



**Compressed Air System Products**

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**Installation, Operation, and Maintenance Instructions  
Blower Purge Regenerative Air Dryers Models BPD-100 to BPD-10000  
and BPD-PAK-100 to BPD-PAK-10000**

**SPECIFICATIONS**

Maximum Working Pressure: 150 PSIG  
Maximum Inlet Temperature: 110°F

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## INSTALLATION

1. Install dryer in a vertical (upright) position. In systems where air usage fluctuates or there are sudden demands, protect dryer against air flow surges by providing sufficient piping between dryer and point of air use or by installing a receiver tank between dryer and point of air use. Allow enough space for future servicing of the unit.
2. Install by-pass piping with inlet, outlet, and by-pass valves to isolate dryer for performing routine maintenance without interruption of the plant air system. All equipment downstream of the air dryer should be rated for 400°F in the event hot air is emitted from the dryer. (see Warning on page 11)
3. Install a coalescing filter(s) with automatic drain upstream of the dryer inlet, and a particulate filter(s) downstream of the dryer outlet. By-pass piping is recommended for both (all) filters.
4. Connect inlet air piping to dryer inlet (top of dryer) and outlet air piping to dryer outlet (bottom of dryer). **CHECK ALL CONNECTIONS ON THE UNIT FOR TIGHTNESS.**
5. Connect 460 Volt, 60 Hertz, three phase electric power to terminals inside the 460 Volt control enclosure, in accordance with local and national codes. To prevent the Programmable Controller timing device, blower and heater from operating when the air supply is interrupted, it is recommended that provisions be made to shut off the dryer when the air compressor is not in use.  
**WARNING: CHECK ALL ELECTRICAL CONNECTIONS ON THE UNIT!!!**
6. Install remote piping of purge exhaust line if high temperature or humidity is objectionable. If remote piping is required, maintain piping temperature above freezing and allow for the draining of condensed moisture away from the dryer.

## OPERATION

### Set-up:

1. Remove fill plug. Fill tanks slowly with specified desiccant. Replace fill plug.
2. Remove muffler to prevent clogging from desiccant dust. **Note: Always wear ear protection when muffler is removed.**
3. With dryer by-pass valve open, slowly open the inlet valve to the dryer and allow the unit to pressurize. When the pressure gauges indicate that the dryer is at full line pressure, open dryer outlet valve and close the by-pass valve. The filters should be placed on-line using a similar procedure.
4. To start up the dryer, turn the unit on. Immediately depress and hold the reset button for several seconds to allow the programmable controller to load its instructions from memory. The dryer running light will light indicating dryer is operating. After a short time, one tower will depressurize and start to regenerate, the other tower will be drying air at full line pressure. After about 4 hours, the low pressure tower will repressurize and the towers will switch functions.
5. Adjust the purge flow control valve to the proper pressure setting indicated in the "Setting the Purge Pressure" section while the dryer is in the last half of the regeneration cycle or cool down period. (see page 11)
6. Re-install the muffler after one complete cycle.

## Shutdown:

1. Turn dryer off.
2. Allow towers to depressurize to atmospheric pressure.
3. Allow the dryer to cool completely before performing any maintenance.

## RECOMMENDATIONS FOR IMPROVED PERFORMANCE

1. Do not exceed rated design flow.
2. Make sure dryer is turned on when air is passed through the unit. Tower switching is vital to the successful drying of air.
3. Change prefilter and afterfilter elements regularly. The coalescing prefilter, when operating properly, will remove contaminants such as oil and liquid water as well as abrasive solids that could reduce the effectiveness of the dryer. The particulate afterfilter will prevent desiccant particles from migrating downstream and possibly damaging equipment.
4. Never weld to vessel framework. This may cause damage to the Programmable Controller timing device which controls dryer operation.
5. Check and clean the muffler often during initial operation. Desiccant dust is especially heavy after shipment and tower filling. As an option, allow the dryer to cycle several times without the muffler.  
**Remember to wear hearing protection.**

## SAFETY

1. Do not repair or replace any part of the dryer while the unit is under pressure.
2. Do not repair or rewire electrical components of the dryer while power is supplied to the unit.
3. Avoid touching high temperature piping and the desiccant towers while the dryer is operating.

**WARNING: CHECK ALL ELECTRICAL CONNECTIONS!!**

## MAINTENANCE

1. Change prefilter and afterfilter elements regularly!!!
2. Periodically check that the dryer is cycling properly. Watch for each tower to alternate between line and atmospheric pressure. The entire cycle will take about 8 hours.
3. Approximately once a year, shut unit down and inspect all valves. (Based on an 8 hour work day).
4. Approximately once a year, check the desiccant bed for oil contamination and/or losses.
5. Approximately once a year, inspect and clean purge muffler(s). If signs of oil are present, desiccant may be contaminated.
6. Periodically verify that insulation is in good condition and repair or replace if necessary.

## REPLACING DESICCANT:

1. Open by-pass valve. Close dryer outlet valve and dryer inlet valve.
2. Turn dryer off.
3. Allow towers to depressurize to atmospheric pressure.
4. Allow the dryer to cool completely.
5. Loosen plug at bottom of tower. Allow desiccant to drain, then replace plug. Loosen plug at top of tower. Fill with fresh desiccant, then replace plug. (For molecular sieve use: 1/3 activated alumina, 1/3 molecular sieve, 1/3 activated alumina)
6. Desiccant dust may be unusually heavy after changing the desiccant. To remove this dust from the dryer, allow the dryer to cycle several times **without** the purge muffler. **Remember to wear hearing protection during this procedure.**
7. A couple of weeks after filling the dryer with desiccant shut the unit down and check desiccant level. Top off with fresh desiccant if necessary.
8. Should a problem arise, consult the Troubleshooting Guide (Page 14).

**IMPORTANT: Your AIR/TAK Blower Purge Regenerative Air Dryer was designed to use a specific desiccant. When replacing the desiccant, always use desiccant of the same size and type as that which was supplied with your dryer. For more information, please consult the factory.**

### **POWER INTERRUPTION PROTECTION (PIP)**

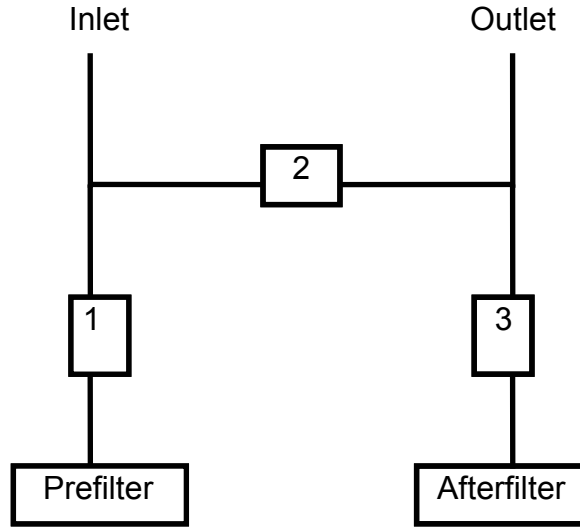
On units utilizing the SLC 500 programmed logic controller, the Power Interruption Protection utilizes double solenoid pilot valves to control the switching valves. The double solenoid pilot valves require an electric signal to change the position of the valve. In the event of a power loss, the switching valves will not change position and place a hot desiccant tank online. When power is restored, the unit automatically will resume the timing cycle at the exact point of the power interruption.

The EEPROM memory chip should be removed from the unit and stored as a backup for the PLC's internal memory. If there is ever any damage or loss of integrity to the internal memory of the PLC, the program can be re-booted from the EEPROM chip. To do this, turn off the power to the unit and replace the EEPROM chip. Turn the power back on and allow the unit to come online. Then, turn the unit off again. Remove the EEPROM chip and return it to storage. Turn the power back on and resume normal operation.

|  |
|--|
| <b>OPERATING THE THREE-VALVE BYPASS (PAK MODELS)</b> |
|--|

1. BPD-PAK Plus I and Plus II Models of desiccant air dryers are equipped with a factory installed three-valve bypass for ease in performing routine maintenance such as changing filter elements. If your model is not a PAK, Plus I or II, it is recommended that you install a three-valve bypass, similar to the one depicted in Figure 1.0 when installing the dryer.
2. During normal operation, valves 1 & 3 will be open and valve 2 will be closed, allowing air to flow through the filters and dryer.
3. To perform routine maintenance, operate the valves in 3-2-1 order to allow air to flow directly from the inlet connection to the outlet connection without passing through the dryer (close valve 3, open valve 2 and close valve 1). **Remember to bleed the air pressure from the dryer and filters before performing any service. See Sections entitled Maintenance, Changing Filter Elements, or Replacing Desiccant for specific instructions.**
4. When bringing the dryer back on-line after maintenance, operate the valves in 1-2-3 order to prevent backflow to the dryer and filters. (Open valve 1, close valve 2, open valve 3.

**Figure 1.0 - Typical BPD-PAK Three-Valve Bypass**



**Dryer Operating Sequence for  
BLOWER PURGE REGENERATIVE DRYERS**

| Component                | Cycle Time (H/M/S)                           |                            |
|--------------------------|--|----------------------------|
| LEFT SWITCHING VALVE     | On 04:00:00                                  | Off 04:00:00               |
| RIGHT SWITCHING VALVE    | Off 04:00:00                                 | On 04:00:00                |
| LEFT PURGE VALVE         | Off 04:00:30<br>Off 00:04:00                 | On 03:55:30                |
| RIGHT PURGE VALVE        | Off 00:00:30<br>Off 04:04:00                 | On 03:55:30                |
| HEATER                   | Off 00:01:30<br>Off 01:00:00<br>Off 00:58:30 | On 03:00:00<br>On 03:00:00 |
| BLOWER                   | Off 00:01:20<br>Off 00:54:50<br>Off 00:53:30 | On 03:05:10<br>On 03:05:10 |
| PURGE REGENERATION VALVE | Off 03:06:30<br>Off 03:06:30                 | On 00:53:30<br>On 00:53:30 |

**OPTIONS:**

**REGENERATION ENERGY SAVING THERMOCOUPLE (REST):**

When the thermostat located at the purge exhaust has a reading that exceeds the set point, the temperature switch will close a contact. The heater will shut off at this point and begin the cool down cycle. At the end of this cycle the off-line tank will repressurize and the unit will remain in the REST mode until the end of the half cycle.

**BURST ENERGY SAVING THERMOSTAT (BEST):**

Air/Tak's Burst Energy Saving Thermostat allows the user to set the preferred maximum heater element temperature between preset limits. The Silicon Controlled Rectifier (SCR) Power Controller maintains the heater element temperature at the maximum temperature once it has been reached.

The Power Controller switches as fast as once every three wave cycles (1/20th of a second) to prevent the heater element from achieving higher than setpoint temperatures, even when there is no purge air flow over the element. Also, since the heater element temperature remains constant under these conditions, far less KW energy is consumed.

If a failure occurs with the Power Controller, an IEC contactor controlled by a latching thermostat will turn off power to the heater. A heater over-temperature alarm light turn on signaling a malfunction of the Power Controller. To reset the thermostat open the electrical enclosure, locate the thermostat and depress the blue reset button on the face. Units that also have the Automatic Logic Function will not have a heater over-temperature alarm light. The heater will be turned off immediately and the dryer will switch to HLD mode at the start of the next cycle.

### **AUTOMATIC LOGIC FUNCTION (ALF):**

- a) **Standard:** When the heater thermocouple temperature falls below the set point, the heater will shut down. At the start of the next cycle, the dryer will automatically switch to HLD mode and remain in this mode until reset.
- b) **Steam Reactivated:** If the steam pressure falls below the setpoint, the dryer will automatically switch to HLD mode at the end of the next half cycle. This will continue until the steam pressure again rises above the setpoint. The dryer will then return to normal EHD operation at the end of the next half cycle.

### **OVERHEAT PROTECTION (OHP):**

Air/Tak's Overheat Protection provides a measure of safety by guarding against high temperature air accidentally being sent downstream. Main control line voltage is wired directly into the PLC while the On/Off switch is wired to trigger an input which begins the timing operation. A thermocouple at the purge exhaust measures the temperature of the air leaving the regenerating tank. If the temperature is too high, the OHP will not allow the unit to be reset or stepped forward into the next half cycle. The timing cycle will also hold at a point just prior to the tower switchover until the temperature of the desiccant bed measured via the purge air reaches the desired setpoint.

### **VISUAL MOISTURE INDICATOR (VMI):**

The Visual Moisture Indicator is located near the discharge of the dryer and senses the dewpoint regardless of which tower is online. The yellow color indicates a dewpoint above approximately -20°F and a green color indicates a dewpoint below -20°F.

### **FAIL-TO-SWITCH WARNING LIGHT (FTS):**

Air/Tak's Fail-To-Switch utilizes pressure switches to verify proper valve operation and tower sequencing. The pressure switches are factory set between 40 PSIG and 60 PSIG. Each pressure switch has a single pole, double throw contact and the switch should alternate between the poles in sequence with the towers. The PLC reads the inputs from the switches and will signal an alarm if the inputs are not correct. Once an alarm condition has occurred, it is necessary to press the reset button to turn off the light and reset the alarm. This will also restart the dryer at the beginning of the timing cycle.

### **HEATER OVER-TEMPERATURE WARNING LIGHT (HOT):**

Air/Tak's Heater Over-Temperature Warning Light measures the heater element temperature directly.

The HOT option will shut down the heater and give a visual indication of a malfunction by energizing the Heater Over-Temperature Warning Light. The remainder of the dryer cycle will continue to function normally, although the heater will remain “off” until the manual reset on the Heater Over-Temperature Thermostat, located inside the electrical enclosure, has been pressed. The thermostat has a factory setting of 1100°F, but can be set in the field to a customer desired lower setting. The Heater Over-Temperature Thermostat should always be set at least 200°F above the Heater Thermostat setting to prevent nuisance tripping.

## **COMPRESSOR SMART CONTROL**

The Compressor Smart Control is designed to run the Externally Heated Regenerative Dryer only when one compressor or both compressors tied into the control device are running. The dryer will shut down if neither compressor is running, and will start up at exactly the same point where it left off when one or both compressors restart.

Connect wire from the terminal fed with gray wire to an auxiliary contact on both compressors. Wire the other end of the contact from Compressor One to the second terminal and from Compressor Two to the third terminal.

**WARNING: DO NOT CONNECT 115V/1PH/60HZ SIGNAL SUPPLIED FROM ANY SOURCE OTHER THAN THE CONTROL TRANSFORMER INSIDE THE DRYER ELECTRICAL ENCLOSURE.**  
**FLEX POWER PURGE SYSTEM II:**

At the 4 hour mark (end of each half cycle), the Flex Power Purge System II will sense the moisture content in the outlet air stream. If the contact is closed (meaning the outlet moisture is above the dewpoint setting), the timing cycle will begin the next half cycle as programmed. If the contact is open (the outlet moisture is below the dewpoint setting), the PLC will hold the cycle with the actuating valve remaining in the same position. All other contacts will be turned off and no time counting will take place. The timer will continue to read the moisture sensing contact. When the contact closes, the timer will begin the next half cycle.

## **OPERATING THE FLEX POWER PURGE SYSTEM II (OPTIONAL)**

### **Description:**

The Flex Power Purge System II (FPPS II) is a control system that enables the user to determine the pressure dewpoint the dryer produces, thereby saving energy (compressed air) when operating at dewpoints higher than -40°F. The Flex Power Purge System II is available as an option on all Air/Tak desiccant dryers and is standard equipment on the PAK Plus II models.

The system consists of a user interface with digital readout, and a hygrometer (moisture analyzer) connected to the outlet air piping of the dryer. This moisture analyzer transmits data to the FPPS II regarding the moisture content of the outlet compressed air supply.

The user enters the desired operating dewpoint of the dryer via the user interface. The dryer purges the off-line tower based on the dewpoint entered by the user, rather than purging based on a constant -40°F pressure dewpoint. Energy saving is achieved when the user selects a dryer operating dewpoint higher than -40°F.

The user interface enables the user to enter the desired dewpoint and to monitor the dewpoint of the outlet compressed air supply. The units can either be shown in °F or °C and are factory set.

### **Front Panel Controls:**

The Flex Power Purge System II has two displays and four front panel controls that allow the user to interact with the instrument.

The upper display shows the actual system dewpoint and the bottom display shows the desired dewpoint setting.

The controller keys are as follows:



Up key



b) These steps will disable the Flex Power Purge Mode.

### **Troubleshooting Note:**

*\*The operating range of the FFPS II is -112°F to 68°F. A number in the upper display outside of this range (such as -157°F) may indicate that the controller is not communicating with the probe (most likely there is an open cable connection or an incorrect connection).*

*\*This condition is also indicated by the **High Humidity Alarm Light** and the **Flex Power Purge Light** being illuminated at the same time.*

*\*If the dryer must continue to run for any period of time before the problem is corrected Alarm 1 must be disabled in order for the dryer to cycle (see Probe Removal).*

## **SETTING THE PURGE PRESSURE**

The AIR/TAK BPD Blower Purge Regenerative Air Dryers use a combination of heated ambient air and dry compressed air to purge moisture from the off-line tower. The dryer operates on an eight hour cycle. Each tower dries for four (4) hours and purges for four (4) hours.

Heated ambient air is used for the first three hours of the purge cycle. For 53 minutes of the remaining hour, dry compressed air from the on-line tower is used for purge. This is done for two reasons; 1) As a final purge to remove any remaining moisture from the off-line tower. 2) To cool the desiccant bed before the tower is put back on-line.

It is necessary to adjust the purge pressure of your dryer during the cool down portion of the purge cycle based on the operating conditions for your particular application. This will enable the dryer to produce a -40°F pressure dewpoint while operating under a given set of conditions.

There are four steps to determine and set the proper Purge Pressure for your AIR/TAK dryer based on your operating conditions. Proper adjustment of the Purge Pressure is vital to the performance of your dryer.

### **Step 1. Calculating Purge Flow Rate:**

$$Q \times [114.7 \div (P + 14.7)] \times .05 = \text{Purge Flow Rate}$$

Perform the above calculation where Q = your inlet flow to the dryer in SCFM and P = your inlet pressure in PSIG.

#### **EXAMPLE:**

If your inlet flow is 3100 SCFM and your inlet pressure is 100 PSIG, the calculation would look like this:

$$[(3100 \times [114.7 \div (100 + 14.7)]) \times .05 = \text{Purge Flow Rate}$$

OR

$$[3100 \times (1)] \times .05 = 155.00$$

Your Purge Flow Rate is 155 SCFM!

**Step 2. Determining Column on Purge Pressure Table:**

Consult the following table to determine which column on the Purge Pressure Table you will use to find your purge pressure.

| <b>MODEL NUMBER</b> | <b>USE COLUMN</b> | <b>ALF</b> |
|---------------------|-------------------|------------|
|                     |                   |            |
| BPD-100             | B                 | C          |
| BPD-175             | C                 | D          |
| BPD-250             | C                 | D          |
| BPD-350             | D                 | E          |
| BPD-500             | D                 | E          |
| BPD-700             | E                 | F          |
| BPD-850             | E                 | F          |
| BPD-1000            | E                 | F          |
| BPD-1350            | F                 | G          |
| BPD-1700            | F                 | G          |
| BPD-2100            | F                 | G          |
| BPD-2400            | G                 | H          |
| BPD-3100            | G                 | H          |
| BPD-3800            | G                 | H          |
| BPD-4300            | G                 | H          |
| BPD-5000            | G                 | I          |
| BPD-5500            | H                 | I          |
| BPD-6250            | H                 | I          |
| BPD-7750            | H                 | I          |
| BPD-8750            | H                 | I          |
| BPD-10000           | H                 | I          |

*EXAMPLE:*

If you have an *AIR/TAK* BPD-3100, you will use column G in the next step.

**Step 3. Determining Purge Pressure:**

Locate the column on the following table that corresponds with the letter you determined in step 2. Once you have found the proper column, move down the column until you find the number that most closely equals the number you calculated in step 1 (Purge Flow Rate). Move across the table to the gauge reading at the end of the row in which you found your purge flow rate. This is your purge pressure.

| <b>PURGE PRESSURE CHART</b> |          |          |          |          |          |          |          |          |          |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Purge Pressure</b>       | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> | <b>G</b> | <b>H</b> | <b>I</b> |
| <b>5</b>                    | .965     | 2.18     | 3.86     | 8.71     | 15.4     | 34.7     | 61.6     | 139      | 246      |
| <b>10</b>                   | 1.36     | 3.08     | 5.45     | 12.3     | 21.8     | 49.1     | 87.2     | 196      | 349      |
| <b>15</b>                   | 1.67     | 3.75     | 6.65     | 15.0     | 26.7     | 60.1     | 107      | 240      | 427      |
| <b>20</b>                   | 1.93     | 4.25     | 7.70     | 17.1     | 30.8     | 69.3     | 123      | 277      | 493      |
| <b>25</b>                   | 2.16     | 4.75     | 8.60     | 19.4     | 34.5     | 77.6     | 138      | 311      | 552      |
| <b>30</b>                   | 2.52     | 5.60     | 10.0     | 22.5     | 40.0     | 90.0     | 160      | 360      | 640      |
| <b>35</b>                   | 2.80     | 6.20     | 11.2     | 25.0     | 44.7     | 101      | 179      | 402      | 715      |
| <b>40</b>                   | 3.07     | 6.80     | 12.3     | 27.5     | 49.1     | 110      | 196      | 442      | 786      |
| <b>45</b>                   | 3.36     | 7.60     | 13.4     | 30.3     | 53.8     | 121      | 215      | 484      | 861      |
| <b>50</b>                   | 3.64     | 8.20     | 14.5     | 32.8     | 58.2     | 131      | 233      | 524      | 931      |
| <b>60</b>                   | 4.20     | 9.40     | 16.8     | 37.5     | 67.0     | 151      | 268      | 603      | 1072     |
| <b>70</b>                   | 4.76     | 10.7     | 19.0     | 43.0     | 76.0     | 171      | 304      | 684      | 1216     |
| <b>80</b>                   | 5.32     | 11.9     | 21.2     | 47.5     | 85.0     | 191      | 340      | 765      | 1360     |
| <b>90</b>                   | 5.87     | 13.1     | 23.5     | 52.5     | 94.0     | 212      | 376      | 846      | 1504     |
| <b>100</b>                  | 6.45     | 14.5     | 25.8     | 58.3     | 103      | 232      | 412      | 927      | 1648     |

**EXAMPLE:**

You determined in Step 1 that your Purge Flow Rate was 155 SCFM. In Step 2 you determined that you needed to use Column G on the Purge Pressure Chart. Follow Column G down to 160 (the closest number in that column to 155). Next, move across this row to the Purge Pressure Column, you would find that your Purge Pressure for this dryer would be 30 PSIG.

**Step 4. Setting the Purge Pressure:**

In this Step, you will adjust the Purge Pressure of the dryer to that which you determined in Step 3. Locate the Purge Pressure Valve and Purge Pressure Gauge on your dryer. With the dryer pressurized and operating, wait 3 hours into the cycle (See note on page 11) until the blower has shut off. The Purge Regeneration Valve should be open. Adjust the Purge Pressure Valve to the setting determined in Step 3.

Your dryer has now been adjusted to provide a -40°F pressure dewpoint under the specific operating conditions of your application. Should changes in operating pressure or inlet flow occur, you must repeat Steps 1 through 4 to re-adjust Purge Pressure for the new conditions!

| <b>PROBLEM</b>                               | <b>PROBABLE CAUSE</b>                        | <b>SOLUTION</b>  |
|--|--|--|
| <b>Poor dewpoint.</b>                        | 1. Flow exceeds rated capacity.              | Reduce flow or consult factory if increased flow volume is needed.   |
|  | 2. Low inlet pressure.                       | Check and replace prefilter if necessary.  |
|  | 3. Excessive water.                          | Check upstream separator, prefilter and drain.   |
|  | 4. Desiccant contamination.                  | Replace desiccant and filter elements.   |
|  | 5. Excessive inlet temperature, above 110°F. | Check upstream aftercooler.  |
|  | 6. High or low ambient conditions.           | Change dryer location to correct condition.  |
|  | 7. Heater malfunction.                       | See <i>Heater Malfunction</i> section.   |
| <b>Excessive pressure drop across dryer.</b> | 1. Excessive inlet flow.                     | Reduce flow or consult factory if increased flow volume is needed.   |
|  | 2. Low inlet pressure.                       | Check prefilter and replace element if necessary.  |
|  | 3. Switching Valve failure.                  | Check for proper valve operation. If valve hangs up, check pilot air filter and replace element if necessary. Inspect valve, solenoid and actuator and replace if necessary. |
| <b>Switch-over failure.</b>                  | 1. Electric power loss.                      | Turn dryer off. Check power to unit. Check all connections to Process Controller.  |
|  | 2. Switching Valve failure.                  | Check for proper valve operation. If valve hangs up, check pilot air filter and replace element if necessary. Inspect valve, solenoid and actuator and replace if necessary. |

| <b>PROBLEM</b>                                       | <b>PROBABLE CAUSE</b>                                   | <b>SOLUTION</b>   |
|--|---|---|
| <b>Pressurization failure.</b>                       | 1. Purge Regeneration Valve failure or orifice clogged. | Check for proper valve operation. If valve hangs up, check pilot air filter and replace element if necessary. Inspect valve, solenoid and actuator and replace if necessary. Clean or replace orifice.                            |
|  | 2. Failure of check valve.                              | Clean or replace check valve if necessary.  |
|  | 3. Purge Valve failure.                                 | Check for proper valve operation. If valve hangs up, check pilot air filter and replace element if necessary. Inspect valve, solenoid and actuator and replace if necessary.  |
| <b>Regeneration failure.</b>                         | 1. Failure of check valve.                              | Clean or replace.   |
|  | 2. Purge Valve failure.                                 | Check for proper valve operation. If valve hangs up, check pilot air filter and replace element if necessary. Inspect valve, solenoid and actuator and replace if necessary.  |
|  | 3. Purge exhaust muffler clogged.                       | Clean or replace.   |
|  | 4. Blower malfunction.                                  | See <i>Blower Malfunction</i> section.  |
| <b>Back-pressure build-up in tower being purged.</b> | 1. Purge exhaust muffler clogged.                       | Clean or replace.   |
|  | 2. Failure of check valve.                              | Clean or replace.   |
| <b>Heater Malfunction.</b>                           | 1. Excessive heat.                                      | Verify regeneration flow. Verify operation of blower. Verify that cooling cycle is functioning properly (see <i>Dryer Operating Sequence</i> ). Verify thermostat temperature setting. Repair or replace thermostat if necessary. |

**TROUBLESHOOTING GUIDE- Continued**

| PROBLEM             | PROBABLE CAUSE  | SOLUTION  |
|---------------------|---|---|
| Heater Malfunction. | 2. insufficient heat.                                     | Verify regeneration flow. check wiring and power supply to heater and contactor. Verify operation of blower. Verify thermostat temperature setting. Repair or replace if necessary. |
| Blower Malfunction. | 1. No power.  | Check power supply and fuses.   |
|                     | 2. Blower motor failure.                                  | Repair or replace motor.  |
|                     | 3. Contactor not operating.                               | Check wiring and power supply to contactor.   |
|                     | 4. Motor wire loose or disconnected.                      | Connect wire(s) as shown in <i>Wiring Diagram</i> .   |
|                     | 5. Overload tripped.<br>(models BPD-100 to BPD-1700 only) | Check blower motor. Check purge muffler and intake filter for flow restrictions.  |

**Note:** It may be necessary during trouble shooting to move the cycle of the dryer ahead in 1 hour increments. To accomplish this, depress and hold the alarm acknowledge switch. Then, depress the reset switch momentarily. After releasing the reset switch, release the alarm acknowledge switch. This will jog the cycle ahead 1 hour. Repeat as needed. Use caution not to depress the reset button without the alarm acknowledge switch depressed. If this occurs, the dryer will reset to the beginning of the cycle.

**Warning:** If the timing cycle is moved into the next half of the cycle or the dryer is reset or turned off allowing the towers to change processes without sufficient cool down, hot air up to 400°F may be sent downstream. Caution should be taken to protect personnel and equipment from these elevated temperatures.

#### AIR/TAK WARRANTY POLICY

*Air/Tak products will be warranted to be free from defects in materials and workmanship for a period of one year from date of shipment or up to one year from the verified date of installation not to exceed 15 months. Date of installation will be verified upon receipt of the completed Warranty Registration Card. All Air/Tak refrigerated dryers will additionally be warranted on parts only (excluding fan motors and drain valves) for a period of two years from the date of shipment. Also, deliquescent and regenerative air dryer pressure vessels and refrigerated air dryer heat exchangers have a 5-year prorated warranty.*

**All damaged pressure vessels and heat exchangers returned to AIR/TAK for warranty consideration must be returned freight prepaid. Warranty will be determined after factory inspection. Failure to return a damaged heat exchanger or pressure vessel will result in warranty denial.**

**Repairs, adjustments, parts, etc. are limited to actual labor cost provided that such defects are promptly reported and approved following AIR/TAK's warranty procedures. In no event shall the cost of repairs exceed the actual cost of materials and labor.**

**AIR/TAK or its representatives reserve the right to decide which warranty items are authorized. AIR/TAK shall not be liable for incidental or consequential damages which may result from a breach of the warranty described above.**

**For more information on warranty policies and procedures, contact your authorized AIR/TAK Distributor.**

**COMPRESSED AIR SYSTEM FILTERS \* AIR-COOLED AFTERCOOLERS  
REFRIGERATED AIR DRYERS \* CAD COMBINATION AFTERCOOLER DRYER SYSTEMS  
RAD-PAK REFRIGERATED AIR DRYER/FILTER PACKAGES \* HEATLESS REGENERATIVE AIR DRYERS  
HLD-PAK HEATLESS REGENERATIVE AIR DRYER/FILTER PACKAGES  
BLOWER PURGE REGENERATIVE AIR DRYERS \* EXTERNALLY HEATED REGENERATIVE AIR DRYERS  
SINGLE TOWER HEATED REGENERATIVE AIR DRYERS \* AIR CHILLERS \* FLUID CHILLERS**

**For an authorized distributor near you, contact Air/Tak at: Air/Tak Inc. P.O. Box 129 Worthington, PA 16262  
Phone: 724.297.3416 Fax: 724.297-5189  
URL: <http://www.airtak.com>  
e-mail: [airtak@airtak.com](mailto:airtak@airtak.com)**