

ADK MODEL 30000E
Air Dehydration System



**INSTALLATION, OPERATING
& MAINTENANCE MANUAL**



McIntire

Featuring ADK Dry Air Systems

745 Clark Ave.
Bristol, CT 06010
1 800 4 DRY AIR (437-9247)

Thank you for choosing an ADK Air Dryer System by McIntire for your cable pressurization needs. All ADK Dryer Systems have been designed to provide years of outstanding performance and reliable service with minimal maintenance.

This manual covers the installation, operation, maintenance and servicing of the Air Dryer System. Please read it carefully to better understand the dryer's operation and maintenance requirements.

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The needs of the telecommunications industry have changed dramatically over the last decade and we have continued to develop our product line to better serve the requirements of this dynamic market. The acquisition of several, popular industry-related product lines make "The McIntire Companies" the single *largest* and *most complete* supplier of telecommunications pressurization equipment in the world. Our extensive catalog includes:

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McIntire

Featuring **ADK** Dry Air Systems

INSTALLATION AND OPERATING INSTRUCTIONS

MODEL 30000E

AIR DEHYDRATION SYSTEM

DRYER SYSTEM LOG

Installation Data

Model No. _____

Serial No. _____

Compressor No. _____

Installation Date _____

Location _____

Yearly Maintenance Kits:

Ordered Installed

Operating Manual Information

Manual P/N 22564

Issue Date 2/1/99

ADDENDA

Page No.	Revision	Date
All	Revised manual to reflect change to solid-state compressor module. Removed alarm options section. Revised all diagrams and illustrations.	7/98
14	Revised flow diagram to reflect change in location of compressor check valves.	2/99
15	Revised wiring diagram to show Programmable Logic Controller (PLC)	05/02

745 Clark Avenue
Bristol, CT 06010
1-800-4 Dry Air (437-9247)
Local: 860-585-0050
FAX 860-314-4500
www.mcintireco.com

ADK AIR DEHYDRATION SYSTEM MODEL 30000E

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MODEL 30000E**

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ADK AIR DEHYDRATION SYSTEM MODEL 30000E

1.0 GENERAL

1.1 This manual covers the installation, operation and maintenance instructions for the Model 30000 Air Dryer. This air dryer is designed to provide a continuous dry air flow at adjustable pressures of 0 - 15 PSIG for continuous feed pressure cables, pipe systems and other systems requiring dry air. The Model 30000 has a normal output capacity of 24000 standard cubic feet per day (SCFD) and an emergency capacity of 32000 SCFD.

1.2 A complete air dryer consists of a Compressor Module and a Dryer Module. Each module is compact and lightweight. The unique ADK system concept, which is described in this manual, provides a unit with high-energy efficiency, low noise level and high reliability to meet today's air pressure requirements.

2.0 SPECIFICATIONS

Capacity:*	
Normal	24000 SCFD
Emergency	32000 SCFD
* Rated at ambient conditions of 70°F and barometric pressure of 29.92 inches of mercury	
Power:	
	208 Volts, Three-Phase, 60 Hertz
@ Normal Capacity	18 Amps
@ Emergency Capacity	24 Amps
Delivered Air Humidity:	Below 1% at 70°F
Delivered Air Pressure:	
Low Pressure Outlet	Adjustable 0-15 PSIG
High Pressure Outlet	25 PSIG Maximum
Operating Temperature Range:	33°F to 125°F
Alarms:	
	Adjustable High Outlet Pressure
	Adjustable Low Outlet Pressure
	Adjustable System Pressure
	Fixed High Humidity
	Power Failure
Net Weight:	
Compressor Module	380 Lbs.
Dryer Module	325 Lbs.
Dimensions:	
Compressor Module	49 1/2" High x 16 3/4" Wide x 25 1/2" Deep
Dryer Module	49 1/2" High x 20 1/2" Wide x 21" Deep

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3.0 OUTSTANDING FEATURES

3.1 Automatic Output Capacity Adjustment

The air compressors cycle automatically to provide normal capacity of 7000, 16000 or 24000 SCFD. This provides maximum energy efficiency and versatility in meeting changing central office air requirements.

3.2 True Emergency Capacity

The air compressors automatically switch up to 32,000 SCFD in emergencies and the system can be operated for months at a time in the emergency mode.

3.3 Low Maintenance, Energy Efficient Drying System

The dryer module utilizes a maintenance-free refrigeration system to "pre-dry" the compressed air and heat-reactivated desiccant to dry the air to less than 2% RH.

3.4 Improved, Solid-State Compressor Controls

A new, solid-state controller automatically sequences the operation of the compressors for increased reliability and durability.

3.5 Improved Compressor Servicing and Cooling

The compressor module has been redesigned with plate-style heat exchangers that are mounted to the module chassis rather than on top of the compressors. This new design simplifies compressor maintenance and offers a significant decrease in operating temperatures for improved reliability.

4.0 INSTALLATION

4.1 Inspect the air dryer for evidence of exterior or interior shipping damage and immediately report any such damage to the carrier.

4.2 Remove the wooden shipping blocks from the air compressor mounting bases in the compressor module.

4.2.1 To remove the air compressor shipping blocks first remove the front door from the compressor module. Remove the two hold-down bolts from the front corners of the sliding bases. Slide the compressors part-way out from the cabinet. Remove the nuts, bolts and wooden shipping blocks from each side of the air compressor mounting bases. Slide the compressors back into the cabinet and install the hold-down bolts.

4.3 The recommended installation is to set the modules side by side at least 12 inches away from any wall. There is no minimum space required between the modules because all normal maintenance and service can be performed from the top or the front.

4.4 The Model 30000 is designed to operate from a 208 volts, three-phase, 60 Hertz, 30 amp circuit.

4.4.1 Connect the incoming power at the conduit box on the rear of the compressor module.

4.5 Plug the dryer module power cord into the "POWER OUT" receptacle on the rear of the compressor module.

4.6 Install the outlet assembly into the compressor module air outlet.

4.7 Connect the "Air Outlet" of the compressor module to the "Air Inlet" of the dryer module using the hose and elbow fittings provided.

4.8 The dryer module is supplied with a 3/8" plastic compression fitting for the drain connection. Connect to a floor drain or an open drain line. Do not connect to a closed or pressurized drain line. The outlet of the drain tube must not be more than 10 feet above the dryer module.

4.9 Back out (counter-clockwise) the outlet pressure regulator (refer to Fig. 10) located at the upper right side shelf on the dryer module. Move the start-stop switches on both modules to the "ON" position. When the system pressure rises above 18 PSIG, press the reset button on the top of the compressor module electrical box.

4.10 Following the procedure described in paragraph 5.5.3, check/adjust the system pressure switches, the bypass relief valve, and the humidity by-pass relief valve to ensure proper settings for the altitude at the installation site.

4.11 After a few minutes check that the temperature gauge is indicating within the range of 35°F and 50°F.

4.12 When the humidity alarm lamp goes out the air dryer may be connected to the cable system.

4.13 If necessary adjust the high/low pressure alarm to the desired settings. The adjusting procedure is outlined in para. 6.6.

4.14 Adjust the air outlet pressure regulator to obtain the desired outlet pressure as indicated on the outlet pressure gauge.

4.15 Check all air fittings for leakage.

4.16 Connect the office alarm pair(s), as outlined in section 8.0.

4.17 It is recommended that the air dryer be re-checked after 24 hours of operation.

5.0 COMPRESSOR MODULE COMPONENT DESCRIPTION

5.1 Cabinet

The air compressors are installed in a separate acoustically insulated, ventilated cabinet with a hinged top door and a removable front door. The electrical box is mounted to the top door and the box cover is secured by four (4) #8 sheet

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metal screws. The front door is secured by one T-handle draw latch.

5.2 Air Compressors

(4/unit), P/N 11576 (60 Hz) P/N 11341 (50 Hz)

5.2.1 The air compressors are mounted on slide-out bases and can be easily removed from the cabinet by first removing two (2) hold-down bolts from the front corners of the sliding base. Disconnect the discharge tubing, slide the compressor out from the cabinet, then disconnect the quick connect electrical terminals.

5.2.2 Each air compressor is direct-driven by a 3/4 HP motor which has a built-in thermal overload protector which will automatically reset once the motor cools to normal temperature.

5.2.3 Each air compressor is a single-stage, two-cylinder piston compressor that utilizes Teflon rings and skirts. No lubrication is required for either the compressor or the motor. It is recommended that the rings, valves and skirts be replaced annually.

5.3 Air Intake Filters

(8/unit), P/N 11688

Each compressor is equipped with two (2) intake filters. The filters have replaceable elements and it is recommended that the elements be replaced once every three (3) months. Replacement elements for the first year of operation are furnished with the air dryer.

5.4 Ventilating Fan

Fan Motor, P/N 12212
Fan Blade, P/N 12005

The compressor module is ventilated by a continuously operating fan driven by a high-efficiency, permanently lubricated, split capacitor motor. The ventilating fan is mounted in the upper rear of the module. The fan blades draw cooling air in through the baffle at the lower rear of the module and exhaust it at the upper rear, creating efficient up-flow cooling of the compressors and heat exchangers. A switch mounted in the top door of the module will shut the fan off when the door is opened.

5.5 Air Compressor Control Circuit

The operation of the air compressors and the alarms is controlled by a system consisting of one solid-state control module, two pressure switches, three manually operated switches, and four contactors. (See Figure 2, Flow Schematic and Figure 3, Wiring Diagram).

5.5.1 Control Relay Block

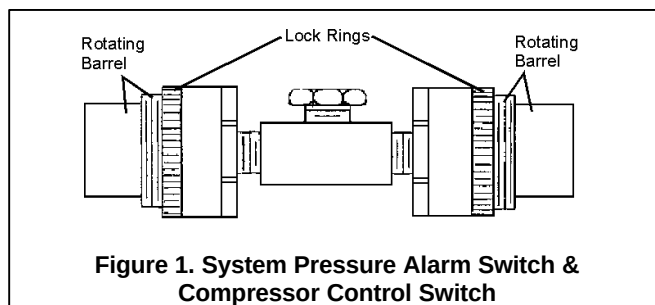
P/N 22555

This solid-state control module has 4 inputs and 4 outputs, and is pre-programmed before installation into the Compressor Module. The module controls the operation, timing and sequencing of the compressors, based upon the inputs from pressure switches and manual override controls. **This**

module is not adjustable in the field; consult our factory service personnel if any changes are required.

5.5.2 Compressor Control Switch, P/N M-20720-A System Pressure Alarm Switch, P/N M-20720-A

There are two identical switches mounted on the back of the system pressure gauge (as shown in Figures 1 and 8) that are used to signal two different set points of system pressure. The switch on the left (looking down from the front) actuates the system pressure alarm. The compressor control switch, the right-hand switch, is part of the control system for the compressor control relay block. If necessary, the pressure switches can be adjusted as described in section 5.5.3 below.



5.5.3 Test Switch Panel

Test Switch, P/N 11669
Test Lamp, P/N 11785

The test switch assembly is used only for checking and adjusting four related system components in a single procedure. The four components adjusted in this procedure are the system pressure alarm switch, the compressor control switch and the by-pass relief valve (located in the compressor module); and the humidity by-pass relief valve (located in the dryer module).

Whenever any one of these components needs adjustment, the entire procedure must be completed to insure proper adjustment of the other related components. Proceed as follows:

- If the unit is running, turn off both the compressor and dryer modules at the start-stop switch.
- Open the compressor module top door and remove the cover from the electrical box, then remove the front panel from the dryer module.
- Move the test switch, which is inside the electrical box, from the "RUN" position to the "TEST" position.
- Turn on only the compressor module at the start-stop switch. Only compressor #1 should be running, and the system pressure alarm light will be illuminated.
- Pull up on the locking ring on the by-pass relief valve on the rear of the compressor module, and adjust system pressure to 25 PSIG by opening or closing the by-pass relief valve. Depress the manual reset switch. The system pres-

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sure alarm lamp should go out. If the lamp does not go out, raise system pressure in increments of 2 PSIG, attempting reset after each increment, until the lamp goes out.

F. Decrease system pressure by slowly turning the by-pass relief valve knob counterclockwise until the system pressure alarm lamp illuminates, noting the system pressure just as the lamp illuminates. The alarm should be just activated as system pressure falls to 17 PSIG. If adjustment is required, locate the system pressure alarm switch on the back of the system pressure gauge (the left-hand switch looking down from the front-Refer to Figure 8.) Carefully loosen the lock ring and rotate the barrel clockwise to lower or counterclockwise to raise the setpoint. (Refer to Figure 1.) Tighten the lock ring FINGER TIGHT only. Proper adjustment may take several attempts because the rotating barrel may move slightly when tightening the lock ring. Repeat the procedure of "Raise pressure - Reset alarm - Lower pressure" to check for the proper setting after each adjustment of the switch. Once the switch is set to 17 PSIG, readjust the by-pass relief valve setting to 25 PSI system pressure to begin the next step.

G. Decrease the system pressure by slowly turning the by-pass relief valve knob counterclockwise until the TEST lamp illuminates, noting the system pressure just as the lamp illuminates. The lamp on the test switch panel should illuminate just as the system pressure falls to 19 PSIG. If adjustment is required, locate the compressor control switch on the back of the system pressure gauge (the right-hand switch). (Refer to Figure 8.) Carefully loosen the lock ring and rotate the barrel clockwise to lower or counterclockwise to raise the setpoint. (Refer to Figure 1.) Tighten the lock ring FINGER TIGHT only. Proper adjustment may take several attempts because the rotating barrel may move slightly when tightening the lock ring. Repeat the procedure of "Raise pressure - Reset alarm - Lower pressure" to check for the proper setting after each adjustment of the switch. Once the switch is set to 19 PSIG, readjust the by-pass relief valve setting to 25 PSI system pressure to begin the next step.

H. Turn on the dryer module at the start-stop switch. Pull out, or away from the valve body, the knob on the humidity by-pass relief valve inside the dryer module (Ref. Fig. 11). Make the final adjustment on the humidity by-pass relief valve by first running the adjusting knob all the way in, or clockwise, then slowly turning the knob out until air just starts bleeding from the muffler. Push the knob toward the valve body to lock the setting.

I. Turn the dryer and compressor modules off at the start-stop switch. Move the test switch in the compressor module electrical box to the "RUN" position.

J. Turn on only the compressor module at the start-stop switch. All four compressors should be running, and the system pressure alarm should be activated. Make the final adjustment of the by-pass relief valve on the rear of the compressor module by adjusting the knob to obtain 30 PSIG system pressure. Lock the setting by pushing down on the knob lock ring. Turn off the compressor module at the start-stop switch.

K. Replace the electrical box cover on the compressor module and the front panel on the dryer module. Re-start both modules and press the manual reset button.

5.5.4 Reset Override Switch P/N 11669

If it is known that the air output requirements will cause the air dryer to operate in the emergency capacity mode for an extended period of time, then it is recommended that the reset override switch be moved to the "ON" position. In the "ON" position it will override the automatic reset feature and keep the air dryer in the emergency capacity mode continuously. It will also open the system pressure alarm circuit so that there will be no alarm sent to the remote alarm monitoring system. The red "System Pressure Alarm" lamp on the gauge panel will always be on when the unit is in the emergency capacity mode. ***Do not leave the module in the Reset Override mode for extended periods of time; excessive compressor wear will result.***

5.5.5 Manual Reset Switch P/N M-20131

Resetting of the system pressure alarm is accomplished by manually depressing the reset button, or automatically every 5 minutes, as programmed into the Control Relay Block. Reset can be accomplished only if the system pressure is above the pre-set alarm point at 17 PSIG.

Caution: Do not depress the reset pushbutton unless all four (4) compressors are running; doing so may disrupt the compressor sequencing and affect the compressor cool-down intervals, shortening compressor life.

If the sequence does become disrupted, it can be corrected by performing the following steps:

a. Move the "Reset Override" switch, on the front of the electrical box (inside top cover) to the "ON" position; all four (4) compressors will start.

b. Turn the "Reset Override" switch "OFF", and depress the "RESET" button; system indications should be as noted above, and the appropriate sequencing will be re-established.

5.5.6 Compressor Power Contactor (4/unit) P/N 11247

The power contactors, which are controlled by the Control Relay Block, connect power to the air compressors. The contactors are equipped with heavy duty, 30 amp contacts.

5.6 Electrical System

The electrical diagram is shown in Figure 1. The Model 30000 is designed to operate from a 208 volt, three-phase, 60 Hertz power source and should be fused for 30 amperes. The air dryers can be supplied for operation from other voltages and frequencies, upon request.

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5.6.1 Start-Stop Circuit Breaker P/N 12282

The circuit breaker is located on the left side of the front panel. The breaker contains a trip-free mechanism that allows the contacts to open on overload even if the handle is in the reset (on) position.

5.6.2 Power Lamp P/N 3450-1

This white lamp, which is located below the circuit breaker, is illuminated when the breaker is in the "on" position.

5.6.3 Boost Transformer (2/unit) P/N 3739

All electrical components in the compressor module are rated for either 230 volts or 115 volts; therefore, included in the electrical circuit are two (2) 10% boost transformers.

5.6.4 Control Transformer P/N 14571

The control transformer reduces the incoming power to operate the various control and alarm components which are rated for 115 volts.

5.6.5 Compressor Lamps (4/unit) P/N 11606

These green lamps which are located in the center of the front panel indicate which air compressors are operating. Compressor 1 is the bottom compressor and compressor 4 is the top compressor.

5.7 System Pressure Alarm System Pressure Alarm Lamp, P/N 3450 Alarm Relay Board (1/unit), P/N 22521

Whenever the system pressure in the Compressor Module falls below 17 PSIG, the "SYSTEM PRESSURE" alarm lamp on the gauge panel will illuminate, and all four compressors will start and run. As the system pressure builds above 17 PSIG, the "SYSTEM PRESSURE" alarm lamp on the gauge panel will turn off. However, the Alarm Relay Board, a printed-circuit board with permanently-mounted relays, reports an alarm condition whenever all four (4) compressors are running simultaneously. There are no field-serviceable components or adjustments on this board.

5.8 Pressure and Flow Controls

5.8.1 Precooler Assembly P/N 22592

The compressed air from the air compressors is routed through heat exchangers (precoolers) mounted on the sides of the Compressor Module frame.

5.8.2 Check Valve (4/unit) P/N 22593

Check valves are installed in the outlet of each heat exchanger to prevent air from bleeding back through the air compressors when they are shut off.

5.8.3 Accumulator P/N 12043

The cooled compressed air is then routed to an accumulator which dampens the air pulses.

5.8.4 System Pressure Gauge, P/N B-101 Snubber Coil, P/N 22575

This 0-60 PSIG gauge measures the compressor module system pressure. The snubber coil, mounted on the rear panel, minimizes the fluttering of the gauge needle due to the compressor pulsations.

5.8.5 By-Pass Relief Valve, P/N 11790 Relief Valve Muffler, P/N 11688

The by-pass relief valve is mounted in the air outlet at the rear of the compressor module. The valve is used to limit the system pressure to a maximum of 30 PSIG. A muffler is installed at the outlet of the valve. If valve adjustments are necessary, refer to paragraph 5.5.3.

6.0 DRYER MODULE COMPONENT DESCRIPTION

6.1 Cabinet

The cabinet has a hinged top door and a removable front door. The electrical box is mounted to the top door and the box cover is secured by four (4) #8 sheet metal screws. The front door is secured by one T-handle draw latch.

6.2 Replaceable Refrigeration Unit (RRU) P/N 11585

6.2.1 The replaceable refrigeration unit consists basically of two refrigeration compressors, condensers, condenser fan and a heat exchanger. The unit can easily be removed and replaced if necessary.

6.2.2 The compressed air from the compressor module is partially dried in the refrigeration unit before it is delivered to the desiccant drying system.

6.2.3 Temperature Gauge P/N 5000-12-13

The temperature gauge, mounted on the front panel, measures the temperature in the refrigerated heat exchanger. The temperature will be maintained within the range of 35°F to 50°F.

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6.2.4 Drain Capillary and Strainer Assembly P/N 13660

Located at the bottom of the heat exchanger in the RRU, the drain capillary and strainer carry moisture removed from the compressed air to the drain outlet at the back of the dryer module. The strainer prevents large particles from clogging the very small capillary drain tubing. Over time, the strainer may become clogged itself and prevent moisture from being expelled through the drain capillary. The drain capillary and strainer should be replaced once every year to prevent possible humidity alarms and prolong the life of the desiccant towers.

Note: Do not alter the size or length of the drain capillary. Should the capillary become clogged, the system can be operated for very limited periods without the capillary installed. Operating the dryer for extended periods without the drain capillary will decrease the performance of the entire system and may shorten the life of the compressors.

6.3 Desiccant Drying System

6.3.1 The desiccant drying system consists of four (4) desiccant-filled towers with tower heaters immersed in the desiccant, filters in the outlet of the towers, four (4) two-way solenoid valves and a timer assembly.

6.3.2 Desiccant Towers (2 sets/unit) Front Tower, P/N 11578 Rear Tower, P/N 11577

The desiccant towers are used to dry the air from the refrigeration unit to a dew point below -40°F. Each tower set (set no. 1 front two towers and set no. 2 rear two towers) dries the air for a period of five hours and then is automatically reactivated for a five-hour period.

6.3.3 Tower Solenoid Valves (2 sets/unit) Air Solenoid Valves (2/unit) P/N 11598 Purge Solenoid Valves (2/unit), P/N 21321

The two way tower solenoid valves route the air through the desiccant towers. The purge valves direct the wet air purge to the water drain outlet. The valves are controlled by a timer and are operated once each five (5) hours.

6.3.4 Tower Timer Assembly P/N 11587 (60 Hertz) P/N 11662 (50 Hertz)

The tower timer assembly controls the operation of the tower solenoid valves, purge valves and the tower heaters. A complete timer cycle is ten (10) hours.

6.3.5 Tower Outlet Filters (4/unit) P/N 15-168

These porous filters prevent desiccant from passing out of the towers. The filters are easily replaced by first disconnecting the flexible tubing and then unscrewing the filter from the tower.

6.4 Electrical System

The electrical diagram is shown in Figure 2. Power to the dryer module is provided from the compressor module by means of a twist lock plug and receptacle. However, since the electrical systems of the two modules are independent the dryer module can also be connected to any convenient 208 volt, single phase, 60 Hertz outlet. Each module has its own start-stop switch with overcurrent protection.

6.4.1 Start-Stop Switch, P/N 5000-8-43 Switch Heater, P/N 7378B

The start-stop switch is located on the right side of the front panel. The switch is equipped with an 18.6 ampere switch heater. If an overcurrent in the dryer module occurs the mechanism in the switch moves the switch level to the mid-position. The switch may be reset by waiting two minutes and then moving the switch level to the "OFF" and then to the "ON" position.

6.4.2 Power lamp P/N 3450-1

This white lamp, which is located below the start-stop switch, is energized when the start-stop switch is moved to the "on" position.

6.4.3 Boost Transformer P/N 12314

A 10% boost transformer is included in the circuit to increase the voltage to the refrigeration unit.

6.4.4 Control Transformer P/N 14571

The control transformer reduces the incoming power to operate the various control and alarm components which are rated for 115 volts.

6.5 High Humidity Alarm System Humidity Monitor Board, P/N 22262 Humidity Alarm Relay, P/N 11597 Humidity Solenoid Valve, P/N 11598 Humidity Alarm Lamp, P/N 3450

The humidity alarm system is designed to open a circuit and shut off the air flow to the high and low pressure outlets in the event that the humidity of the delivered air rises above the fixed humidity alarm set point.

The humidity alarm circuit is shown in the wiring diagram (Figure 4) and the operation of the alarm system is as follows:

A. The humidity solenoid valve is connected to the humidity alarm through the normally open contacts of the humidity relay. The office alarm circuit is connected to the normally closed contacts of the humidity relay. The office alarm circuit terminates at the alarm terminal board (TB-D).

B. During normal operation, the humidity monitor board will be closed energizing the humidity alarm relay and the

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solenoid valve. The humidity alarm lamp is out, the office alarm circuit is de-activated and the solenoid valve permits dry air to pass into the cable system.

C. If the humidity of the air rises above the alarm point the humidity monitor board contacts open de-energizing both the humidity relay and the solenoid valve. The humidity alarm lamp is energized, the office alarm circuit activates and the solenoid valve shuts off air flow to the high and low pressure outlets.

D. The operation of the humidity alarm system can be checked by performing the following steps:

1. Move the start-stop switch on the dryer module to the off position.
2. After the pressure has bled from the system, disconnect the humidity sensor cable from the adaptor.
3. Remove the sensing element from the sensing tube and gently blow on the sensor.
4. Re-install the sensor, re-connect the sensor cable and re-start the dryer module.
5. For a brief period (5-30 seconds), a humidity alarm should be shown on the instrument panel and all air should be dumping overboard through the humidity by-pass valve. The alarm should clear automatically within a minute or so.
6. If the alarm does not activate, perform steps 1 through 4 again. If the alarm still does not activate, replace the humidity sensor and repeat the procedure.

Caution: Do not attempt to check the sensor with a meter of any type and never expose the sensor to water.

6.6 High-Low Output Pressure Alarm System

High-Low Pressure Alarm Switch, P/N 22530
Pressure Alarm Relay, P/N 5000-12-86
Pressure Alarm Lamp, P/N 3450

Located in the electrical box of the dryer module, the high-low pressure alarm switch is connected electrically to the pressure alarm relay coil and the pressure alarm lamp. It will provide a visual alarm and an activated office alarm circuit if the air dryer output pressure falls below or rises above pre-set values. The alarm is factory preset to operate at 13 ± 1.5 and 17 ± 1.5 PSIG. If necessary the switch can be adjusted as follows:

- a. The high pressure alarm setting is made by adjusting the output pressure regulator to give the pressure at which the high alarm should operate. Identify the "High Pressure" half of the switch assembly and carefully loosen the lock ring. Slowly rotate the inner barrel clockwise or counterclockwise to the point at which the output alarm lamp just illuminates. (Refer to Figure 1 on page 3) Then, tighten the lock ring FINGER TIGHT only. Proper adjustment may take several attempts because the rotating barrel may move slightly when tightening the lock ring. Repeat the procedure of "Lower pressure - Reset alarm - Raise pressure" to check for the proper setting after each adjustment of the switch.
- b. The low pressure alarm setting is made by adjusting the output pressure regulator to the pressure at which the

low alarm should operate. Identify the "Low Pressure" half of the switch assembly and carefully loosen the lock ring. Slowly rotate the inner barrel clockwise or counterclockwise to the point at which the output alarm lamp just illuminates. (Refer to Figure 1 on page 3) Then, tighten the lock ring FINGER TIGHT only. Proper adjustment may take several attempts because the rotating barrel may move slightly when tightening the lock ring. Repeat the procedure of "Raise pressure - Reset alarm - Lower pressure" to check for the proper setting after each adjustment of the switch.

6.7 Air Pressure and Flow Controls

6.7.1 Humidity By-Pass Relief Valve, P/N 4634 Muffler, P/N 11688

This valve which is mounted on the humidity sensing tube is used to permit a flow of air across the humidity sensing element in the event that the flow of air to the high and low pressure outlets is shut off due to a high humidity alarm. If the alarm condition is temporary and the air passing across the sensing element and out through the valve is dry the humidity alarm will clear and air flow to the dryer outlets will resume. Air will bleed continuously from the valve when the system pressure is between approximately 18 and 25 PSIG. A muffler is installed in the valve outlet to reduce the noise level. If it becomes necessary to readjust the valve refer to paragraph 5.5.3.

6.7.2 System Pressure Gauge P/N B-101

This 0-60 PSIG gauge measures the dryer module system pressure. A pressure drop between this gauge and the system pressure gauge on the compressor module will be noted. This drop is normal and will increase as air flow from the air dryer is increased.

6.7.3 Air Flowmeter P/N 12324

The air flowmeter measures the total instantaneous flow of air to the cable system. The flowmeter range is 4000 - 34000 SCFD.

6.7.4 High Pressure Shut Off Valve P/N 11620

This is a 1/4-turn ball valve which is used to shut off the high pressure outlet if it is not being used. The valve is open when the handle is horizontal.

6.7.5 Pressure Regulator P/N 13317

This is a single-stage regulator which reduces the system pressure to the desired cable system pressure. The regulator is equipped with a self contained relief valve feature for ease of making lower output pressure settings. The regulator can be adjusted to the required output pressure by loosening the locknut and turning the handle clockwise to increase or counterclockwise to decrease the pressure. When

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the desired setting has been made the locknut should be re-tightened.

6.7.6 Outlet Pressure Gauge P/N 22601

This 0-15 PSIG gauge measures the pressure at the low pressure outlet.

7.0 PRINCIPLES OF OPERATION

7.1 Air System

The air flow schematic is shown in Figure 2.

7.1.1 In operation, ambient air is drawn in through the air filters and into the compressors in the compressor module where it is compressed to a maximum pressure of 25 PSIG. The compressed air flows through precoolers check valves and an accumulator to the compressor module outlet.

7.1.2 Start-Up

When unit is first turned on, there will be a delay of a few seconds, and then all four compressors will start. As the system pressure builds above 17 PSIG, the "SYSTEM PRESSURE" alarm lamp on the gauge panel will turn off. However, the System Pressure *remote* alarm contacts will continue to report an alarm condition *any time all four compressors are running*.

7.1.3 Primary Control

Primary Control describes normal operation of the Compressor Module, after starting in system pressure alarm and being manually or automatically reset. After the system pressure, as indicated by the pressure gauge on the gauge panel, is above 19 PSIG, the system can be reset to normal "load-sensing" operation in two different ways:

- a. By depressing the manual reset button, located on the front of the electrical box, which is attached to the bottom of cabinet top cover.
- b. Five minutes after the system pressure reaches 19 PSIG, the system will reset automatically, providing that the system pressure has remained above 19 PSIG for the 5-minute time period.

When the system has been reset, compressor #1 will turn off; compressors #2, #3, and #4 will remain on.

Caution: Do not depress the reset pushbutton unless all four (4) compressors are running; doing so may disrupt the compressor sequencing and affect the compressor cool-down intervals, shortening compressor life.

If the sequence does become disrupted, the following steps can correct it:

- a. Move the "Reset Override" switch, on the front of the electrical box (inside top cover) to the "ON" position; all four (4) compressors will start.

- b. Turn the "Reset Override" switch "OFF", and depress the "RESET" button; system indications should be as noted above, and the appropriate sequencing will be re-established.

After reset:

Compressor #2 will run for 3 min. 20 sec., then shut off.
Compressor #3 will run for 6 min. 40 sec., then shut off.
Compressor #4 will run for 10 min., then shut off.

As these compressors shut off, causing the system pressure to drop below 19 PSIG, other compressors will start, in sequence, to assume the load and keep the system pressure above 19 PSIG. Thus, the normal sequential operation and the compressor cool-down period intervals are established. The module will automatically run only enough compressors to keep the system pressure above 19 PSIG.

During the normal operation of the module, each compressor will start, in sequence, in response to the system pressure falling below 19 PSIG, run for ten minutes, then shut off. As system pressure drops to 19 PSIG, the next compressor will start, continuing the cycle. If only one compressor is required to keep the system pressure above 19 PSIG, there will be short intervals when there are *no* compressors running, since the next compressor will not start until the system pressure drops to 19 PSIG. In normal operation, the 10-minute run time for each compressor will be followed by a cool-down period of *at least* 3 minutes, 20 seconds. The interval will be longer for some compressors in some operating modes.

If there is a sudden increase in the demand for air into the cable system, causing the system pressure to drop, the module will automatically start additional compressors to meet the demand. If the system pressure stays below 19 PSIG for more than 5 seconds, and/or drops to 17 PSIG, all four (4) compressors will start, and the System Pressure *remote* alarm contacts will report an alarm condition as long as all four (4) compressors are running. The "SYSTEM PRESSURE" alarm lamp on the gauge panel will be illuminated only while the system pressure is below 17 PSIG. When the system pressure is restored above 19 PSIG, the automatic reset cycle will begin, or the system may be manually reset.

If there is known to be a temporary demand for maximum air flow from the module, the "Reset Override" switch, on the front of the electrical box (inside top cover) may be moved to the "ON" position. All four (4) compressors will start, as indicated by the four compressor lamps, and the remote alarm **will not** report. When the high demand condition has been corrected, move the switch to the "OFF" position; the system will reset automatically, or may be reset manually.

Do not leave the module in the Reset Override mode for extended periods of time; excessive compressor wear will result.

7.1.4 The compressed air from the compressor module is routed to the inlet of the dryer module. The air flows to the refrigerated heat exchanger where it is cooled to between 35 and 50°F to remove most of the moisture. The condensed

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moisture is purged from the heat exchanger through a capillary tube, which ejects the moisture through the water drain outlet in the rear of the unit.

7.1.5 The cooled, partially dried air flows from the heat exchanger to the solenoid valves and into one set of desiccant towers for final drying.

7.1.6 From the desiccant towers most of the dry air is routed to the humidity sensing tube. A small amount of dry air from the tower set being utilized is routed through the tower set being reactivated to purge its moisture. The moisture-laden air flows through capillary tubes to the water drain outlet.

7.1.7 The dry air flows from the humidity sensing tube through the high humidity solenoid valve to the air flowmeter. The air flow then splits. One tube carries air to the output pressure regulator. The other tube connects to the high pressure shut off valve and to the high pressure outlet. A pressure alarm switch and a low pressure gauge are connected between the pressure regulator and the low pressure outlet.

7.2 Air Drying System

The air drying system contained in the dryer module consists of a replaceable refrigeration unit, four desiccant-filled towers equipped with heaters immersed in the desiccant and filters in the outlet of each tower, four solenoid valves and a timer assembly.

7.2.1 The compressed air from the compressor module flows through the refrigerated heat exchanger. The operating temperature of the refrigeration unit is in the range of 35 to 50°F and will vary depending upon load and ambient temperature.

In the refrigerated heat exchanger up to 90% of the moisture is removed and is ejected through the drain capillary. The air is then routed to the desiccant drying system where the remaining moisture is removed.

7.2.2 The desiccant drying system is arranged and cycled so that as one set of towers dries the air, the desiccant in the other set of towers is being reactivated or dried. The tower functions are controlled by the timer assembly and the sequence of operation is as follows:

A. Tower Set No. 1

Partially dried air from the refrigeration unit passes through the tower solenoid valve set no. 1 and enters the towers through a filter where it is dried to below -40°F dewpoint as it passes over the desiccant. The continuous flow of air is dried by passing through the towers for a five-hour period.

B. Tower Set No. 2

Simultaneously with the operation of tower set no. 1 tower solenoid valve set no. 2 is opened to the tower purge capillaries and the heaters in tower set no. 2 are energized. The desiccant is heated for a period of 2-1/2 hours. After the 2-1/2 hour period, the tower heaters are de-energized and

the towers are allowed to cool for a period of 2-1/2 hours. During this entire five-hour period, a small amount of dry air from tower set no. 1 is purged through tower set no. 2 and tower solenoid valve set no. 2 to the tower purge capillaries and then out the water drain outlet.

C. At the end of the five-hour period the timer will reverse the functions of the tower sets. The reactivated tower set no. 2 will dry the air and tower set no. 1 will be reactivated.

8.0 ALARM CIRCUIT OPERATION

8.1 General

The air dryer provides an external alarm for high humidity, high or low outlet pressure and system pressure. The alarm system provides contact operation only (open on alarm or close on alarm) and is not energized within the air dryer.

The alarms can be connected either as a common alarm pair combining all three alarms or with separate alarm pairs for each alarm condition.

The humidity and high/low pressure alarms terminate at a terminal board (TB-D) in the dryer module, located on the rear panel next to the regulator bracket.

The compressor module system pressure alarm pair (wires 57 and 85) leave the compressor module through the alarm grommet in the rear panel of the compressor module.

A grommated hole is provided in the rear panel of the dryer module to facilitate routing the compressor module system pressure alarm pair and the central office alarm pair(s) to the terminal board.

If a single alarm pair is used, it is recommended that it be connected directly to the terminal board. If desired, an alarm plug and socket can be used. These parts are furnished in the air dryer accessory kit. To install the recessed male alarm plug, first remove the grommet from the rear panel of the dryer module. Install the alarm plug in the hole using the screws and nuts provided. Connect one of the wires from the alarm plug to terminal 1 of TB-D and the other wire to terminal 6 of TB-D.

The female alarm socket is equipped with four pigtail wires (two white and two black). Connect the compressor module system pressure alarm wire no. 57 to one of the white leads and wire no. 85 to one of the black leads. Connect the central office alarm pair to the remaining white and black leads. Wire butt connectors are provided to facilitate these connections.

8.2 Alarm Options

The air dryer alarm system is factory-wired to provide "Close- On-Alarm", Common Alarm Pair. Other alarm options are available with some minor modifications to the alarm circuit wiring. Please contact the ADK Service Department at 1-800-437-9247 and ask for Technical Service Bulletin 98-081 for complete instructions.

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9.0 PREVENTIVE MAINTENANCE

To ensure continued satisfactory operation, it is recommended that inspection and maintenance procedures be performed at scheduled intervals. A maintenance chart (Figure 14 on page 23) is provided for a visual reference and should be used to track maintenance performed over time.

9.1 A maintenance kit supplied with each air dryer provides all the parts necessary for normal maintenance during the first year of operation. After the first year, an annual maintenance kit, P/N 30000M, should be ordered. The kit contains the following parts:

Qty.	Part No.	Description
4	3865	Compressor Maintenance Kit
4	15-168	Tower Filter

9.2 Quarterly (Three Month) Maintenance

9.2.1 Replace the filter felts in the air compressor intake. Do not attempt to clean and reuse the old felts.

9.2.2 Check the system pressure. System pressure should be about 25 PSIG. If adjustment is required, follow steps outlined in paragraph 5.5.3.

9.2.3 Check the operation of the output pressure alarm. Refer to para. 6.6.

9.2.4 Check the operation of the humidity alarm system. Refer to para. 6.5.

9.2.5 Check that the heat exchanger temperature is within the range of 35° to 50°F.

9.2.6 Carefully clean the finned condenser on the refrigeration unit with a brush.

9.3 Annual Maintenance

9.3.1 Check the compressor vibration mounts on each compressor; replace as necessary.

9.3.2 Change the piston rings and valves in the air compressors as follows: (refer to figure 5)

a. Disassembly

1. Remove the air compressors from the compressor module. It will not be necessary to remove the compressors from the mounting bases.

2. Disconnect the manifold tubing at the elbow fittings on both heads.

3. Remove the four (4) cylinder head screws and lift off the cylinder head and the valve components.

4. Remove the two (2) cylinder screws and two (2) lockwashers and lift out the cylinder.

5. Remove the piston seals, piston rings and rider rings.

6. Clean all components with a non-flammable, non-toxic cleaning solvent.

b. Assembly

1. Install the new piston seals, piston rings and rider rings on the piston. Locate the ring joints approximately opposite each other.

2. Slide the cylinder over the piston and attach the cylinder to the bracket with the screws and lockwashers. **Tighten screws finger tight.** Move the piston to the top dead center position. Using a metal straight edge, adjust the cylinder flush with the top of the piston. Tighten the cylinder screws.

3. The valve assemblies furnished in the maintenance kit are tied together with a plastic tie. They are assembled in the proper sequence. **Do not cut the tie until the valves are partially installed.**

4. Place the valve assembly on the head with the alignment hole in the valve assembly in-line with the alignment hole in the head. Insert screws through two of the holes in the head. Place the head and valve assembly on the cylinder and position them with the manifold elbow facing in toward the compressor. Loosely engage the two screws in the cylinder. Cut the plastic tie and install the two remaining screws and lockwashers. **Do not tighten the screws at this time.**

Note: On top of each cylinder head, the ends of two fins have been omitted. They are always in the discharge ports.

5. Install manifold nuts and new seals on the manifold and assemble it to the elbow fitting on one head assembly. Do not tighten the nut.

6. Install the second head assembly and assemble the manifold. Tighten all head screws and the manifold nuts.

7. Install the air compressors in the compressor module. Start the air dryer and soap test all of the compressor fittings.

9.3.3 Replace the drain capillary and strainer as outlined in paragraph 6.2.4.

9.3.4 Replace the inlet filters in the top of the desiccant towers. Refer to para. 6.3.5.

9.3.5 Perform the tests and adjustments outlined in paragraph 5.5.3 to ensure proper adjustment and operation of the system pressure switches, the by-pass relief valve, and the humidity by-pass relief valve. At step D, be sure to check for any remote alarm indications, if any are connected.

9.3.6 Perform the Quarterly Maintenance checks outlined in paragraphs 9.2.1 through 9.2.6.

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10.0 TROUBLESHOOTING – Field Service Chart

Malfunction Condition	Possible Causes(s)	Corrective Action
Dryer Not Running	Air dryer "start-stop" switch "OFF"	Move switch to "ON" position
	External power circuit breaker tripped	Reset breaker
	Open circuit in external power supply	Check for proper voltage at incoming power terminal board in the dryer. If no voltage exists, check for an open in the external circuit and repair.
	Main air dryer power wires open or "start-stop" switch defective	With switch in "ON" position, check for proper voltage at power distribution terminal board. If there is no power or incorrect power, disconnect the external power and trace for an open in the main power circuit of the dryer. Replace any defective wiring or the switch.
Humidity Alarm	Defective humidity monitor board or humidity alarm relay	Unplug the humidity sensing cable at the sensing element. If the humidity alarm lamp goes out, the humidity by-pass solenoid valve energizes and the remote alarm contacts open, this would indicate that the humidity monitor board and the humidity alarm relay are operating properly and that there is most likely a malfunction in the drying circuit. If none of the above happen, it indicates that the humidity monitor board is defective and should be replaced. If before and after the humidity sensing cable is unplugged the humidity alarm lamp is off, but the remote alarm contacts are closed and the by-pass solenoid is "by-passing" air, check the voltage across terminals 2 and 3 on the humidity monitor board. If there is 115 volts, the humidity monitor board is defective. If there is 0 volts, the humidity alarm relay is defective.
	Refrigeration unit drain capillary or strainer clogged	While the unit is running, disconnect the 1/8" copper refrigeration unit drain capillary at the junction next to the conduit box in the inside rear of the dryer module. If there is no air and/or water flow, replace the plastic drain capillary and drain strainer in the bottom of the heat exchanger.
	Refrigeration unit not operating properly	The temperature gauge on the front of the dryer module should indicate between 35°F and 50° (or 60°F is the ambient temp. is close to 120°F). If not, check the following: A) Is there 230 volts at the refrigeration compressors terminals? If not, repair the circuit. B) Is the condensor fan in the refrigeration unit unobstructed and is the motor running? If not, remove the obstruction or replace the fan motor. C) Are the condensor fins clean and free of debris? Clean if necessary. D) Are the refrigeration compressors running and does the system have a proper charge? Check the refrigeration system operating current with a clamp-on ammeter.

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10.0 TROUBLESHOOTING – Field Service Chart (continued)

Malfunction Condition	Possible Causes(s)	Corrective Action
Humidity Alarm (continued)		Model 30000 Normal Current (compressor and fan motor): 2.8 - 3.5 amps Low Charge: 1.8 to 2.3 amps If current is not normal, replace the complete refrigeration unit.
	Desiccant drying system malfunction	Check the desiccant drying system operation: A) Note the position of the tower timer 0-99% dial relative to the black pointer on the timer frame. (see figure 8 in the operating manual). If the timer is running, the dial will move 1% in 6 minutes. If not, replace the timer. B) Refer to para. 7.2.2 in the operating manual. With the dryer running, note the position of the dial on the tower timer and then manually rotate the timer dial. Using a clamp-on ammeter, check that the towers are energizing and de-energizing in the right sequence relative to the "click" of the tower solenoids operating. NOTE: Start at 95% on the dial. Tower Set #1 solenoid valves should energize (click) as 0% passes the pointer and the heater in Tower #2 should energize as 2% passes the pointer and so on as per the sequence described in para. 7.2.2. 10% on the dial is equal to one hour. Return the dial to its original position. C) Check for proper purge flow from the towers. Disconnect the two 1/8 inch purge capillaries at the junction of the 1/4 inch plastic tube, just to the right of the tower solenoid valves. With the air dryer running, set the timer dial at 5%. There should be a low flow of air from the capillary attached to Tower set #2 solenoid valves. If the capillaries are clogged, replace them. Re-connect the purge capillaries and disconnect the 1/4 inch plastic tube at the rear of the unit. With the dryer running, there should be a low flow of air and possibly water from the outlet. If not, clean or replace the lines that connect the capillary junction tees to the drain connection.
High/Low Outlet Pressure Alarm	Outlet pressure regulator out of adjustment	Readjust regulator or replace.
	Outlet pressure alarm switch out of adjustment	Check the outlet pressure gauge. If the outlet pressure is in the normal range, readjust the pressure alarm switch per para. 6.6 in the operating manual or replace if necessary.
	Maximum capacity of air dryer exceeded	If the outlet flow is at 30000 SCFD or above, reduce the outlet pressure or add another dryer system.
	Air compressors not running	There should always be at least one compressor running. If the system pressure falls below 15 PSIG, all compressors should be running. If one compressor should fail, the other compressors should be running continuously. If there are no compressors running, check the following:

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10.0 TROUBLESHOOTING – Field Service Chart (continued)

Malfunction Condition	Possible Causes(s)	Corrective Action
High/Low Outlet Pressure Alarm (continued)		A) Is there 230 volts (+/- 20 volts) across the L1 and L2 terminals on the power contactors? If not, check for an open in the wiring feeding the power contactors. B) Is there 230 volts (+/- 20 volts) across the T1 and T2 terminals on the power contactors? If not, check for 115 volts across the coil terminals (A & B) on the contactors. If there is, replace the contactors. If not, check the adjustment of the system pressure switch and the wiring around the compressor control relay and alarm relay board. C) There should be 230 volts at the compressors. If not, check the wiring from the compressors to the contactors for continuity. Repair as necessary. If there is power, repair or replace the compressors as necessary. D) If one compressor is running and system pressure is below 15 PSIG, check the following: What is the system pressure switch setting? Turn off the air dryer and allow the system pressure to bleed to zero. Restart the air dryer. If all compressors start and system pressure alarm is "in", readjust or replace system pressure switch (refer para. 5.5.2). If any of the compressors fail to start, follow steps A, B and C above on any of the components associated with the inoperative compressor(s).
	Relief valves set too low	If the outlet flow is below 30000 SCFD, check the relief valves on the back of the compressor module and on the humidity tube. If air is flowing from either, reset as described in para. 5.5.2 and 5.5.3 in the operating manual or replace the valve(s) if necessary.
	Leak in air dryer	Check all air line fittings and piping for leaks. Repair or replace as necessary.
	Air compressors need maintenance	If no other problems can be identified, install maintenance kits in the air compressors.
System Pressure Alarm	High outlet flow	Check the outlet flowmeter. If the flow rate is above the normal capacity of the dryer (22500 SCFD on Model 30000), it is normal to have a system pressure alarm. If the higher flow requirement is temporary (3 months or less), move the alarm override switch to the "on" position. This will open the alarm circuit and by-pass the automatic reset system. If the high flow rate is permanent, it will be necessary to add another dryer to the system. See the last four possible causes under High/Low Outlet Pressure Alarm.

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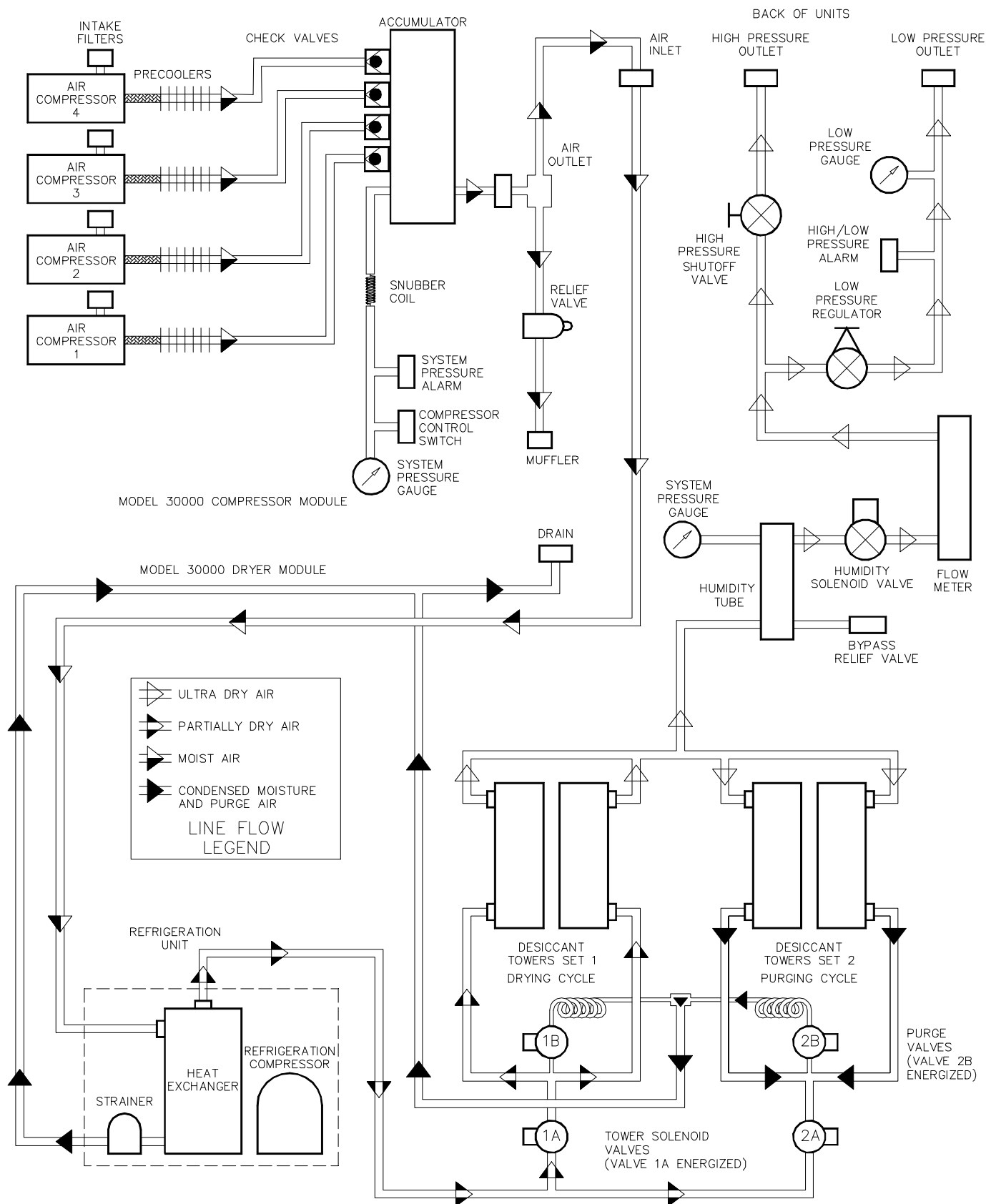


**Figure 2
Air Flow Schematic**

Figure 3

ADK AIR DEHYDRATION SYSTEM
MODEL 30000E

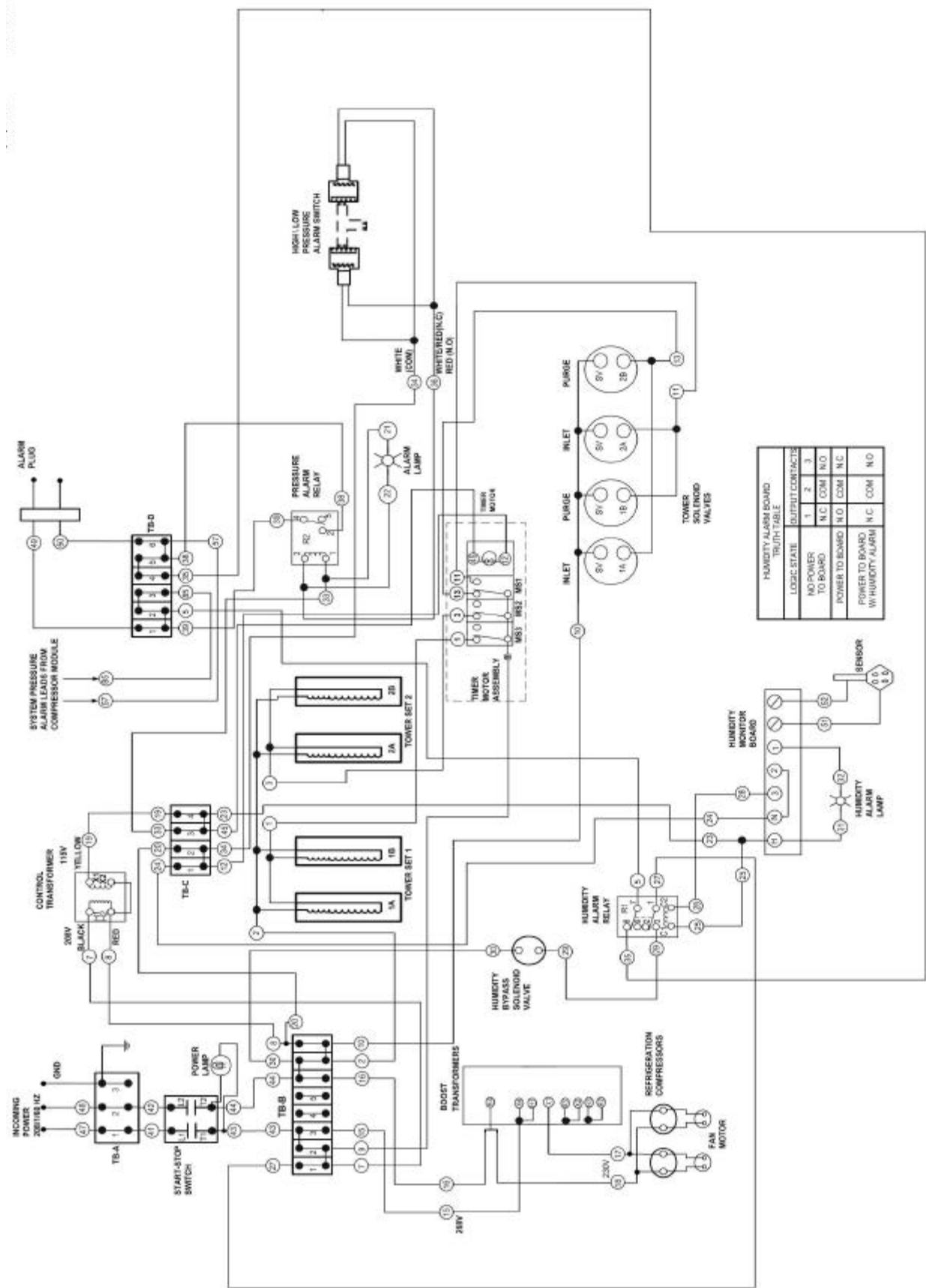
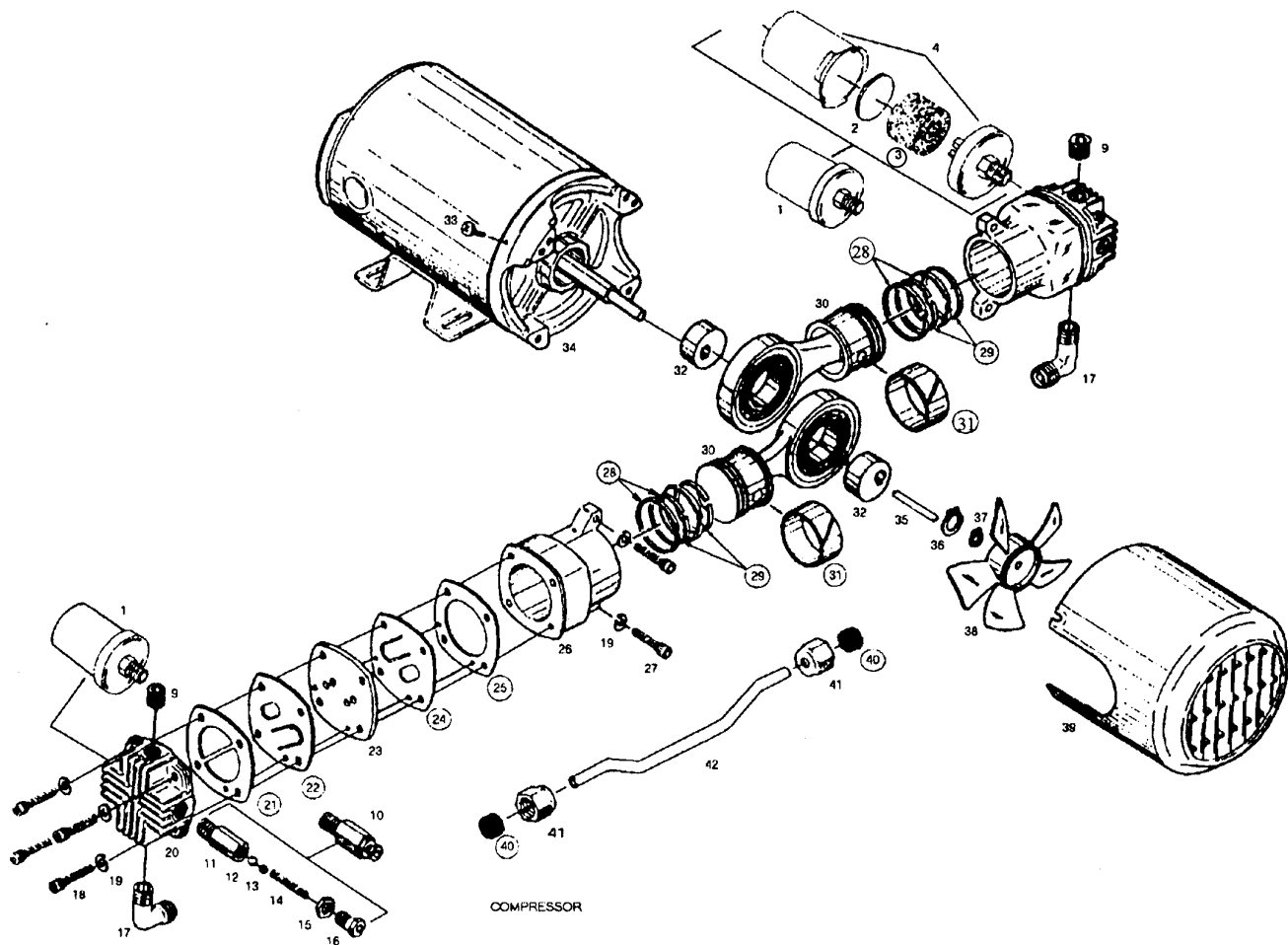


Figure 4
Drying Module Wiring Diagram

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000F**



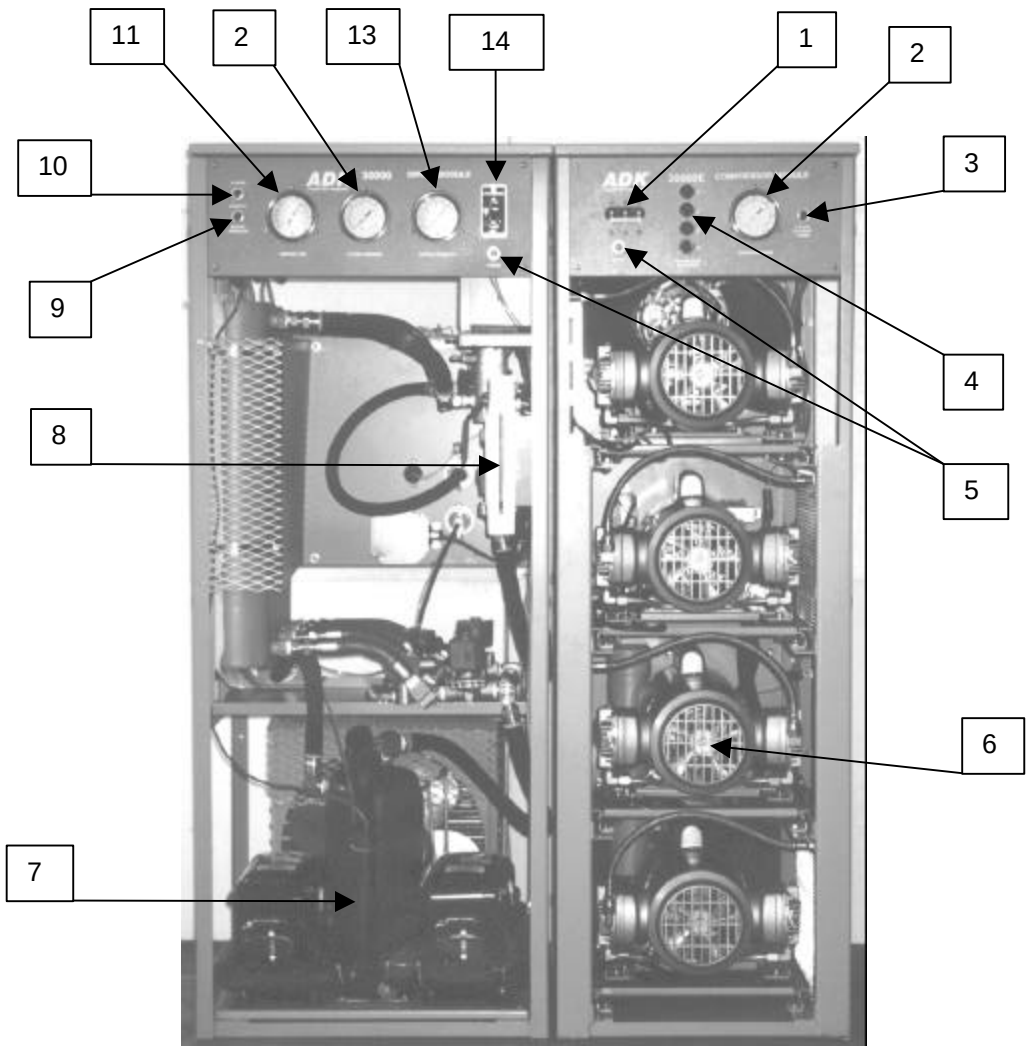
Legend and Spare Parts List

Index Number	Part Number	Description	Index Number	Part Number	Description
1	11688	Air Intake Filter Assembly	27	3979	Cylinder Screw
2	11689	Filter Disc	28	-----	Piston Ring
3	3986	Filter Felt	29	-----	Piston Seal
9	3998	Pipe Plug	30	3872	Piston Rod Assembly
10	3996	Safety Valve	31	-----	Rider Ring
17	4024	Manifold Elbow	32	4030F	Eccentric
18	4025	Head Screw	33	4033	Screw
19	4026	Lock Washer	34	-----	Bracket
20	3875	Cylinder Head	35	4040	Square Key
21	-----	Head Gasket	37	4041	Retaining Ring
22	-----	Outlet Valve	38	3873	Fan
23	3870	Valve Plate	39	3871	Shroud
24	-----	Inlet Valve	40	3864	Manifold Sleeve
25	-----	Cylinder Gasket	41	4043	Manifold Nut
26	3874	Cylinder	42	4050	Manifold

Note: Index numbers not listed and part numbers shown as "-----" are not available separately as spare parts.
Index numbers shown inside circles are included with compressor maintenance kit p/n 3860.

**Figure 5
Air Compressor Parts**

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000E**

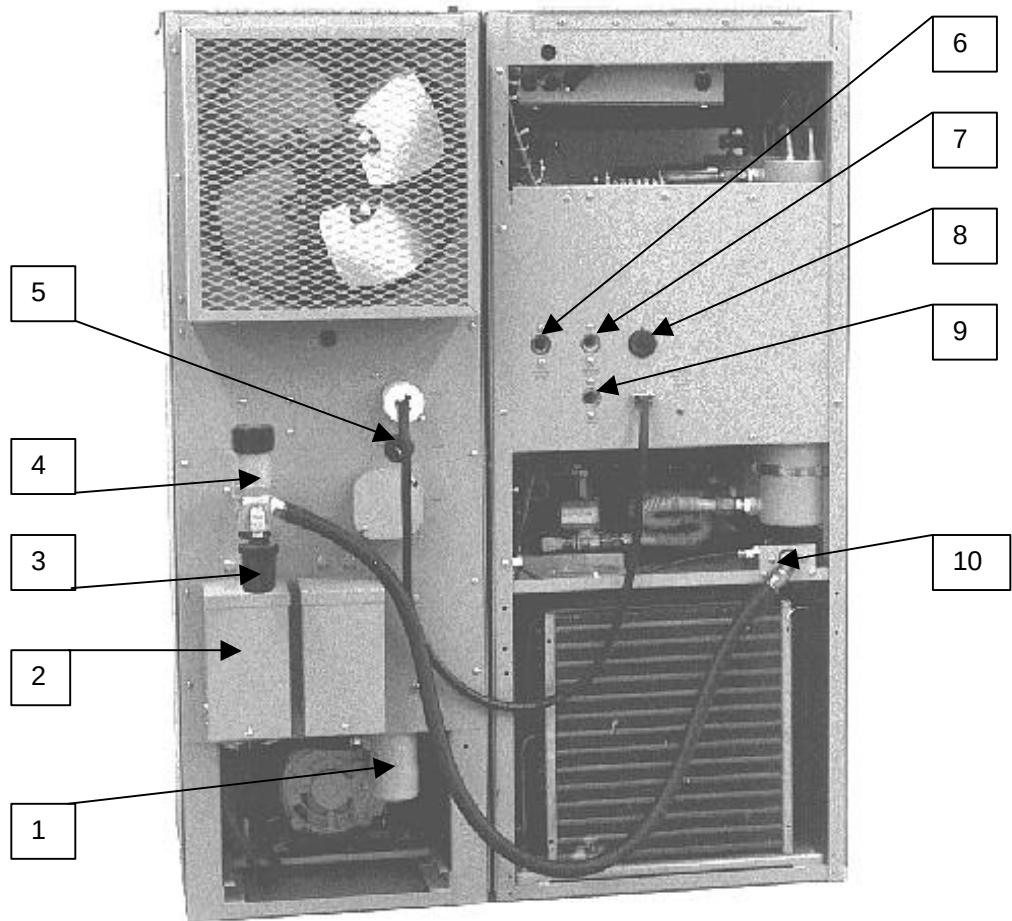


Legend and Spare Parts List

Index Number	Part Number	Description	Qty.
1	12282	Start-Stop Switch (Circuit Breaker)	1
2	B-101	System Pressure Gauge	2
3	3450	System Pressure Alarm Lamp	1
4	11606	Compressor Lamp	4
5	3450-1	Power Lamp	2
6	11576	Motor/Compressor Assembly	4
7	11585	Replaceable Refrigeration Unit (RRU)	1
8	12324	Output Flowmeter	1
9	3450	High-Low Pressure Alarm Lamp	1
10	3450	Humidity Alarm Lamp	1
11	5000-12-13	Temperature Gauge	1
12	13253	Outlet Pressure Gauge	1
13	5000-8-43	Start-Stop Switch	1
	7378B	Switch Heater	1

**Figure 6
Front View**

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000E**



Legend and Spare Parts List

Index Number	Part Number	Description	Qty.
1	12043	Accumulator	1
	12186	Check Valve	4
2	3739	Boost Transformer	2
3	11688	Relief Valve Muffler	1
4	11790	By-Pass Relief Valve	1
5	5000-6-47K	System Pressure Alarm Grommet	1
6	-----	High Pressure Outlet	1
7	-----	Low Pressure Outlet	1
8	5000-6-47K	Outlet Air Alarm Grommet	1
	5000-8-38	Alarm Plug, Optional (in accessory kit)	1
	5000-8-39	Alarm Socket, Optional (in accessory kit)	1
9	-----	Water Drain Outlet	1
10	11892	Module Connecting Hose Assembly	1

**Figure 7
Rear View**

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000E**

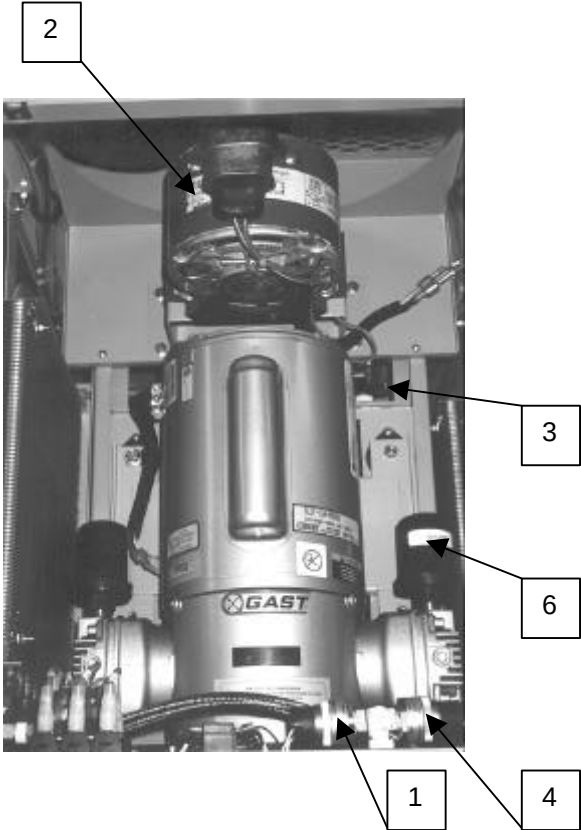


Figure 8
Top View, Compressor Module

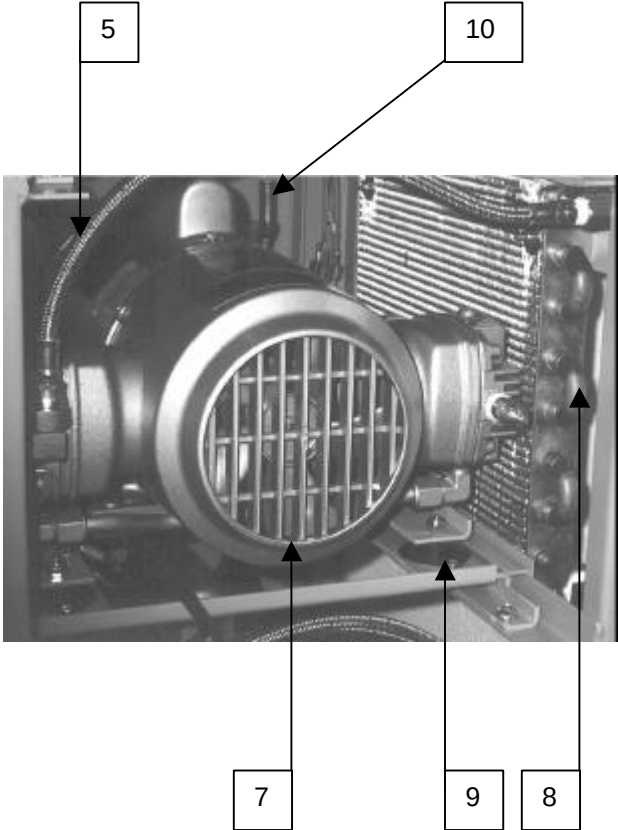


Figure 9
Lower Section, Compressor Module

**Legend and Spare Parts List
Figures 8 and 9**

Index Number	Part Number	Description	Qty.
1	M-20720-A	System Pressure Alarm Switch	1
2	12212	Ventilating Fan Motor Assembly	1
	12005	Ventilating Fan Blade	1
3	14571	Control Transformer (not shown)	1
4	M-20720-A	Compressor Control Switch	1
5	B-431	Compressor Hose Assembly	4
6	11688	Air Intake Filter Assembly	8
7	11576	Air Compressor Assy., 60 Hz	4
	11341	Air Compressor Assy., 50 Hz	4
8	22592	Precooler Assembly	4
9	4582	Vibration Mount	16
10	22575	Pressure Gauge Snubber Coil	1

Figures 8 and 9
Top View, Compressor Module and Lower Section, Compressor Module

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000E**

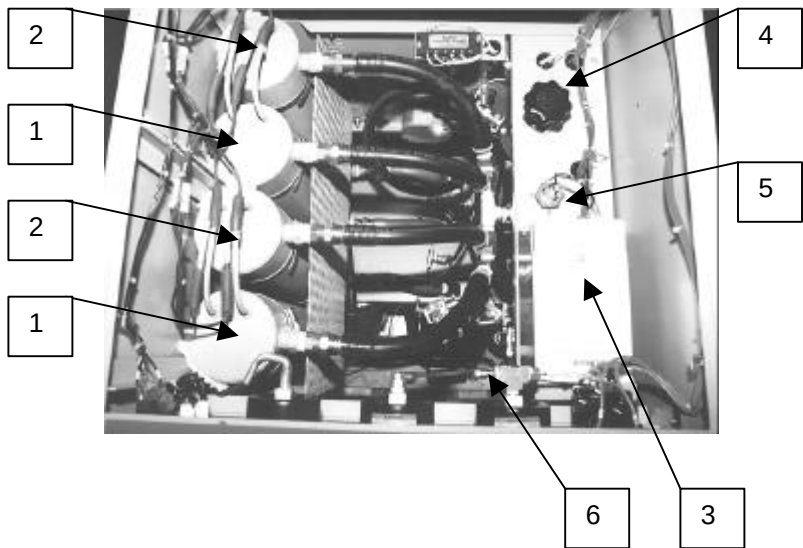


Figure 10
Top View, Dryer Module

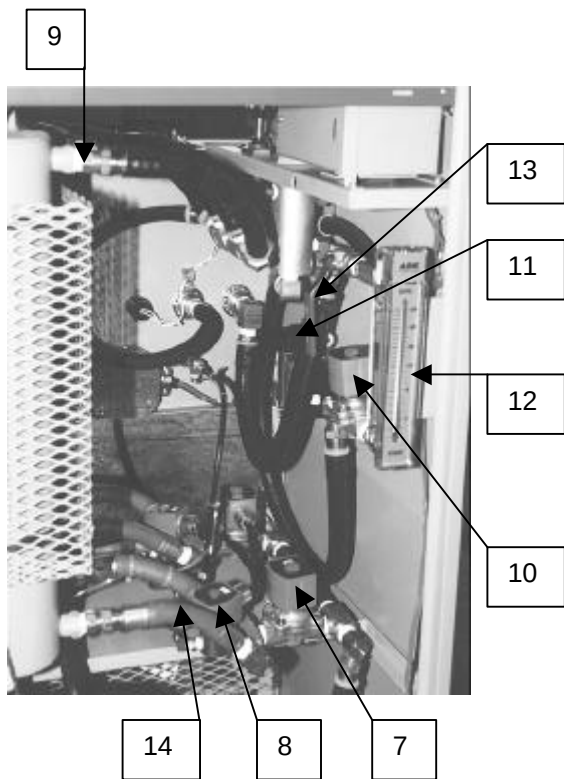


Figure 11
Front Middle Section, Dryer Module

**Legend and Spare Parts List
Figures 10 and 11**

Index Number	Part Number	Description	Qty.
1	11578	Desiccant Tower, Front	2
2	11577	Desiccant Tower, Rear	2
3	12314	Boost Transformer	1
4	13117	Pressure Regulator	1
5	11602	Humidity Sensing Tube	1
	5000-6-47D	Humidity Sensing Element	1
	4157	Adaptor	1
	5000-6-47J	Humidity Tube Nut	1
	5000-1-18C	O-Ring	1
6	CCM-18	Pressure Test Valve	1
7	11598	Tower Solenoid Valve	2
8	21321	Purge Solenoid Valve	2
9	15-168	Tower Filter	4
10	11598	Humidity Solenoid Valve	1
11	4634	Humidity By-Pass Relief Valve	1
	11688	Relief Valve Muffler (not shown)	1
12	12227	Air Flowmeter	1
13	11620	High Pressure Shut-Off Valve	1
14	21308	Tower Inlet Hose Assembly	4
15	14571	Control Transformer (not shown)	1

Figures 10 and 11
Top View, Compressor Module and Lower Section, Compressor Module

**ADK AIR DEHYDRATION SYSTEM
MODEL 30000E**

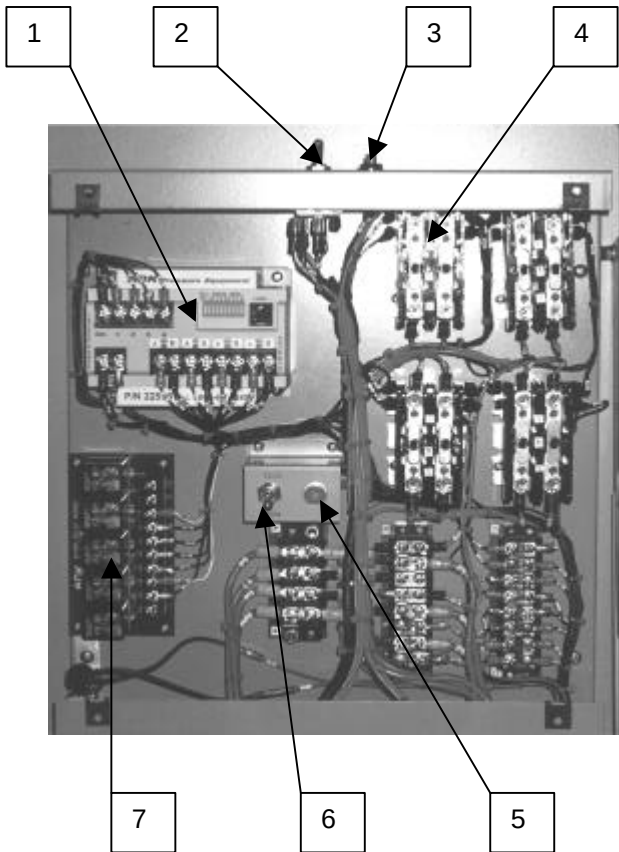


Figure 12
Compressor Module Electrical Box

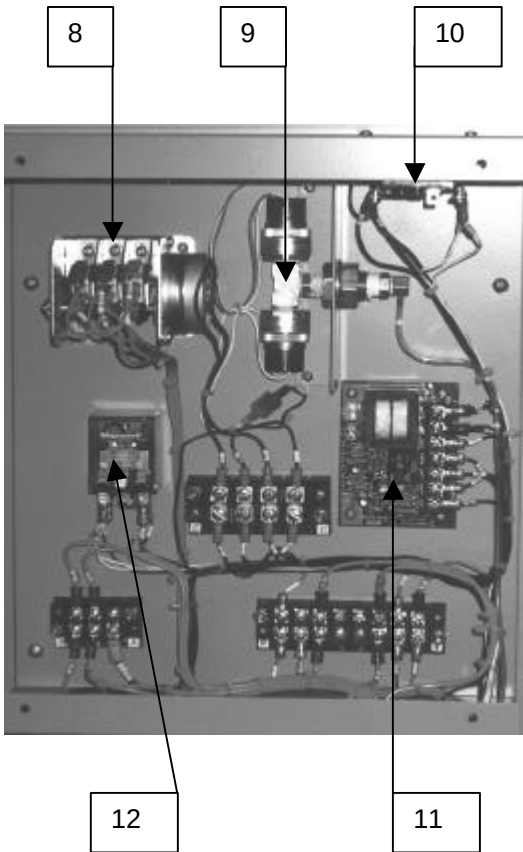


Figure 13
Dryer Module Electrical Box

**Legend and Spare Parts List
Figures 12 and 13**

Index Number	Part Number	Description	Qty.
1	22555	Control Relay Block	1
2	11669	Reset Override Switch	1
3	M-20131	Manual Reset Switch	1
4	11247	Compressor Power Contactor	4
5	11785	Test Lamp	1
6	11669	Test Switch	1
7	22521	Alarm Relay Board	1
8	11587	Tower Timer Assembly, 60 Hz	1
	11662	Tower Timer Assembly, 50 Hz	1
9	22530	High-Low Pressure Alarm Switch	1
10	5000-12-86	High-Low Pressure Alarm Relay	1
11	22262	Humidity Monitor Board	1
12	11597	Humidity Alarm Relay	1

Figures 12 and 13
Compressor Module and Dryer Module Electrical Boxes

ADK

Important: Refer to Preventive Maintenance sections of the operating manual for the proper procedures and sequence before performing maintenance.

MODEL NO. _____

SERIAL NO. _____

DATE SYSTEM PLACED IN SERVICE _____

ROUTINE PERIOD	DATE	REPLACE COMP. AIR INLET FILTER ELEMENTS	CHECK SYSTEM PRESSURE	CHECK OUTPUT PRESSURE ALARMS	CHECK HUMIDITY ALARM	CHECK HEAT EXCHANGER TEMPERATURE	CHECK & CLEAN REFRIG. UNIT CONDENSER	CHECK SYSTEM PRESSURE ALARM	REPLACE TOWER FILTERS	REPLACE DRAIN CAPILLARY & STRAINER	CHECK COMPRESSOR VIBRATION MOUNTS	SERVICE COMP. REPLACE RINGS AND VALVES
3 MONTHS		☐	☐	☐	☐	☐	☐					
6 MONTHS		☐	☐	☐	☐	☐	☐					
9 MONTHS		☐	☐	☐	☐	☐	☐					
1 YEAR		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ ☐ X DENOTES ROUTINE MAINTENANCE ITEM. INITIAL AND DATE WHEN COMPLETED

☐ CAN BE DONE WITH DRYER IN OPERATION

☐ X SHUT DOWN DRYER BEFORE PERFORMING



McIntire

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745 Clark Ave.
Bristol, CT 06010
1 800 4 DRY AIR (437-9247)