Pressure of oxygen is less than 275 kPa (40 psig).	ON/OFF switch set to <i>OFF</i> .	Set ON/OFF switch to <i>ON</i> .
	Defective ON/OFF switch.	Replace switch.
	Loose or defective power wire to circuit board.	Repair or replace wire.
	Pressure switch improperly set.	Adjust pressure switch as described in Chapter 7.
	Defective pressure switch.	Replace pressure switch.
Oxygen generator operates continuously. Amber light on AUTO/MAN switch illuminates and switch set to <i>AUTO</i> . Pressure of oxygen exceeds 400 kPa (58 psig).	Defective circuit board.	Replace circuit board.
	Pressure switch improperly set.	Adjust pressure switch as described in Chapter 7.
	Defective pressure switch.	Replace pressure switch.
	Loose or defective power wire to pressure switch.	Repair or replace wire.
	Defective AUTO/MAN switch.	Replace switch.
Oxygen generator operates continuously. Pressure of oxygen at specified purity is less than 275 kPa (40 psig).	Defective circuit board.	Replace circuit board.
	Inadequate feed air pressure.	Make sure feed air valves remain fully open and lines are not obstructed.
	Inadequate cycle pressure.	Adjust or replace feed air regulator.
	Oxygen demand exceeds oxygen generator capacity.	Check oxygen usage or check unit and oxygen hoses and piping for leaks.

Problem	Probable Cause	Solution
Oxygen purity below specified purity (50–70%).	Low purity oxygen during initial start-up.	Start unit as described in Chapter 6.
	Unit shut down for extended period—no pressure in oxygen system.	Start unit as described in Chapter 6.
	Momentary power loss.	Vent low purity oxygen from system as described in Chapter 6.
	Inadequate feed air.	Check air lines for obstructions or adjust or replace feed air regulator.
	Valves not cycling properly.	See valve sequence in Appendix A.
	Improperly wired or defective circuit board.	Replace circuit board.
	Torn valve diaphragm.	Identify defective valve and rebuild valve.
	Solenoid valve not functioning properly. Check for the following causes:	
	Defective coil.	Replace coil.
	Loose or defective wire to valve.	Repair or replace wire.
	Defective circuit board. (No power output to valve.)	Replace circuit board.
	Valve remains energized and open.	Replace circuit board.
	Defective valve.	Rebuild valve.
	Worn internal parts on valve.	Rebuild valve.
Valve makes loud “chattering” noise.	Low voltage.	Check power supply.
	Low voltage circuit board output.	Replace circuit board.
	Dirty valve.	Clean or rebuild valve.
	Worn valve core.	Rebuild valve.
	Defective EMI filter.	Replace EMI filter.
Very low oxygen output (21–50%).	Leaking check valves.	Clean or replace check valves.
	Plugged muffler.	Replace muffler.
	Contaminated molecular sieve in adsorbers.	Replace molecular sieve.

Problem	Probable Cause	Solution
Oxygen generator outputs particulates (dusting).	Excess feed air pressure.	Make sure maximum feed air pressure does not exceed 1,035 kPa (150 psig).
	Feed air regulator set above 485 kPa (70 psig).	Adjust feed air regulator.
	Contaminated molecular sieve in adsorbers.	Contaminated molecular sieve in adsorbers.
	System not cycling properly.	Check and repair or replace faulty wiring and/or circuit board.
Feed air regulator leaks out bleed orifice.	Stuck feed air regulator main valve assembly.	Clean and lubricate main regulator valve assembly.
	Defective main valve assembly seat.	Rebuild or replace regulator.
Oxygen generator relief valves open.	Cycle pressure exceeds 485 kPa (70 psig) maximum.	Adjust feed air regulator.
	Stuck feed air regulator main valve assembly.	Rebuild or replace regulator.
	Frozen feed air regulator main valve assembly.	Make sure ambient temperature exceeds 4°C (40°F).
	Defective cycle pressure gauge.	Replace gauge and adjust feed air regulator.
	Defective relief valve.	Replace relief valve.
Filter drain valve remains open. (Valve not energized.)	Valve obstructed.	Clean or replace valve.
Filter drain valve remains energized.	MANUAL DRAIN valve button stuck.	Replace button.
	Defective circuit board.	Replace circuit board.
Filter drain valve does not energize.	Defective MANUAL DRAIN valve button.	Replace button.
	Loose or defective wire to valve.	Repair or replace wire.
	Defective valve coil.	Replace valve.
	Valve core stuck in closed position.	Replace valve.
	Defective circuit board. (No power output to valve.)	Replace circuit board.
Filter drain valve energizes with unit pressurized, but no air exhausts.	Drain valve obstructed or stuck in closed position.	Clean or replace valve.
	Drain tubing obstructed or pinched.	Clean or replace tubing.

A Appendix Technical Data

Specifications

Data in this section refer to standard AS-20 through AS-1000 model oxygen generators. The oxygen generators may use feed air at specifications outside those shown; however, use of such feed air may require modification of the oxygen generators at the AirSep Corporation factory to ensure the product oxygen meets the design specifications. Consult your sales representative to determine whether your oxygen generator requires modifications for your application.

AS-20

Oxygen output:	20 SCF/hr at 0–45 psig* 0.53 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C (-100°F)
Dimensions:	13 x 11 x 57 in. (W x D x H) 33 x 28 x 145 cm (W x D x H)
Approximate weight:	134 lb 61 kg

Feed Air Requirements

Flow:	5.3 SCF/min* (0.14 Nm ³ /min**)
Pressure:	90 psig (620 kPa) minimum
Temperature:	50°C (122°F) maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-45

Oxygen output:	45 SCF/hr at 0–45 psig* 1.18 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	17 x 15 x 58 in. (W x D x H) 43 x 38 x 147 cm (W x D x H)
Approximate weight:	238 lb 108 kg
Feed Air Requirements	
Flow:	13.3 SCF/min* 0.35 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-80

Oxygen output:	80 SCF/hr at 0–45 psig* 2.10 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	20 x 16 x 60 in. (W x D x H) 51 x 41 x 152 cm (W x D x H)
Approximate weight:	338 lb 153 kg
Feed Air Requirements	
Flow:	20 SCF/min* 0.53 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-160

Oxygen output:	160 SCF/hr at 0–45 psig* 4.21 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	27 x 26 x 66 in. (W x D x H) 69 x 66 x 168 cm (W x D x H)
Approximate weight:	722 lb 328 kg
Feed Air Requirements	
Flow:	31.0 SCF/min* 0.81 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-250

Oxygen output:	250 SCF/hr at 0–45 psig* 6.57 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	31 x 28 x 76 in. (W x D x H) 79 x 71 x 193 cm (W x D x H)
Approximate weight:	1,034 lb 469 kg
Feed Air Requirements	
Flow:	46.7 SCF/min* 01.23 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-450

Oxygen output:	450 SCF/hr at 0–45 psig* 11.83 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	42 x 34 x 79 in. (W x D x H) 107 x 86 x 201 cm (W x D x H)
Approximate weight:	1972 lb 894 kg
Feed Air Requirements	
Flow:	83.3 SCF/min* 2.19 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-750

Oxygen output:	750 SCF/hr at 0–45 psig* 19.72 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	58 x 40 x 100 in. (W x D x H) 147 x 102 x 254 cm (W x D x H)
Approximate weight:	2530 lb 1148 kg
Feed Air Requirements	
Flow:	130 SCF/min* 3.80 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

AS-1000

Oxygen output:	1000 SCF/hr at 0–45 psig* 28.32 Nm ³ /hr at 0–310 kPa**
Oxygen purity:	90% minimum
Oxygen dew point:	-73°C -100°F
Dimensions:	62 x 40 x 106 in. (W x D x H) 158 x 102 x 270 cm (W x D x H)
Approximate weight:	3500 lb 1588 kg
Feed Air Requirements	
Flow:	160 SCF/min* 4.53 Nm ³ /min**
Pressure:	90 psig minimum 620 kPa minimum
Temperature:	50°C maximum 122°F maximum
Power requirements:	120 VAC, 50 Hz, Single Phase, 60 W, 0.5 Amp 120 VAC, 60 Hz, Single Phase, 60 W, 0.5 Amp 240 VAC, 50 Hz, Single Phase, 60 W, 0.25 Amp 240 VAC, 60 Hz, Single Phase, 60 W, 0.25 Amp

*SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F.

**Nm³ (normal cubic meters) gas measured at 1 atmosphere and 0°C.

Operating Data

Drawings

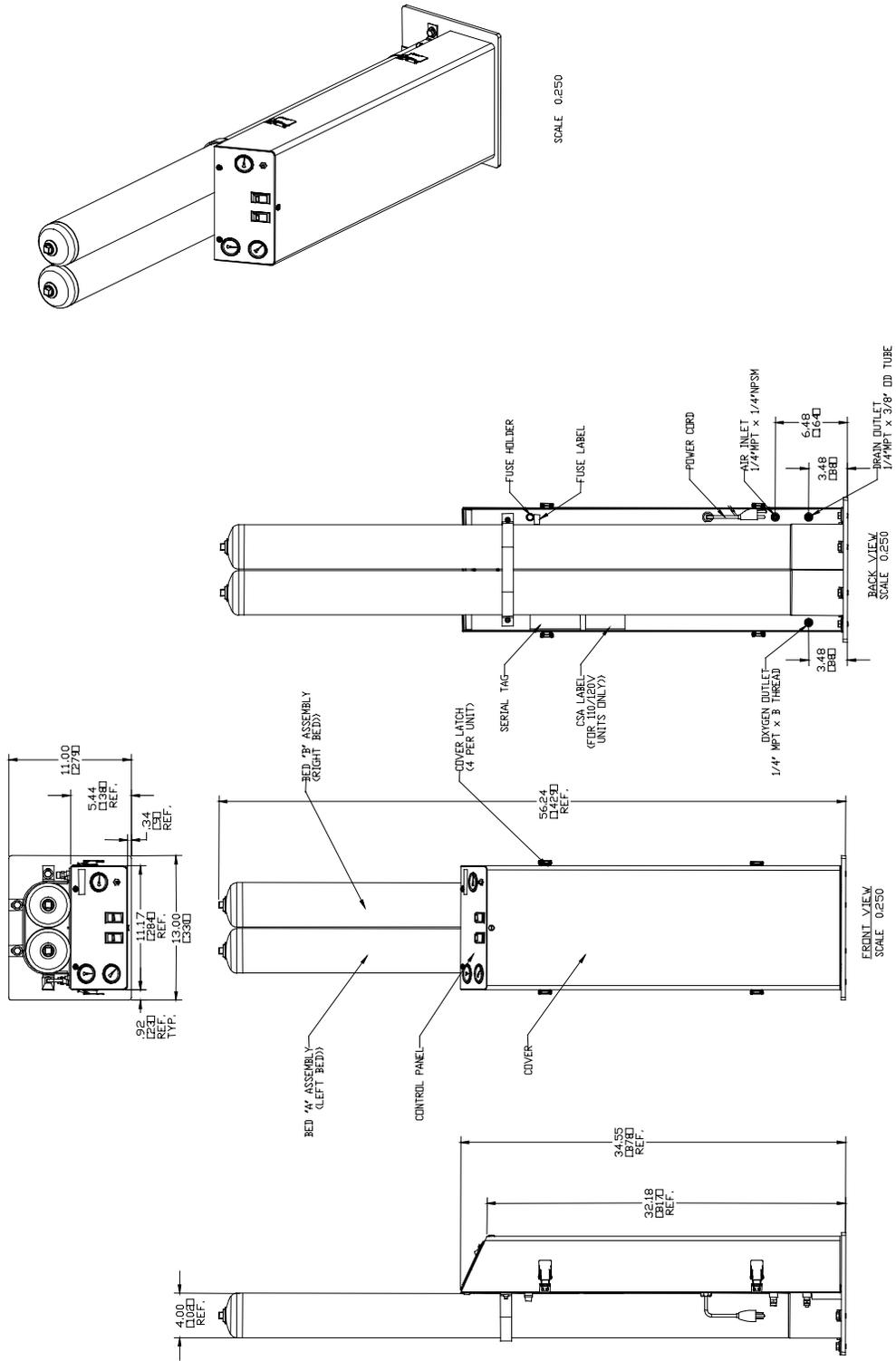


Figure 2 General Arrangement Drawing – AS-20

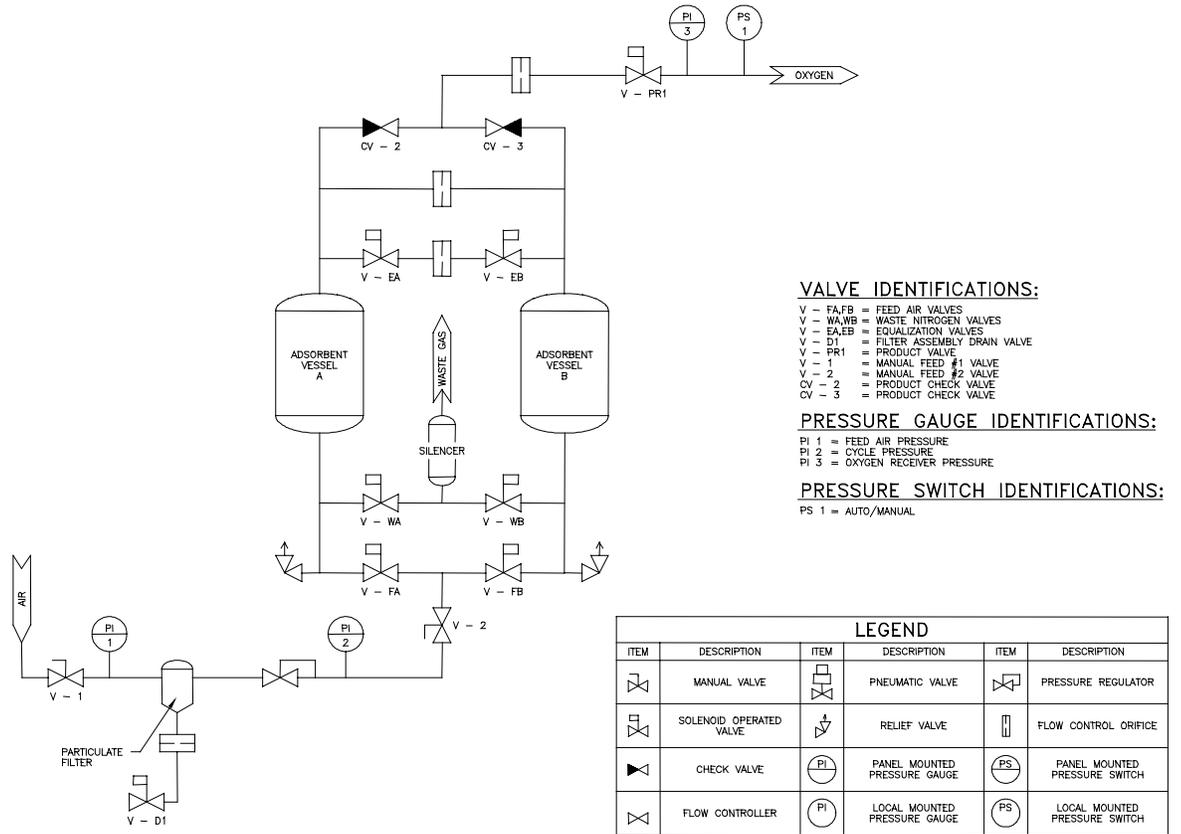


Figure 3 Flow Schematic – AS-20

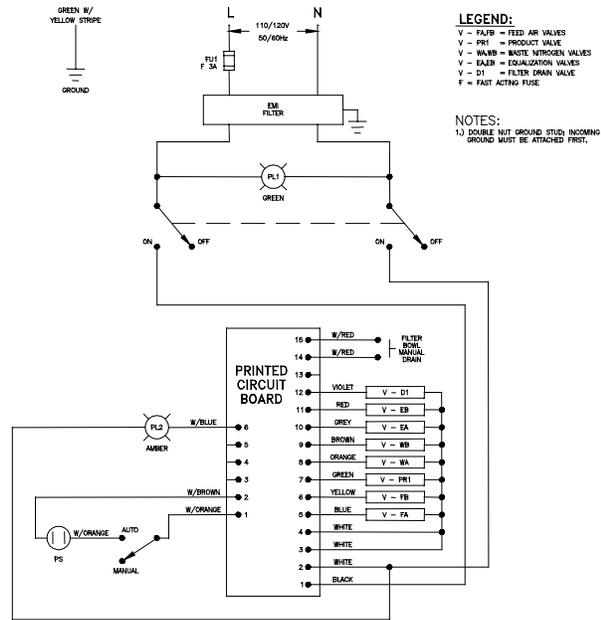


Figure 4 Electrical Schematic – AS-20 (120V)

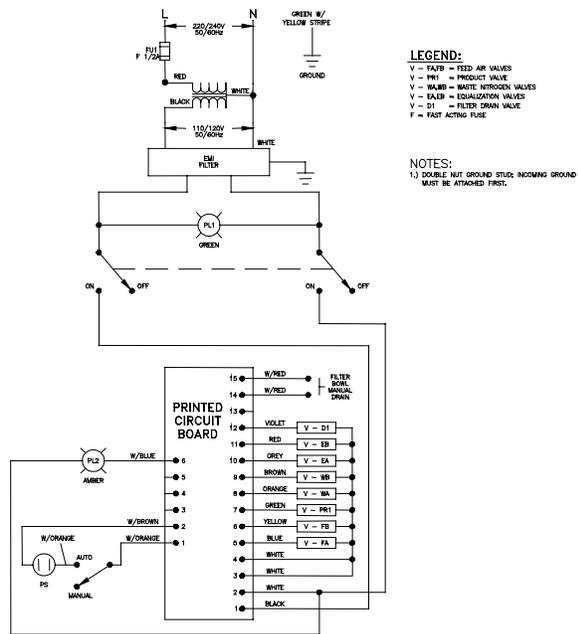


Figure 5 Electrical Schematic – AS-20 (220V)

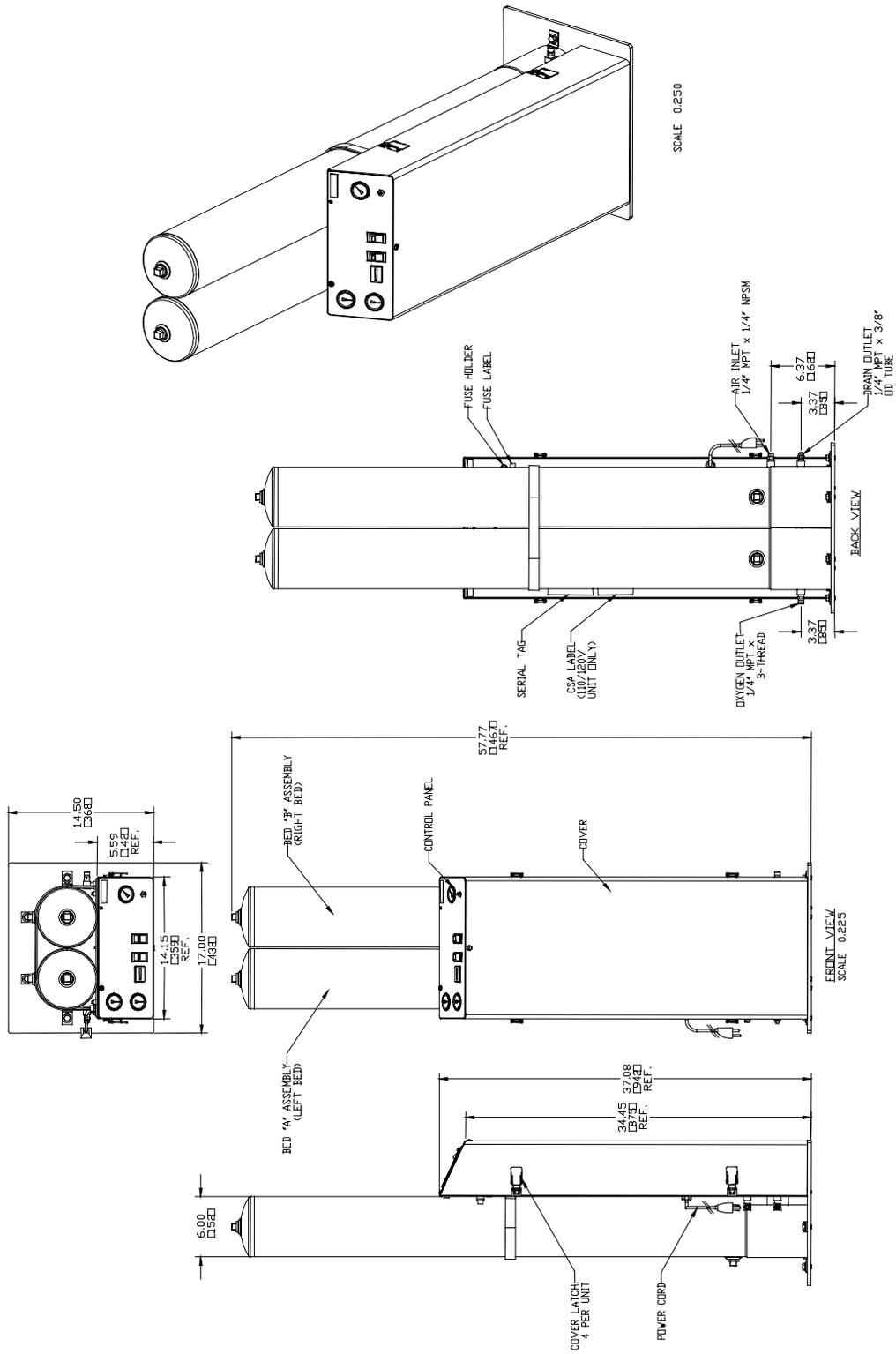


Figure 6 General Arrangement Drawing – AS-45

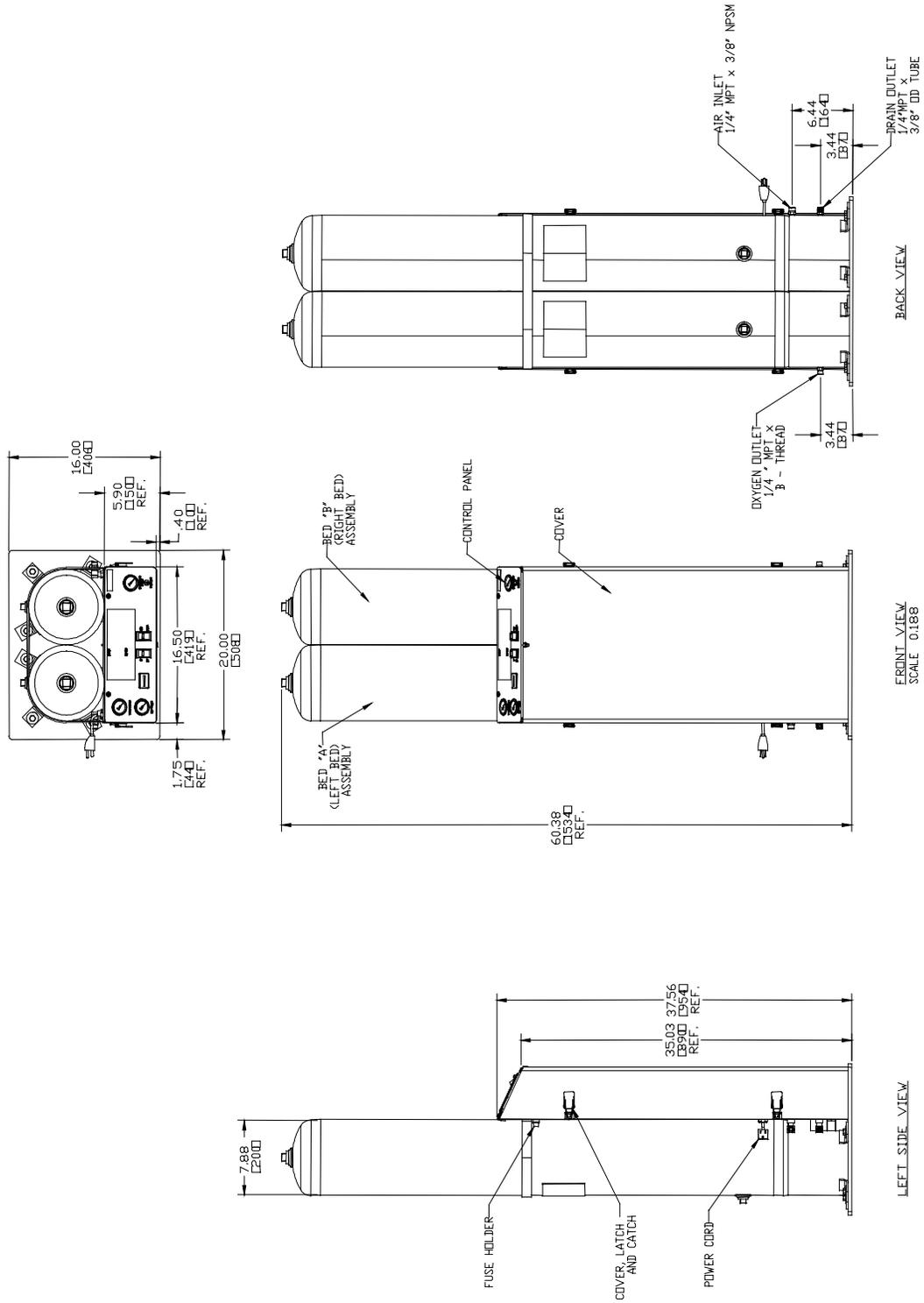


Figure 7 General Arrangement Drawing – AS-80

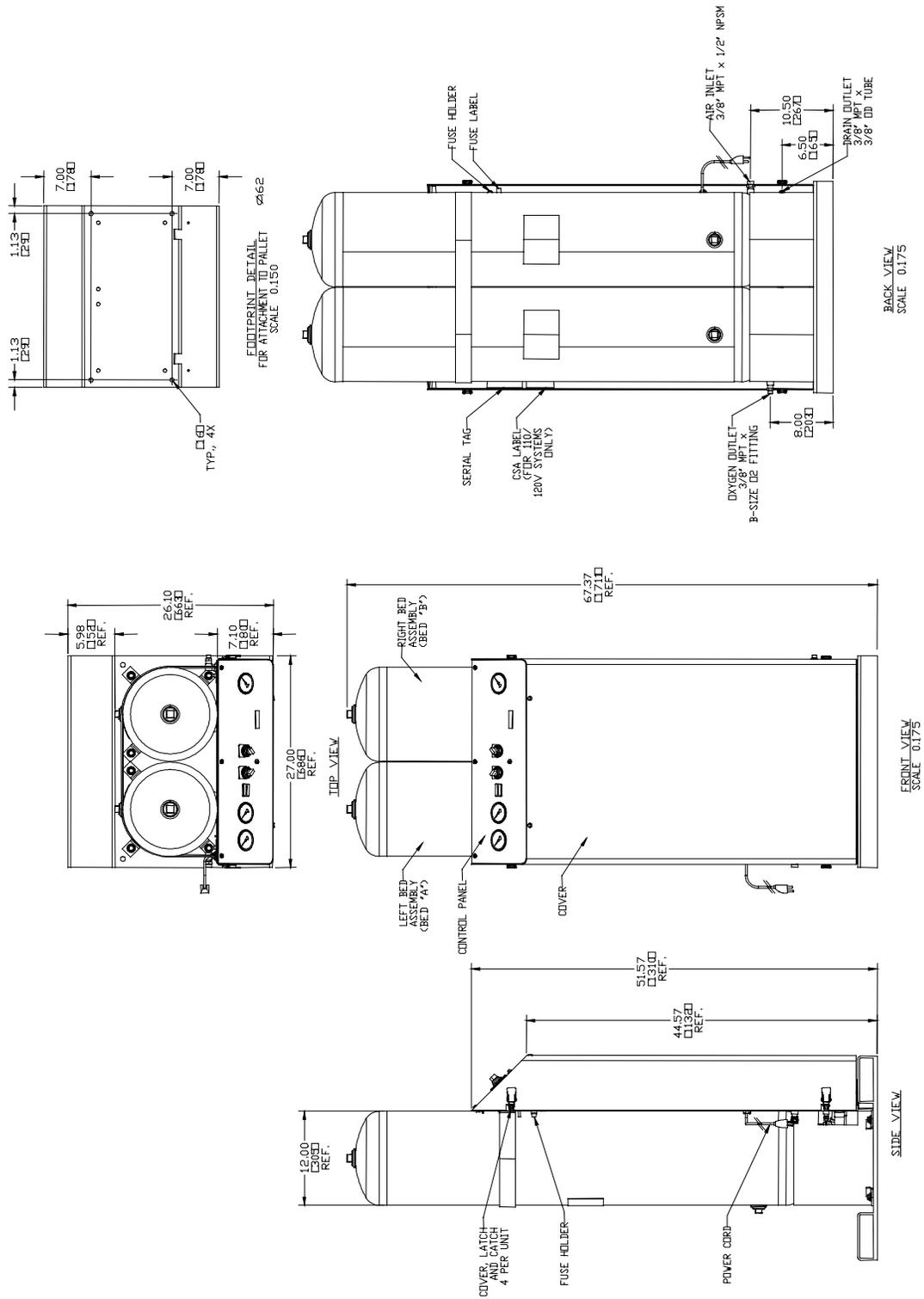


Figure 8 General Arrangement Drawing – AS-160

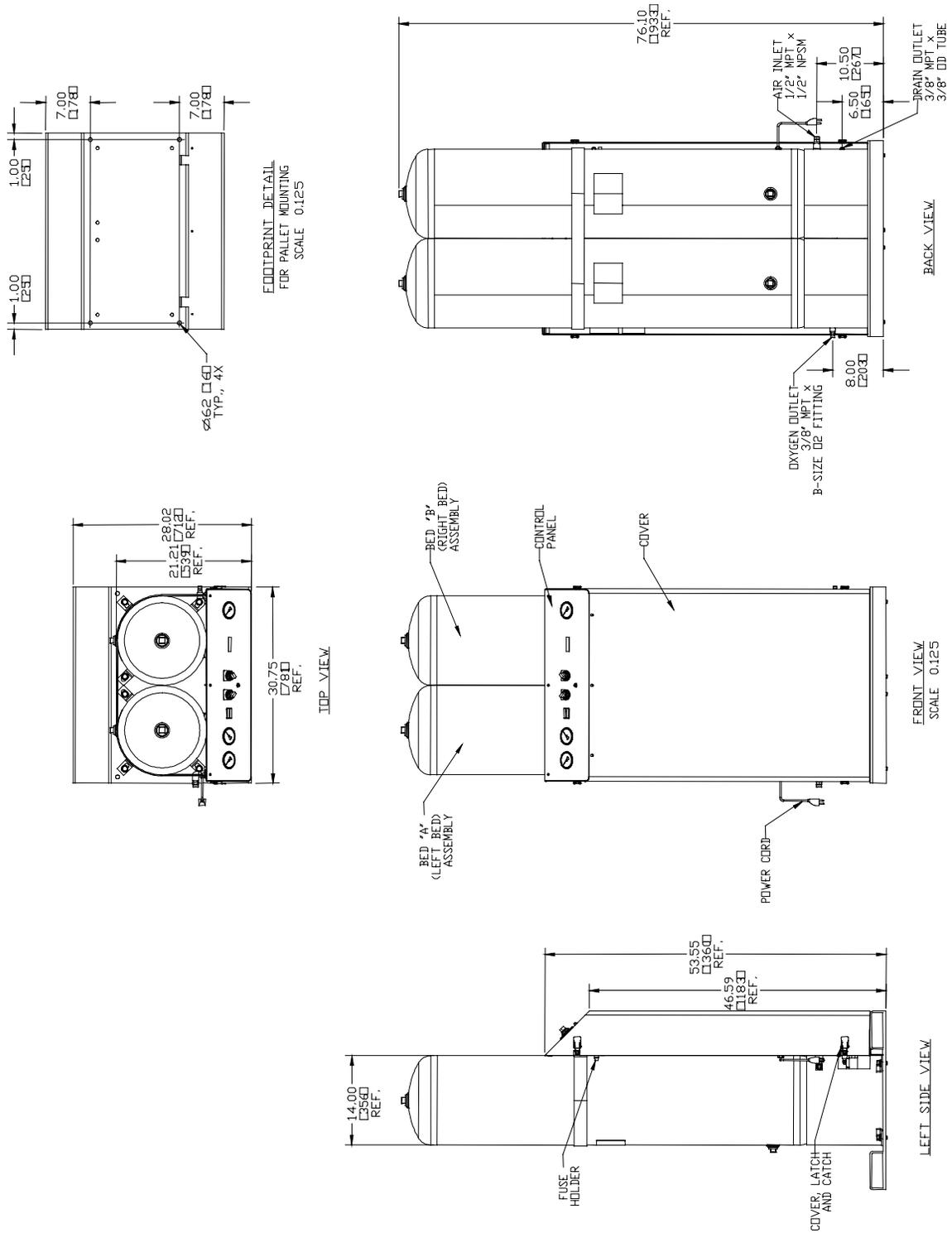


Figure 9 General Arrangement Drawing – AS-250

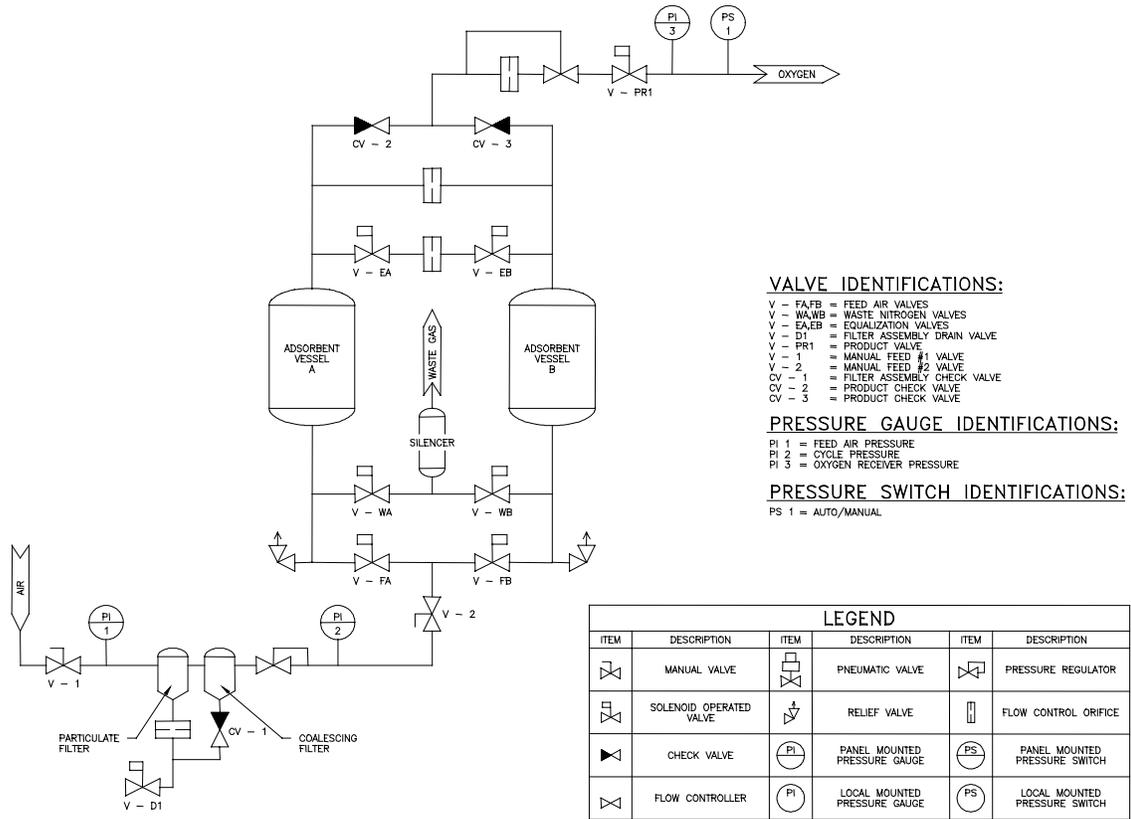


Figure 10 Flow Diagram – AS-45 through AS-250

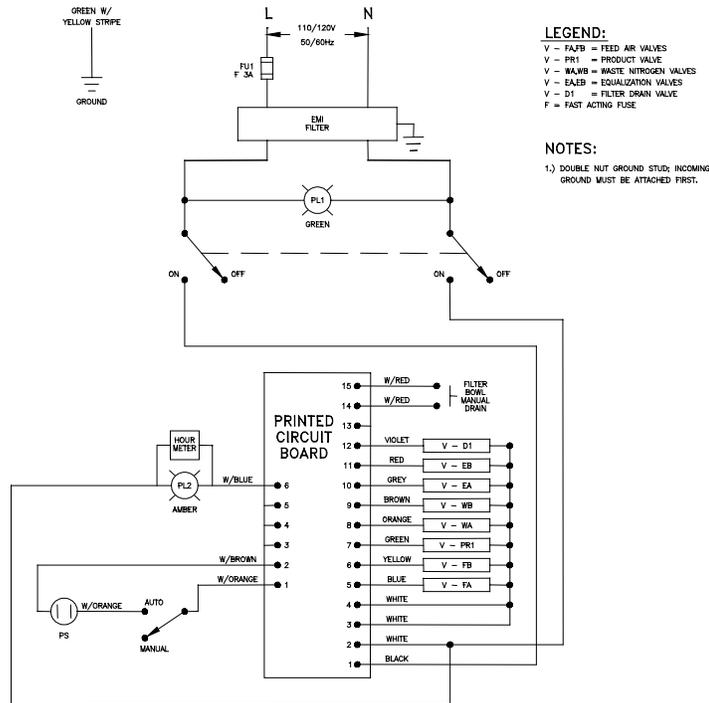


Figure 11 Electrical Diagram – AS-45 through AS-250 (120V)

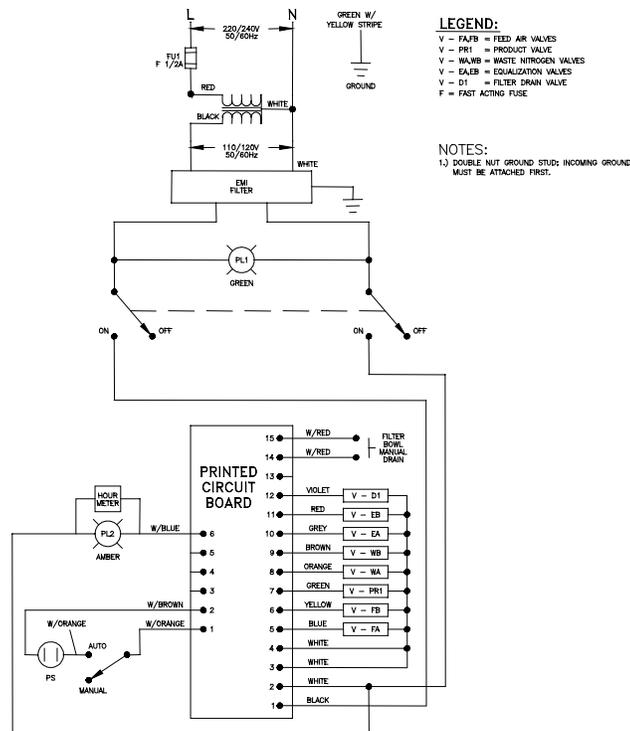


Figure 12 Electrical Diagram – AS-45 through AS-250 (220V)

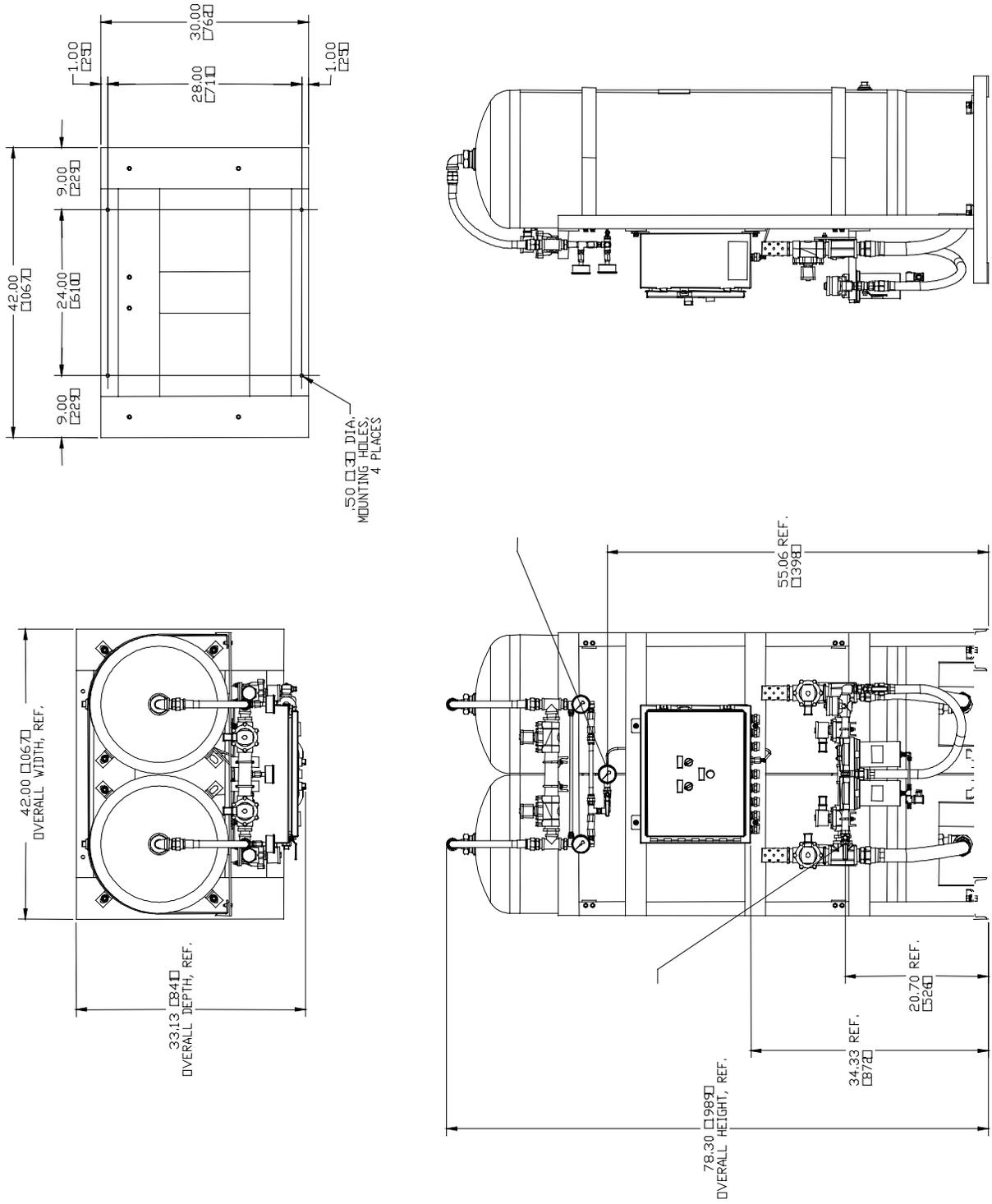


Figure 13 General Arrangement Drawing – AS-450

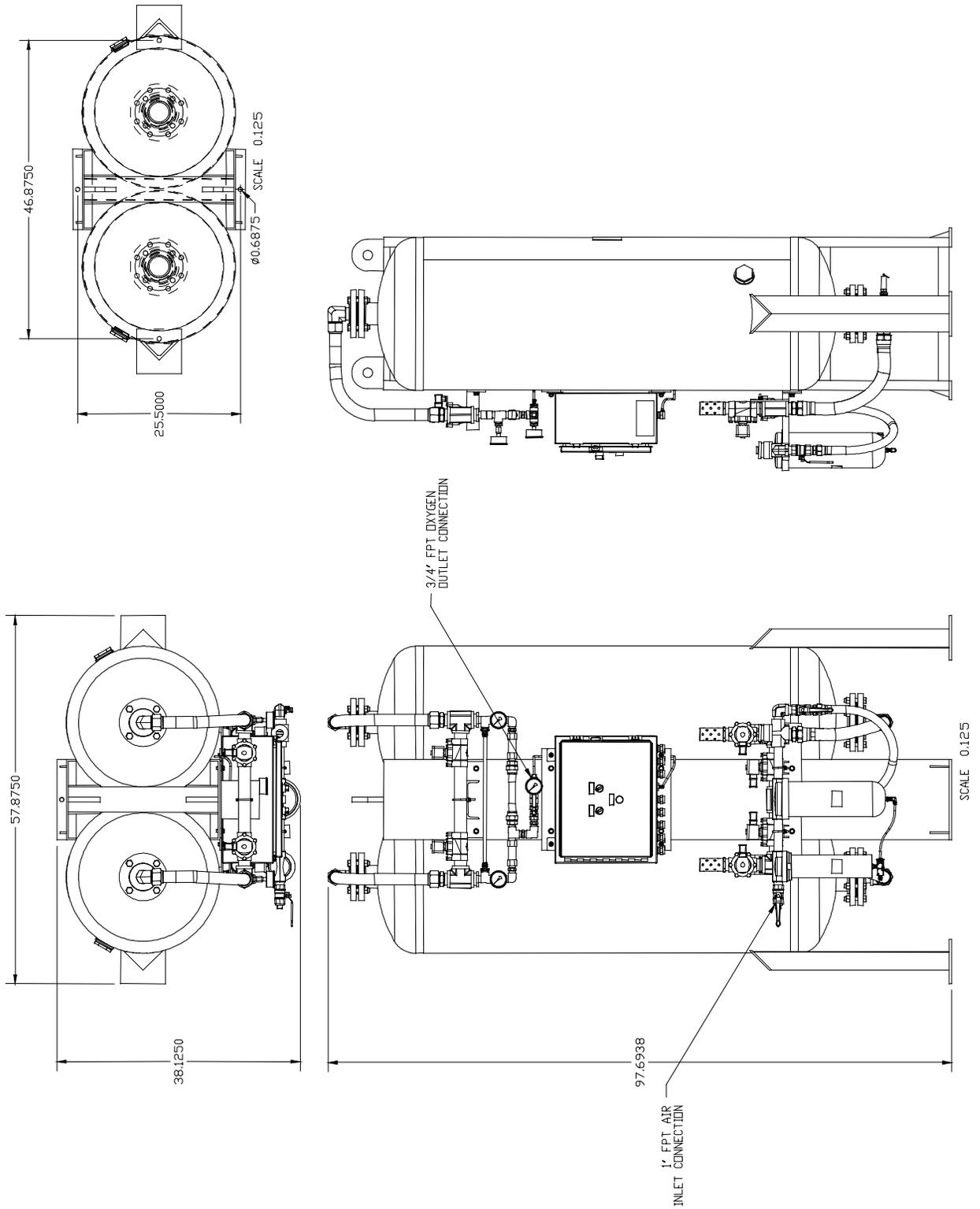
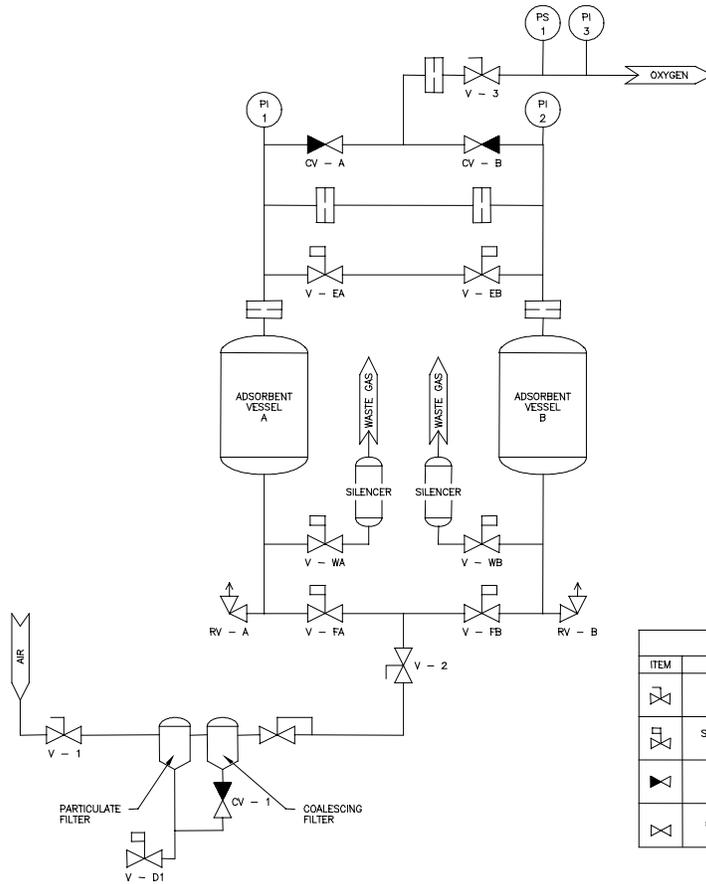


Figure 14 General Arrangement Drawing – AS-750



VALVE IDENTIFICATIONS:

- V - FA,FB = FEED AIR VALVES
- V - WA,WB = WASTE NITROGEN VALVES
- V - EA,EB = EQUALIZATION VALVES
- V - D1 = FILTER ASSEMBLY DRAIN VALVE
- V - 1 = MANUAL FEED #1 VALVE
- V - 2 = MANUAL FEED #2 VALVE
- V - 3 = MANUAL PRODUCT VALVE
- CV - 1 = FILTER ASSEMBLY CHECK VALVE
- CV - A = PRODUCT CHECK VALVE
- CV - B = PRODUCT CHECK VALVE
- RV - A = RELIEF VALVE
- RV - B = RELIEF VALVE

PRESSURE GAUGE IDENTIFICATIONS:

- PI 1 = ADSORBENT A PRESSURE
- PI 2 = ADSORBENT B PRESSURE
- PI 3 = PRODUCT OXYGEN PRESSURE

PRESSURE SWITCH IDENTIFICATIONS:

- PS 1 = AUTO/MANUAL

LEGEND

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
	MANUAL VALVE		PNEUMATIC VALVE		PRESSURE REGULATOR
	SOLENOID OPERATED VALVE		RELIEF VALVE		FLOW CONTROL ORIFICE
	CHECK VALVE		PANEL MOUNTED PRESSURE GAUGE		PANEL MOUNTED PRESSURE SWITCH
	FLOW CONTROLLER		LOCAL MOUNTED PRESSURE GAUGE		LOCAL MOUNTED PRESSURE SWITCH

Figure 15 Flow Diagram – AS-450 through AS-750

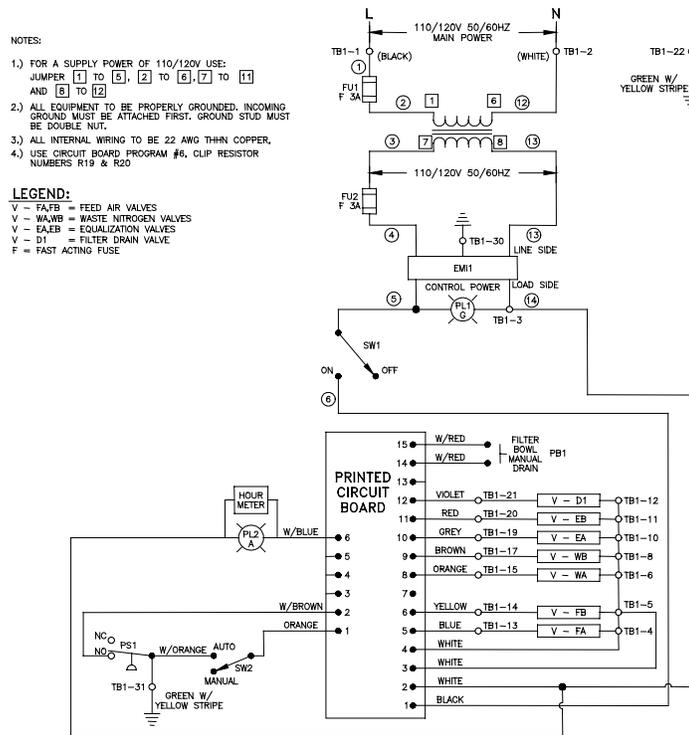


Figure 16 Electrical Schematic – AS-450 through AS-750 (120V)

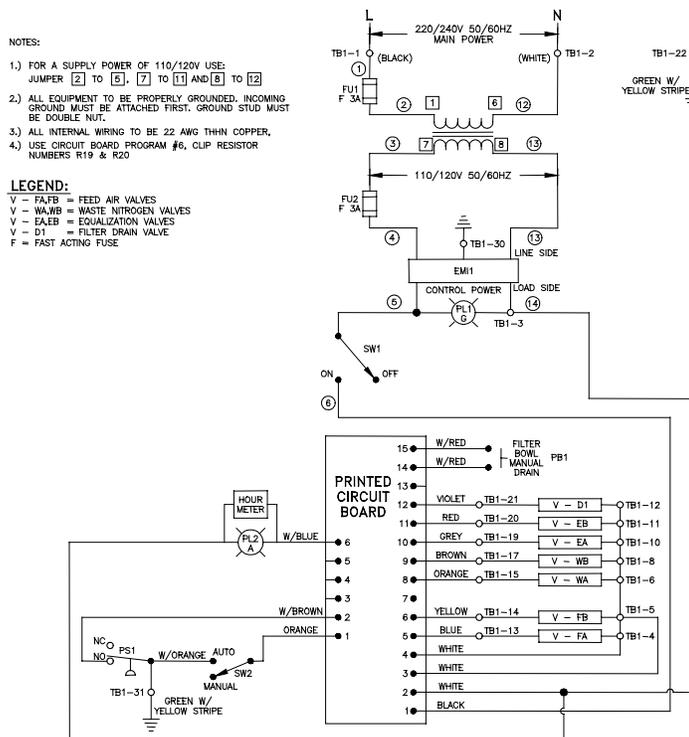


Figure 17 Electrical Schematic – AS-450 through AS-750 (220V)

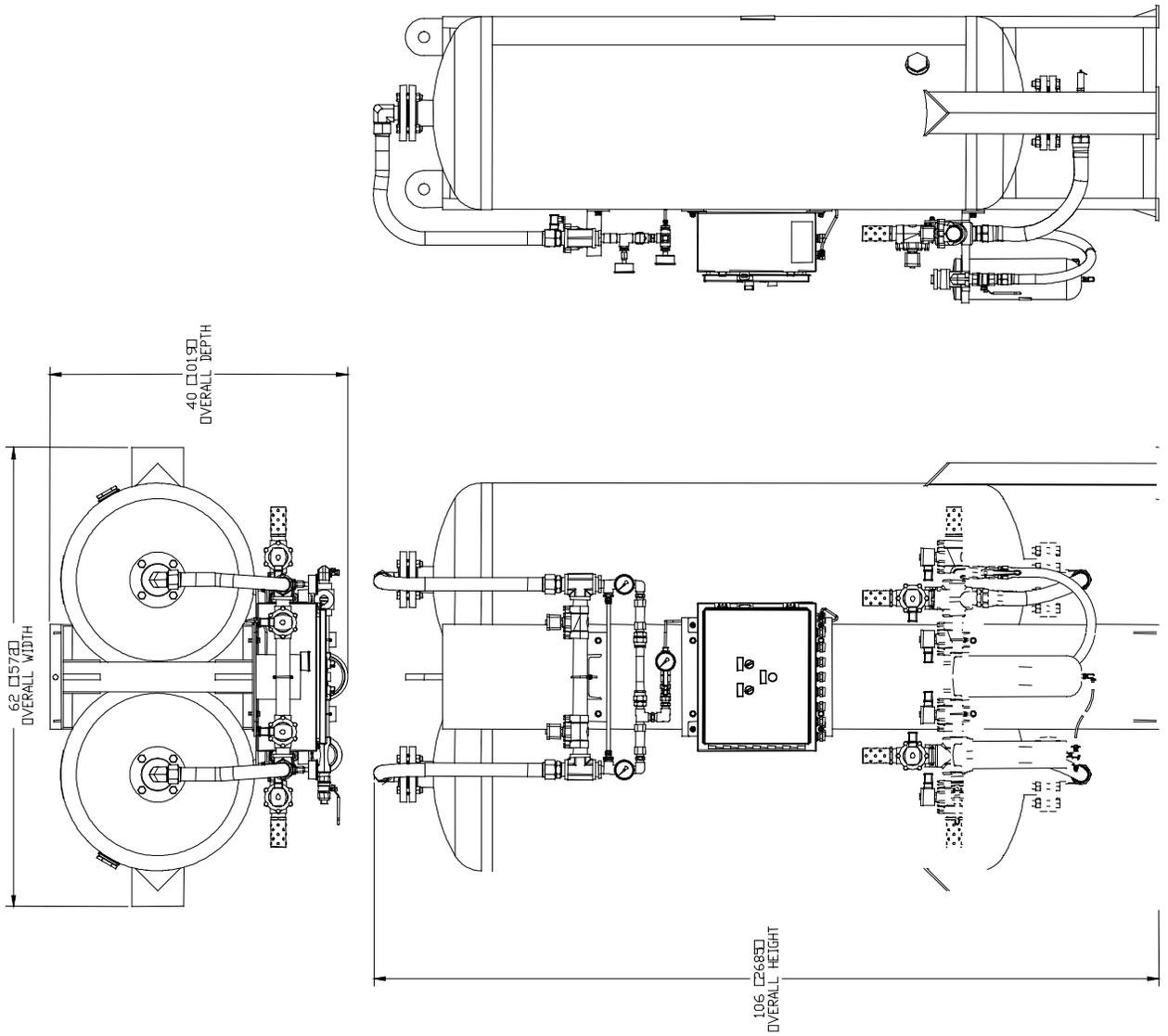


Figure 18 General Arrangement Drawing- AS-1000

NOTES:

- FOR A SUPPLY POWER OF 110/120V USE:
JUMPER [1] TO [5], [2] TO [6] [7] TO [11].
& [8] TO [12]
- ALL EQUIPMENT TO BE PROPERLY GROUNDED. INCOMING GROUND MUST BE ATTACHED FIRST TO GROUND STUD. STUD MUST BE DOUBLE NUT.
- ALL INTERNAL WIRING TO BE 22 AWG THIN COPPER.

LEGEND:

- V = FA/FB = FEED AIR VALVES
- V = WA/WB = WASTE NITROGEN VALVES
- V = EA/EB = EQUALIZATION VALVES
- V = DI = FILTER DRAIN VALVE
- F = FAST ACTING FUSE
- X = TRANSFORMER TERMINAL NUMBER
- ⊙ = WIRE NUMBER
- > = DENOTES COMPONENT-TO-COMPONENT WIRING

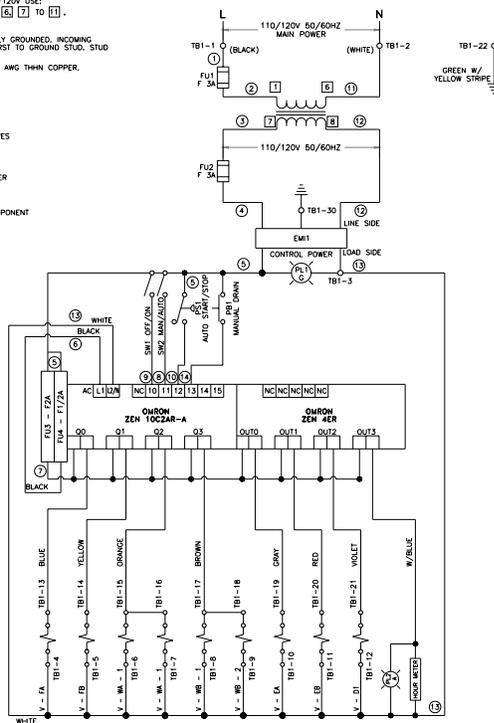
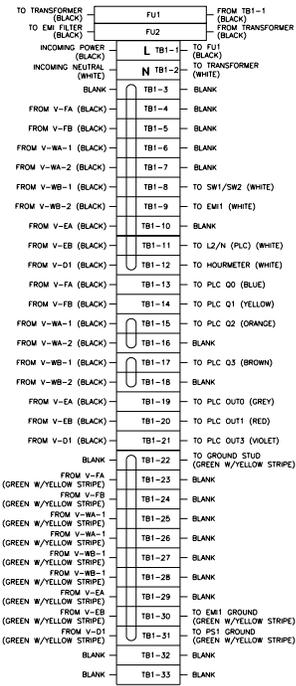


Figure 19 Electrical Schematic – AS-1000 (120V)



TERMINAL BLOCK CONNECTIONS

NOTES:

- FOR A SUPPLY POWER OF 220/240V USE:
JUMPER [2] TO [5], [7] TO [11] AND [8] TO [12]
- ALL EQUIPMENT TO BE PROPERLY GROUNDED. INCOMING GROUND MUST BE ATTACHED FIRST TO GROUND STUD. STUD MUST BE DOUBLE NUT.
- ALL INTERNAL WIRING TO BE 22 AWG THIN COPPER.

LEGEND:

- V = FA/FB = FEED AIR VALVES
- V = WA/WB = WASTE NITROGEN VALVES
- V = EA/EB = EQUALIZATION VALVES
- V = DI = FILTER DRAIN VALVE
- F = FAST ACTING FUSE
- X = TRANSFORMER TERMINAL NUMBER
- ⊙ = WIRE NUMBER
- > = DENOTES COMPONENT-TO-COMPONENT WIRING

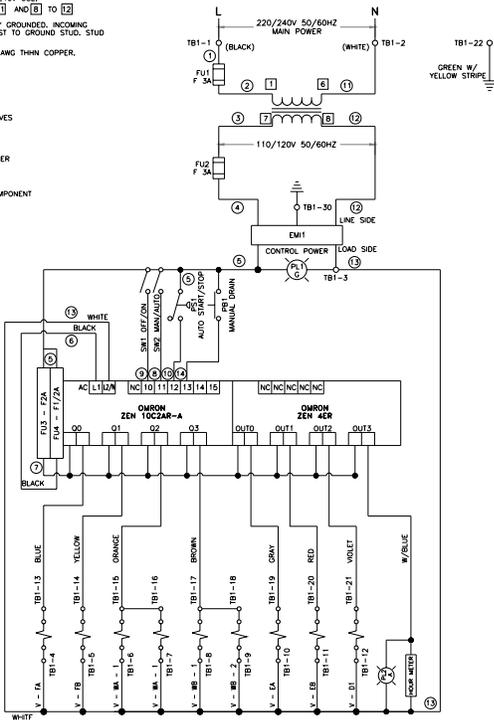
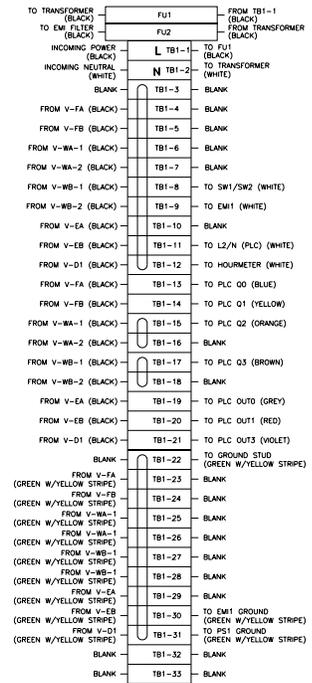
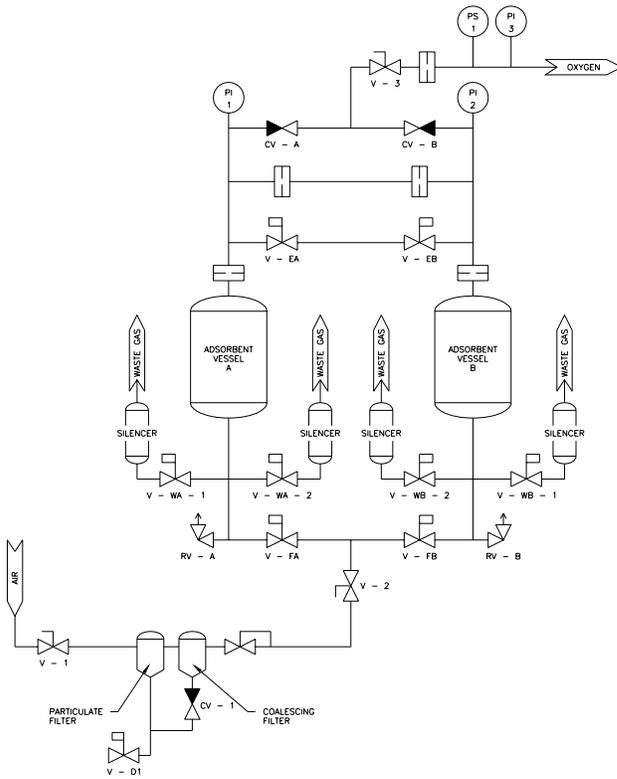


Figure 20 Electrical Schematic – AS-1000 (220V)



TERMINAL BLOCK CONNECTIONS



VALVE IDENTIFICATIONS:

- V - FA,FB = FEED AIR VALVES
- V - WA,WB = WASTE NITROGEN VALVES
- V - EA,EB = EQUALIZATION VALVES
- V - D1 = FILTER ASSEMBLY DRAIN VALVE
- V - 1 = MANUAL FEED #1 VALVE
- V - 2 = MANUAL FEED #2 VALVE
- V - 3 = MANUAL PRODUCT VALVE
- CV - 1 = FILTER ASSEMBLY CHECK VALVE
- CV - A = PRODUCT CHECK VALVE
- CV - B = PRODUCT CHECK VALVE
- RV - A = RELIEF VALVE
- RV - B = RELIEF VALVE

PRESSURE GAUGE IDENTIFICATIONS:

- PI 1 = ADSORBENT A PRESSURE
- PI 2 = ADSORBENT B PRESSURE
- PI 3 = PRODUCT OXYGEN PRESSURE

PRESSURE SWITCH IDENTIFICATIONS:

- PS 1 = AUTO/MANUAL

LEGEND

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
	MANUAL VALVE		PNEUMATIC VALVE		PRESSURE REGULATOR
	SOLENOID OPERATED VALVE		RELIEF VALVE		FLOW CONTROL ORIFICE
	CHECK VALVE		PANEL MOUNTED PRESSURE GAUGE		PANEL MOUNTED PRESSURE SWITCH
	FLOW CONTROLLER		LOCAL MOUNTED PRESSURE GAUGE		LOCAL MOUNTED PRESSURE SWITCH

Figure 21 Flow Diagram – AS-1000

B Appendix Warranty>Returns

Product Warranty

AirSep Corporation (“AirSep”) warrants to the party purchasing from AirSep (the “original purchaser”) the PSA oxygen generator to be free from defect in parts and workmanship for one year from the date of start-up, not to exceed eighteen (18) months from the date of shipment to the original purchaser, under normal use, maintenance and operation*. TO THE EXTENT PERMITTED UNDER APPLICABLE LAW, ALL WARRANTIES WITH RESPECT TO SUCH UNIT SHALL ONLY EXTEND TO AND BE FOR THE BENEFIT OF THE ORIGINAL PURCHASER AND SHALL NOT BE ASSIGNABLE TO, EXTEND TO OR BE FOR THE BENEFIT OF ANY OTHER PARTY. AirSep’s obligations under this warranty are limited, at AirSep’s option, to the repair, replacement or refunding the purchase price of any such unit of equipment (or part thereof) found by AirSep to be defective in parts or workmanship; provided, however, that AirSep shall have no obligation hereunder with respect to a defective part unless it receives written notice of such defect prior to the expiration of the applicable warranty period as referenced above.

Each unit of equipment for which a warranty claim is asserted shall, at the request of AirSep, be returned on a prepaid basis with proof of purchase date to the AirSep factory specified by AirSep at the expense of the original purchaser. Replacement parts shall be warranted as stated above for the unexpired portion of the original warranty. This warranty does not extend to any unit or part subjected to misuse, accident, improper maintenance or application, or which has been repaired or altered outside of the AirSep factory without the express prior written authorization of AirSep.

Notwithstanding anything to the contrary contained herein, during the applicable warranty period, as specified above, AirSep will pay the cost of return freight charges to the original purchaser, provided an authorized AirSep representative approved return of the unit or parts, for any equipment found by AirSep to be defective. For warranty repairs performed during the first 90 days from the date of invoice, AirSep will pay freight both ways. After the applicable parts warranty period has expired, the original purchaser is responsible for freight both ways.

* Please refer to the appropriate product documentation for applicable installation and operating requirements.

Limits of Liability

THE FOREGOING WARRANTY IS THE ONLY WARRANTY MADE BY AIRSEP WITH RESPECT TO THE EQUIPMENT (OR ANY PART THEREOF) AND IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. IT IS EXPRESSLY UNDERSTOOD THAT THE SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECT IN PARTS OR WORKMANSHIP IS LIMITED TO ENFORCEMENT OF AIRSEP'S OBLIGATIONS AS SET FORTH ABOVE, AND AIRSEP SHALL NOT BE LIABLE TO ORIGINAL PURCHASER OR ANY OTHER PARTY FOR LOSS OF USE OF THE EQUIPMENT, LOST PROFITS OR FOR ANY OTHER SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (EVEN IF AIRSEP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES).



AirSep oxygen generators are sold for use in industrial applications only. Contact AirSep Corporation or an authorized AirSep Corporation representative before you use this unit for any medical application.

Returning the Oxygen Generator or a Component for Service

If the oxygen generator or a defective part requires service, contact your distributor. If instructed by your distributor to contact AirSep Corporation, follow the procedure below to return the oxygen generator or a component for service or credit.

- 1) Obtain a Return Goods Authorization (RGA) number from the AirSep Commercial Products Service Department. (Refer to Chapter 8, Troubleshooting for information about contacting AirSep Corporation.) Before you call for service assistance, have the following information readily available:
 - Oxygen Generator Model
 - Serial Number
 - Hours of Use
 - Invoice Date



AirSep Corporation issues no credit for any warranted item until you present the model number, serial number, and invoice date of the oxygen generator, and defective part is returned to AirSep Corporation.

- 2) Write the RGA number clearly on the outside of the shipping container.



AirSep Corporation accepts no item(s) for service or credit unless prior written authorization was issued by AirSep Corporation.

- 3) Return item(s) in their original packaging material. Pack merchandise for a safe return. AirSep Corporation assumes no responsibility for damage that occurs in transit. Any damage to the oxygen generator or a component because of failure to follow this procedure is the sole responsibility of the customer.



Return item(s) on a freight prepaid basis only.

C Appendix Parts List

Use the following lists to order parts for the oxygen generator. To order, please contact your distributor. If instructed by your distributor to contact AirSep Corporation, contact the AirSep Commercial Products Service Department as described in Chapter 8, Troubleshooting. If the list does not contain the part you require, please provide a precise description of the part when you call.

AS-20 Parts

Model AS-20 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI180-1
Microalescer Element	1	FI019-1
16,000 Hour Kit/2 Year		KI181-1
Microalescer Element	2	FI019-1
1/4" Feed Valve Rebuild Kit	2	VA089-1
1/4" Waste Valve Rebuild Kit	2	VA089-1
1/4" Equalization Valve Rebuild Kit	2	VA088-1
1/8" Product Valve	1	VA009-1
1/8" Drain Valve	1	VA009-2
40,000 Hour Kit/5 Year		KI182-1
Microalescer Element	5	FI019-1
1/4" Feed Valve Rebuild Kit	4	VA089-1
1/4" Waste Valve Rebuild Kit	4	VA089-1
1/4" Equalization Valve Rebuild Kit	4	VA088-1
1/8" Product Valve	2	VA009-1
1/8" Drain Valve	2	VA009-2
Emergency Kit		KI183-1
Microalescer Element	1	FI019-1
1/4" Feed Valve Rebuild Kit	1	VA089-1
1/4" Waste Valve Rebuild Kit	1	VA089-1
1/4" Equalization Valve Rebuild Kit	1	VA088-1
1/8" Product Valve	1	VA009-1
1/8" Drain Valve	1	VA009-2
PC Board	1	CB039-1
3 Amp Fuse	4	FU004-1
Check Valve	1	VA141-2
1/4" Equalization, Feed, Waste Valve Coil	1	VA110-1

AS-45 Parts

Model AS-45 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI184-1
Prefilter Element 1/4000 hrs	2	FI029-1
Microalescer Element 1/8000 hrs	1	FI020-1
16,000 Hour Kit/2 Year		KI185-1
Prefilter Element	4	FI029-1
Microalescer Element	2	FI020-1
1/4" Feed Valve Rebuild Kit	2	VA089-1
3/8" Waste Valve Rebuild Kit	2	VA096-1
3/8" Equalization Valve Rebuild Kit	2	VA095-1
1/8" Product Valve	1	VA009-1
1/8" Drain Valve	1	VA009-2
40,000 Hour Kit/5 Year		KI186-1
Prefilter Element	10	FI029-1
Microalescer Element	5	FI020-1
1/4" Feed Valve Rebuild Kit	4	VA089-1
3/8" Waste Valve Rebuild Kit	4	VA096-1
3/8" Equalization Valve Rebuild Kit	4	VA095-1
1/8" Product Valve	2	VA009-1
1/8" Drain Valve	2	VA009-2
Emergency Kit		KI187-1
Prefilter Element	1	FI029-1
Microalescer Element	1	FI020-1
1/4" Feed Valve Rebuild Kit	1	VA089-1
3/8" Waste Valve Rebuild Kit	1	VA096-1
3/8" Equalization Valve Rebuild Kit	1	VA095-1
1/8" Product Valve	1	VA009-1
1/8" Drain Valve	1	VA009-2
PC Board	1	CB039-2
3 Amp Fuse	4	FU004-1
Check Valve	2	VA141-2
1/4" Feed Valve Coil	1	VA110-1
3/8" Waste,Equalization Valve Coil	1	VA112-1

AS-80 Parts

Model AS-80 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI184-1
Prefilter Element 1/4000 hrs	2	FI029-1
Microalescer Element 1/8000 hrs	1	FI020-1
16,000 Hour Kit/2 Year		KI188-1
Prefilter Element	4	FI029-1
Microalescer Element	2	FI020-1
3/8" Feed Valve Rebuild Kit	2	VA096-1
3/8" Waste Valve Rebuild Kit	2	VA096-1
3/8" Equalization Valve Rebuild Kit	2	VA095-1
1/4" Product Valve Rebuild Kit	1	VA088-1
1/8" Drain Valve	1	VA009-2
40,000 Hour Kit/5 Year		KI189-1
Prefilter Element	10	FI029-1
Microalescer Element	5	FI020-1
3/8" Feed Valve Rebuild Kit	4	VA096-1
3/8" Waste Valve Rebuild Kit	4	VA096-1
3/8" Equalization Valve Rebuild Kit	4	VA095-1
1/4" Product Valve Rebuild Kit	2	VA088-1
1/8" Drain Valve	2	VA009-2
Emergency Kit		KI190-1
Prefilter Element	1	FI029-1
Microalescer Element	1	FI020-1
3/8" Feed Valve Rebuild Kit	1	VA096-1
3/8" Waste Valve Rebuild Kit	1	VA096-1
3/8" Equalization Valve Rebuild Kit	1	VA095-1
1/4" Product Valve Rebuild Kit	1	VA088-1
1/8" Drain Valve	1	VA009-2
PC Board	1	CB039-3
3 Amp Fuse	4	FU004-1
Check Valve	1	VA141-2
1/4" Product Valve Coil	1	VA110-1
3/8" Feed,Waste,Equalization Valve Coil	1	VA112-1

AS-160 Parts

Model AS-160 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI191-1
Prefilter Element 1/4000 hrs	2	FI029-1
Microalescer Element 1/8000 hrs	1	FI016-1
16,000 Hour Kit/2 Year		KI192-1
Prefilter Element	4	FI029-1
Microalescer Element	2	FI016-1
3/8" Feed Valve Rebuild Kit	2	VA096-1
3/4" Waste Valve Rebuild Kit	2	VA101-1
3/4" Equalization Valve Rebuild Kit	2	VA100-1
3/8" Product Valve Rebuild Kit	1	VA095-1
1/8" Drain valve	1	VA009-2
40,000 Hour Kit/5 Year		KI193-1
Prefilter Element	10	FI029-1
Microalescer Element	5	FI016-1
3/8" Feed Valve Rebuild Kit	4	VA096-1
3/4" Waste Valve Rebuild Kit	4	VA101-1
3/4" Equalization Valve Rebuild Kit	4	VA100-1
3/8" Product Valve Rebuild Kit	2	VA095-1
1/8" Drain valve	2	VA009-2
Emergency Kit		KI194-1
Prefilter Element	1	FI029-1
Microalescer Element	1	FI016-1
3/8" Feed Valve Rebuild Kit	1	VA096-1
3/4" Waste Valve Rebuild Kit	1	VA101-1
3/4" Equalization Valve Rebuild Kit	1	VA100-1
3/8" Product Valve Rebuild Kit	1	VA095-1
1/8" Drain valve	1	VA009-2
PC board	1	CB039-4
3 Amp Fuse	4	FU004-1
Check Valve	1	VA027-1
3/8" Feed,Waste,Equalization,Product Valve Coil	1	VA112-1

AS-250 Parts

Model AS-250 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI195-1
Prefilter Element 1/4000 hrs	2	FI030-1
Microalescer Element 1/8000 hrs	1	FI016-1
16,000 Hour Kit/2 Year		KI196-1
Prefilter Element	4	FI030-1
Microalescer Element	2	FI016-1
3/4" Feed Valve Rebuild Kit	2	VA101-1
1" Waste Valve Rebuild Kit	2	VA103-1
1 1/2" Equalization Valve Rebuild Kit	2	VA104-1
3/8" Product Valve Rebuild Kit	1	VA095-1
1/8" Drain valve	1	VA009-2
40,000 Hour Kit/5 Year		KI197-1
Prefilter Element	10	FI030-1
Microalescer Element	5	FI016-1
3/4" Feed Valve Rebuild Kit	4	VA101-1
1" Waste Valve Rebuild Kit	4	VA103-1
1 1/2" Equalization Valve Rebuild Kit	4	VA104-1
3/8" Product Valve Rebuild Kit	2	VA095-1
1/8" Drain valve	2	VA009-2
Emergency Kit		KI198-1
Prefilter Element	1	FI030-1
Microalescer Element	1	FI016-1
3/4" Feed Valve Rebuild Kit	1	VA101-1
1" Waste Valve Rebuild Kit	1	VA103-1
1 1/2" Equalization Valve Rebuild Kit	1	VA104-1
3/8" Product Valve Rebuild Kit	1	VA095-1
1/8" Drain valve	1	VA009-2
PC board	1	CB039-5
3 Amp Fuse	4	FU004-1
Check Valve	1	VA027-1
3/8" Feed,Product Valve Coil	1	VA112-1
1 1/2" Waste,Equalization Valve Coil	1	VA115-1

AS-450 Parts

Model AS-750 Spare Parts

Item	Qty Per	Part Number
8,000 Hour Kit/1 Year		KI237-1
Prefilter Element 1/4000 hrs	2	FI030-1
Microalescer Element 1/8000 hrs	1	FI017-1
16,000 Hour Kit/2 Year		KI238-1
Prefilter Element	4	FI030-1
Microalescer Element	2	FI017-1
1" Feed Valve Rebuild Kit	2	VA103-1
1 1/2" Waste Valve Rebuild Kit	2	VA104-1
1 1/2" Equalization Valve Rebuild Kit	2	VA104-1
1/8" Drain valve	1	VA009-2
40,000 Hour Kit/5 Year		KI239-1
Prefilter Element	10	FI030-1
Microalescer Element	5	FI017-1
1" Feed Valve Rebuild Kit	4	VA103-1
1 1/2" Waste Valve Rebuild Kit	4	VA104-1
1 1/2" Equalization Valve Rebuild Kit	4	VA104-1
1/8" Drain valve	2	VA009-2
Emergency Kit		KI240-1
Prefilter Element	1	FI030-1
Microalescer Element	1	FI017-1
1" Feed Valve Rebuild Kit	1	VA103-1
1 1/2" Waste Valve Rebuild Kit	1	VA104-1
1 1/2" Equalization Valve Rebuild Kit	1	VA104-1
1/8" Drain valve	1	VA009-2
PLC Timer	1	CM084-1
3 Amp Fuse	4	FU004-1
Check Valve	1	VA027-1
1 1/2" Feed,Waste,Equalization Valve Coil	1	VA360-1

AS-750 Parts

Model AS-750 Spare Parts

Item	Qty	Part #
8,000 Hour Kit/1 Year		KI237-1
Prefilter Element 1/4000 hrs	2	FI030-1
Microalescer Element 1/8000 hrs	1	FI017-1
16,000 Hour Kit/2 Year		KI238-1
Prefilter Element	4	FI030-1
Microalescer Element	2	FI017-1
1" Feed Valve Rebuild Kit	2	VA103-1
1 1/2" Waste Valve Rebuild Kit	2	VA104-1
1 1/2" Equalization Valve Rebuild Kit	2	VA104-1
1/8" Drain valve	1	VA009-2
40,000 Hour Kit/5 Year		KI239-1
Prefilter Element	10	FI030-1
Microalescer Element	5	FI017-1
1" Feed Valve Rebuild Kit	4	VA103-1
1 1/2" Waste Valve Rebuild Kit	4	VA104-1
1 1/2" Equalization Valve Rebuild Kit	4	VA104-1
1/8" Drain valve	2	VA009-2
Emergency Kit		KI240-1
Prefilter Element	1	FI030-1
Microalescer Element	1	FI017-1
1" Feed Valve Rebuild Kit	1	VA103-1
1 1/2" Waste Valve Rebuild Kit	1	VA104-1
1 1/2" Equalization Valve Rebuild Kit	1	VA104-1
1/8" Drain valve	1	VA009-2
PLC Timer	1	CM084-1
3 Amp Fuse	4	FU004-1
Check Valve	1	VA027-1
1 1/2" Feed,Waste,Equalization Valve Coil	1	VA360-1

AS-1000 Parts

Model AS-1000 Spare Parts

Item	Qty	Part #
8,000 Hour Kit/1 Year		KI237-1
Prefilter Element 1/4000 hrs	2	FI030-1
Microalescer Element 1/8000 hrs	1	FI017-1
16,000 Hour Kit/2 Year		KI238-1
Prefilter Element	4	FI030-1
Microalescer Element	2	FI017-1
1" Feed Valve Rebuild Kit	2	VA103-1
1 1/2" Waste Valve Rebuild Kit	2	VA104-1
1 1/2" Equalization Valve Rebuild Kit	2	VA104-1
1/8" Drain valve	1	VA009-2
40,000 Hour Kit/5 Year		KI239-1
Prefilter Element	10	FI030-1
Microalescer Element	5	FI017-1
1" Feed Valve Rebuild Kit	4	VA103-1
1 1/2" Waste Valve Rebuild Kit	4	VA104-1
1 1/2" Equalization Valve Rebuild Kit	4	VA104-1
1/8" Drain valve	2	VA009-2
Emergency Kit		KI240-1
Prefilter Element	1	FI030-1
Microalescer Element	1	FI017-1
1" Feed Valve Rebuild Kit	1	VA103-1
1 1/2" Waste Valve Rebuild Kit	1	VA104-1
1 1/2" Equalization Valve Rebuild Kit	1	VA104-1
1/8" Drain valve	1	VA009-2
PLC Timer	1	CM084-1
3 Amp Fuse	4	FU004-1
Check Valve	1	VA027-1
1 1/2" Feed,Waste,Equalization Valve Coil	1	VA360-1
Supplemental Equipment		
Oxygen Analyzer	1	AN009-1