

# Models 600 / 850

## Series A - D Compressor Dehydrator

Instruction and operation manual

IB - 268 Rev. I Part Number 48248



**Notes, Cautions, and Warnings herein this manual  
are used to prevent personal injury.**

**Warning:** To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture. For Indoor use only.

**Warning:** If the equipment is used in a manner not specified herein, the protection provided by the equipment may be impaired.

**Warning:** Turn off Power, Isolate power by unplugging or by locking separate disconnect before servicing.

**Warning!:** High Voltage    Disconnect Power before working within

**Caution:** This Unit may start automatically at any time

**NOTE:** All machinery must be fitted with means to isolate it from electrical energy sources. The isolator must be capable of being locked, when the operator is unable from any of the points to which he/she has access, to check that the energy is off!

**Caution:** Use care when lifting compressor as compressor weight exceeds 12.3 lbs. ( 5.6 kg)

**ATTENTION:** Observe Precautions for Handling Electrostatic Sensitive Devices

### **Important Safety Instructions**

1. Read and follow all instructions
2. Keep these instruction with the equipment
3. Heed all warnings, cautions and notes.
4. Do not block any ventilation openings.
5. Install in accordance with SPX Dielectric instructions
6. Do not defeat the safety purpose of the grounding type plug
7. Protect the power cord from being walked on or pinched.
8. Use Wrist Strap when handling ESD Sensitive Circuit Boards

#### ***WARNING! Risk of Electrocutation***

***Isolate power by unplugging or by locking separate disconnect.***



WARNING - RISK OR ELECTROCUTION



CAUTION - REFER TO ACCOMPANYING DOCUMENTS



WARNING - HOT SURFACE



ATTENTION - ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE PRECAUTIONS FOR HANDLING



CAUTION - LIFTING HAZARD



PROTECTIVE CONDUCTOR TERMINAL

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**Table II**  
**TABLE OF LEADING PARTICULARS**

CHARACTERISTIC	MODEL 600 A to D	MODEL 850 A to D
NORMAL CAPACITY	600 SCFD	850 SCFD
EMERGENCY CAPACITY	750 SCFD	1080 SCFD
WEIGHT	85 LBS	85 LBS
ELECTRICAL OPTIONS	115VAC, 5.5A 50/60Hz 1ph 208-230VAC, 2.5A 60Hz 1ph 220-240VAC, 3.3A 60Hz 1ph	115VAC, 6.5A 50/60Hz 1ph 208-230VAC, 2.7A 60Hz 1ph 220-240VAC, 3.5A 60Hz 1ph
AIR COMPRESSOR SIZE	1/4 HP Piston	1/4 HP Piston
COMPRESSOR CIRCUIT PROTECTION	10 Amps(115V) 5 Amps(230V)	10 Amps(115V) 5 Amps(230V)
CONTROL CIRCUIT PROTECTION	0.8 Amps(115V) 0.5 Amps(230V)	0.8 Amps(115V) 0.5 Amps(230V)

DRY AIR DEWPOINT . . . . .	Below -40°F. (below -40°C.)
DESICCANT DRYER TYPE . . . . .	DRY-PAK® twin-tower heatless dryer. Efficient, internal check-ball valving, purge controlled by Four-way solenoid valves.
OPERATING PRESSURE . . . . .	DRY-PAK® and compressor 45 PSIG (310 kPa), independent of tank pressure.
TANK PRESSURE RANGE . . . . .	20 PSIG (137 kPa) (compressor start) to 45 PSIG (310 kPa) (compressor stop).
AIR COMPRESSOR TYPE . . . . .	Piston oilless
REGULATED LINE PRESSURE . . . . .	Adjustable 2 TO 15 PSIG (14 - 103 kPa) on Models A,B, and C Adjustable 0.1 TO 2.0 PSIG (0.7 - 14 kPa) on Models D
HUMIDITY ALARM . . . . .	Color Change Humidity Indicator on Model A Solid state Humistat on Models B,C, and D
LOW LINE PRESSURE ALARM . . . . .	Adjustable from 2 to 15 PSIG (14 - 103 kPa) on Models A, B, and C Adjustable from 0.1 to 2.0 PSIG (.07 - 14 kPa) on Model D
HIGH LINE PRESSURE ALARM . . . . .	Adjustable from 2 to 15 PSIG (14 - 103 kPa) on Models C Adjustable from 0.1 to 2.0 PSIG on Model D
EXCESS RUN ALARM . . . . .	Solid state timer, fix set @ 10 min.
POWER ALARM . . . . .	Active in event of service interruption, compressor or control-circuit breaker overload or unit turned off manually.
CABINET DIMENSIONS . . . . .	H 15.5in. x W 17.5 in. x D 17.5 in. (39.3 cm x 44.5 cm x 44.5 cm)
AIR TANK . . . . .	0.37 cu/ft (10 L) - Mechanical 2nd agency rated
AIR TANK RELIEF VALVE . . . . .	Pop-off 60-75 PSIG (413 - 517 kPa)

**TABLE III**  
**MODEL 600 / 850 OPTION DESIGNATIONS**

**OPTIONS ARE KEYED TO LAST LETTER OF MODEL DESIGNATION**

**LETTER**

**-A** The output pressure regulator allows adjustment of the output pressure from 2 to 15 PSIG. This unit comes equipped with a color-change Humidity Indicator, an adjustable Low Output Pressure Alarm, Power Off Alarm, Power On indicator light, and Summary Alarm Terminal Board. Both “Closed in Alarm” and “Open in Alarm” conditions can be monitored from the alarm terminal board.

**-B** The output pressure regulator allows adjustment of the output pressure from 2 to 15 PSIG. This unit is equipped with an Electronic Humidity Alarm factory preset to alarm at 2% RH (-20° dew point). Other standard features include an adjustable Low Output Pressure Alarm, and Power Off Alarm Power-On Indicator Light and a Summary Alarm Terminal Board. Both “Closed in Alarm” and “Open in Alarm” conditions can be monitored from the alarm terminal board.

**-C** The output pressure regulator allows adjustment of the output pressure from 2 to 15 PSIG. This unit is equipped with an Electronic Humidity Alarm, factory preset to alarm at 2% RH (-20° dew point), and a Humidity Bypass with automatic reset. Other standard features include an adjustable Low Output Pressure Alarm, adjustable High Output Pressure Alarm, Excessive Operation Alarm, and Power Off alarm. Front Panel indicator lights provide confirmation of alarm status and a segregated Alarm Terminal Board provides for remote recognition of 5 separate alarm conditions or a single “Summary” alarm condition. Both “Closed in Alarm” and “Open in Alarm” conditions can be monitored from the alarm terminal board.

**-D** A precision low pressure regulator allows adjustment of the output pressure from 0.1 to 2.0 PSIG. This model is equipped with an Electronic humidity alarm, factory preset to alarm at 2% RH (-20° dew point), and a Humidity Bypass with automatic reset. Other standard features include adjustable Low Output and High Output Pressure Alarms, Excessive Operation Alarm, and Power Off Alarm. Front panel indicator lights provide verification of alarm status and a Segregated Alarm Terminal Board provides remote recognition of five separate alarm conditions or a single “Summary” alarm condition. Both “Closed in Alarm” and “Open in Alarm” conditions can be monitored from the alarm terminal board.

## 1.0 INTRODUCTION

1.1.1 This manual covers installation, operation, and maintenance of the Model 600 and 850 Series Compressor Dehydrators. These units are capable of years of trouble-free service when properly installed, operated and maintained.

1.1.2 The Model 600 and 850 air dryers from Dielectric feature a reliable heatless dryer and a long life compressor well suited to high altitude operation. These models benefit from more than 45 years of dehydrator design and manufacturing experience, while incorporating the most advanced and reliable components available today. Cabinet flow through forced air ventilation and sophisticated vibration isolation optimize service life. Special consideration has been given to accessibility and ease of service, to provide a versatile, full featured, yet cost effective pressurization package.

1.1.3 Equipment options: The Model 600 and 850 are offered in two voltage options with the 115V/50-60Hz being standard. Each of these is available in any of four output/alarm option groups. Each output/alarm option group is signified by a suffix letter (A through D) following the model number. As an example: "Model 600 C, 115 VAC/60-50 HZ", in which the "C" designates the output pressure range and types of alarms included in the air dryer. A full description of electrical and output/alarm option groups is shown in Table 3.

## 1.2 Before Installing

1.2.1 READ THE MANUAL THOROUGHLY, then with the manual as a reference, examine the air dryer. Learn to recognize the various components and the full function performed by each.

1.2.2 The installation environment can impact the performance and serviceability of the compressor/dehydrator, and therefore, the performance and reliability of the systems which it serves. Careful consideration should be given to the parameters outlined in section 3.0 of this manual, so that the best utilization of available space may be made.

## 1.3 Receiving



### **WARNING!**

**LIFTING HAZARD - This unit weighs 85 lbs. Use the appropriate number of people to lift and position.**

1.3.1 Shipping damage is unusual but not totally avoidable. Do not accept delivery of containers which show shipping damage. Open acceptable containers immediately

upon receipt and inspect the contents for hidden damage. If damage is evident, promptly file a hidden damage claim with the delivering transportation company.

## 2.0 PRINCIPAL OF OPERATION

2.1.1 Ambient airflows through the intake filter into the compressor and is compressed to 45 PSIG operating pressure, which is controlled by the adjustable back pressure regulator. The compressed air is cooled by the heat exchanger which causes water droplets to form in the air stream.

2.1.2 The cooled, compressed air is directed by the Dryer Control Solenoid Valve to either the left or right desiccant tower of the dryer. Any water droplets are trapped at the solenoid valve and do not enter the desiccant towers, where gaseous moisture is absorbed by molecular sieve. A solid state timer causes the Dryer Control Solenoid Valve to alternate tower selection every thirty seconds of compressor operation. Air leaving the dryer is at -40°F (-40°C) or lower in dew point.

2.1.3 Air leaving the dryer passes through a Humidity Sensor Block and back pressure regulator before entering the dry air storage tank. Note: Humidity Sensor Block is not on "A" models. On model "A" air passes through the back pressure regulator and a humidity indicator located on the front panel before entering the dry air storage tank. On models "C" and "D" air flows through a Wet Air Bypass Solenoid Valve before entering the dry air storage tank. Moist air of 2% RH or more will be bypassed before storage of air.

2.1.4 Air pressure within the dry air storage tank is monitored by a gauge on the front panel and controlled by the Start/Stop Pressure Switch. The pressure switch causes the compressor to start when the tank pressure falls to 20 psig and to stop when 45 psig is reached.

2.1.5 The dry air flows from the storage tank to the line pressure regulator, which is adjustable from 2 to 15 psig. The regulated pressure is indicated on the front panel Outlet Pressure Gauge and monitored by the Pressure Alarm Switch or Switches. The dry, regulated air next flows to the Dry Air Outlet. Note: All models are provided with a Low Output Pressure Alarm Switch. A High Output Pressure Alarm Switch is provided on "C" and "D" models. Note, on "D" models the line pressure regulator is adjustable from 0.1 to 2.0 PSIG.

## 2.2 Operating Cycle Of The Desiccant Dryer

2.2.1 There are two phases of the one minute dryer cycle. The cycle is interrupted when the compressor is not operat-

ing and resumes when the compressor restarts. The cycle is controlled by a solid state timer with a memory feature which is active whenever the power is on.

The timer memory insures that the dryer cycle will resume at exactly the point at which it was interrupted by the Start/Stop Pressure Switch. This feature provides for a balanced work load in the drying towers, regardless of the frequency or duration of compressor operation.

**PHASE ONE:** Right desiccant tower is in dehydration mode and left desiccant tower is in purge mode. Duration is 30 seconds for this phase.

The Dryer Control Solenoid Valve is energized by the timer, venting the left tower to atmosphere via the exhaust port. Compressed air is directed to the right tower to be dried. The ball check valve prevents higher pressure air

in the right tower from flowing to the left tower. A small portion of dry air from the right tower passes through a purge control orifice and to the left tower, where it expands at lower pressure. The expanded air picks up the moisture deposited in the tower in the previous cycle and carries it to atmosphere via the exhaust port of the Dryer Control Solenoid Valve.

**PHASE TWO:** Left desiccant tower is in dehydration mode and right desiccant tower is in purge mode. Duration is 30 seconds for this phase.

The Dryer Control Solenoid Valve is de-energized by the timer, venting the right tower to atmosphere via the exhaust port. Compressed air is directed to the left tower to be dried. The ball check valve prevents higher pressure air in the left tower from flowing to the right tower. A small portion of dry air from the left tower passes through a purge control orifice to the right tower, where it expands at lower pressure. The expanded air picks up the moisture deposited in the tower in the previous cycle and carries it to atmosphere via the exhaust port of the Dryer Control Solenoid Valve.

At the completion of phase two the cycle timer proceeds to phase one, and so forth.

## 2.3 Alarms

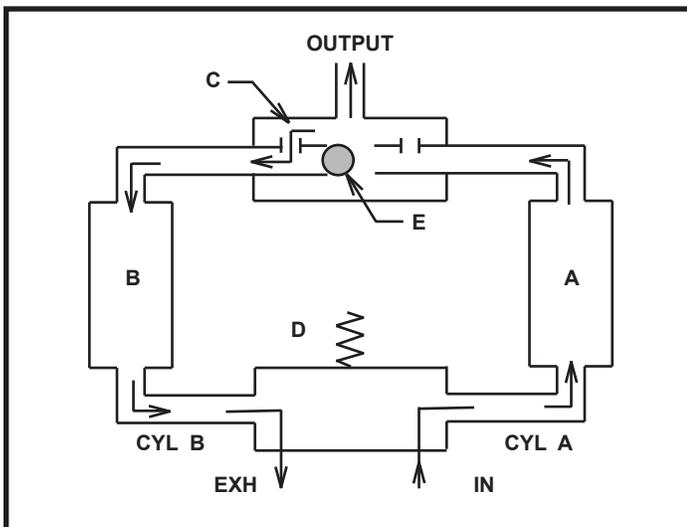
### 2.3.1 Humidity Alarm

On the "A" model only a color change humidity indicator is provided for visual indication of dry air. When indicator is pink in color the outlet air is above 10% RH. When the indicator is blue in color the outlet air is below 10% RH.

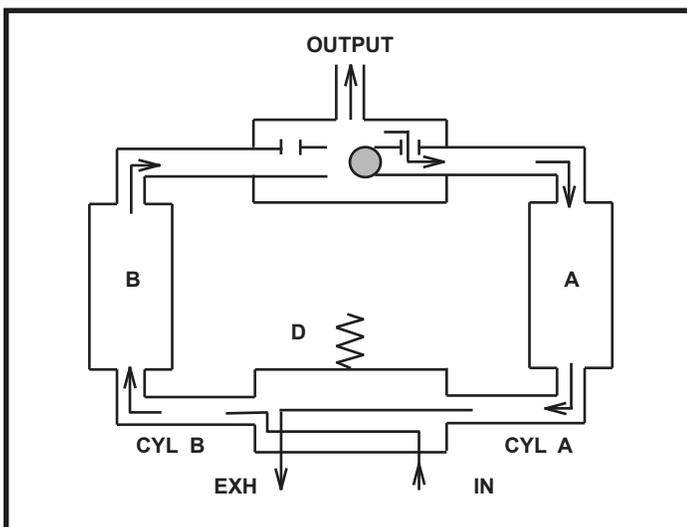
On the "B", "C" and "D" models a solid state humidistat is provided that will alarm at 2% RH. The humidistat has a test switch and two LEDs on the dryer option panel, which provide a means of alarm verification. A glowing red LED indicates a high humidity alarm. The amber LED indicates an open circuit alarm. The humidity alarm function can be tested by moving the test toggle lever, whether in test alarm or test clear. A humidity alarm causes the alarm light to glow and provides a dry contact short at the alarm terminal board at the rear of the enclosure. On "C" and "D" models a Wet Air Bypass Solenoid Valve will exhaust to the atmosphere when the humidistat is in alarm.

### 2.3.2 Outlet Pressure Alarms

On all models, an adjustable low outlet pressure alarm switch, preset to close at 3.0 psig on decreasing pressure is located on the dryer option panel. The alarm provides a dry



PHASE 1



PHASE 2

**Figure 2**  
**Dry-Pak Dryer Cycle**

contact short at the alarm terminal board at the rear of the enclosure. Note: on “D” models preset at 0.2 psig. On “C” and “D” models an adjustable high output pressure alarm switch, preset to open at 11.0 psig on increasing pressure is located on the dryer option panel. The alarm provides a dry contact short at the alarm terminal board at the rear of the enclosure. Note: on “D” models preset at 1.5 psig.

### 2.3.3 Excess Run Alarm

On “C” and “D” models a fixed ten minute timer will provide an alarm if the unit runs for more than ten minutes without the compressor being allowed to stop. The alarm provides a dry contact short at the alarm terminal board at the rear of the enclosure.

### 2.3.4 Power Failure Alarm

All models provide a power failure alarm at the terminal board on the rear of the enclosure.

## 3.0 SITE REQUIREMENTS

3.1 The Models 600 and 850 require a firm, level surface with a minimum of 3” clearance at the rear and top for ventilation. Provide space on the sides as well if possible, so that the cover may be easily removed for yearly compressor servicing, without relocating the unit.

3.2 The site must not be subject to freezing or extremely high temperatures. The allowable temperature range for operation is 33°F to 100°F. A reasonably clean location with a temperature range of 60 to 90° F will enhance the service life of the air dryer.

3.3 Be sure to connect the power cord only to an electrical outlet which complies with the electrical specifications of the dryer. **The grounding of this equipment is important and this product is not to be operated with the ground bypassed.** The power cord must be placed not in an inaccessible manner, so that the power cord can be used as a disconnect device. Check the nomenclature plate on the front panel for the electrical characteristics. Units powered by 230 VAC, 60/50 HZ. will require the addition of an electrical plug purchased locally.

## 4.0 INSTALLATION

4.1 Mount the Model 600 or 860 per section 3.

4.2 Provide remove alarm wires for later connection to the alarm terminal board on the rear of the enclosure. The alarm circuit device must have its own power source (normally 24 or 48 volts DC).

4.3 Provide a 3/8” o.d. tube from the user system, but do not connect to the dehydrator Dry Air Outlet until performing step 5.5 below.

4.4 Be sure the front panel power switch is off and connect the dehydrator power cord to an electrical outlet which complies with the equipment nomenclature plate.

4.5 If the equipment is used in a manner not specified by the manufacturer, the protection provided by this equipment may be impaired.

## 5.0 START-UP OF THE MODEL 600 and 850



### **WARNING!**

***RISK OF ELECTROCUTION - All machinery must be fitted with a means to isolate it from electrical energy sources. The isolator must be capable of being locked where an operator is unable, from any of the points to which he/she has access, to check that the energy is still cut off!***

5.1 Remove the front cover of the dehydrator. Turn on the On/Off Power switch on the front panel. After the compressor has run for a minute, check the system back pressure regulator setting to assure that the system is operating at 45 psig on the back pressure gauge. The regulator has a locking adjusting knob. Pull the knob out carefully a 1/4 inch to unlock.

5.2 Turn the Outlet Pressure Regulator knob counterclockwise so that no air flows from the Dry Air Outlet. The regulator has a locking adjusting knob. Pull the knob out carefully a 1/4 inch to unlock.

5.3 Observe the Tank Pressure Gauge on the front panel of the dehydrator. The compressor should stop when 45 psig is reached. Turn the Outlet Pressure Regulator clockwise until air flows from the Dry Air Outlet. The compressor should start to operate when the Tank Pressure Gauge reaches 20 psig. If the limits are more than 2 psig outside of those specified, adjustment to the start/stop pressure switch will be required. Refer to section 6.4

5.4 The air dryer may exhibit a higher than normal moisture content when it is started after a period of inactivity. If high moisture content is evident, do not connect the Dry Air Outlet fitting to the user system until corrective action is taken as follows:

5.4.1 Models 600A and 850A only: An outlet air moisture indicator changes color to signify higher than normal outlet air relative humidity. This indicator will be light pink when moist, blue when dry. If the indicator is not blue, adjust the Outlet Pressure Regulator so that outlet air flows through the indicator and out the Dry Air Outlet fitting.

Unlock the regulator and turn the knob clockwise to cause maximum air flow through the outlet fitting to atmosphere. Operation of several hours may be necessary in severe cases, to restore the indicator to a blue color.

5.4.2 Models 600B and 850B only: This unit is equipped with a solid state humistat. On the humistat, a red LED indicates a humidity alarm when lit. If the outlet air relative humidity is above 2% the humistat will be in alarm. If the humistat is showing a humidity alarm, adjust the Outlet Pressure Regulator so that air is flowing out the Dry Air Outlet fitting. Operation for an hour or more may be necessary in severe cases, to clear the humidity alarm.

5.4.3 Models 600C/D and 850C/D only: These units are equipped with a solid state humistat. On the humistat, a red LED indicates a humidity alarm when lit. A wet air bypass solenoid valve operates automatically with the humistat when in a humidity alarm. This prevents any moist air from entering the storage tank. The tank pressure will increase only after the humidity alarm has automatically cleared. Operation for an hour or more may be necessary in severe cases, to clear the humidity alarm.

5.4.4 All Models: If high humidity is indicated, but the dryer is operational, the condition will clear itself after an extended period of operation. Ignore any alarms which are present at start up.

5.5 Connect a 3/8" plastic tube from the Dry Air Outlet fitting on the rear of the enclosure to the user system. If more than one system is to be supplied, the use of check valves is recommended.

5.6 Alarm connection for Models A and B only: These units are equipped with a three place terminal board on the rear of the enclosure for remote alarm connection. Dry contact terminals with a five amp rating will send out a summary alarm in either "CLOSED IN ALARM" OR "OPEN IN ALARM". Connect one alarm wire to the board labeled "COMMON" and select the manner of receiving the summary alarm either "CLOSE IN ALARM" or "OPEN IN ALARM" and connect the other wire to the terminal board.

5.7 Alarm Connections for Models C and D only: These units are equipped with a Segregated Alarm terminal board (located on the rear of the enclosure) for remote alarm connection. Dry contact terminals having a five amp rating are provided. The alarm terminals related to each alarm function are labeled "COMMON", "CLOSED IN ALARM" and "OPEN IN ALARM". There are four alarm output wiring options available. Selection of an alarm output characteristic is made by positioning the jump wires on the segregated alarm terminal board in one of the following options.

#### 5.7.1 Alarm output option 1 :

A summary closed in alarm remote warning that one or more of the alarm circuits is active. To utilize this option leave the terminal board configured as received from the factory. Yellow jump wires connect "common" terminals in series, blue jump wires connect "closed in alarm" terminals in series. Connect your remote alarm pair to terminals #1 and #15.

#### 5.7.2 Alarm output option 2 :

Segregated alarms using a single common provide discrete indication of each alarm circuit, either closed in alarm or open in alarm, but all at one potential. To utilize this option remove the blue jump wires from the terminal board, leave the yellow jump wires that connect the commons in series in place. Connect your remote alarm common wire to terminal #1 and your remaining remote wires to selected "CLOSED IN ALARM" or "OPEN IN ALARM" terminals as you prefer.

#### 5.7.3 Alarm output option 3 :

A summary open in alarm remote warning that one or more of the circuits are active. To utilize this option move only one end of each yellow jump wire from its location in a "common" terminal to the adjacent "open in alarm" terminal as follows: yellow jump wire #1 to #4 becomes #2 to #4 and move the remaining yellow jump wires to connect #5 to #7, #8 to #10 and #11 to #13. Remove the blue jump wires from the terminal board. Connect your remote alarm pair to terminals #1 and #14.

#### 5.7.4 Alarm output option 4:

A completely segregated alarm output wherein a separate voltage or frequency may be used for any or each alarm function. Remove both the yellow and blue jump wires from the alarm terminal board. Connect your remote alarm wires to each function terminal set to obtain "OPEN IN ALARM" output as you prefer.

5.8 Make final verification of the outlet pressure regulator adjustment and verify that the adjustment knob is locked. This completes the start up procedure.

## 6.0 ADJUSTMENTS

### 6.1 Outlet Pressure Regulator Adjustment

6.1.1 The Outlet Pressure Regulator on the front panel of models A, B and C has a locking adjuster knob. Carefully pull out the knob a 1/4 inch to unlock. Adjust the regulator to the desired pressure, as shown on the Outlet Pressure Gauge. Lock the regulator knob when adjustment is complete. On "D" models the outlet pressure regulator has a locking nut, after all outlet pressure adjustments are made just tighten the nut with a 7/16 inch wrench.

## 6.2 Back Pressure Regulator Adjustment

6.2.1 The Back Pressure Regulator which is located after the dryer assembly has a locking adjuster knob. Carefully pull out the knob a 1/4 inch to unlock. Adjust the regulator to the desired operating pressure using the back pressure gauge. Recommended back pressure for these dryer is 45 PSIG. Lock the regulator knob when adjustment is complete.

## 6.3 Outlet Pressure Alarm Switch Adjustment

6.3.1 Adjustment of the Outlet Pressure Alarm Switch on all models is accomplished by removing the front cover. Located on the dryer option panel that is mounted on the tank, use a 1/8" flat blade screw driver to turn the slotted plastic adjuster. Screw gently clockwise to increase or counterclockwise to decrease the adjuster of the low output pressure or high output pressure alarm switches. Verify the adjustment by decreasing and increasing the outlet air pressure to activate and to deactivate the alarms.

## 6.4 Start / Stop Pressure Switch Adjustment



### **WARNING!**

**RISK OF ELECTROCUTION - Before performing this procedure: Disconnect from the electrical power source.** Turn the dehydrator off and disconnect from the external power source before performing the following procedures.

6.4.1 Before adjusting the start/stop pressure switch, observe the pressure shown on the Tank Pressure Gauge when the compressor starts and when it stops. Make note of the amount of change required in psig to obtain the desired setting. The compressor should start at 20 psig and stop at 45 psig +/-2 psig.

6.4.2 The Start/Stop Pressure Switch can be accessed by first removing the screws which retain the front cover and the top cover.

6.4.3 Mounted on the storage tank in the center of the unit. Remove the gray plastic pressure switch cover using a 5/16" wrench. Note the two adjuster nuts of the Start/Stop Pressure Switch. The center adjuster controls the entire range of the pressure switch. The side adjuster controls only the stop pressure. **TURN ONLY THE CENTER ADJUSTER.**

6.4.4 Each full revolution of the adjuster nut changes the range by 2 psig. Clockwise raises, counterclockwise lowers the amount of differential or range. Use a 3/8" open end wrench to reach the new stop pressure (the start pressure changes also).

6.4.5 Connect the power cord to the electric outlet and restart the dehydrator. Again check the Stop Pressure to verify the Start/Stop Pressure Switch adjustment. If the desired change is complete, turnoff the dehydrator, disconnect from the electrical power source, reinstall the pressure switch cover. Install the top cover and front cover to the dehydrator. Finally Reconnect the power and turn on the panel power switch.

## 7.0 MAINTENANCE

7.1 At 6 month intervals verify that the dryer purges every 30 seconds when the compressor is running.

7.1.1 Verify that the adjustment of the Start/Stop Pressure Switch is correct. The compressor should start when tank pressure declines to 20 +/-2 psig and should stop at 45 +/-2 psig. If outside of this range, refer to section 6: ADJUSTMENTS.

7.1.2 Verify the Outlet Pressure alarm switches by raising and then lowering the Outlet Pressure Regulator. Return the regulator to the normal outlet pressure setting. If pressure settings need adjustment refer to section 6: ADJUSTMENT.

7.1.3 While operating at normal outlet pressure, verify that the compressor does not run more than 70% of the time. If operating time exceeds this limit check the inlet filter element of the compressor to see if it is very dirty. Replace the filter element if indicated. If excess operation continues, check for leaks throughout the air system.

**IF THE COMPRESSOR CONTINUES TO RUN MORE THAN 70% OF THE TIME, PERFORM THIS TEST:**

Turn the power switch off and let the tank pressure reach 0 psig as indicated by the Tank Pressure Gauge. Turn the outlet air regulator knob fully counterclockwise to prevent outlet air flow. Turn the power switch on and measure the time required to reach 15 psig tank pressure. A capable compressor, absent any air leaks, should accomplish this in two minutes or less when operating on 60 HZ current. With 50 HZ current the maximum time would be about three minutes. If the unit takes longer than this, a compressor overhaul may be required. Refer to section 8.0

7.2 After each twelve months of operation, again perform maintenance outlined in section 7.1. Install a compressor maintenance kit (refer to compressor exploded view fig 8) and to section 8.0 COMPRESSOR MAINTENANCE.

7.3 It is recommended that the Purge Valve be serviced after 12 months of operation and performed at the same

time as the Compressor Maintenance. Reference Purge Valve Repair Kit P/N 46037.(fig 10) See manufacture's instructions provided with repair kit.

7.4 After 24 months, it is recommended that the Humidity Sensor , Plug and Gasket be changed out. (Model Versions B, C, and D) . With the unit shut off , using the Test Valve, Relieve the pressure from the Humidity Manifold until the gauge show zero. Disconnect the Electrical Connector and remove the Nut. Pull out the Humidly plug with the Sensor attached. Replace with new Sensor Plug and Gasket and secure with Nut finger tight and reattached connector. (see fig 7)

7.5 After 24 months , it is recommended to replace the Humidity Bypass Solenoid Valve. ( Model Versions C and D only) With the Unit Shut off and Power Cord Disconnected, remove the 3 Electrical Connections ( note where the Green Wire ground is connected ) . Remove the two tubes by pressing in on the Collar and pulling the ¼ inch tubing straight out of the fitting. Remove the two ¼-20 Phillip Head screws holding the mounting plate to the Tank Bracket. Pull the panel away from the tank and remove the two M5 Phillip head screw holding the Bypass Valve. Note the positioning of the #1 and #2 Ports. Remove the fittings and reinstall in the new Valve. Reattached the Valve to the plate with #2 Port on the left side then reassembly in reverse order.

## 8.0 COMPRESSOR MAINTENANCE.

(see manufacture's instructions provided with service kit)

### NOTE

***Do not lubricate the compressor. Do not allow petroleum products, caustics or solvents to contact any part of the compressor. Parts may be cleaned with soap and water followed by wining down with a dampened cloth.***



### WARNING!

***RISK OF ELECTROCUTION - Before performing this procedure: Disconnect from electrical power source.***



### WARNING!

***RISK OF BURNS - Normal compressor operation will cause head temperature to exceed 212 °F (100 °C). Be careful when handling a hot compressor.***

8.1 When replacing the compressor air filter, first remove the outer cap from the filter housing, discard the old filter and clean the housing with a rag. Install the new filter and replace the cap.

8.2 DISASSEMBLY: It is not necessary to remove the filter from the cylinder head as metal chips could be dislodged and enter the unit. Remove the shroud, cylinder

head, and valve components. Do not rearrange the valve components. Remove the cylinder and rings. Make sure all parts are clean before reassembling. DO NOT use any chlorinated solvents to clean valves, or any liquids to flush units. THE STAINLESS STEEL VALVES MAY BE CLEANED WITH WATER. All parts, except the valves, can be cleaned with any industrial, nonflammable, non-toxic, cleaning solvent.

8.3 ASSEMBLY: Install piston seals, piston rings, and rider rings on the piston. Locate ring joints approximately opposite each other. Attach cylinder to bracket with the cylinder screws and lock washers. Tighten screws finger tight. Move pistons to top dead center position. Adjust cylinder flush with top of piston and torque cylinder screws to 150-160 in. lbs. Torque second time. Stack the valve components in order as shown in figure 8. Install the cylinder head, lock washers, and head screws. The exhaust ports in the cylinder head have been marked by omitting the ends of two fins. Torque head screws to 150-160 in.-lbs. Torque head screws again after running for 10 minutes.

## 9.0 TROUBLE SHOOTING

### 9.1 Outlet Air Pressure Alarm

Be sure the Outlet Pressure Gauge indicates the desired pressure. If the gauge reliability is in question, it can be verified by connecting a test gauge to the test valve labeled line pressure, on the control panel. Replace the gauge if indicated. The line pressure alarm switches are labeled. For outlet pressure alarm switch adjustment refer to section 6.3.

### 9.2 Humidity Alarm

A list of conditions which can cause a high humidity alarm (a Humidity Alarm on models with suffix B, C and D) and the order in which to proceed follows:

- a: Faulty alarm circuit (9.2.1)
- b: Dryer not cycling (9.2.2)
- c: Plugged purge outlet (9.2.3)
- d: Low Back Pressure (9.2.4)
- e: Infrequent operation (9.2.5)
- f: High temperature (9.2.6)
- g: Desiccant towers (9.2.7)
- h: Needs time to clear (9.2.8)

NOTE: Model 600A and 850A are equipped with a color change moisture indicator. If excessive outlet air moisture is indicated (pink in color ) proceed to section 9.2.2.

#### 9.2.1 Humidistat Operational Test

9.2.1.1 Excessive moisture will cause the Alarm Light on the control panel to glow. Determine which LED on the

humidistat is lit, amber or red.

9.2.1.2 If the humidity alarm is active and the amber LED is lit, VERIFY THE ALARM by moving the test toggle to “Test Clear”. If this action clears the alarm temporarily, the humidistat is working properly and there is an open condition in the sensor circuit. Check for a loose connection between the humidistat and sensor. If connections are ok, the sensor itself has an open circuit and must be replaced. If the test toggle will not temporarily clear the amber LED when it is lit, replace the humidistat.

9.2.1.3 If the humidity alarm is active and the red LED is lit: VERIFY THE ALARM by moving the test toggle to “Test Clear”. If this action clears the alarm temporarily, the humidistat is working properly. Perform the corrective action indicated in the following paragraphs. If all operational checks reveal no reason for the alarm condition, but the alarm persists, replace the sensing element.

9.2.2 If the dryer does not cycle (does not purge audibly each 30 seconds of compressor operation), replace the dryer solenoid valve. If the condition persists, replace the cycle timer.

9.2.3 A restricted exhaust port on the dryer solenoid valve can cause excessive pressure in the desiccant towers while purging. This can cause a humidity condition. Be sure that the exhaust port is not plugged.

9.2.4 If the system back pressure setting falls below 43 psig. re-adjust the back pressure setting to the correct setting of 45 psig +/-2 psig.

9.2.5 If the user system requires so little air that the compressor operates less frequently than once each 45 minutes, it is recommended that an external fixed air leak is added to the unit. This leak will allow the unit to operate more frequently.

9.2.6 Be sure that the dehydrator is not located where the temperature rises above 100° F.

9.2.7 The desiccant used in the drying towers is molecular sieve, which has a normal useful life equal to the dehydrator. Reduced service life can occur due to air borne contaminants (hydrocarbons, acids etc.) which may plug or degrade the desiccant. This is seldom the cause of a high humidity condition, but if all other possible causes for a high humidity condition have been ruled out, and especially after years of service, replacement of the desiccant towers is indicated.

## 9.2.8 Dry-Down After Repair

If a malfunction of the timer, dryer solenoid valve or a low back pressure setting caused a humidity condition, the unit must operate after repairs are completed for about an hour in order to dry the desiccant towers and clear the humidity alarm. If (not applicable to models with suffix A) a defective sensor element was the cause of alarm, it will normally clear after 15 minutes of operation or less with a new sensor in place.

## 9.3 Excess Run Alarm

Check the duration of time the compressor starts to when it stops. This time should be less than seven (7) minutes without any short-term humidity problem. If the duration of time is higher than seven minutes check for any air leaks within the unit and outlet fitting. Check the user system for higher than normal flow requirements. If the unit has no air leaks or high flow requirements and the excess run alarm clears after restarting the unit, a compressor overhaul kit should be installed. If the excess run alarm does not cause an alarm after eleven minutes of compressor run time replace the excess run timer. If the excess run alarm does not clear or is in alarm after less than ten minutes of run time, replace the excess run timer. The excess run timer should be 10 minutes +/- 2 minutes.

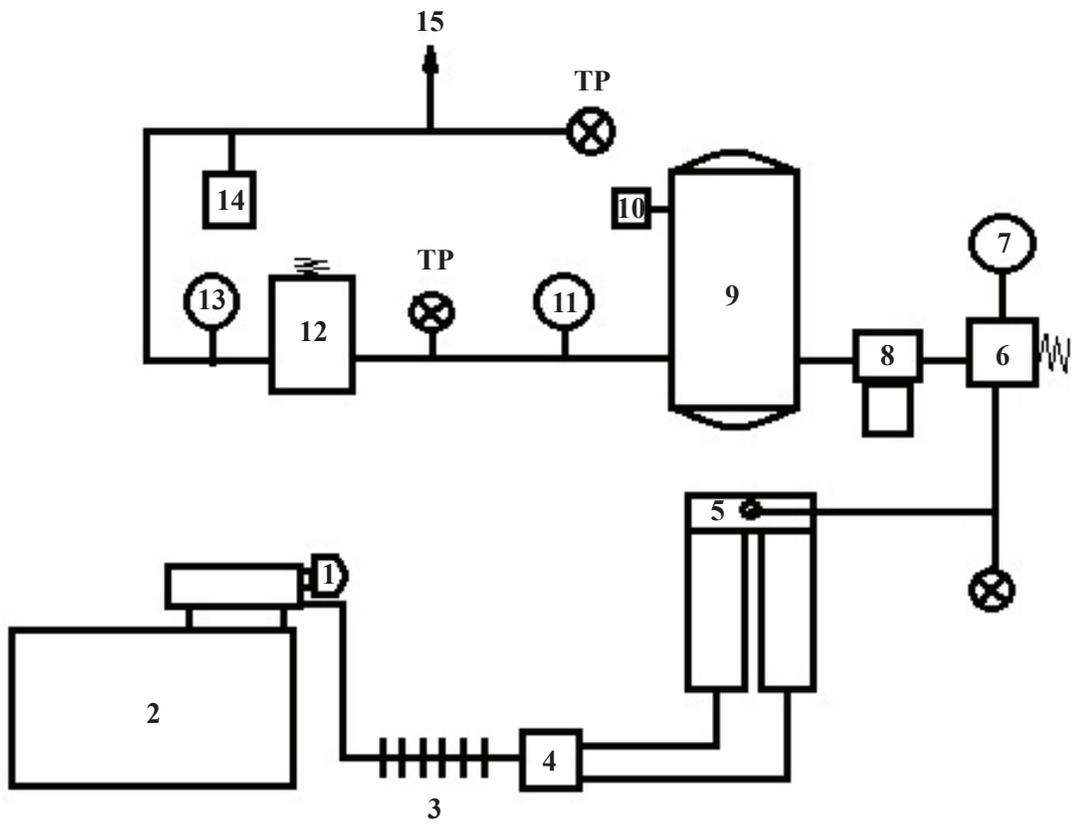
## 10.0 Service Information

Should you need to contact us please call our Customer service department on (207) 655-8525 or Toll Free at (877) 247-3797

When returning a unit for factory service, Call the customer service department for a service return authorization number (SRA). The device should be boxed securely and contain contact information, contact telephone number, billing information, and return shipping information. If device is being sent to the factory for service, a written statement of the problem of symptoms should be included. The SRA number must be on the outside of the package or indicated on the shipping label.

NOTE: Do not ship equipment contaminated with any type of hazardous/harmful substance.

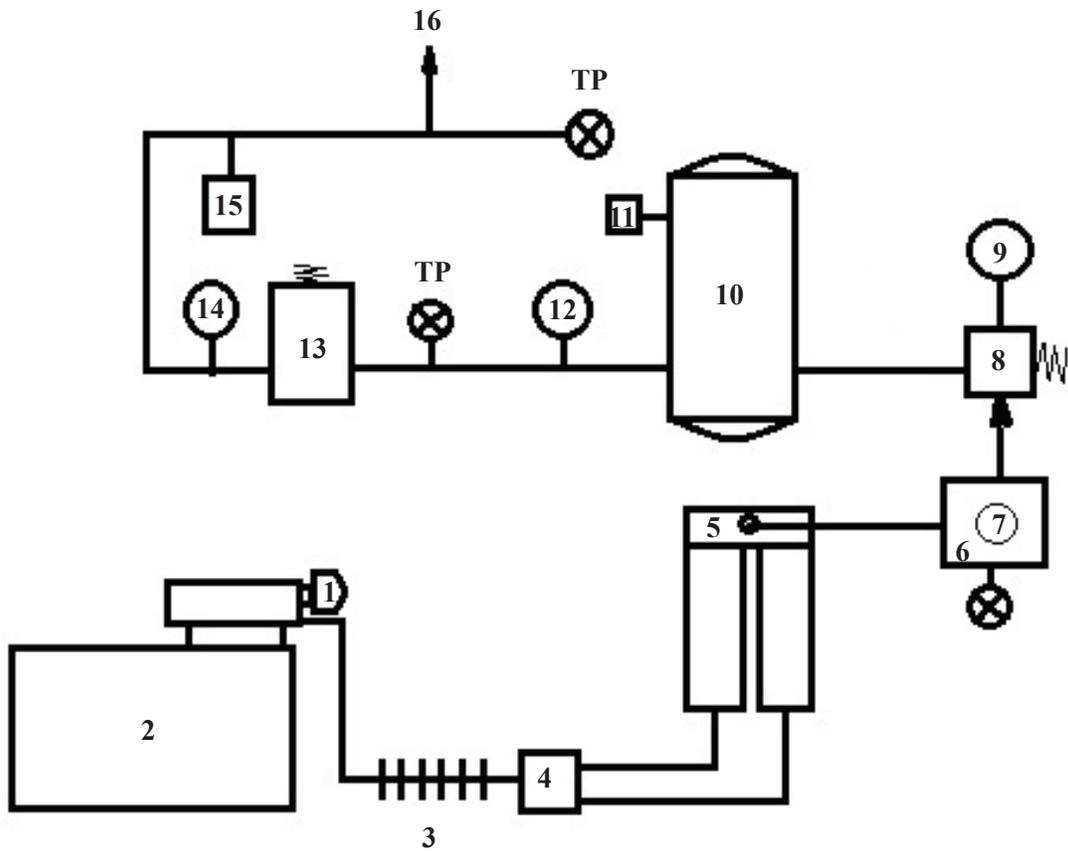
**SPX Dielectric**  
**28 Tower Road, Raymond Maine. 04071**  
**Phone (207) 655-8525 Toll Free: (877) 247-3797 Fax:**  
**(207) 655-8535**  
**Email: rd.sales.us@spx.com**



**COMPONENT LIST**

- |    |                         |     |                                 |
|----|-------------------------|-----|---------------------------------|
| 1. | Intake Filter           | 8.  | Color Change Humidity Indicator |
| 2. | Compressor              | 9.  | Air Storage Tank                |
| 3. | Heat Exchanger          | 10. | Stop / Start Pressure Switch    |
| 4. | Purge Solenoid Valve    | 11. | Tank Pressure Gauge             |
| 5. | Dryer Assembly          | 12. | Outlet Pressure Regulator       |
| 6. | Back Pressure Regulator | 13. | Outlet Pressure Gauge           |
| 7. | Back Pressure Gauge     | 14. | Low Outlet Pressure Alarm       |
|    |                         | 15. | Outlet Air Fitting              |

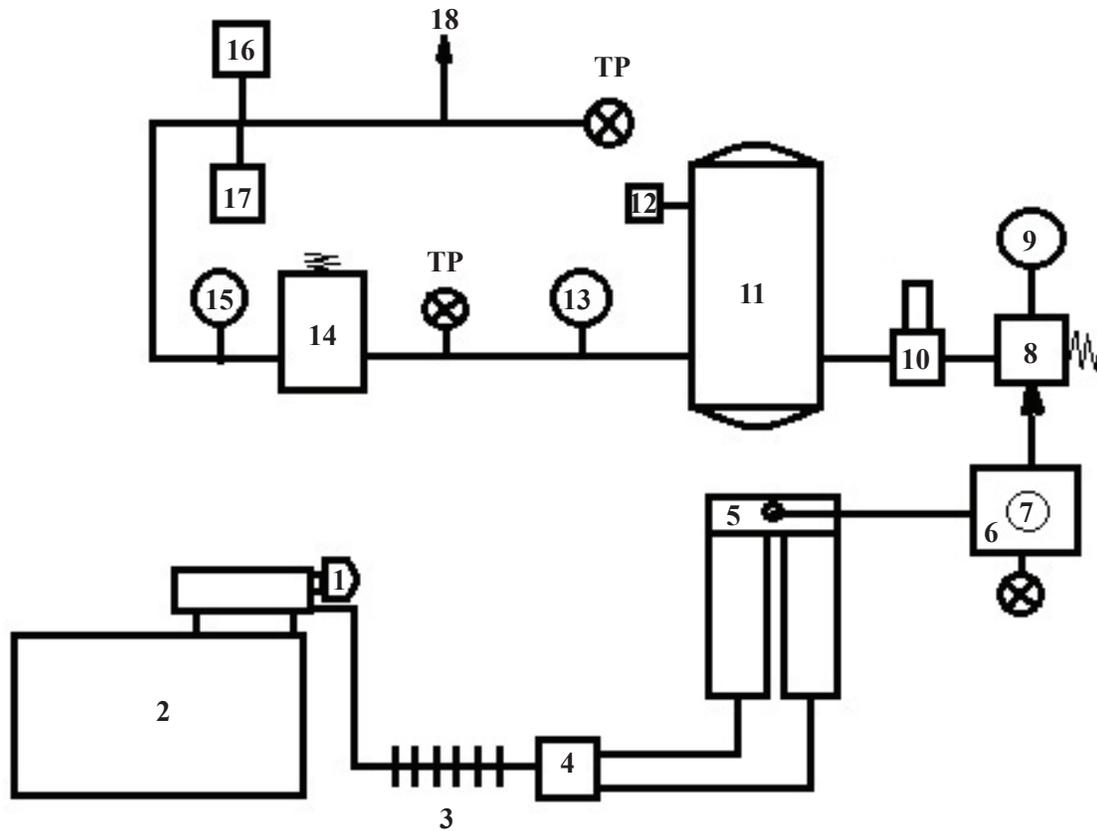
**Figure 2**  
**Flow Schematic for Model "A" Dryers**



### COMPONENT LIST

- |    |                          |     |                              |
|----|--------------------------|-----|------------------------------|
| 1. | Intake Filter            | 10. | Air Storage Tank             |
| 2. | Compressor               | 11. | Stop / Start Pressure Switch |
| 3. | Heat Exchanger           | 12. | Tank Pressure Gauge          |
| 4. | Purge Solenoid Valve     | 13. | Outlet Pressure Regulator    |
| 5. | Dryer Assembly           | 14. | Outlet Pressure Gauge        |
| 6. | Humidity Sensor Manifold | 15. | Low Outlet Pressure Alarm    |
| 7. | Humidity Sensing Element | 16. | Outlet Air Fitting           |
| 8. | Back Pressure Regulator  |     |                              |
| 9. | Back Pressure Gauge      |     |                              |

**Figure 3**  
**Flow Schematic for Model "B" Dryers**



### COMPONENT LIST

- |    |                          |     |                              |
|----|--------------------------|-----|------------------------------|
| 1. | Intake Filter            | 10. | Humidity Bypass Valve        |
| 2. | Compressor               | 11. | Air Storage Tank             |
| 3. | Heat Exchanger           | 12. | Stop / Start Pressure Switch |
| 4. | Purge Solenoid Valve     | 13. | Tank Pressure Gauge          |
| 5. | Dryer Assembly           | 14. | Outlet Pressure Regulator    |
| 6. | Humidity Sensor Manifold | 15. | Outlet Pressure Gauge        |
| 7. | Humidity Sensing Element | 16. | High Output Pressure Alarm   |
| 8. | Back Pressure Regulator  | 17. | Low Outlet Pressure Alarm    |
| 9. | Back Pressure Gauge      | 18. | Outlet Air Fitting           |

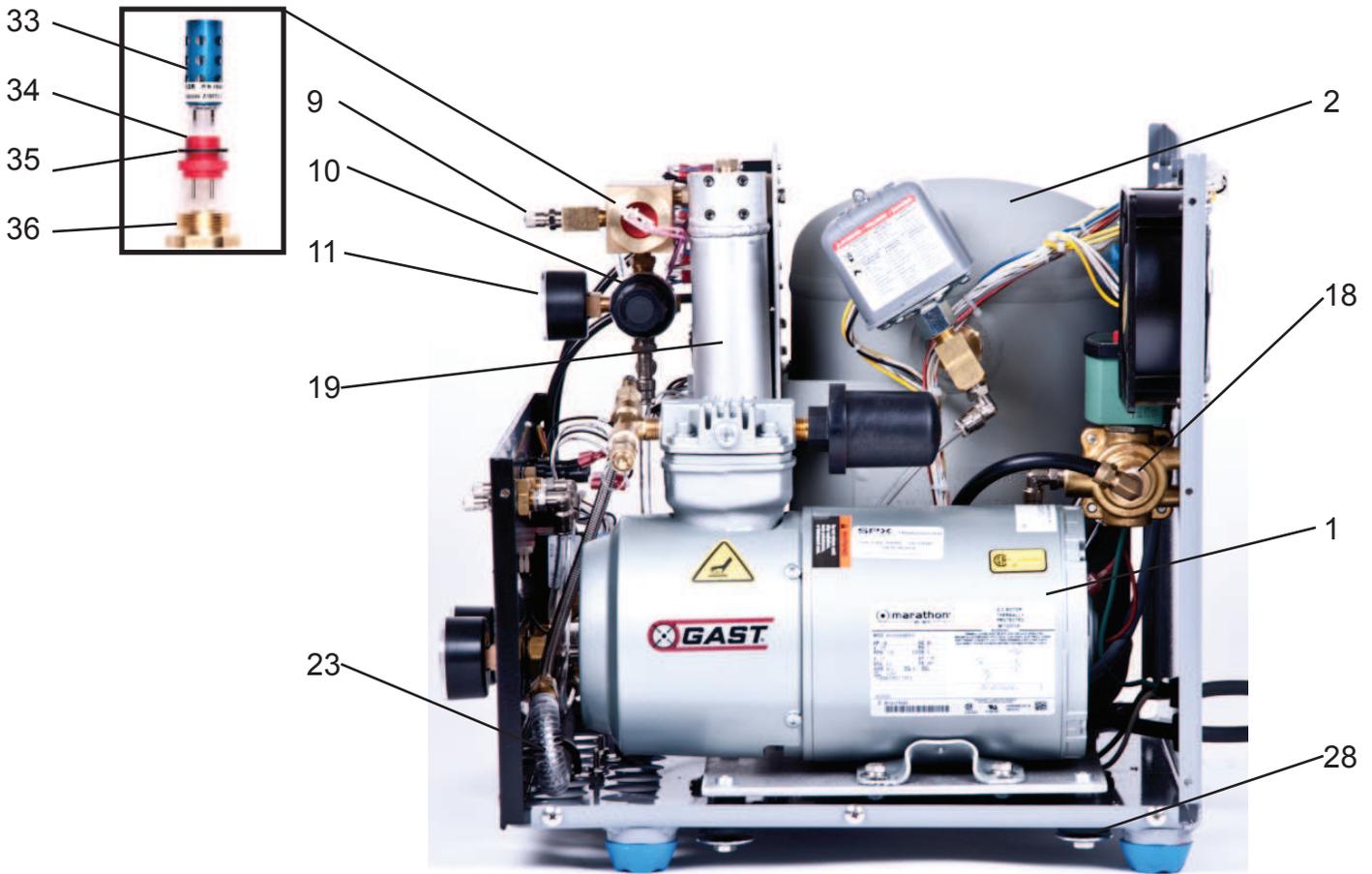
**Figure 4**  
**Flow Schematic for Model "C & D" Dryers**



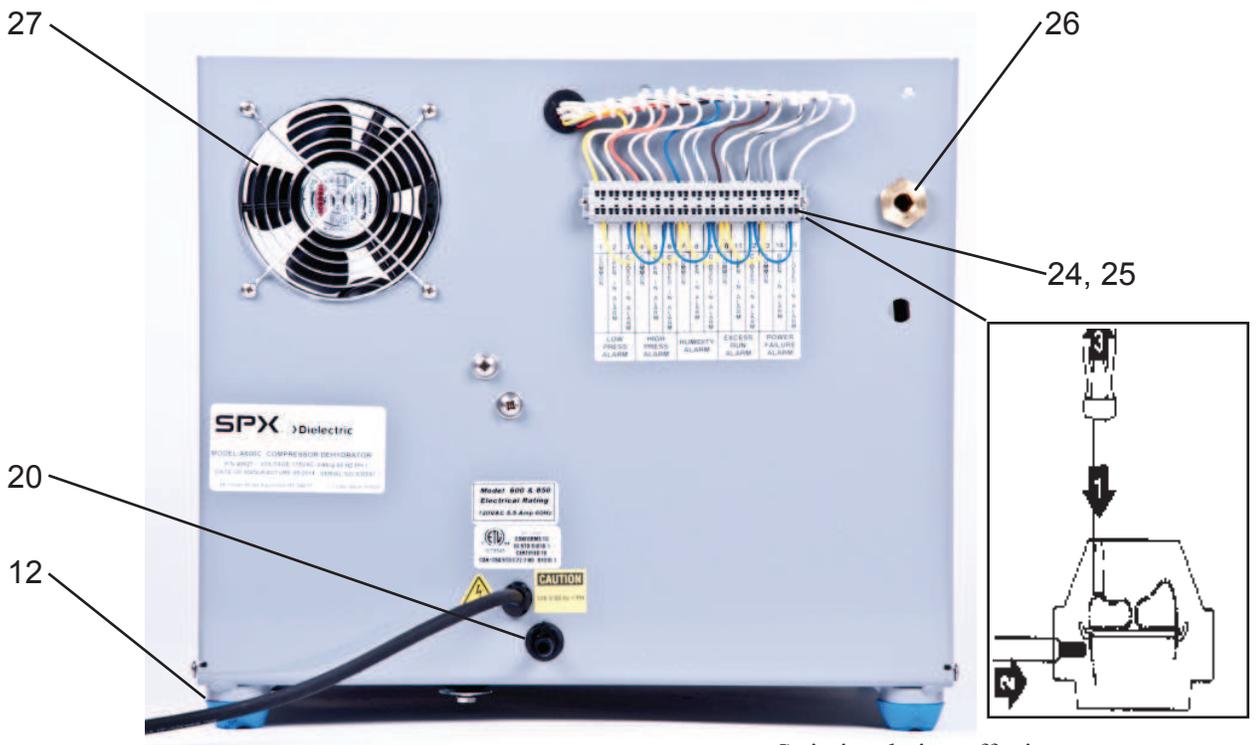
**Figure 5**  
**Front View**



**Figure 6**  
**Front View (Cover removed)**



**Figure 7**  
**Side View (Cover removed)**



**Figure 8**  
**Back View**

Strip insulation off wire  
 Insert tip of screwdriver blade  
 Push down and insert wire the release

**TABLE IV**  
**LIST OF COMMON SPARE PARTS**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>QTY.</b>	<b>PART NO.</b>
1.	Spare 600 Compressor 115Vac	1	48163
	Spare 600 Compressor 230Vac	1	48164
	Spare 850 Compressor 115Vac	1	48165
	Spare 850 Compressor 230Vac	1	48166
1a.	Compressor Service Kit for 600 and 850 models		0046789501
2.	Storage tank	1	39530
3.	Line Pressure Gauge (A, B and C)	1	0017221016
	Line Pressure Gauge (D only)	1	41776
4.	Tank Pressure Gauge	1	0017221018
5.	Circuit Breaker 115Vac	1	13281
	Circuit Breaker 230Vac	1	30172
6.	Power On Light 115Vac	1	13226
	Power On Light 230Vac	1	41136
7.	Alarms Light 115Vac	1-3	13225
	Alarms Light 230Vac	1-3	41135
8.	Line Regulator (A,B and C)	1	40328
	Line Regulator (D only)	1	10814
9.	Test Valves	3	0017495001
10.	Back Pressure Regulator	1	0020523003
11.	Back Pressure Gauge	1	0017221028
12.	Cabinet feet	4	39959
13.	Relay 115Vac	1-3	14126
	Relay 230Vac	1-3	14127
14.	Compressor contactor 115Vac	1	47052
	Compressor contactor 230Vac	1	47053
15.	Outlet Alarm Pressure Switch (on A, B and C )		46752
	Outlet Alarm Pressure Switch (on D only)		46753
15A	Barb Fitting (part of switch)	1	36696
15B	Gasket (part of switch)	1	40679
16.	Solid State Timer 115Vac	1	48540
	Solid State Timer 230Vac	1	48541
17.	Start/Stop Pressure Switch	1	0060353003
18.	Spare (complete) Dryer Solenoid Valve 115Vac	1	48178
	Spare (complete) Dryer Solenoid Valve 230Vac	1	48179
18A	Spare Dryer Solenoid Coil 115Vac	1	0019525001
	Spare Dryer Solenoid Coil 230Vac	1	0019525002
18B	Repair Kit Solenoid Valve	1	46037
19.	Spare Complete 600 Dryer	1	48169
	Spare Complete 850 Dryer	1	48170
20.	Spare Power Cord 115Vac	1	48172
	Spare Power Cord 230Vac	1	67452
21.	Fuse Holder	2/3	48061
22.	Fuse .8 amp for 115Vac		52528
	Fuse 1/2 amp for 230Vac		43803
23.	Spare Heat Exchanger Assy.	1	48174
24.	Alarm Terminal Block		0060192006
25.	Alarm Terminal end		0060192005
26.	Outlet Fitting	1	0016853013
27.	Ventilation Fan 115Vac	1	39957
	Ventilation Fan 230Vac	1	35066
28.	Shock Mounts	4	44390

**TABLE V  
LIST OF PARTS ON ALL MODELS**

**LIST OF PARTS ON MODEL A**

ITEM NO.	DESCRIPTION	QTY.	PART NO.
29.	Humidity Indicator	1	39962

**LIST OF PARTS ON MODELS C AND D**

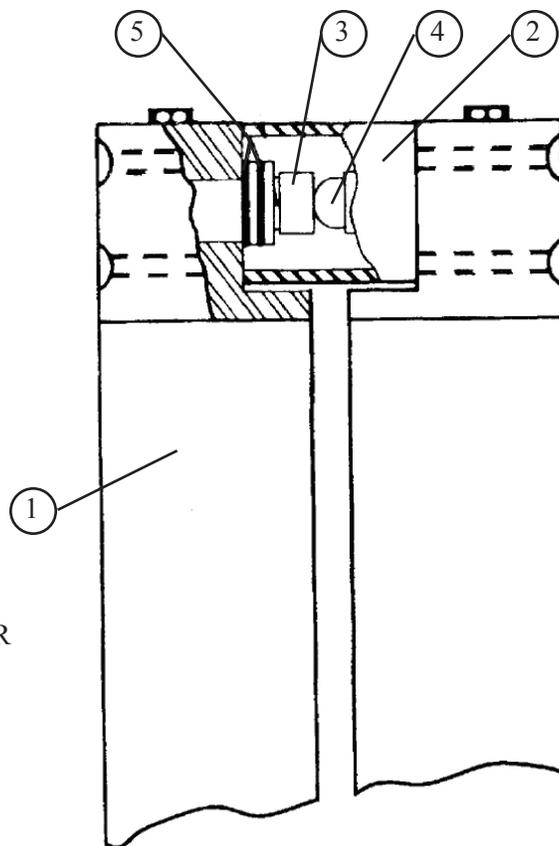
ITEM NO.	DESCRIPTION	QTY.	PART NO.
30.	Excess Run Timer 115Vac	1	17107
	Excess Run Timer 230Vac	1	33384
31.	3 Way Bypass Solenoid Valve 115Vac	1	39984
	3 Way Bypass Solenoid Valve 230Vac	1	34724

**LIST OF PARTS ON MODELS B, C AND D**

ITEM NO.	DESCRIPTION	QTY.	PART NO.
32.	Humidistat	1	14701
33.	Humidity Sensor Element	1	15688
34.	Humidity Sensor Shield	1	30986
35.	Gasket	1	89795

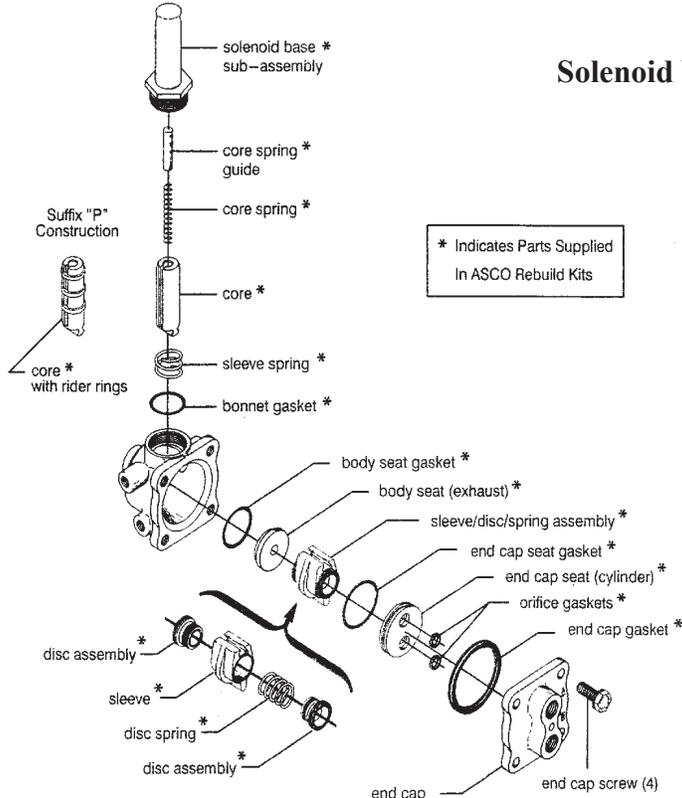
**PARTS LIST FOR DESICCANT DRYER**

ITEM	PART NO.	DESCRIPTION
REF.	48169	DESICCANT DRYER ASSY, MODEL 600
REF.	48170	DESICCANT DRYER ASSY, MODEL 850
1.	47728	MODEL 600 & 850 DESICCANT CHAMBER
2.	47725	CENTER MANIFOLD BLOCK
3.	41548	BALL SEAT MODEL 600
3a	104292	BALL SEAT MODEL 850
4.	0015903005	BALL CHECK
5.	0014000017	O-RING SEAL

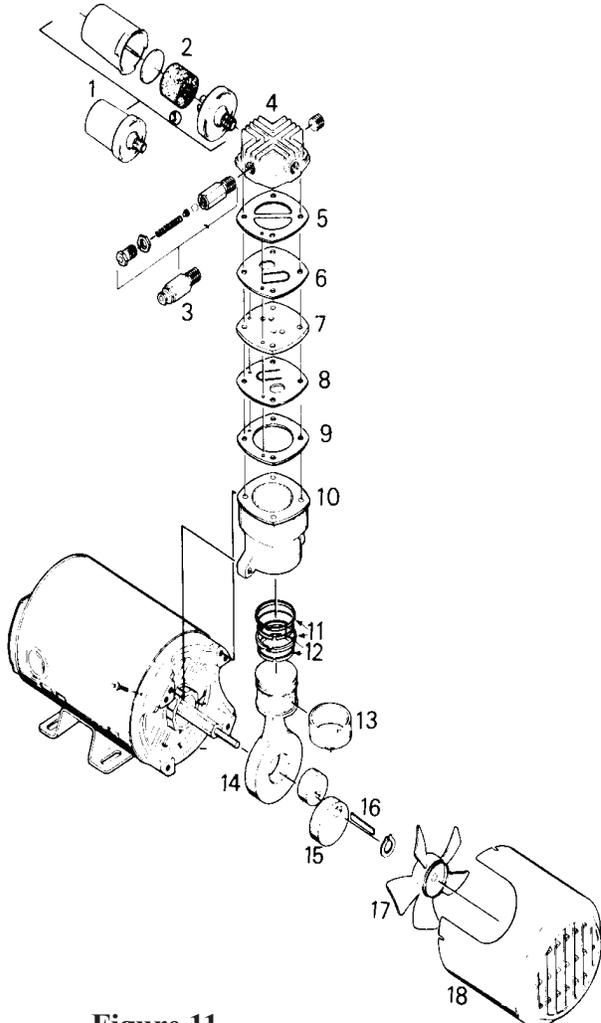


**Figure 9  
Desiccant Dryer Assembly**

**Figure 10**  
**Solenoid Valve- Exploded View**



**List of Compressor Parts**

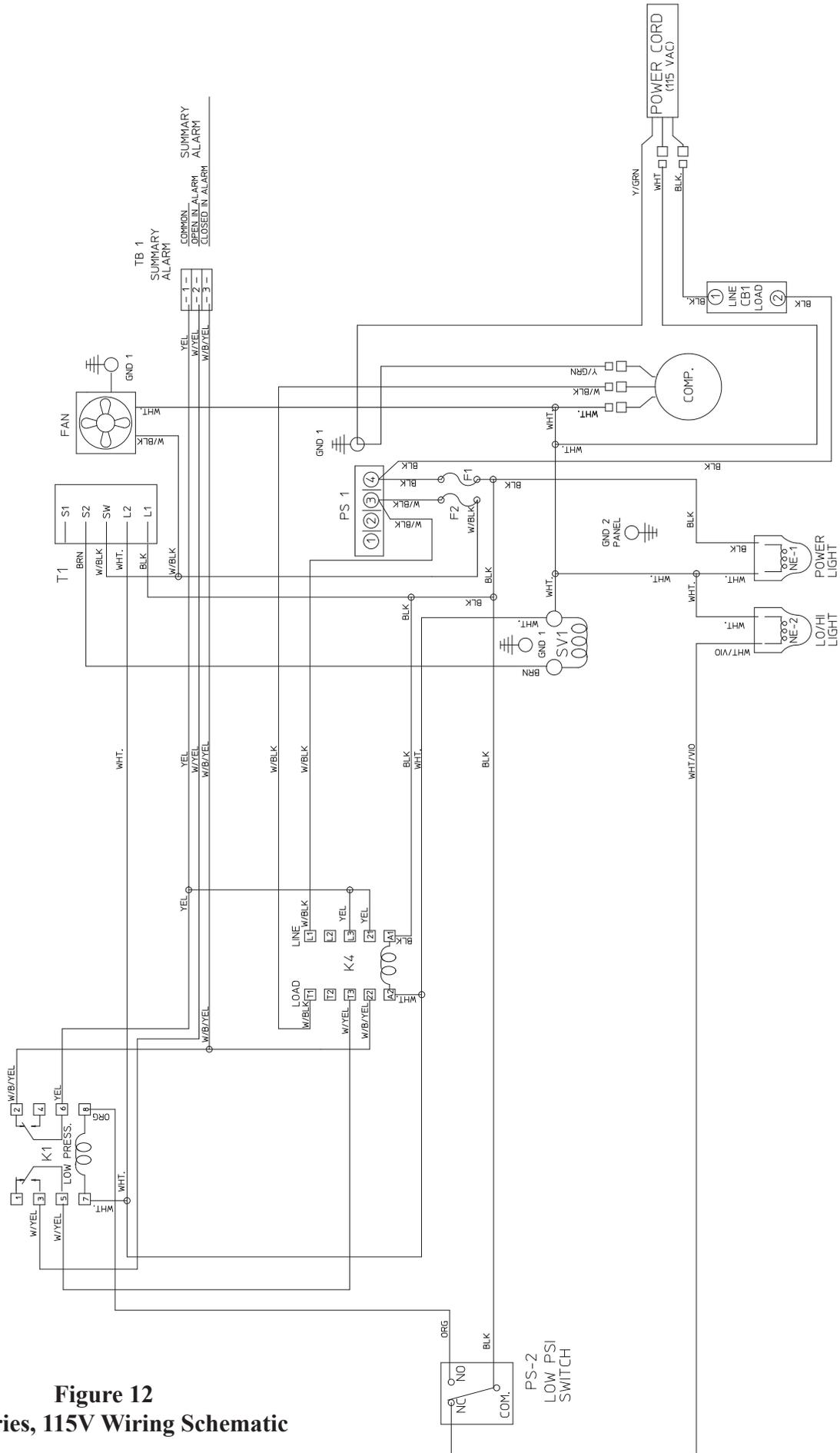


**Figure 11**  
**Compressor - Exploded View**

Ref. No.	Description	Qty
1	Filter Muffer Element	1
2*	Filter Felt	1
3	Safety Valve	1
4	Cylinder Feed	1
5*	Head Gasket	1
6*	Valve, Outlet	1
7	Valve Plate	1
8*	Valve, Inlet	1
9*	Cylinder Gasket	1
10	Cylinder	1
11*	Piston Ring	2
12*	Piston Seal	2
13*	Rider Ring	1
14	Piston Rod Assy	1
15	Counter Weights	1
16	Flat Key	1
17	Fan	1
18	Shroud	1

Dots(\*) indicate items contained in Service kit  
Use service kit P/N 46789-501 for Models 600 & 850

**Figure 12**  
**“A” Series, 115V Wiring Schematic**



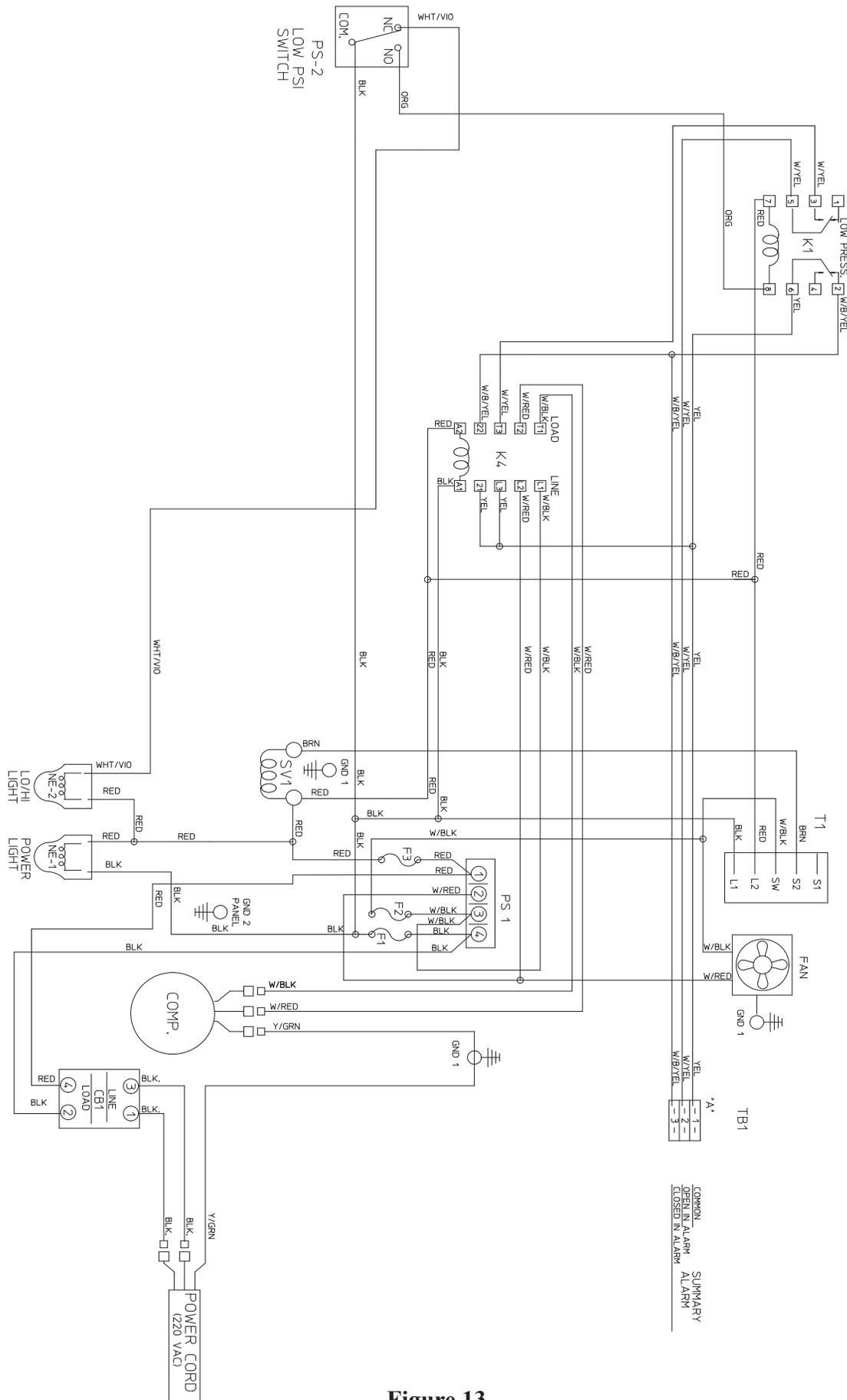
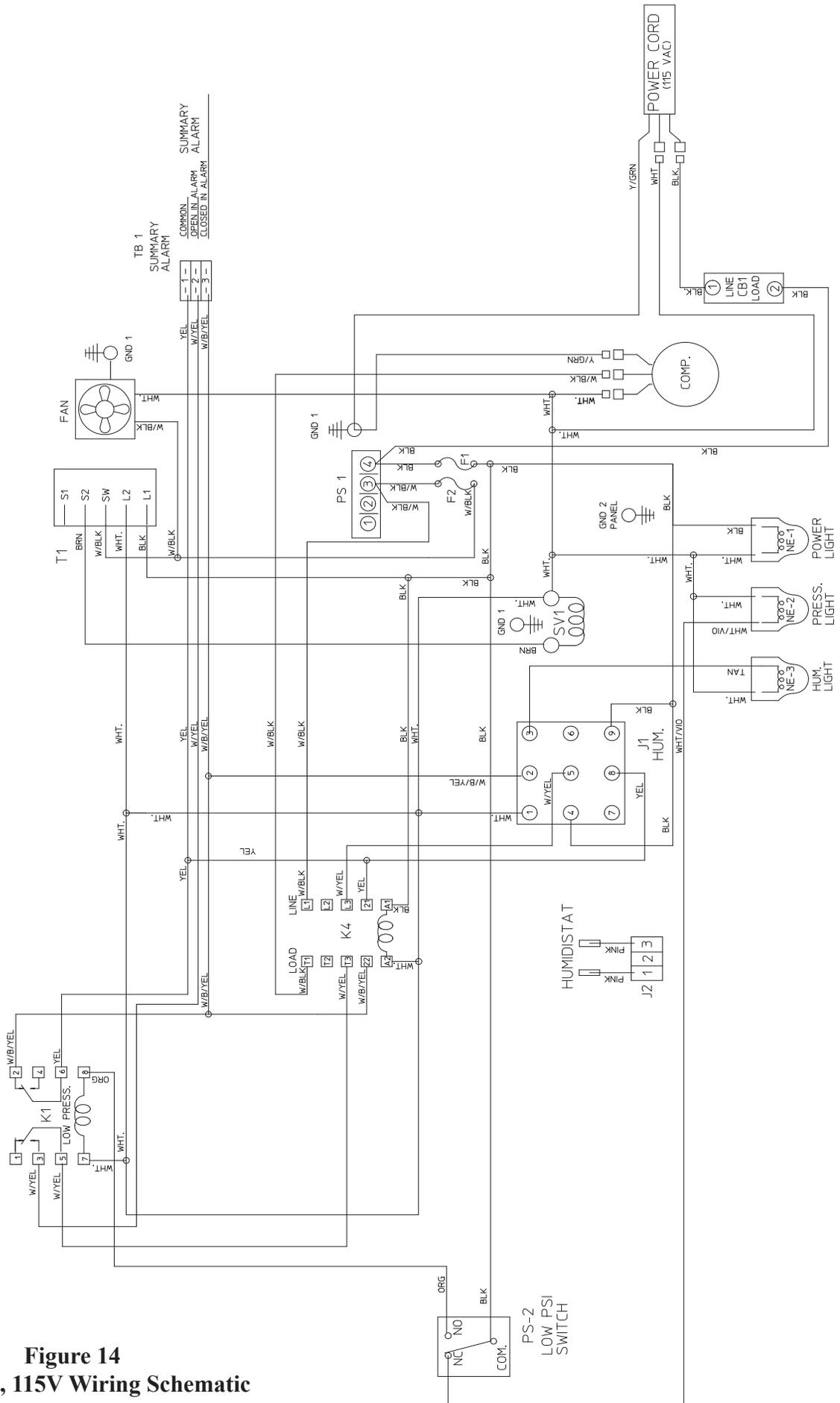


Figure 13  
"A" Series, 230V Wiring Schematic

**Figure 14**  
**“B” Series, 115V Wiring Schematic**





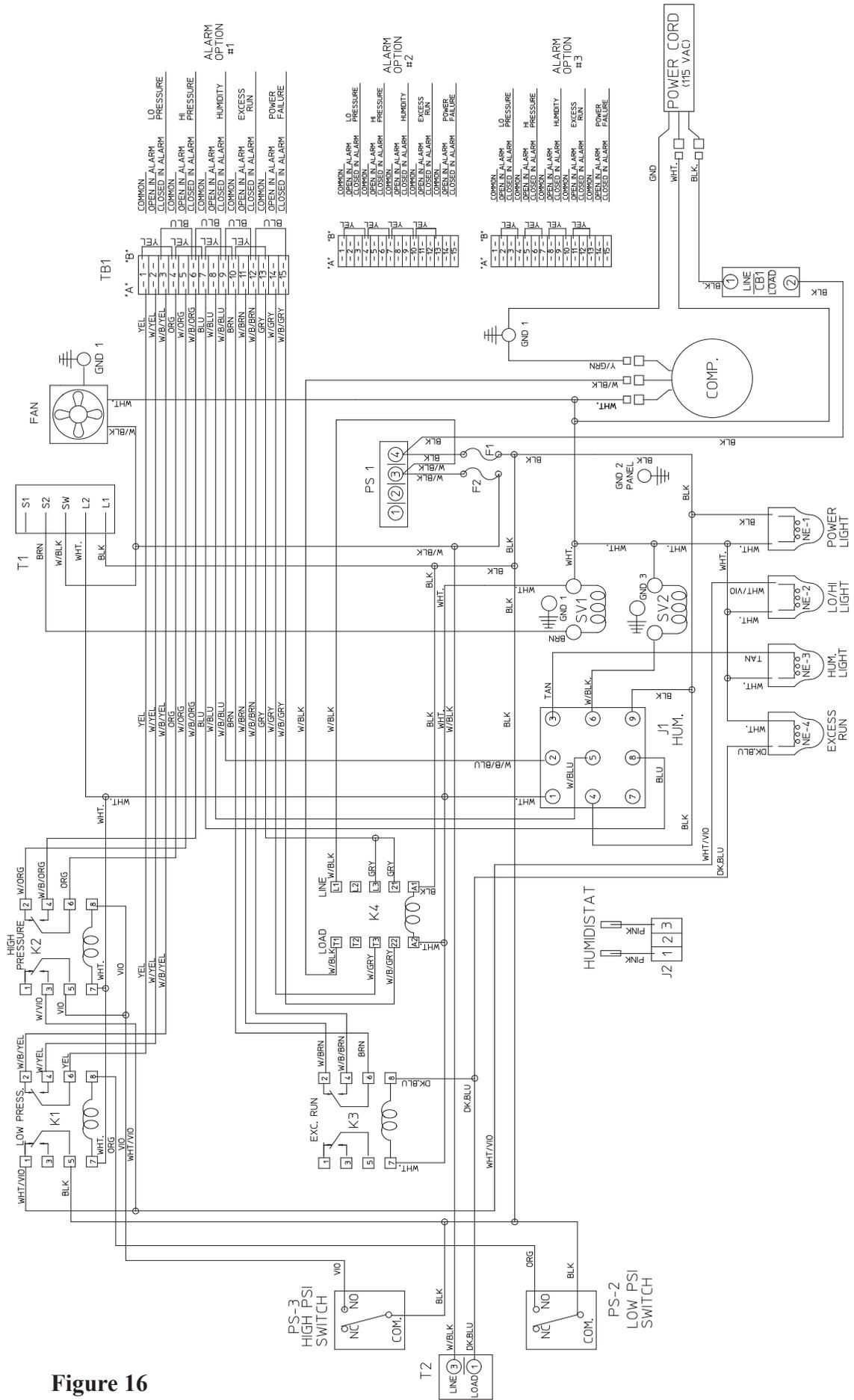
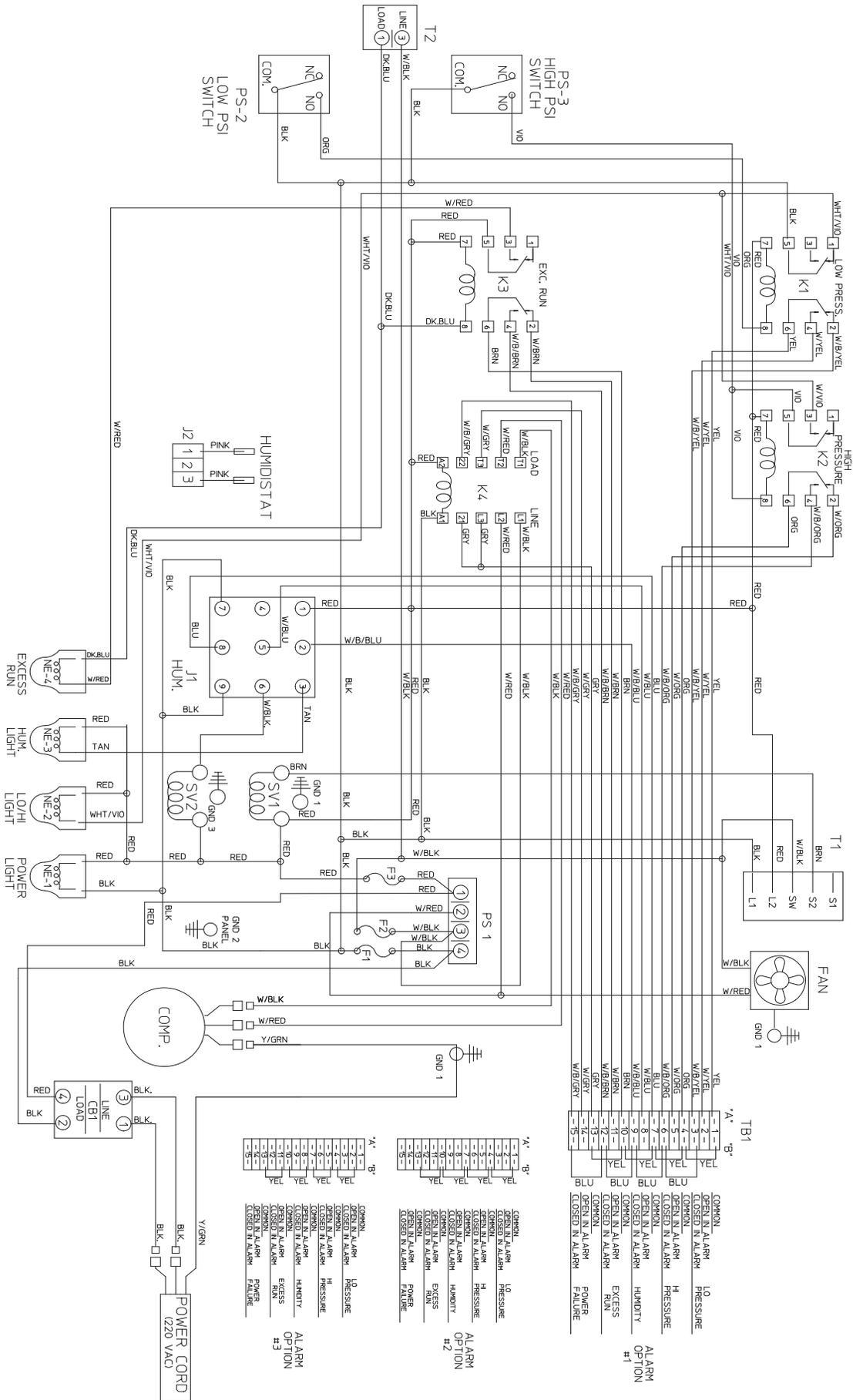


Figure 16  
 "C" & "D" Series, 115V Wiring Schematic



**Figure 17**  
**“C” & “D” Series, 230V Wiring Schematic**

**TABLE VI**  
**GLOSSARY OF TERMS**

**Altitude:** The distance which the installation is above sea level expressed in feet/meters, used interchangeably with elevation.

**Ambient:** The environment surrounding the dehydrator. Ambient factors which can influence a dehydrator include the temperature, the relative humidity, the atmospheric pressure and quantity of various pollutants which are present.

**Desiccant:** The component within the dryer towers which is used alternately to retain, then to expel moisture from the process air. SPX Radiodetection dryers employ desiccant which is totally inert, that is; it undergoes no chemical or physical change in normal use.

**Dew Point:** Expressed in °F., the temperature at which dew or frost would form at 14.7 PSIA. The dew point of a given air sample rises with increased pressure. In 1943 SPX Dielectric established a dew point of -400F. as standard for their compressor / dehydrators and for the pressurization of the communications equipment which is produced at SPX Radiodetection. NOTE: -400 is the one point at which the Fahrenheit and Celsius scales are numerically equal.

**Dry-Pak:** A patented dryer design and registered trade mark of SPX Radiodetection which describes the most simple and efficient heatless air dryer. A Dry-Pak consists of two desiccant towers, two maintenance free ball checks and two direct acting solenoid valves controlled by a solid state timer. The main air flow is handled by the ball checks without measurable pressure loss. Only the purge air flows through the two way solenoid valves, providing high efficiency and long trouble free service.

**Elevation:** The distance which the installation is above sea level expressed in feet/meters, used interchangeably with altitude.

**Line Pressure:** The pressure of the low pressure outlet system, which is controlled by the adjustment of the Line Pressure Regulator, is displayed on the Line Pressure Gauge, and is monitored by the adjustable Low and High Pressure Alarm Switches.

**PSIA/kPaa:** Pounds per Square Inch Absolute / kilo pascal Absolute. The measure of the pressure of a gas or liquid, expressed in pounds per square inch, relative to a total vacuum. Standard atmosphere at sea level equals 14.7 PSIA (approx.) / 101 kPaa (approx)

**PSIG/kPa:** Pounds per Square Inch Gauge. The measure of the pressure of a gas or liquid within a component or system, to the degree it is greater than that of the surrounding atmosphere, expressed in pounds per square inch. The internal pressure as shown on the gauges used on air dryers.

**SCFD/SCMD:** Standard Cubic Feet per Day. A rate of air flow measured in cubic feet at 14.7 PSIA and 680 F. One SCFD when subjected to 10 PSIG (without temperature change) would occupy a space equivalent to 0.6 cubic feet.

**Segregated Alarm:** An alarm circuit which provides separate terminations for each alarm function within the dehydrator. Segregated alarms can provide to a remote location the information necessary for establishment of maintenance priorities. Alarm terminations which either close in alarm or open in alarm, or dual function terminations may be available, dependent on design parameters.

**Std. conditions:** Standard operating conditions imply a reasonably clean environment at 70°F.(21°C.) and sea level. Ambient conditions impact dryer maintenance needs.

**Summary Alarm:** An alarm which does not identify an individual condition, but which can indicate an active state of one or more alarm sensors within the dehydrator. Alarm terminations which either close in alarm or open in alarm, or dual function terminations may be available, dependent on design parameters.

**System Pressure:** The pressure at which the compressors and the drying towers (desiccant towers) operate. System Pressure determines the quantity of compressed air flow, the quantity of purge air and the moisture load on the desiccant towers.

## **WARRANTY**

The Manufacturer warrants that all goods supplied hereunder, whether or not of its own manufacture, will be of the kind described herein or in any specification and drawing approved by the Manufacturer and free from defects in material or workmanship under normal use and prescribed maintenance for a period of one (1) year, with the exception of air dryers utilizing water sealed compressors as well as the compressors themselves which shall be for two (2) years. Neither this warranty nor any other, expressed or implied, shall apply to goods delivered hereunder which have been damaged or subjected to alteration or negligence after delivery. The Manufacturer's only obligation for breach of this warranty shall be the repair, without charge, or the furnishing EX Works Raymond Maine, of a similar part to replace any part which within one (1) year, with the exception as noted above, from date of shipment is proven to have been defective, provided that (i) the Purchaser shall have notified the Manufacturer within ten (10) days of the discovery of such defect and not later than ten (10) days after the last day of this warranty, and (ii) the Manufacturer shall have the option of requiring the return of the defective material (transportation prepaid) to establish the claim. The Manufacturer shall not in any event be liable for the Purchaser's manufacturing costs, loss of profits, good will or any other special, consequential, incidental, or other damages resulting from such defects. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE WARRANTY SET FORTH HEREIN.

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