

AirSep<sup>®</sup> Corporation  
Reliant  
PSA Oxygen Concentrator

Instruction Manual



MN021-1



# Ownership Data

Take a moment to note important information below about your AirSep RELIANT PSA Oxygen Concentrator. Keep this instruction manual, along with your invoice, to serve as a permanent record of your purchase.

## *PSA Oxygen Concentrator*

Model Number:

Serial Number:

Invoice Date:

Start-Up Date:

## *AirSep Representative*

Company:

Contact:

Address:

City/Town:  State:  Zip:

Country:  Fax:

Telephone:  Telex:



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



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## 1.0 Introduction

### 1.1 General

This instruction manual provides a description of the AirSep RELIANT Pressure Swing Adsorption (PSA) Oxygen Concentrator as well as instructions for its installation, operation, and maintenance. Pertinent drawings and component information are also included.

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

### 1.2 Warnings, Cautions, and Notes

As you read the 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.



Provides information that can prevent minor bodily injury or property damage.



Provides information important enough to emphasize or repeat.



## 2.0 Safety

### 2.1 General

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

To ensure your safety, thoroughly read and familiarize yourself with this Safety Precautions section. AirSep Corporation strongly recommends that you review this section periodically.

### 2.2 Potential Hazards

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



The design of the RELIANT Oxygen Concentrator allows for use under the direction of a qualified, licensed physician. An alternate source of oxygen must be available if a power failure or equipment malfunction occurs.



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



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 avoid a fire or an explosion, keep gasoline, kerosene, oil, grease, cotton fibers, paint, and any other combustible material away from any part of the RELIANT Oxygen Concentrator or optional auxiliary oxygen receiver.

Do not smoke or use an open flame near the oxygen concentrator or optional auxiliary oxygen receiver.

Post "NO SMOKING OR OPEN FLAMES" signs in the area where the oxygen concentrator and optional auxiliary oxygen receiver are located. AirSep STRONGLY recommends that only individuals trained and experienced in the safe handling of oxygen operate this system.



Electrical shock hazard. The interior of the RELIANT Oxygen Concentrator contains electrical parts that can produce an electrical hazard if not handled properly. To prevent electrical shock, read and thoroughly understand the Troubleshooting section of this instruction manual before you service the system.



Connect the oxygen concentrator power cord to a properly grounded wall outlet on a circuit that cannot be accidentally turned off. Do not use extension cords.



To prevent fire or electrical shock, locate the oxygen concentrator and the auxiliary oxygen receiver (if supplied) indoors away from rain or any other type of moisture.

## 2.3 Safety Publications

This section is not a complete summary of required safety procedures. Review the following publications for additional information on the safe handling of oxygen:

- "Installation of 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 General Information



The design of the RELIANT Oxygen Concentrator allows for use under the direction of a qualified, licensed physician. An alternate source of oxygen must be available if a power failure or equipment malfunction occurs.

### 3.1 Product Warranty

AirSep Corporation warrants the RELIANT PSA Oxygen Concentrator to be free from defect in parts and workmanship for one year (or otherwise as specified on the original invoice provided) from the invoice date to the original purchaser. AirSep's obligations under this warranty are limited to the repair (all parts and labor free of charge, excluding filter elements) or replacement of any such concentrator (or part thereof) shown to be defective or, at AirSep's option, to refunding the purchase price of any such system.

Each concentrator for which a warranty claim is asserted shall, at the request of AirSep, be returned freight prepaid with proof of purchase date to the AirSep Factory at the expense of the purchaser. Any replacement component(s) shall be warranted as stated above for the unexpired portion of the original one-year (or otherwise specified) warranty. This warranty does not extend to any concentrator or part if a defect or malfunction occurs from misuse (at AirSep's sole determination), accident, improper filter maintenance,<sup>1</sup> or external causes.<sup>2</sup> The warranty shall be null, void, and inoperative if the concentrator has been repaired or altered outside of the AirSep Factory without the express prior written authorization of AirSep.

- 1 Clean the oxygen concentrator air intake filter every seven (7) days, the compressor intake filter every six (6) months, and replace the coalescing filter element every twelve (12) months according to the instructions within this manual. Failure to clean the intake filters and replace the coalescing filter element on schedule results in a void AirSep Product Warranty.
- 2 Locate the oxygen concentrator in a well-ventilated, climate controlled area that is protected from the weather elements and remains between 40°F (4°C) and 80°F (26°C) to prevent damage not covered under the AirSep Product Warranty. Provide proper voltage to the oxygen concentrator (120 VAC ±10% or 220 VAC ±10%) to prevent damage not covered under the AirSep Product Warranty.

The foregoing warranty is in lieu of any other warranty, expressed or implied, in fact or in law, including without limitation the warranty of merchantability or the warranty of fitness for a particular purpose. It is expressly understood that purchaser's sole and exclusive remedy for defect in parts is limited to enforcement of AirSep's obligation as set forth above, and AirSep shall not be liable to the purchaser or others for loss of use of the concentrator or for other special, indirect, incidental, or consequential damages.

Notwithstanding anything to the contrary herein, during the product warranty period, as specified above, AirSep will return repaired concentrators freight prepaid. After the product warranty has expired, the customer is responsible for freight charges both ways. Said warranty shall extend and apply to the concentrator only while the system is owned and used exclusively by the original purchaser.

### 3.2 Limits of Liability

AirSep Corporation shall not be liable for any special, indirect, incidental, or consequential damages that result from the use or malfunction of the RELIANT PSA Oxygen Concentrator or any of its components.

The design of the concentrator allows for use under the direction of a qualified, licensed physician. An alternate source of oxygen must be available if a power failure or equipment malfunction occurs.

### 3.3 Returning the Concentrator or a Component for Service

Follow the procedure below to return the RELIANT Oxygen Concentrator or a component for service or credit:

■ Obtain a Return Goods Authorization (RGA) number from the AirSep Industrial Service Department. **Before you call, have the following information readily available** (noted on the Ownership Data page in the front of this instruction manual):

- Concentrator Model
- Concentrator Serial Number
- Hours of Use (See Hour Meter on Control Panel)
- Invoice Date



AirSep issues no credit for any warranted item until you present the model number, serial number, and invoice date of the oxygen concentrator.

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



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

- Return item(s) in their original packaging material. Be sure to pack merchandise for a safe return. AirSep assumes no responsibility for damage that occurs in transit. Any damage that occurs to the oxygen concentrator 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.



## 4.0 Specifications

<b>Oxygen Output:</b>	17 SCFH at 0-50 psig* (0-3.4 atm) (0-3.4 bars) at 120 VAC ±10%, 60 Hz or 220 VAC ±10%, 50 Hz .45 Nm <sup>3</sup> /hr at 0-345 kPa** at 120 VAC ±10%, 60 Hz or 220 VAC ±10%, 50 Hz 8 slpm at 0-345 kPa*** at 120 VAC ±10%, 60 Hz or 220 VAC ±10%, 50 Hz
<b>Dew Point:</b>	-100°F -73°C
<b>Oxygen Purity:</b>	93-95% at 1-10 SCFH* 93-95% at .03-.26 Nm <sup>3</sup> /hr** 93-95% at 1-5 slpm***  90% ±3% at 11-17 SCFH* 90% ±3% at .29-.45 Nm <sup>3</sup> /hr** 90% ±3% at 6-8 slpm***
<b>Response Time:</b>	Requires 20-30 minutes (4 hours with the optional 60 U.S. gal [227 l] receiver) to achieve maximum purity after initial start-up or extended shutdown.
<b>Sound Level:</b>	58 dB(A) at 1 m, open field conditions
<b>Dimensions:</b>	22.5 x 24.5 x 36.25 in. (W x D x H) 57.2 x 62.3 x 92.1 cm (W x D x H)
<b>Weight:</b>	175 lb 80 kg
<b>Power Requirements (±10%):</b>	120 VAC, 60 Hz, Single Phase, 6 A 220 VAC, 50 Hz, Single Phase, 3 A
<b>Auxiliary Oxygen Receiver Specifications (If Supplied):</b>	60 U.S. gal 227 l  24 x 51.75 in. (Dia x H), 4 (ea) bolt hole centers at 23.75 in. 61 x 131.5 cm (Dia x H), 4 (ea) bolt hole centers at 60.4 cm.  150 lb 68 kg

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

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

\*\*\* slpm (liter per minute) gas measured at 1 atmosphere and 70°F.



## 5.0 Controls, Parts, and Connections

### 5.1 Oxygen Concentrator Controls and Indicators

See Figure 1 for the location of the controls described below:

#### **ON/OFF (Power) Switch**

The ON/OFF switch starts and stops the operation of the oxygen concentrator. When you supply power to the system, the switch's green indicator light turns on. It remains lit whether the switch is in the ON or OFF position.

#### **AUTO/MANUAL Switch**

The AUTO/MANUAL switch includes an amber indicator light. In the AUTO position, the concentrator cycles on and off to meet oxygen demand. In the MANUAL position, the concentrator cycles continuously. The concentrator produces oxygen only while the amber light is lit.

#### **Hour Meter**

The hour meter indicates the total number of hours the concentrator has cycled.

#### **Circuit Breaker Reset Button**

Used to reset the RELIANT after an electrical overload shutdown.

#### **Oxygen Monitor Light (Optional)**

If the unit has an oxygen monitor, the oxygen monitor light turns on if the concentrator does not maintain proper oxygen purity.

#### **Oxygen Regulator**

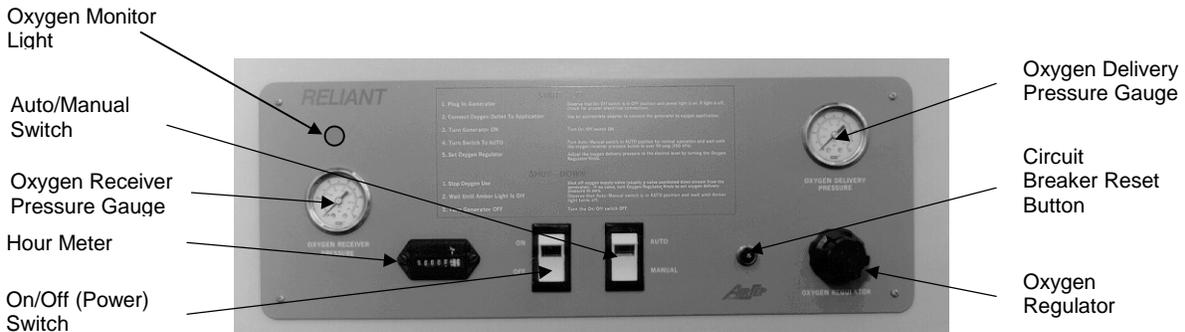
The OXYGEN REGULATOR controls the delivery pressure of oxygen produced by the concentrator.

#### **OXYGEN RECEIVER PRESSURE Gauge**

The OXYGEN RECEIVER PRESSURE gauge indicates the pressure of oxygen in the receiver(s).

#### **OXYGEN DELIVERY PRESSURE Gauge**

The OXYGEN DELIVERY PRESSURE gauge indicates the pressure of oxygen currently in use.



**Figure 1. Control Panel**

## 5.2 Oxygen Concentrator Parts

### Adsorbers

The adsorbers contain the molecular sieve that adsorbs (attracts) nitrogen from compressed air and allows oxygen to pass through as product gas.

### Oxygen Receiver

The oxygen receiver stores oxygen produced by the oxygen concentrator. It also provides stable flow and purity for short-term surges of oxygen that exceed the rated capacity of the oxygen concentrator. It is located on a shelf inside the unit.

### Coalescing Filter

The coalescing filter serves as a bacteria filter and removes any bacteria present in the oxygen supply. This filter is attached to the back of the control panel.

### Cabinet Fan

The cabinet fan provides internal cooling for the air compressor. It is found inside the unit on the bottom left hand side.

### Compressor Intake Filter

This filter provides additional filtration for the air as it enters the air compressor. This filter is attached to the gray PVC pipe between the oxygen receiver and the front of the unit.

### Air Intake Filter

Located on the left side panel, the air intake filter removes any foreign particles from the air that enters the oxygen concentrator cabinet.

## 5.3 Auxiliary Oxygen Receiver Parts (Optional)

See Figure 2 for the location of the parts described below:

### Auxiliary Oxygen Receiver

The auxiliary oxygen receiver stores oxygen produced by the oxygen concentrator. It also provides stable flow for longer term surges of oxygen that exceed the rated capacity of the oxygen concentrator. It serves to increase the oxygen surge capacity of the oxygen receiver within the oxygen concentrator.

### Auxiliary Receiver Supply Valve

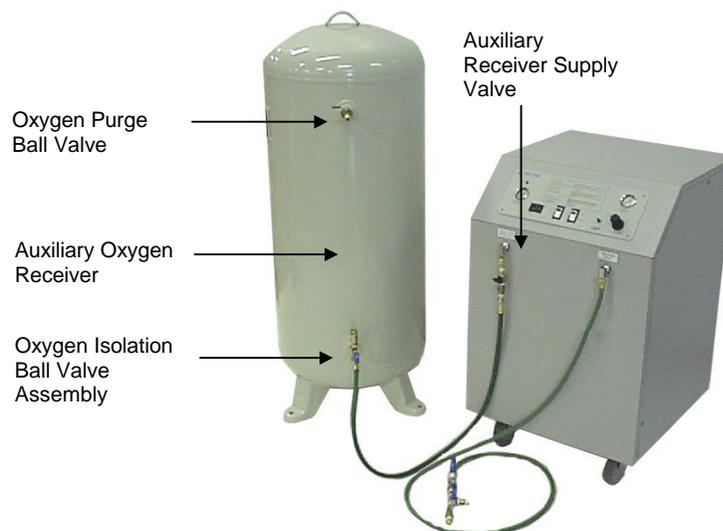
The auxiliary receiver supply valve limits the amount of flow to the auxiliary receiver during purge.

### Oxygen Purge Ball Valve

During initial startup or after an extended shutdown, the auxiliary oxygen receiver is filled with air or low purity oxygen. The oxygen purge ball valve allows low purity oxygen to be vented out of the auxiliary oxygen receiver while it is being purged.

### Oxygen Isolation Ball Valve Assembly

The oxygen isolation ball valve stops the flow of oxygen to the auxiliary oxygen receiver during troubleshooting. The oxygen safety valve prevents excess pressure from building in the auxiliary oxygen receiver if a system malfunction occurs.



**Figure 2. Auxiliary Oxygen Receiver Parts**

## 5.4 Connections

See Figure 3 for the location of the parts described below:

### **Auxiliary Oxygen Receiver Outlet**

A chrome demand valve allows oxygen to flow between the auxiliary oxygen receiver and the concentrator.

### **Auxiliary Oxygen Receiver Supply Valve Assembly**

This is connected to the auxiliary oxygen receiver outlet and limits the amount of flow to the auxiliary receiver during purge. A green hose connects to the ¼" MPT x B size fitting of the assembly. The other end of the hose connects to the oxygen isolation ball valve assembly.

### **Main Oxygen Outlet**

A green oxygen hose connects this 1/4-inch MPT x "B" size oxygen demand valve to the ball valve assembly.

### **Primary Oxygen Ball Valve**

The primary oxygen ball valve controls the flow of oxygen from the oxygen concentrator to your oxygen distribution system.

### **Secondary Oxygen Ball Valve**

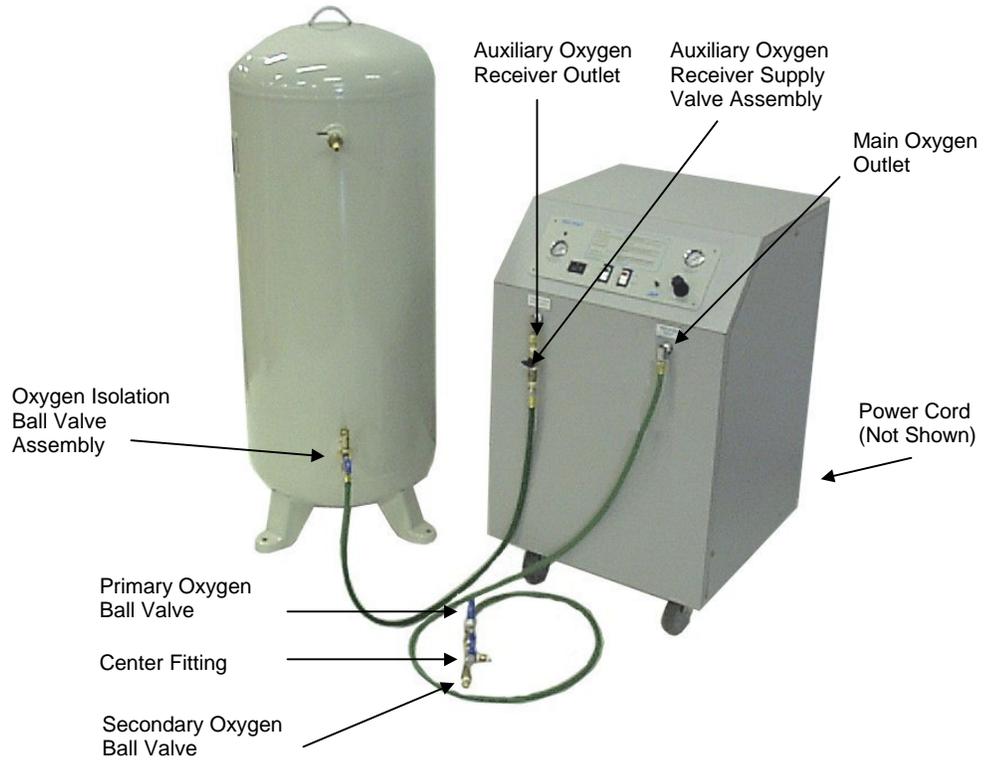
The secondary oxygen ball valve controls the flow of a backup source of oxygen to your oxygen distribution system. This ball valve should always be closed unless a backup source is connected to it.

### **Center Fitting**

This 1/4-inch MPT fitting connects the RELIANT and a backup oxygen source to your oxygen distribution system.

### **Power Cord**

This power cord and its grounded electrical plug supply power to the RELIANT when connected to an electrical outlet.



**Figure 3. Auxiliary Oxygen Receiver Connections**



## 6.0 Installation

### 6.1 Unpacking

AirSep Corporation ships RELIANT Oxygen Concentrators on a wooden skid covered with corrugated cardboard. This container includes an accessory kit with an instruction manual and all the items necessary to properly install the oxygen concentrator. The auxiliary oxygen receiver (if supplied) is shipped separately.

AirSep recommends that you follow these unpacking guidelines carefully to protect yourself against loss from any damage caused during shipment.

1. Make sure the container is delivered right side up, and inspect the exterior for damage. If you observe any damage, note it on the freight bill or the express receipt before you sign it.



Failure to note exterior damage on the freight bill or the express receipt at the time of delivery can result in the carrier's refusal of a damage claim.

2. Carefully cut and remove any banding straps from the container. Then remove the corrugated cardboard.



Remove the corrugated cardboard very carefully. You may need to return the oxygen concentrator if it was damaged during shipment.

3. Remove the oxygen concentrator from the wooden skid.
4. Remove a side panel from the concentrator and remove the white piece of foam under the compressor.
5. Thoroughly inspect the oxygen concentrator interior and exterior for damage caused during shipment. Pay special attention to the cabinet (especially the bottom), switches, gauges, brackets, etc. Replace the side panel on the concentrator.
6. Remove the accessory kit, and place the oxygen concentrator near the inlet of your oxygen distribution system.

7. Unpack the accessory kit, and inspect the contents for damage.



Refer to Appendix B for the contents of accessory and spare parts kits.

8. Although the RELIANT is carefully inspected, tested, and packed, it can be damaged during shipment due to improper handling. If you find any concealed damage (loss or damage not found until the concentrator is unpacked), immediately call the delivery carrier and file a concealed-damage claim. Keep ALL container material and interior packing for the carrier's inspection.



**YOU MUST MAKE A CONCEALED-DAMAGE CLAIM WITHIN 24 HOURS OF DELIVERY.**  
Only the consignee can file this claim.



Follow these unpacking guidelines carefully to protect yourself against loss from any damage caused during shipment.

## 6.2 Pre-Installation Guidelines

Before you install your AirSep RELIANT PSA Oxygen Concentrator, review the following: ambient temperature, floor space, feed air, and power guidelines.

### 6.2.1 Ambient Temperature

Locate the oxygen concentrator in a well-ventilated, climate controlled area that is protected from direct sunlight and remains between 40°F (4°C) and 100°F (38°C) to prevent damage not covered under the AirSep Product Warranty.

### 6.2.2 Physical Specifications

*RELIANT Oxygen Concentrator*

Floor Space: 34.5 x 36.5 x 48.25 in. (W x D x H)  
87.7 x 92.8 x 122.6 cm (W x D x H)\*

\* Includes a minimum 6-inch (15.3-cm) clearance on all sides.

*60 U.S. gal (227 l) Auxiliary Oxygen Receiver (if supplied)*

Floor Space: 24 x 51.75 in. (Dia x H)  
61 x 131.5 cm (Dia x H)

### 6.2.3 Power Supply

120 VAC  $\pm$ 10%, 60 Hz, Single Phase, 6 A

or

220 VAC  $\pm$ 10%, 50 Hz, Single Phase, 3 A

Locate an available grounded electrical outlet on a circuit that cannot be accidentally turned off and cause the oxygen concentrator to stop cycling. If power is off but oxygen is in use, the auxiliary oxygen receiver depressurizes. Repressurization of a 60 U.S. gal (227 l) auxiliary oxygen receiver requires approximately 4 hours.



A backup source of oxygen must be available if a power failure or system malfunction occurs.



Connect the oxygen concentrator power cord only to a properly grounded electrical outlet on a circuit that cannot be accidentally turned off. Do not use extension cords.



Provide proper voltage to the oxygen concentrator (120 VAC  $\pm$ 10% or 220 VAC  $\pm$ 10%) to prevent damage not covered under the AirSep Product Warranty.



Do not plug in the power cord until you complete the installation of the oxygen concentrator.

### 6.3 Installation Instructions

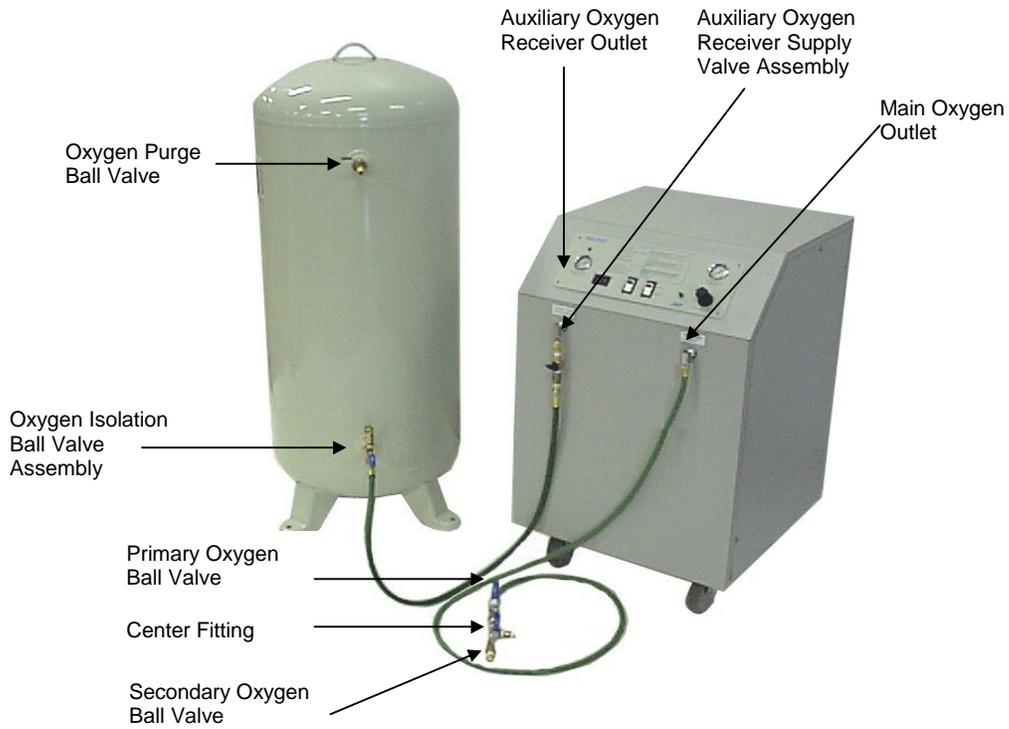
To assure proper installation and safe operation of your RELIANT PSA Oxygen Concentrator, AirSep Corporation recommends that you review this entire section before you attempt to install the unit. Figure 4 shows a typical installation setup which includes an auxiliary oxygen receiver. Figure 5 shows a typical setup without an auxiliary oxygen receiver.



Do not turn off power to any component unless you are sure the medical facility does not require any oxygen, or there is a sufficient alternative/backup source of oxygen.



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



**Figure 4. Typical Installation Setup with Auxiliary Oxygen Receiver**



**Figure 5. Typical Installation Setup without Auxiliary Oxygen Receiver**

1. Move the oxygen concentrator and optional auxiliary oxygen receiver into place near the inlet of your oxygen distribution system. Locate the unit away from curtains or drapes, hot air registers, radiators, heaters, etc. Allow a minimum 6-in. (15.3-cm) clearance on all sides of the oxygen concentrator.



To prevent fire or electrical shock, locate the oxygen concentrator and the auxiliary oxygen receiver (if supplied) indoors away from rain or any other type of moisture.



Locate the oxygen concentrator in a well-ventilated, climate controlled area that is protected from direct sunlight and remains between 40°F (4°C) and 100°F (38°C) to prevent damage not covered under the AirSep Product Warranty.



Do not plug in the power cord of the oxygen concentrator at this time.



Perform steps 2, 3, and 4 only if the system includes a 60 U.S. gal (227 l) auxiliary oxygen receiver.

2. Connect the oxygen isolation ball valve assembly to the auxiliary oxygen receiver inlet port (bottom port) and tighten.
3. Connect the auxiliary oxygen receiver supply valve assembly to the auxiliary oxygen receiver outlet of the concentrator.



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

4. Connect one end of the 7-ft (2.1-m) green oxygen hose to the auxiliary oxygen receiver supply valve assembly and the other end to the oxygen isolation ball valve assembly. Tighten both fittings.
5. Connect the center fitting of the oxygen ball valve assembly to your oxygen distribution system. Close the primary and secondary ball valves.
6. Connect one end of the 4-ft (1.2-m) green oxygen hose to the primary ball valve on the oxygen ball valve assembly, and tighten.
7. Connect the other end of the 4-ft (1.2-m) green oxygen hose to the oxygen concentrator MAIN OXYGEN OUTLET.
8. Connect a backup source of oxygen to the secondary ball valve on the oxygen ball valve assembly, and tighten.



A backup source of oxygen must be available if a power failure or system malfunction occurs.



Make sure the backup source of oxygen is equipped with an oxygen multi-stage regulator.



Make sure all connections are tight.

9. Make sure that the secondary ball valve is closed.



## 7.0 Operation

### 7.1 Initial Start-Up



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



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 avoid a fire or an explosion, keep gasoline, kerosene, oil, grease, cotton fibers, paint, and any other combustible material away from any part of the oxygen concentrator.

Do not smoke or use any open flame near the oxygen concentrator or oxygen receiver.

Post "NO SMOKING OR OPEN FLAMES" signs in the area where the components are located. AirSep STRONGLY recommends that only individuals trained and experienced in the safe handling of oxygen operate this system.



The design of the RELIANT Oxygen Concentrator allows for use under the direction of a qualified, licensed physician. A backup source of oxygen must be available if a power failure or system malfunction occurs.



Before the RELIANT can supply oxygen within purity specifications, you must purge all air from the oxygen receiver(s).



Provide proper voltage to the oxygen concentrator (120 VAC  $\pm$ 10% or 220 VAC $\pm$ 10%) to prevent damage not covered under the AirSep Product Warranty.



When you turn the oxygen concentrator on for the first time, it can take 20-30 minutes for oxygen purity to reach specification (4 hours if the auxiliary receiver is used).

1. Observe that the ON/OFF switch is in the off position.



Connect the oxygen concentrator power cord to a properly grounded electrical outlet on a circuit that cannot be accidentally turned off. Do not use extension cords.

2. Insert the plug into a grounded electrical outlet. (Refer to Section 6.2.3 for power guidelines.)
3. Observe that the ON/OFF switch's green power light is on.



If the power light is off, first check the electrical connection and then the oxygen concentrator circuit breaker. If this condition still exists, refer to the Troubleshooting section.

4. Set the AUTO/MANUAL switch to the MANUAL position.

**NOTE**

If the unit is equipped with an oxygen monitor, the oxygen monitor light on the control panel remains on until the oxygen purity reaches 85%  $\pm$ 3%. The oxygen monitor alarms intermittently after 15 minutes if the RELIANT does not reach proper oxygen purity. During start-up, this alarm is silenced for 30 minutes.

**NOTE**

Air exhausts for 3-5 seconds from the compressor relief valve. This is normal. It removes any pressure that builds up inside the compressor to ensure easy start-up.

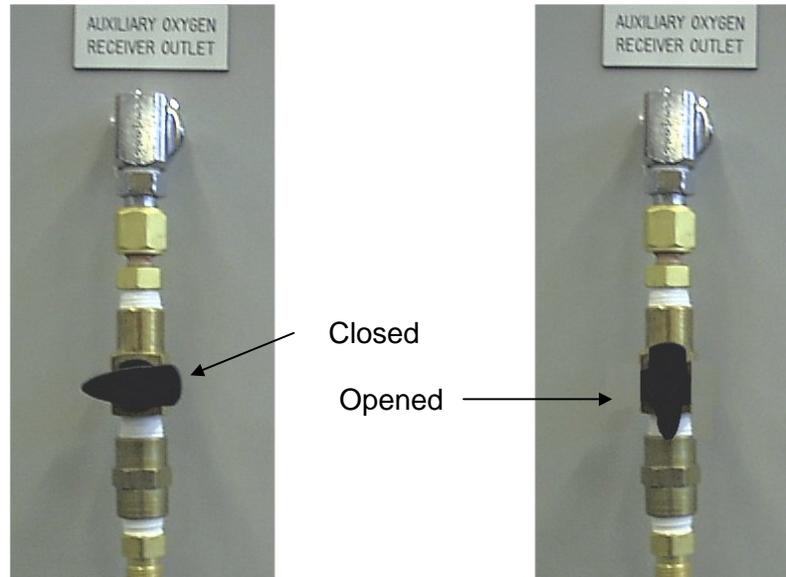
**Perform the following steps only if the auxiliary oxygen receiver is used.**

1. Close the primary oxygen supply valve.
2. Open the ball valve on the oxygen isolation ball valve assembly.
3. Close the auxiliary oxygen receiver supply valve.

**NOTE**

There is a small hole drilled in the ball valve to allow a controlled amount of gas to flow into the tank receiver when the valve is in the closed position. Figure 6 illustrates the opened and closed position of this valve.

4. Open the oxygen purge ball valve on the auxiliary oxygen receiver.
5. Ensure that the AUTO/MANUAL switch is set to MANUAL and turn the unit on.
6. After 1.5 hours, close the oxygen purge ball valve.
7. After an additional 2.5 hours, open the auxiliary receiver supply valve.
8. Set oxygen regulator to 50 psig.
9. Open the primary oxygen supply valve.
10. Set your flow meter to 8 LPM and allow the unit to run for 15 minutes.
11. Set flowmeter(s) to desired flow and set the AUTO/MANUAL switch to AUTO



**Figure 6 - Auxiliary Tank Supply Valve**

**Perform the following if an auxiliary oxygen receiver is not used.**

1. Ensure that the AUTO/MANUAL switch is set to MANUAL and turn the unit on.
2. When the oxygen receiver pressure reaches 50 psig, set the regulator pressure to 50 psig and the flow to 8 LPM.
3. Allow to run for ½ hour.
4. Set flowmeter(s) to desired flow and set the AUTO/MANUAL switch to AUTO.



**NOTE**

If Reliant supplies oxygen to more than one location, a flowmeter calibrated to **50 PSIG** must be used at each location. The total flow out of all locations must not exceed 8.0 LPM.



At the time of initial start-up, and periodically thereafter, check all external fittings/pipe joints for leaks using an oxygen-compatible leak-detecting solution.



Use an oxygen analyzer (if available) to sample the oxygen purity to verify it is within specification.

## 7.2 Normal Start-Up

1. Make sure the AUTO/MANUAL switch is in the AUTO position and the ON/OFF switch's green power light is on
2. Set the ON/OFF switch to the ON position.

## 7.3 Start-Up After an Extended Shutdown

When the RELIANT Oxygen Concentrator is turned on after an extended shutdown, the oxygen receiver may be full of air or low purity oxygen. Before the RELIANT can supply oxygen within purity specifications, you must purge all air from the oxygen receiver(s). To do this, follow all steps in Section 7.1.

## 7.4 Manual Mode

In Manual Mode, the unit will cycle continuously. This mode should only be used during initial start up.

## 7.5 Auto Mode

In Auto Mode, the compressor will turn off intermittently. When the pressure in the receiver(s) reaches the high pressure setpoint, the unit will stop cycling. When the pressure falls below the low pressure setpoint, the unit will begin to cycle again. This mode should be used during normal operation

## 7.6 Shutdown



Do not turn off power to the oxygen concentrator unless you are sure that the facility does not require any oxygen, or there is a sufficient alternative/backup source of oxygen.

1. Close the primary oxygen ball valve (see Figure 4). This ensures that the oxygen receiver(s) is/are full the next time of use, even if there is a leak beyond the location of the primary ball valve.
2. Observe that the AUTO/MANUAL switch is in the AUTO position, and wait until the amber light shuts off.
3. Set the ON/OFF switch to the OFF position.



Failure to wait until the amber light on the AUTO/MANUAL switch automatically shuts off results in initially lower purity oxygen during subsequent use.



If the unit is equipped with an oxygen monitor and an auxiliary oxygen receiver is used, close the oxygen isolation ball valve on the receiver. The oxygen monitor allows a small amount of oxygen to flow through its sensor to the atmosphere. If this valve is not closed during an extended shut down, the auxiliary receiver will slowly lose its oxygen through the oxygen monitor.

## 8.0 Maintenance/Service

To ensure the long life of your RELIANT Oxygen Concentrator, maintain the unit as described in the following sections.

Foreign particles in the feed air affect the operation of the oxygen concentrator. The filters supplied in the concentrator are factory-selected based on the unit's air requirements and average air conditions.



Electrical shock hazard. The interior of the RELIANT Oxygen Concentrator contains electrical parts that can produce an electrical hazard if not handled properly. To prevent electrical shock, use extreme care when you service the system.



AirSep selects concentrator filters based on their ability to perform in severe conditions. Use of other than Original Equipment Manufacturer filters/elements can cause damage not covered under the AirSep Product Warranty.



Failure to maintain the air intake and compressor intake filters can allow foreign particles in the air to enter the oxygen concentrator and cause damage not covered under the AirSep Product Warranty.

### 8.1 Weekly Maintenance

Once every seven days, remove the black air filter from the left side of the enclosure and wash it with soap and water.

### 8.2 Semi-Annual Maintenance

#### 8.2.1 Cleaning the Compressor Intake Filter

Once every six months, or as often as necessary, use the following procedure to clean the compressor intake filter.



For systems that include an auxiliary oxygen receiver, close the oxygen isolation ball valve.

1. Close the primary ball valve.

This ensures that the oxygen receiver(s) is full the next time of use, even if there is a leak beyond the location of the ball valve.

2. Observe that the AUTO/MANUAL switch is in the AUTO position, and wait until the amber light shuts off.

This allows the auxiliary oxygen receiver (if supplied) to completely fill with oxygen for immediate use when required. It also allows the oxygen concentrator to shut down at the proper point in its cycle.

3. Set the ON/OFF switch to the OFF position.
4. Unplug the unit.
5. Remove the left side panel on the oxygen concentrator.
6. Pull up on the black cap on the compressor intake filter housing to remove it. This is attached to the gray PVC pipe located between the oxygen receive and the front of the concentrator.
7. Remove and wash the black foam insert with soap and water.
8. Replace the black foam insert.
9. Replace the black cap.
10. Replace the left side panel on the oxygen concentrator.



For systems that include an auxiliary oxygen receiver, open the oxygen isolation ball valve.

11. Follow all steps in Section 7.1.

## 8.2.2 Adjusting the Oxygen Monitor Regulator



For systems that include an auxiliary oxygen receiver, close the oxygen isolation ball valve.

1. Close the primary oxygen ball valve.
2. Observe that the AUTO/MANUAL switch is in the AUTO position, and wait until the amber light shuts off.
3. Set the ON/OFF switch to the OFF position.
4. Unplug the power cord from the electrical outlet.
5. Remove the left side panel.
6. Pull outward on the oxygen monitor regulator knob, and turn it fully counterclockwise.



Remove any tie-wraps from the tubing before you disconnect it.

7. Disconnect the output tubing at the oxygen monitor board. The oxygen monitor board is located towards the top of the electrical panel.
8. Connect the output tubing to a (maximum 10 psig [70 kPa] [.7 atm] [.7 bars]) pressure gauge.
9. Adjust the knob on the oxygen monitor regulator until the gauge registers 5 psig (35 kPa) (.3 atm) (.3 bars). The regulator is attached to the oxygen receiver.
10. Lock the oxygen monitor regulator knob.
11. Remove the gauge from the oxygen monitor regulator tubing.
12. Reconnect the output tubing to the oxygen monitor board.
13. Secure the tubing with new tie-wraps.
14. Replace the left side panel.



For systems that include an auxiliary oxygen receiver, open the oxygen isolation ball valve.

15. Follow all steps in Section 7.1.

## 8.3 Annual Maintenance

The expected life of the coalescing filter element is approximately 12 months. Failure to replace the filter element on schedule results in a void AirSep Product Warranty.



AirSep selects concentrator filters based on their ability to perform in severe conditions. Use of other than Original Equipment Manufacturer filters/elements can cause damage not covered under the AirSep Product Warranty.



Failure to maintain the air intake and compressor intake filters can allow foreign particles in the air to enter the concentrator and cause damage not covered under the AirSep Product Warranty.

### 8.3.1 Coalescing Filter Element Replacement

The coalescing filter is located inside the cabinet behind the OXYGEN RECEIVER PRESSURE gauge on the control panel. It removes any foreign particles present in the oxygen supply.



Order the element to be replaced through the AirSep Industrial Service Department. Specify Part Number FI018-1, cleaned for oxygen service. Contact AirSep Monday through Friday, from 8:00 a.m. to 4:00 p.m. Eastern Standard Time/USA or Canada, at 1-800-320-0303 or (716) 691-0202 outside of the USA/Canada.



For systems with an auxiliary oxygen receiver, close the oxygen isolation ball valve.

1. Wash your hands thoroughly, and make sure they are oil-free before you begin this procedure.



Oxygen can cause spontaneous combustion, and as such, is a fire hazard. Make sure that no flammable materials are located in the oxygen concentrator area designated "Oxygen in Use — No Smoking."

2. Close the primary oxygen ball valve.
3. Observe that the AUTO/MANUAL switch is in the AUTO position, and wait until the amber light shuts off.
4. Set the ON/OFF switch to the OFF position.
5. Unplug the power cord from the electrical outlet.
6. Remove the left side panel.
7. Push up on the pin on the bottom of the filter bowl.



Pressure releases when you push up on the pin on the filter bowl.

8. When the OXYGEN RECEIVER PRESSURE gauge registers 0 psig, the unit is depressurized.

9. When the unit is depressurized, replace the filter element.

To gain access to the element, you must remove the filter bowl. Unscrew the bowl counterclockwise to remove it. Use one hand to steady the filter base while removing the bowl with the other to ensure you do not loosen the fittings and hoses connected to the sides of the filter.

Unscrew the filter element, and remove the O-rings. Replace the element and both O-rings with new ones, taking care to ensure that they remain oil- and grease-free. Reconnect the bowl to the filter body. Use one hand to steady the filter base while making sure the filter bowl is completely screwed on with the other.



For systems with an auxiliary oxygen receiver, open the oxygen isolation ball valve.

10. Leak test the coalescing filter assembly.
11. Follow all the steps in Section 7.1.

## 9.0 Troubleshooting

The AirSep RELIANT Oxygen Concentrator runs pressurized during normal operation. **You must depressurize the unit BEFORE you attempt any REPAIRS.**

Use the following procedure to depressurize the oxygen concentrator safely.

1. Shut down the oxygen concentrator as described in Section 7.6.
2. To depressurize the concentrator, follow the steps in the Coalescing Filter Element Replacement procedure in Section 8.3.1.



**NOTE**

If the unit needs to be pressurized to troubleshoot it, close the oxygen isolation ball valve and let the unit run in the MANUAL position while the ON/OFF switch is in the ON position. Make sure you open the oxygen isolation ball valve after you complete troubleshooting.

3. The OXYGEN RECEIVER PRESSURE gauge should now register 0. If it does not, stop and contact your nearest AirSep Service Representative or the AirSep Industrial Service Department for further instructions.

Contact the AirSep Industrial Service Department by phone Monday through Friday between 8:00 a.m. and 4:00 p.m. Eastern Standard Time/USA or Canada at 1-800-320-0303 or (716) 691-0202 outside of the USA/Canada.

4. When the OXYGEN RECEIVER PRESSURE gauge registers 0, turn the oxygen concentrator ON/OFF switch to the OFF position.
5. Proceed to determine and repair the problem.
6. When you complete the repair, start up the oxygen concentrator as described in Section 7.1.

## 9.1 Troubleshooting Chart

The chart on the following pages is a guide for troubleshooting the AirSep RELIANT Oxygen Concentrator.



Electrical shock hazard. The interior of the oxygen concentrator contains electrical parts that can produce an electrical hazard if not handled properly. To prevent electrical shock, use extreme care when you service the system.



The Printed Circuit Boards (PCBs) contain components that are sensitive to electrostatic discharge (ESD) and can be damaged if not handled properly. As when handling any ESD-sensitive PCB, observe standard ESD safety procedures. These procedures include the following:

- Handle the PCB only by the edges.
- Work on a grounded ESD mat.
- Wear a grounded wrist strap.
- Store PCBs only in anti-static bags.

<b>Problem</b>	<b>Probable Cause</b>	<b>Solution</b>
Oxygen concentrator does not cycle. No green power light.	Unit not plugged in.  Blown 3-amp fuse.  Tripped circuit breaker (unit). Blown circuit breaker or fuse (electrical outlet).	Plug in unit.  Replace fuse - 3 amps, 250 volts, BUSS AG3 type. (See Figure 16.) Reset circuit breaker (unit). Reset circuit breaker, or replace fuse (electrical outlet).
Oxygen concentrator does not cycle, but green power light is on. AUTO/MANUAL switch is set to MANUAL position, and amber light is off.	ON/OFF switch is off.  Defective AUTO/MANUAL switch.  Defective ON/OFF switch.  Defective power wire to circuit board.  Defective circuit board.  Low voltage condition.	Set ON/OFF switch to ON position.  Replace AUTO/MANUAL switch.  Replace ON/OFF switch.  Repair or replace wire.  Replace circuit board.  Call electric company.
Oxygen concentrator does not cycle. Green power light is on, AUTO/MANUAL switch is set to AUTO position. Amber light is off. Oxygen Receiver Pressure gauge registers less than 50 psig (205 kPa).	ON/OFF switch is set to OFF position.  Defective ON/OFF switch.  Defective wire to circuit board.  Pressure switch improperly adjusted.  Defective pressure switch.  Defective circuit board.	Set ON/OFF switch to ON position.  Replace ON/OFF switch.  Repair or replace wire.  Adjust pressure switch correctly. (Refer to Section 9.1.1.)  Replace pressure switch.  Replace circuit board.
Oxygen concentrator turns on. Green power light is not on.	Defective ON/OFF switch.	Replace ON/OFF switch.
Oxygen concentrator cycles, but amber light does not turn on. AUTO/MANUAL switch is set to AUTO position.	Defective wire.  Defective circuit board.  Defective AUTO/MANUAL switch.	Repair or replace wire.  Repair or replace circuit board.  Replace AUTO/MANUAL switch.

Problem	Probable Cause	Solution
<p>Oxygen concentrator cycles continuously. AUTO/MANUAL switch is set to AUTO position. Amber light is on. Oxygen Receiver Pressure gauge registers less than 50 psig (345 kPa). Oxygen purity is acceptable</p>	Compressor does not build up adequate pressure.	Replace compressor.
	Compressor intake filter plugged.	Clean or replace compressor intake filter.
	Defective circuit board.	Replace circuit board. (Refer to Section 9.1.4.)
	Compressor relief valve leaks (valve energized).	Check all wires and connections (Refer to the wiring diagrams in Appendix A). If problem continues, replace the circuit board.
	Compressor relief valve leaks (valve not energized)	Replace relief valve
	Air leak in system.	Check oxygen concentrator. Repair as necessary.
	Oxygen usage is greater than capacity of oxygen concentrator.	Check oxygen usage. If usage exceeds system capacity (17 SCF/hr [8 lpm]), reduce usage.
Oxygen leak in system.	Check oxygen concentrator and oxygen distribution system for leaks. Repair as necessary.	

Problem	Probable Cause	Solution
<p>Oxygen concentrator cycles continuously. AUTO/MANUAL switch is set to AUTO position. Amber light is on. Oxygen Receiver Pressure gauge registers 63 psig (435 kPa) or higher</p>	<p>Pressure switch improperly adjusted.</p> <p>Defective wire to pressure switch.</p> <p>Defective pressure switch</p> <p>Defective wire to AUTO/MANUAL switch.</p> <p>Defective AUTO/MANUAL switch.</p> <p>Defective circuit board.</p>	<p>Readjust pressure switch. (Refer to Section 9.1.1.)</p> <p>Repair or replace wire to pressure switch.</p> <p>Replace pressure switch.</p> <p>Repair or replace wire to AUTO/MANUAL switch.</p> <p>Replace AUTO/MANUAL switch.</p> <p>Replace circuit board. (Refer to Section 9.1.4.)</p>
<p>Low purity oxygen (21-82%) temporarily after start-up. Alarm sounds. Oxygen monitor light illuminates.</p>	<p>Incorrect initial start-up.</p> <p>Extended shutdown (oxygen receiver pressure registers 0).</p> <p>Momentary power loss.</p> <p>Leaky feed check valve.</p>	<p>Refer to Start-Up procedure.</p> <p>Refer to Start-Up procedure.</p> <p>Purge system. (Refer to Start-Up procedure.)</p> <p>Replace feed check valve.</p>

Problem	Probable Cause	Solution
<p>Low purity oxygen (21-82%) continuously after start-up. Alarm sounds. Oxygen monitor light illuminates. Oxygen receiver pressure registers less than 50 psig (345 kPa).</p>	<p>Defective solenoid valve.</p> <p>Defective wire to circuit board.</p> <p>Defective circuit board.</p> <p>Oxygen leak in system.</p> <p>Compressor pressure not adequate.</p> <p>Leaky equalization check valves.</p> <p>Plugged waste muffler.</p> <p>System does not cycle properly.</p> <p>Molecular sieve contaminated.</p>	<p>Identify and rebuild valve.</p> <p>Repair or replace wire.</p> <p>Replace circuit board. (Refer to Section 9.1.4.)</p> <p>Check oxygen concentrator for leaks. Repair as necessary.</p> <p>Replace compressor.</p> <p>Clean or replace check valves.</p> <p>Replace muffler.</p> <p>Check all wires and connections. Repair as needed. If problem continues, replace circuit board.</p> <p>Replace molecular sieve. Contact AirSep Industrial Service Department for assistance.</p>
<p>Solenoid valve chatters loudly.</p>	<p>Low voltage condition.</p> <p>Low voltage to valve from circuit board.</p> <p>Dirty valve.</p> <p>Worn valve core.</p>	<p>Check power supply.</p> <p>Replace circuit board. (Refer to Section 9.1.4.)</p> <p>Clean or rebuild valve.</p> <p>Rebuild valve.</p>

<b>Problem</b>	<b>Probable Cause</b>	<b>Solution</b>
Safety valve(s) pops off.	Defective safety valve.	Replace safety valve.
	Plugged waste muffler.	Replace muffler.
	Defective solenoid valve.	Rebuild or replace solenoid valve.
	System does not cycle properly.	Check all wires and connections. Repair as needed. If problem continues, replace circuit board.
Compressor does not run. ON/OFF switch in ON position.	Molecular sieve contaminated.	Replace molecular sieve. Call AirSep Industrial Service Department for assistance.
	No power to unit.	Check electrical outlet for power.
	Unit circuit breaker tripped.	Reset or replace circuit breaker.
	Blown 3-amp fuse.	Replace fuse - 3 amps, 250 volts, BUSS AG3 type. (See Figure 16.)
	Faulty electrical connections.	Check electrical connections.
	Defective ON/OFF switch.	Replace ON/OFF switch.
	Defective circuit board.	Replace circuit board. (Refer to Section 9.1.4.)
Defective compressor.	Replace compressor. (Refer to Section 9.1.5.)	
Concentrator runs with intermittent alarm. Oxygen flow 17 SCF/hr (8 lpm). Purity is within specifications.	Defective relay switch.	Replace relay switch.
	Defective oxygen monitor board.	Replace monitor board. (See Figure 16.)
	Defective alarm board.	Replace alarm board. (See Figure 16.)
	Faulty electrical connection.	Check electrical connection.

Problem	Probable Cause	Solution
<p>Concentrator runs with oxygen monitor light illuminated for more than 15 minutes.</p> <p>Audible alarm does not sound. Low purity oxygen (21-82%)</p>	<p>Defective alarm board.</p> <p>Defective alarm buzzer.</p>	<p>Replace alarm board.</p> <p>Replace alarm buzzer.</p>
<p>Concentrator runs with audible alarm for more than 15 minutes. Oxygen monitor light is not illuminated. Low purity oxygen (21-82%).</p>	<p>Defective oxygen monitor light.</p> <p>Faulty electrical connections.</p>	<p>Replace oxygen monitor light.</p> <p>Check all wires and connections. (Refer to the wiring diagrams in Appendix A.) If problem continues, replace alarm board.</p>

### 9.1.1 Pressure Switch Troubleshooting

The pressure switch is located across from the electrical panel above the fan.

If the pressure switch does not work properly, review the following probable causes:

Probable Cause	Solution
Incorrect electrical connections.	Check leads to switch. Make sure they are properly connected.
Faulty control circuit.	Check electrical power supply to switch. Check for open-circuited or grounded wires and loose connections at terminal block or switch.
Incorrect adjustment.	Check high and low adjustments for proper setting. (See Appendix C — Component Literature.)

If you cannot correct the operation of the pressure switch, replace the entire switch.

### 9.1.2 Solenoid Valve Troubleshooting

If a solenoid valve does not energize or stays constantly energized, review the following probable causes:

Probable Cause	Solution
Defective valve.	Rebuild or replace valve.
Defective circuit board.	Replace circuit board.
Defective wire to valve.	Repair or replace wire.
Defective coil.	Replace coil.

To determine if a solenoid valve, main circuit board, or wire is defective, review the following:

### Solenoid Valves

Set a voltmeter to DC, and carefully connect the leads to the two terminal spades on the coil of the solenoid valve. The voltmeter should register 100 VDC  $\pm 10\%$  when energized, and 0 when de-energized.

### Compressor Relief Valve

This valve is normally closed. A problem with the valve exists only if air constantly escapes from the outlet.



Whenever you start up the RELIANT, it is normal for air to escape from the compressor relief valve for 3-5 seconds. During this period, the valve receives 0 voltage.



If all of the solenoid valves receive the proper voltage but a solenoid valve still malfunctions, proceed to rebuild the valve. Refer to the troubleshooting chart for further information.

If any valve, with the exception of the compressor relief valve, does not energize:

1. Check the wires from the circuit board to the valves for defects.
2. If wires do not appear defective, replace the circuit board.
3. If the problem still exists, replace the solenoid valve coil.

### 9.1.3 Main Circuit Board Removal

1. Set the unit's ON/OFF switch to the OFF position, and unplug the power cord.
2. Remove the left side panel.
3. Disconnect the connectors from the circuit board. If the unit has an oxygen monitor installed, the main circuit board is the lower one.



The Printed Circuit Boards (PCBs) contain components that are sensitive to electrostatic discharge (ESD) and can be damaged if not handled properly. As when handling any ESD-sensitive PCB, observe standard ESD safety procedures. These procedures include the following:

- Handle the PCB only by the edges.
- Work on a grounded ESD mat.
- Wear a grounded wrist strap.
- Store PCBs only in anti-static bags.

4. Push in on the board support tabs with a slotted screwdriver while you pull each corner.
5. Remove the circuit board.

### 9.1.4 Main Circuit Board Installation



Handle the new circuit board only by the edges to prevent an electrostatic short.

1. Push the circuit board on to the four support tabs.
2. Firmly plug the connectors into the new circuit board so that the connectors' locking tabs lock against the circuit board.
3. Reconnect the side panel.

## 9.1.5 Compressor Removal

To remove the compressor for exchange, follow the steps below:

1. Set the ON/OFF switch to the OFF position, and unplug the power cord.
2. Remove both side panels.
3. Remove the suction tube and the red air hose from the compressor.



**NOTE**

To remove the air hose from the compressor, make sure that the hose does not turn when you loosen the brass nut.

4. Disconnect the two power cords from the terminal block and the two capacitor wires.
5. Remove the four bolts that connect the compressor plate to the base of the unit.
6. Slide out the compressor.



**NOTE**

Take note of the assembly of the spring mounts. These components will need to be reinstalled when the new compressor is assembled.

7. Carefully place the compressor upside down, and remove the four bolts that connect the compressor to the mounting plate.

### 9.1.6 Compressor Installation

To install a new compressor, follow the steps below:

1. Place the new compressor upside down.
2. Align the holes of the aluminum spring mount plates with the holes on the compressor.
3. Place the springs on the spring mount plates.
4. Place the compressor mounting bracket onto the springs.
5. Thread the four bolts into the compressor ensuring that all spring mount assembly parts are present.
6. Turn the compressor right side up. Make sure that the springs are centered on the black plastic bushings.
7. Thread the brass fittings and pressure relief valve into the compressor.
8. Follow the compressor removal procedure in reverse order.



**NOTE**

Use an oxygen compatible leak-detecting solution to leak test the brass fittings and the air hose to ensure that no air leaks from these connections.

9. Reconnect both side panels on the unit.



# Appendix A

## Technical Data

### Specifications

#### AirSep RELIANT Oxygen Generator

Oxygen Output: 17 SCFH at 0-50 psig\* (0-3.4 atm) (0-3.4 bars) at 120 VAC  $\pm$ 10%, 60 Hz or 220 VAC  $\pm$ 10%, 50 hz  
 .45 Nm<sup>3</sup>/hr at 0-345 kPa\*\* at 120 VAC  $\pm$ 10%, 60 Hz or 220 VAC  $\pm$ 10%, 50 hz  
 8 slpm at 0-345 kPa\*\*\* at 120 VAC  $\pm$ 10%, 60 Hz or 220 VAC  $\pm$ 10%, 50 hz

Dew Point: -100°F  
 -73°C

Oxygen Purity: 93-95% at 1-10 SCFH\*  
 93-95% at .03-.26 Nm<sup>3</sup>/hr\*\*  
 93-95% at 1-5 slpm\*\*\*  
 90%  $\pm$ 3% at 11-15 SCFH\*  
 90%  $\pm$ 3% at .29-.45 Nm<sup>3</sup>/hr\*\*  
 90%  $\pm$ 3% at 6-8 slpm\*\*\*

Response Time: Requires 20-30 minutes (4 hours with the optional 60 U.S. gal [227 l] receiver) to achieve maximum purity after initial start-up or extended shutdown.

Sound Level: 58 dB(A) at 1 m, open field conditions

Dimensions: 22.5 x 24.5 x 36.25 in. (W x D x H)  
 57.2 x 62.3 x 92.1 cm (W x D x H)

Weight: 175 lb (80 kg)

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

\*\* Nm<sup>3</sup> (normal cubic meters) gas measured at 1 atmosphere and 0°C.

\*\*\* slpm (liter per minute) gas measured at 1 atmosphere and 70°F.

Power Requirements (±10%): 120 VAC, 60 Hz, Single Phase, 6 A  
220 VAC, 50 Hz, Single Phase, 3 A

Auxiliary Oxygen Receiver Specifications (If Supplied):	60 U.S. gal 227 l 20 x 51 in. (Dia x H) 50.8 x 129.5 cm (Dia x H)
	150 lb 68 kg



Provide proper voltage to the oxygen generator (120 VAC ±10% or 220 VAC ±10%) to prevent damage not covered under the AirSep Product Warranty.



The RELIANT Oxygen Concentrator delivers up to 17 SCFH (.45 Nm<sup>3</sup>/hr or 8 slpm) of 90% ±3% oxygen gas and operates at delivery pressures up to 50 psig (345 kPa) (3.4 atm) (3.4 bars) at 120 VAC, 60 Hz or 220 VAC, 50 Hz.

Operation at a flow rate or delivery pressure outside standard specifications requires concentrator modification(s). Please contact AirSep for further assistance.

## **Wiring Diagrams**

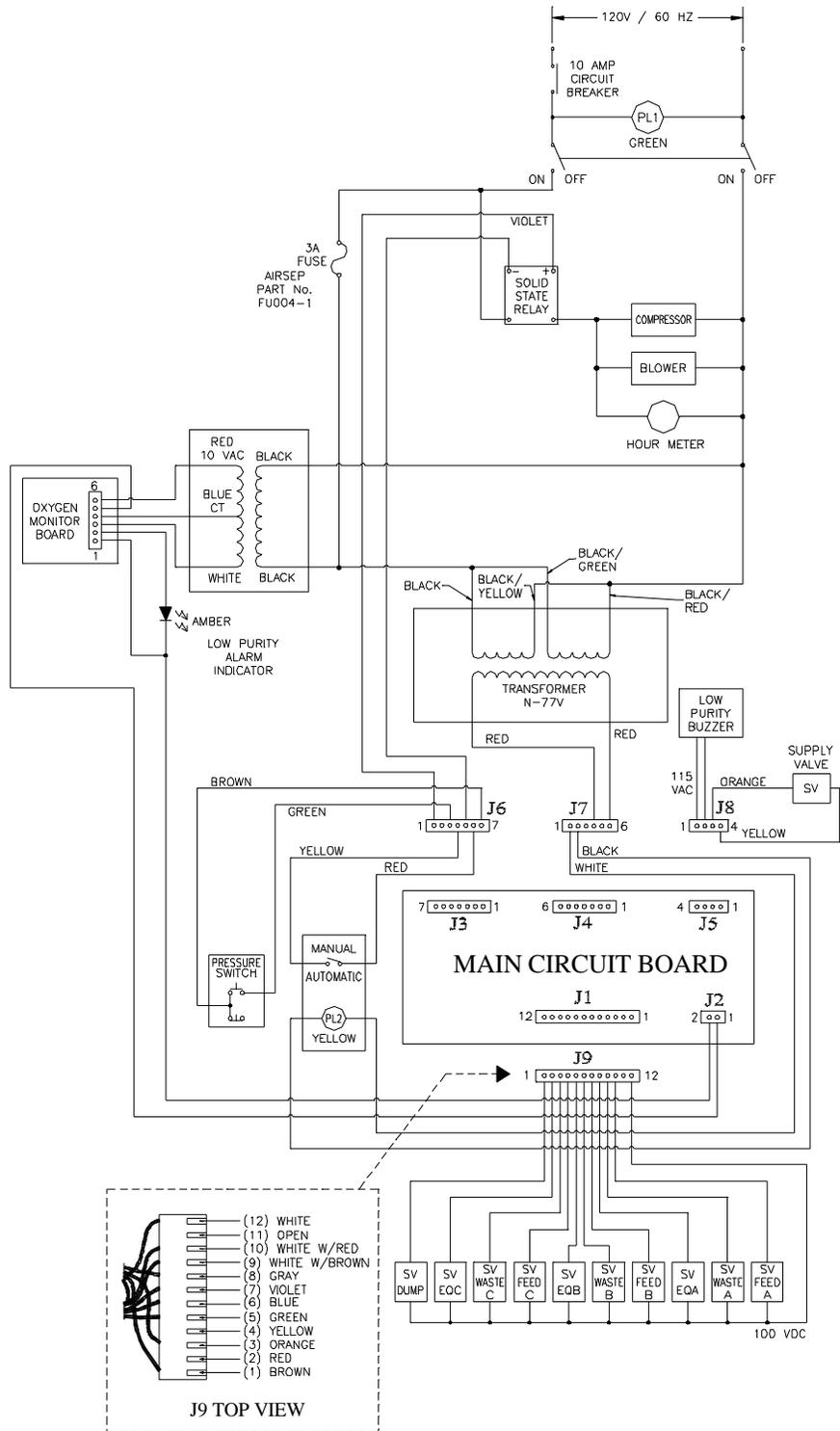


Figure A1 - 120 V Wiring Diagram





# Appendix B

## Accessory/Spare Parts Kits

### Accessory Kit

#### ■ Part Number — KI046-1

- 1 ea. Reliant Generator Manual
- 1 ea. 4-ft (1.2-m) Hose Assembly
- 1 ea. Primary/Secondary Oxygen Ball Valve Assembly

### Auxiliary Oxygen

### Receiver

### Accessory Kit

#### ■ Part Number — KI048-1

- 1 ea. 7-ft (2.1-m) Hose Assembly
- 1 ea. Oxygen Isolation Ball Valve Assembly
- 1 ea. ¼ Hex Nipple
- 1 ea. ¼ MPT x B size Oxygen Brass Fitting
- 1 ea. ¼ FPT Jomar Ball Valve
- 1 ea. Auxiliary Oxygen Receiver Supply Valve assy.

### Spare Part Kit

#### ■ Part Number — KI049-1

- 2 ea. 3-amp Fuse
- 2 ea. Microalserter Filter Element (Coalescing Filter Element)
- 2 ea. Air Intake Gross Particle Filter (Foam Filter)
- 2 ea. Compressor Intake Filter



# Appendix C

## Component Literature

### Fan

- Dayton  
Operating Instructions and Parts Manual —  
Models 1C982B, 2C067A, 2C069B, 2C915A,  
2C916B, 4C015B, and 4C442 Fans

### Filters

- Wilkerson  
Service Manual for Microalescer Filter

### Gauge

- Wika  
Pressure Gauges Specifications Sheet

### Pressure Switch

- ASCO  
Installation and Maintenance Instructions —  
Pressure Switches

### Regulator

- Wilkerson  
Oxygen Pressure (Reverse Flow) Regulator  
Specification Sheet

### Valves

- Neles-Jamesbury  
Ball Valves Specification Sheets
- Control Devices  
Super-tite Safety Valve  
Specification Sheet
- ASCO  
Valve Installation and Maintenance Instructions  
Series 8225
- ASCO  
Valve Installation and Maintenance Instructions  
Series 8262–8263
- ASCO  
Valve Installation and Maintenance Instructions  
Series 8325



OPERATING INSTRUCTIONS & PARTS MANUAL

SHADED POLE BLOWERS

MODELS 1C982B, 2C067A, 2C069B,  
2C915A, 2C916B, 4C015B AND 4C442

FORM 5S2553  
04040  
0293/034/10M

READ CAREFULLY BEFORE ATTEMPTING TO ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THE PRODUCT DESCRIBED. PROTECT YOURSELF AND OTHERS BY OBSERVING ALL SAFETY INFORMATION. FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE! RETAIN INSTRUCTIONS FOR FUTURE REFERENCE.

MODELS 1C982B, 2C916B

MODEL 2C067A

MODELS 2C915A, 4C442

MODELS 2C069B, 4C015B

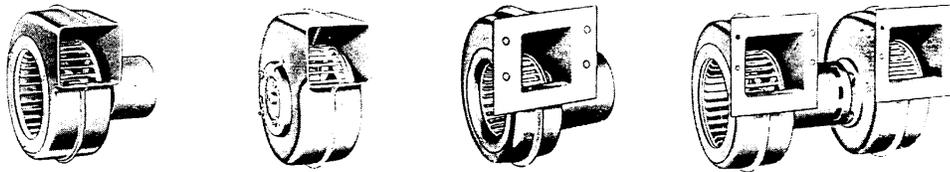


Figure 1

**Description**

The Dayton shaded pole blower, finished in grey enamel, is a single speed unit designed specifically for heating, cooling, exhausting, ventilating and drying. It is field interchangeable with most direct drive blowers and can be mounted in any discharge position. Blower is driven by a shaded-pole motor which features automatic-reset thermal protection.

Unit automatically shuts off should excessive motor temperatures develop. Maximum ambient temperature is 104°F (40°C).

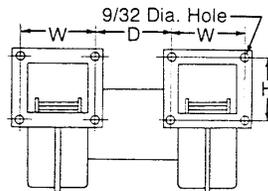


Figure 2

**Bolt Hole Dimensions**

MODEL	"H"	"W"	"D"
1C982B, 2C916B	—	—	—
2C067A	—	—	—
2C915A	1½	4⅛	—
2C069B	1 <sup>15</sup> / <sub>32</sub>	4⅛	3 <sup>19</sup> / <sub>32</sub>
4C015B	2 <sup>7</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>
4C442	1½	4⅛	—

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**General Safety Information**

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
2. Blower must be securely and adequately grounded. This can be accomplished by wiring with a grounded, metal-clad raceway system, by using a separate ground wire connected to the bare metal of the blower frame, or other suitable means.
3. Always disconnect power source before working on or near a motor or its connected load. If the power disconnect point is out-of-sight, lock it in the open position and tag to prevent unexpected application of power.
4. All moving parts should be guarded.
5. Be careful when touching the exterior of an operating motor — it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage — modern motors are built to operate at higher temperatures.
6. Protect the power cable from coming in contact with sharp objects.
7. Do not kink power cable and never allow the cables to come in contact with oil, grease, hot surfaces, or chemicals.
8. Make certain that the power source conforms to the requirements of your equipment.
9. Wiping or cleaning rags and other flammable waste materials must be placed in a tightly closed metal container and disposed of later in the proper fashion.
10. When cleaning electrical or electronic equipment, always use an approved cleaning agent such as dry cleaning solvent.
11. Do not use these blowers in explosive atmospheres.

6119-4161

Dayton Models 1C982B, 2C067A, 2C069B, 2C915A, 2C916B, 4C015B, and 4C442 Fans

FORM 5S2553 MODELS 1C982B, 2C067A, 2C069B, 2C915A, 2C916B, 4C015B AND 4C442

04040

**Replacement Parts List**

REF. NO.	DESCRIPTION	PART NO. FOR MODELS:						
		1C982B	2C067A	2C069B	2C915A	2C916B	4C015B	4C442
1	Housing, LH	8853-4288	8853-4286	8853-4303	8853-4287	8853-4288	8853-4304	8853-4287
2	Housing, RH	—	—	8853-4302	—	—	8853-4305	—
3	Blower wheel, LH	8710-0003	0912-0023	8710-0003	0909-0021	—	0905-0058	0909-0021
4	Blower wheel, RH	—	—	8710-0002	—	8710-0003	0905-0059	—
5	Inlet ring	8793-4054	8793-4054	8793-4054	8793-4052	8793-4054	8793-4051	8793-4052
6	Gasket	0912-0167	—	0912-0167	0912-0167	0912-0167	0912-0167	0912-0167
7	Outlet box cover	8591-6628	—	8591-6628	8591-6628	8591-6628	8591-6628	8591-6628
8	Nut #8-32	*	*	*	*	*	*	*
9	Lockwasher #8	—	*	—	—	—	—	—
10	Plain washer #8	*	*	*	*	*	*	*
11	Grommet	0912-0168	0911-0006	0912-0168	0912-0168	0912-0168	0912-0168	0912-0168
12	Screw #8-1/4	*	*	*	*	*	*	*
13	Motor	7163-5179	7163-3293	7163-5182	7121-3483	7163-5181	7121-4932	7121-3467

(\*) Standard hardware item, available locally.

**Specifications**

MODEL	WHEEL SIZE		MOTOR			OUTLET OPENING		OVERALL DIMENSIONS		
	DIA.	W	HP	SPD	PWR. REQD.	H	W	H	W	D
1C982B	5¼	2⅞	⅓	1	115V 50/60 Hz	2½⅙	3⅝	8⅞	6¹⁹⁄₃₂	8¼⅙
2C067A	5¼	2⅞	⅓	1	115V 50/60 Hz	2½⅙	3⅝	8⅞	4⅞	8¼⅙
2C069B	5¼	2⅞	¼	1	115V 50/60 Hz	2½⅙	3⅝	8⅞	11⅞	8¼⅙
2C915A	3⅞⅙	1⅞	⅓	1	230V 50/60 Hz	2½	2½	7⅞	6³⁄₁₆	6¾
2C916A	5¼	2⅞	⅓	1	230V 50/60 Hz	2½⅙	3⅝	8⅞	6¹⁹⁄₃₂	8¼⅙
4C015B	3	1⅞	¼	1	115V 50/60 Hz	2⅞	2²¹⁄₃₂	5¼	8⁵⁄₁₆	5⁵⁄₁₆
4C442	3⅞⅙	1⅞	⅓	1	115V 50/60 Hz	2½	2½	7⅞	6³⁄₁₆	6¾

NOTE: Automatic-reset thermal protection. All dimensions in inches.

**Performance**

MODEL	CFM AIR DELIVERY AT SPEED AND STATIC PRESSURE (SP) SHOWN						FREE AIR		
	FREE AIR	0.1' SP	0.2' SP	0.3' SP	0.4' SP	0.5' SP	SPEED *	WATTS *	AMPS *
2C067A	108	94	79	61	25	—	1530	47	0.58
2C915A	140	136	131	125	119	110	3020	80	0.51
4C442	140	136	131	125	119	110	3020	80	1.02
4C015B	157	145	134	116	103	72	3180	74	0.98
1C982B	160	151	141	125	93	16	1460	67	1.00
2C916B	160	151	141	125	93	16	1460	67	0.50
2C069B	320	305	284	252	195	50	1320	92	1.27

(\*) At Free Air.

NOTE: Automatic-reset thermal protection. All data based on 60Hz operation. When operated on 50Hz, a decrease of approximately 20% will occur in flow rate performance.

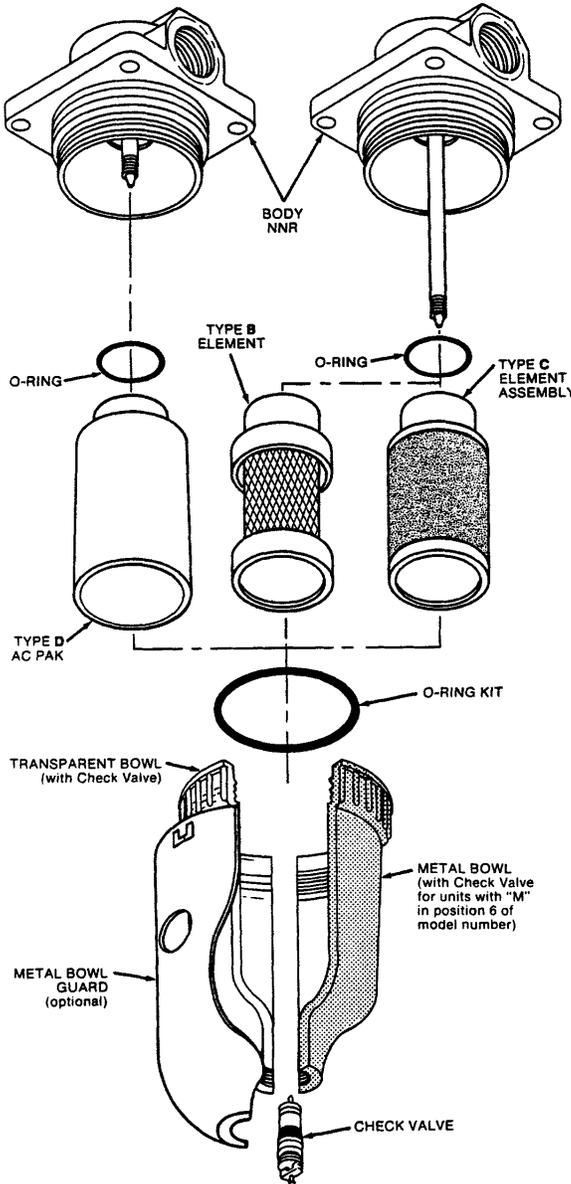


# SERVICE MANUAL

MICROalescer® Filter  
 Models M00-C2-000 and M00-02-000  
 with Variations and Accessories

9SM-NH-M00  
 NOVEMBER 1988

REPLACES SERVICE MANUAL  
 PAGES: SM-M00-9SM,  
 9SM-BJ-M00, C.J-M00-9SM,  
 FD-M00-9SM, KB-M00-9SM  
 and ME-M00-9SM.



NNR = NOT NORMALLY REPLACED

## WARNING

### DO NOT PLACE PLASTIC BOWL UNIT IN SERVICE WITHOUT METAL BOWL GUARD INSTALLED.

Plastic bowl units are sold only with metal bowl guards except miniature models. To minimize the danger of flying fragments in the event of plastic bowl failure, the metal bowl guard should not be removed. If the unit is in service without the metal bowl guard installed, manufacturer's warranties are void, and the manufacturer assumes no responsibility for any resulting loss. IF UNIT HAS BEEN IN SERVICE AND DOES NOT HAVE A METAL BOWL GUARD, ORDER ONE AND INSTALL BEFORE PLACING BACK IN SERVICE.

## CAUTION

Certain compressor oils, chemicals, household cleaners, solvents, paints and fumes will attack plastic bowls and can cause bowl failure. Do not use near these materials. When bowl becomes dirty replace bowl or wipe only with a clean, dry cloth. Reinstall metal bowl guard or buy and install a metal bowl guard. Immediately replace any crazed, cracked, damaged or deteriorated plastic bowl with a metal bowl or a new plastic bowl and a metal bowl guard.

### SOME OF THE MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS

Acetaldehyde	Chlorobenzene	Methylene chloride
Acetic acid (conc.)	Chloroform	Methylene stearate
Acetone	Cresol	Milk of lime (CaOH)
Acrylonitrile	Cyclohexanol	Nitric acid (conc.)
Ammonia	Cyclohexanone	Nitrobenzene
Ammonium fluoride	Cyclohexene	Nitrocellulose laquer
Ammonium hydroxide	Dimethyl formamide	Phenol
Ammonium sulfide	Dioxane	Phosphorous hydrochloride
Anaerobic adhesives	Ethane tetrachloride	Phosphorous trichloride
8 sealants	Ethyl acetate	Propionic acid
Antifreeze	Ethyl ether	Pyridine
Benzene	Ethylamine	Sodium hydroxide
Benzoic acid	Ethylene chlorohydrin	Sodium sulfide
Benzyl alcohol	Ethylene dichloride	Styrene
Brake fluids	Ethylene glycol	Sulfuric acid (conc.)
Bromobenzene	Formic acid (conc.)	Sulphural chloride
Butyric acid	Freon (refrig. & propell.)	Tetrahydronaphthalene
Carbolic acid	Gasoline (high aromatic)	Toluene
Carbon disulfide	Hydrazine	Turpentine
Carbon tetrachloride	Hydrochloric acid (conc.)	Xylene
Caustic potash solution	Lacquer thinner	Perchlorethylene and others
Caustic soda solution	Methyl alcohol	

### TRADE NAMES OF SOME COMPRESSOR OILS, RUBBER COMPOUNDS AND OTHER MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS

Atlas "Perma-Guard"	National Compound #N11
Buna N	"Nylock" VC-3
Cellulube #150 and #220	Parco #1306 Neoprene
Crylex #5 cement	*Permabond #910
*Eastman 910	Petron PG287
Garlock #98403 (polyurethane)	Prestone
Haskel #568-023	Pydraul AC
Higard Co.'s hiL phene	Sears Regular Motor Oil
Houghton & Co. oil #1120, #1130 and #1055	Sinclair oil "Lily White"
Houtosafe 1000	Stauffer Chemical FYROQUEL #150
Kano Krol	Stillman #SR 269-75 (polyurethane)
Keystone penetrating oil #2	Stillman #SR 513-70 (neoprene)
*Loctite Z71	Tannergas
*Loctite 290	Telar
*Loctite 601	Tenneco anderol #495 and #500 oils
*Loctite Teflon-Sealant	Titon
Marvel Mystery Oil	*Vibra-tite
Minn. Rubber 386V	Zerex

\*When in raw liquid form.

WE CANNOT POSSIBLY LIST ALL HARMFUL SUBSTANCES. SO CHECK WITH A MOBAY CHEMICAL OR GENERAL ELECTRIC OFFICE FOR FURTHER INFORMATION ON POLYCARBONATE PLASTIC.

## CAUTION

Except as otherwise specified by the manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication, and manufacturer assumes no responsibility for any resulting loss. Before using with fluids other than air, or for non-industrial applications, or for life support systems consult manufacturer for written approval.

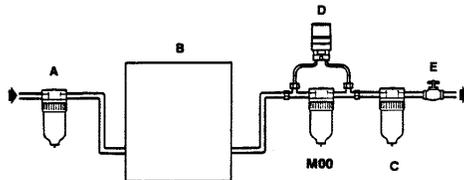
(see reverse side for Installation and Maintenance Instructions)

Printed in U.S.A.

Wilkerson Microalescer Filter

**INSTALLATION**

1. Refer to warning on front page.
2. Purge downstream air line of oil.
3. Install as close as possible to point where air is being used.
4. Install the unit with the air flowing in the direction indicated by arrow on the body.
5. Maximum inlet pressure and operating temperature ratings are: transparent plastic bowls, 150 psig (10,3 bar) and 125°F (51,7°C); metal bowls, 200 psig (13,8 bar) and 175°F (79°C).

**TYPICAL INSTALLATION** (not to scale)

- A. PREFILTER** - It is recommended that a Wilkerson 5-micron-rated prefilter, be installed upstream from the coalescer filter to prolong element life.
- B. AIR DRYER** - (refrigerative or Twin Tower) An air dryer is generally preferred for optimum results, but is optional.
- C. AC PACK** - The Type D element is an adsorption type for removing oil vapors, oil-associated odors, whether petroleum-base or synthetic base. Element service life is approximately 1200 hours.
- D. DIFFERENTIAL PRESSURE GAUGE** - Maximum recommended pressure drop across coalescer filters is 10 psi (0,7 bar). This can be monitored by installing a Wilkerson differential pressure gauge.
- E. VALVE** - Do not use a valve or shutoff device in conjunction with a coalescer filter that will allow a momentary or surge pressure drop greater than 50 psi (3,4 bar). To avoid high surges which can either ruin the element or momentarily allow downstream contamination, use a slow-opening type valve.

**MAINTENANCE**

1. The element operates effectively when it is saturated. The element's useful life will end only when the resistance to flow becomes too high and the maximum permissible pressure is reached. The element cannot be cleaned or reused and must be replaced at the end of its useful life.
2. Drain the unit at least once per shift.
3. When bowl becomes dirty replace the bowl or clean by wiping with a dry, clean cloth.
4. Before placing the unit in service, make sure that the bowl and bowl guard are reinstalled, and securely locked in place.

**REPAIR KITS AND REPLACEMENT PARTS**

Repair Kit (Element Type B) .....	<b>MSP-95-991</b>
Repair Kit (Element Type C) .....	<b>MTP-95-547</b>
Repair Kit (Element Type D) .....	<b>MXP-95-054</b>
Plastic Bowl w/Check Valve .....	<b>GRP-96-310</b>
Metal Bowl w/Check Valve .....	<b>GRP-96-506</b>
Metal Bowl Guard .....	<b>GRP-96-309</b>

**ACCESSORIES**

Mounting Bracket .....	<b>GRP-95-754</b>
------------------------	-------------------



## Pressure Gauges

### ABS Plastic or Painted Steel Case Copper Alloy Wetted Parts Model 111.10

#### Application

Fluid medium which does not clog connection port or corrode copper alloy. Example: hydraulic and pneumatic systems, pumps, compressors, water systems, regulators.

#### Sizes

1 1/2", 2" and 2 1/2" (40 mm, 50 mm and 63 mm)

#### Accuracy

1 1/2"  $\pm$  3/2/3% (ASME B40.1 Grade B)  
2" and 2 1/2"  $\pm$  1.5% full scale value

#### Ranges (All ranges not stocked)

Vacuum 30" Hg  
Compound to 200 PSI  
Pressure from 10 PSI to 5000 PSI

#### Working Range

Steady: 3/4 of full scale value  
Fluctuating: 2/3 of full scale value  
Short Time: Full scale value

#### Operating Temperature

Ambient: -13 °F to 140 °F (-25 °C to 60 °C)  
Media: max. 140 °F (+60 °C)

#### Temperature Error

Additional error when temperature changes from reference temperature of 68 °F (20 °C) +0.3% for every 18 °F (10 °C) rising or falling. Percentage based on gauge accuracy.

#### STANDARD FEATURES

##### Connection

Material: copper alloy  
Lower mount (LM)  
Center back mount (CBM)  
1 1/2"-1/8" NPT  
2"-1/8" or 1/4" NPT  
2 1/2"-1/4" NPT

##### Bourdon Tube

Material: copper alloy  
30" Hg (Vac) to 600 PSI C-type  
800 PSI to 5000 PSI helical type

##### Movement

Copper alloy

##### Dial

White plastic with stop pin and black and red lettering

##### Pointer

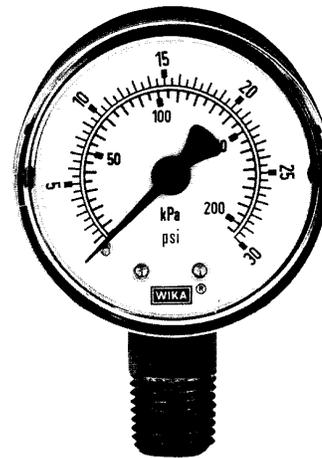
1 1/2" Black plastic  
2" and 2 1/2" Black aluminum

##### Case

1 1/2" Black plastic  
2" and 2 1/2" Black steel  
U-clamp case; Black steel with chrome plated crimped ring

##### Standard Scales

PSI only 1 1/2" and 2" 1/8" NPT CBM  
PSI/KPA for 2" 1/4" NPT and 2 1/2"

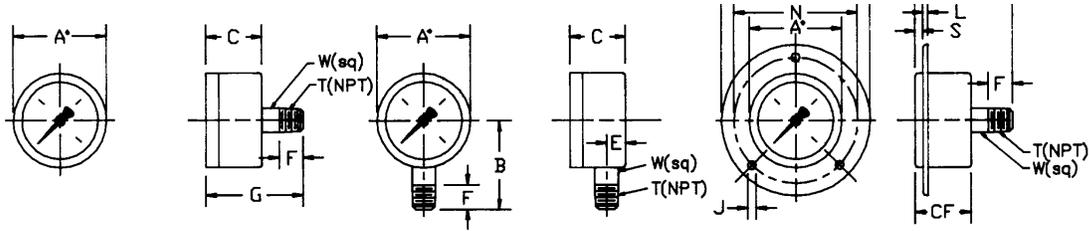


##### Window

Snap-in acrylic  
Flat window glass for gauges with U-clamp

##### ORDER OPTIONS (min. order may apply)

Front or rear flange  
Brass threaded or pressfit restrictor  
U-Clamp  
Plastic adaptor ring for non-metric panel cutout  
Slip-fit or friction ring  
Glass window  
Plastic case  
Stainless steel case  
Brass case  
Special case colors  
Special connections limited to wrench flat area  
Nickel or chrome plated connection  
Oxygen cleaned  
Medical specification  
Rubber cover  
Custom dial lay-out  
Other pressure scales available:  
Bar, KPA, Kg/cm<sup>2</sup> and dual scales  
DIN standards  
Red set pointer  
Red drag pointer



111.10 CBM  
1 1/2"-2"-2 1/2"

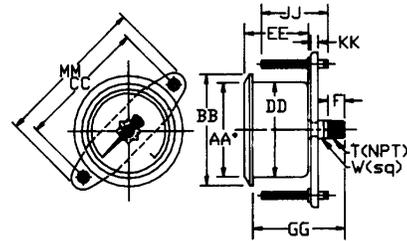
111.10 LM  
1 1/2"-2"-2 1/2"

111.10 CBM/FF  
1 1/2"-2"-2 1/2"

A\* NOMINAL SIZE

PLASTIC CASE		A*	C	F	G	T	W
111.10 1 1/2"	MM	40.6	24.9	9.9	40.9	-	12
1/8"NPT CBM	IN	1.60	0.98	.39	1.61	1/8	.47

STEEL CASE		A*	C	F	G	T	W
111.10 1 1/2"	MM	40	24.5	10	40.5	-	12
CBM	IN	1.50	.96	.39	1.59	1/8	.47
111.10 2"	MM	50	28	13	47	-	14
CBM	IN	2.00	1.10	.51	1.85	1/4	.55
111.10 2 1/2"	MM	63	28	13	47	-	14
CBM	IN	2.50	1.10	.51	1.85	1/4	.55



111.10 CBM/UC  
2 1/2"

111.10 1 1/2"	LM	MM	A*	B	C	E	F	T	W
		IN	1.50	1.42	.90	.31	.39	1/8	.47
111.10 2"	LM	MM	50	44	26	9.5	13	-	14
		IN	2.00	1.73	1.02	.37	.51	1/4	.55
111.10 2 1/2"	LM	MM	63	52	27	9.5	13	-	14
		IN	2.50	2.05	1.06	.37	.51	1/4	.55

111.10 1 1/2"	CBM/FF	MM	A*	CF	F	G	J	L	M	N	S	T	W
		IN	1.50	.98	.39	1.59	.14	.08	2.40	2	.08	1/8	.47
111.10 2"	CBM/FF	MM	50	29	13	47	3.5	2	71	60	2	-	14
		IN	2.00	1.14	.51	1.85	.14	.08	2.79	2.36	.08	1/4	.55
111.10 2 1/2"	CBM/FF	MM	63	29	13	47	3.5	2	85	75	2	-	14
		IN	2.50	1.14	.51	1.85	.14	.08	3.35	2.95	.08	1/4	.55

111.10 2 1/2"	CBM/UC	MM	AA*	BB	CC	DD	EE	F	GG	JJ	KK	MM	T	W
		IN	2.50	2.64	3.07	2.42	1.23	.61	2.37	1.77	.20	3.58	1/4	.55

Ordering Information:

State computer part number (if available)/model number/size/range/connection size and location/options required.

WIKA reserves the right to make design changes without prior notice.

07/91

**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

**TRI-POINT® switches**

**ADJUSTABLE DEADBAND COMPACT LINE SWITCHES  
OPEN FRAME, GENERAL PURPOSE OR  
WATERTIGHT SWITCH ENCLOSURES**

SERIES  
**PA10, PA11, PA16  
PA20, PA21, PA26  
PA30, PA31, PA36**

Form No. P7032—T88

**DESCRIPTION**

The Adjustable Deadband Compact Line Switch is of rugged aluminum alloy construction. The switch may be provided with a General Purpose NEMA Type 1 Switch Enclosure, a Watertight NEMA Type 3 and 4 Switch Enclosure or an open-frame switch. The compact line switch may be supplied as a complete unit, that is, the switch assembly unit and the transducer (either pressure, temperature or mechanical transducer) completely assembled or as separate units to be assembled upon installation. The actuation (set) point and the re-actuation (reset) point are each independently adjustable over the full range of the switch. The switch assembly can be mated with a wide selection of interchangeable pressure, temperature and mechanical transducers to cover a broad range of pressures, fluids, temperatures and mechanical movements. The switch will control electrical circuits in response to changes in pressure, temperature or mechanical signals.

**IMPORTANT:** This sheet is designed to cover the installation and use of this switch on pressure transducers, temperature transducers and mechanical transducers. Review this sheet and select the paragraphs that apply to your particular installation and application. Throughout the sheet, the word "signal" will be used in place of pressure, temperature or mechanical changes.

**INSTALLATION**

Check the nameplate for the correct catalog number, pressure range, temperature range, media and rated over range pressure or temperature. Nameplates are located on cover and on the bottom of the transducer. Check to be sure the third digit in each number is the same. If not, the unit should not be used. (Refer to Figure 2)

**IMPORTANT:** All internal adjustments have been made at the factory. Any adjustment, alteration or repair to the internal parts of the switch other than stated herein voids all warranties. Signal setting adjustments required are made by the two adjusting nuts on the top of the switch.

**TEMPERATURE LIMITATIONS**

Ambient temperature limits are -4°F (-20°C) to 122°F (50°C). To determine fluid temperature limitations, see Form No. P7033 for Pressure Transducer catalog numbers and construction materials, then refer to chart below.

TRANSDUCER CONSTRUCTION MATERIALS	RATINGS FLUID TEMPERATURE
Buna N or Neoprene	-4°F (-20°C) to 179°F (82°C)
VTON*	-4°F (-20°C) to 250°F (121°C)
316 Stainless Steel	-50°F (-45°C) to 300°F (149°C)
All Nylon	Maximum 179°F (82°C)
All Nylon For Water Service	Maximum 130°F (55°C)

For steam service, the fluid temperature with a pigtail (siphon tube or condensate loop) installed directly into the transducer will be below 179°F (82°C).

**ASSEMBLY OF SWITCH AND TRANSDUCER UNITS** (Refer to Figure 2)

**IMPORTANT:** The switch unit and transducer unit may be provided as a complete assembly or as separate units. If separate units are provided, refer to Form No. P7033 for a complete listing of switch unit and transducer unit combinations. Form No. P7033 is provided to insure that the proper switch unit be assembled to the proper transducer unit.

Pay careful attention to exploded view provided in Figure 2 for assembly of switch unit and transducer unit. Proceed in the following manner:

1. CAUTION: The third digit in the catalog number on both the switch unit and the transducer unit must be identical. If not, do not assemble to each other. If the same, proceed.
2. Remove bolts (4) from base of switch unit. On general purpose or watertight constructions, remove switch cover.
3. Remove instruction label and pressure, temperature or mechanical switch range scale from the transducer unit.
4. Place transducer unit on base of switch unit and assemble. Start bolts (4) approximately two turns by hand to avoid the possibility of cross threading. After initial engagement, torque bolts (4) in a crisscross manner to 80 ± 10 inch-pounds.
5. Remove backing paper from range scale and install on the front of the switch body over the left opening and between the two slots with the adjusting indicator points.

**POSITIONING**

Switch may be mounted in any position.

**MOUNTING**

For mounting dimensions for general purpose switch enclosures, refer to Figure 3. For all switches, an optional mounting bracket is available. For mounting bracket mounting dimensions, refer to Figure 6.

**PIPING/TUBING (PRESSURE TRANSDUCER)**

Adequate support of piping and proper mounting of switch should be made to avoid excessive shock or vibration. To minimize the effect of vibration on a switch, mount perpendicular to vibration. Connect piping or tubing to switch at base of transducer. It is recommended that flexible tubing be used whenever possible. Apply pipe compound sparingly to male pipe threads only. If applied to transducer threads, it may enter the transducer and cause operational difficulty. Pipe strain on switch should be avoided by proper support and alignment of piping. When tightening pipe, do not use switch as a

lever. Wrenches applied to transducer body or piping are to be located as close as possible to connection point. **IMPORTANT:** For steam service, install a condensate loop (pigtail or steam siphon tube) directly into the pressure transducer.

**CAUTION:** To avoid damage to the transducer body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If TEFLON® tape, paste or similar lubricant is used, use extra care due to reduced friction.

**IMPORTANT:** To eliminate the effect of undesirable pressure fluctuations in the system, install a surge suppressor.

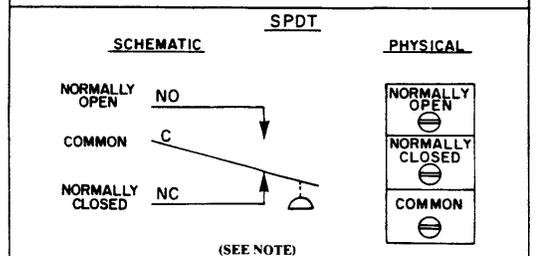
**WIRING**

Wiring must comply with local codes and the National Electrical Code. The general purpose switch enclosure is provided with a 7/8" diameter hole to accommodate 1/2" electrical hub or connector. It is recommended that a flexible conduit connection be used. If rigid conduit is used, do not consider it or use it as a means of supporting (mounting). For watertight switch enclosures, a watertight conduit hub must be installed in the 7/8" diameter hole; use conduit hub Part No. PP01 or equivalent. **IMPORTANT:** Electrical load must be within range stated on nameplate. Failure to stay within the electrical range of the switch rating may result in damage to or premature failure of the electrical switch. Use No. 14 AWG copper wire rated for 60°C minimum. **CAUTION:** Do not exert excessive screwdriver force on snap switch when making terminal connections. When connections are made, be sure there is no stress on the wire leads. Either condition may cause malfunction of switch.

Electrical Ratings For Standard & Suffix J Switches	
Ratings for Limit Controls and Pressure Operated Switches:	Ratings for Industrial Controls and Temperature Indicating and Regulating Equipment:
5 Amps Res., 125 or 250 VAC	15 Amps Res., 125 VAC
1/8 HP or 90 Watts, 125 VAC	10 Amps Res., 250 VAC
1/4 HP or 180 Watts, 250 VAC	1/8 HP or 90 Watts, 125 VAC
1/2 Amp Res., 125 VDC	1/4 HP or 180 Watts, 250 VAC
1/4 Amp Res., 250 VDC	1/2 Amp Res., 125 VDC
	1/4 Amp Res., 250 VDC

OPTIONAL SWITCH SUFFIX "H" HERMETICALLY SEALED ELECTRICAL RATING
25 AMPS Resistive
10 AMPS Inductive
3 AMPS Motor
3 AMPS Lamp
AT 28 VDC
1 AMP 125 VAC

**SCHEMATIC FOR STANDARD, SUFFIX "H" AND SUFFIX "J" SWITCHES**



**NOTE:** Terminal Connections (C, NC & NO) on snap switch are located differently than shown in the schematic above. Common "C" is located at the bottom. Normally Closed "NC" is located in the center. Normally Open "NO" is located at the top.

**INSTALLATION OF TEMPERATURE TRANSDUCERS**

(Refer to Figure 5)

**DIRECT PROBE**

The Direct Probe (local) Temperature Transducer is provided with 1/2 inch N.P.T. connection. When installing, do not use switch unit as a lever for tightening. Use wrenching flats provided at base of transducer for tightening.

**CAPILLARY AND BULB**

The Capillary and Bulb (remote) Temperature Transducers are provided with a length of capillary and a 3/8 inch diameter sensing bulb. **CAUTION:** Do not bend capillary at sharp angles. For proper operation, be sure sensing bulb is completely immersed in fluid and not in contact with heating element or anything that would directly affect the temperature of the fluid being sensed.

\*DuPont Co. Registered Trademark



ASCO Pressure Switches





**ASCO® TRIPOINT®** pressure switches

**SWITCH UNIT AND TRANSDUCER UNIT COMBINATIONS**  
**ADJUSTABLE DEADBAND COMPACT LINE PRESSURE SWITCHES**  
**OPEN FRAME, GENERAL PURPOSE OR WATERTIGHT SWITCH ENCLOSURES**

SERIES

PA10, PA11, PA16  
 PA20, PA21, PA26  
 PA30, PA31, PA36

Form No. P7033R1

**DESCRIPTION**

This sheet is a listing of switch unit and transducer unit combinations. The chart below is provided to insure that the proper switch unit is assembled to the proper transducer unit, thus providing a complete adjustable deadband pressure switch.

In the chart below, locate the switch unit catalog number being used. Then going to the right on the same line (as the switch unit catalog number) find the transducer unit catalog number which may be used with this particular switch unit. **IMPORTANT:** The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a Switch Unit Catalog No. PA20A can be used with Transducer Unit Catalog No. RE20A11. The mating produces a complete adjustable deadband pressure switch, Catalog No. PA20A/RE20A11. Note third digits in both catalog numbers are identical. If the third digit is not identical, it is an incorrect mate and the units should not be assembled.

**NOTE:** Switch units listed to left may be used with any transducer units listed to right provided they are on the same horizontal line.

SWITCH UNITS			RANGE		TRANSDUCER UNITS				
GENERAL PURPOSE ENCLOSURE	WATERTIGHT ENCLOSURE	OPEN FRAME	ADJUSTABLE OPERATING RANGE	RATED OVER-RANGE PRESSURE (psig)	ALUMINUM AND BUNA N CONSTRUCTION	POLYESTER, BRASS AND BUNA N CONSTRUCTION	BRASS AND BUNA N CONSTRUCTION	303 STAINLESS STEEL AND VITON* CONSTRUCTION	316 STAINLESS STEEL WELD DIAPHRAGM AND BODY CONSTRUCTION
PA30A	PA31A	PA36A	0 - 30" Hg (VAC)	50	RV34A11	—	RV34A21	RV34A32	—
PA20A	PA21A	PA26A	30" Hg (V) - 15 psig	50	RV24A11	—	RV24A21	RV24A32	—
PA30A	PA31A	PA36A	0 - 9 psig	60	RD30A11	RD30A71	RD30A21 (2)	RD30A32 (2)	—
PA20A	PA21A	PA26A	2 - 18 psig	60	RD20A11	RD20A71	RD20A21 (2)	RD20A32 (2)	—
PA30A	PA31A	PA36A	2 - 18 psig	100	—	—	—	—	RE30A44
PA20A	PA21A	PA26A	4 - 36 psig	150	RE20A11	RE20A71	RE20A21 (2)	RE20A32 (2)	RE20A44
PA10A	PA11A	PA16A	6 - 60 psig	150	RE10A11	RE10A71	RE10A21 (2)	RE10A32 (2)	RE10A44
PA10A	PA11A	PA16A	10 - 100 psig	200 (1)	RF10A11	RF10A71 (1)	RF10A21 (2)	RF10A32 (2)	RF10A44
PA10A	PA11A	PA16A	20 - 200 psig	400 (1)	RG10A11	RG10A71 (1)	RG10A21 (2)	RG10A32 (2)	RG10A44
PA10A	PA11A	PA16A	30 - 300 psig	450	RH10A11	—	RH10A21 (2)	RH10A32 (2)	RH10A44
PA10A	PA11A	PA16A	40 - 400 psig	500	RJ10A11	—	RJ10A21 (2)	RJ10A32 (2)	RJ10A44
PA20A	PA21A	PA26A	60 - 600 psig	2000	—	—	RL20A21	RL20A42 (3)	—
PA10A	PA11A	PA16A	100 - 1000 psig	2000	—	—	RL10A21	RL10A42 (3)	—
PA20A	PA21A	PA26A	180 - 1800 psig	4500	—	—	RN20A21	RN20A42 (3)	—
PA10A	PA11A	PA16A	300 - 3000 psig	4500	—	—	RN10A21	RN10A42 (3)	—
PA10A	PA11A	PA16A	600 - 6000 psig	7500	—	—	—	RQ10A42	—

**IMPORTANT:** All units listed above are suitable for air and hydraulic oil service. For water service, all units are suitable except aluminum.

**NOTES:**

- ① Rated overrange pressure on RF10A71 is 150 psig and on RG10A71 is 300 psig.
- ② These transducers are acceptable for steam service if used with pigtail (condensate loop) between steam line and transducer.
- ③ Transducers ending in 42 have 316 S.S. bodies, not 303 S.S.

\*DuPont's registered trademark.





**UNDERWRITERS LABORATORIES, INC. LISTED  
AND/OR RECOGNIZED COMPONENTS**

**ASCO® TRIPPOINT® Compact Line  
Pressure Switches**



Form No. P7047R1

**UL LISTINGS**

This sheet is a listing of switch unit and transducer unit combinations that are Listed and/or Component Recognized by Underwriters Laboratories, Inc. The table below is provided to insure that the proper switch unit (section) is assembled to the proper transducer unit (section), thus providing a complete, UL Listed and/or Recognized Component pressure switch. Only completely assembled combinations are UL Listed and/or Recognized Component. See table below for UL complementary product category listing and guide card numbers.

**INSTALLATION INSTRUCTIONS**

To determine the proper switch and transducer combinations, first locate the switch unit catalog number in the table below. Then going to the right on the same line (as the switch unit catalog number) find the transducer unit catalog number which may be used with this particular switch unit.

**IMPORTANT:** The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a switch unit Catalog No. PA31A can be used with transducer unit Catalog No. RV34A11. The mating produces a complete pressure switch Catalog No. PA31A/RV34A11.

SWITCH UNITS See Note ④					PRESSURE TRANSDUCER UNITS See Notes ①, ② & ③				
Series: PA, PB, PC & PG Followed by Numbers Below									
General Purpose Enclosure Type 1	Watertight Enclosure Types 3 & 3S	Watertight Enclosure Types 3, 3S, 4 & 6	Open-Frame (No Enclosure)	Applicable Options	Air Non-Hazardous Oil & Gas Aluminum/Buna N Construction	Air - Water Non-Hazardous Gas & Oil Polyester, Brass & Buna N Construction	Air - Water Non-Hazardous Gas, Oil & Steam Brass, Buna N & VITON* Construction	Corrosive Fluids Air - Water Non-Hazardous Gas & Oil 303 Stainless Steel & VITON* Construction	
40A	41A	44A	48A	46A	RD40A11	RD40A71	RD40A21	RD40A32	
30A	31A	34A	38A	36A	RV34A11	—	RV34A21	RV34A32	
20A	21A	24A	28A	26A	RV24A11	—	RV24A21	RV24A32	
30A	31A	34A	38A	36A	RD30A11	RD30A71	RD30A32 ②	RD30A32 ②	
20A	21A	24A	28A	26A	RD20A11	RD20A71	RD20A21 ②	RD20A32 ②	
30A	31A	34A	38A	36A	—	—	—	—	
20A	21A	24A	28A	26A	RE20A11	RE20A11	RE20A21 ②	RE20A32 ②	
10A	11A	14A	18A	16A	RE10A11	RE10A71	RE10A21 ②	RE10A32 ②	
10A	11A	14A	18A	16A	RF10A11	RF10A71	RF10A21 ②	RF10A32 ②	
10A	11A	14A	18A	16A	RG10A11	RG10A71	RG10A21 ②	RG10A32 ②	
10A	11A	14A	18A	16A	RH10A11	—	RH10A21 ②	RH10A32 ②	
10A	11A	14A	18A	16A	RJ10A11	—	RJ10A21	RJ10A32 ②	
20A	21A	24A	28A	26A	—	—	316 St. St. & VITON*	—	
10A	11A	14A	18A	16A	—	—	RL20A21	RL20A42	
20A	21A	24A	28A	26A	—	—	RL10A21	RL10A42	
10A	11A	14A	18A	16A	—	—	RN20B21	RN20B42	
10A	11A	14A	18A	16A	—	—	RN10B21	RN10B42	
10A	11A	14A	18A	16A	—	—	—	RQ10B42	

**NOTES:**

- ① All transducers used with general purpose and watertight switch units are UL Listed as Industrial Control Equipment—Enclosed, Motor Controllers —Pressure Operated, Guide NKPZ. Transducers which end in 11, 21, 32 or 42 and used with General Purpose and Watertight Switch Units are also UL Listed as Switches for Heating and Cooling Appliances, Guide MFHX.
- ② All transducers used with open-frame (no enclosure) switch units are considered UL Recognized Components as Industrial Control Equipment, Motor Controllers — Pressure Operated, Guide NKPZ2. Transducers which end in 11, 21, 32, or 42 and used with open-frame (no enclosure) switch units are also considered UL Recognized Components as Switches for Heating and Cooling Appliances, Guide MFHX2.
- \* DuPont's registered trademark.
- ③ When used for steam service, these transducers with general purpose and watertight switch units are also UL Listed as Limit Controls, Guide MBPR.
- ④ Transducers used with open-frame (no enclosure) switch units are considered UL Recognized Component Limit Controls, Guide MBPR2.
- ⑤ Suffix B is an applicable option.
- ⑥ Series PC10A, PC11A, PC16A, PC20A, PC21A, PC26A, PC30A, PC31A & PC36A are UL Recognized Components for use as Motor Controller — Pressure Operated (NKPZ2).

Form No. P7047R1

MADE IN U.S.A.

Automatic Switch Co.





**UNDERWRITERS LABORATORIES, INC. LISTED  
AND/OR RECOGNIZED COMPONENTS**

**ASCO® TRIPPOINT® Compact Line  
Temperature Switches**



Form No. P7047R1

**UL LISTINGS**

This sheet is a listing of switch unit and transducer unit combinations that are Listed and/or Component Recognized by Underwriters Laboratories, Inc. The table below is provided to insure that the proper switch unit (section) is assembled to the proper transducer unit (section), thus providing a complete, UL Listed and/or Recognized Component temperature switch. Only completely assembled combinations are UL Listed and/or Recognized Component. See table below for UL complementary product category listing and guide card numbers.

**INSTALLATION INSTRUCTIONS**

To determine the proper switch and transducer combinations, first locate the switch unit catalog number in the table below. Then going to the right on the same line (as the switch unit catalog number) find the transducer unit catalog number which may be used with this particular switch unit.

**IMPORTANT:** The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a switch unit Catalog No. PA10A can be used with transducer unit Catalog No. KB10A4. The mating produces a complete temperature switch Catalog No. PA10A/KB10A4.

SWITCH UNITS						TEMPERATURE TRANSDUCER UNITS				Applicable Options	
Series: PA, PB, PC, & PG Followed by Numbers Below						Direct Probe		6' Capillary & Bulb			
General Purpose Enclosure Type 1	Watertight Enclosure Types 3 & 3S	Watertight Enclosure Types 3, 3S, 4, 5, 6		Open-Frame (No Enclosure)	Applicable Options	Copper	316 Stainless Steel	Copper (Armored Capillary)	316 Stainless Steel (Plain Capillary)		
10A	11A	15A	19A	16A	Series PA, PB, PC & PG, 4A with Suffix 1 Enclosure Types 4, 4X & 6 Optional Suffixes 1, 2, 3, J & K.	KA10A1	KA10A4	KA11A1	KA11A4	Suffixes D, E, F, & G	
10A	11A	15A	19A	16A		KB10A1	KB10A4	KB11A1	KB11A4		
10A	11A	15A	19A	16A		KD10A1	KD10A4	KD11A1	KD11A4		
10A	11A	15A	19A	16A		KF10A1	KF10A4	KF11A1	KF11A4		
10A	11A	15A	19A	16A		KJ10A1	KJ10A4	KJ11A1	KJ11A4		
10A	11A	15A	19A	16A		KL10A1	KL10A4	KL11A1	KL11A4		
10A	11A	15A	19A	16A		—	—	KN11A1	KN11A4		
10A	11A	15A	19A	16A		—	—	KT11A1	KT11A4		
10A	11A	15A	19A	16A		—	—	KU11A1	KU11A4		

**NOTES:**

- ① All transducers used with general purpose and watertight switch units are UL Listed as Temperature — Indicating and Regulating Equipment, Guide XAPX.
- ② All transducers used with open frame (no enclosure) switch units are considered UL Recognized Components as Temperature — Indicating and Regulating Equipment Guide XAPX2.

- ③ Optional features, armored capillary, and capillary length identified by the seventh, eighth, and ninth digit codes respectively of the transducer catalog number are also UL Listed.

Form No. P7047R1

Automatic Switch Co.





**ASCO® TRIPOINT®** temperature switches

SWITCH UNIT AND TRANSDUCER UNIT COMBINATIONS  
 FOR ADJUSTABLE DEADBAND COMPACT LINE TEMPERATURE SWITCHES  
 OPEN FRAME, GENERAL PURPOSE OR WATERTIGHT SWITCH ENCLOSURES

SERIES  
**PA10, PA11, PA16**

Form No. P7033R1

**DESCRIPTION**

This sheet is a listing of switch unit and transducer unit combinations. The chart below is provided to insure that the proper switch unit is assembled to the proper transducer unit, thus providing a complete adjustable deadband temperature switch.

In the chart below, locate the switch unit catalog number being used. Then going to the right on the same line (as the switch unit catalog number) find the transducer unit catalog number which may be used with this particular switch unit. **IMPORTANT:** The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a Switch Unit Catalog No. PA10A can be used with Transducer Unit Catalog No. KA10A1. The mating produces a complete adjustable deadband temperature switch, Catalog No. PA10A/KA10A1. Note third digits in both catalog numbers are identical. If the third digit is not identical, it is an incorrect mate and the units should not be assembled.

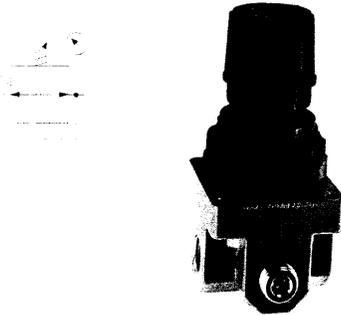
NOTE: Switch units listed to left may be used with any transducer units listed to right provided they are on the same horizontal line.

SWITCH UNITS			RANGE		TEMPERATURE TRANSDUCER UNITS					
GENERAL PURPOSE ENCLOSURE	WATERTIGHT ENCLOSURE	OPEN FRAME	ADJUSTABLE OPERATING RANGE	RATED OVERRANGE TEMPERATURE (IN°)	DIRECT MOUNT		6' CAPILLARY AND BULB		12' CAPILLARY AND BULB	
					COPPER	316 S.S.	COPPER	316 S.S.	COPPER	316 S.S.
PA10A	PA11A	PA16A	-60 — 20°F	200°F	KA10A1	KA10A4	KA11A1	KA11A4	KA11A1D	KA11A4D
			-51 — -7°C	93°C						
PA10A	PA11A	PA16A	-30 — 60°F	250°F	KB10A1	KB10A4	KB11A1	KB11A4	KB11A1D	KB11A4D
			-34 — 16°C	121°C						
PA10A	PA11A	PA16A	0 — 90°F	300°F	KD10A1	KD10A4	KD11A1	KD11A4	KD11A1D	KD11A4D
			-18 — 32°C	149°C						
PA10A	PA11A	PA16A	50 — 160°F	350°F	KF10A1	KF10A4	KF11A1	KF11A4	KF11A1D	KF11A4D
			10 — 71°C	177°C						
PA10A	PA11A	PA16A	100 — 220°F	450°F	KJ10A1	KJ10A4	KJ11A1	KJ11A4	KJ11A1D	KJ11A4D
			38 — 104°C	232°C						
PA10A	PA11A	PA16A	160 — 260°F	500°F	KL10A1	KL10A4	KL11A1	KL11A4	KL11A1D	KL11A4D
			71 — 127°C	260°C						
PA10A	PA11A	PA16A	225 — 340°F	600°F	-	-	KN11A1	KN11A4	KN11A1D	KN11A4D
			107 — 171°C	316°C						
PA10A	PA11A	PA16A	300 — 450°F	700°F	-	-	KT11A1	KT11A4	KT11A1D	KT11A4D
			149 — 232°C	371°C						
PA10A	PA11A	PA16A	350 — 510°F	800°F	-	-	KU11A1	KU11A4	KU11A1D	KU11A4D
			177 — 266°C	427°C						

NOTE: Rated overrange temperatures are limited as follows:  
 For copper capillary units — 550°F (288°C).  
 For direct mount units — 260°F (127°C).



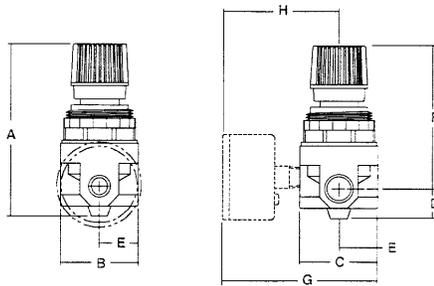
# Reverse Flow Regulator R00



### Specifications

Flow Capacity*	1/8	17.5 scfm (8,3 dm³/s)
	1/4	24.5 scfm (11,6 dm³/s)
Maximum Operating Temperature	175°F (79°C)	
Maximum Supply Pressure	300 psig (21 bar)	
Pressure Range	0-125 psig (0-8,5 bar)	
Port Size	NPT/BSP	1/8, 1/4
Gauge Port(s)	NPT/BSPT	(2) 1/8
Weight	lb. (kg)	.48 (0,2)

\*Inlet pressure 100 psig (7 bar). Secondary pressure 90 psig (6 bar).



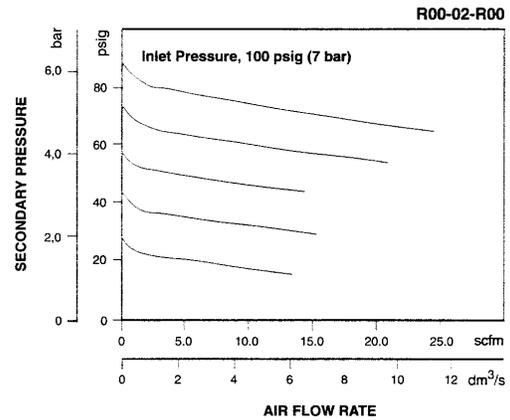
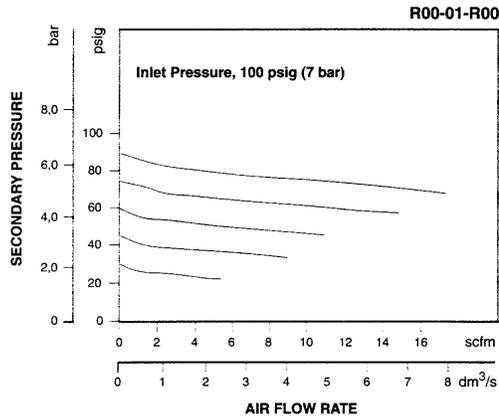
NOTE: 1.25" Dia. (31.7 mm) hole required for panel nut mounting

### Materials of Construction

Body	Zinc
Bonnet	Acetal - Glass filled
Diaphragm	Nitrile/Steel
Valve Assembly	Brass/Nitrile
Springs	Steel
Seals	Nitrile
Panel Nut	Acetal

### Dimensions

Models	Inches mm	A	B	C	D	E	F	G	H
Standard Unit R00-XX-R00		3.29	1.50	1.50	.57	.75	2.72	—	—
		84	38	38	14.5	19	69	—	—
With Gauge		3.29	1.50	1.50	.57	.75	2.72	2.95	2.20
		84	38	38	14.5	19	69	75	56



**Ordering Information**

Model Type	Port Size	Without Gauge	Without Gauge	With Gauge	With Gauge
		5-125 psig (0,4-8,5 bar)	3-60 psig (0,2-4,1 bar)	5-125 psig (0,4-8,5 bar)	3-60 psig (0,2-4,1 bar)
Relieving	1/8	R00-01-R00	R00-01-RL0	R00-01-RG0	R00-01-RGL
	1/4	R00-02-R00	R00-02-RL0	R00-02-RG0	R00-02-RGL

**Options** - To order an option supplied with the unit model, add the appropriate coded suffix letter in position 6, 7, 8 of the model number. For additional information on regulator accessories and repair kits see page R36.

Option Code	Description	Accessories	Part Number
P	Metal Panel Nut	L-Bracket	GRP-95-147

# NELES-JAMESBURY

BULLETIN B103-I

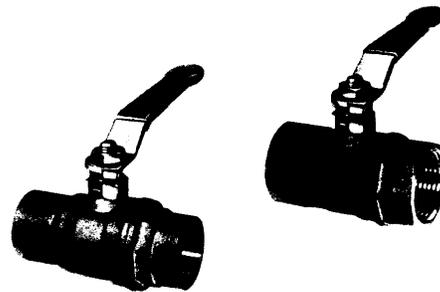
## SPECIFICATIONS

Neles-Jamesbury Ball Valves

### 1/4" -2" SCREWED END - NPT and 1/2"-2" SOLDER END SERIES 300 BALL VALVES

#### FEATURES

- Series 300 valves provide quality and performance at lowest cost.
- Hot forged brass body and cap for strength, durability and compact design.
- Internal entry stem provides positive stem retention.
- Field-proven polymeric sealing for reliable shutoff and long cycle life.
- Large port sizes for maximum flow capacity.
- Series 371 vent valves provide automatic downstream venting when in the closed position.
- Full compliment of optional accessories include: 4" stem extension, round handle, stainless steel handle, locking device and memory (balancing) stop kits for use with lever handle to permit periodic opening to a specific partially open position.



Series 300 ball valves are the ideal answer for reliable operation when cost is the primary consideration. Equally important, these valves meet Neles-Jamesbury's quality standards. For this reason, Neles-Jamesbury ball valves are the most preferred throughout industry.

One style, the Series 371 screwed end all brass valve with TFE seats and seals, includes a venting feature which relieves pressure in lines and power devices downstream of the valve when the valve is closed. This feature is ideal for machinery that uses compressed air as its power source. When equipped with optional locking device, this valve complies with OSHA regulation 1910.147 lockout requirements. Available in 1/4" -2" (6mm - 50mm) sizes, Series 371 vent valves are pressure rated to 200

psi (14 bar) and temperature rated from 400° F (204° C) to -20° F (-29° C).

Two other styles of these screwed and solder end valves are available: all brass, and brass with 316 stainless steel trim, both having TFE seats and seals.

For general service, Series 351 and 356 screwed end valves, available in 1/4" - 2" (6mm - 50mm) sizes, are rated to 400 psi (28 bar). In steam service, they are rated to 150 psi (10 bar). Their high temperature limit is 400° F (204° C) with a low limit of -20° F (-29° C).

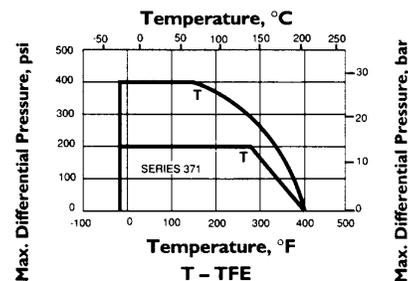
Series 351 and 356 screwed end valves are listed by Underwriter Laboratories (UL) for natural and manufactured gas, other compressed gases, fuels and solvents, and fire protection trim and drain. They are also Factory Mutual (FM) approved for components in fire protection alarm, dry pipe, and sprinkler systems.

Series 341 and 346 solder end valves, available in 1/2" - 2" (13mm - 50mm), are limited by their solder joint ratings. Consult the solder joint table on page 2 for appropriate pressure and temperature ratings.

#### VALVE SEAT RATING

This rating is based on differential pressure with valve ball in fully closed position and refers to seats only.

Solder joint ratings per ANSI B16.18 and B16.22 are significantly lower than the TFE seat rating. These joint ratings vary with solder type, tube size, and temperature.



**VALVE BODY RATING**

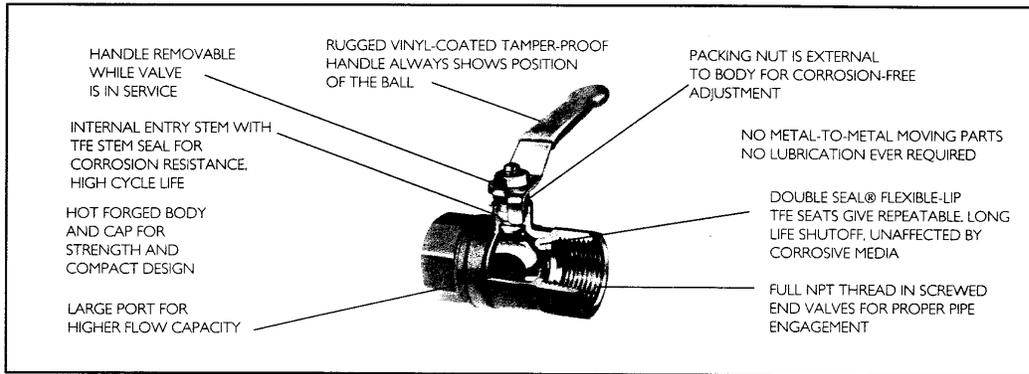
This is the maximum working pressure rating of the valve body only. The seat rating on page 1 (and solder connection table at right) determine the practical pressure limitation in actual service. Working pressure rating is at -20°F to +100°F (-29°C to 38°C). Test pressure is for hydrostatic test with ball half open..

Working Pressure	400 psi	27.6 bar
Test Pressure	600 psi	41.4 bar

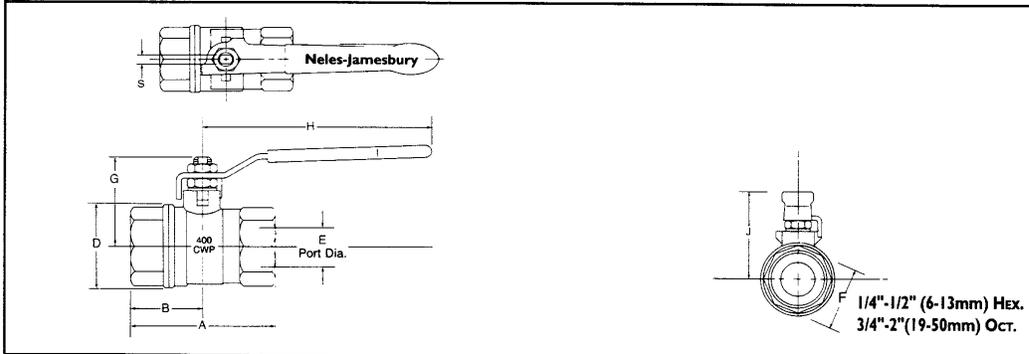
**SOLDER JOINT RATINGS**

(Based on ANSI B16.18 and B16.22)

Joining Material	Working Temperature		Maximum Working Pressure			
	°F	°C	1/2"-1" (12-25mm)		1 1/4"-2" (32-50mm)	
			psi	bar	psi	bar
50-50 Tin-Lead Solder	100	38	200	13.8	175	12.1
	150	66	150	10.3	125	8.6
	200	93	100	6.9	90	6.2
	250	121	85	5.9	75	5.2
95-5 Tin-Antimony Solder	100	38	400	27.6	400	27.6
	150	66	400	27.6	350	24.1
	200	93	300	20.7	250	17.2
	250	121	200	13.8	175	12.1



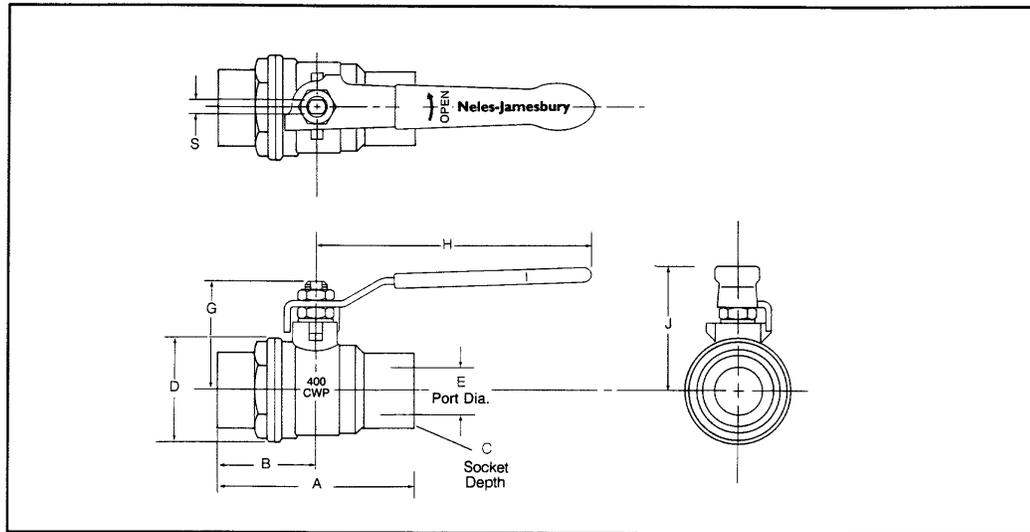
**DIMENSIONS – SCREWED END VALVES, SERIES 351 AND 356**



VALVE SIZE	APPROXIMATE DIMENSIONS – inches (mm)									WT lbs.(kg)
	A	B	D	E	F	J	G	H	S	
1/4 (6)	1.78 (45)	.89 (23)	.84 (21)	.31 (8)	.78 (20)	1.50 (38)	1.31 (33)	3.94 (100)	.22 (5)	.3 (1)
3/8 (10)	1.81 (46)	.91 (23)	.84 (21)	.34 (9)	.78 (20)	1.50 (38)	1.31 (33)	3.94 (100)	.22 (5)	.3 (1)
1/2 (13)	2.22 (56)	1.11 (28)	.91 (23)	.41 (10)	1.00 (25)	1.56 (40)	1.38 (35)	3.94 (100)	.22 (5)	.4 (2)
3/4 (19)	2.41 (61)	1.20 (30)	1.25 (32)	.59 (15)	1.22 (31)	1.56 (40)	1.50 (38)	3.94 (100)	.22 (5)	.5 (2)
1 (25)	2.97 (75)	1.48 (38)	1.47 (37)	.78 (20)	1.50 (38)	2.13 (54)	1.81 (46)	4.75 (121)	.25 (6)	1.2 (1.5)
1 1/4 (32)	3.34 (85)	1.67 (42)	1.88 (47)	1.00 (25)	1.91 (48)	2.13 (54)	2.00 (51)	4.75 (121)	.25 (6)	1.5 (2)
1 1/2 (40)	3.75 (95)	1.88 (47)	2.34 (59)	1.25 (32)	2.13 (54)	2.81 (71)	2.53 (64)	6.25 (159)	.31 (8)	2.2 (1.0)
2 (50)	4.28 (109)	2.14 (54)	2.91 (74)	1.56 (40)	2.59 (66)	3.19 (81)	2.81 (71)	6.25 (159)	.31 (8)	3.3 (1.5)

B103-I

**DIMENSIONS—SOLDER END VALVES, SERIES 341 AND 346**



VALVE SIZE	APPROXIMATE DIMENSIONS – inches (mm)									WT lbs.(kg)
	A	B	C	D	E	J	G	H	S	
1/2 (13)	2.06 (52)	1.13 (28)	.50 (13)	1.09 (28)	.41 (10)	1.56 (40)	1.38 (35)	3.94 (100)	.22 (5)	.4 (.2)
3/4 (19)	2.63 (67)	1.31 (33)	.75 (19)	1.31 (33)	.59 (15)	1.56 (40)	1.50 (38)	3.94 (100)	.22 (5)	.6 (.3)
1 (25)	3.28 (83)	1.64 (42)	.91 (23)	1.66 (42)	.78 (20)	2.13 (54)	1.81 (46)	4.75 (121)	.25 (6)	1.0 (.5)
1 1/4 (32)	3.75 (95)	1.88 (47)	.97 (24)	2.06 (52)	1.00 (25)	2.13 (54)	2.00 (51)	4.75 (121)	.25 (6)	1.4 (.6)
1 1/2 (40)	4.41 (112)	2.20 (56)	1.09 (28)	2.50 (64)	1.25 (32)	2.81 (71)	2.53 (64)	6.25 (159)	.31 (8)	2.1 (.9)
2 (50)	5.38 (136)	2.69 (68)	1.34 (34)	3.06 (78)	1.56 (40)	3.19 (81)	2.81 (71)	6.25 (159)	.31 (8)	3.5 (1.6)

**HOW TO ORDER**

Series 300 valves should be ordered by the following figure and valve size designations. Series 300 valve accessories can be ordered separately by specifying the appropriate part number.

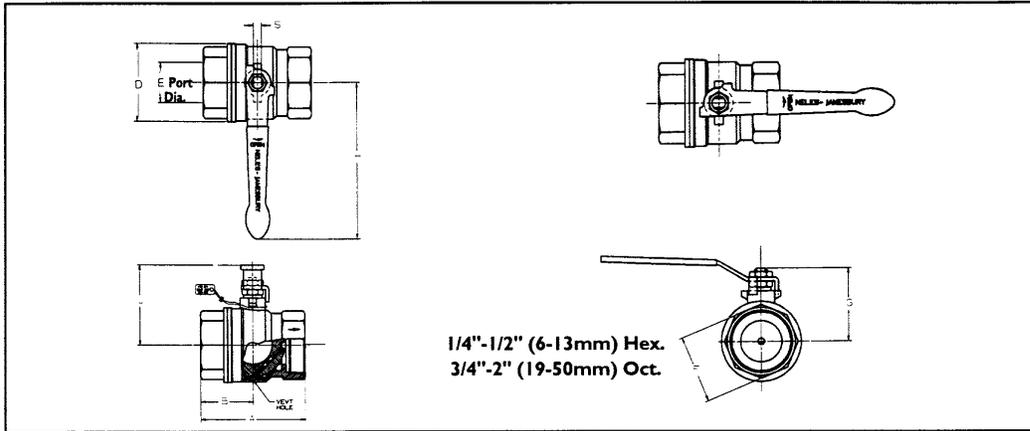
FIGURE NUMBER		
END CONNECTIONS	TRIM	
	BRASS	316 STAINLESS STEEL
Screwed End-NPT	Fig. 351	Fig. 356
Solder End*	Fig. 341	Fig. 346

VALVE SIZE inches (mm)	ACCESSORY PART NUMBER				
	MEMORY STOP	LOCKING DEVICE	STEM EXTENSION	ROUND HANDLE	STAINLESS STEEL HANDLE
1/4", 3/8", 1/2", 3/4" (6), (10), (13), (19)	011-0263-22	LD-36	012-0735-22	012-0719-22	012-0713-30
1", 1-1/4" (25), (32)	011-0264-22	LD-37	012-0736-22	012-0720-22	012-0714-30
1-1/2", 2" (40), (50)	011-0265-22	LD-38	012-0737-22	012-0721-22	012-0715-30

\* Not available in 1/4" (6mm) and 3/8" (10mm) sizes.

For complete specifications on Series 300 ball valve accessories, see Bulletin B160-8.

**DIMENSIONS-SCREWED END VENT VALVES, SERIES 371**



VALVE SIZE	APPROXIMATE DIMENSIONS – inches (mm)										WT lbs.(kg)
	A	B	D	E	F	J	G	H	S		
1/4 (6)	1.78 (45)	.89 (23)	.84 (21)	.31 (8)	.78 (20)	1.50 (38)	1.31 (33)	3.94 (100)	22 (5)		.3 (.1)
3/8 (10)	1.81 (46)	.91 (23)	.84 (21)	.34 (9)	.78 (20)	1.50 (38)	1.31 (33)	3.94 (100)	22 (5)		.3 (.1)
1/2 (13)	2.22 (56)	1.11 (28)	.91 (23)	.41 (10)	1.00 (25)	1.56 (40)	1.38 (35)	3.94 (100)	22 (5)		.4 (.2)
3/4 (19)	2.41 (61)	1.20 (30)	1.25 (32)	.59 (15)	1.22 (31)	1.56 (40)	1.50 (38)	3.94 (100)	22 (5)		.5 (.2)
1 (25)	2.97 (75)	1.48 (38)	1.47 (37)	.78 (20)	1.50 (38)	2.13 (54)	1.81 (46)	4.75 (121)	25 (6)		1.2 (.5)
1 1/4 (32)	3.34 (85)	1.67 (42)	1.88 (47)	1.00 (25)	1.91 (48)	2.13 (54)	2.00 (51)	4.75 (121)	25 (6)		1.5 (.7)
1 1/2 (40)	3.75 (95)	1.88 (47)	2.34 (59)	1.25 (32)	2.13 (54)	2.81 (71)	2.53 (64)	6.25 (159)	31 (8)		2.2 (1.0)
2 (50)	4.28 (109)	2.14 (54)	2.91 (74)	1.56 (40)	2.59 (66)	3.19 (81)	2.81 (71)	6.25 (159)	31 (8)		3.3 (1.5)

**HOW TO ORDER**

Series 371 vent valves should be ordered by the following figure and valve size designations. The Series 371 locking device can be ordered separately by specifying the appropriate part number.

<b>FIGURE NUMBER</b>
<b>END CONNECTIONS</b> Screwed End-NPT
<b>BRASS TRIM</b> Fig. 371

VALVE SIZE inches (mm)	LOCKING DEVICE
1/4", 3/8", 1/2", 3/4" (6), (10), (13), (19)	LD-36
1", 1-1/4" (25), (32)	LD-37
1-1/2", 2" (40), (50)	LD-38

For more information on optional locking device, see Bulletin B160-8.

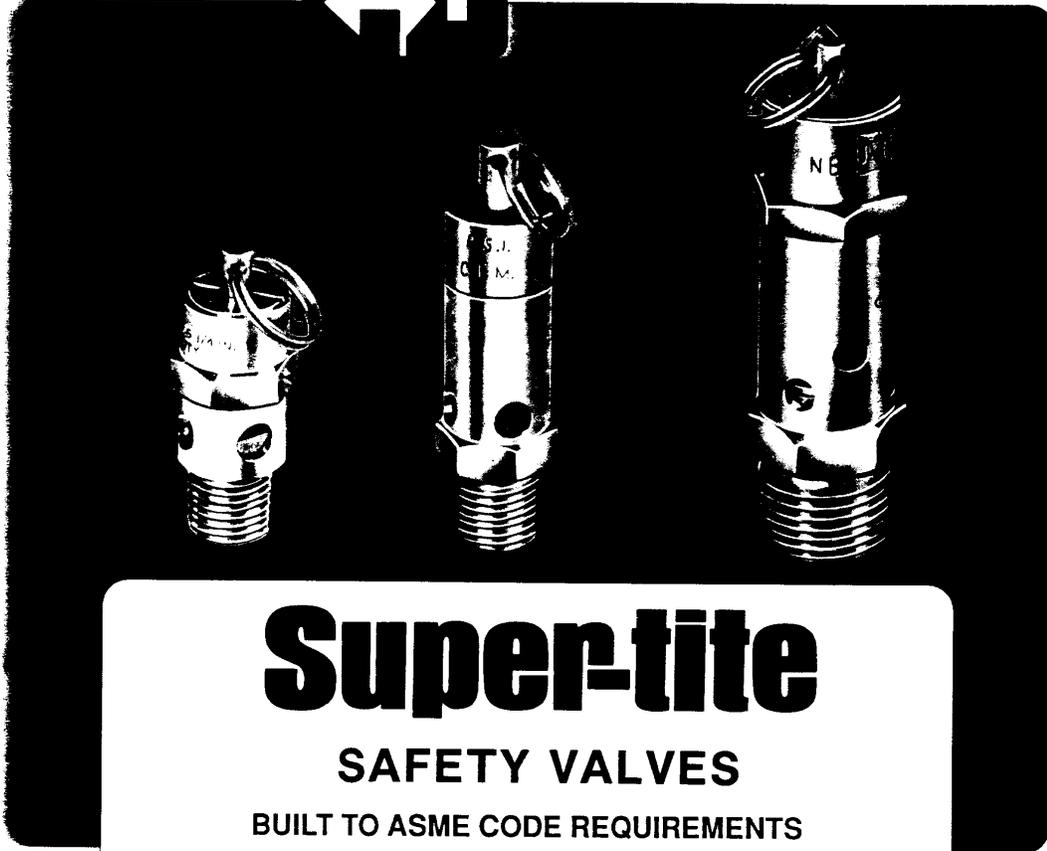
INTERNATIONAL MANUFACTURING and SALES LOCATIONS								
UNITED STATES	CANADA	MEXICO	BRAZIL	FINLAND	ENGLAND	FRANCE	WEST GERMANY	JAPAN
Glens Falls, New York Warwick, Rhode Island Worcester, Massachusetts	Ottawa, Ontario	Tlalnepanitia, EDO de Mexico	Sao Jose dos Campos	Helsinki	Basingstoke, Hampshire	Wittenheim	Overath-Vilkerath	Tokyo
Our products are available through Neles-Jamesbury sales offices in Australia, Austria, Belgium, Italy, The Netherlands, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Arab Emirates, Venezuela as well as through a world-wide network of representatives.								

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Control Devices Super-tite Safety Valve

# Super-tite

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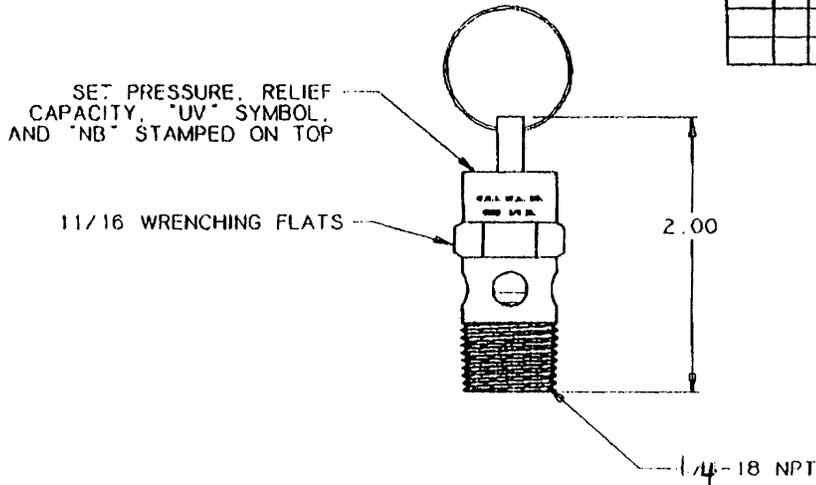
Control Devices Super-Tite line of safety valves are built to ASME standards and are certified by the National Board. Each valve is built to exacting quality requirements and is set to customer specification. Widely used on air compressor receivers and related pneumatic equipment.

**CAUTION:** These valves were designed to protect pressure vessels built to ASME code standards. Misapplication or misuse can result in serious injury or death. For specific application and installation details, please consult Control Devices or refer to section UG-125 through UG-136 and Appendix M of Section VIII of the ASME Boiler and Pressure Vessel Code.

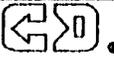


control devices inc.

DATE	SYM	REVISION RECORD	AI



1. SET PRESSURE RANGE IS 25 PSI TO 350 PSI.
2. RELIEF CAPACITY IS GIVEN BY THE EQUATION  
 $Q = .759(1.1P + 14.7)$ , WHERE  
 Q = RELIEF CAPACITY IN SCFM, AND  
 P = SET PRESSURE IN PSI
3. MATERIALS OF CONSTRUCTION  
 BODY, ROD, CUP, SCREW--BRASS  
 SPRING--MUSIC WIRE  
 PAD--SILICONE RUBBER  
 PULL RING--STAINLESS STEEL

TOLERANCES (EXCEPT AS NOTED)	 CONTROL DEVICES 1		
DECIMAL	MATERIAL	SCALE	DRAWN BY
---		NONE	APPROVED BY
FRACTIONAL	TITLE		
---	VALVE, ASME SAFETY		
ANGULAR	DATE	DRAWING NUMBER	
---	10/3/90	ST25	

# INSTALLATION & MAINTENANCE INSTRUCTIONS

2-WAY DIRECT-ACTING SOLENOID VALVES  
SUB-MINIATURE – NORMALLY CLOSED OPERATION  
BRASS OR STAINLESS STEEL CONSTRUCTION – 1/8 NPT

**ASCO**  
BULLETIN  
8225  
Form No. V6332

## DESCRIPTION

Bulletin 8225 valves are 2-way normally closed, direct-acting solenoid valves made of rugged brass or stainless steel. Valves are sub-miniature in size and are provided with an open-frame solenoid.

## OPTIONAL FEATURES

**Mounting Bracket Kit No. 224-736:** This kit provides mounting of valves for ease of installation, removal and adjustment to piping (See Figure 2.).

**Plug Connector Kit No. 226-061:** The open-frame solenoid with spade terminal connections may be used with the plug connector kit providing a 2-pole with grounding contact DIN Type 43650 construction (See Figure 4.).

**Conduit Connector Kit No. 224-735:** The open-frame solenoid with lead wires may be converted to gasketed threaded conduit hub enclosure for watertight or general purpose construction (See Figure 5.).

## OPERATION

**Normally Closed:** Valve is closed when solenoid is de-energized. Valve is open when solenoid is energized.

**IMPORTANT:** No minimum operating pressure required.

## INSTALLATION

Check nameplate for correct catalog number, pressure, voltage and service.

## POSITIONING

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the plugnut/core tube sub-assembly area.

## MOUNTING

For valve body mounting dimensions refer to Figure 1. For dimensions of mounting bracket supplied in Mounting Bracket Kit No. 224-736, refer to Figure 2.

## PIPING

Connect piping to valve according to markings on valve body. Inlet port is marked "1" and outlet port is marked "2". Apply pipe compound sparingly to male pipe threads only. If applied to valve threads the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

**IMPORTANT:** To protect the solenoid valve, install a strainer or filter, suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Bulletins 8600, 8601 and 8602 for strainers.

## WIRING

Wiring must comply with local codes and the National Electrical Code. Open-frame solenoid may be rotated in 90° increments by lifting the coil upward and rotating it in either direction.

**NOTE:** To convert from Alternating Current (A-C) to Direct Current (D-C) or vice versa, it is necessary to change only the coil. However, the valve pressure rating will change. Consult ASCO Catalog.

## SOLENOID TEMPERATURE

Coils for Bulletin 8225 valves are designed for continuous duty. When solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched by hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

## MAINTENANCE

**NOTE:** It is not necessary to remove the valve from the pipeline for inspecting, cleaning or coil replacement.

**WARNING:** Turn off electrical power supply and depressurize valve before inspecting, cleaning or replacing the coil.

## CLEANING

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. Clean valve strainer or filter when cleaning the valve.

## PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.

## CAUSES OF IMPROPER OPERATION

1. **Faulty Control Circuit:** Check the electrical system by energizing the coil. A metallic "click" signifies that the solenoid is operating. Absence of the "click" indicates loss of power supply. Check for loose or blown fuses, open-circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil if necessary. Check supply voltage; it must be the same as specified on nameplate.
3. **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve (see MAINTENANCE) and clean all parts. If parts are worn or damaged, replace valve. See Ordering Information.

## COIL REPLACEMENT (Refer to Figure 3.)

**WARNING:** Turn off electrical power supply. Then proceed as follows:

1. Disconnect coil lead wires.
2. Remove retaining spring by dislodging the top spring coil and prying the spring upward.
3. Slip coil off plugnut/core tube sub-assembly.
4. Install new coil and replace retaining spring.
5. Make electrical hookup and restore electrical power.

Form No. V6332

Printed in U.S.A.

Automatic Switch Co.

ASCO Valves



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ASCO Valve Series 8225

**VALVE DISASSEMBLY FOR INSPECTING AND CLEANING**

(Refer to Figure 3.)

**WARNING:** Turn off electrical power supply and depressurize valve before inspecting and cleaning. Then proceed as follows:

1. Disassemble valve in an orderly fashion. Use exploded view for identification and placement of parts.
2. Disconnect coil lead wires.
3. Remove retaining spring by dislodging the top spring coil and prying the spring upward.
4. Slip coil off plugnut/core tube sub-assembly.
5. Remove mounting screws, cover, plugnut/core tube sub-assembly, gasket and core assembly with core spring.
6. All parts are now accessible for cleaning.

**VALVE REASSEMBLY**

1. Reassemble in reverse order of disassembly. Use exploded view for identification and placement of parts.
2. Lubricate gasket with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.  
NOTE: If core spring has been removed from core assembly, be sure to install small diameter end of core spring on core assembly first. The core spring should snap in place and remain engaged.
3. Replace core assembly, core spring, gasket, plugnut/core tube sub-assembly, cover and mounting screws. Torque mounting screws in a crisscross manner to  $9 \pm 2$  inch-pounds [ $1,8 \pm 0,2$  newton-meters].
4. Replace coil and retaining spring. Make electrical hookup and restore electrical power and line pressure.
5. After maintenance is completed, operate the valve a few times to be sure of proper operation.

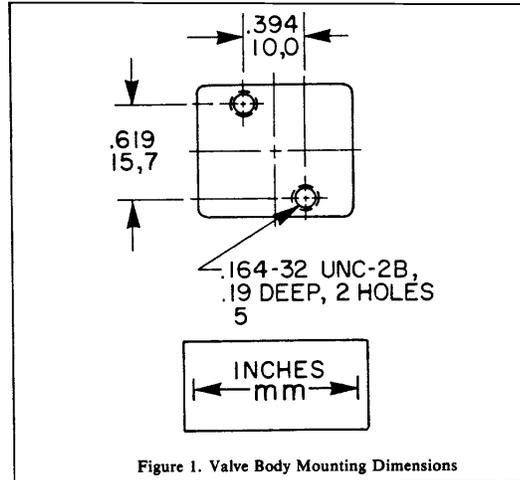


Figure 1. Valve Body Mounting Dimensions

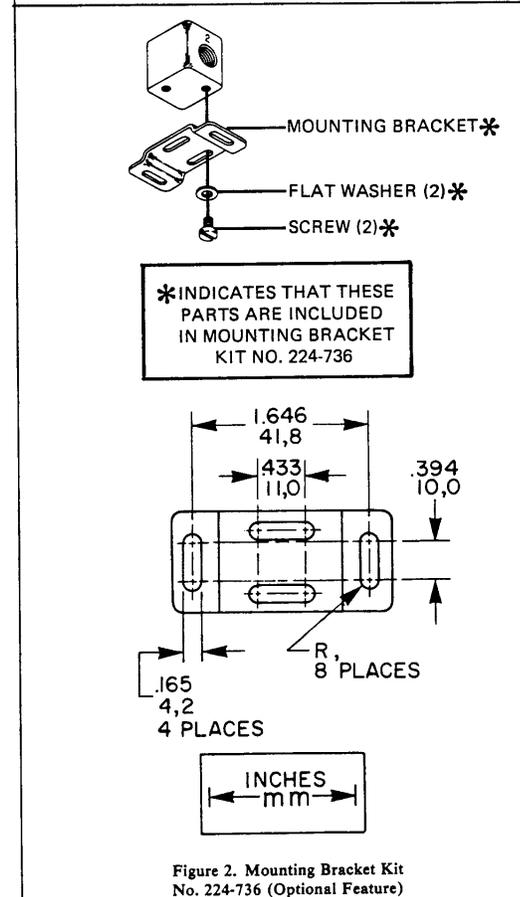
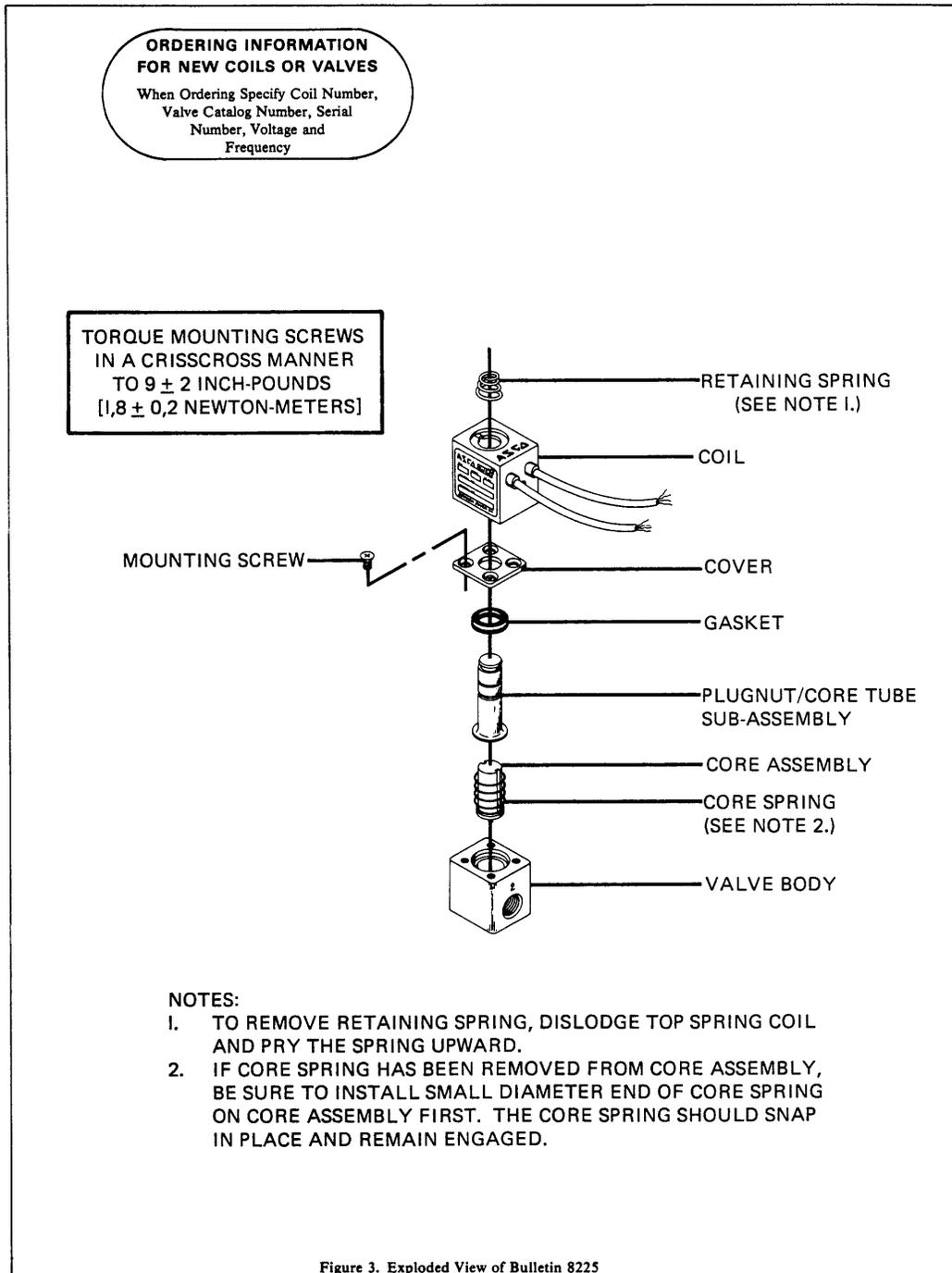


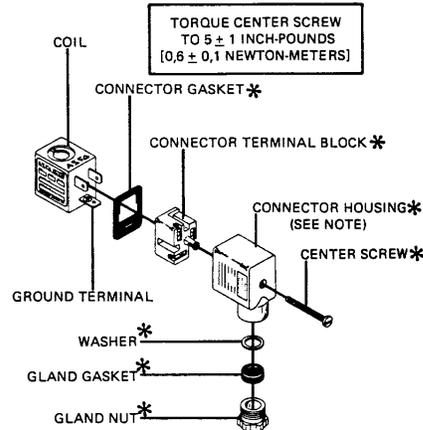
Figure 2. Mounting Bracket Kit No. 224-736 (Optional Feature)



Form No. V6332

**INSTALLATION OF PLUG CONNECTOR KIT NO. 226-061**  
(Refer to Figure 4.)

1. Remove center screw from plug connector. Using a small screw driver pry terminal block from connector housing.
2. Use stranded copper wire rated at 90°C or greater for connections. Maximum wire size is Number 18 AWG. Strip wire leads back approximately 1/4-inch for installation in socket terminals. The use of wire-end sleeves is also recommended for these socket terminals. Maximum length of wire-end sleeves to be approximately 1/4-inch. Tinning of the ends of the lead wires is not recommended.
3. Thread wire through gland nut, gland gasket, washer and connector housing. NOTE: Connector housing may be rotated 180° from position shown in Figure 4 for alternate positioning of cable entry.
4. Make electrical hookup to terminal block. Snap terminal block into connector housing and replace center screw.
5. Position gasket on coil and install plug connector. Torque center screw to  $5 \pm 1$  inch-pounds [ $0,6 \pm 0,1$  newton-meters].



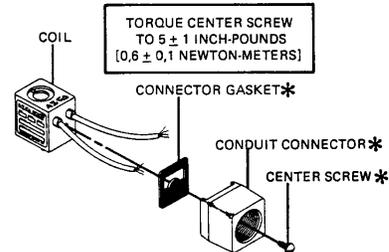
NOTE: CONNECTOR HOUSING MAY BE ROTATED 180° FROM POSITION SHOWN FOR ALTERNATE POSITIONING OF CABLE ENTRY.

\*INDICATES THAT THESE PARTS ARE INCLUDED IN PLUG CONNECTOR KIT NO. 226-061

Figure 4. Plug Connector Kit No. 226-061 (Optional Feature)

**INSTALLATION OF CONDUIT CONNECTOR KIT NO. 224-735**  
(Refer to Figure 5.)

1. Thread coil lead wires through connector gasket and conduit connector.
2. Position gasket and conduit connector against coil and install center screw. Torque center screw to  $5 \pm 1$  inch-pounds [ $0,6 \pm 0,1$  newton-meters].



\*INDICATES THAT THESE PARTS ARE INCLUDED IN CONDUIT CONNECTOR KIT NO. 224-735

Figure 5. Conduit Connector Kit No. 224-735 (Optional Feature)

# Installation & Maintenance Instructions

2-WAY DIRECT-ACTING SOLENOID VALVES  
 NORMALLY OPEN OR NORMALLY CLOSED OPERATION  
 BRASS OR STAINLESS STEEL CONSTRUCTION - 1/8", 1/4", OR 3/8" NPT

**SERIES**

**8262**  
**8263**

Form No. V5256R7

ASCO Valve Series 8262-8263

**IMPORTANT:** See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation, and Coil or Solenoid Replacement.

## DESCRIPTION

Series 8262 and 8263 valves are 2-way direct-acting general service solenoid valves. Valves bodies are of rugged brass or stainless steel. Series 8262 or 8263 valves may be provided with a general purpose or explosionproof solenoid enclosure.

Series 8262 and 8263 valves with suffix "P" in the catalog number are designed for dry inert gas and non-lubricated air service.

## OPERATION

**Normally Open:** Valve is open when solenoid is de-energized; closed when is energized.

**Normally Closed:** Valve is closed when solenoid is de-energized; open when energized.

**IMPORTANT:** No Minimum operating pressure required.

### Manual Operator (Optional)

Manual operator allows manual operation when desired or during an electrical power outage. Two types of manual operators are available - push type (Suffix MO) and screw type (Suffix MS). To operate valve manually with push type operator, push stem at base of valve body as far upward as possible. Valve will now be in the same position as when the solenoid is energized. Removing pressure from stem will release manual operator to original position. To operate valve with a screw type manual operator, rotate manual operator stem at base of valve body clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. Rotate manual operator stem fully counterclockwise before operating valve electrically.

### Flow Metering Devices

Valves with suffix "M" in catalog number are provided with a metering device for flow control. Turn stem to right to reduce flow; left to increase flow.

## INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Note: Inlet port will either be marked "I" or "IN". Outlet port will be marked "2".

### Future Service Considerations.

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

## Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to charts below. Check catalog number, coil prefix, suffix, and watt rating on nameplate to determine the maximum temperatures.

Wattage	Catalog Number Coil Prefix	Coil Class	Max. Ambient Temp. °F	Max. Fluid Temp. °F
6, 10.5, 12.4	none, DA or S	A	77	180
6, 10.5 12.4	DF, FT or SF	F	125	180
6, 10.5, 12.4	HT	H	140	180
9, 10.7	none, DP or SP	F	77	180
9.7	none, FT or HT	A, F or H	77	120
11.2	none, FT or HT	A, F or H	77	150
16.7	none, DP or SP	F	77	200
17.1	none, KP SP or SD	F	125	180
17.1	HB, KB SS or SV	H	140	180

Catalog Nos. 8262B200 and 8262 C200 AC construction only and Catalog Nos. 8262B214 and 8262 D200 AC and DC construction are limited to 140°F fluid temperature.

Valves with Suffix V or W that are designed for AC service and normally closed operation are for use with No. 2 and 4 fuel oil service. These valves have the same maximum temperatures per the above table except Suffix W valves are limited to a maximum fluid temperature of 140°F.

Listed below are valves with Suffix V in the catalog number that are acceptable for higher temperatures.

Catalog Number Coil Prefix	Max. Ambi- ent Temp. °F	Max. Fluid Temp. °F
FT8262, HB8262 FT8263, HB8263 8262G, 8263G	125	250*
HT or HB 8262G HT or HB 8263G	140	250

\*The only exception is the 8262G and 8263G series (Class F coil) at 50 Hertz rated 11.1 and 17.1 watts are limited to 210°F fluid temperature.

### Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub-assembly area. Valves with suffix "P" in the catalog number must be mounted with the solenoid vertical and upright.

**Mounting**

Refer to Figure 2 for mounting dimensions.

**Piping**

Connect piping or tubing to valve according to markings on valve body. Inlet port will either be marked "1" or "IN". Outlet port will be marked "2". Wipe the pipe threads clean of cutting oils. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

**IMPORTANT:** To protect the solenoid valve, install a strainer or filter suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

**MAINTENANCE**

**▲ WARNING:** To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

**Cleaning**

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean valve strainer or filter when cleaning the valve.

**Preventive Maintenance**

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.
3. Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

**Causes of Improper Operation**

1. Incorrect Pressure: Check valve pressure. Pressure to valve must be within range specified on nameplate.
2. Excessive Leakage: Disassemble valve (see Maintenance) and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

**Valve Disassembly**

**▲ WARNING:** To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

1. Disassemble valve using exploded views for identification of parts.
2. Remove solenoid, see separate instructions.
3. Unscrew solenoid base sub-assembly or valve bonnet with special wrench adapter supplied in ASCO Rebuild Kit. For wrench adapter only, order No.K218-948. Remove core assembly, core spring, and solenoid base gasket from valve body. For normal maintenance on Series 8263 valves it is not necessary to remove valve seat. See Figure 1. for metering or manual operator constructions.
4. For normally open construction (Figure 3) remove end cap, or manual operator, (not shown) end cap gasket, disc holder spring, and disc holder assembly.
5. All parts are now accessible to clean or replace. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

**Valve Reassembly**

1. Use exploded views for identification, orientation and placement of parts.
2. Lubricate all gaskets with DOW CORNING ® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. For normally open construction (Figure 3), install disc holder assembly, disc holder spring, end cap gasket and end cap or manual operator. For valves with 1/8" NPT, torque end cap or manual operator to  $90 \pm 10$  in-lbs ( $10,2 \pm 1,1$  Nm). For all other valves torque end cap or manual operator to  $175 \pm 25$  in-lbs ( $19,8 \pm 2,8$  Nm).
4. For Series 8263 apply a small amount of LOCITITE ® PST ® pipe sealant to threads of valve seat (if removed). Follow manufacturers instructions for application of pipe sealant. Then install valve seat and torque to  $75 \pm 10$  in-lbs ( $8,5 \pm 1,1$  Nm).
5. Replace solenoid base gasket, core assembly with core spring and solenoid base sub-assembly or plugnut/core tube sub-assembly and valve bonnet. Note: For core assemblies with internal type core springs, install wide end of core spring in core assembly first, closed end of core spring protrudes from top of core assembly.
6. For 1/8" NPT valve constructions, Torque valve bonnet to  $90 \pm 10$  in-lbs ( $10,2 \pm 1,1$  Nm). Torque solenoid base sub-assembly to  $175 \pm 25$  in-lbs ( $19,8 \pm 2,8$  Nm).
7. Install solenoid, see separate solenoid instructions. Then make electrical hookup to solenoid.

**▲ WARNING:** To prevent the possibility of personal injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic "click" signifies the solenoid is operating.

**ORDERING INFORMATION  
FOR ASCO REBUILD KITS**

Parts marked with an asterisk (\*) in the exploded view are supplied in Rebuild Kits.

• When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. +

+ If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

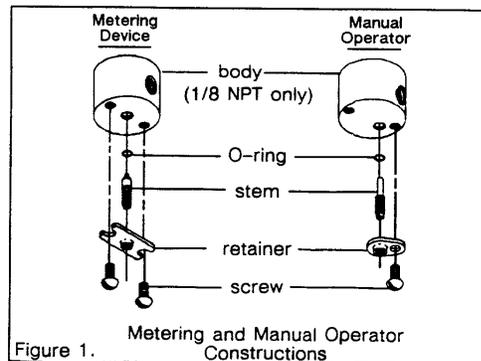
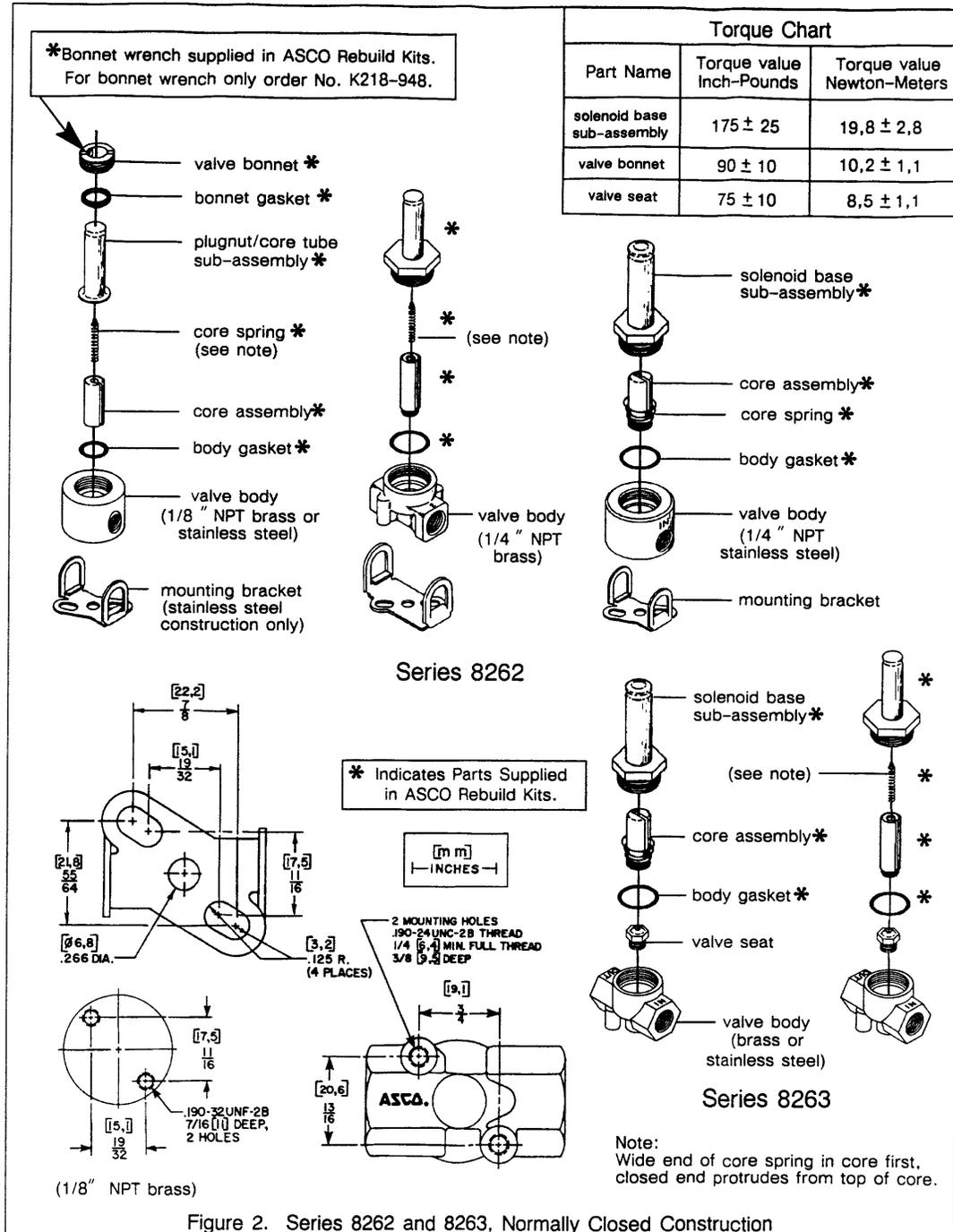
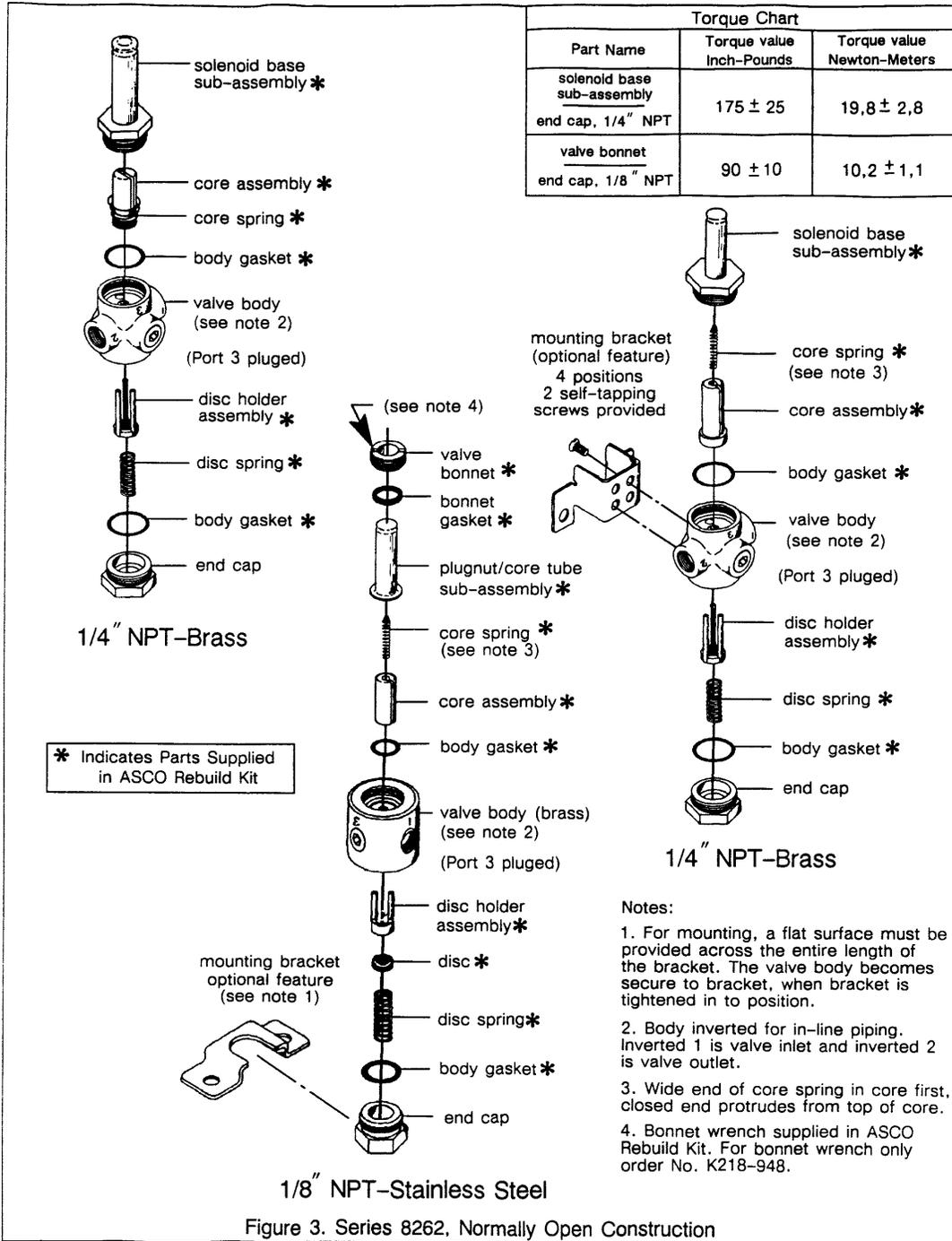
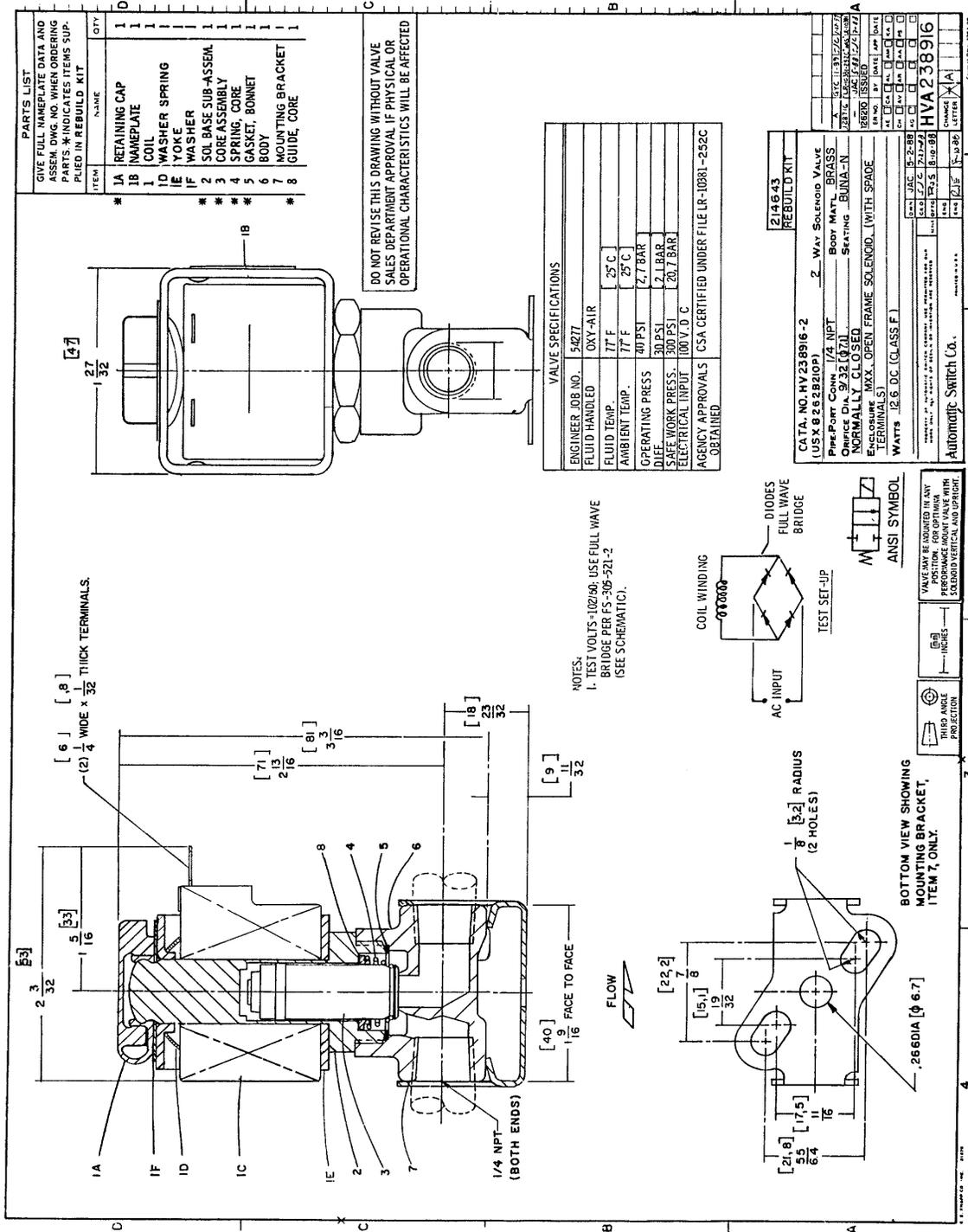


Figure 1. Metering and Manual Operator Constructions









**FIRE DEPARTMENT**  
9 METROTECH CENTER BROOKLYN, N.Y. 11201-3857

**CERTIFICATE OF APPROVAL # 4693**  
**THIS CERTIFICATE IS REVOCABLE, NOT TRANSFERABLE**  
**AND EXPIRES ON June 30, 2003**

July 19, 2000

Mr. Peter Weisenborn  
Vice President  
AirSep Corporation  
290 Creekside Drive  
Buffalo, NY 14228

By order of Fire Commissioner, Thomas Von Essen and pursuant to §27-4015 of the Administrative Code, the following equipment or material may be acceptable for use provided the conditions as outlined below are in full compliance.

**Manufacturer:** AirSep Corporation  
**Product:** Portable oxygen generator for industrial use  
**Pertinent Code Section:** §27-4102.d and §27-4100.d of the NYC Administrative Code  
**Laboratory:** Canadian Standards Association  
**Test Report:** File #: LR83232-1 Dated: 12/30/94  
File #: LR83232-5 Dated: 03/28/95  
File #: CB838102329 Dated: 03/28/95

<b>Trade Name / Model Number:</b>	1. New Life	Operating Pressure: 30 PSI
	2. Reliant	Operating Pressure: 30 PSI
	3. AS-10	Operating Pressure: 30 PSI
	4. AS-12	Operating Pressure: 30 PSI
	5. AS-20	Operating Pressure: 67 PSI
	6. AS-45	Operating Pressure: 67 PSI
	7. AS-80	Operating Pressure: 67 PSI
	8. AS-160	Operating Pressure: 67 PSI
	9. AS-250	Operating Pressure: 67 PSI
	10. AS-450	Operating Pressure: 67 PSI

**Description:** Model # AS-10, AS-12, Reliant and New Life have internal compressor.  
Model # AS-20, 45, 80, 160, 250, 450 are connected to shop air.

### **CONDITIONS OF APPROVAL:**

1. Use shall be only in ventilated room and free of oil and grease. Manufacturer's safety and maintenance practices must be observed.
2. Post decals on unit cautioning against blocking gas inlet and outlet and air inlet and against using oil or grease. ASME code pressure vessel must be re-tested every five (5) years.
3. The installation shall conform to the manufacturer's recommendations and the NYC Electrical Code. The operation of this equipment with a combustible gas shall be under the supervision of a person holding a Certificate of Fitness from the Fire Department and a Fire Department permit must be obtained.
4. A permit will be required if the air compressor used to run this equipment has a receiver exceeding 30 cubic feet capacity, has a pressure gauge calibrated to greater than 100 PSI or operates over 100PSI.
5. The use of the above mentioned product and/or system shall be limited to the indicated intent and has not been acceptable for other uses or applications. All CSA. requirements and follow-up service procedures must be complied with.
6. Each equipment of a type for which a Certificate of Approval shall have been issued must have number of such certificate plainly and permanently stamped or otherwise fixed upon it by the manufacturer.
7. The Certificate of Approval will be issued upon condition that the equipment's technology does not violate any patent, trade name, trade secret or other intellectual right.
8. The Fire Department Certificate of Approval does not constitute an endorsement or recommendation of your product by the Fire Department, but is a certification that your product, as represented, meets the standards as of the date of issuance.

9. The Fire Department reserves the right to withdraw this approval at any time in the event there is a reasonable doubt that the product does not operate or perform as required by code, the conditions of this resolution or as represented in your application.
10. The Fire Department's conditions of approval shall be enumerated in the installation manuals and brochures which will be provided to buyers, users and installers.
11. As the manufacturer of this equipment/material, you should be aware that any end users who fail to comply with the condition as outlined in the acceptance will be subject to enforcement action which may include fines and imprisonment.

Any change in product original design, product name, material of construction, model number, company name or ownership of any product included on this certificate must be immediately reported to this Department in writing.

Very truly yours,



James Hansen, P.E.  
Director of Engineering and  
Technical Standards Management