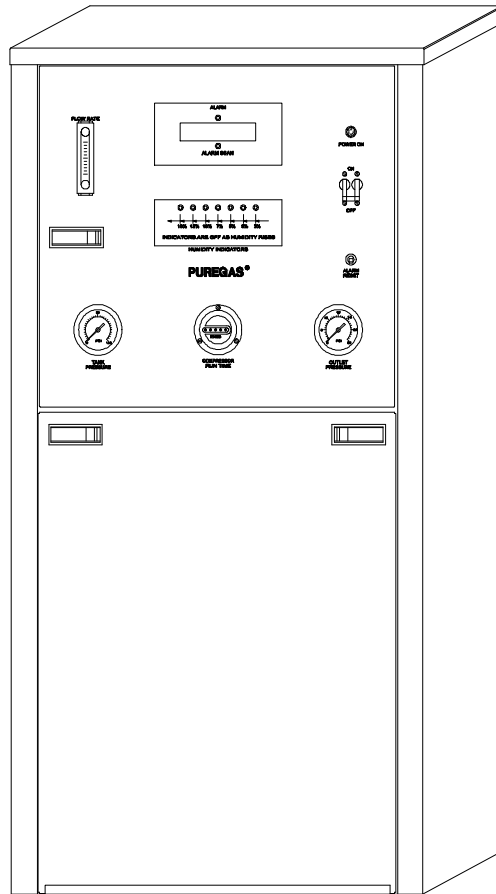


# OPERATING INSTRUCTIONS AND PARTS LIST FOR PUREGAS MODEL P4200DCO3A CENTRAL OFFICE AIR DRYER



5600 W 88th Ave. • Westminster, CO 80031  
800-521-5351 • (303) 427-3700 • Fax (303) 657-2148

## **PREFACE**

This instruction manual is for the benefit of our customers. It is intended to provide the basic information that will enable our customers to install, maintain and service PUREGAS air dryers economically, capably, and with minimum delay. Careful observation of the instructions and maintenance procedures will ensure maximum life and efficiency from the unit.

This manual should be read thoroughly before installing operating, or servicing the air dryer to familiarize the technician with the unit and the proper operating procedures. This will minimize the possibility of damage to the unit due to improper operation and handling or disassembly.

Please Direct all inquiries to:  
PUREGAS Service Department  
5800 West 88<sup>th</sup> Street  
Westminster, CO 80030  
1-800-521-5351 or (303) 427-3700

**NO PART OF THIS MANUAL MAY BE REPRODUCED WITHOUT  
THE EXPRESS WRITTEN CONSENT OF PUREGAS.**

**KEEP THIS MANUAL FOR FUTURE REFERENCE.**

## LIMITED WARRANTY AGREEMENT

Puregas Air Dryers carry a one-year warranty against defective workmanship and material. This period starts at date of shipment. Not included are the components subject to normal replacement during a year's operating time. These parts include, but are not limited to, electrical components, pressure switches, pressure regulators, and air compressors which carry a one year warranty.

On refrigeration type air dryers, the basic refrigeration unit circuit carries a five year warranty. This warranty covers the refrigeration compressor, refrigeration tubing and coils but NOT the thermostat, thermometer, or fan motor.

Liquid ring compressors, heatless dryers and circuit boards carry a two year warranty.

No claims for labor in replacing defective parts or for consequential damages will be allowed. Replacement parts will be invoiced in the regular way, with invoices subject to adjustment after the parts claimed defective are examined at our factory. In addition, no material or parts will be accepted at our factory for in-warranty repairs or credit without previous authorization from Puregas.

Responsibility for damages incurred in transit will be borne by the user and the user in turn should file any damage claim against the carrier. All warranty items are F.O.B. our plant. Freight charges are the responsibility of the user.

This warranty shall not apply to any air dryer which shall have been repaired or altered in any way by anyone other than Puregas so as to affect, in our judgment, its proper functioning or reliability, neither will it apply to a dryer which has been subject to misuse, negligence, or accident.

**THE INSTALLING OF PARTS PURCHASED FROM OTHER THAN PUREGAS WILL  
VOID THE WARRANTY ON OUR AIR DRYERS.**

# PUREGAS INSTRUCTION MANUAL

## MODEL P4200DCO3A AIR DRYER

### TABLE OF CONTENTS

<b>SECTION 1 – GENERAL</b> .....	<b>1</b>
1.1 Scope of Manual .....	1
1.2 Initial Inspection.....	1
1.3 Warranty.....	1
<b>SECTION 2 – DESCRIPTION</b> .....	<b>2</b>
<b>SECTION 3 – PRINCIPLES OF OPERATION</b> .....	<b>3</b>
3.1 Air System.....	3
3.2 Air Compressor .....	3
3.3 Heatless Dryer.....	4
3.3.1 Tower #1 .....	4
3.3.2 Tower #2.....	4
3.4 Humidity Sensing Tube .....	5
3.5 Capacity Control Valve .....	5
3.6 Pressure Switch and Storage Tank .....	5
3.7 Pressure Regulator and Shut-Off Valve .....	5
3.8 High/Low Pressure Switch .....	5
3.9 Alarm Summary .....	5
3.9.1 High Pressure Alarm – HIGH PRESSURE.....	5
3.9.2 Low Pressure Alarm – LOW PRESSURE .....	5
3.9.3 Air Compressor Maintenance Alarm - COMP. RUN TIME ALARM .....	5
3.9.4 Humidity Condition – HUMIDITY, -COND.- .....	6
3.9.5 Humidity Alarm – HUMIDITY ALARM .....	6
3.10 Humidistat .....	6
3.11 Desiccant .....	6
3.12 Logic Scan LED .....	6
3.13 Alarm LED .....	6
<b>SECTION 4 – INSTALLATION AND START-UP</b> .....	<b>7</b>
4.1 Inspection.....	7
4.2 Installation Procedure .....	7
4.3 Location .....	7
4.4 Electrical Hook-Up.....	7
4.5 Start-Up .....	8
<b>SECTION 5 – TEST PROCEDURES</b> .....	<b>9</b>
5.1 Low Pressure Alarm Test.....	9
5.2 High Pressure Alarm Test.....	9
5.3 Humidity Condition Test.....	9
5.4 Humidity Alarm Test .....	10
5.5 Compressor Performance Test.....	11
<b>SECTION 6 – MAINTENANCE</b> .....	<b>12</b>
6.1 Routine Maintenance .....	12
6.2 Maintenance Matrix .....	13
6.3 Recommended Spare Parts List.....	14
6.4 Air Compressor Safety Valves .....	15

6.5	Air Compressor Pressure Switch.....	15
6.6	High/Low Pressure Alarm Adjustment .....	15
6.7	Capacity Control Valve Adjustment.....	15
6.8	Air Compressor Maintenance Kit.....	16
6.9	Air Compressor Troubleshooting Chart .....	17
6.10	Air Compressor Disassembly .....	18
6.11	Air Compressor Assembly.....	18
6.12	Heatless Dryer (dehydrator) .....	19
6.13	Pressure Regulator .....	19
6.14	Humidity Alarm.....	19
6.15	Maintenance Kit .....	21
6.16	Dehydrator Parts List.....	22
6.17	Compressor Parts List.....	24
<b>SECTION 7 – TROUBLESHOOTING INFORMATION GUIDE .....</b>		<b>29</b>
7.1	Alarm Display Summary .....	30
7.2	Air System.....	30
7.3	Humidity Alarm System.....	31
7.4	Electrical System .....	32
7.5	Dehydrator.....	33

## FIGURES

<b>AIR FLOW PATH.....</b>	<b>3</b>
<b>PUREGAS HEATLESS DRYER.....</b>	<b>4</b>
<b>HUMIDITY BOARD.....</b>	<b>8</b>
<b>HUMIDITY TIME DELAY SWITCH.....</b>	<b>9</b>
<b>CONTROL BOARD P05847F .....</b>	<b>10</b>
<b>COMPRESSOR PERFORMANCE TIME DELAY SWITCH.....</b>	<b>11</b>
<b>AIR COMPRESSOR PRESSURE SWITCH.....</b>	<b>15</b>
<b>HIGH/LOW PRESSURE ALARM SWITCH .....</b>	<b>15</b>
<b>EXPLODED VIEW OF PUREGAS HEATLESS DRYER.....</b>	<b>23</b>
<b>EXPLODED VIEW OF COMPRESSOR AND MOTOR ASSEMBLY .....</b>	<b>24</b>
<b>TOP PANEL FRONT VIEW .....</b>	<b>26</b>
<b>TOP PANEL REAR VIEW.....</b>	<b>26</b>
<b>WIRING DIAGRAM.....</b>	<b>28</b>

## CHARTS

<b>PUREGAS P4200DCO3A AIR DRYER CHARACTERISTICS.....</b>	<b>2</b>
<b>PUREGAS P4200DCO3A MAINTENANCE.....</b>	<b>13</b>
<b>AIR COMPRESSOR TROUBLESHOOTING.....</b>	<b>17</b>
<b>DEHYDRATOR PARTS LIST .....</b>	<b>22</b>

## **SECTION 1 – GENERAL**

### **1.1 Scope of Manual**

This instruction Manual covers the description, operating principles, installation and start up, test procedures, maintenance, and troubleshooting techniques for the Model P4200DCO3A Air Dryer. The Model P4200DCO3A is designed for indoor use.

### **1.2 Initial Inspection**

Carefully inspect both the exterior and interior of the air dryer for any shipping damage.

**IMPORTANT:**  
**ANY SHIPPING DAMAGE MUST BE BROUGHT TO THE IMMEDIATE  
ATTENTION OF THE CARRIER. THE MANUFACTURER IS NOT  
RESPONSIBLE FOR SHIPPING DAMAGE**

### **1.3 Warranty**

Before starting the dryer, read the manual thoroughly to become acquainted with the principles of operation. Follow installation, start-up, and test procedures in proper sequence so as not to void the warranty.

**CAUTION !!!**  
**FAILURE TO FOLLOW PROPER SEQUENCE FOR INSTALLATION,  
START-UP, AND TEST WILL VOID THE WARRANTY.**

## SECTION 2 – DESCRIPTION

The model P4200DCO3A Air Dryer employs the principles of compression and physical adsorption. The operation is fully automatic and relatively maintenance free. The unit essentially consists of an oilless air compressor and heatless desiccant dryer. It also incorporates the necessary gauges, controls, and automatic alarms to ensure the delivery of dry air at the proper pressure and relative humidity. The air dryer will automatically shut down in the event of a high humidity alarm. Specific characteristics are shown below in Chart 1.

### SPECIFICATIONS

<b>NORMAL OUTPUT CAPACITY:</b>	<b>2,600 SCFD</b>
<b>EMERGENCY OUTPUT CAPACITY:</b>	<b>4,200 SCFD</b>
<b>ALARMS AND INSTRUMENTATION:</b>	<b>Standard alarms with remote monitoring capability. Individual alarm indication display</b>
<b>HEAT DISSIPATION:</b>	<b>4000 BTU/HR, Maximum</b>
<b>SIZE:</b>	<b>25 1/8" Wide x 21" Deep x 49" High</b>
<b>NET WEIGHT:</b>	<b>280 Lbs. (127 kg)</b>
<b>ELECTRICAL:</b>	<b>115 VAC, 1 Ph, 60 Hz</b>
<b>DEWPOINT:</b>	<b>-40 °F</b>
<b>DEHYDRATOR:</b>	<b>Solid State Timer/ D.C. Valves</b>
<b>DELIVERED AIR PRESSURE:</b>	<b>Adjustable 0-20 PSIG</b>
<b>AIR COMPRESSOR:</b>	<b>Two-cylinder, 3/4 hp, oilless type</b>
<b>NOISE LEVEL WITH COMPRESSOR RUNNING:</b>	<b>56 dbA at 3', 53 dbA at 10'</b> (under normal conditions, compressor will only operate 50% of the time)
<b>DRY AIR OUTLET CONNECTIONS:</b>	<b>Low Pressure 1/2" NPT Female</b> <b>High Pressure 1/2" NPT Female</b>

**Chart 1**  
**PUREGAS P4200DCO3A AIR DRYER CHARACTERISTICS**



## SECTION 3 – PRINCIPLES OF OPERATION

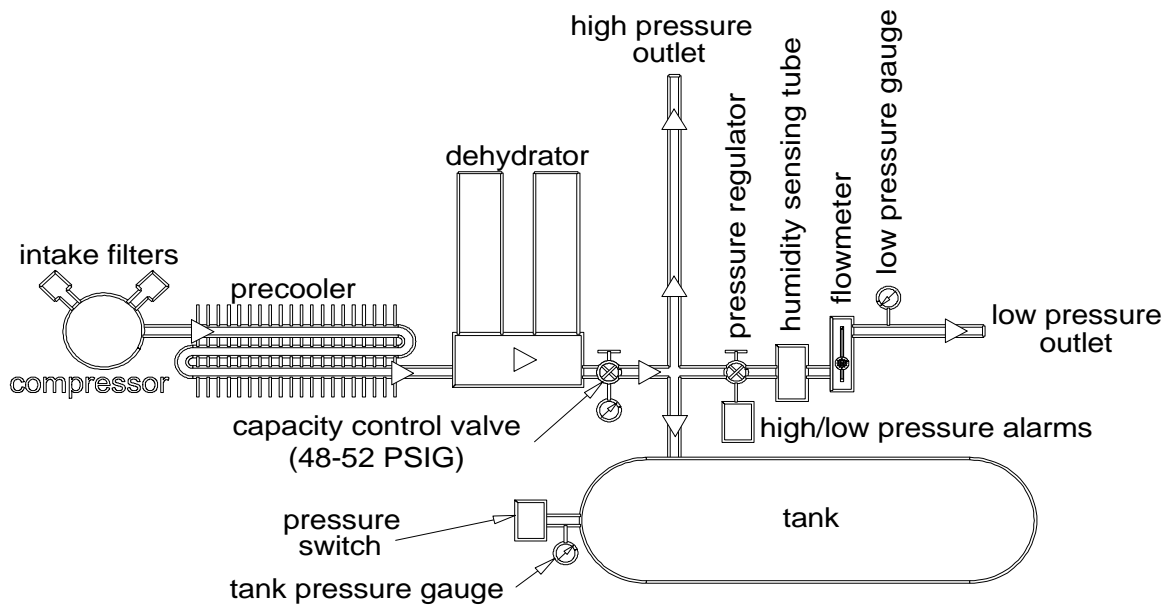
This unit has successfully completed a three day operational test at the factory. Each component was individually calibrated and tested over its full range of operation. The operation and existing settings are explained in the sections following.

### 3.1 Air System

The air flow is shown schematically in the Figure 1 below.

### 3.2 Air Compressor

Ambient air is drawn through the intake filter on the air compressor and compressed to approximately 50 PSIG. It then passes to the pre-cooler where hot compressed air is cooled before entering the heatless dryer.



**FIGURE 1  
AIR FLOW PATH**

### 3.3 Heatless Dryer

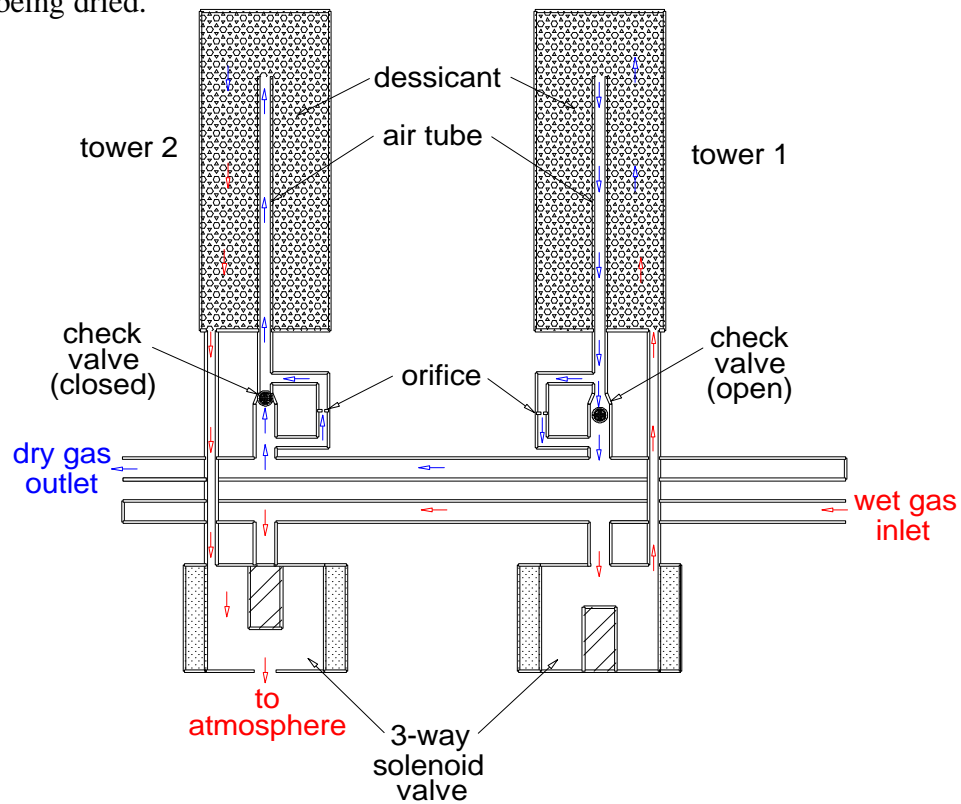
The Puregas heatless dryer, which is located downstream from the air compressor, consists of two desiccant-filled towers, a manifold, a solid state timer and two solenoid valves. It is arranged and cycled so one tower delivers dry air while the desiccant in the other tower is purged and dried by a small quantity of dry air supplied by the first tower, refer to Figure 2. The tower functions reverse at 30 second intervals. The operation of the towers follows below.

#### 3.3.1 Tower #1

Air from the compressor enters the solenoid valve, which is controlled by an electrical timer and is forced upward through the desiccant tower. Moisture is removed from the air as it passes over the desiccant. The dried air is then forced down through the air tube in the center of the desiccant tower, out through an open ball check valve and is finally delivered through the capacity control valve to the air storage tank.

#### 3.3.2 Tower #2

Simultaneously with the operation of Tower 1, as described above, the solenoid valve of Tower 2 is opened to the atmosphere. The main dry air supply from Tower 1 is prevented from entering Tower 2 by automatic closure of the ball check valve. However, a small quantity of the dry air is forced through an orifice into the air tube, then down through the desiccant bed absorbing the moisture previously collected while Tower 2 was furnishing dry air (as Tower 1 is doing at this time), and finally expelled to the atmosphere through the solenoid valve. The desiccant in Tower 2 is thus dried and made ready for the next cycle reversal. Tower 1 and Tower 2 reverse functions: Tower 2 takes over the air drying operation, while the desiccant in Tower 1 is being dried.



**Figure 2**  
**PUREGAS HEATLESS DRYER**

### **3.4 Humidity Sensing Tube**

Air is then channeled to the humidity sensing tube and flows over the humidity sensor. The humidity sensor (not shown) will signal the alarm systems if the relative humidity rises above 10%. A relative humidity rise would indicate a malfunction.

### **3.5 Capacity Control Valve**

This valve has two functions. First, it maintains the proper purge pressure through the heatless dryer, which will insure dry air delivery under maximum flow condition. It also acts as a check valve preventing air in the storage tank from bleeding back through the heatless dryer when the air compressor is not running.

### **3.6 Pressure Switch and Storage Tank**

Once the air passes through the capacity control valve, it is directed in to the air storage tank. The on/off pressure switch then signals the compressor to shut down at 50 PSIG. The Air compressor will remain off until the tank pressure drops below 20 PSIG. Then the on/off pressure switch will start the compressor, and the cycle continues. For adjustment refer to Section 6.5 and Figure 7.

### **3.7 Pressure Regulator and Shut-Off Valve**

From the air storage tank, the air is channeled to the high pressure outlet valve and the low pressure outlet which is regulated by the pressure regulator (0-20 PSIG).

### **3.8 High/Low Pressure Switch**

Dry air will flow to the high/low pressure switch which signals an alarm if the pressure drops below, or rises above the preset values. For adjustments of the pressure switch, refer to Section 6.6, and Figure 8.

### **3.9 Alarm Summary**

The alarms and conditions that can be displayed are described below.

#### **3.9.1 High Pressure Alarm – HIGH PRESSURE**

This alarm results when the outlet pressure, as read on the outlet pressure gauge, exceeds the set point of the high pressure switch following a 30 second delay. The switch can be adjusted. It is factory set to alarm when the outlet pressure exceeds 12 PSIG. Refer to Section 6.6 and Figure 8 for the adjustment procedure.

#### **3.9.2 Low Pressure Alarm – LOW PRESSURE**

This alarm results when the outlet pressure drops below the set point of the low pressure switch. The switch can be adjusted. It is factory set to alarm when the pressure drops below 6.5 PSIG following a 30 second delay. Refer to Section 6.6 and Figure 8 for the adjustment procedure.

#### **3.9.3 Air Compressor Maintenance Alarm - COMP. RUN TIME ALARM**

This alarm occurs when the air compressor and heatless dryer run time exceeds the set point of the solid state compressor performance time delay switch. The switch is may be adjusted. It is factory set at approximately 2 minutes. Refer to Figure 5 for adjustment location.

### 3.9.4 Humidity Condition – HUMIDITY, -COND.-

During the time when the **HUMIDITY, -COND.-** is being displayed the following sequence occurs:

A. The solid state humidity time delay switch starts counting down from its preset value, which is factory set at 2 minutes.

B. **HUMIDITY, -COND.-** is shown on the alarm display.

### 3.9.5 Humidity Alarm – HUMIDITY ALARM

This alarm will only be displayed after the **HUMIDITY –COND.-** time delay has timed out. When **HUMIDITY ALARM** is displayed, the air compressor and heatless dryer do not operate until the reset switch is toggled.

#### **NOTE:**

**If the humidity condition does not clear, and the humidity time delay times out, the air compressor/heatless dryer will shut down and HIGH, HUMIDITY ALARM will appear on the alarm display. If the humidity condition does clear, the alarm will no longer be displayed on the display, and the timer will be reset to zero.**

### 3.10 Humidistat

The humidity level is represented by the seven LED's, three red and four green, located just below the alarm display. When all LED's are energized, the humidity level is below 2% relative humidity, indicating the system is operating correctly.

### 3.11 Desiccant

During shipment, the desiccant in the heatless dryer towers may have absorbed some moisture. If this is the case, one or more LED's may be off during initial start-up, however they will come on as the desiccant dries out during operation. All LED's on the humidistat should be energized after 15 minutes of operation.

### 3.12 Logic Scan LED

The logic scan LED will pulse on and off whenever the dryer is turned on. This indicates the display board is scanning for alarms.

### 3.13 Alarm LED

The alarm LED is normally off. It will only energize when an alarm condition is present on the digital alarm display. The alarm LED will energize during the following conditions: **HUMIDITY ALARM, HIGH PRESSURE, LOW PRESSURE,** and **COMP. RUN TIME ALARM.** The alarm LED will not energize when **HUMIDITY – COND.-** is displayed or when the digital alarm display is blank.

## SECTION 4 – INSTALLATION AND START-UP

### **CAUTION !!!**

**It is extremely important to perform the installation, start-up, and test procedures in Sections 4 and 5 in the sequence outlined or damage to components may result and the warranty voided.**

#### **4.1 Inspection**

Remove the lower front door and open the upper instrument panel. Carefully inspect both the exterior and interior of the air dryer for any shipping damage.

### **IMPORTANT:**

**ANY SHIPPING DAMAGE MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CARRIER. THE MANUFACTURER IS NOT RESPONSIBLE FOR SHIPPING DAMAGE**

#### **4.2 Installation Procedure**

Step 1. Close the upper instrument panel and install the lower panel before moving the dryer to its permanent location.

Step 2. Remove the shipping blocks from beneath the compressor plate. This permits the compressor assembly to float freely on the rubber vibration pads.

### **NOTE:**

**Failure to remove shipping blocks may damage the mounting assembly.**

#### **4.3 Location**

The unit should be installed in an environment that is free from abrasive dust and chemicals. The optimum temperature range is between 40° and 85 °F. Although the unit will operate at temperatures up to 120 °F, the operating life of the components decreases dramatically at temperatures above 85 °F.

#### **4.4 Electrical Hook-Up**

The air dryer operates on 115 VAC, I phase, 60 hertz power.

Before plugging in the air dryer into the electrical outlet, make sure the main power switch is in the OFF position.

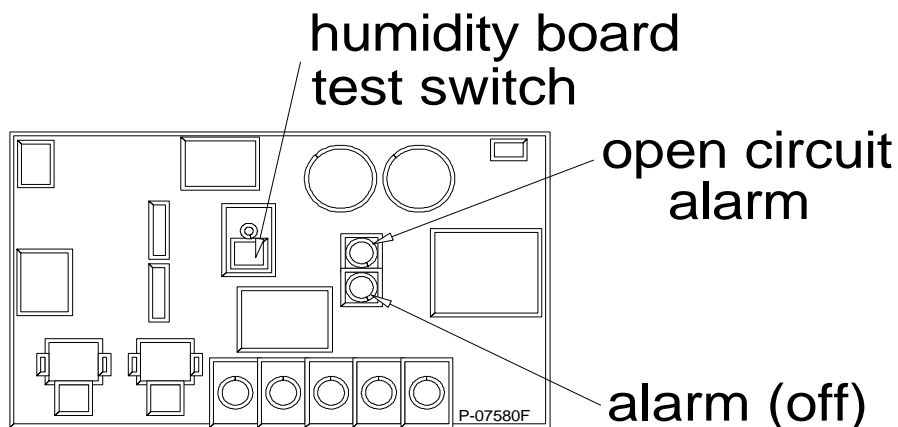
### **IMPORTANT:**

**A 15 amp minimum service must be provided. The incoming power to the dryer should have 20 amp SLO-BLO fuses. A minimum of 14 AWG wire must be used to connect the dryer.**

## 4.5 Start-Up

A plastic plug with a small hole is located in the low pressure outlet port at the rear of the dryer. This orifice plug will permit the unit to operate in a simulated “on-line” condition.

- A. Place the main power switch to the ON position.
- B. The logic scan LED will start flashing.
- C. The air compressor, heatless dryer and ventilating fan will start running and the air will flow through the low pressure orifice plug.
- D. **LOW PRESSURE** will appear on the alarm display until the outlet pressure gauge reads approximately 6 PSIG or more. During the time that **LOW PRESSURE** appears on the display, the alarm LED will also be energized.
- E. **HUMIDITY –COND.-** may appear on the alarm display. If **HUMIDITY –COND.-** does not clear within approximately two minutes, **HUMIDITY ALARM** will appear on the alarm display and the air dryer will shut down. If this happens, simply toggle the reset switch. This will allow the unit to run for approximately two more minutes. The **HUMIDITY –COND.-** should clear within 10-15 minutes.
- F. The seven humidity level LED’s will energize when the desiccant in the heatless dryer is dry. If, however, during initial start-up, **HUMIDITY –COND.-** appears in the alarm display, two more LED’s will be off. The LED’s will energize as the desiccant dries out. This should take less than 15 minutes. It may be necessary to increase outlet flow to 2160 SCFD during this “dry out” period.
- G. The outlet pressure gauge will stabilize at approximately 10 PSIG.
- H. The air pressure in the air storage tank will cycle between 20 and 50 PSIG. This may be seen on the tank pressure gauge.
- I. The alarm LED will be energized only when the **HUMIDITY ALARM, HIGH PRESSURE, LOW PRESSURE,** and **COMP. RUN TIME ALARM** appear on the alarm display. The alarm LED will be off in all other cases.
- J. Check for pressure leaks that may have occurred during shipment with soapy water. Be careful not to spray water on any circuit boards within the unit.



**Figure 3**  
**HUMIDITY BOARD**

## SECTION 5 – TEST PROCEDURES

### **WARNING !!!**

**Avoid contact with energized circuits when access doors are open.  
REMOVE ALL JEWELRY before performing any test or  
maintenance on the air dryer.**

#### **5.1 Low Pressure Alarm Test**

- A. Open the front instrument panel.
- B. Locate the outlet pressure regulator and loosen the locking nut so that the regulator can be adjusted.
- C. Rotate the knob counterclockwise and reduce the pressure on the outlet pressure gauge to approximately 5 PSIG.
- D. At this point, **LOW PRESSURE** will appear on the alarm display. Turn the knob clockwise and increase the pressure on the outlet pressure gauge to 10 PSIG. **LOW PRESSURE** will disappear from the alarm display. The low pressure alarm set point is factory set at 6 PSIG.

#### **5.2 High Pressure Alarm Test**

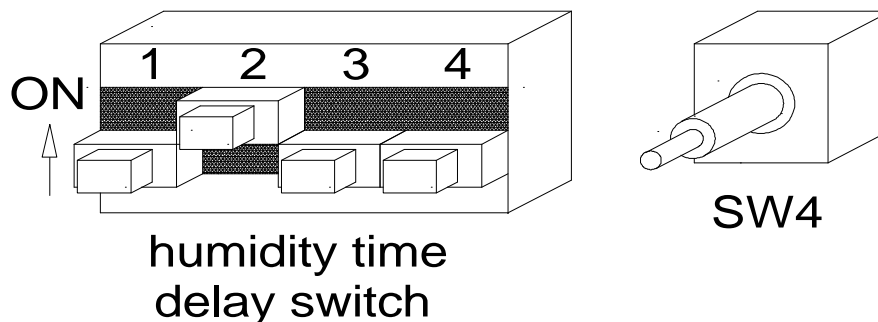
- A. Rotate the pressure regulator knob clockwise until the outlet pressure gauge reads approximately 15 PSIG. **HIGH PRESSURE** will appear on the alarm display.
- B. Rotate the knob counterclockwise until the outlet pressure gauge reads approximately 10 PSIG. Toggle the reset switch and **HIGH PRESSURE** will disappear. The alarm set point is factory set at 12.5 PSIG.

#### **5.3 Humidity Condition Test**

Locate SW2 on the P05847F control board. Select the desired time delay by setting only one of the four dip switches. Select switch one on for one minute, two on for two minutes, and so fourth. If all four switches are off, a 5 minute delay is set. If longer delays are required, turn SW4 on, this multiplies all delays by 2. Refer to Figure 4 below.

### **NOTE:**

**Only one switch should be in the ON position at any one time.  
Figure 4 below shows the #2 switch in the ON position**



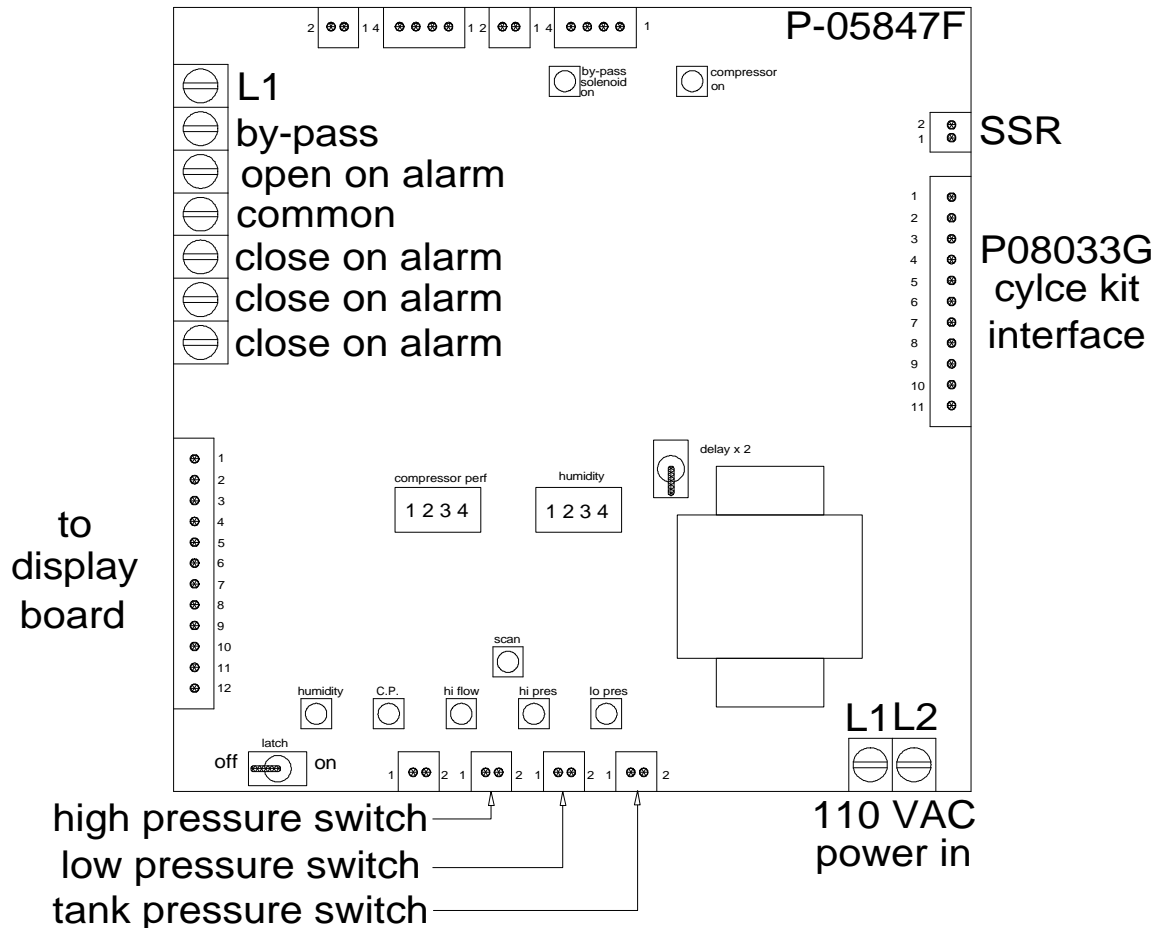
**Figure 4  
HUMIDITY TIME DELAY SWITCH**

### 5.4 Humidity Alarm Test

A humidity alarm will result after the system has remained in a humidity condition for longer than the time set on the humidity time delay switch. To perform the test, simply keep the dryer in a humidity condition for longer than two minutes. This may be done by depressing the humidity test switch on the humidity board. After the dryer has been in a humidity condition for longer than two minutes, the following should occur:

- A. **HUMIDITY ALARM** will appear on the alarm display.
- B. The alarm LED will be on while the **HUMIDITY ALARM** appears on the display.
- C. The air compressor will shut down. compressor on (LD2) should de-energize on the P05847F logic board.
- D. The two green humidity LED's, possibly some or all of the red LED's, will de-energize on the humidity display.

Toggle the reset switch on the front panel, and the dryer will start-up again. The LED's will energize and the alarm will no longer be displayed.



**Figure 5**  
**CONTROL BOARD P05847F**



## 5.5 Compressor Performance Test

A compressor performance alarm (**COMP. RUN TIME ALARM**) will result when the air compressor remains running for a period longer than normal for a particular application.

Example: If the time between the air compressor starting and stopping is one minute, then the normal run time is one minute.

### **CAUTION !!!**

**It is extremely important to perform the installation, start-up, and test procedures in Sections 4 and 5 in the sequence outlined or damage to components may result and the warranty voided.**

With the normal cycle at one minute, the compressor performance time delay switches, located on the P05847F control board, should be set with the two minute switch ON and all of the other switches OFF. SW4 should be at X1. See Figure 6 below. A compressor performance alarm will appear on the alarm display if, for any reason, the air compressor runs continuously for the set period of time.

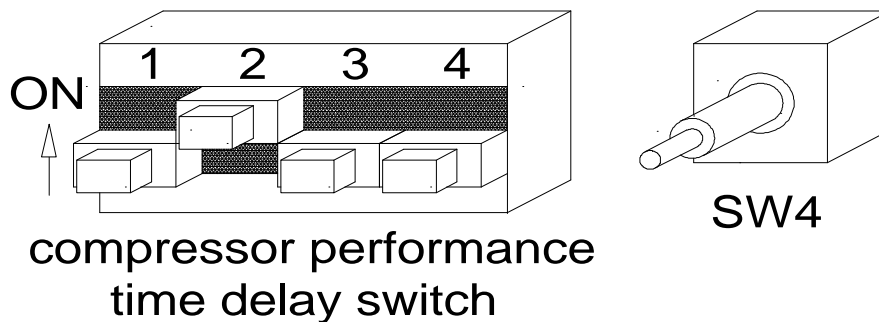
The following items represent some possible reasons a **COMP. RUN TIME ALARM** would be displayed. Refer to the troubleshooting guide for further details in Section 7.2.

- A. An increase in flow to the cables.
- B. A leak in the internal pneumatic connections in the air dryer.
- C. A “weak” air compressor. (the air compressor needs maintenance)
- D. A faulty solenoid valve in the heatless dryer.

To test the alarm, simply create a temporary leak in the dryer which will force the air compressor to run longer than two minutes. **COMP. RUN TIME ALARM** will appear on the display. Remove the leak from the dryer, toggle the reset switch, and the alarm should clear from the display.

### **NOTE:**

**The compressor performance time delay is factory set at two minutes.**



**Figure 6**  
**COMPRESSOR PERFORMANCE TIME DELAY SWITCH**

## SECTION 6 – MAINTENANCE

### **CAUTION !!!**

**When working around energized circuits, extreme caution should be taken to prevent injury to personnel and damage to equipment.**

#### **6.1 Routine Maintenance**

The following maintenance procedure is recommended by Puregas. If maintenance problems persist after thoroughly consulting this manual, contact Puregas Service Department, 1-800-521-5351 extension 2156.

### **IMPORTANT !!!**

**It is very important that routine maintenance be performed at six month, one year (or 4,000 hours), and two year (or 8,000 hours) intervals to keep dryer operating efficiently. Puregas recommends a historical record be maintained on all air dryers.**

#### **SIX MONTH CHECK**

- ✓ Run times (ON and OFF)
- ✓ Flow rate (compare to previous flow rate)
- ✓ Humidity alarm
- ✓ Safety valve
- ✓ Pressure switch (ON at 20 PSIG, OFF at 50 PSIG)
- ✓ High/Low pressure alarm (HIGH at 12 PSIG, LOW at 6 PSIG)
- ✓ Capacity control valve (set at 48-52 PSIG)
- ✓ Replace the air compressor intake filter felts, P3986
- ✓ Replace cabinet filter element, P05893
- ✓ Clean the air pre-cooler

#### **ONE YEAR (or 4,000 hours) CHECK**

- ✓ Change the items in the compressor maintenance, refer to Section 6.15
- ✓ Change the humidity sensing element
- ✓ Check all wire connections
- ✓ Repeat six month check. **NOTE:** order maintenance kit, P07511

#### **TWO YEAR (or 8,000 hours) CHECK**

- ✓ Change the items in the heatless dryer maintenance kit, P200499S
- ✓ Repeat six month check
- ✓ Repeat one year check

### **NOTE:**

**After performing maintenance on air dryers, always soap test pressure fittings to insure there are no leaks. Wiring should be checked on a routine basis, whether maintenance has been performed or not.**

## 6.2 Maintenance Matrix

	Maintenance Procedure	Frequency Interval	Time Required
Flowrate	Check	6 months	1
Humidity Alarm	Check	6 months	5
High/Low pressure alarm	Check	6 months	5
Compressor pressure switch	Check	6 months	5
Safety valve	Check	6 months	5
Outlet regulator	Check/Adjust	6 months	5
Ventilation filter	Replace	6 months	5
Compressor intake filter	Replace	6 months	5
Compressor performance	Check	6 months	5
Capacity control valve	Check	6 months	5
Precooler coils	Clean	6 months	10
Air fittings	Leak test	6 months	15
Heatless dryer kit	Replace	2 years	60
Humidity and compressor performance delay	Check	6 months	10
Air compressor kit	Replace	1 year	60
Humidity sensing element	Replace	1 year	5

**Chart 2**  
**Puregas P4200DCO3A Maintenance**

The air compressor kit, and the humidity sensing element are supplied in the annual maintenance kit. The part number for the heatless dryer maintenance kit is P200499S.

### 6.3 Recommended Spare Parts List

Part Number	Description	QTY
P02626S	vibration mounts	4
P010369	pressure switch	1
P05285	precooler fan	1
P07580F2	humidity board	1
P5000647D	humidity sensor	2
P05847F1	logic board	1
P07599F1	display board	1
P05992	solid state relay (25 amp)	1
P06136	circuit breaker (15 amp)	1
P400589DC1	solenoid valve assembly	2
P200499S	heatless dryer maintenance kit	1
P06521F1	cycle timer	1
P07511	compressor maintenance kit	1
P4634	capacity control valve	1

#### OPTIONAL SPARE PARTS:

P39663LS      ¾ HP Air compressor

Quantities listed are recommended spare parts per five air dryers.

#### 6.4 Air Compressor Safety Valves

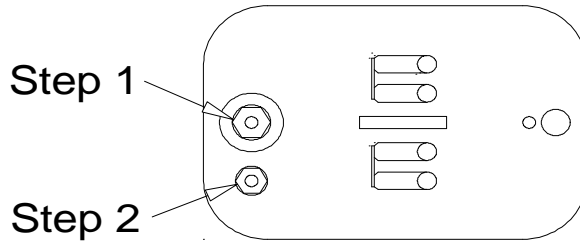
The air compressor safety valve is factory preset to prevent the air compressor from delivering over 60 PSIG. Check for proper operation

#### 6.5 Air Compressor Pressure Switch

The ON/OFF pressure switch is factory set to stop and start the air compressor and maintain the pressure in the air storage tank. The pressure in the tank should cycle between 20-50 PSIG, as may be seen on the high pressure gauge (tank pressure). To adjust the ON/OFF switch, refer to Figure 7 below.

Step 1: Range adjustment- Turn down (clockwise) for higher cut-in pressure, or up for lower cut-in

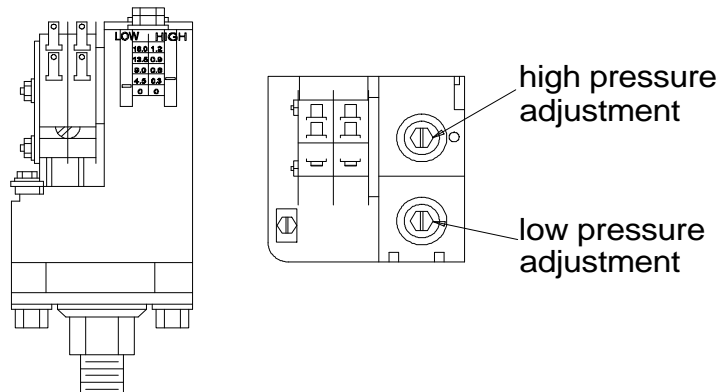
Step 2: Differential adjustment- Turn down for higher cut-out, Or up for lower cut-out



**Figure 7**  
**AIR COMPRESSOR PRESSURE SWITCH**

#### 6.6 High/Low Pressure Alarm Adjustment

The high/Low pressure switch is located in the air output. To adjust, use the pressure regulator and refer to Figure 8 below.



**Figure 8**  
**HIGH/LOW PRESSURE ALARM SWITCH**

#### 6.7 Capacity Control Valve Adjustment

To adjust the capacity control valve make sure the air compressor is running, and the tank pressure is between 20-40 PSIG. Lift up on the valve lock collar and adjust the valve knob clockwise until 48-52 PSIG is read on the heatless dryer gauge, which is mounted on the heatless dryer manifold. Then press the locking collar back in place. Refer to Figure 11.

## 6.8 Air Compressor Maintenance Kit

The maintenance kit contains the parts necessary for scheduled maintenance on the P4200DCO3A air dryer when operating under normal conditions. The contents of the maintenance kit are as follows:

Part Number	Description	QTY/Kit
P3861	piston seal	4
P3862	piston ring	4
P3864	manifold sleeve	2
P3866	head gasket	2
P3867	outlet valve	2
P3868	inlet valve	2
P3869	cylinder gasket	2
P3870	valve plate	2
P3981	rider ring	2
P3986	filter felt	2
P5000647D	sensing element	1
P07510	pressure switch cream	1

Regular inspection may prevent expensive repairs. The rider ring thickness can be an indication that the air compressor needs maintenance. See Figure 10 for a reference. If a rider ring measures .050 inches or less in thickness, the maintenance kit P3865 should be installed. The thickness of a new rider ring is .060 inches.

**NOTE:**

**At higher ambient temperatures,  
maintenance must be performed more frequently.**

## 6.9 Air Compressor Troubleshooting Chart

The wear of the air compressor rings are affected by ambient conditions. At 80° to 85 °F maximum ambient temperature and 40% (maximum average) relative humidity, it is suggested the compressor life between maintenance checks be set at approximately 4,000 hours of run time.

### **IMPORTANT !!!**

**If the air compressor shows evidence of overheating or excessive noise, stop immediately for repairs.**

The air compressor is oilless and requires no lubrication. It is recommended the piston rings, piston seals, rider rings, inlet valves, outlet valves, valve plate and gaskets be replaced at 4,000 hours of run time.

REASON	COMPLAINT			
	Low Pressure	Overheating or Excessive AMP Draw	Excessive Noise	Won't Start Under Load
worn piston rings	X			
worn rider rings	X		piston hitting cylinder	
dirty valves	X			
bent valves	X			
blown head gasket	X		air blowing out intake filter	
dirty filters	X			
low voltage		X		X
cylinder mis-adjustment		piston hitting intake valve	piston hitting intake valve	X
leaky connections	X			
relief valve set too high		X		
relief valve set too low	X			
wrong voltage hook-up		X	X	X
dirt or liquid in top of piston	X	X	X	X

**Chart 3  
Air Compressor Troubleshooting**

## 6.10 Air Compressor Disassembly

- A. Remove or loosen the four screws, which secure the fan shroud to the motor and slide the shroud off. Remove the four cylinder head bolts and separate them from the cylinder bolts. Remove the air manifold tube and the cylinder head with the valve components.

**NOTE:**

**Head bolts are different than cylinder bolts.**

- B. Remove the two cylinder bolts at the motor and lift the cylinder off the piston.
- C. Remove the piston rings, springs, and rider rings.
- D. Clean all components with non-flammable, non-toxic cleaning solvent.

**CAUTION !!!**

**DO NOT FLOOD THE PISTON WRIST PIN OR CONNECTING ROD MAIN BEARING WITH SOLVENT, OR THE PERMAMNET LUBRICANT WILL BE WASHED AWAY.**

- E. The head gaskets may have become firmly attached to the flat surfaces of the cylinder heads or cylinders. Remove the old gasket material. Use number 240 grit emery cloth (or wet/dry abrasive material) to sand flat the cylinder surfaces. Follow with number 400 grit emery cloth (or wet/dry) to dress these flat surfaces before reassembly with new gaskets.

## 6.11 Air Compressor Assembly

- A. Install the new piston springs, rings, and rider rings on the piston. Locate the ring joints approximately 120° opposite each other.
- B. Attach cylinder to motor with cylinder bolts and lock washer. Finger tighten bolts. Move the piston to the top dead center position and adjust the cylinder flush with the top of the piston.

**NOTE:**

**Top dead center can be checked by using a straight edge across the cylinder head. Move the piston flush with the straight edge. Move piston up and down to insure there is no binding in the cylinder, and then tighten the cylinder bolts.**

- C. Install valve components, gaskets, and plates by lining them up as shown in Figure 10. Valves are pre-aligned in the maintenance kit, however, they should be rechecked. The leaves of the intake and discharge valves have been pre-bent and do not require adjustment. Check to make sure that the leaves are bent away from the valve plate.



**NOTE:**

**The ends of two fins on the cylinder have been omitted.  
They are always on the exhaust port.**

- D. Install the head assembly using the four head bolts and finger tighten.
- E. Install the new manifold seals on the manifold, and assemble to the elbow fitting on the head assembly. Do not tighten.
- F. Install the second head assembly and assemble the manifold. Tighten head bolts (150-160 inch pounds) and manifold nuts.
- G. Soap test all fittings with compressor running. A small amount of air will bleed around the heads.

### **6.12 Heatless Dryer (dehydrator)**

Open the front panel. No adjustments are necessary on the heatless dryer. No lubrication is required. It is recommended that the unit be inspected at regular intervals. The heatless dryer has a solid state timer that switches power to the solenoid valves from one tower to the other every thirty seconds. This can be heard as an air purge. If this purge can not be heard, refer to Section 7.5 for troubleshooting information. At two year intervals, install the maintenance kit, P200499S. The steps to follow are listed below.

- A. After turning off the power to the unit, remove the heatless dryer from the unit and remove the mufflers from the solenoid valve.
- B. Remove the solenoid coil and frame from the manifold assembly.
- C. Using a 1 1/16" wrench, remove the base assembly containing the core assembly and discard.
- D. Remove o-rings from the manifold and install the new o-rings (P400313018).
- E. Install new base assembly containing new core manifold. Tighten only until snug. DO NOT over torque.
- F. Reinstall solenoid coils in the frame.
- G. Install retaining ring.
- H. Install mufflers.
- I. Remove desiccant chambers, o-rings, and purge orifices.
- J. Remove and discard check valve ball and springs, and install new check valve ball (P400375) and springs (P300507).
- K. Reinstall purge orifices with new o-rings (P400313110, P400312908). Check orifice to make sure it is free of debris.
- L. Lubricate desiccant chamber threads and reinstall with o-rings (P400312924). Reinstall heatless dryer into the unit, and turn power back on.

### **6.13 Pressure Regulator**

Preventative maintenance is not required. If, however, the pressure regulator becomes erratic or inoperative, it should be replaced.

### **6.14 Humidity Alarm**

If the unit is in humidity alarm:

- A. Verify that the four LED's (2%, 3%, 5%, and 7% on the front panel) are de-energized. If not, toggle the RESET switch on the front panel. The compressor will be running.

- B.** Locate the green and yellow LED's on the P07580F humidity board. If the yellow LED is energized, check the cable connections between the board and the sensor. If needed, re-seat all connections. Verify that there is a humidity sensor in the unit. If the above tests all check out to be correct, and the yellow LED is energized, the humidity board is defective.
- C.** If the green LED is energized and an alarm is present, then the humidity board is defective. (Assuming the RESET switch was toggled.)
- D.** If both the green and yellow LED's are de-energized, disconnect the cable from the sensor. First the green LED, then the yellow LED will energize. This verifies that the circuitry is operating correctly and that the unit's drying system is malfunctioning.

**WARNING !!!**

**DO NOT MEASURE SENSING ELEMENT RESISTANCE OR APPLY D.C. VOLTAGE, IN ANY WAY, TO THE SENSING ELEMENT. THIS WILL RENDER THE SENSING ELEMENT DEFFECTIVE.**

- E.** Reconnect the sensing element cord that was disconnected in the previous step. With the air compressor running, check the setting and operation of the capacity control valve (48-52 PSIG). Refer to Section 6.7 for more information. If the capacity control valve is set low, the performance of the dryer will suffer. If the capacity control valve is set high, the air compressor may overheat. If the alarm energized again, replace the sensing element (P5000647D).
- F.** If the new sensing element does not clear the alarm, a failure in the heatless dryer is indicated. Refer to the trouble shooting guide in Section 7.5 and Figure 9 for more information.
- G.** Listen for the strong air purge every 30 seconds. If no purge occurs, proceed to the next step. If a purge occurs every 30 seconds, replace the check balls and core assemblies. Make sure to clear the purge orifices from debris. Refer to Figure 9.
- H.** Using a voltmeter, remove the terminal cover and check for 115 VAC at L1 and L2. If 115 VAC is present, verify 53 VDC is alternately being applied from DC1 to L2 for 30 seconds, and then DC2 to L2 for 30 seconds. If this is not happening, replace the solid state timer (P06521F).
- I.** If the air dryer is still in humidity alarm after the above steps have been taken, contact the Puregas Service Department for technical help.

## 6.15 Maintenance Kit

This maintenance kit is designed to provide the parts necessary for one year's normal maintenance on the Puregas P4200DCO3A air dryers. The maintenance indicated should be performed at the noted intervals. See Section 6 for more information.

### Parts List

Part Number	Description	QTY	Interval
P05893	cabinet air filter	2	6 months & 1 year
P5000647D	humidity sensing element	1	1 year
P3865	compressor maintenance kit	1	1 year
P07510	pressure switch cream	1	1 year

### Instructions:

- A. Move the ON/OFF circuit breaker to the OFF position. See Figure 12.
- B. Open the front door and remove the lower compartment panel.
- C. Replace the cabinet air intake filter from beside the air pre-cooler.
- D. Loosen the thumbscrew and slide the compressor assembly forward. Disassemble the two inlet air filter assemblies and replace felt filters. See Figure 11 and Figure 12. After replacing filters, slide compressor back into the unit and tighten thumbscrew.
- E. Loosen the brass nut from the humidity tube, and replace the humidity-sensing

### **CAUTION !!!**

**Wait for the system, to de-pressurize completely (0 PSIG)  
before proceeding with maintenance.**

element. Replace the nut into the humidity tube.

- F. Perform air compressor maintenance kit. See Sections 6.8 to 6.11
- G. After placing the compressor back into cabinet, and tightening thumb screw, reposition the ON/OFF circuit breaker back to the ON position.
- H. Order new maintenance kit for next interval. 1-800-521-2156 part number P3865.

### **NOTICE:**

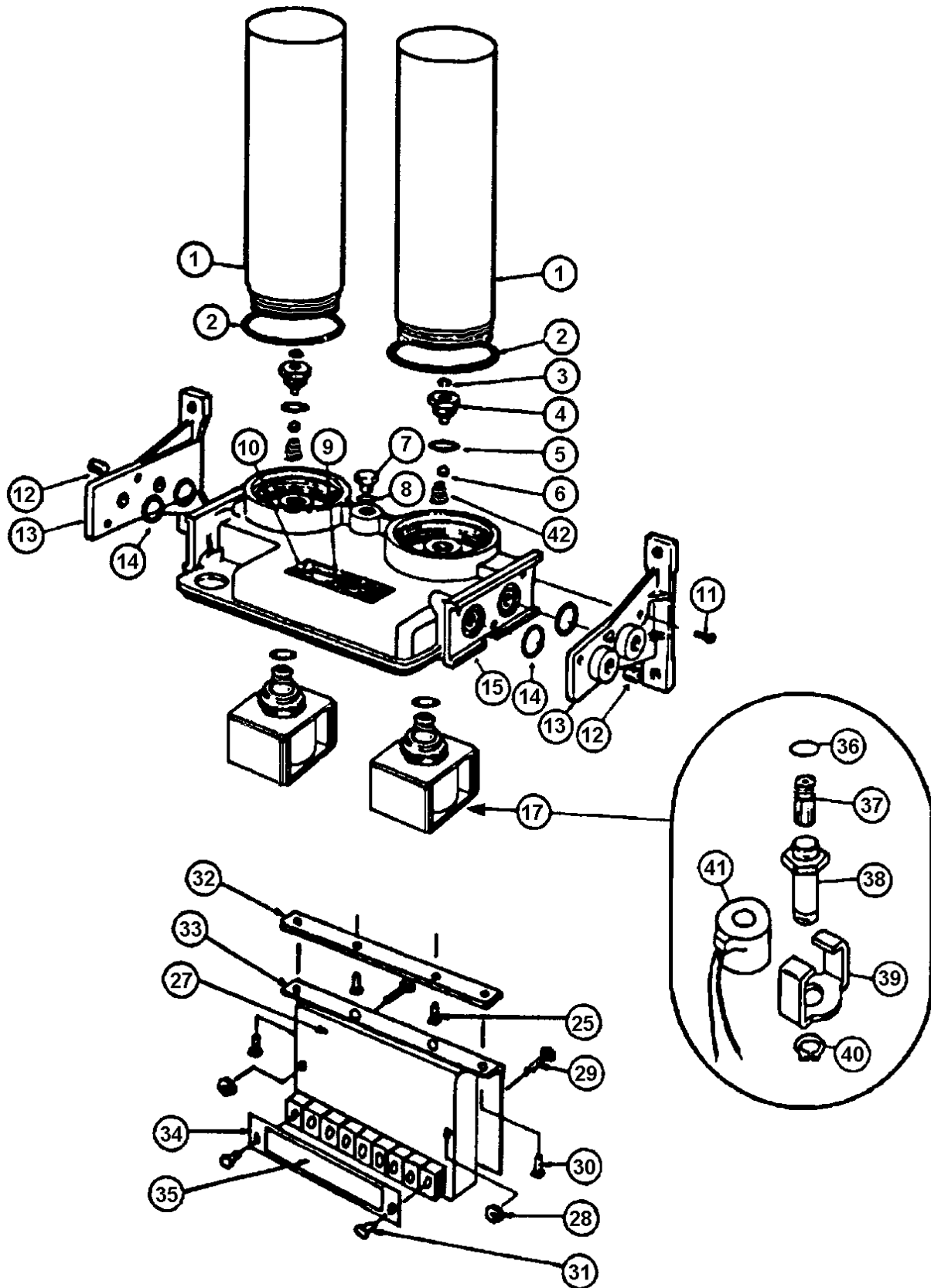
**In addition to the above maintenance, perform all maintenance  
as outlined in Section 6 of this manual.**

## 6.16 Dehydrator Parts List

Numbers refer to parts shown in Figure 9.

Reference Number	Part Number	Description	QTY
1	P20040312	desiccant chamber assembly, 12 in	2
2	P400312924	o-ring (included in above)	2
3	P400313110	o-ring	2
4	P20040441	purge orifice	2
5	P400312908	o-ring	2
6	P400375	check valve ball	2
7	P4003074	hex plug	2
8	P400312904	o-ring	1
9	P300737	nameplate	1
10	P4003221	drive screw #4,3/16"	2
11	P4003612	screw #10/24,5/8"	2
12	P07559	pipe plug, 1/4" - 18 socket	2
13	P300497P	mounting bracket	2
14	P400313209	o-ring	4
15	P300495P	air manifold	1
16	P400313018	oring	2
17	P400589DC1	solenoid valve assy, 53 VDC	2
25	P4003611	screw #6/32, 3/8"	2
27	P06521F	solid state timer, 115V, 50/60 Hz	1
28	HNK01-OHC-04	keps nut #8/32	2
29	HSB83-OHC-10	screw #8/32, 1"	2
30	HSB83-OFC-04	screw #6/32, 1/2"	2
32	P06496	ss timer adapter plate	1
33	P06497	ss timer mounting bracket	1
34	P06499	terminal cover	1
35	-----	terminal cover decal	1
42	P300507	check valve spring	2

**Chart 4**  
**Dehydrator Parts List**

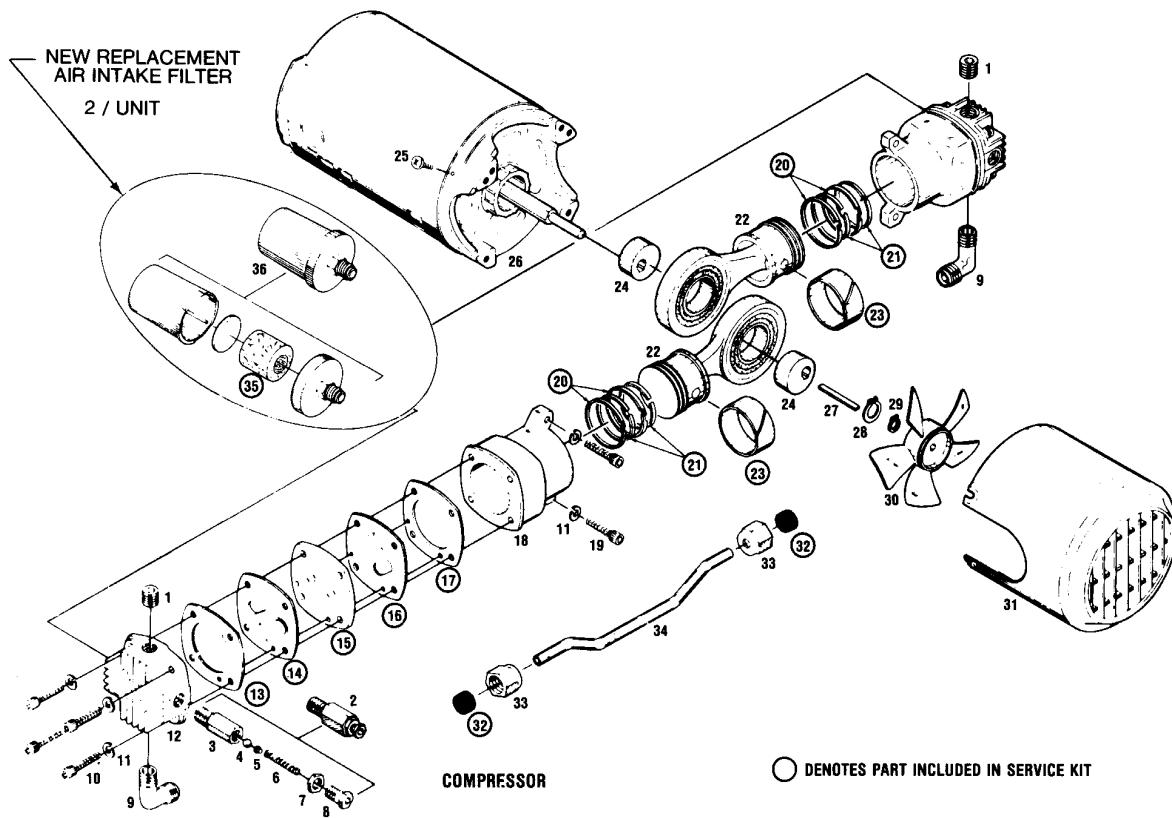


Heatless dryer maintenance kit P200499S includes items 2,3,5,6, and 17.

Solenoid maintenance kit P200498S includes item 17 which consists of items 36 to 41.

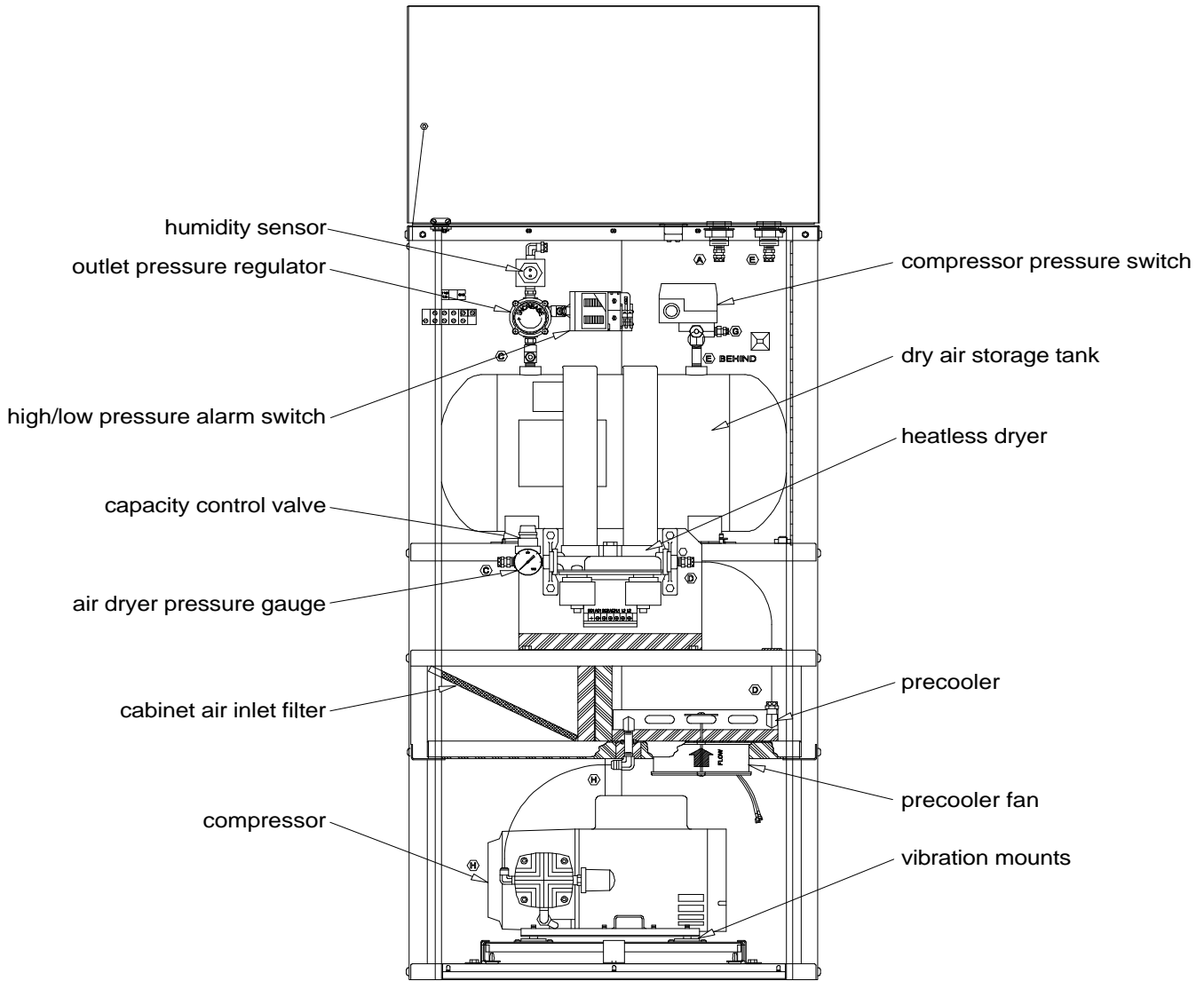
**Figure 9**  
**EXPLODED VIEW OF PUREGAS HEATLESS DRYER**

## 6.17 Compressor Parts List

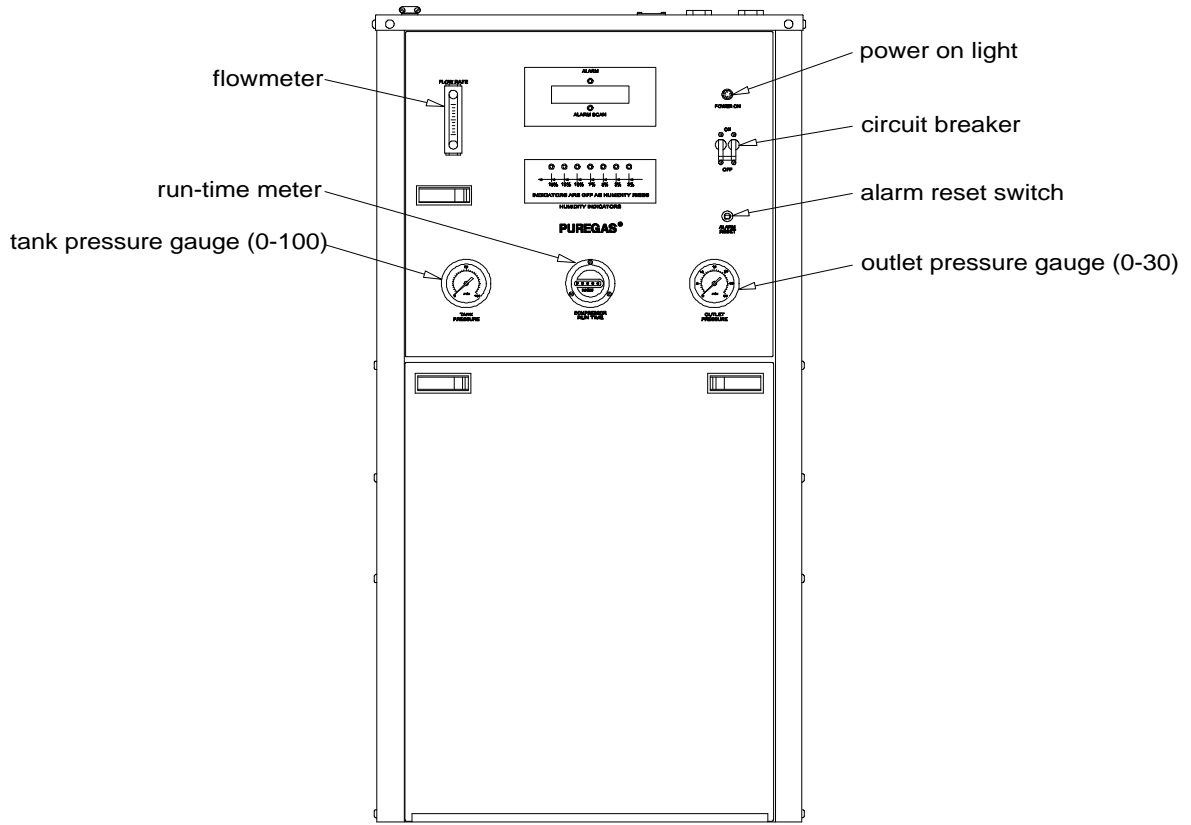


**Figure 10**  
**EXPLODED VIEW OF COMPRESSOR AND MOTOR ASSEMBLY**

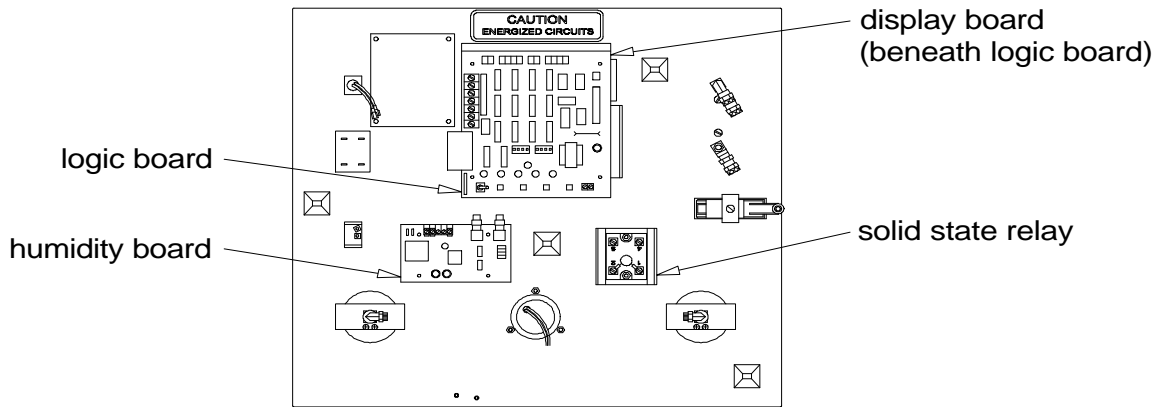
Ref. No.	Part No.	Description	QTY	Ref. No.	Part No.	Description	QTY
1	P3998	pipe plug	2	20	P3862	piston ring	4
2	P3996	safety valve	1	21	P3861	piston seal	4
3	---	(included in #2)	1	22	P3872	piston rod assy.	2
4	---	(included in #2)	1	23	P3981	rider ring	2
5	---	(included in #2)	1	24	P02646	eccentric	2
6	---	(included in #2)	1	25	P4033	screw	2
7	---	(included in #2)	1	26	P02646	bracket	4
8	---	(included in #2)	1	27	P4040	square key	1
9	P4024	manifold elbow	2	28	---	ring (not supplied)	1
10	P4025	head screw	8	29	P4041	retaining ring	1
11	P4026	lock washer	12	30	P3873	fan	1
12	P3875	cylinder head	2	31	P3871	fan shroud	1
13	P3866	head gasket	2	32	P3864	manifold sleeve	2
14	P3867	outlet valve	2	33	P4043	manifold nut	2
15	P3870	valve plate	2	34	P01240	manifold	1
16	P3868	inlet valve	2	35	P3986	felt filter	1
17	P3869	cylinder gasket	2	36	P02619	air intake filter	2
18	P3874	cylinder	2				
19	P3979	cylinder screw	4				



**Figure 11**  
**FRONT VIEW OF PUREGAS P4200DCO3A**



**Figure 12**  
**AIR DRYER FRONT VIEW**



**Figure 13**  
**TOP PANEL REAR VIEW**

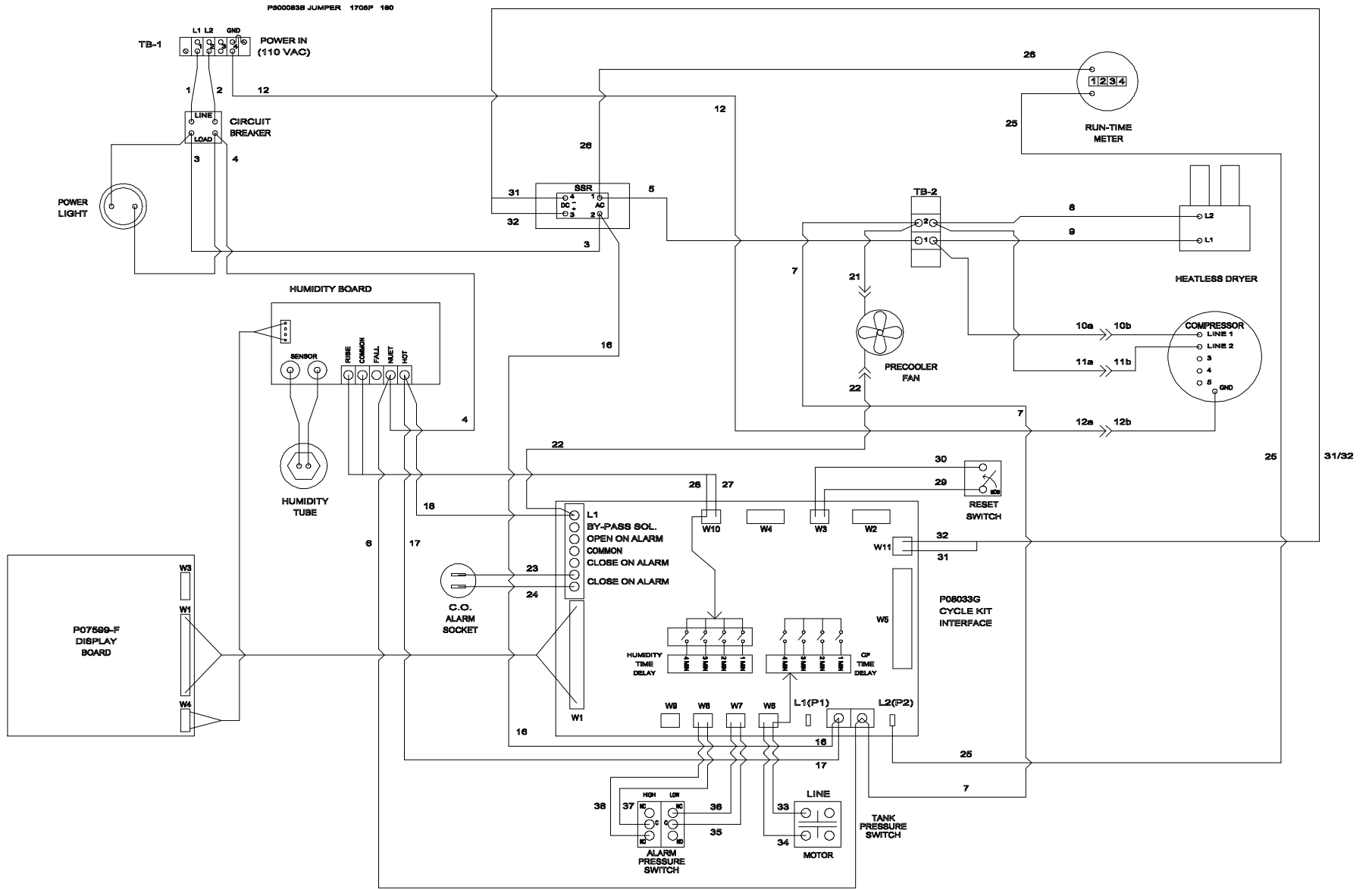


## Air Dryer Parts List

Refer to drawings on previous pages.

Part Number	Description	QTY
P5000647D	humidity sensor	1
P03348	outlet pressure regulator	1
P07677	high/low pressure alarm switch	1
P4634	capacity control valve	1
P3197	pressure gauge 0-100 PSIG	1
P05893	cabinet filter	1
P39664L	compressor	1
P010369	compressor pressure switch	1
PHF2C112041	heatless dryer	1
P4642CP	precooler	1
P05285	precooler fan	1
P02626SCP	vibration mounts	4
P02301	flowmeter	1
P02358	run time meter	1
P010275	tank pressure gauge 0-100 PSIG	1
P010253	power on light	1
P06136	circuit breaker	1
P05695	alarm reset switch	1
P010276	outlet pressure gauge 0-30 PSIG	1
P05847F1	logic board	1
P07580F2	humidity board	1
P07599F1	display board	1
P05992	solid state relay (SSR)	1

**Figure 14**  
**WIRING DIAGRAM**



## **SECTION 7 – TROUBLESHOOTING INFORMATION GUIDE**

This troubleshooting guide is set in a columnar format to simplify the isolation of problems, possible causes, areas to check and corrective action required to restore the air dryer to normal operation. It is further divided into system headings for easy referral. Where possible, the most like causes have been listed first. Otherwise, the causes start with the simplest and progress to more complicated possibilities. The steps should be followed in sequence to expedite service. It is further suggested that once the problem has been isolated, the corresponding text in the Maintenance Section be reviewed to provide additional information. After the air dryer has been serviced, the alarms should be re-tested to assure the alarm system is working properly.

The alarm troubleshooting guide is easy to use and very effective when used properly. Therefore, it is suggested to always start at the beginning and continue in sequence by reading the possible cause, check and corrective action paragraphs and follow the procedures indicated.

This guide will require a volt ohmmeter (VOM), and will specify DC (direct current) or AC (alternating current) setting.

The troubleshooting information guide can by no means cover every possible cause of malfunction, but will help solve most problems. If the problem persists after thoroughly consulting the troubleshooting section, contact Puregas Technical Service at 1-800-521-5351 extension 2156, or (303) 657-2156.

### **WARNING !!!**

**This section requires access to components inside the cabinet of the air dryer. In most cases, an energized and operating air dryer is necessary to conduct a test and make adjustments. Extreme care should be exercised to avoid contact with live electrical or moving parts.**

## 7.1 Alarm Display Summary

### Problem 1. Low Pressure Alarm

Possible Cause:

Refer to Section 3 and Section 5.

Check:

Corrective Action:

### Problem 2. Comp. Run Time Alarm

Possible Cause:

Refer to Section 3 and Section 5.

Check:

Corrective Action:

### Problem 3. Humidity –Cond.- Alarm

Possible Cause:

Refer to Section 3 and Section 5.

Check:

Corrective Action:

### Problem 4. Humidity Alarm

Possible Cause:

Refer to Section 3 and Section 5.

Check:

Corrective Action:

## 7.2 Air System

### Problem 1. Low Pressure Alarm

Possible Cause:

outlet pressure is too low

Check:

check outlet pressure gauge  
(factory set alarm point is .25  
PSIG)

Corrective Action:

if setting is below .25 PSIG,  
readjust pressure regulator

leak in the air system

with no outlet flow, check all fittings  
with soapy water

tighten any loose connections as  
required

defective outlet pressure gauge

check the outlet pressure test  
valve with digital pressure gauge

readings should be the same (+/- 2  
PSIG). If not, replace gauge on  
unit

weak air compressor

check for excessive run time

install maintenance kit (Section 6)

pressure alarm is defective or out of  
adjustment

check low outlet pressure alarm  
setting (Section 5)

readjust pressure switch, or replace  
defective switch

high ambient temperature

check ambient temperature

if above 120 F, cool environment  
or relocate dryer to cooler  
environment

defective pressure switch

disconnect wire from switch

if alarm clears, replace pressure  
switch. If not, replace logic board

### Problem 2. Compressor Will Not Build Up Pressure

Possible Cause:

incorrect compressor safety relief  
valve setting

Check:

check safety relief valve setting  
(Section 6)

Corrective Action:

refer to Section 6

compressor requires maintenance

check rings and valves for  
excessive wear

install maintenance kit (P07511)

capacity control valve is defective or  
needs adjustment

check capacity control valve for  
proper adjustment

adjust to 50 PSIG (+/- 2 PSIG)

### Problem 3. Rapid ON/OFF Cycling

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
leak in air system	with no outlet flow, check all fittings with soapy water	tighten any loose connections as required
incorrect capacity control valve adjustment	adjust capacity control valve to 50 PSIG +/- 2 PSIG	properly adjust capacity control valve

## 7.3 Humidity Alarm System

### Problem 1. Air Dryer in Humidity Alarm

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
humidity circuit defective	humidity alarm circuit (Section 5)	refer to Section 5
loose or improper electrical connections	wire connections	replace as necessary
low system pressure	capacity control valve setting (50 +/- 2 PSIG)	properly adjust valve (Section 5)
defective dehydrator timer	refer to Section 3 for proper timer operation	replace defective timer as necessary
excessively high ambient temperature	ambient temperature should be below 120 F	cool environment around dryer, or relocate dryer to cooler environment

### Problem 2. Air Dryer Humidity Alarm Doesn't Function

Note: The following are possible causes for a humidity condition. After isolating and correcting the problem, the air dryer may have to run for up to 5 minutes to dry out the entire system and clear the alarm. A higher system pressure will dry out the towers faster. It is advisable to run the system pressure at 52 PSIG to dry out the towers.

**WARNING !!!**  
**DO NOT MEASURE SENSING ELEMENT RESISTANCE OR APPLY D.C. VOLTAGE, IN ANY WAY, TO THE SENSING ELEMENT. THIS WILL RENDER THE SENSING ELEMENT DEFFECTIVE.**

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
defective humidity sensing element	toggle the humidity switch on the humidity board	if the dryer does not go into a humidity condition, replace the sensing element
loose or poor electrical connections	check wires for proper connection	tighten as necessary

## 7.4 Electrical System

### Problem 1. No Power To The Air Dryer

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
power has been interrupted to the dryer	toggle the humidity switch on the humidity board	reset the main power supply, or replace bad fuse
circuit breaker tripped out main supply	check circuit break to see if it has tripped. check for proper AC voltage at power connections	reset circuit breaker, and check for sufficient voltage
loose or improper wire connections	check power connections	tighten or correct improper connections

### Problem 2. No Power To The Compressor, But The Other Components Have Power

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
loose or poor electrical connections	check for proper AC voltage at air compressor	repair any bad electrical connections
solid state relay	check for 5 VDC across position 3 and 4, on the logic board verify LED 2 is on	replace solid state relay

### Problem 3. Power To Dryer, But The Compressor Doesn't Operate

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
humidity alarm after set time delay	check for humidity alarm on display	if in alarm, refer to Section 5
loose or poor electrical connections	check power connections at terminal block	repair any bad electrical connections
circuit breaker	with the breaker on, check for proper AC voltage at the supply side and the load side of the breaker	if voltage fails to be on both sides, replace breaker
tank pressure switch	this switch operates on 5 VDC, when the contacts are closed the compressor should operate	change sides of the switch, or clean contacts, reapply contact cream
compressor overload protection switch has tripped	check ventilating fan for operation	replace if necessary
	check cabinet air filter for obstruction	clean if necessary
	check compressor inlet filters for obstruction	replace if necessary
	check for rapid ON/OFF cycling	see Section 7.2

## 7.5 Dehydrator

### Problem 1. Heatless Dryer Delivers Wet Air

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
defective solenoid valve	check core assembly for broken spring and proper seating	defective parts should be replaced
purge orifice plugged	check orifice for obstruction	clean orifice from debris, do not clean with abrasive material
solenoid coil burned out	check coil for magnetic pull with screwdriver	replace if necessary
improper operation of timer	check for proper AC voltage on positions L1 and L2	if no operation with voltage applied, replace timer

### Problem 2. White Powder in Flowmeter or Exhaust

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
deteriorated dessicant towers	check for movement of perforated disk at open end of tower, disc should not move more than 1/4" from retaining ring	replace chamber, or have repacked at factory

### Problem 3. Heatless Dryer Has Excessive Drop in Outlet Pressure

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
improper operating conditions	see Section 3	install maintenance kit P200499S
solenoid coil burned out	check coil for magnetic pull with screwdriver	replace if necessary
improper operation of timer	check for 30 second switch between towers	if no switch with voltage applied, replace timer
check valve balls not seated properly	check rings and valves for excessive ware	replace if necessary