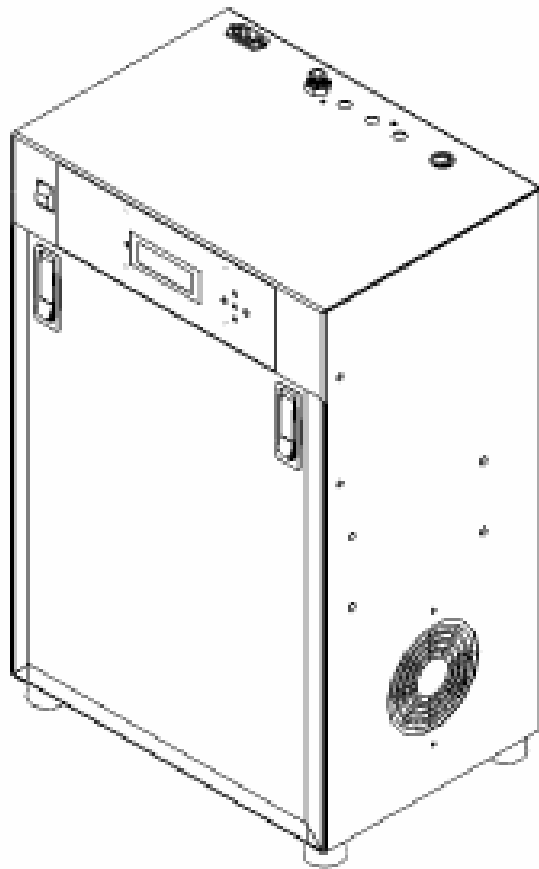


OPERATING INSTRUCTIONS AND PARTS LIST FOR PUREGAS MODEL P550WCDA CO2 ADSORBER



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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 Engineering Department
226A Commerce Street
Broomfield, CO 80020
1-800-521-5351 or (303) 657-2156

**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.

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.

IMPORTANT:

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

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MODEL P550W AIR DRYER
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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 P550WCDA air dryer. The purpose of the air dryer is to supply a normal outlet flow of .300 SLPM of CO2 free air at a regulated pressure between 45 and 50 PSIG for continuous feed of pressurized cables, waveguides or other devices requiring CO2 free dry air. This unit will deliver a maximum of .750 SLPM of dry air under emergency conditions. Model P550WCDA is designed for floor, wall or relay rack mounting.

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

1.2 Initial Inspection

Carefully inspect both the exterior and interior of the air dryer for any shipping damage. Remove the shipping tags and manual from inside the unit. Remove the shipping block from under the compressor and remove the shipping straps from around the compressor and filter assembly. Remove all shipping foam from the side and behind the compressor or any other locations prior to use.

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.

IMPORTANT:
FAILURE TO FOLLOW PROPER PROCEDURE FOR INSTALLATION, START-UP AND TEST WILL VOID THE WARRANTY.

1.4 Safety Information

Please read this entire manual before unpacking, setting up, or operating this equipment. Pay attention to all danger and caution statements. Failure to do so may result in serious injury to the operator or damage to the equipment.




To ensure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this manual.

Veillez lire l'ensemble du manuel avant le déballage, le réglage ou la mise en fonctionnement de cet appareil. Prêtez attention aux prescriptions de

danger, avertissements et mises en garde. Le non-respect de cette procédure peut conduire à des blessures graves de l'opérateur ou à des dégâts au matériel.

Assurez-vous que la protection fournie avec cet appareil ne soit pas compromise, n'utilisez pas ou n'installez pas cet appareil d'une autre façon que celle décrite dans ce manuel.

1.4.1 Precautionary Labels

	<p>This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. If on the instrument, refer to the instruction manual for operation or safety information.</p> <p><i>Ceci est le symbole d'alerte de sécurité. Se conformer à tous les messages de sécurité qui suivent ce symbole afin d'éviter des blessures potentielles. Si apposés sur l'instrument, se référer au manuel d'utilisation pour le fonctionnement ou les informations de sécurité.</i></p>
	<p>THIS SYMBOL, IF NOTED ON THE EQUIPMENT, INDICATES A HOT SURFACE THAT MAY CAUSE BURNS IF TOUCHED.</p> <p><i>CE SYMBOLE, SI NOTÉ SUR L'ÉQUIPEMENT, INDIQUE UNE SURFACE CHAUDE QUI PEUT PROVOQUER BRÛLE SI TOUCHÉ.</i></p>
	<p>THIS SYMBOL INDICATES THAT A RISK OF ELECTRICAL SHOCK AND/OR ELECTROCUTION EXISTS.</p> <p><i>CE SYMBOLE INDIQUE QU'IL EXISTE UN RISQUE DE CHOC ÉLECTRIQUE ET/OU D'ÉLECTROCUTION.</i></p>

1.4.2 Use of Hazard Information Keywords

DANGER:

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION:

Indicates a potentially hazardous situation that may result in minor or moderate injury.

IMPORTANT: *Indicates a situation which, if not avoided, may*

cause damage to the instrument. Information that requires special emphasis.

NOTE: *Indicates non-safety-critical information that nevertheless is useful to the operator.*

DANGER

Indique une situation de danger potentielle ou imminente qui, si elle n'est pas évitée, peut entraîner la mort ou des blessures graves.

AVERTISSEMENT

Indique une situation de danger potentiel ou imminent qui, si elle n'est pas évitée, pourrait entraîner la mort ou des blessures graves.

ATTENTION

Indique une situation potentiellement dangereuse qui peut entraîner des blessures mineures ou modérées.

SECTION 2 – DESCRIPTION

The model P550WCDA 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 displays, gauges, and controls to ensure the delivery of dry air at the proper pressure and relative humidity. Specific characteristics for the air dryer unit are shown below in Chart 1.

<u>POWER REQUIREMENTS:</u>	
ELECTRICAL:	115 VAC, 1PH 50/60Hz 6.5 Amps 6 Amp Circuit Breakers
	230 VAC, 1PH 50 Hz 3.5 Amps 3 Amp Circuit Breakers
NORMAL OUTPUT CAPACITY:	.300 SLPM
EMERGENCY OUTPUT CAPACITY:	.750 SLPM
SIZE:	17.25" Wide x 12" Deep x 28" High 44 x 30 x 71 cm
NET WEIGHT:	74 Lbs. (33.5 kg)
DEWPOINT:	-40 °F (-40 °C) & CO2 to 2PPM
DEHYDRATOR:	Solid State Timer/ D.C. Valves
DELIVERED AIR PRESSURE:	Standard, 40-50 PSIG (275-344 kPa) - , adjustable
AIR COMPRESSOR:	Single-cylinder, 1/3 Hp (0.25 kW), oilless type
DRY AIR OUTLET CONNECTION:	3/8" (0.95 cm) plastic tubing connector
Maximum Operating Temp.:	+120° F (+49° C)
Minimum Operating Temp:	+40° F (4.4° C)
Compressor Noise Level	72 dBA @ 3'(1M) & 69 dBA @ 10'(3M)

**Chart 1
PUREGAS P550WCDA 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 airflow is shown schematically in Figure 1.

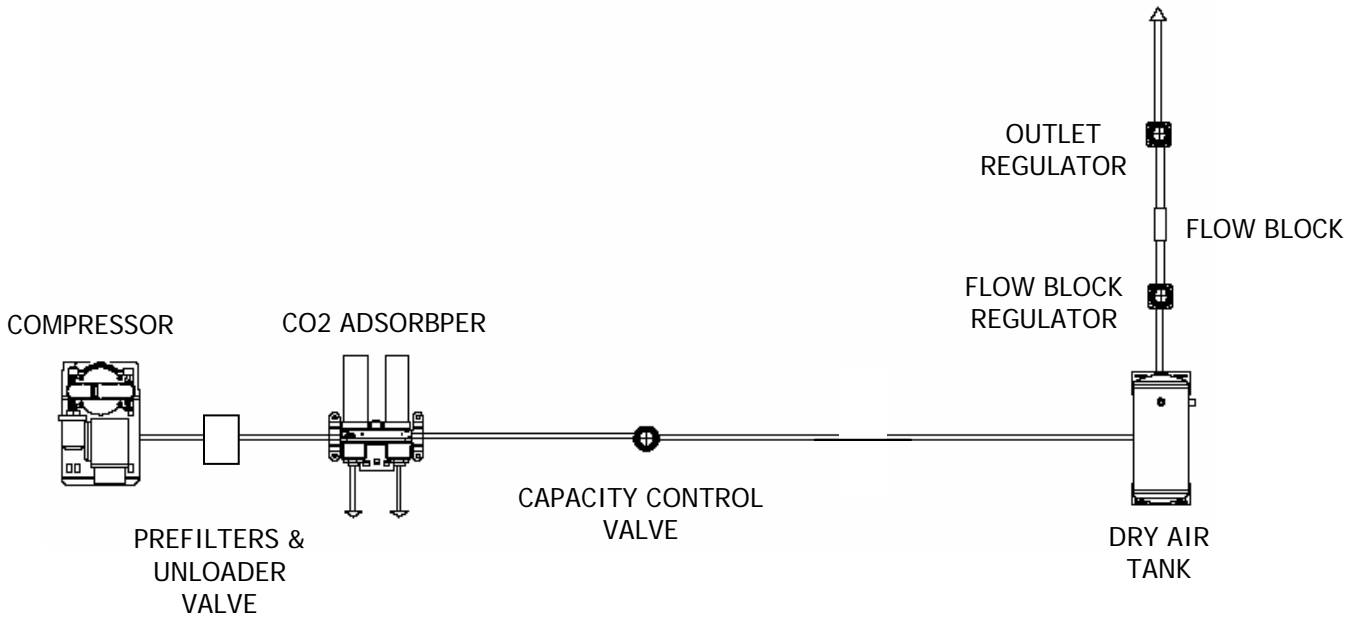


Figure 1
P550WCDA FLOW DIAGRAM

3.2 Air Compressor

Ambient air is drawn through the intake filter on the air compressor and compressed to approximately 90 PSIG.

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 electronic 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 releasing 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.

NOTE: During shipment, the desiccant in the heatless dryer towers may have adsorbed some moisture. If so, the unit may exhibit a humidity condition on start-up, but will clear as the desiccant dries out during operation, typically within 30 minutes.

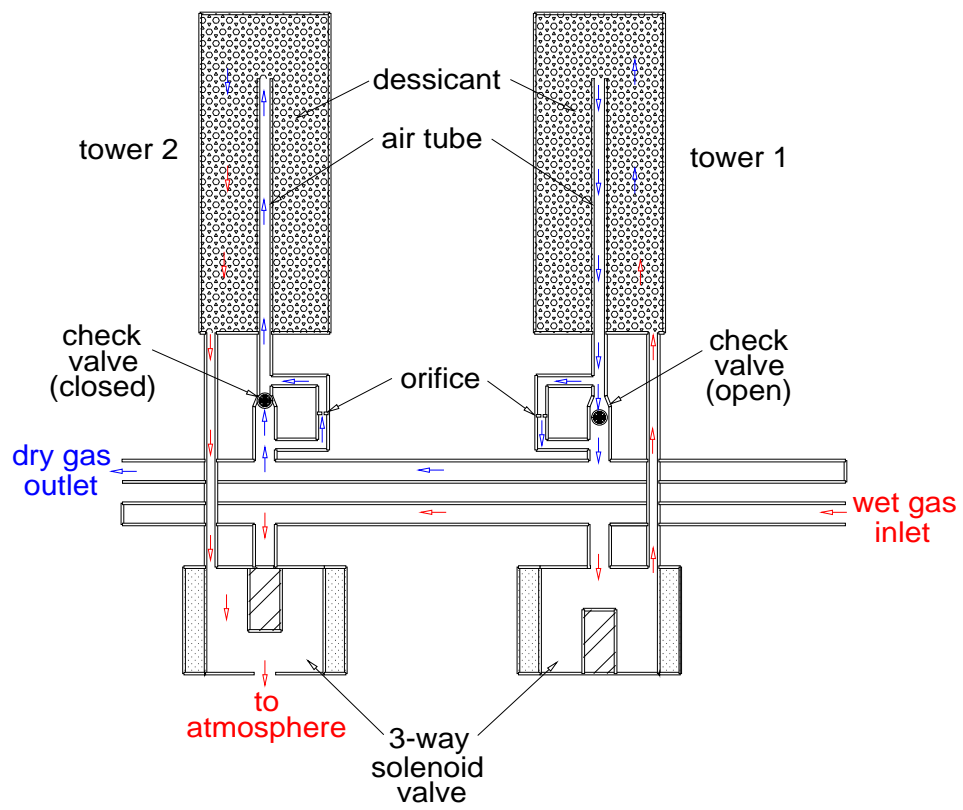


Figure 2
PUREGAS HEATLESS DRYER

3.4 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.

3.5 Storage Tank and Pressure Control

Once the air passes through the capacity control valve, it is directed into the air storage tank. The pressure control function is located on the control circuit board. The control board signals the compressor to shut down at 90 PSIG. The air compressor will remain OFF until the tank pressure drops below 60 PSIG. At this point the control board will start the compressor and the cycle continues. The ON/OFF set points are fixed and can not be field adjusted.

3.6 Flow Block Regulator and Flow Block

The main flow of air from the storage tank is directed through an adjustable flow block regulator. The flow block regulator should be set at 60 PSIG. The function of the pressure regulator is to keep a constant pressure on the inlet of the flow block and allow for an accurate flow reading. Air exiting the flow block regulator flows across an orifice in the flow block. The small pressure drop across the orifice is sensed by the control board and converted to an accurate flow reading on the unit LCD display.

3.7 Outlet Regulator

From the flow block, the air is channeled to the outlet regulator. This regulator controls the outlet pressure located on the top of the unit. A pressure line is fed to the control board from the pressure outlet side. This allows the control board to accurately sense the outlet pressure. The outlet pressure alarm function is located on the control circuit board. To set the alarm point refer to the DISPLAY MENU portion of the manual.

3.8 Alarm Summary

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

3.8.1 High Pressure Alarm – HALR

This alarm results when the outlet pressure, as read on the LCD display screen, exceeds the set point following a 30 second delay. The set point can be adjusted. It is factory set to alarm when the outlet pressure exceeds 50.0 PSIG. Refer to DISPLAY MENU SECTION of manual for the adjustment procedure.

3.8.2 Low Pressure Alarm – LALR

This alarm results when the outlet pressure drops below the low-pressure set point. The set point can be adjusted. It is factory set to alarm when the pressure drops below 40.0 PSIG following a 30-second delay. Refer to DISPLAY MENU SECTION of manual for the adjustment procedure.

3.8.3 COMP. RUN TIME ALARM - ALR

This alarm occurs when the air compressor run time exceeds the alarm setting. It is factory set at approximately 6:30 minutes. Refer to DISPLAY MENU SECTION of manual for adjustment procedure.

SECTION 4 – INSTALLATION AND START-UP

WARNING: MULTIPLE HAZARDS, INCLUDING POTENTIAL FOR ELECTROCUTION, SERIOUS INJURY, AND DEATH

All installation, service and maintenance activities must be performed by qualified personnel.

AVERTISSEMENT : LES HASARDS MULTIPLES, EN INCLUANT LE POTENTIEL POUR L'ÉLECTROCUTION, LA BLESSURE SÉRIEUSE ET LA MORT

Toute l'installation, le service et les activités de maintenance doivent être exécutés par le personnel qualifié.

IMPORTANT:

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

IMPORTANT:

REMOVE SHIPPING BLOCKS, FOAM, AND STRAP BEFORE START UP. FAILURE TO DO SO MAY RESULT IN COMPRESSOR DAMAGE AND VOID THE WARRANTY.

IMPORTANT:

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

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

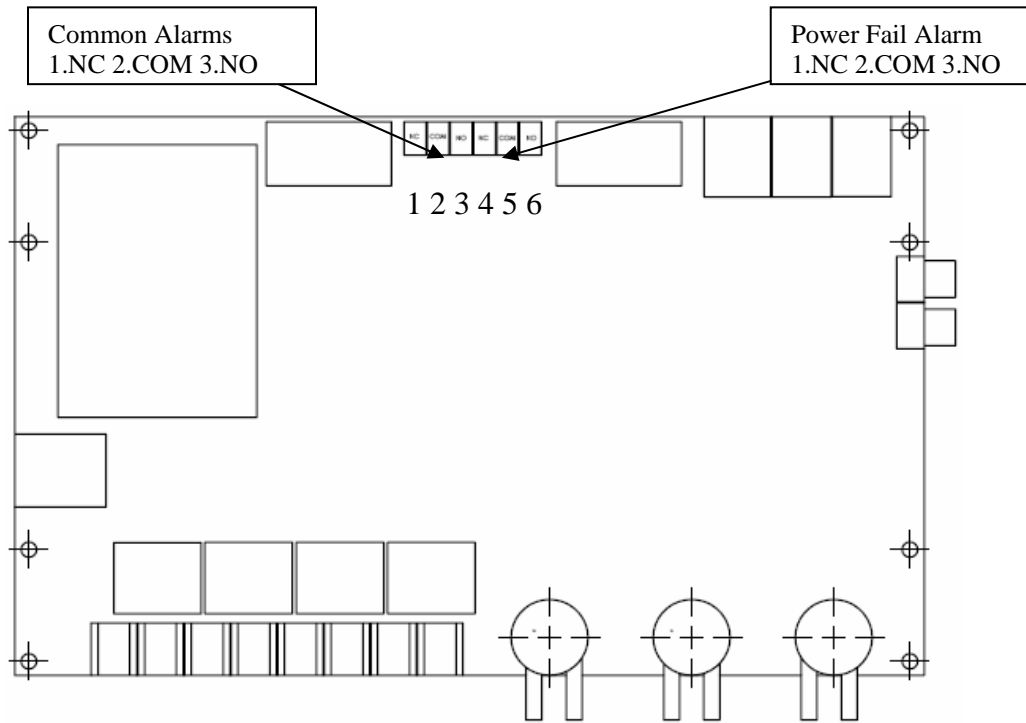
4.2 Installation Procedure

4.2.1 Indoor Installation – Locate the air dryer in a well-ventilated area.

4.2.2 Cabinet Mounting – Wall, floor, or rack mount (order P011674 for 23" rack only) the air dryer as required.

4.2.3 Electrical Power Requirements – 115 VAC 10 AMP

4.2.4 Alarm Connection – Connect the incoming alarm pair to the control board. Knock-Outs are provided at the top of the unit. A sealed connector is recommended. A pair of dry contacts are provided on the circuit board as shown. Stripped wire pairs can be connected normally open or normally closed. Commons alarms will appear on terminals 123 and power fail will appear on terminals 456.



4.2.5 Ventilation Requirements– Keep inlet and fan vent clear of obstructions.

IMPORTANT:
A minimum of 14 AWG Wire,
or 16 AWG capable of carrying a 10 AMP load,
must be used to connect the dryer.

4.3 Start-Up

WARNING: RISK OF ELECTRIC SHOCK

Do not get any water on the control board when testing for leaks with soapy water.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE

Ne recevez pas d'eau sur le tableau de commande en évaluant pour les fuites avec l'eau savonneuse.

(Refer to Figure 4)

- A. Release the adjustment knob locking mechanism on the outlet pressure regulator and turn the adjustment knob counterclockwise to initially cut off outlet flow for leak testing.
- B. Apply power to the air dryer and allow the tank pressure to build up to about 90 PSIG (as read on the display).
- C. Soap test for air leaks all air connections between the air compressor and the inlet of the outlet pressure regulator.
- D. Turn the outlet pressure regulator knob clockwise until air starts to bleed. The outlet flow should be low enough to allow the compressor to fill the air storage tank from 90-60 PSIG in 8-9 minutes.
- E. Allow the dryer to run for about 15 minutes to purge moisture from the dry airlines, or until the humidity, alarm has cleared.
- F. Turn the adjustment knob of the outlet air pressure regulator counterclockwise until air is no longer bleeding form the dry air outlet.
- G. Connect the equipment to the cable or waveguide system. The air outlet is 3/8 O.D. plastic tubing.

WARNING: RISK OF ELECTRIC SHOCK

Avoid contact with energized circuits and REMOVE ALL JEWELRY before performing any test or maintenance on the air dryer.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE

Évitez le contact avec les circuits stimulés et ENLEVEZ TOUTE LA BIJOUTERIE avant le fait d'exécuter n'importe quelle épreuve ou maintenance sur le séchoir aérien.

SECTION 5 – TEST PROCEDURES

The unit will mask any alarm for the first two minutes after the unit has been turned on, reset, or cycles internally or externally. This insures that the unit will stabilize before a false alarm is latched. The internal alarm clock does not start until the compressor begins to operate. While performing the tests below, the two-minute mask will need to be exceeded.

5.1 Low Pressure Alarm Test

- A. Remove the front door. Locate the outlet pressure regulator and pull upward on the knob.
- B. Turn the knob counterclockwise and reduce the pressure to approximately 1 PSIG.
- C. At this point, **LALR** will appear on front panel display after one minute. Reset the unit by depressing the reset button. The low-pressure alarm set point is factory set at 40.0 PSIG.

5.2 High Pressure Alarm Test

- A. Rotate the knob clockwise and increase the outlet pressure to approximately 45 PSIG.
- B. At this point, **HALR** will appear on front panel display after one minute. Reset the unit by depressing the reset button. The high-pressure alarm set point is factory set at 50.0 PSIG.

WARNING: MULTIPLE HAZARDS, INCLUDING POTENTIAL FOR ELECTROCUTION, SERIOUS INJURY, AND DEATH

All installation, service and maintenance activities must be performed by qualified personnel.

AVERTISSEMENT : LES HASARDS MULTIPLES, EN INCLUANT LE POTENTIEL POUR L'ÉLECTROCUTION, LA BLESSURE SÉRIEUSE ET LA MORT

Toute l'installation, le service et les activités de maintenance doivent être exécutés par le personnel qualifié.

5.3 Compressor Run-time Test

A compressor run-time alarm will result when the air compressor remains running for a period longer than normal for a particular application. (i.e. outlet flow & pressure requirements). The compressor run-time alarm is factory set at 6:30 minutes, but can be adjusted (SEE DISPLAY MENU SECTION).

A compressor run-time alarm will appear on the alarm display if the air compressor runs continuously for longer than the alarm set point. The following items represent some possible reasons an **ALR** would be displayed next to the run-time reading. Refer to the troubleshooting guide for further details.

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

SECTION 6 – MAINTENANCE

6.1 ROUTINE MAINTENANCE

If On/Off light is not illuminated in the on position, check circuit breakers above air tank and reset by pushing in, if necessary.

Replace cabinet filter and compressor intake filters as needed. Clean enclosure with mild soap and water solution only and wipe dry with a soft cloth.

No Solvents or harsh cleaning agents should be used at any time.

The following maintenance procedure is recommended by Puregas. If

IMPORTANT:

It is very important that routine maintenance be performed at six month, 8,000 hour intervals, or when the control board alarms in for maintenance to keep dryer operating efficiently. Puregas recommends a historical record be maintained on all air dryers.

maintenance problems persist after thoroughly consulting this manual, contact Puregas Product Support, 1-800-521-5351 extension 213.

SIX MONTH CHECK

- ✓ Run times (ON and OFF)
- ✓ Flow rate (compare to previous flow rate)
- ✓ Compressor pressure control (ON at 60 PSIG, OFF at 90 PSIG)
- ✓ Capacity control valve (set at 90-92 PSIG)
- ✓ Replace the air compressor intake filter

8,000 HOURS CHECK

- ✓ Change the compressor intake filter
- ✓ Change the items in the heatless dryer maintenance kit
- ✓ Change the items in the compressor maintenance
- ✓ Check all wire connections
- ✓ Repeat six-month check.

6.2 Maintenance Matrix

Description	Maintenance Procedure	Frequency Interval	Time Required (min)
Flow-rate	Check	6 months	1
Compressor pressure control	Check	6 months	5
Outlet regulator	Check/Adjust	6 months	5
Compressor intake filter	Replace	6 months	5
Compressor performance	Check	6 months	5
Capacity control valve	Check	6 months	5
Air fittings	Leak test	6 months	15
Air compressor kit	Replace	8,000 Hours	60
Heatless dryer kit	Replace	8,000 Hours	60
Prefilter/Coalescer	Replace	8,000 Hours	15

Chart 2
Puregas P550WCDA Maintenance

6.3 Recommended Spare Parts List

Part Number	Description	QTY
P011817	control board	1
P010499	heatless dryer maintenance kit	1
P010980F1	heatless dryer cycle timer 110 vac	1
P3986	compressor air filter	1
P010734F4	purge silencer	1
P011030	compressor maintenance kit	1
P010492	capacity control valve	1
P011693	cabinet filter	1
P011048F24	prefilter coalescer elements kit	1

OPTIONAL SPARE PARTS:

P38061 (110) 1/3 Hp Air compressor

6.4 Air Compressor Pressure Control

The ON/OFF pressure control function is factory set to stop and start the air compressor and, maintain the pressure in the air storage tank. The pressure in the tank will cycle between 60-90 PSIG, as may be seen on the front panel display. This is not field adjustable. If a malfunction occurs, consult the factory.

6.5 High/Low Pressure Alarm Adjustment

The High/Low pressure alarm function is sensed from the air output of the flow block. To adjust refer to the DISPLAY MENU portion of the manual

6.6 Capacity Control Valve Adjustment

To adjust the capacity control valve make sure the air compressor is running, and the tank pressure is between 60-90 PSIG. Lift up on the valve lock collar and adjust the valve knob clockwise until 90-92 PSIG is read on the heatless dryer gauge, which is mounted on the air tank. Then press the locking collar back in place.

6.7 Air Compressor Maintenance Kit

The maintenance kit contains the parts necessary for scheduled maintenance on the P550WCDA air dryer when operating under normal conditions. The contents of the maintenance kit are as follows:

Description	Qty
Piston Cup	2
Cylinder Sleeve	2
O-Ring-Head Gasket	2
O-Ring Valve Flapper	2
Valve Restraint	4
Valve Keeper Strip	2
Valve Flapper-Intake & Exhaust	4

6.8 Air Compressor Troubleshooting Chart

The wear of the air compressor cups is 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 8,000 hours of run time.

IMPORTANT NOTE:

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 cup, cylinder, retainer screws, cylinder o-ring, tube o-rings, head o-rings and valves, and valve retainers be replaced at 8,000 hours of run time.

REASON	COMPLAINT			
	Low Pressure	Overheating or Excessive AMP Draw	Excessive Noise	Won't Start
dirty filter	X			
dirty muffler				
dirty valves	X			
bent/damaged valves	X			
worn/damaged cup	X		X	
leaky hose	X		X	
leaky check valve	X			X
plugged line		X		X
low voltage		X		X

**Chart 3
Air Compressor Troubleshooting**

6.9 Heatless Dryer (dehydrator)

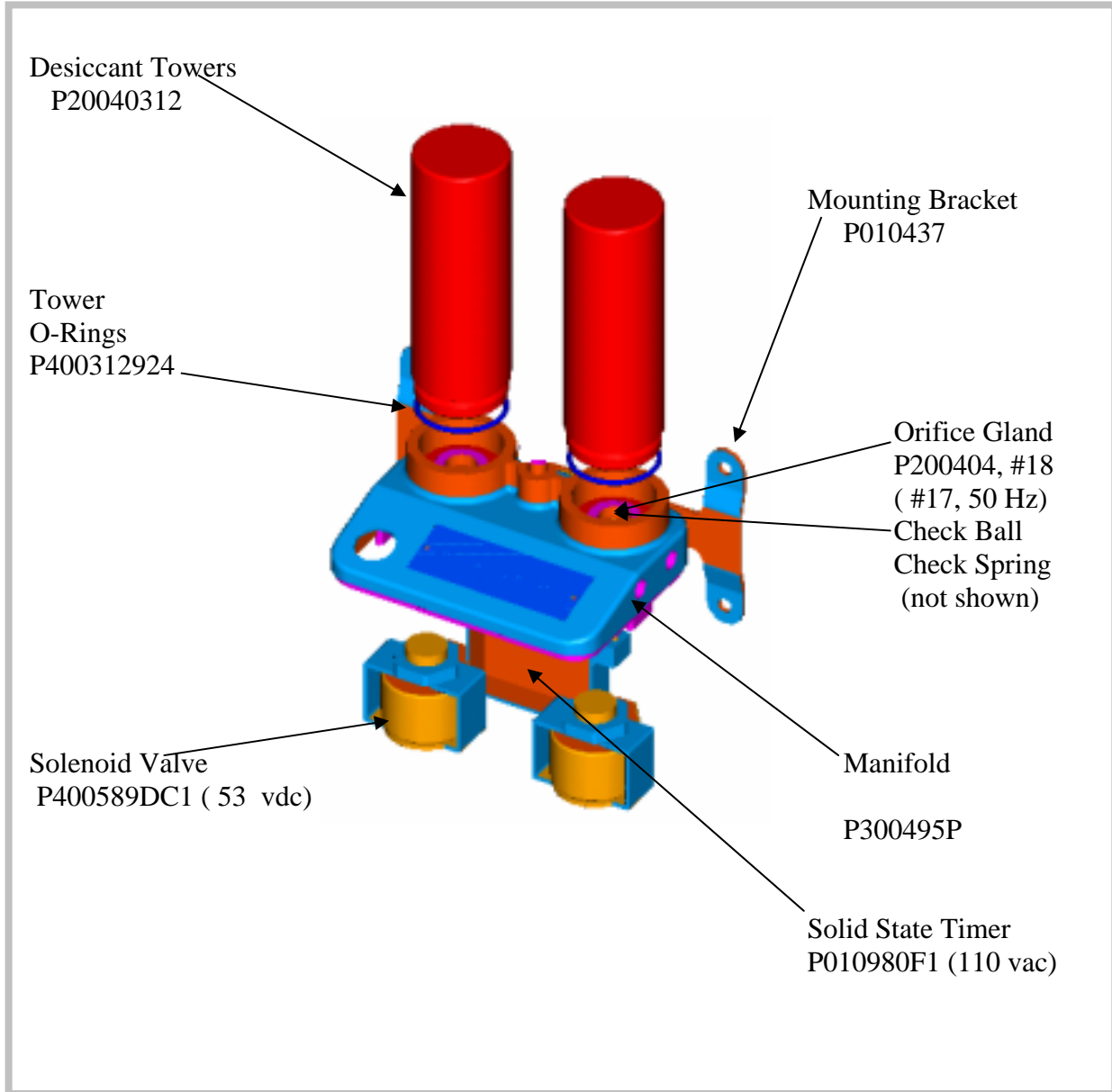
No adjustments are necessary on the heatless dryer. It is recommended that the unit be inspected at regular intervals. The heatless dryer has a solid state timer that switches power to the solenoid valves from one tower to the other every thirty seconds. This can be heard as an air purge. If this purge can not be heard, refer to Section 6 for troubleshooting information. At 8,000 hour intervals, install maintenance kit, P010499. The steps to follow are listed below.

- A. After turning off the power to the unit, remove the heatless dryer from the unit.
- 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.
- 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 and springs.
- K. Reinstall purge orifices with new o-rings. Check orifice to make sure it is free of debris.
- L. Lubricate desiccant chamber threads and reinstall with o-rings. Reinstall heatless dryer into the unit, and turn power back on.

6.10 Pressure Regulator

Preventative maintenance is not required. If, however, the pressure regulator becomes erratic or inoperative, it should be replaced. (P010622)

6.11 Dehydrator Parts List



Heatless dryer maintenance kit P010499. Solenoid maintenance kit P010498

Figure 3
EXPLODED VIEW OF PUREGAS HEATLESS DRYER

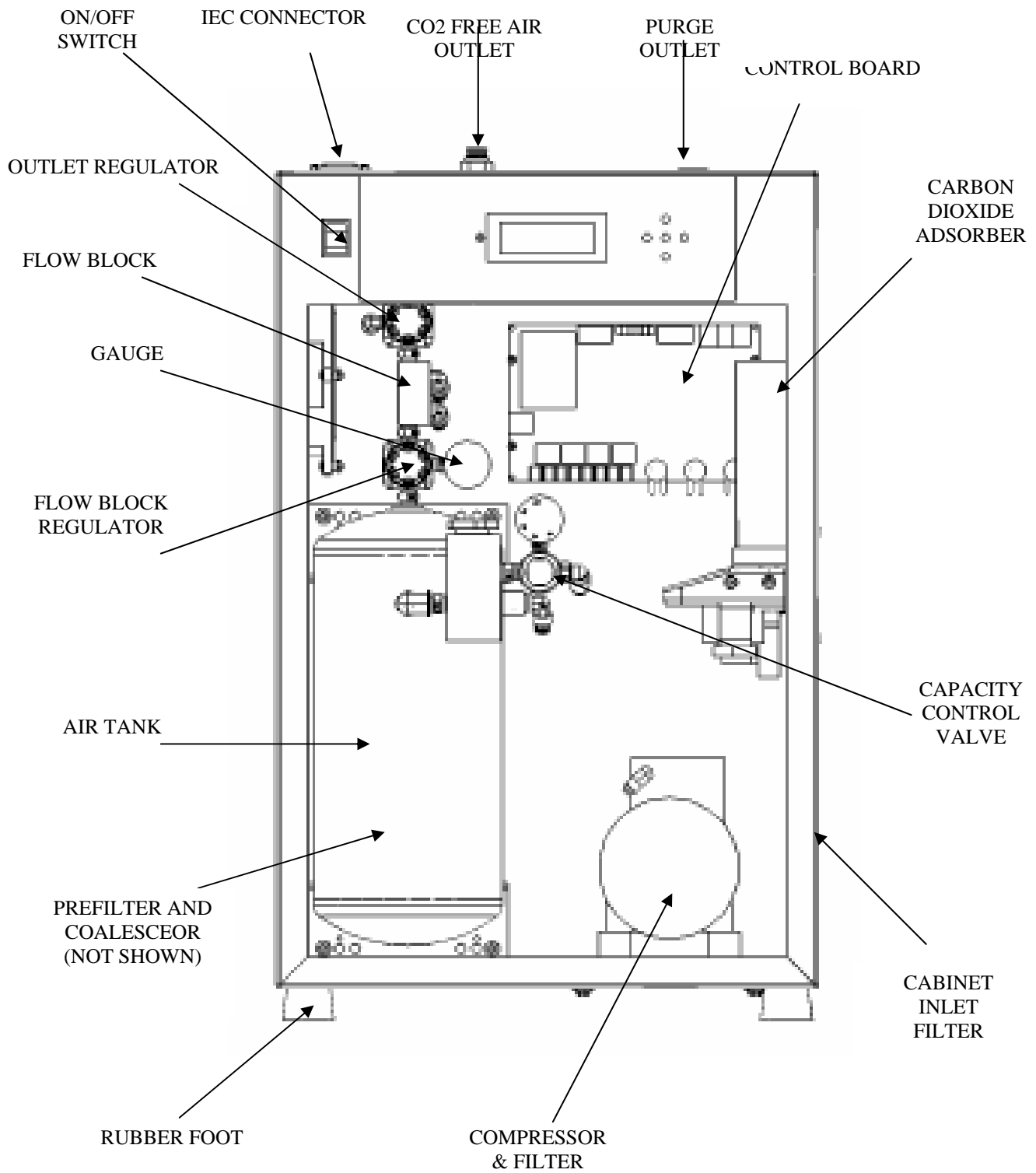


FIGURE 4
AIR DRYER PART IDENTIFICATION

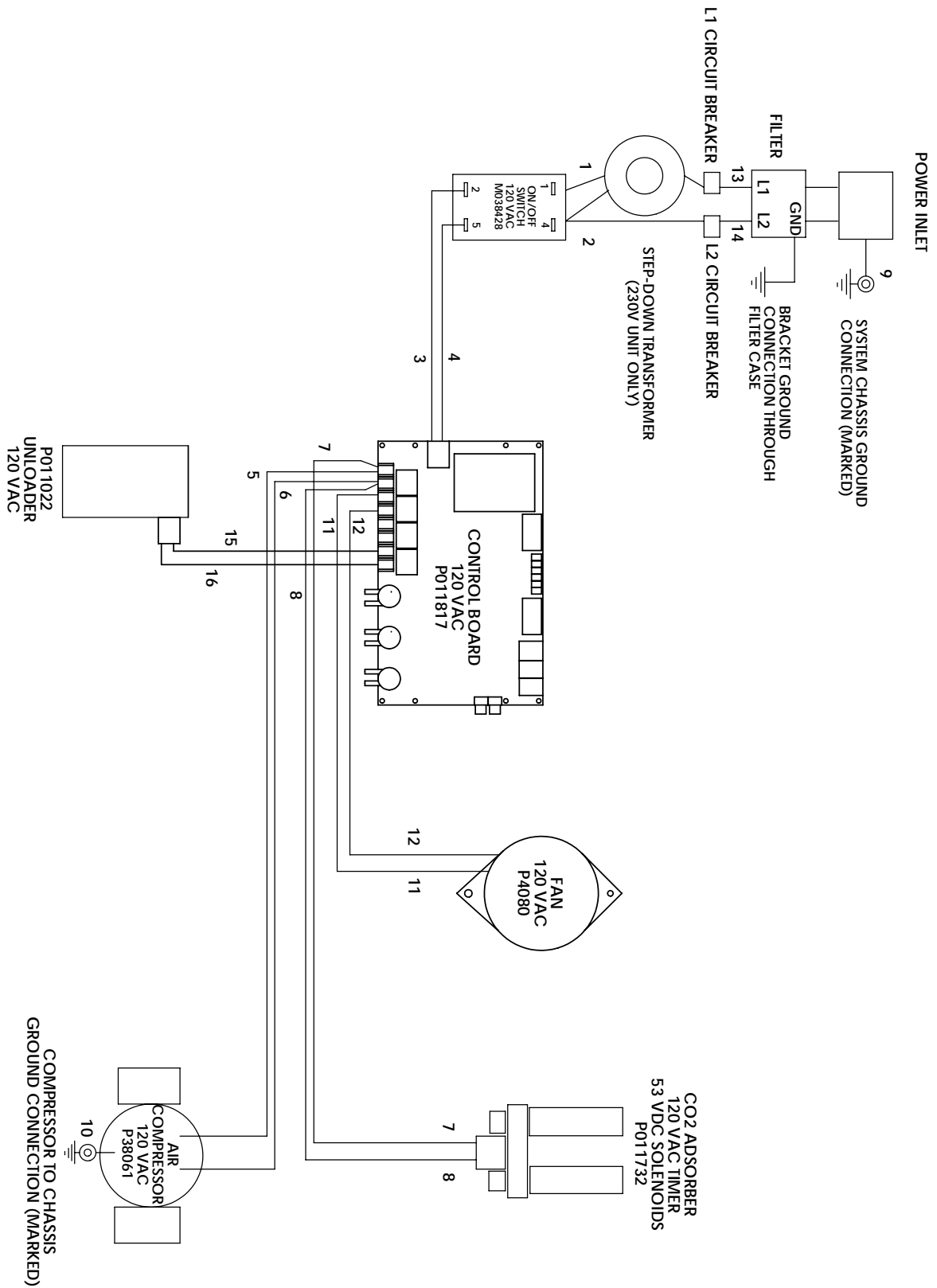


FIGURE 5
WIRE DIAGRAM

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 likely 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 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 213, or (303) 657-2156.

WARNING: ELECTRICAL AND MECHANICAL HAZARDS

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.

AVERTISSEMENT : HASARDS ÉLECTRIQUES ET MÉCANIQUES

Cette section exige l'approche aux composantes à l'intérieur du cabinet du séchoir aérien. La plupart du temps, un séchoir aérien stimulé et opérant est nécessaire d'accomplir une épreuve et faire des ajustages. Le soin extrême devrait être exercé pour éviter le contact avec les parties électriques ou bougeantes vivantes.

7.1 Air System

Problem Low Pressure Alarm

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
alarm set point too high	check alarm point setting	adjust alarm point as required
outlet pressure is too low	adjust outlet regulator	replace as necessary
incorrect tubing	trace tubing from outlet regulator to control board PRES 2	reroute tubing
maximum flow condition	flowrate	correct down stream problem to decrease flowrate
leak in the air system	with no outlet flow, check all fittings with soapy water	tighten any loose connections as required
weak air compressor	check for excessive run time	install maintenance kit
high ambient temperature	check ambient temperature	if above 120 F, cool environment or relocate dryer to cooler environment
defective control board	check the outlet pressure regulator with digital pressure gauge	readings should be the same (+/- 2 PSIG). If not, replace control board

Problem High Pressure Alarm

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
alarm set point is too low	check alarm point setting	adjust alarm point as required
outlet pressure is too high	adjust outlet regulator	replace as necessary
incorrect tubing	trace tubing from outlet regulator to control board PRES 2	reroute tubing
obstruction in delivered air stream	check pressure lines in dryer for debris	clean lines and connections of any debris

Problem : Compressor Will Not Build Up Pressure

<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 90 PSIG +/- 2 PSIG	properly adjust capacity control valve. See section 6.6
high flow condition	flowrate	correct downstream problem to decrease flowrate

7.2 Electrical System

Problem : No Power To The Air Dryer

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
power has been interrupted to the dryer	no display readout	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 : No Power To Compressor, But 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

Problem : Power To Unit, But The Compressor Doesn't Operate

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
loose or poor electrical connections	check power connections at terminal block	repair any bad electrical connections
incorrect tubing	trace tube from tank to PRES 1 on control board	reroute tubing
compressor overload protection switch has tripped	check compressor ventilating fan for operation	replace if necessary
	check compressor inlet filters for obstruction	replace if necessary
	check for rapid ON/OFF cycling	refer to Section 5

7.3 Heatless Dryer

Problem : 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 : White Powder in Purge or Outlet

<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 : 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

7.4 Miscellaneous

Problem : Display panel is not lit, but dryer runs

<u>Possible Cause:</u>	<u>Check:</u>	<u>Corrective Action:</u>
loose cable connection	cable connection from display board to control board	insure proper connection, turn dryer OFF and then back ON to reset display screen

SECTION 8 – DISPLAY MENU

There are display screens and set point screens. Each is described in the sections to follow. To enter the set point screens, the up arrow must be depressed. The air dryer unit will change the display screens at about 2 second intervals. The HOLD button will start and stop the screens from changing. The RESET button will reset all of the alarms that may occur. It is also necessary to depress the RESET button after any of the set points are changed. While changing the alarm points, if there is no button pressing activity after 1 minute, the screen will time out and return to the display screens.

8.1 Unit Screen

TANK -	65.4	PSI
OUTP -	45.0	PSI
CABINET -	78.7	°F

This screen shows the tank pressure, outlet pressure, humidity, and cabinet temperature for the air dryer unit. The tank pressure will cycle between 60 and 90 PSIG. The outlet pressure will read from 45 to 50 PSIG. Next to this reading may appear LALR or HALR, low pressure and high-pressure alarms. Next to the humidity reading ALR may appear, indicating a high humidity alarm. The screen also shows cabinet temperature of the air dryer unit. Next to the reading may appear ALR, indicating a high temperature alarm. Should the temperature reach more than 140°F, the unit will shut down in a high temperature alarm.

8.2 System Screen

SYSTEM STAT -	ON
LAST RUN -	1 : 25
COMP RUN -	0 : 45
FLOW -	.500

This screen shows the status of the System, the last run time reading, the total hours of run time, and flow for the System. The reading next to System Stat will either be ON or SHUTDOWN. ON indicates that System is being run. SHUTDOWN indicates that an alarm has latched for the System, causing the system to be shutdown. High temperature, and high humidity level will cause a system to shutdown. The Last Run reading shows the amount of time, in minutes, that the System ran during the last tank pressurization cycle. Comp Run is the total hours that the compressor has run. If the maintenance alarm has been reset, the total hours will also be reset to 0 hours. Next to this reading may appear ALR, indicating a high flow alarm.

8.3 Flow Alarm Set Point Screen

S	E	T	P	O	I	N	T	A	D	J	U	S	T			
^	v		S	E	L	E	C	T	V	A	R	I	A	B	L	E
>			C	H	A	N	G	E	V	A	L	U	E			
F	L	O	W						.	5	0	0	S	L	P	M

To change the flow rate alarm point, depress the right arrow. After pressing the arrow, an underscore will appear at the far left of the set point value. The left and right arrows will move the underscore from one digit to another. To increase the digit value, depress the up arrow. To decrease the digit value, depress the down arrow. After changing the flow rate to the desired alarm point, scroll the underscore to the left or right of the value. The underscore will disappear, signaling the alarm point has changed. Depress the RESET button to change the alarm point in memory. The factory default value is .500SLMP.

8.4 High Pressure Alarm Set Point Screen

S	E	T	P	O	I	N	T	A	D	J	U	S	T			
^	v		S	E	L	E	C	T	V	A	R	I	A	B	L	E
>			C	H	A	N	G	E	V	A	L	U	E			
O	U	T	P	H	I	G	H			5	0	.	0	P	S	I

To change the high-pressure alarm point, depress the right arrow. After pressing the arrow, an underscore will appear at the far left of the set point value. The left and right arrows will move the underscore from one digit to another. To increase the digit value, depress the up arrow. To decrease the digit value, depress the down arrow. After changing the high pressure to the desired alarm point, scroll the underscore to the left or right of the value. The underscore will disappear, signaling the alarm point has changed. Depress the RESET button to change the alarm point in memory. The factory default value is 50.0 PSIG

8.5 Low Pressure Alarm Set Point Screen

S	E	T	P	O	I	N	T	A	D	J	U	S	T			
^	v		S	E	L	E	C	T	V	A	R	I	A	B	L	E
>			C	H	A	N	G	E	V	A	L	U	E			
O	U	T	P	L	O	W				4	0	.	0	P	S	I

To change the low-pressure alarm point, depress the right arrow. After pressing the arrow, an underscore will appear at the far left of the set point value. The left and right arrows will move the underscore from one digit to another. To increase the digit value, depress the up arrow. To decrease the digit value, depress the down arrow. After changing the flow rate to the desired alarm point, scroll the underscore to the left or right of the value. The underscore will disappear, signaling the alarm point has changed. Depress the RESET button to change the alarm point in memory. The factory default value is 40.0 PSIG.

8.6 Compressor Run Time Alarm Set Point Screen

```
SET POINT ADJUST
^ v  SELECT VARIABLE
>   CHANGE VALUE
RUN TIME                6 : 3 0
```

To change the run time alarm point, depress the right arrow. After pressing the arrow, an underscore will appear at the far left of the set point value. The left and right arrows will move the underscore from one digit to another. To increase the digit value, depress the up arrow. To decrease the digit value, depress the down arrow. After changing the run time to the desired alarm point, scroll the underscore to the left or right of the value. The underscore will disappear, signaling the alarm point has changed. Depress the RESET button to change the alarm point in memory. The factory default value is 3:00 minutes.

8.7 Alarm Point Reset Screen

```
SET POINT ADJUST
^ v  SELECT VARIABLE
< > RESET TO FACTORY
      VALUES
```

Depressing the left and right arrows at the same time for approximately 2 seconds will change the flow rate, high pressure, low pressure, humidity, and the run time alarm points to the default factory settings.

8.8 Alarm Delay Screen

```
SET POINT ADJUST
^ v  SELECT VARIABLE
<   CHANGE VALUE
ALARM DELAYS ON
```

During normal operation the alarm delays should be ON. While troubleshooting, it may be useful to see an alarm immediately when it happens, alarm delays OFF. This screen will not time out and return to the display screens if not in use.

8.9 Pressure Gauge Screen

```
SET POINT ADJUST
^ v  SELECT VARIABLE
PRES GAUGE    4 5 . 0 PSI
```

In order to read different pressures throughout the unit, the pressure line that is normally connected to the outlet pressure regulator may be used as a digital pressure gauge. While checking pressures the alarm functions of the air dryer unit are masked. This screen will not time out and return to the display screens if not in use.