DIELECTRIC

Models 5000 / 7200 Moderate Capacity Compressor Dehydrators

Instruction manual

IB-131 REV. I PART NUMBER 52649

SPX

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 where 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 60 lbs. (27.3 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 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 Electrocution
Isolate power by unplugging or by locking seporate disconnect.


WARNING - RISK OF 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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CHARACTERISTIC	MODEL 5000	MODEL 7200
CAPACITY	5000 SCFD / 141.6 SCMD (2500 SCFD/70 SCMD X 2 @ 60 Hz*)	7200 SCFD - 203 SCMD (3600 SCFD / 101 SCMD X 2 @ 60 Hz*)
DRY AIR DEW POINT	LESS THEN 2% RH	LESS THEN 2% RH
WEIGHT	300 LBS / 136 KG	335 LBS / 151 KG
ELECTRICAL OPTIONS	230V - 60Hz - 1 PH 220V - 50Hz - 1 PH	230V - 60Hz - 1 PH 220V - 50Hz - 1 PH
AIR COMPRESSOR SIZE	(2)- 3/4 HP	(2)- 1.0 HP
OPERATING CURRENT	11 AMPS	13 AMPS
COMPRESSOR CIRCUIT	(2) 7.5 AMP C.B.	(2) 10 AMP C.B.
CONTROL CIRCUIT	(3) 0.5 AMP C.B.	(3) 0.5 AMP C.B.
MAX SOUND PRESSURE	72 DBA @ 1 M, 1.6 M ELEV. **	72 DBA @ 1 M, 1.6 M ELEV. **

* CAPACITY LESS FOR 50Hz OPERATION

** SOUND PRESSURE AT INSTALLATION WILL BE HIGHER, AND WORKER EXPOSURE TO SOUND MUST BE ADDRESSED ON A SITE-BY-SITE BASIS

TABLE OF LEADING PARTICULARS

DRY AIR DEWPOINT . . . . . Below -40°F (below -40°C.)

DESICCANT DRYER TYPE . . . . . DRY-PAK® Heatless twin-tower dryer. Efficient, internal check-ball valving, purge controlled by two-way solenoid valves.

OPERATING PRESSURE . . . . . DRY-PAK® and compressor 60 PSIG(414 kPa), **(50 PSIG (345 kPa) ON MODEL 7200/ 60Hz ONLY)** independent of tank pressure.

TANK PRESSURE RANGE . . . . . 25 PSIG (172 kPa), (compressor start) to 60 PSIG (414 kPa), (compressor stop) : **20 PSIG (138 kPa) (compressor start) to 50 PSIG (345 kPa) (compressor stop) on Model 7200/ 60Hz ONLY.**

AIR COMPRESSOR TYPE . . . . . Oilless, direct drive, motors are thermally protected.

REGULATED LOW OUTLET PRESSURE . . . . . Adjustable 2 TO 20 PSIG (14-138 kPa) (Equipped with high and low line pressure alarm switches)
REGULATED HIGH

OUTLET PRESSURE . . . . . Adjustable 2 TO 20 PSIG (14-138 kPa)

ALARMS - GENERAL . . . . . Eight independent alarm circuits can be monitored individually or as a single C.O. alarm. Excepting Power alarm, each signaled by red alarm light on front panel. Common, NO and NC terminals are provided.

HUMIDITY ALARM . . . . . Factory preset, protects storage tank via Wet Air Bypass solenoid valve. Clears automatically when below preset limit.

LOW LINE PRESSURE ALARM . . . Adjustable pressure switch, factory set @ 7 PSIG (48 kPa), range 2 to 20 PSIG (14-138 kPa).

HIGH LINE PRESSURE ALARM . . . Adjustable pressure switch, factory set @ 13 PSIG (90 kPa), range 2 to 20 PSIG(14-138 kPa).

EXCESS RUN ALARM A and B . . . . solid state timer, fixed 10 minute.

POWER ALARM . . . . . Active in event of service interruption, compressor or control-circuit breaker overload or unit turned off manually.

DUPLEX RUN ALARM . . . . . Adjustable, solid state timer, Range to 15 minutes active only in alternate mode.

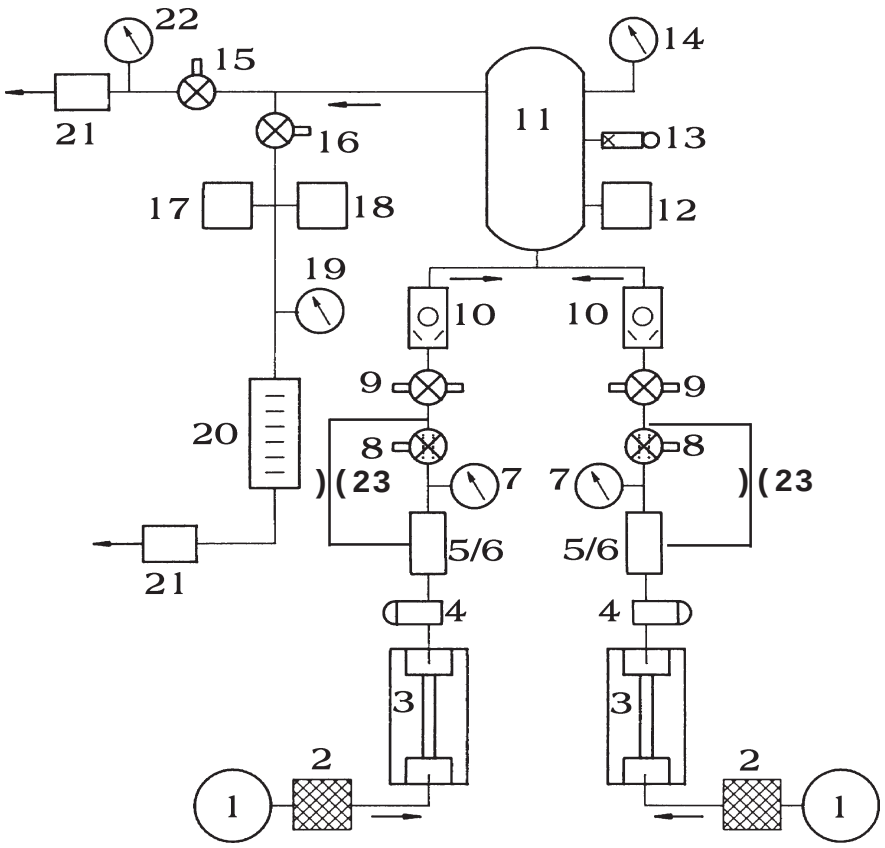
CABINET DIMENSIONS . . . . . H 50 in. x W 29 in. x D 22.5 in. (H127 cm x W73.7 cm x D57.2 cm)

AIR TANK . . . . . 1.6 Cubic Foot (45.3 L) - Agency certified per national codes

AIR TANK RELIEF VALVE . . . . . Pop-off 80 ± 5 PSIG (552 ±34 kPa)- Agency certified per national codes

PANEL INDICATORS AND SWITCHES

HUMIDITY CIRCUIT TEST	Test toggle switch on each humidistat (subsystem "A" and "B") provides complete electronic operational verification.
DUPLEX MODE LIGHT	Indicates flow capacity problems requiring both systems to operate together (duplex).
"A" MODE	Dryer operation in which only the "A" dryer system is in operation. The "B" dryer system is off.
"B" MODE	Dryer operation in which only the "B" dryer system is in operation. The "A" dryer system is off.
ALTERNATING MODE	Dryer operation that allows dryer system "A" and dryer system "B" to alternate on every other start-up. Duplexing occurs (BOTH SYSTEMS RUNNING TOGETHER) automatically if a flow capacity problem exist in one system.



1. Motor Compressor
2. Heat Exchangers
3. DRY-PAK® Dryer Tower
4. 5 Micron Filter
5. Manifold Block
6. Humidity Sensing Element
7. Back Pressure Gauge
8. Back Pressure Regulator
9. Humidity Bypass Solenoid Valve
10. System Check Valve
11. Reservoir Tank
12. Pressure Switch Start/Stop
13. Pressure Relief Valve
14. Tank Pressure Gauge
15. High Outlet Pressure Regulator
16. Low Outlet Pressure Regulator
17. Low Pressure Switch
18. High Pressure Switch
19. Low Outlet Pressure Gauge
20. Flow Meter
21. Outlet
22. High Outlet Pressure Gauge
23. Orifice

Figure 2
Air Flow Diagram

1.0 INTRODUCTION

1.1 This manual covers installation, operation, and maintenance with spare parts list for the Model 5000 and 7200 Central Office air dryers.

1.2 The Model 5000 and 7200 features two independent compressor/dryer systems, either of which can be operated independently or is capable of operating both systems together (Duplexing) in the event of increased flow requirements. Cabinet flow-through forced air ventilation and vibration isolation optimize service life. Special consideration has been given to accessibility and ease of service.

1.3 BEFORE INSTALLING - - -

READ THE MANUAL THOROUGHLY, then, with the manual as a reference, examine the air dryer. Learn to recognize the various components and the function performed by each. Section 5 of this manual provides guidelines for selection of a suitable installation site.

1.4 SELECTED MODES OF OPERATION

"A" Mode - Dryer operation in which only the "A" dryer system is in operation. The "B" dryer system is off.

"B" Mode - Dryer operation in which only the "B"dryer system is in operation. The "A" dryer system is off.

Alternating Mode - Dryer operation that allows dryer system "A" and dryer system "B" to alternate on every other start-up. If either of the operating systems operates continuously for more that the preset excess operating time, the standby system will automatically start and whereby both systems will operate together (Duplexing).

2.0 PRINCIPAL OF OPERATION

2.1 The Model 5000 and 7200 Air Dryers are heatless, automatic regeneration, self contained dual system dryers.

2.2 Ambient air is taken in by the compressor and compressed to approximately 60 PSIG (414 kPa), (50 PSIG (345 kPa) ON MODEL 7200/60Hz ONLY). The compressed air flows through the heat exchanger, where it is cooled, to the inlet fitting of the twin tower DRY-PAK®.

2.3 In the DRY-PAK®, the moisture is adsorbed in one of the desiccant towers (see figure 3 and section 3.0 for an explanation of dryer operation). When the air leaves the dryer, it is at a dewpoint of -40°F (-40°C)or lower.

2.4 The moisture content of the air is monitored by a humidity sensor in the manifold block and will activate if the relative humidity of the air rises above the set point.

2.5 The dry air flows from the manifold to the adjustable back pressure regulator. The back pressure regulator maintains the pressure in the DRY-PAK® at 60 PSIG, (414 kPa) (50 PSIG (345 kPa) ON MODEL 7200/60Hz ONLY) to insure efficient drying of the air. The pressure setting of the back pressure regulator is shown on the back pressure gauge ***only*** when the compressor is operating.

2.6 After leaving the back pressure regulator, the air passes through the automatic humidity bypass solenoid valve, through a tank mounted check valve and into the dry air storage tank. Pressure in the tank is controlled by the tank pressure switch, which interrupts both the "A" and "B" system heatless dryer cycles and which stops both compressors when the tank pressure reaches 60 PSIG, (414 kPa) (50 PSIG (345 kPa) ON MODEL 7200/60Hz ONLY). The switch starts the heatless dryers and the compressors again when the tank pressure drops to 25 PSIG,(172 kPa) (20 PSIG (138 kPa) on Model 7200/60Hz ONLY). The tank pressure is indicated on the tank pressure gauge located on the front panel of the dryer.

2.7 The dry air storage tank is equipped with an safety valve set at 80 ± 5 PSIG(552± 34 kPa) .

2.8 The dry air from the tank, supplies air to a high output pressure regulator that is monitored by the high output pressure gauge located on the front panel. High output dry air is supplied to the high output outlet.

2.9 The dry air from the tank, supplies air to a low output pressure regulator. The low output regulator maintains the required cable pressure, as shown on the low output pressure gauge located on the front panel. The dry air flow rate (measured in STANDARD CUBIC FEET PER DAY, or SCFD) is shown on the output air flow meter.

2.10 The low line pressure alarm and high line pres-

sure alarm switches (both located in the electric compartment) monitor the low outlet air pressure.

2.11 Both the system "A" and system "B" solid state dryer timers maintain their memory whenever the dehydrator power switch is ON. The timers control the drying cycles of the DRY-PAK® and progress only when the compressors operate.

2.12 Two fans operate concurrently with the compressors. This provides sufficient ventilation to allow continuous operation without overheating.

3.0 DRY-PAK® OPERATING CYCLE

3.1 The two-way purge solenoid valves of the DRY-PAK® handle only the purge air. Both the wet main air flow from the compressor and the dried air are controlled by the ball checks without appreciable pressure loss. This very low pressure drop is the key to the high efficiency of the Heatless dryer.

There are four distinct phases of the one minute DRY-PAK® cycle. Since the DRY-PAK® operates only when the compressor is running, the cycle may be interrupted during any cycle phase if the tank pressure reaches 60 PSIG(414 kPa), (50 PSIG (345 kPa) ON MODEL 7200/ 60Hz ONLY) and the compressor stops. When the tank pressure declines to 25 PSIG (172 kPa), (20 PSIG (138 kPa) on Model 7200/60Hz ONLY) and the compressor restarts, the DRY-PAK® will resume cycling in the same cycle phase as when it was interrupted.

Cycle phase 1..Right dehydration and left tower purge ..duration 25 seconds: (27 sec. for model 7200 60Hz only)

The right purge solenoid valve is closed, the left is open, venting the left desiccant tower to atmosphere. The check balls are held against the left valve seats by the higher pressure in the right desiccant tower. While most of the air being dried by the right tower leaves the outlet, a portion of the high pressure dry air passes through the orifice and expands at low pressure in the left tower which was wetted in the previous cycle. The expanding air flow picks up the moisture and carries it through the open purge solenoid valve outlet to atmosphere. At completion of cycle phase 1, the elapsed cycle time is 25 seconds. (27 sec. for model 7200 60Hz only)

Cycle phase 2..Right dehydration and left dwell..duration 5 seconds. (3 sec. for model 7200 60Hz only)
Both purge solenoid valves are closed and dry air continues to flow through the calibrated purge orifice until the air pressure in the left tower is equal to the air pressure in the right tower. At completion of cycle phase 2, the elapsed cycle time is 30 seconds.

Cycle phase 3.. Left dehydration and right tower purge..duration 25 seconds. (27 sec. for model 7200 60Hz only)

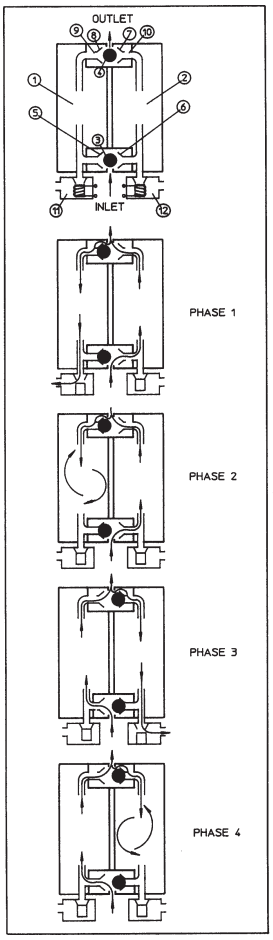


Figure 3
DRY-PAK® **Cycle**

HEATLESS REGISTERED TRADEMARK / DIELECTRIC COMMUNICATIONS
U.S. PAT. 3323292

Major details of construction:

1,2.... Left and right desiccant towers.
3,4.... Inlet and outlet check balls.
5,6.... Left and right inlet valve seat.
7,8.... Left and right outlet valve seat.
9,10... Left and right calibrated purge air flow orifices.
11,12. Left and right purge solenoid valves.

The left purge solenoid valve is closed, the right is open, venting the right desiccant tower to atmosphere. The check balls are held against the right valve seats by the higher pressure in the left desiccant tower. While most of the air being dried by the left tower leaves the outlet, a portion of the high pressure dry air passes through the orifice and expands at low pressure in the right tower which was wetted in the previous cycle. The expanding air flow picks up the moisture and carries it through the open purge solenoid valve outlet to atmosphere. At completion of cycle phase 3, the elapsed cycle time is 55 seconds.(57 sec. for model 7200 60Hz only)

Cycle phase 4..Left dehydration and right dwell..duration 5 seconds. (3 sec. for model 7200 60Hz only)

Both purge solenoid valves are closed and dry air continues to flow through the calibrated purge orifice until the air pressure in the right tower is equal to the air pressure in the left tower. At completion of cycle phase 4, the elapsed cycle time is 60 seconds.

4.0 RECEIVING AND INSPECTION

4.1 Shipping damage is unusual but not totally avoidable. Open the shipping container upon receipt and inspect the contents for hidden damage. If damage is evident, promptly file a hidden damage claim with the delivering transportation company.

5.0 SITE REQUIREMENTS

5.1 The Model 5000 and 7200 air dryers requires a firm, level site with a minimum of 6 inches (150 mm) clearance at the rear for ventilation. Front clearance should be at least 3 feet (one meter). The space above the cabinet should be open. Do not stack objects on the cabinet or otherwise restrict the free flow of air upward from the cabinet rear surface.

5.2 The temperature at the installation site must be within the range of 32° F to 120° F (0° C to 48° C) BEST PERFORMANCE WILL OCCUR AT 68° F (20° C).

5.3 No water drain is required as purge moisture is evaporated by cabinet air flow and normal operating temperature.

5.4 The dryer location should be close to the cables to be pressurized. This will avoid unnecessary pressure loss in the regulated pressure line.

6.0 INSTALLATION AND START-UP

6.1 Position the Model 5000 or 7200 as per section 5.0. Open the cabinet front door. Remove the accessory kit from the cabinet.

6.2 Inspect for damage inside the cabinet (see 4.1). Verify that the Cabinet Ventilation Fan exhaust opening at the rear is not obstructed. Install the cabinet intake filter onto the dryer. Verify that electrical relays are seated into their sockets.

6.3 Remove the two shipping hold-down straps and wooden spacer blocks from each compressor.

6.4 Do not connect the air outlet to the cable system until the air dryer has been started and fully tested.

6.5 Connect the proper power electrical plug to the dryer power entrance cord. Provide the correct power to the dryer as stated on the dehydator electrical data plate.

6.6 Select system "A" on the front panel and turn on the power switch on the front panel. Verify that system "A" shows 60 to 65 PSIG (414 - 448 kPa), (50 PSIG (345 kPa) on Model 7200/60Hz ,back pressure while the compressor is operating. If outside this pressure range refer to: ***8.2 Adjust Back-Pressure.***

6.7 Verify the purge cycling of the DRY-PAC® at the bottom of the door. When the compressor is operating a purge occurs at 30 second intervals, first from one and then the other heatless dryer Purge Solenoid Valve. The purge air blast is audible and can be felt as it escapes from the plastic silencer on the purge solenoid valve. After the initial purge blast, a steady flow of purge air continues for 25 seconds. After 5 additional seconds, the opposite purge will occur. If the cycling is not as described, refer to section ***9.3*** **DRY-PAK®** ***Trouble Shooting*****.** Close the cabinet door to insure maximum ventilation. (27/3 sec. for model 7200 60Hz only)

6.8 A humidity alarm is a common condition at initial start-up. This is due to an extended period of dryer inactivity, consequent to storage and shipping. The initial humidity alarm will normally clear automatically after several minutes of operation. For in depth information, refer to ***9.2 Humidity Alarm Trouble Shooting.***

6.9 After the humidity alarm is cleared, push the low outlet pressure requlator knob in. Adjust the low outlet pressure regulator to allow air to escape the outlet air

fitting at a rate of approximately 1000 SCFD (28 SCMD)as shown on the outlet air flow meter. Temporarily lock the regulator by pulling the knob out about ¼" to maintain this flow rate. When the tank pressure reaches 60 ± 2 PSIG (414±14 kPa), (50±2 PSIG (354±14 kPa) on Model 7200/60Hz ONLY) the compressor will stop. The compressor will start again when the tank pressure declines to 25 PSIG ± 2 (172±14 kPa) PSIG, (20 ± 2 PSIG (138±14 kPa) on Model 7200/60Hz ONLY). If the tank pressure range exceeds these limits refer to: ***8.1 Tank Pressure Switch Adjustment.***
NOTE: The humidity alarm may become active when the compressor is not operating. Operate the dehydrator in this mode for not less than six hours after the humidity alarm remains permanently cleared.
6.10 Select system "B" mode and verify that the back pressure settings and heatless dryer operation function as per paragraph 6.7, 6.8 and 6.9.

6.11 Plug the air outlet fitting on the rear of the cabinet with your finger and increase the line pressure to clear the low pressure alarm. Continue to increase the line pressure and note the pressure at which the High Line Pressure alarm becomes active. Lower the line pressure and note the pressure at which the Low Line Pressure alarm becomes active. If you wish to change these factory settings refer to: ***8.3 Check or change alarm pressure switch adjustment.***

6.12 Adjust the line pressure regulator to achieve the desired pressure as indicated on the line pressure gauge. When the line pressure is satisfactory, lock the setting by means of the regulator knob.

6.13 Connect the remote alarm wires to the alarm terminal board on the rear of the cabinet. For alarm wiring options, refer to: ***8.5 Alarm Wiring Options***. This completes the start up procedure.

7.0 GENERAL MAINTENANCE

Periodic maintenance must be performed to insure continued reliable and efficient operation of the Models 5000 and 7200.

7.1 At intervals of 1000 hours of operation: Verify that the DRY-PAK® is cycling correctly. Refer to: *8.9* DRY-PAK® *Cycling Test.*

7.2 At intervals of 1000 hours of operation: Verify that the back pressure regulator is correctly adjusted. Refer to section 8.2.

7.3 At intervals of 1000 hours of operation: Verify the adjustment of the Tank Pressure Switch. Refer to section 8.1.
7.4 At intervals of 1000 hours of operation: Verify the adjustment of the high and low line pressure alarm switches. Refer to section 8.3.

7.5 At intervals of 2000 hours of operation: Replace the compressor inlet filter elements. Refer to section 8.6.

7.6 At intervals of 2000 hours of operation: Test the humidity alarm circuit. Refer to section 8.7.
7.7 At intervals of 4000 hours of operation: Replace the compressor rings and valves. Refer to: 8.8.

8.0 ADJUSTMENTS AND TESTS

8.1 CHECK OR CHANGE TANK PRESSURE SWITCH SETTING ADJUSTMENT

NOTE:
Acceptable tank pressure at compressor start is 25 ± 2 PSIG (172±14 kPa) **(20 PSIG (138 ±14 kPa) on Model 7200/60Hz ONLY)**and stop at 60 ± 2 PSIG (414±14 kPa) **(50 ± 2 PSIG (345±14) on Model 7200/60Hz ONLY**).

8.1.1 The Tank Pressure Switch has been factory adjusted. Observe and record the start and stop pressures for reference before continuing.

TABLE III
MAINTENANCE CHART

PROCEDURE	Ref. Para.	1000 Hrs	2000 Hrs	3000 Hrs	4000 Hrs
Verify Heatless Dryer Cycling	7.1	X	X	X	X
Verify Back Pressure	7.2	X	X	X	X
Verify Tank Pressure Switch Adjustment	7.3	X	X	X	X
Verify High & Low Pressure Switch Adjustment	7.4	X	X	X	X
Replace Inlet Air Filter Elements	7.5		X		X
Test Humidity Alarm Circuit	7.6		X		X
Replace Compressor Rings & Valves	7.7				X

WARNING!

RISK OF ELECTROCUTION - Disconnect from electrical power before starting this procedure.

8.1.2 The Tank Pressure Switch is located in the electrical compartment and is accessed through the top cover of the Model 5000 or 7200 air dryer. The Tank Pressure Switch cover is held by a single 5/16 inch hex nut. The cover can be seen just below the front panel when the cabinet door is open. With the cover removed, two adjuster screws are visible. To adjust both the start and stop pressures (the total tank pressure range) turn only the screw on the **center** adjuster. About $2^{1}/_{8}$ FULL REVOLUTIONS of the adjuster nut changes the set-point 5 PSIG(35 kPa). Clockwise raises, counterclockwise lowers the setting. Replace the switch cover after adjustment and close the cabinet door.

8.1.3 Connect the power cord to the electric outlet and restart the dehydrator. Again check the start and stop pressure to verify the Tank Pressure Switch adjustment.

8.2 CHECK OR CHANGE BACK PRESSURE REGULATOR ADJUSTMENT

8.2.1 PREPARATION: Adjust the back pressure regulator only -- *WHILE THE COMPRESSOR IS OPERATING AND THE TANK PRESSURE IS BETWEEN 29 AND 50 PSIG. (199 AND 345 kPa)*

Loosen the outlet air tube at the rear of the cabinet to increase the air flow rate. This will help to give more time to perform and validate the adjustment. Pull the Back Pressure Regulator adjuster knob about 1/4 inch to the unlocked position.

8.2.2 Wait until a purge blast occurs from one of the purge solenoid valve silencers. Turn the adjustment knob clockwise to raise, or counterclockwise to lower the Back Pressure. The acceptable adjustment range is 60 to 65 PSIG (414 - 448 kPa).

8.2.3 Continue to observe the back pressure gauge for not less than one full minute more. The first purge valve to purge after your adjustment will have purged a second time. This assures that you have observed the full timing cycle of the DRY-PAK®.

8.2.4 If the compressor stopped operating, or, if the tank pressure varied from the specified range before you completed your observation, repeat 8.2.3.

8.2.5 It is normal for the back pressure to rise slightly before a purge, or to fall slightly when the purge occurs. If the back pressure is much more erratic than (± 20 PSIG / ± 138 kPa) proceed to section 9.3.

8.3 CHECK OR CHANGE ALARM PRESSURE SWITCH ADJUSMENT

8.3.1 Both the High and Low line pressure alarm pressure switches are located on the side wall of the electrical compartment. Both may be adjusted while in normal operation.

8.3.2 Test the alarm switch operation before making an adjustment. Close the air valve at the pipe panel or meter panel supplied with dry air from the dryer. Reduce the line pressure and note the pressure at which the low pressure alarm occurs. Increase the line pressure and note the pressure at which the high line pressure alarm occurs. If either HIGH or LOW alarm switch operating pressure is incorrect, proceed to 8.3.3. If no adjustment is required, open the panel air flow valve.

8.3.3 The alarm pressure switches are identified by labels. Use a small screw driver and turn the adjustment screw GENTLY clockwise to increase or counterclockwise to reduce the pressure setting. Affirm the adjustment by means of the line pressure regulator, changing pressure slowly to obtain precision. Verify that any or all panel flow valves are opened when adjustment and tests are completed.

8.4 DUPLEX RUN ALARM TIMER ADJUSTMENT.

NOTE

The Dryer must be running in the "ALT" Mode.

8.4.1 The Duplex Run Alarm Timer (TD3) is located, and identified, in the Electrical Compartment. Before making adjustment, cause the dryer to run continually and measure the duration time from compressor "A" or "B" start-up, to the Duplex alarm activation.

8.4.2 The adjustment range and direction of increase/decrease are shown on the timer label. Make only very minor adjustment at any one time and then check the alarm delay as in 8.4.1. If the alarm does not function, replacement of the delay timer is indicated.

8.5 ALARM WIRING OPTIONS

8.5.1 ALARM OUTPUT OPTION 1: A summary "close in alarm" remote warning that one or more of the alarm circuits is active. To utilize this option leave the alarm terminal board as configured at the factory. Yellow jump wires connect "common" terminals in series, blue jump wires connect "close in alarm" terminals in series. Connect your remote alarm pair to terminals #1 and #24.

8.5.2 ALARM OUTPUT OPTION 2: Segregated alarms using a single common provide discrete indication of each alarm circuit, either close or open in alarm, but all at one potential. To utilize this option remove the blue jumps from the terminal board, leave the yellow jumps (which connect commons in series) in place. Connect your remote alarm common wire to terminal #1 and your remaining remote alarm wires to selected "Close In Alarm" or Open In Alarm" terminals as you prefer.

8.5.3 ALARM OUTPUT OPTION 3: A summary "open in alarm" remote warning that one or more of the alarm circuits is 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 #1 to #4 becomes #2 to #4 and move the remaining yellow jumps to connect #5 to #7, #8 to #10, #11 to #13, #14 to #16,#17 to #19, and #20 to #22. Remove the blue jumps from the terminal board. Connect your remote alarm pair to terminals #1 and #23.

8.5.4 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 the blue jump wires from the alarm terminal board. Connect your remote alarm wires to each alarm function terminal set to obtain "Open In Alarm" or "Close In Alarm", output as you prefer.

8.6 REPLACE COMPRESSOR FILTERS

8.6.1 Press the black filter cap towards the cylinder head and turn it counterclockwise. Remove the cap, discard the old filter and wipe the cap clean with a rag. Install the new filter element and reassemble in reverse order. Each cylinder has one filter element.

NOTICE - Do this only when compressor is not running, otherwise it may ruin the valves.

8.7 HUMIDITY ALARM MOISTURE TEST

8.7.1 Turn the dehydrator off and ***vent all the air pressure*** from the Sensor Manifold test valve. When the back pressure gauge indicates 0 PSIG, remove the sensor by turning the large hex nut at the top of the manifold counterclockwise. Remove the sensor carefully so that the sealing O-ring is not lost.

8.7.2 Wave the Sensor Element in the room air to allow it to become moist and then return it to the manifold. Be sure that the O-ring is in place, then hand-tighten the large hex nut (***do not use a wrench***).

8.7.3 Start the dehydrator and verify that the Humidity Alarm is active and that air escapes through the open port (port 3) of the Humidity Bypass Solenoid Valve.

8.7.4 While the alarm is active, move the humidistat test toggle to "TEST CLEAR" for a few seconds. Verify that the humidity alarm clears until the test toggle is released. Close the cabinet door. After several minutes of operation the alarm will clear automatically.

8.8 COMPRESSOR REBUILD

WARNING!!

RISK OF ELECTROCUTION - Disconnect from electrical power source: Before disconnecting compressor electrical quick-connect from cabinet electrical harness.

WARNING!

RISK OF BURNS - Normal compressor operation will cause head temperature to exceed 100°C. Be very careful when handling a hot compressor.

8.8.1 To remove the compressor from the cabinet:

a.- Disconnect the flexible hose from the compressor outlet using two wrenches (11/16 inch and 3/4 inch open end or comparable adjustable wrenches).

b.- Disconnect the electrical quick connect which joins the compressor electrical harness to the cabinet electrical harness.

c.- Loosen the nuts from the four support-shock mounts with a 1/2 inch open end wrench. Remove the nuts

and washers.

d.- Lift the compressor assembly free of the shock mounts and remove the compressor from the cabinet.

8.8.2 Refer to Illustration 8, "COMPRESSOR - Exploded View" before disassembly of the compressor.

8.8.3 **DO NOT** remove the inlet filter assemblies (1) from the cylinder heads.

8.8.4 Loosen the four #2 Phillips screws and remove the plastic Compressor Fan Shroud (39).

8.8.5 Do not lubricate any part of 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 wipe down with a cloth dampened with clean water. Use a 3/4 inch open end wrench to loosen the manifold nuts (41) on the manifold tube (42) between the left and the right cylinder heads (20). DO NOT REMOVE THE MANIFOLD TUBE UNTIL ONE HEAD HAS BEEN REMOVED!

8.8.6 Use a 3/16 inch Allen hex wrench to remove the cylinder head and valve components (22, 23 and 24) from one cylinder. Next remove the manifold tube, and then the opposite cylinder head. It may be necessary to use a knife or razor blade to remove the gasket material (21 and 25) from the head and cylinder. Be very careful not to scratch the aluminum surfaces.

8.8.7 Remove the two Cylinder Screws (27) which hold each Cylinder (26) and slide the cylinders outward, over the Pistons (30). Remove the Piston Rings (28), Piston Seals (29) and Piston Rider Rings (31) from the pistons.

NOTE!!!

Do not lubricate any part of 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 wipe down with a cloth dampened with clean water.

8.8.8 Examine the heads, pistons and cylinders for scratches or scars on working surfaces. Clean the parts only with a cloth and soapy water if they are dirty or greasy. Do not reuse scratched components.

8.8.9 Install a new piston seal in one ring grove of one piston and hold it in place by installing a piston ring over the seal. Place the joint in the piston ring opposite to the joint in the piston seal. Be sure that the ring covers the entire seal all around the piston. Repeat with each of the 3 remaining seals and rings. If the joints of the piston rings on either piston are nearly aligned, rotate one ring until its joint is not less than 45 angular degrees from the adjacent ring joint.

8.8.10 Place a Piston Rider Ring (31) on one piston and slide a cylinder gently over the piston rings and rider ring. Be sure that no part of the rider ring protrudes from the cylinder, and that the cylinder will slide smoothly on the piston. Attach the cylinder to the motor front bracket, using two screws. Tighten the screws ONLY FINGER TIGHT. Repeat for the opposite cylinder of the compressor.

8.8.11 Rotate the motor shaft and move the pistons to the extreme outward position (top dead center). Move each cylinder so that it is even with the top of the piston. Torque the cylinder screws to 150 pound-inches (18.44 Nm). Place a flat bar vertically across the open cylinder. Rotate the motor shaft. The piston should contact the flat bar without lifting the bar from the cylinder surface. The cylinder gasket (25), when added, will provide the correct piston-to-valve clearance when the head assembly is secured.

8.8.12 The aluminum head, the head gasket and the outlet valve, each have 4 bolt holes at the corners and a single, smaller hole, (a “pilot” hole) for reference in aligning the components correctly. The aluminum valve plate, the inlet valve and the cylinder gasket each have 4 bolt holes at the corners, and two smaller holes (“pilot holes”) for the same purpose.

NOTE!

The following procedure will assure that cylinder heads and valve components are correctly positioned during reassembly!

8.8.13 Hold the head in one hand, with its inside up, and with two head bolts protruding upward through the head. Align the pilot hole in the head gasket and the outlet valve, with the pilot hole in the head and place them on the head. The pilot hole in the head must still be visible through the pilot holes in the components. The outlet valve has a “finger” on one side, an oblong hole in the opposite side. The inside of the head must still be visible through the oblong hole in the outlet valve.

8.8.14 Place the aluminum valve plate on next, so one pilot hole aligns with that in the head, the outlet valve finger can be moved by pushing gently with a pencil through the outlet air passages of the aluminum plate and so that the inside of the head is still visible through the inlet air passages of the aluminum plate. Next add the inlet valve so that its finger covers the inlet air passages and the outlet valve finger can still be seen and can be moved with a pencil through the outlet air passages. Add the cylinder gasket, then loosely connect the assembly to the cylinder. Loosely install the manifold on the first head, after installing new Manifold Sleeves (40). DO NOT TIGHTEN the head bolts at this time. Repeat with the opposite head.

8.8.15 Tighten the four Allen head screws of each head finger tight. Torque the screws to 120 pound-inches (13.83 Nm) using a 3/16 inch Allen hex wrench.

8.8.16 Install the Compressor Fan Shroud with the four screws and washers previously removed.

8.8.17 Position the manifold and tighten the manifold nuts with a wrench, 1/2 to 3/4 turns more than hand tight.

NOTE!

Minor air leakage at the head-valve-cylinder joints is normal. DO NOT SEAL the gaskets with joint compound or sealant as damage to the assembly will occur. Do not attempt to eliminate leakage by exceeding recommended torque values as distortion will result.

8.8.18 Carefully reinstall the compressor into the cabinet so that it rests on all four shock mounts. Install the four lock washers and nuts, tighten to not more than 70 pound-inches (8 Nm). Hold the outlet air fitting with a wrench while tightening the flexible hose nut. Reconnect the electrical quick-connect before restoring the cabinet power cord connection.

8.9 DRY-PAK® CYCLING TEST

8.9.1 The DRY-PAK® only cycles when the compressor is operating. Loosen the air outlet tube at the rear of the cabinet, if necessary, to cause the dehydrator to continue operating for several minutes.

8.9.2 With the compressor operating and the back pressure adjusted as per section 8.2, an audible purge should be heard each 30 seconds. A blast of air from the purging valve silencer can be felt simultaneously. 30 seconds later the opposite purge valve will provide the same indications. This is indication that the Heatless dryer is cycling normally. If cycling is normal, tighten the air outlet tube. If trouble shooting, refer to section 9.4.

9.0 TROUBLE SHOOTING

9.1 Trouble Shooting Low or High Pressure Alarm

9.1.1 Perform adjustment procedures as per section 8.3 to verify that a malfunction exists. Close the valve or valves at the meter panel (s) supplied by the dehydrator.

a.- leave the dehydrator in normal operation and use the ohm-meter ONLY AT THE REMOTE ALARM TERMINAL BOARD TB2, while the remote device connection wires are DISCONNECTED.

b.- To check any of the alarm circuit except a. above, TURN THE DEHYDRATOR OFF AND DISCONNECT FROM THE ELECTRICAL POWER SOURCE BEFORE USING AN OHM METER TO CHECK THE CAUSE OF MALFUNCTION.

c.- To check either alarm pressure switch: Remove the black wire terminal from the COMMON terminal of the suspect pressure switch. If checking the Low Line Pressure Alarm switch, remove the violet (purple) wire terminal. If checking the High Line Pressure Alarm switch, remove the gray wire terminal.

9.1.2 **SYMPTOM:** The (high or low) line pressure alarm light (schematic symbol LT4 or LT5) on the front panel WILL NOT ILLUMINATE and the remote alarm terminals (schematic symbol TB2-10,11,12 OR TB2-13,14,15) of the effected circuit DO NOT respond TO SWITCH ADJUSTMENT:

CORRECTIVE ACTION: disconnect from power and replace the effected pressure switch (P/N 46752) and adjust per section 8.3.

9.1.3 **SYMPTOM:** The (high or low) line pressure alarm light (schematic symbol LT4 or LT5) on the front panel REMAIN ILLUMINATED/WILL NOT CLEAR and the remote alarm terminals (schematic symbol TB2-10, 11, 12 OR TB2-13, 14, 15) of the effected circuit WILL NOT RESPOND TO SWITCH ADJUSTMENT:

CORRECTIVE ACTION: Disconnect from power and replace the effected pressure switch (P/N 46752) and adjust per section 8.3.

9.1.4 **SYMPTOM:** The (high or low) line pressure alarm light (schematic symbol LT4 or LT5) on the front panel WILL NOT ILLUMINATE but the remote alarm terminals (schematic symbol TB2-10, 11, 12 OR TB2-13, 14, 15) of the effected circuit DO RESPOND TO SWITCH ADJUSTMENT:

CORRECTIVE ACTION: Replace the effected light.

9.1.5 **SYMPTOM:** The (high or low) line pressure alarm light (schematic symbol LT4 or LT5) on the front panel WILL ILLUMINATE AND CLEAR but the remote alarm terminals (schematic symbol TB2-10, 11, 12 OR TB2-13, 14, 15) of the effected circuit DO NOT RESPOND TO SWITCH ADJUSTMENT:

CORRECTIVE ACTION: First verify that the alarm wires are connected to the correct terminals of TB2. If the malfunction persists replace the effected relay.

9.2 TROUBLE SHOOTING A HUMIDITY ALARM

9.2.1 The following is a list of conditions which can cause a humidity alarm and the order in which to proceed:

a: Test for faulty alarm circuit (section 9.2.2).

b: Test for low back pressure (section 8.2).

c: Test for DRY-PAK® not cycling - refer to: *8.9* DRY-PAK® *Cycling Test.* and to: *9.3 TROUBLE SHOOTING* DRY-PAK® *CYCLING INTERRUPTION*.

d: Back pressure falls to near 0 PSIG while compressor is operating. Refer to: *9.3.3 PRESSURE FLUCTUATION.*

e: Continual humidity alarm, but Heatless Dryer cycle, back pressure and operating duty cycle are normal. Refer to: section 9.3.4.

f: Intermittent humidity alarm. Humidity alarm clears automatically after a period of continual operation. After a period of alarm free operation the humidity alarm reoccurs. Refer to section 9.4.

g:- If you have found and corrected an obvious cause of the humidity alarm and yet the alarm persists, refer to section 9.4.

9.2.2 Humidity Circuit Test

9.2.2.1 When trouble shooting a humidity alarm, first verify the operation of the humidistat, located on the front panel.

9.2.2.2 If the humidity alarm is active and the amber (yellow) LED ON THE HUMIDISTAT is lit, VERIFY THE ALARM by moving the test toggle to "Test Alarm". If this action temporarily clears an amber alarm, the humidistat is operating correctly. Refer to 9.2.3 "Valid Open Alarm". If the test toggle will not temporarily clear the amber LED when it is lit, replace the humidistat.

9.2.2.3 If the humidity alarm is active and the red LED ON THE HUMIDISTAT is lit: VERIFY THE ALARM by moving the test toggle to "Test Clear". If this action temporarily clears the alarm, the humidistat is operating correctly. Refer to 9.2.3: "Valid Humidity Alarm". If the test toggle will not temporarily clear the red LED when it is lit, replace the humidistat.

9.2.3 Valid Open Alarm - If the amber LED on the humidistat is lit and the test toggle will temporarily clear it, (section 9.2.2.2) 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. Do not test the sensor with a direct current ohm meter, as sensor calibration will be destroyed.

9.3 TROUBLE SHOOTING DRY-PAK® CYCLING INTERRUPTION

9.3.1 Having found the dryer cycle to be interrupted (8.9), TURN THE DEHYDRATOR OFF AND DISCONNECT FROM POWER SOURCE BEFORE CONTINUING! Disconnect both wire leads of each purge solenoid valve coil. Measure the resistance of each coil with an ohmmeter. Normal coil resistance is 260 ± 30 ohms. If either coil is open or shorted, replace the coil assembly. Be sure coil connections are secure when finished. If when the dehydrator is restarted, normal cycling is resumed, proceed to 9.4, if not, to 9.3.2.

9.3.2 If cycle interruption continues, replace the timer. When cycling is restored, proceed to 9.4.

9.3.3 PRESSURE FLUCTUATION. If the back pressure falls to 0 PSIG at any time when the compressor is operating it indicates that one purge solenoid valve has failed to close. This can be corrected by installing valve repair kit P/N 0024815021. Install kits in both valves so that both are in new condition. When the valve repair is completed and cycling is restored, proceed to section 9.4.

9.3.4 If DRY-PAK® cycling and back pressure are normal and if the dehydrator operates more than once each hour, replace the purge mufflers. After installation of new purge mufflers, if a noticable increase in purge noise is noted, proceed to section 9.4. If all operational checks reveal no reason for the alarm condition, but the alarm persists, replace the sensing element. If the alarm persists, go to section 9.4.

9.3.5 If the humidity alarm repeatedly occurs and automatically clears after a period of continual operation, increase the back pressure regulator setting to 69 PSIG (476 kPa) **(53 PSIG (365 kPa) on Model 7200/ 60Hz ONLY)**. This type of humidity alarm is often the result of an exceptionally high-capacity compressor or of infrequent DRY-PAK® operation. In either case the extra back pressure will eliminate the problem.

9.4 DRY-DOWN AFTER REPAIR

If the cause of a valid humidity alarm has been corrected, the unit must operate after repairs are completed for perhaps an hour or more in order to dry the desiccant towers and clear the humidity alarm. If a defective sensor element was the cause of alarm, it will normally clear after 5 to 15 minutes of operation with a new sensor in place.

9.4.1 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 DRY-PAK® desiccant towers is recommened.

9.4.2 If none of the above procedures solve the humidity alarm, replace the DRY-PAK®.

NOTES

TABLE IV
SPARE PARTS LIST FOR Model 7200 COMPRESSOR DEHYDRATOR

Item	Part No.	Description	Quantity
1	41136	Light, Power On (Clear)	1
2	43137	Line Pressure regulator	2
3	44002	Filter Assembly (See Heatless Dryer Assy.- Fig.6)	2
3a	44177	Replacement Filter Element, 5 micron	2
4a	47116	Compressor Circuit Breaker - (Model 5000)	2
4b	44018	Compressor Circuit Breaker - (Model 7200)	2
5	44416/105139	Air Storage Tank ASME/CE Certified	1
6	44746	Heat Exchanger Assembly	2
7	0045024503	Flex Hose	2
8	46752	Line Pressure Switch - High or Low	2
9	47048	Humidity Bypass Solenoid Valve	2
9a	47317	Humidity Bypass Solenoid Valve Coil	-
9b	0024815021	Humidity Solenoid Valve Repair Kit	-
10	47097	Elapsed Timer (Hour Meter)	2
11a	60832	DRY-PAK® Assembly (Model 5000)	2
11b	60833	DRY-PAK® Assembly (Model 7200 - 50Hz)	2
11c	60834	DRY-PAK® Assembly (Model 7200 - 60Hz)	2
12	47217	Fan (220V/50Hz)	2
13	105149	Duplex Run Timer	1
14	0049983001	Outlet Air Flow Meter	1
15	34709	Humidistat	2
17	47053	Compressor Control Relay (3 pole, 220V/50Hz)	2
18	51627	Alternating Relay	1
19	51626	Relay (4 PDT)	3
21	0005390070	Line Pressure Gauge 200 Kpa (0 - 30 PSI)	2
22	0005390071	Tank Pressure Gauge 1100 Kpa (0 - 160 PSI)	1
23	89795	O-Ring, Sensing Element Nut Seal	2
24	14127	Relay Bracket Case (220V)	10
25	15688	Sensing Element	2
26	0017221082	Pressure Gauge (7000Kpa/100PSI)	2
27	0017495001	Schrader Valve	6
28	33384	Excess Run Timer	2
29	51625	Rotary Switch	1
30	0018568011	Shock Mount	8
31	0020523003	Back Pressure Regulator	2
32	105142	Tank Pressure Relief Valve ASME CE	1
33a	0023009026	Compressor (Model 5000 - 50Hz)	2
33b	0023009023	Compressor (Model 5000 - 60Hz)	2
33c	0023009029	Compressor (Model 7200 - 50Hz)	2
33d	0023009014	Compressor (Model 7200 - 60Hz)	2
34	30986	Sensor Plug	2
35a	34721	S.S. Timer (All Model 5000s and 7200/50Hz	2
35b	12441	S.S. Timer Model 7200/60Hz Only	2
37	36696	Brass Barb Connector (part of 46752)	2
38	37977	On-Off Control Circuit Breaker -.5 Amp, 2 pole	3
39	41135	Light, Alarm (Red)	7
40	51623	On / Off Switch	1
41	-	Alarm Terminal Board	ref.
42	0060353003	Start/Stop Pressure Switch	1
43	40151-2	Cabinet Filter	1

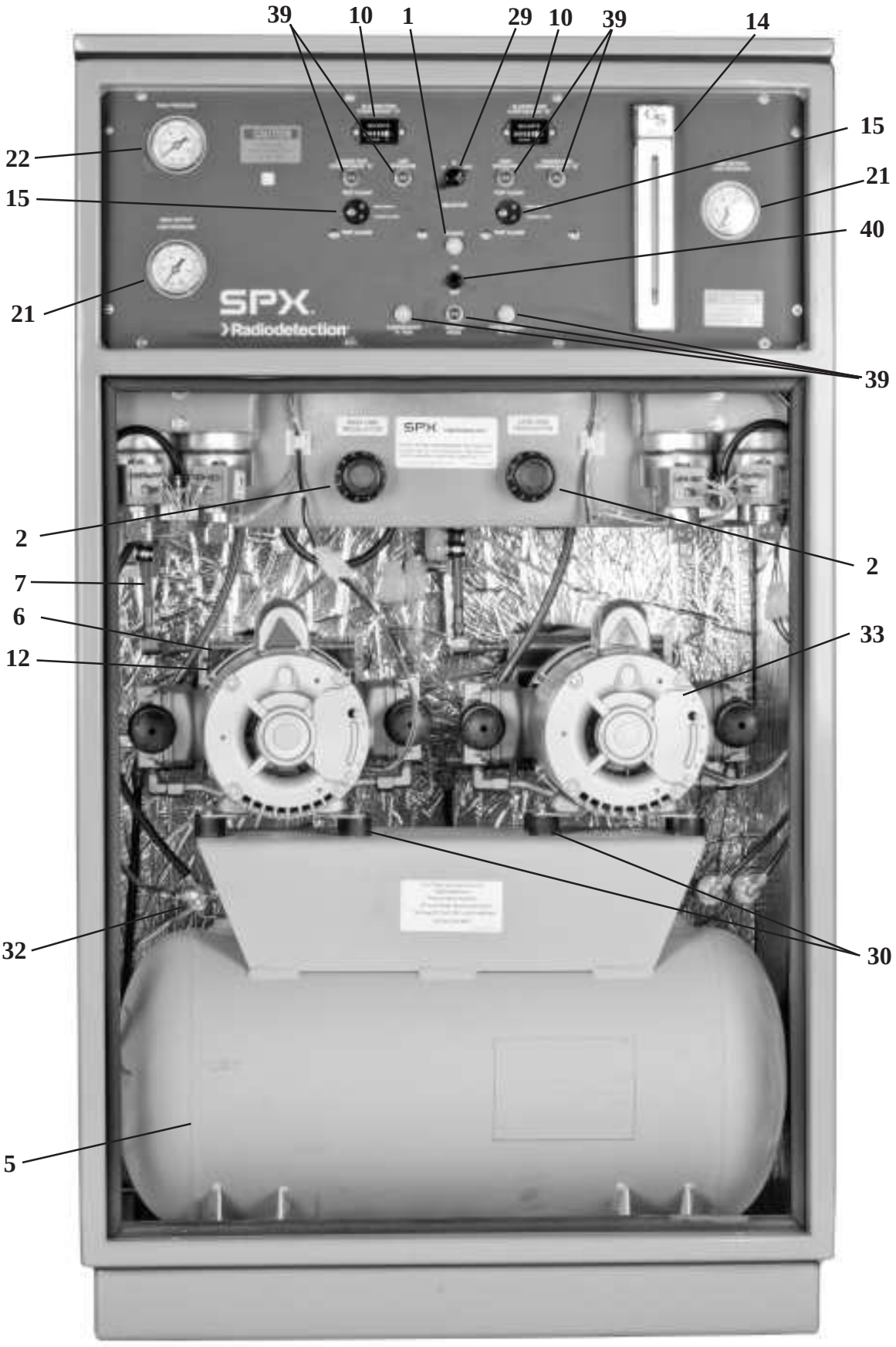


Figure 4
Model 7200 Air Dryer (front view)

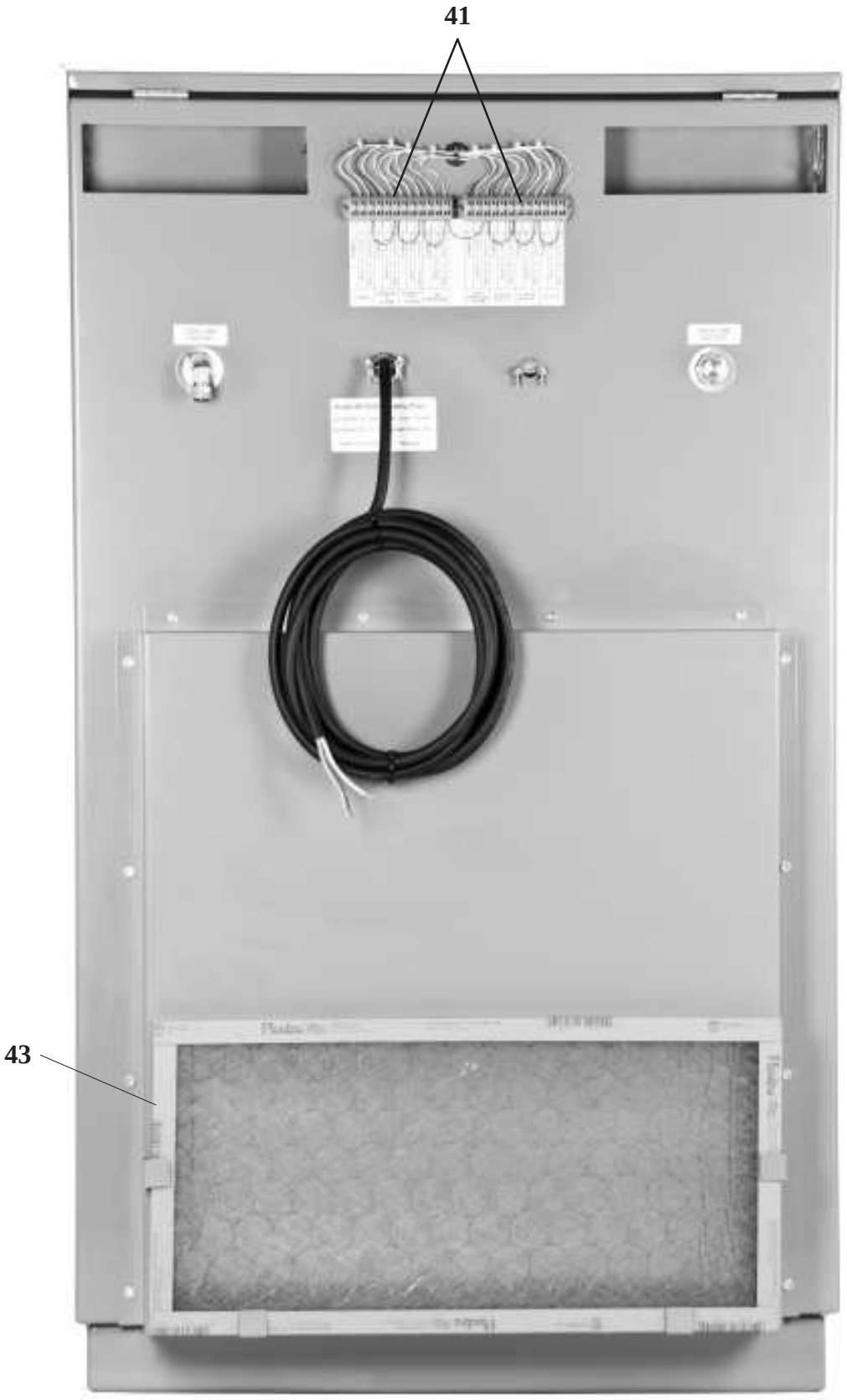


Figure 5
Model 7200 Air Dryer (rear view)

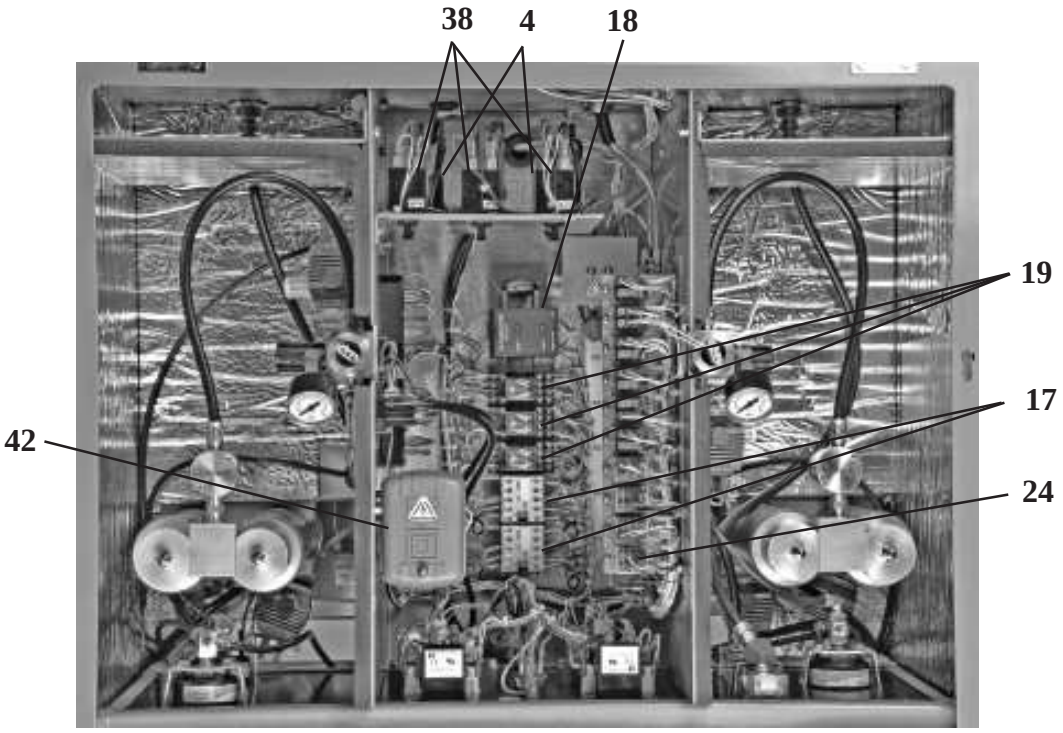


Figure 6
Model 7200 Air Dryer (inside top view)

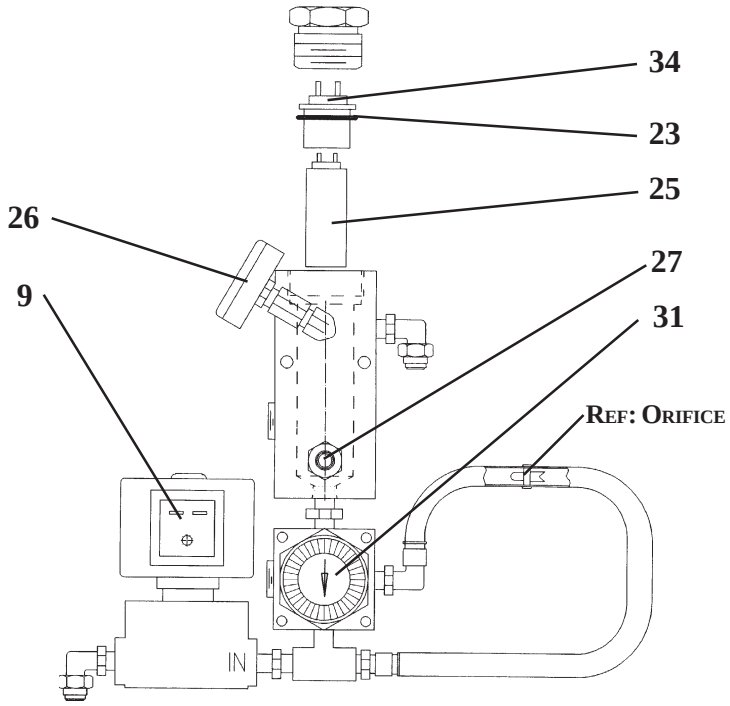


Figure 7
Humidity Manifold Assembly

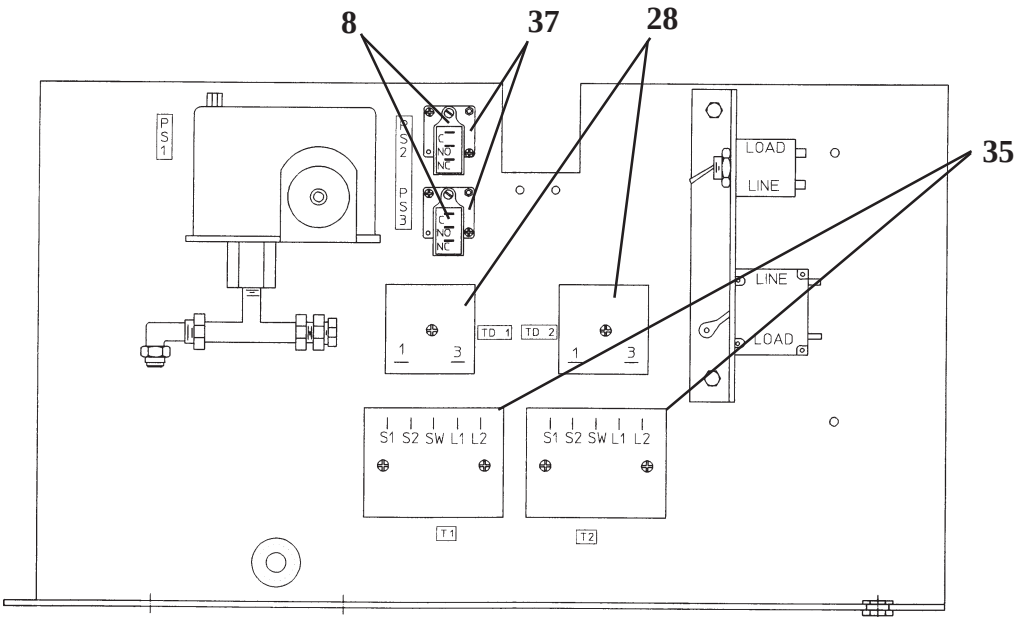


Figure 8
Electrical Compartment Wall (inside left)

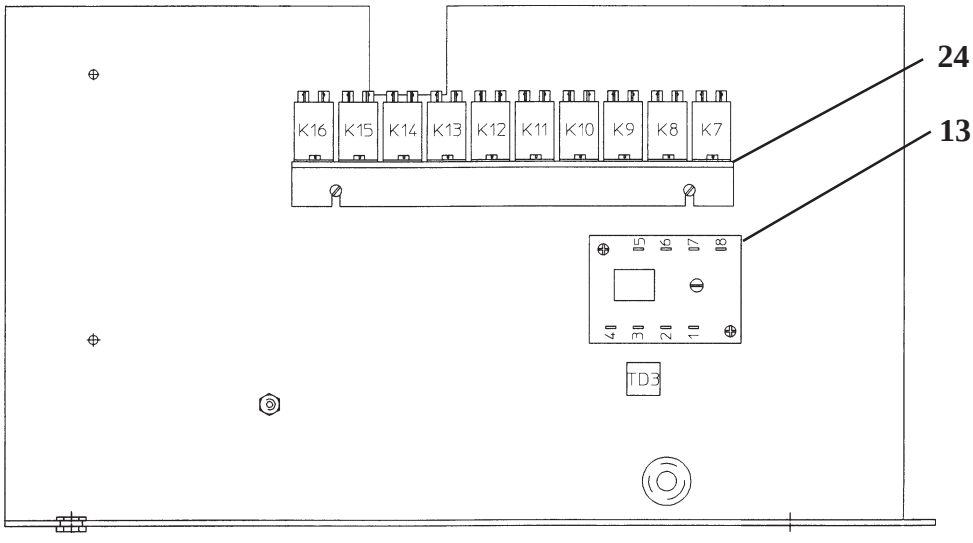


Figure 9
Electrical Compartment Wall (inside right)

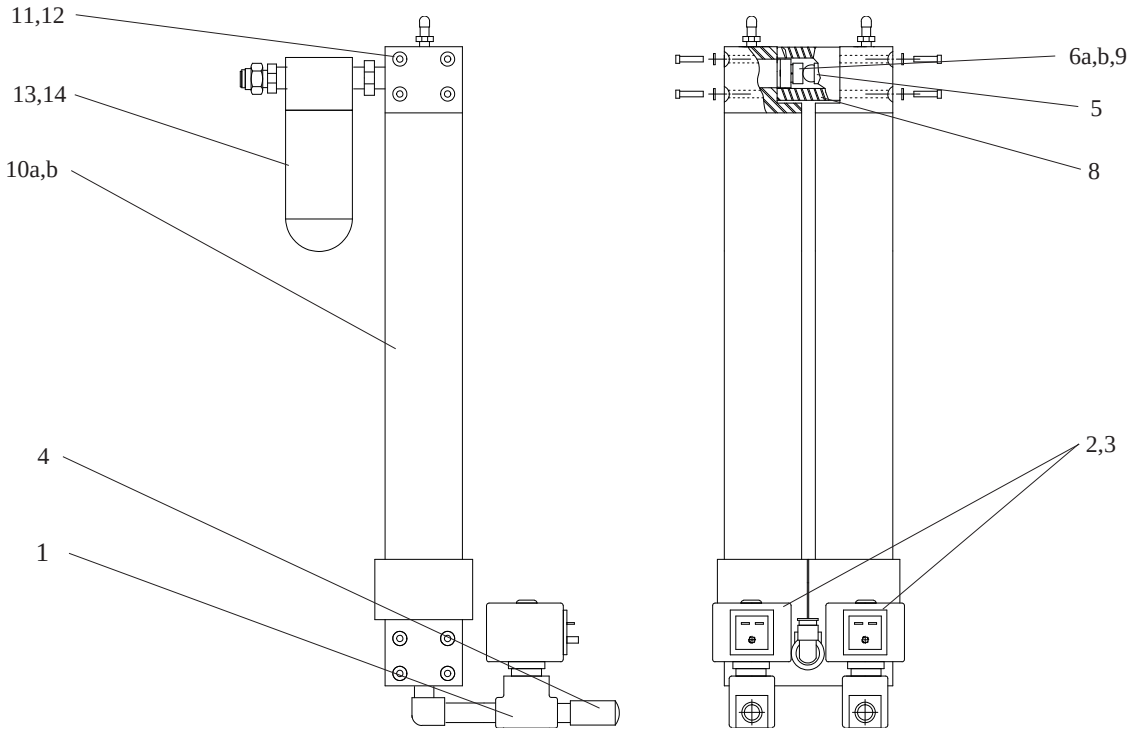
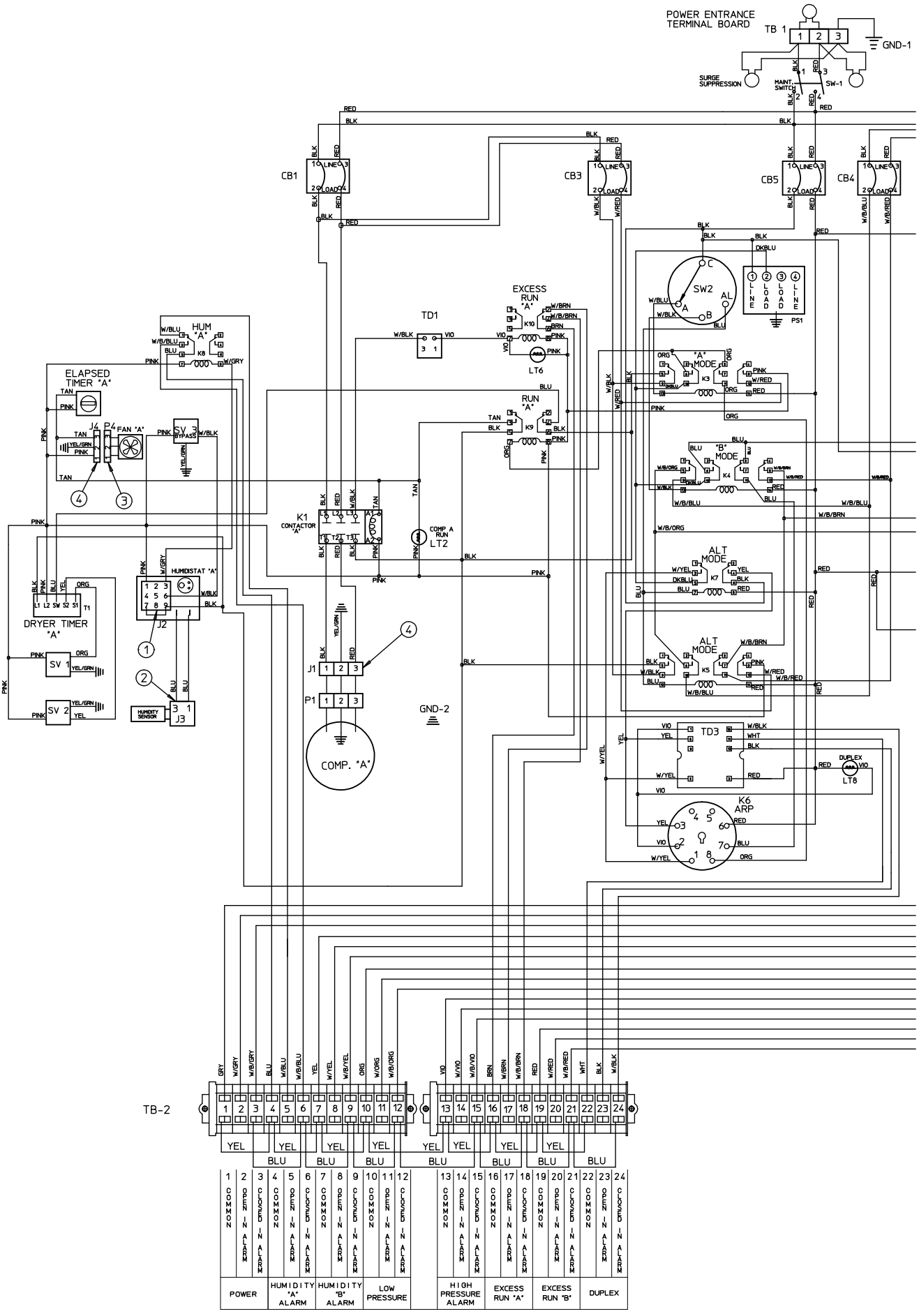


Figure 10
DRY-PAK® **Assembly**

1	Purge Valve -All 230/220v Models (2 required)	47046
2	Valve Repair Kit (mechanical parts-2 required)	0024815022
3	Purge Solenoid Valve Electric Coil 230/220v, 60/50 hz	47315
4	Purge Solenoid Valve Silencer (2 required)	0022646001
5	Ball Check (2 required)	0015903003
6a	Top Ball Valve Seat with drilled orifice (5000 / 7200)	47314
6b	Top Ball Valve Seat with drilled orifice (7200 - 60Hz only)	60841
7	Bottom Ball Valve Seat (no orifice, 2 required)	37393
8	Center Block	37392
9	Valve Seat O-ring Seal	0014000115
10a	Model 5000 Desiccant Cylinder Assembly (2 required)	47114
10b	Model 7200 Desiccant Cylinder Assembly (2 required)	45992
11	Desiccant Cylinder Socket Head Cap Screws	0011032150
12	Lock Washer for item 18-11	0161000000
13	Filter Housing	47002
14	Replacement 5 micron Filter Element	44177


POWER ENTRANCE TERMINAL BOARD
TB 1
GND-1
SURGE SUPPRESSION
MAINT. SWITCH
SW-1
CB1
CB3
CB5
CB4
SW2
PS1
TD1
EXCESS RUN "A"
LT6
RUN "A"
"A" MODE
"B" MODE
ALT MODE
ALT MODE
ALT MODE
HUM "A"
ELAPSED TIMER "A"
FAN "A"
SV BYPASS
DRYER TIMER "A"
SV 1
SV 2
HUMIDISTAT "A"
HUMIDITY SENSOR
J2
J3
K1 CONTACTOR "A"
COMP. A RUN
LT2
J1
P1
COMP. "A"
GND-2
TD3
DUPLEX
LT8
K6 ARP
TB-2
POWER
HUMIDITY "A" ALARM
HUMIDITY "B" ALARM
LOW PRESSURE
HIGH PRESSURE ALARM
EXCESS RUN "A"
EXCESS RUN "B"
DUPLEX

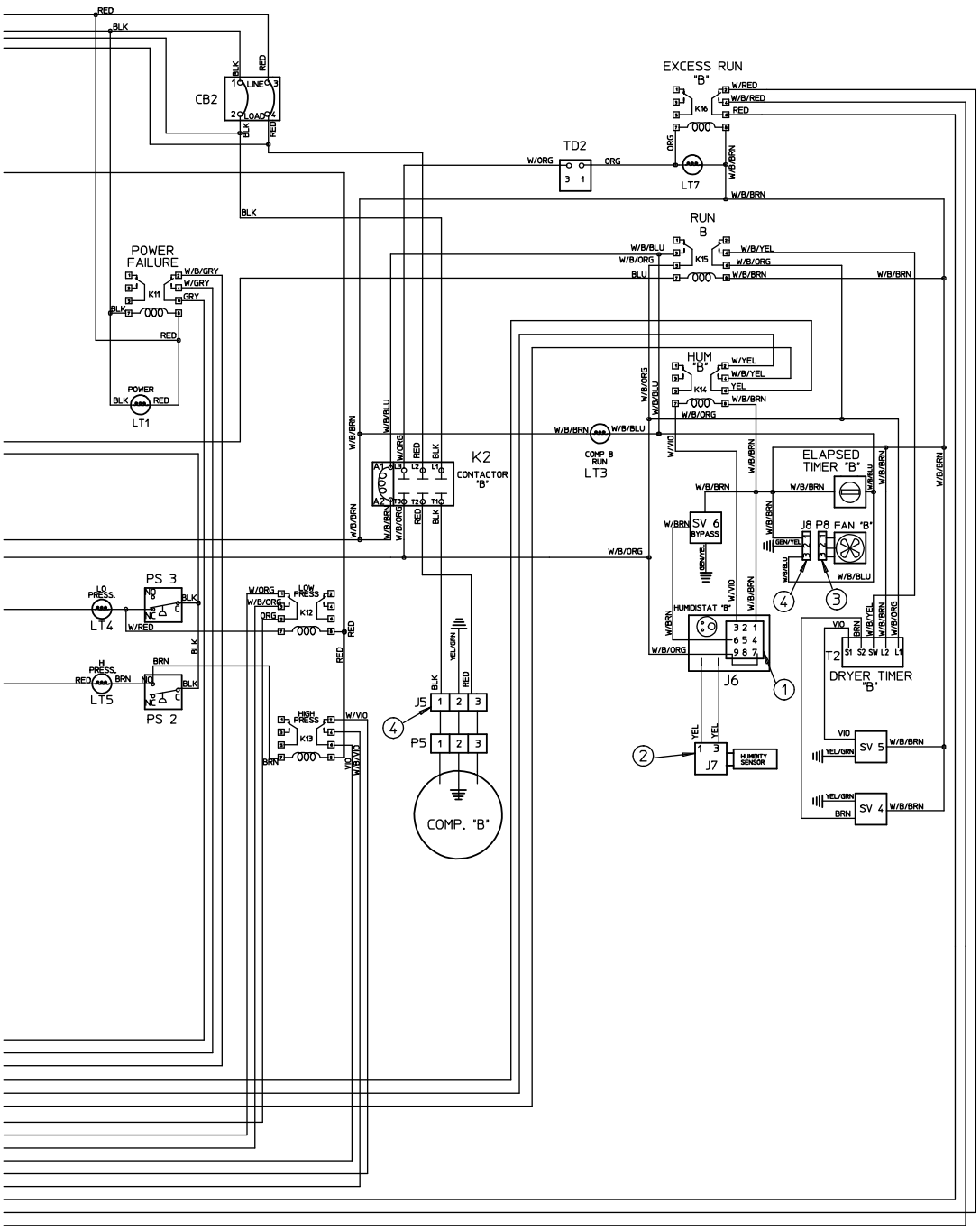


Figure 11
Electrical Schematic

TABLE V
ELECTRICAL PARTS - LOCATIONS AND FUNCTIONS

CB 1 —10 amp / 7.5 amp, 2 pole Compressor "A" Circuit Breaker, located inside electrical compartment on rear CB Panel — provides current to CB 3 and to Compressor A via K1 Contractor.

CB 2 —10 amp / 7.5 amp, 2 pole Compressor "B" Circuit Breaker, located inside electrical compartment on rear CB Panel — provides current to CB 4 and to Compressor B via K2 Contractor.

CB 3 —0.5 amp, 2 pole CONTROL "A" Circuit Breaker, located inside electrical compartment on rear CB Panel — provides current to "A" side Control Circuitry.

CB 4 —0.5 amp, 2 pole CONTROL "B" Circuit Breaker, located inside electrical compartment on rear CB Panel — provides current to "B" side Control Circuitry.

CB 5 —0.5 amp, 2 pole Mode Control Circuit Breaker, located inside electrical compartment on rear CB Panel — provides current to Mode Switch, Mode Controlling Relays, and Duplex Timer.

Comp A/Comp B —Oil Free Compressor/Motor Assembly, located in cabinet base on Air Storage Tank.

Fan "A"/Fan "B" —Cabinet Ventilation Fan, located on cabinet rear surface — powered by K9 and K15 Run "A" and Run "B" Relays.

Humidity Sensor —Located inside electrical compartment on Humidity Manifold "A" and "B", left and right side wall — responds electrically to any changes in moisture content of the dry air from the Heatless Dryer.

Hum "A"/Hum "B" —Humidistat, located on the front control panel — provides current to SV3/SV6 when clear or to K8/K14 if in alarm.

J1/P1-J5/P5 —Polarized Pin and Socket Connector, 3 positions - connects Cabinet Harness to Compressors Harness.

J2/J6 —Polarized Socket Connector, 9 positions - located on Humistats "A" and "B".

J3/J7 —Non Polarized Connector, 3 position (center not used), located inside electrical compartment on Humidity Sensor Manifold — connects to Humidity Sensor Plug.

ET "A"/ET "B" —Elapsed Timer (Hour Meter) located on front control panel — Shows the total hours of Compressor and Air Dryer Operation

K1/K2 —Contractor "A" and "B", located inside electrical compartment on Bottom Din Rail — provides current to Compressors and to Excess Run Timers TD 1 and TD 2.

K3 —Relay, 4PDT 240/220 VAC Coil, located inside electrical compartment on Bottom Din Rail — provides current to "A" Mode Control Circuitry.

K4 —Relay, 4PDT 240/220 VAC Coil, located inside electrical compartment on Bottom Din Rail — provides current to "B" Mode Control Circuitry.

K5 —Relay, 4PDT 240/220 VAC Coil, located inside electrical compartment on Bottom Din Rail — provides current to Alternating Mode Control Circuitry

K6 —Relay Alternating, located inside electrical compartment on Bottom Din Rail — alternates duty cycle between Compressor A and Compressor B and Duplexes (Running Both Compressor) when excess flow demand exists.

K7 —Relay, DPDT 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — provides current to Alternating Mode Control Circuitry.

K8/K14 —Relay, Humidity DPDT 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — provides Remote Alarm Signal to TB2 for Humidity "A" and Humidity "B" Alarms.

K9/K15 —Relay, DPDT 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side — provides "Run A" and "Run B" Control Circuitry.

K10/K16 —Relay, Excess Run, 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — provides Remote Alarm Signal to TB2 for Excess Run "A" and Excess Run "B".

K11 —Relay, Power Failure, 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — monitors incoming power and provides a Remote Alarm Signal to TB2 for power loss.

K12 —Relay, Low Pressure, 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — provides Remote Alarm Signal to TB2 for Low Pressure Alarm.

K13 —Relay, High Pressure, 240/220 VAC Coil, located inside electrical compartment on Relay Bracket, right side wall — provides Remote Alarm Signal to TB2 for High Pressure Alarm.

LT1 —Power on Indicator (Amber), located on front control panel.

LT2/LT3 —Compressor RUN A and COMPRESSOR RUN B Indicator (Amber), located on front control panel — illuminates when Compressor(s) Run.

LT4 —Low Line Pressure Alarm Indicator (Red), located on front control panel — illuminates when Low Line Pressure Alarm.

LT5 —High Line Pressure Alarm Indicator (Red), located on front control panel — illuminates when High Line Pressure Alarm.

LT6/LT7 —Excess run A and Excess run B Indicator (Red), located on front control panel — illuminates when Compressor exceeds 10 minutes of continuous operation.

LT8 —Duplex Indicator (Red), located on front control panel — illuminates when Single Compressor exceeds pre set Duplex Time (TD3) for both Compressor to operator together.

PS 1 —Start/Stop Tank Pressure Switch, located inside electrical compartment on left side wall — provides current to Mode Relays K3, K4 and K7 which control Run Relay K9 and K15. Provides on/off cycling control of Compressors.

PS 2 —Adjustable High Line Pressure Switch, located inside electrical compartment on left side wall beside Start/Stop Pressure Switch — provides current to HI Pressure Alarm Indicator (LT5) and Relay K13 when in alarm.

PS 3 —Adjustable Low Line Pressure Switch, located inside electrical compartment on left side wall beside Start/Stop Pressure Switch — provides current to Low Pressure Alarm Indicator (LT4) and Relay K12 when in alarm.

T1/T2 —DRY-PAK® Timer “A” and “B”, located inside electrical compartment on left side wall — provides 25 seconds of current and 5 seconds of “dwell” (current interruption) alternately to SV1/SV2 and SV4/SV5 of the DRY-PAK®. L1 and L2 of T1/T2 are continually energized when the Dehydrator is powered, providing the uninterrupted memory function which balances the work load on the desiccant towers of the DRY-PAK®. (27/3 sec. for model 7200 60Hz only)

TD1/TD2 —Excess Run Time Delay “A” and “B”, located inside electrical compartment on left side wall — provides current to Excess Run Relays K10/K16 after 10 minutes of continuous operation of Compressors “A” and “B”.

TD3 —Duplex Run Timer, located inside electrical compartment on right side wall below Relay Bracket — provides current to alternating Relay (K6) after adjusted time delay causes Duplexing (both Compressors operating together) when unit in “Alt Mode”, also provides current to Duplex Indicator and Remote Alarm Signal to
TB2.

SV1/SV2 —Normally closed Purge Solenoid Valve, located at base of Heatless Dryer, operating by T1-S1 and T1-S2.

SV3/SV6 —3 way Bypass Solenoid Valve, located outside the electrical compartment on Humidity Manifolds “A” and “B” (left and right side walls) — when Humidity Alarm is clear, valve is energized allowing dry air to flow to storage tank. Vents wet air through port # 3 if in Humidity Alarm.

SV4/SV5 —Normally closed Purge Solenoid Valve, located at base of DRY-PAK®, operating by T2-S1 and T2-S2.

SW1 —Main Power Disconnect Switch, located on front control panel — interrupts input power to air dryer on/off switch.

SW2 —Mode Selection Switch, located on front control panel — selection of “A” Mode, “B” Mode or Alternating Mode of Operation, provides current to “Mode Relays”.

TB1 —Main Power Entrance Terminal Board, located inside electrical compartment on Bottom Back Shelf — wire termination for incoming power cord.

TB2 —-Remote Alarm Terminal Board, located on rear back surface of Dehydrator — provides voltage free independent open or close contracts for various alarm conditions.

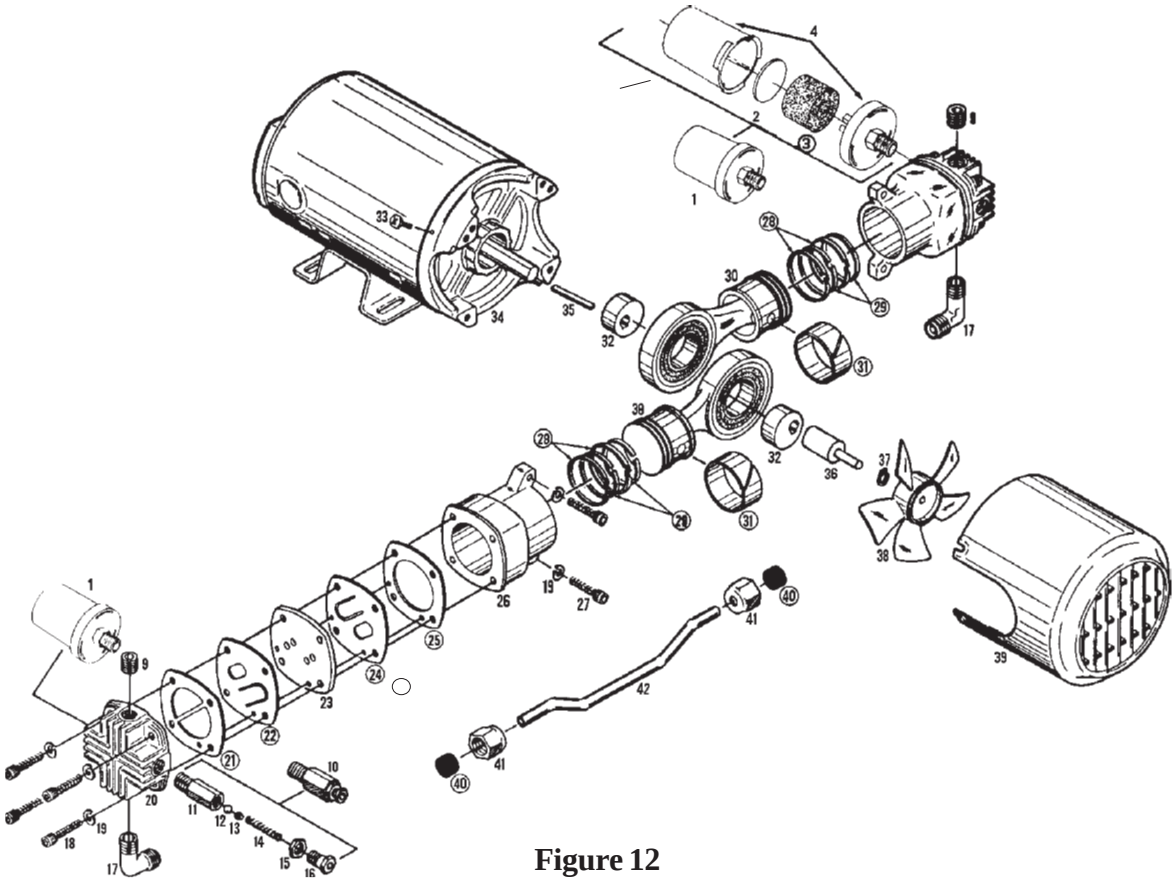


Figure 12
Compressor - Exploded View

TABLE VI - SPARE PARTS LIST FOR COMPRESSOR

Item	Description	Qty	Part Number
1	Inlet Filter Assembly	2	0023601002
*3	Replacement Felt Element for Inlet Filter	2	0021990001
9	Pipe Plug	2	Reference
10	Safety Valve	1	0023630002
17	Manifold Elbow	2	Reference
18	Head Screw	8	Reference
19	Lock washer	12	Reference
20	Cylinder Head	2	Reference
*21	Head Gasket	2	Reference
*22	Valve, Outlet	2	Reference
*23	Valve Plate	2	Reference
*24	Valve, Inlet	2	Reference
*25	Cylinder Gasket	2	Reference
26	Cylinder	2	0023637001
27	Cylinder Screw	4	Reference
*28	Piston Ring	4	Reference
*29	Piston Seal	4	Reference
30	Piston Rod Assembly with eccentric	2	Reference
*31	Piston Rider Ring	2	Reference
38	Fan Blade	1	0023643003
39	Fan Shroud	1	0024398001
*40	Manifold Sleeve	2	Reference
41	Manifold Nut	2	Reference
42	Manifold Tube	1	Reference
* =	Parts contained in Compressor Maintenance Kit P/N 0027406501		

GLOSSARY of TERMS

Altitude: The distance which the installation is above sea level expressed in feet, 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. Dielectric 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 Dielectric established a dew point of -40°F as standard for their compressor / dehydrators and for the pressurization of the communications equipment which is produced at Dielectric. NOTE: -40^0 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 Dielectric 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.

Duplex: A mode of dryer operation where both dryer systems operate together. This mode of operation can only occur when the dryer is operated in the automatic alternating mode.

Elevation: The distance which the installation is above sea level expressed in feet, 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/Kilopascal 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.).

PSIG/kPa: Pounds per Square Inch Gauge / Kilopascal. 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/Standard Cubic Meters per Day. A rate of air flow measured in cubic feet at 14.7 PSIA and 68^0 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.

Radiodetection (USA) 28 Tower Road, Raymond, Maine 04071, USA
Tel: +1 (207) 655 8525 Toll Free: +1 (877) 247 3797 Fax: +1 (207) 655 8535 rd.sales.us@spx.com www.radiodetection.com

Radiodetection Ltd. (UK) Western Drive, Bristol BS14 0AF, UK
Tel: +44 (0) 117 976 7776 Fax: +44 (0) 117 976 7775 rd.sales.uk@spx.com www.radiodetection.com

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