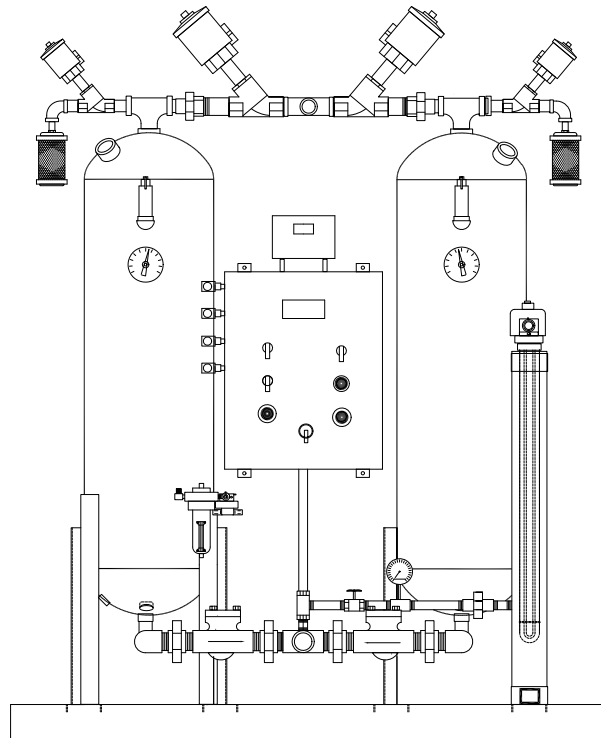




*Always air. Always there.*

# USER/SERVICE MANUAL

## HEATED REGENERATIVE DRYERS DEX SERIES



PART NUMBER:  
**02250195-404 R00**

**KEEP FOR  
FUTURE  
REFERENCE**

### WARRANTY NOTICE

Failure to follow the instructions  
and procedures in this manual or,  
misuse of this equipment will  
VOID its warranty!

©SULLAIR CORPORATION  
The information in this manual is current  
as of its publication date, and applies to  
compressor serial number:

**SEHIBAAA-0001**

and all subsequent serial numbers.



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# Section 1

# INTRODUCTION

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This manual contains instructions for the installation, operation and maintenance of the **DEX—(200-10,000 CFM )** adsorption dryer.

This manual is intended to familiarize operators quickly with the equipment provided, its construction and operation, and how to carry out any maintenance when required.

Read it through carefully before commissioning the dryer.

Record operating hours, maintenance work and repairs etc in a logbook.

Follow all instructions carefully to ensure a trouble free life.

Our guarantee is affected if you fail to observe the instructions and recommendations for the operation and maintenance of the equipment as given in this instruction manual. Also we cannot guarantee the equipment if it has been modified, operated with parts other than those originally supplied or specified in the spare parts list or if the equipment is operated at conditions other than which it was intended and designed for. Consult **Sullair** before making any changes that may void the equipment warranty.

Our after sales service department will be happy to provide advice, service or any spare parts that you need.

Quote the model number, serial number and date of manufacture on all correspondence with **Sullair** This is very important, particularly when ordering spare parts.

**Sullair** reserves the right to make changes or modifications to the equipment designs without notice.

## 1.1 IDENTIFICATION PLATE

The product identification plate shows all the primary data of the machine. Upon installation, fill in the table shown on the side copying the data shown on the identification plate. These data must always be referred to the manufacturer or to the dealer when information or spare parts are needed, even during the warranty period.

The removal or the alteration of the identification plate will void the warranty rights.

<b>Model</b>	
<b>Serial No.</b>	
<b>Code</b>	Heatless Regenerative Dryer
<b>Nominal Flow Rate</b>	SCFM
<b>Max. Air Pressure</b>	150 PSIG
<b>Max. Inlet Air Temperature</b>	100°F
<b>Ambient Temperature</b>	100°F
<b>Dessicant (type and Qty)</b>	Activated Alumina
<b>Electric Supply</b>	115/110/1/50,60 208/220/1/50,60
<b>Electric Nominal Power</b>	10W
<b>Fuse Max.</b>	1 AMP
<b>Manufactured</b>	—

# NOTES

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## 1.2 WARRANTY CONDITIONS

For 12 months from the installation date, but no longer than 14 months from the delivery date, the warranty covers eventual faulty parts, which will be repaired or replaced free of charge, except the travel, hotel and restaurant expenses of our engineer.

The warranty doesn't cover any responsibility for direct or indirect damages to persons, animals or equipment caused by improper usage or maintenance, and it's limited to manufacturing faults only.

The right to warranty repairs is subordinated to the strict compliance with the installation, use and maintenance instructions contained in this manual.

The warranty will be immediately voided in case of even small changes or alterations to the dryer.

To request repairs during the warranty period, the data reported on the identification plate must be notified.

## Section 2

# SAFETY

---

The dryer has been designed and constructed in accordance with the generally recognized rules pertaining to adsorption technology as well as industrial safety and accident prevention regulations.

The equipment design, development, production, assembly and customer service fall under the **Sullair** quality control system.

The dryer is state of the art. There are, however, hazards to the body, equipment and life accompanying this type of product if it is not operated for the purpose which it is intended by trained and specialized personnel.

The equipment supplied is intended exclusively for drying compressed air. Any other use or one exceeding this is considered unauthorized. **Sullair** cannot be held liable for damages resulting from incorrect or unauthorized use of the equipment. Any such risk is carried solely by the end user.

Authorized use means complete compliance with all of the conditions of operation, servicing and maintenance prescribed by **Sullair** in this Instruction and Operation Manual.

The dryer is only to be operated, serviced and repaired by trained personnel who are familiar with this type of equipment and understand fully its operation and any potential dangers.

### 2.1 SAFETY INFORMATION

The end user and operator must observe all National, State, and Local industrial and safety regulations dealing with the operation of pressure vessels under compressed air service. Also all “end user” safety rules for the same type of service must be adhered to. The following points list some of the important factors dealing with this type of equipment.











- Never make any structural changes to the equipment
- Use only original spare parts and accessories
- Never weld on any pressure vessel or modify it in any way
- All maintenance on “pressure parts” must be carried out with the equipment shut-down, depressurized and locked out. Any in plant procedures or work permits regarding pressure vessels are to be adhered to.
- Do not operate the equipment with the control panel door open, the electrical system energized and live parts exposed.
- Disconnect the dryer from the electrical supply when any electrical work is performed. Lock out the safety disconnect and obtain any required work permits.







The desiccants used in this equipment are not considered hazardous. However **all contact with or disposal of the desiccant** should be in accordance with the **relevant MSDS**. The following lists the more common safety measures normally observed during filling operations.

- In the case of accidental contact of the desiccant with the eyes, rinse immediately with an abundance of clean water. **Refer to the MSDS.**
- Accidental spillage of desiccant on the floor should be cleaned up avoiding the creation of excess dust during this procedure.
- Use a contoured face mask during any filling or draining operations. **Refer to the MSDS.**





# NOTES

## 2.2 DEFINITION OF THE SAFETY SYMBOLS USED

	<p>Before attempting any intervention on the dryer, read carefully the instructions reported in this use and maintenance manual.</p>
	<p>General warning sign. Risk of danger or possibility of damage to the machine. Read carefully the text related to this sign.</p>
	<p>Electrical hazard. The relevant text outlines conditions which could result fatal. The related instructions must be strictly respected.</p>
	<p>Danger hazard. Part or system under pressure.</p>
	<p>Danger hazard. Component or system which during the operation can reach high temperature.</p>
	<p>Danger hazard. It's absolutely forbidden to breathe the air treated with this apparatus.</p>
	<p>Danger hazard: It's absolutely forbidden to use water to extinguish fire on the dryer or in the surrounding area.</p>
	<p>Danger hazard; It's absolutely forbidden to operate the machine when the parts (under pressure or electric panels) are not in place or have been tampered with and changed.</p>
	<p>Danger hazard: machine level noise could be higher than 85 dBA. It is mandatory to install the machine in dedicated area where people are not normally present. The installer and/or the user is responsible for correct installation of the dryer, in order to prevent noise propagation to the near work environment. The installer and/or the user is also responsible for the safety signs affixing into installation site.</p>
	<p>Attention: the User or Operator must wear hearing protection before performing any procedure on the dryer. All personnel must select the proper PPD (Personal Protection Device) hearing protector ( earmuffs, ear canal caps or ear plugs) in order to prevent damage to the person's hearing.</p>

	<p>Maintenance and/or control operation to be very carefully performed by qualified personnel 1.</p>
	<p>Compressed air inlet connection point.</p>
	<p>Compressed air outlet connection point.</p>
	<p>Condensate drain connection point.</p>
	<p>Operations which can be worked out by the operator of the machine, if qualified 1.</p>
	<div style="text-align: center; background-color: black; color: white; padding: 5px;"><b>NOTE</b></div> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: fit-content;"> <p><b>Text to be taken into account, but not involving safety precautions.</b></p> </div>
	<p>In designing this unit a lot of care has been devoted to the protection of the environment:</p> <ul style="list-style-type: none"> <li>• Dryer and relevant packaging composed of recyclable materials.</li> <li>• Energy saving design.</li> </ul> <p>Not to spoil our commitment, the user should follow the few ecological suggestions marked with this sign.</p>

**2.3 WARNINGS**

	<p>Compressed air is a highly hazardous energy source. Never work on the dryer with parts under pressure. Never point the compressed air or the condensate drain jet towards anybody.</p> <p>The user is responsible for the installation of the dryer, which has to be executed on the basis of the instructions given in the “Installation” chapter. Otherwise, the warranty will be voided and dangerous situations for the personnel and/or damages to the machine could occur.</p>
	<p>Only qualified personnel can use and service electrically powered devices. Before attempting any maintenance action, the following conditions must be satisfied :</p> <ul style="list-style-type: none"> <li>• Ensure that any part of the machine is under voltage and that it cannot be connected to the mains.</li> <li>• Ensure that any part of the dryer is under pressure and that it cannot be connected to the compressed air system.</li> </ul>
	<p>Any change to the machine or to the relevant operating parameters, if not previously verified and authorised by the Manufacturer, in addition to create the possibility of dangerous conditions it will void the warranty.</p>
	<p>Don't use water to extinguish fire on the dryer or in the surrounding area.</p>

**2.4 PROPER USE OF THE DRYER**

This dryer has been designed, manufactured and tested only to be used to separate the humidity normally contained in compressed air. Any other use has to be considered improper. The Manufacturer will not be responsible for any problem arising from improper use; the user will be in any case responsible for any resulting damage.

Moreover, the correct use requires the compliance with the installation conditions, in particular:

- Voltage and frequency of the primary electrical supply.
- Pressure, temperature and flow-rate of the incoming air.
- Ambient temperature.

This dryer is supplied tested and fully assembled. The only operation left to the user is the installation of the desiccant into the dryer towers and the connection to the plant in compliance with the instructions given in the following chapters.



The purpose of the machine is the separation of water present in compressed air. The dried air cannot be used for respiration purposes or for operations leading to direct contact with foodstuff, unless subject to further treatments.

### 2.5 INSTRUCTIONS FOR THE USE OF PRESSURE EQUIPMENT

To ensure the safe operation of pressure equipments, the user must conform strictly to the following:

1. The equipment must only be operated within the temperature and pressure limits stated on the manufacturers name/data plate.
2. No welding is allowed on the shell and end caps.
3. The equipment must not be stored in badly ventilated spaces, near a heat source or inflammable substances.
4. Vibration must be eliminated from the equipment to prevent fatigue failure.
5. An internal inspection must be carried out at 12 month intervals to check for pressure equipment corrosion. The actual wall thickness of the tower after corrosion should not be less than the data indicated on the chart located on the side on the tower.
6. Condensate drains should be checked for operation every day to prevent a build up of condensate in the pressure equipment.
7. The maximum working pressure stated on the manufacturers data plate must not be exceeded.
8. All documentation supplied with the equipment (manual, declaration of conformity etc.) must be kept for future reference.

# NOTES

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*Section 3*

# SPECIFICATIONS

Model#	Inlet Flow Capacity @100 PSIG CFM	Voltage	Inlet/Outlet Connections (inches)	Dimensions L x W x H (inches)	Weight (Lbs)
DEX-150	150	230/460/3/60	1" NPT	34x35x76	890
DEX-200	200	230/460/3-60	1" NPT	34x35x76	7910
DEX-250	250	230/460/3-60	1 1/2" NPT	40x40x76	1110
DEX-300	300	230/460/3/60	1 1/2" NPT	40x40x83	1250
DEX-375	375	230/460/3/60	1 1/2" NPT	50x44x85	1400
DEX-500	500	230/460/3/60	2" NPT	50x45x90	1600
DEX-650	650	230/460/3/60	2" NPT	50x45x90	1900
DEX-800	800	230/460/3/60	3" FLG	70x 55x 105	2900
DEX-1000	1000	230/460/3/60	3" FLG	70x55x105	4190
DEX-1250	1250	230/460/3/60	3" FLG	80x60x109	4550
DEX-1500	1500	230/460/3/60	3" FLG	80x60x109	5360
DEX-2000	2000	230/460/3/60	3" FLG	100x85x110	6900
DEX-2500	2500	230/460/3/60	4" FLG	100x85x110	8100
DEX-3000	3000	230/460/3/60	4" FLG	110x89x120	9400

**3.1 TYPE OF CONSTRUCTION**

- Designed for operation indoors in a Non-hazardous location. The electrical equipment is constructed to Nema 12 standards.
- Fully automatic, external heat regenerated twin tower dryer.

**3.2 AMBIENT CONDITIONS**

Atmospheric Pressure	14.7 PSIA
Ambient Temperature Minimum	40°F
Ambient Temperature Maximum	105°F

**3.3 OPERATIONAL DATA**

**3.3.1 ADSORPTION**

Medium	Compressed Air
Condition	Free from dirt, oil, condensation and aggressive contaminants
Inlet Flow	_____scfm
Inlet Pressure	100 psig (minimum)
Adsorption capacity	Saturated inlet air at 100°F
Outlet pressure dewpoint	-40°F (with dry air cooling)
Desiccant type	Activated Alumina (F-200)
Amount per vessel	_____lbs

**3.3.2 REGENERATION**

Medium	Atmospheric air
Nominal flow rate	_____scfm
Regeneration temperature	400°F
Regeneration time	180 minutes maximum

**3.3.1 COOLING**

Medium	Compressed air or ambient air
Nominal flow rate	_____scfm
Cooling air temperature	100°F maximum
Cooling time	60 minutes

**3.4 PRESSURE VESSEL DESIGN AND CONSTRUCTION DATA**

The desiccant chamber pressure vessels are constructed to the latest edition of the ASME Code, Section VIII, Division 1.

**3.4.1 DESICCANT CHAMBERS**

Design pressure	200 psig
Design temperature	400°F
MDMT	-20°F at 150 psig
Materials of construction	SA516 Gr.70, SA53 Gr.B, SA105

**3.4.2 PREFILTERS AND AFTERFILTER**

Design Pressure	232 psig
Design temperature	-20 to 250°F
Materials of Construction	Cast aluminum, up to 1500 CFM (Carbon Steel ASME Coded)

**3.5 PIPE MANIFOLD DETAILS**

Wet air inlet	_____inch sch. 40 pipe
Dry air outlet	_____inch sch. 40 pipe
Regeneration outlet	_____inch sch. 40 pipe

## SECTION 3

## DEX HEATED REGENERATIVE DRYER

### 3.6 ELECTRICAL DATA

Power Supply	480 volt, 3 phase, 60 Hz
Installed power	_____KW
Electrical Enclosure	NEMA 12
Control voltage	120 Volts A.C.
Solenoid coil voltage	120 Volts A.C.

### 3.7 TIME, PRESSURE, TEMPERATURE, AND DEWPOINT SETTINGS

Adsorption time	240 minutes
Regeneration time	240 minutes
Heating time	140 minutes
Cooling time	100 minutes
Heater outlet temperature	350°F
Regen. heater sheath over temp.	650°F
Adsorption pressure	100 Psig (minimum)
Dewpoint controlled changeover	-40°F
High Dewpoint alarm setting	+32°F

### 3.8 DIMENSIONS AND WEIGHT

Width	_____inches
Height	_____inches
Depth	_____inches
Weight	Approx. _____lbs

### 3.9 FILTER MODELS

Pre-filter Model	_____
Pre-filter element	_____
After filter model	_____
After filter element	_____
Control Air Filter	_____
Control Air Element	_____

# NOTES

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## Section 4

# INSTALLATION

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The dryer should be installed on a level location that is selected to provide easy access to all parts of the system to ensure future ease of service.

Care should be taken during the location selection to ensure that there is enough space provided so that all future maintenance and service can be performed efficiently.

Ensure that the inlet and outlet connections to the dryer are made with flanges the correct size and pressure rating.

Ensure that the electrical service to the dryer is suitable for the equipment requirements as listed in **Section 3.6** of this manual.

It is recommended that the dryer “regeneration air outlet connection” or “purge exhaust connection” be piped to the outside of the building. This ensures that the moisture adsorbed in each drying period is not released into the building as the equipment operates. A good rule of thumb that governs the pipe size used is as follows.

Up to 10 feet long use the same size pipe as the regeneration air outlet connection.

Up to 20 feet long use one size bigger pipe.

Up to 50 feet long use two sizes bigger pipe.

**DO NOT** use plastic pipe as the exhaust temperatures may reach 300 degrees F. or hotter.

It is important that the operating conditions listed in the “**Specifications**” are observed. Failure to do so may result in premature failure of the desiccant due to low operating pressure or high inlet temperatures. Do not place the dryer into process service until they has been fully regenerated on both vessels, the operating cycle in the PLC has been verified and the system is at the correct operating pressure.

If the system pressure cannot be maintained in the adsorption vessel during drying a system pressure holding valve is required to protect the dryer from high velocities which are the result of low service pressure. The pressure holding valve must be installed downstream of the dryer system. Failure to maintain the correct operating pressure may lead to dewpoint failure.

If there are any changes in the operating conditions of the system from those listed in the “**Specifications**” section please contact customer service department for advice on any necessary system adjustments.

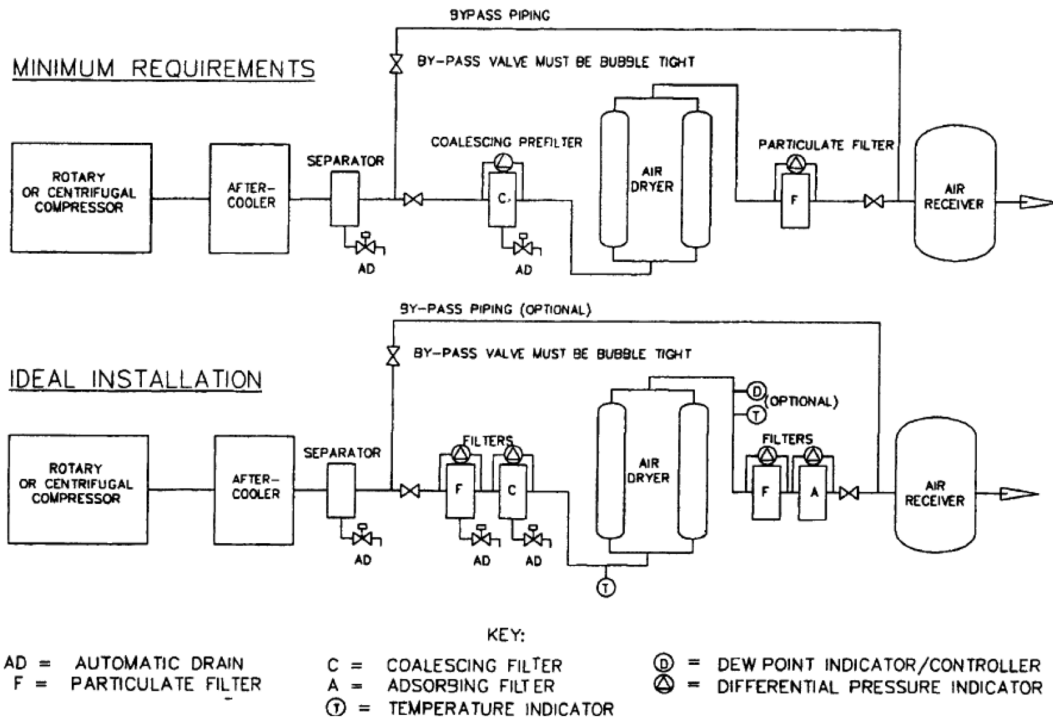
# NOTES

**Table 4-1: Dryer Specifications**

Model No. _____	Desiccant/Tower: _____ LBS _____
Serial No. _____	Inlet/Outlet Size: _____ NPT _____
Inlet Design Conditions: _____	Cycle Time: _____ Standard Short Cycle _____
Flow: _____ SCFM@ _____	
Pressure: _____ 100 _____ PSIG	Maximum Operating Pressure: _____ PSIG
Temperature: _____ 100 _____ °F	Minimum Operating Pressure: _____ PSIG
Outlet Dew Point: _____ °F PDP @ Above Conditions	Maximum Operating Temperature: _____ °F
Purge Flow: _____ PSIG/SCFM _____	Minimum Operating Temperature: _____ °F
Power Supply: _____ V _____ PH _____ HZ	
Current Draw: _____ AMP _____	

1. This pressure is 95% of MAWP
2. Operating at "OFF" design conditions may adversely affect Outlet Dew Point.
3. Operation of dryer below 35°F requires heat tracing of certain components upstream of dryer outlet.

**CLEAN DRY, CONTAMINANT FREE AIR**



**Figure 4-1: Recommended Installation**

## Section 5

# OPERATION

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---

### 5.1 ADSORPTION

Compressed air flows through the system prefilter and into the bottom of the online desiccant chamber via the inlet switching valve and desiccant support screen. The air flow passes upwards through the desiccant bed where it is dried. At the top of the vessel the dried air exits the adsorber through the flow distributor (desiccant retaining screen) and passes through the system afterfilter into the downstream system.

### 5.2 REGENERATION

Regeneration is carried out at with the off stream desiccant chamber isolated from the system and depressurized to atmosphere for regeneration. To achieve this, the inlet valve closes automatically and the depressurization valve is opened. When a low chamber pressure is sensed with a pressure switch, the regeneration outlet valve is opened. Now regeneration (Heating and Cooling) may take place.

The regeneration air passes over the regeneration heater, where the correct regeneration temperature is obtained, and into the desiccant chambers via the regeneration inlet check valves. The air flow is evenly distributed over the area of the desiccant chamber by the upper flow distributors of vessels "1" or "2" and downwards through the desiccant beds to liberate previously adsorbed moisture.

The regeneration air leaves the desiccant chambers via the regeneration outlet valves and passes to atmosphere. Under these conditions all of the previously adsorbed moisture is liberated from the desiccant and removed to atmosphere in the regeneration flow. The process described above continues for the duration of the heating period or until a suitable exhaust temperature is obtained.

The regeneration air heater outlet temperature is monitored and controlled by a thermocouple and PLC Heater sheath over temperature control is provided by PLC temperature controller (Type K thermocouple)

### 5.3 COOLING

The cooling process takes place in the same flow pattern as regeneration except the regeneration heater is turned off.

The cooling cycle will operate until the cooling period time is complete. At this point purge exhaust valves will close and the regenerated chamber will repressurize prior to returning to service in the adsorption mode.

The amount of air used for cooling is manually adjustable by a service valve in the cooling/repress manifold located at the bottom right hand side of the dryer. This valve is pre-adjusted at start-up to provide sufficient air for cooling. If the valve is partially closed or closed from the start up position then satisfactory cooling will not take place. This will result in hot air passing downstream and an accompanying dewpoint bump. If the valve is opened up more than the start up position then more air than necessary will be used in the cooling period.

### 5.4 TIME CONTROLLED VESSEL CHANGE OVER

The vessel change over procedure will be initiated by the PLC control system when the timed adsorption phase for the in process vessel has been completed. Also, it is required that the regenerated vessel has fully repressurized, the vessel pressure is sensed by the vessel pressure switch and the repressurization time has elapsed prior to changeover occurring.

During "Time controlled" operation, "Dewpoint controlled" operation may be selected at any time.

### 5.5 DEWPOINT CONTROLLED VESSEL CHANGE OVER (OPTION)

The vessel change over will be initiated by the PLC control system when the timed adsorption phase for the in process vessel has been completed and when the dew point control senses the required moisture level at the dryer outlet.

During "Dewpoint controlled" operation, "Time controlled" operation may be selected at any time.

## 5.6 PANEL MOUNTED DATA DISPLAY

This device is intended to provide the equipment operators with basic information regarding the operation of the equipment. A copy of the data display program is included later in this manual and shows the various information screens that are provided.

At power up, the display will show the default screen that provides access to "STATUS" or "CONTROL" information. At any time, or from any screen, the default screen can be reached by pressing the "Menu" button.

From the default screen, dryer "STATUS" screens can be reached by pressing up and down arrows from the default screen.

Dryer is equipped with Auto and manual switch. On auto switch the PLC will control the function of the dryer and in manual mode customer can step the process for trouble shooting. When steps are made the switch has to be turned to Auto mode.

Dry air cooling switch is also provided for choosing dry air cooling for better dew point or ambient air cooling if dew point spike is not issue.

## 5.7 EQUIPMENT START UP

During transportation and/or storage of the equipment it is possible that the desiccant has been preloaded with atmospheric moisture. It is recommended to fully regenerate both desiccant beds prior to placing the dryer in service. Thus it is necessary for the installation to be completed and process air to be available.

Prior to starting the regeneration the complete installation should be checked over to verify the following points.

1. Are the connections to and from the system inlet and outlet made? Are the correct size and pressure rated connections used?
2. Is the correct electrical service connected to the dryer with a suitably sized Disconnect switch? With the power applied to the dryer it is necessary to verify that the phase rotation of the supply is correct.
3. Ensure that all instrumentation service valves are in the open position and all vent valves are in the closed position. All liquid drain service valves are to be in the open position.

4. With the system outlet valve and bypass valves closed slowly open the dryer inlet block valve to pressurize the system. Check the complete dryer system for leaks at this time. All leaks must be repaired and re tested.
5. Verify that all instrument and pilot air tubing fittings are tight and that the pilot air service valve is open.
6. With the power on verify that the PLC is in the "RUN" mode and after a few minutes the regeneration process for vessels "1" and "2" will begin. Observe all operations of these first two cycles and verify the settings of temperature, pressure and valve operations in the PLC program.

At the completion of the start up procedure the dryer system is ready to dry the process air. Slowly open the system outlet valve to pressurize the downstream system. Ensure the bypass valve is closed prior to operating the dryer.

After start up and approximately one week of service all process piping flanges and the bolting should be checked for tightness. Thermal cycling may affect some gaskets from the initial bolt torque pre-loading and thus some bolting may need to be tightened.

## 5.8 EQUIPMENT SHUT DOWN

The Dryer can essentially be shut down under any "emergency conditions" at any time in the cycle. It is advisable to be fully familiar with the dryer and its operation to avoid any possible hazard or injury as the equipment is under pressure and may be hot. When the system is shut down and the power removed, the dryer bypass valve must be opened and the outlet block valve must be closed to prevent the vessel in adsorption becoming overloaded with moisture.

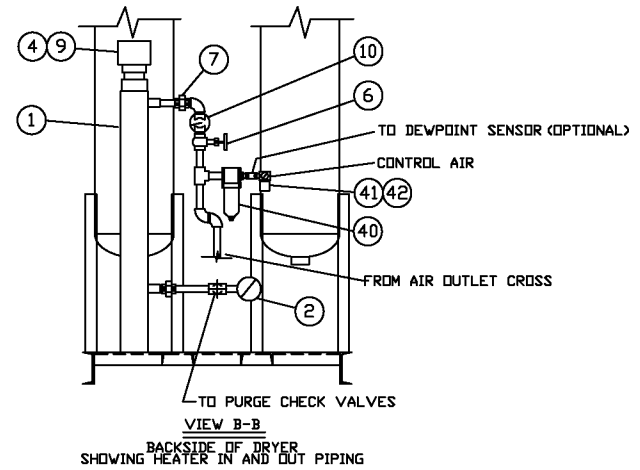
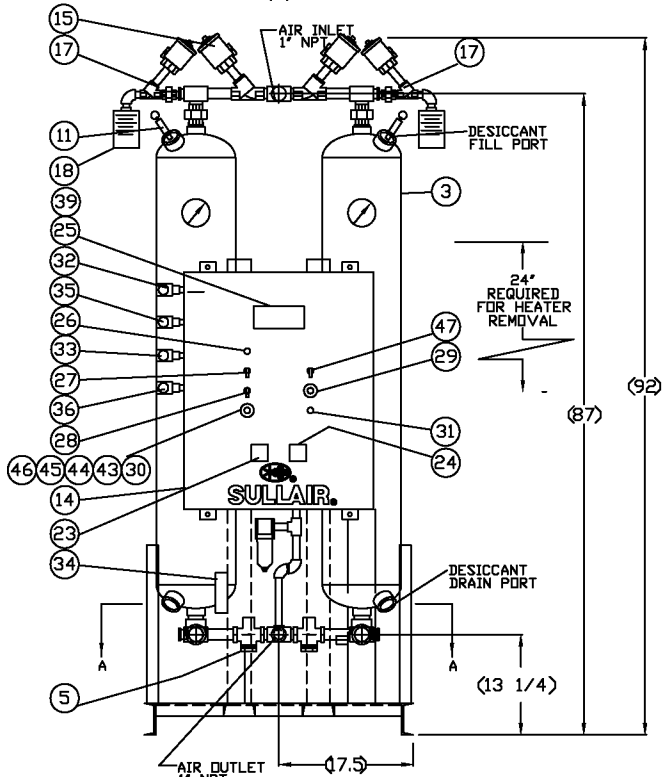
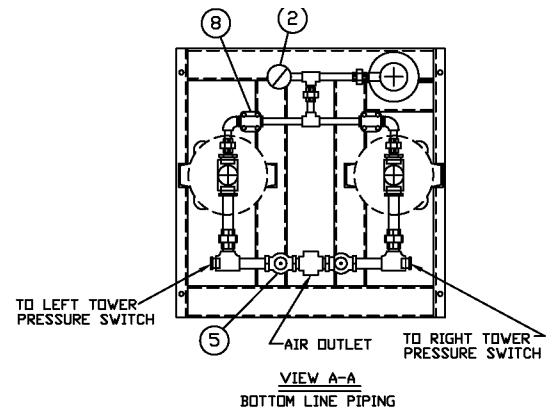
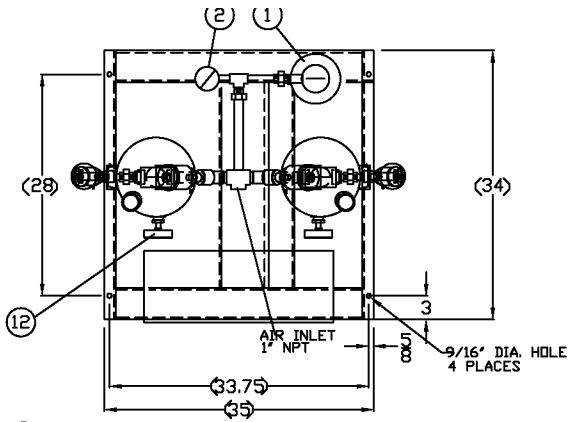
**FOR PLANNED SHUTDOWNS, IT IS RECOMMENDED TO COMPLETE THE REGENERATION PROCESS (HEATING AND COOLING) PRIOR TO STOPPING THE DRYER.**

This ensures that the full heating and cooling cycle took place and that a fully regenerated bed will be available when the system is re-started.

If a long shut down is planned it is recommended to remove the process flow and fully regenerate both vessels prior to shut down. The equipment should then be left depressurized with the system inlet and outlet block valves closed and the power removed. To place the system in operation repeat the start up procedure.



5.9 ID—DEX 200



02250195-339

## 5.9 ID—DEX 200

ITEM	QTY	DESCRIPTION
1	1	HEATER HOUSING
2	1	'K' TYPE THERMOCOUPLE FOR HEATER / PURGE AIR TEMPERATURE
3	2	DESICCANT TOWER
4	1	HEATER
5	2	OUTLET CHECK VALVE
7	1	PURGE ORIFICE UNION
8	2	PURGE CHECK VALVE
9	1	'K' TYPE THERMOCOUPLE FOR HEATER HIGH LIMIT TEMP. CONTROL, INSIDE HEARER THERMOWELL
10	1	PURGE PRESSURE GAUGE <0-200 PSIG>
11	2	PRESSURE RELIEF VALVE <SET @200 PSIG>
12	2	TOWER PRESSURE GAUGE <0-200 PSIG>
13		NOT USED
14	1	ELECTRICAL ENCLOSURE <NEMA 12>
15	2	INLET VALVE, ANGLE BODY, PISTON TYPE
16	1	OPTIONAL DEW POINT MONITOR <NOT SHOWN>
17	2	PURGE EXHAUST VALVE, ANGLE BODY PISTON TYPE
18	2	PURGE EXHAUST MUFFLER
19	2	N/A
20	1	N/A
21	1	N/A
22	1	N/A
23	1	HEATER TEMPERATURE/PURGE AIR TEMP. CONTROLLER
24	1	HEATER HIGH LIMIT TEMP. CONTROLLER
25	1	TEXT DISPLAY WINDOW
26	1	POWER ON LIGHT, GREEN
27	1	POWER OFF/ON SWITCH
28	1	MANUAL/AUTOMATIC MODE SWITCH
29	1	STEP PUSHBUTTON <TROUBLESHOOTING ONLY>
30	1	COMMON ALARM RESET PUSHBUTTON
31	1	COMMON ALARM LIGHT, RED
32	1	L.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
33	1	R.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
34	1	TOWER SELECTOR VALVE, 4-WAY, 2-POS, DUAL SOL.
35	1	L.TOWER DEPRESSURIZATION PILOT SOL. VALVE, 3-WAY

ITEM	QTY	DESCRIPTION
36	1	R.TOWER DEPRESSURIATION PILOT SOL. VALVE, 3-WAY
37	1	LEFT TOWER DEPRESSURIZATION VALVE
38	1	RIGHT TOWER DEPRESSURIZATION VALVE
39	1	DEPRESSURIZATION/EXHAUST MUFFLER
40	1	CONTROL AIR FILTER
41	1	CONTROL AIR PRESSURE REGULATOR
42	1	CONTROL AIR PRESSURE GAUGE
43	2	LEFT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
44	1	LEFT TOWER HIGH PRESSURE SWITCH <INSIDE ENCLOSURE>
45	1	RIGHT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
46		
47	1	DEMAND CYCLE OFF/ON SWITCH <OPTIONAL>

### SPECIFICATIONS

DESICCANT QUANTITY PER TOWER: 125 LBS

TOTAL DESICCANT WEIGHT: 250 LBS

DESICCANT TYPE: 3/16" DIA. ACTIVATED ALUMINA

APPROX. WEIGHT OF UNIT INCLUDING DESICCANT: 950 LBS

DESIGN INLET TEMPERATURE: 100 DEG.F

DESIGN WORKING PRESSURE: 100PSIG

MAXIMUM INLET AIR FLOW AT DESIGN CONDITIONS: 200 SCFM

MAXIMUM ALLOWABLE WORKING PRESSURE: 150PSIG

MAXIMUM TOWER DESIGN TEMPERATURE: 450 DEG.F

PURGE PRESSURE AT DESIGN CONDITIONS SHOULD BE SET AT: 45-50 PSIG

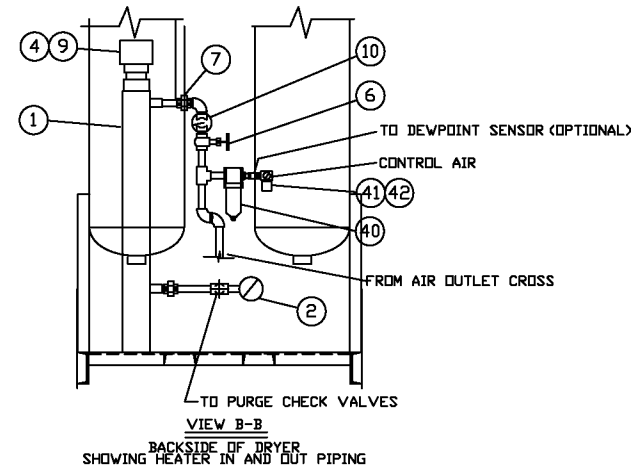
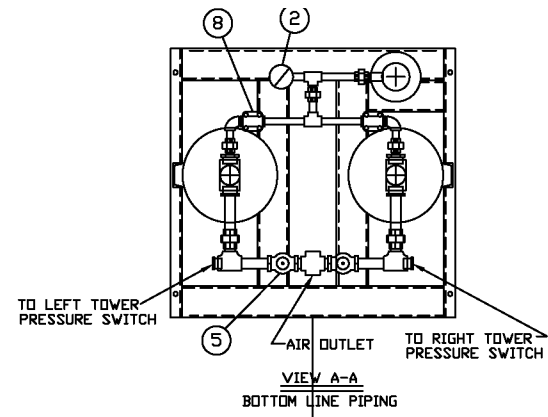
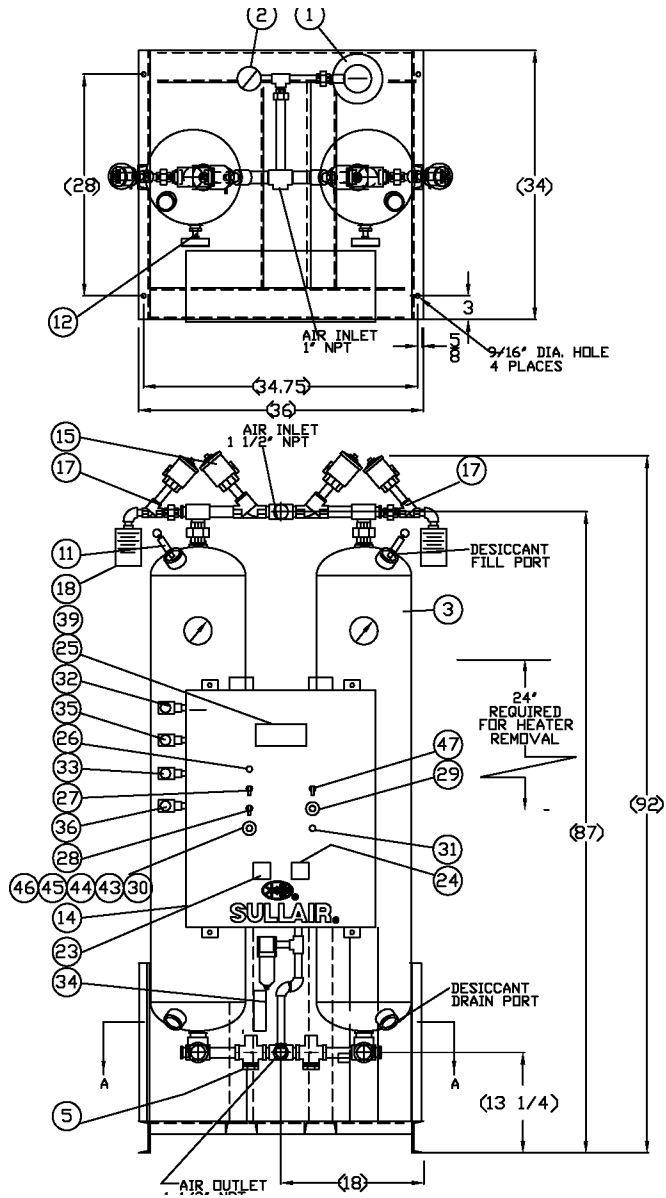
DRYING AIRFLOW: DOWNDRAFT

REGENERATING AIR FLOW: UPDRAFT

### NOTES:

1	ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED
2	MARK/TAG COMPONENT WITH SULLAIR PART NUMBER AND REVISION
3	PAINT PER SULLAIR SPEC. 02250055-350

5.10 ID—DEX 250-300



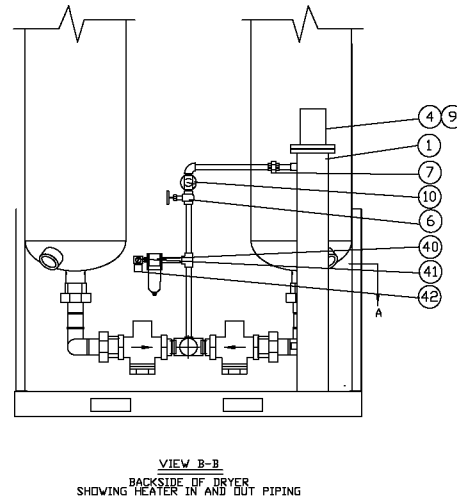
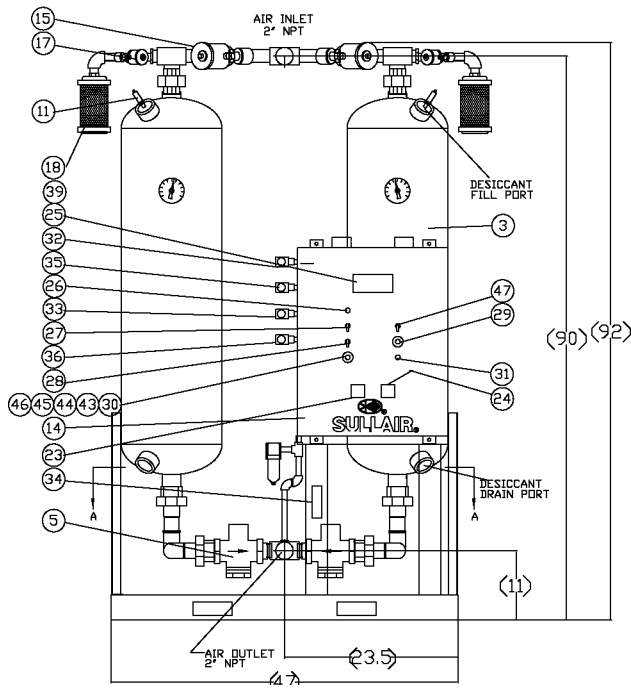
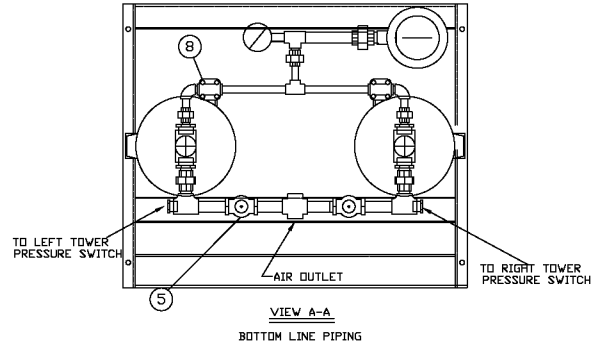
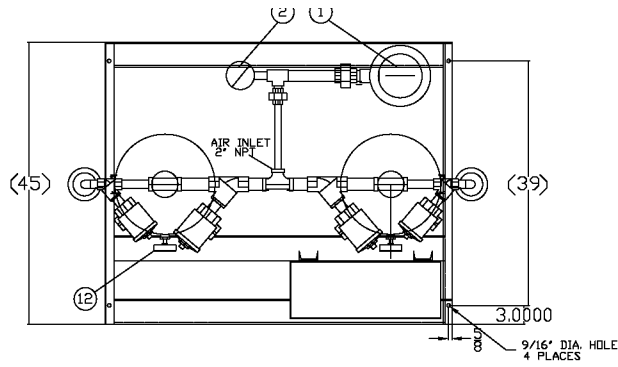
02250195-340

## 5.10 ID—DEX 250-300

ITEM	QTY	DESCRIPTION
1	1	HEATER HOUSING
2	1	'K' TYPE THERMOCOUPLE FOR HEATER/PURGE AIR TEMPERATURE
3	2	DESICCANT TOWER
4	1	HEATER
5	2	OUTLET CHECK VALVE
6	1	PURGE ADJUSTMENT VALVE
7	1	PURGE ORIFICE UNION
8	2	PURGE CHECK VALVE
9	1	'K' TYPE THERMOCOUPLE FOR HEATER HIGH LIMIT TEMP. CONTROL, INSIDE HEATER THERMOWELL
10	1	PURGE PRESSURE GAUGE <0-200 PSIG>
11	2	PRESSURE RELIEF VALVE <SET @200 PSIG>
12	2	TPWER PRESSURE GAUGE <0-200 PSIG>
13		NOT USED
14	1	ELECTRICAL ENCLOSURE <NEMA 12>
15	2	INLET VALVE, ANGLE BODY, PISTON TYPE
16	1	OPTIONAL DEW POINT MONITOR <NOT SHOWN>
17	2	PURGE EXHAUST VALVE, ANGLE BODY PISTON TYPE
18	2	PURGE EXHAUST MUFFLER
19	2	N/A
20	1	N/A
21	1	N/A
22	1	N/A
23	1	HEATER TEMPERATURE/PURGE AIR TEMP. CONTROLLER
24	1	HEATER HIGH LIMIT TEMP. CONTROLLER
25	1	TEXT DISPLAY WINDOW
26	1	POWER ON LIGHT, GREEN
27	1	POWER OFF/ON SWITCH
28	1	MANUAL/AUTOMATIC MODE SWITCH
29	1	STEP PUSHBUTTON <TROUBLESHOOTING ONLY>
30	1	COMMON ALARM RESET PUSHBUTTON
31	1	COMMON ALARM LIGHT, RED
32	1	L.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
33	1	R.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
34	1	TOWER SELECTOR VALVE, 4-WAY, 2-POS., DUAL SOL.

ITEM	QTY	DESCRIPTION
35	1	L.TOWER DEPRESSURIZATION PILOT SOL. VALVE, 3-WAY
36	1	R.TOWER DEPRESSURIZATION PULOT SOL. VAVLE, 3-WAY
37	1	LEFT TOWER DEPRESSURIZATION VALVE
38	1	RIGHT TOWER DEPRESSURIZATION VALVE
39	1	DEPRESSURIZATION/EXHAUST MUFFLER
40	1	CONTROL AIR FILTER
41	1	CONTROL AIR PRESSURE REGULATOR
42	1	CONTROL AIR PRESSURE GAUGE
43	2	LEFT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
44	1	LEFT TOWER HIGH PRESSURE SWITCH <INSIDE ENCLOSURE>
45	1	RIGHT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
47	1	DEMAND CYCLE OFF/ON SWITCH <OPTIONAL>
<b>SPECIFICATIONS:</b>		
DESICCANT QUANTITY PER TOWER: 160LBS/190LBS		
TOTAL DESICCANT WEIGHT: 320LBS/380LBS		
DESICCANT TYPE: 3/16" DIA. ACTIVATED ALUMINA		
APPROX. WEIGHT OF UNIT INCLUDING DESICCANT: 1250 LBS		
DESIGN INLET TEMPERATURE: 100 DEG.F		
DESIGN WORKING PRESSURE: 100PSIG		
MAXIMUM INLET AIR FLOW AT DESIGN CONDITIONS: 250/300 SCFM		
MAXIMUM ALLOWABLE WORKING PRESSURE; 150PSIG		
MAXIMUM TOWER DESIGN TEMPERATURE: 450 DEG.F		
PURGE PRESSURE AT DESIGN CONDITIONS SHOULD BE SET AT: 45-50 PSIG		
DRYING AIRFLOW: DOWNDRAFT		
REGENERATING AIR FLOW: UPDRAFT		
<b>NOTES:</b>		
1	ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTES	
2	MARK/TAG COMPONENT WITH SULLAIR PART NUMBER AND REVISION	
3	PAINT PER SULLAIR SPEC. 02250055-350	

### 5.11 ID—DEX 400-600



02250195-341

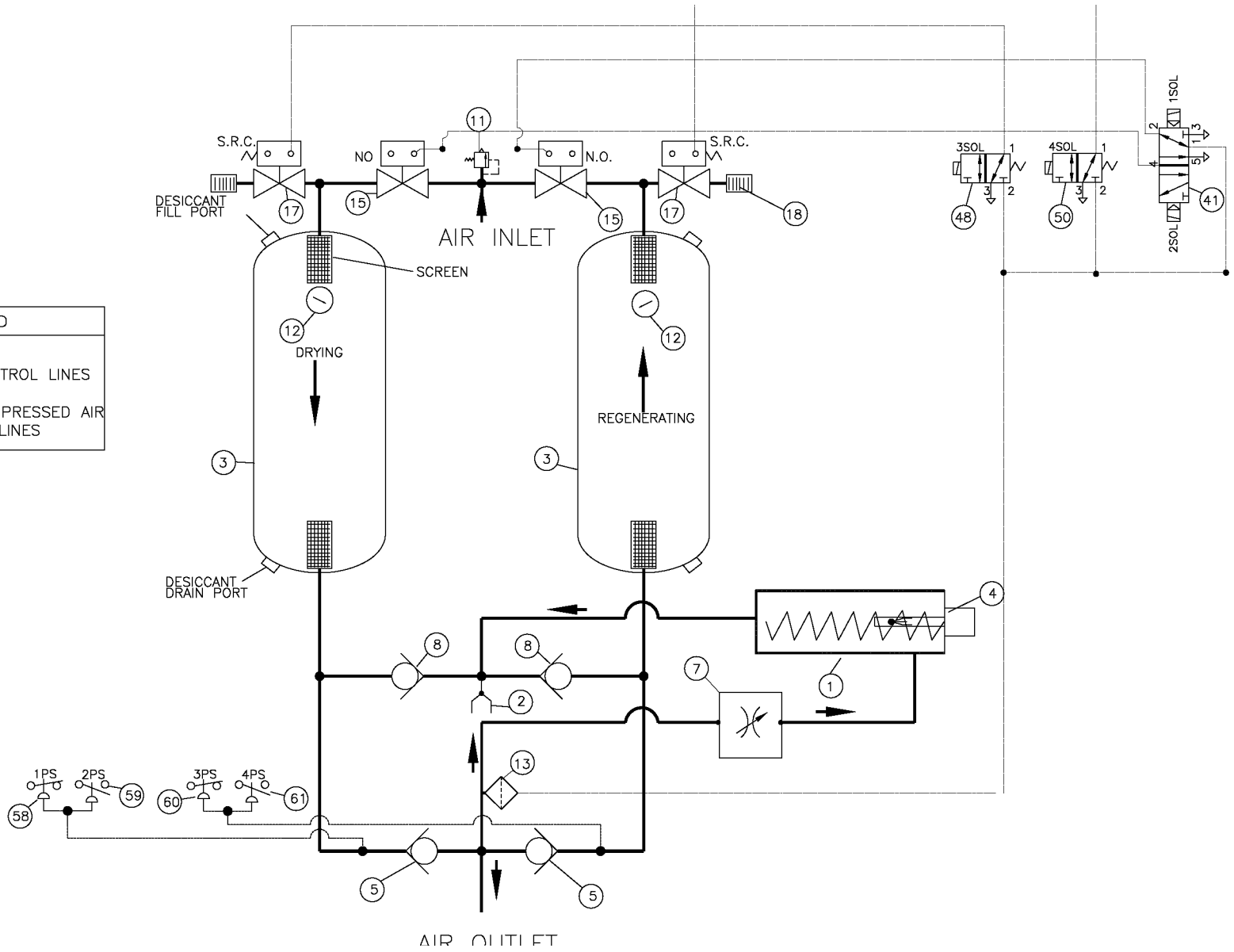
### 5.11 ID—DEX 400-600

ITEM	QTY	DESCRIPTION
1	1	HEATER HOUSING
2	1	'K' TYPE THERMOCOUPLE FOR HEATER/PURGE AIR TEMPERATURE
3	2	DESICCANT TOWER
4	1	HEATER
5	2	OUTLET CHECK VALVE
6	1	PURGE ADJUSTMENT VALVE
7	1	PURGE ORIFICE UNION
8	2	PURGE CHECK VALVE
9	1	'K' TYPE THERMOCOUPLE FOR HEATER HIGH LIMIT TEMP. CONTROL, INSIDE HEATER THERMOWELL
10	1	PURGE PRESSURE GAUGE <0-200 PSIG>
11	2	PRESSURE RELIEF VALVE <SET @200 PSIG>
12	2	TOWER PRESSURE GAUGE <0-200 PSIG>
13		NOT USED
14	1	ELECTRICAL ENCLOSURE <NEMA 12>
15	2	INLET VALVE, ANGLE BODY, PISTON TYPE
16	1	OPTIONAL DEW POINT MONITOR <NOT SHOWN>
17	2	PURGE EXHAUST VALVE, ANGLE BODY PISTON TYPE
18	2	PURGE EXHAUST MUFFLER
19	2	N/A
20	1	N/A
21	1	N/A
22	1	N/A
23	1	HEATER TEMPERATURE/PURGE AIR TEMP. CONTROLLER
24	1	HEATER HIGH LIMIT TEMP. CONTROLLER
25	1	TEXT DISPLAY WINDOW
26	1	POWER ON LIGHT, GREEN
27	1	POWER OFF/ON SWITCH
28	1	MANUAL/AUTOMATIC MODE SWITCH
29	1	STEP PUSHBUTTON <TROUBLESHOOTING ONLY>
30	1	COMMON ALARM RESET PUSHBUTTON
31	1	COMMON ALARM LIGHT, RED
32	1	L.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
33	1	R.TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
34	1	TOWER SELECTOR VALVE, 4-WAY, 2-POS, DUAL SOL.

ITEM	QTY	DESCRIPTION
35	1	L.TOWER DEPRESSURIZATION PILOT SOL. VALVE, 3-WAY
36	1	R.TOWER DEPRESSURIZATION PILOT SOL. VALVE, 3-WAY
37	1	LEFT TOWER DEPRESSURIZATION VALVE
38	1	RIGHT TOWER DEPRESSURIZATION VALVE
39	1	DEPRESSURIZATION/EXHAUST MUFFLER
40	1	CONTROL AIR FILTER
41	1	CONTROL AIR PRESSURE REGULATOR
42	1	CONTROL AIR PRESSURE GAUGE
43	2	LEFT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
44	1	LEFT TOWER HIGH PRESSURE SWITCH <INSIDE ENCLOSURE>
45	1	RIGHT TOWER LOW PRESSURE SWITCH <INSIDE ENCLOSURE>
47	1	DEMAND CYCLE OFF/ON SWITCH <OPTIONAL>
<b>SPECIFICATIONS:</b>		
DESICCANT QUANTITY PER TOWER: 250,320,375 LBS		
TOTAL DESICCANT WEIGHT: 500,640,750 LBS		
DESICCANT TYPE: 3/16" DIA. ACTIVATED ALUMINA		
APPROXIMATE WEIGHT OF UNIT: 2100 LBS		
DESIGN INLET TEMPERATURE: 100 DEG.F		
DESIGN WORKING PRESSURE: 100PSIG		
MAXIMUM INLET FLOW ATR DESIGN PRESSURE: 400,500,600 SCFM		
MAXIMUM ALLOWABLE WORKING PRESSURE: 150PSIG		
MAXIMUM TOWER DESIGN TEMPERATURE: 450 DEG.F		
PURGE PRESSURE AT DESIGN CONDITIONS SHOULD BE SET AT: 45-50 PSIG		
DRYING AIRFLOW: DOWNDRAFT		
REGENERATING AIR FLOW: UPDRAFT		
<b>NOTES:</b>		
1	ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.	
2	MARK/TAG COMPONENT WITH SULLAIR PART NUMBER AND REVISION	
3	PAINT PER SULLAIR SPEC. 02250055-350	

### 5.12 P&I—DEX 200-3500

LEGEND	
	CONTROL LINES
	COMPRESSED AIR LINES



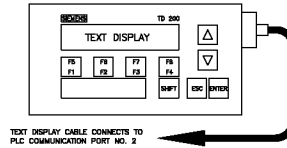
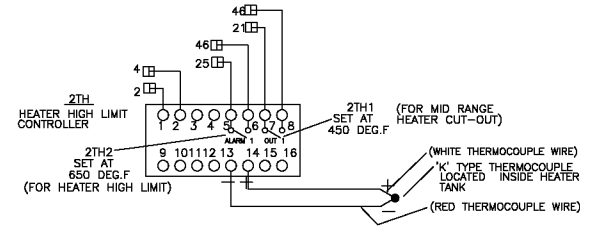
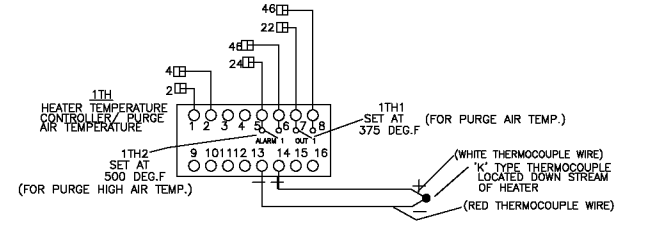
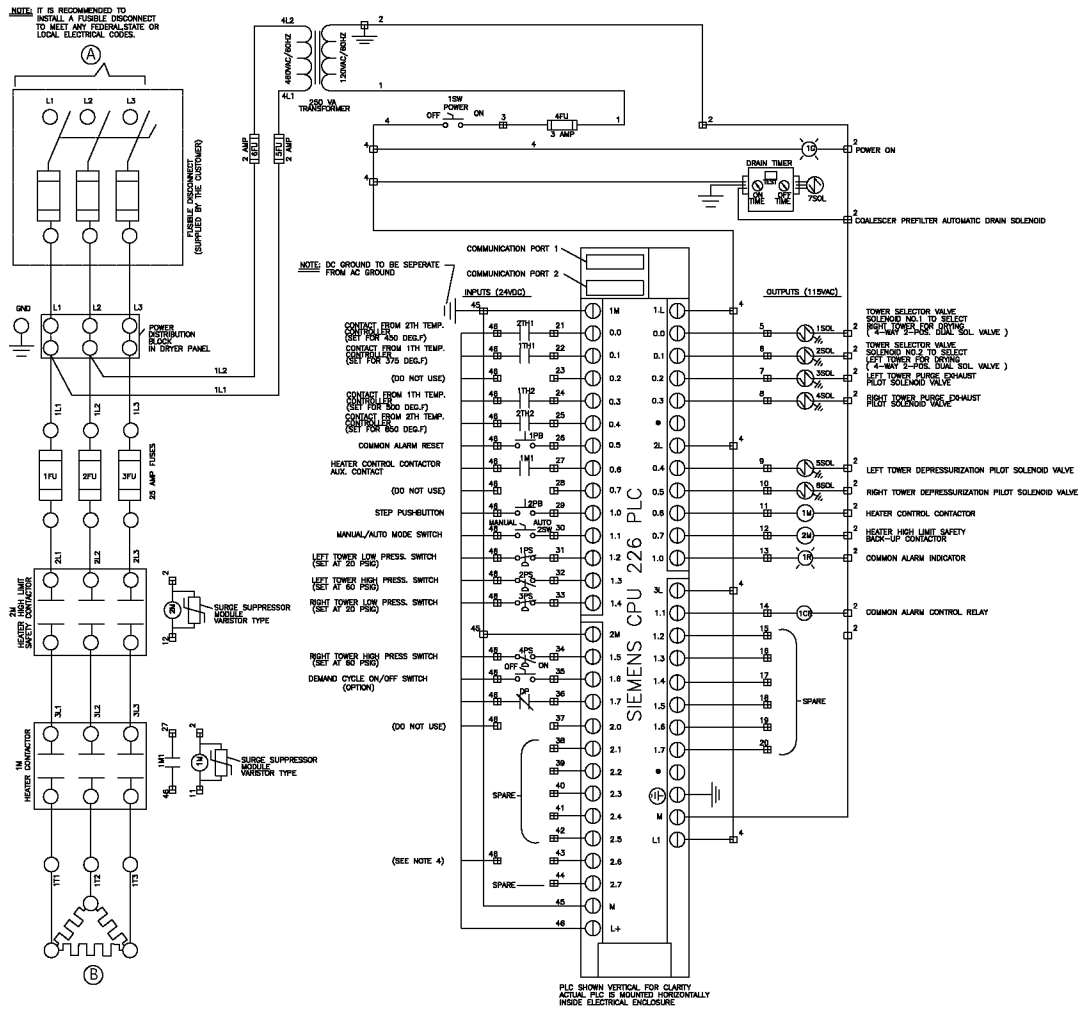
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## 5.12 P&I—DEX 200-3500

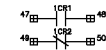
ITEM	QTY	DESCRIPTION
1	1	HEATER HOUSING
2	1	'K' TYPE THERMOCOUPLE FOR HEATER TEMPERATURE CONTROL/PURGE AIR TEMP.
3	2	DESICCANT TOWER
4	1	HEATER
5	2	WAFER STYLE OUTLET CHECK VALVE
6	1	N/A
7	1	REPRESSURIZATION VALVE
8	2	PURGE CHECK VALVE
9	1	N/A
10	1	N/A
11	2	TOWER PRESSURE RELIEF VALVE
12	2	TOWER PRESSURE GAUGE
13	1	CONTROL AIR FILTER
14	1	ELECTRICAL ENCLOSURE <NOT SHOWN>
15	2	INLET VALVE
16	2	NOT SHOWN
17	2	PURGE EXHAUST VALVE
18	1	PURGE EXHAUST OUTLET
19	2	DEPRESSURIZATION MUFFLER
20	1	N/A
21	1	N/A
22	1	N/A
23	1	N/A
24	1	N/A
25		<NOT USED>
26	1	POWER ON <NOT SHOWN>
27	1	POWER OFF/ON SWITCH <NOT SHOWN>
28		DEMAND CYCLE OFF/ON SWITCH <NOT SHOWN>
29	1	N/A
30	1	N/A
31	1	STEP CYCLE PUSHBUTTON <FOR TROUBLESHOOTING ONLY> <NOT SHOWN>
32	1	ALARM RESET PUSHBUTTON <NOT SHOWN>
33	1	COMMON ALARM LIGHT, RED <NOT SHOWN>
34	1	TEXT DISPLAY <NOT SHOWN>

ITEM	QTY	DESCRIPTION
35	1	HEATER TEMP./PURGE TEMP/ CONTROLLER <N.S.>
36	1	HEATER HI LIMIT/MID RANGE CUTOUT TEMP. CONTROLLER <N.S.>
37		<NOT USED>
38		<NOT USED>
39		<NOT USED>
40	1	<NOT USED>
41	1	<NOT USED>
42	1	<NOT USED>
43	1	PRESSURIZATION BALL VALVE
44	2	PURGE EXHAUST (OPEN SLOW) CONTROL VALVE
45	1	HEATER HIGH LIMIT THERMOCOUPLE 'K' TYPE LOCATED INSIDE HEATER IN THERMOWELL
46	1	<NOT USED>
47	1	LEFT TOWER DEPRESSURIZATION PILOT SOLENOID VALVE, 3-WAY
48	1	LEFT TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
49	1	<NOT USED>
50	1	RIGHT TOWER PURGE EXHAUST PILOT SOLENOID VALVE, 3-WAY
51	1	RIGHT TOWER DEPRESSURIZATION PILOT SOLENOID VALVE, 3-WAY
52	1	CONTROL AIR PRESSURE REGULATOR
53	1	CONTROL AIR LINE
54		N/A
55		N/A
56		N/A
57		N/A
58	1	LEFT TOWER LOW PRESSURE SWITCH
59	1	LEFT TOWER HIGH PRESSURE SWITCH
60	1	RIGHT TOWER LOW PRESSURE SWITCH
61	1	RIGHT TOWER HIGH PRESSURE SWITCH

# 5.13 ELECTRICAL SCHEMATIC—TYPICAL EXTERNALLY HEATED



CUSTOMER COMMON ALARM DRY CONTACTS



See table

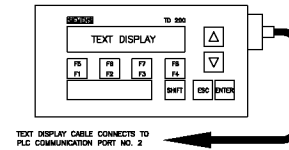
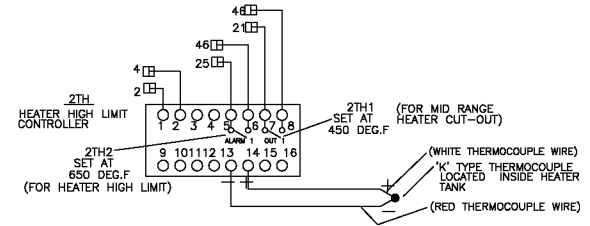
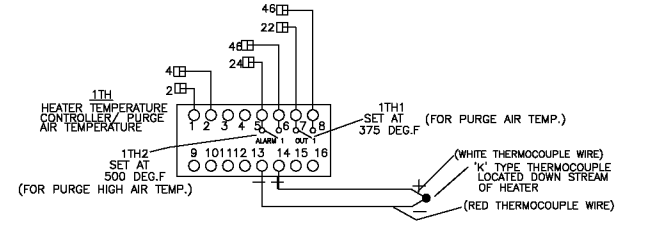
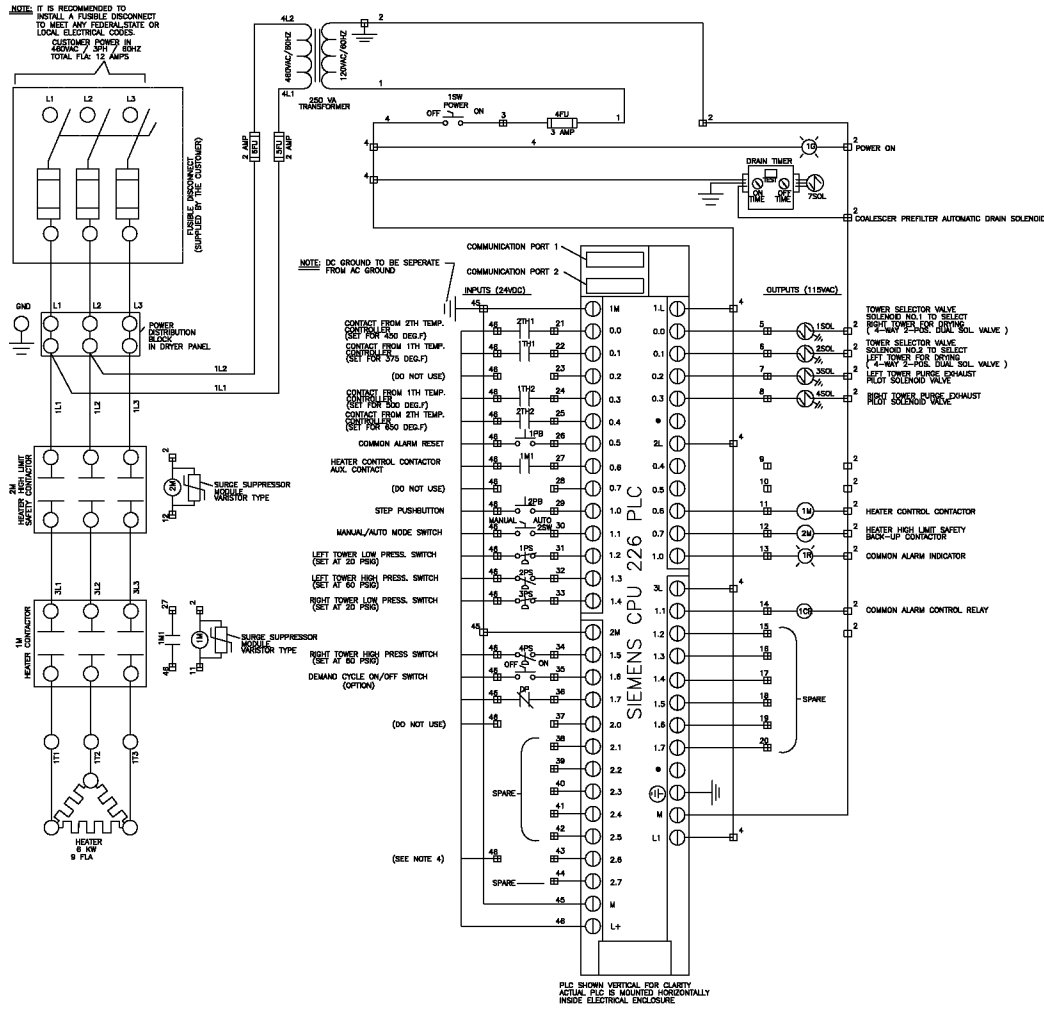
### 5.13 ELECTRICAL SCHEMATIC—TYPICAL EXTERNALLY HEATED

<p>1. Wire Colors:</p> <p>A.C. Hot Control Wiring Color: Solid Red</p> <p>A.C. Neutral Control Wiring Color: Solid White</p> <p>A.C. Power Wiring Color: Solid Black</p> <p>'K' Type Thermocouple Wire Positive: White</p> <p>'K' Type Thermocouple Wire Negative: Red</p> <p>Ground Wire Color: Green</p>
<p>2. A.C. and D.C. to have Separate Ground Points</p>
<p>3. A.C. and D.C. to have Separate Terminal Strips</p>

PART #	A	B
02250195-363	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 5 AMPS	HEATER 2.5 KW 3.6 F.L.A.
02250195-364 02250195-365	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 7 AMPS	HEATER 3 KW 4.5 F.L.A.
02250195-366	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 10 AMPS	HEATER 5 KW 7.5 F.L.A.
02250195-368	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 15 AMPS	HEATER 7.5 KW 11 F.L.A.
02250195-369	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 15 AMPS	HEATER 9 KW 13 F.L.A.

02250195-370	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 20 AMPS	HEATER 10 KW 15 F.L.A.
02250195-371	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 20 AMPS	HEATER 12 KW 17 F.L.A.
02250195-372	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 25 AMPS	HEATER 15 KW 22 F.L.A.
02250195-373	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 30 AMPS	HEATER 18 KW 26 F.L.A.
02250195-374	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 40 AMPS	HEATER 24 KW 35 F.L.A.
02250195-375	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 50 AMPS	HEATER 30 KW 44 F.L.A.
02250195-376	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 60 AMPS	HEATER 35 KW 51 F.L.A.
02250195-377	CUSTOMER POWER IN 460VAC/3PH/60HZ TOTAL FLA: 65 AMPS	HEATER 40 KW 58 F.L.A.

# 5.14 ELECTRICAL SCHEMATIC



TEXT DISPLAY CABLE CONNECTS TO PLC COMMUNICATION PORT NO. 2

CUSTOMER COMMON ALARM DRY CONTACTS



## 5.14 ELECTRICAL SCHEMATIC

- |   |
|---|
| 1. Wire Colors:<br>A.C. Hot Control Wiring Color: Solid Red<br>A.C. Neutral Control Wiring Color: Solid White<br>A.C. Power Wiring Color: Solid Black<br>'K' Type Thermocouple Wire Positive: White<br>'K' Type Thermocouple Wire Negative: Red<br>Ground Wire Color: Green |
| 2. A.C. and D.C. to have Separate Ground Points   |
| 3. A.C. and D.C. to have Separate Terminal Strips   |



Section 6

# TROUBLESHOOTING

Symptom	Probable Cause	Remedy
High humidity alarm (with optional dew point monitor)	The regeneration of the desiccant beds is insufficient.	Reset the alarm with the "Alarm Reset" push button. Verify the heating and cooling operations by observing regenerations. Are the regeneration temperatures in accordance with those listed in <i>Section 3.7</i> ?
	The dewpoint probe service valves are closed.	Open the probe service valves.
Loss of power alarm	The control circuit fuse has blown.	Check the fuse and replace if necessary.
	The PLC has failed or is in an alarm condition.	Check the PLC to verify if any outputs are "on" or if the PLC alarm LED is on. Replace the PLC if necessary.
	The system incoming power has been lost.	Check the incoming power and restore the supply.
Blower overload alarm	The motor overload has operated.	Check the motor overload to see if it is defective. Check the operating conditions to see if the motor is operating overloaded as a result of a problem with the blower or motor bearing, etc.
Vessel #1 De-pressurization failure	The depressurization valve did not open.	Check the solenoid valves for correct operation. Check the valve actuator for correct operation.
	Vessel did not depressurize.	Check if the depressurization muffler is plugged.
	Vessel depressurized but alarm is on.	Check pressure switch for correct operation.
Vessel #2 De-pressurization failure	The depressurization valve did not open.	Check the solenoid valve for correct operation. Check the valve actuator for correct operation.
	Vessel did not depressurize.	Check if the depressurization muffle is plugged.
	Vessel depressurized but alarm is on.	Check pressure switch for correct operation.
Vessel #1 Re-pressurization failure	The repressurization valve did not open.	Check the air actuated ball valve for correct operation. Check the valve actuator for correct operation and check the pilot solenoid valve.
	Vessel re-pressurized but the alarm is on.	Check pressure switch PSH-1 for correct operation.

Symptom	Probable Cause	Remedy
Vessel #2 Re-pressurization	The re-pressurization valve did not open.	Check the pilot solenoid valve for correct operation. Check the valve actuator for correct operation.
	Vessel re-pressurized but the alarm is on.	Check pressure switch PSH-2 for correct operation.
Low operating pressure during regeneration	Compressor not running	Check compressor for operation
	System manual inlet isolation valve closed.	Check all manual valves upstream of the dryer and open as required.
Regeneration heater sheath over temperature failure	Defective or open circuit thermocouple.	Replace the thermocouple.
	Low or no regeneration blower flow.	Check the regeneration blower, motor, motor overloads and inlet filter. Replace as necessary.
	Defective temperature switch.	Replace the temperature switch.

## Section 7

# SYSTEM MAINTENANCE

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### 7.1 WITH YOUR DRYER ONLINE

The following points must be verified at regular intervals

- Daily, verify the regeneration heater outlet temperature is correct and conforms to that listed in *Section 3.7*.
- Daily, verify the prefilter automatic drain is functional.
- Once a week, verify the operating sequence at vessel change over with that previously described in *Section 5.4* and *Section 5.5*,
- Once a week, verify the adsorption, regeneration heating, cooling and vessel change over times compared to that listed in *Section 3.7*
- Weekly, check the dryer, prefilter and afterfilter for excessive pressure drop.

### 7.2 MONTHLY INSPECTIONS

- Verify the system is leak free.
- Verify the current draw of the regeneration heater.
- Verify the operation of all pressure gauges, temperature gauges, temperature switches and the dewpoint indicator.

### 7.3 QUARTERLY INSPECTIONS

- Repeat all monthly inspections.
- Check the prefilter and afterfilter elements for correct installation and excess dirt.
- Check for tightness of flange bolting especially where high temperatures occur.

### 7.4 YEARLY INSPECTIONS

- Replace seats and shaft seals on all butterfly valves.

- Replace seats and shaft seals on all ball valves.
- Dismantle the double acting pneumatic actuators. Inspect internal components for visual signs of wear and replace parts as necessary.
- Dismantle and inspect solenoid valve internal components for visual signs of wear. Replace parts as necessary.
- Check the function of all temperature controls.

### 7.5 DESICCANT CHANGE OUT

Depending on the air quality and service conditions, the desiccant will last 4 to 5 years. Experience has shown that the period may be even longer.

To change the desiccant, ensure the system is out of service, locked out and de-pressurized. Remove the plug from the desiccant drain ports to allow the desiccant to fall from the vessel. At the end of this procedure re-install the plug.

To load the new desiccant the plug on the fill ports on the top head should be removed. Then install the amount and type of desiccant listed in *Section 3.3.1* in each vessel. Re-install the covers on the desiccant fill ports.

Prior to placing the dryer in service all plugs and flanges that were removed should be leak tested. If any leaks occur they should be repaired and re tested prior to placing the dryer in service.

### 7.6 FILTER ELEMENT CHANGE OUT

The prefilter and afterfilter elements should be replaced when the following guidelines are exceeded.

- The differential pressure exceeds 5 PSIG.
- The operating service exceeds 4,500 hours.
- A period of one year is exceeded.

# NOTES

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## Section 8

# TECHNICAL DESCRIPTION OF COMPONENTS

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Basic devices used in the dryer system are described in this section. For more detailed additional information refer to the component bulletins included in the rear of this manual.

### 8.1 ADSORBER

An adsorber is a pressure vessel filled with desiccant. At each end of the vessel are perforated stainless steel flow distributors and desiccant support screens. The sole purpose of the support screen is to retain the desiccant in the vessel and evenly distribute the process and regeneration flows across the area of the desiccant bed for optimum drying and regeneration.

### 8.2 DESICCANT

For this drying application an Activated Alumina desiccant is used

Amount	_____lbs per vessel
Density	48 lbs/ft cubed
Size	1/8" , 3/16" & 1/4" diameter

### 8.3 HEATER

The regeneration heater is installed external to the desiccant beds in an insulated heater housing. It is a immersion type that is removable from the housing. The heating elements are made with an incoloy sheath material. They are attached to the plug by brazing to ensure a leak free pressure connection is obtained. For regeneration of this dryer a heater is provided. A type "K" thermocouple is attached to the sheath of one element to provide "sheath over-temperature" protection.

Electrical power	_____KW
Voltage	_____480 volt, 3 phase, 60Hz.
Heater Enclosure Rating	_____NEMA 1 (indoor) (outdoor enclosure optional)

### 8.4 VALVES

Inlet valves are Piston type Bronze valves, dryers up to 650 CFM and High performance Butterfly valves for 800 CFM and up are used for tower switching and are equipped with a Normally open pneumatic actuator. Purge Exhaust valves are piston type (up to 650 CFM) and high performance butterfly valve 800 CFM. Valves are equipped with Spring Load Normally close actuator. (Note: in case of any power failure the exhaust valves will be closed and inlet valve will be open. Fail safe design)

### 8.5 ACTUATORS

Each valve is equipped with a actuator. Dry instrument quality compressed air is used for pilot actuation. A minimum air pressure of 60-80 psig is required.

### 8.6 REGENERATION BLOWER

A regenerative centrifugal direct mounted motor is used to provide the air for regeneration. The blower is equipped with an inlet filter/silencer to eliminate any air borne particles eing taken into the blower impeller system.

### 8.7 PRESSURE GAUGE

The dryer system is fitted with pressure gauges and Pressure snubber on each vessel solely for the purpose of "local" pressure indication. Do not replace pressure gauges with liquid filled type.

**NOTES**

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*Section 9*

# **SPARE PARTS LIST**

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# 9.1 SPARE PARTS LIST

DEX- Externally Heated Dryers	02250194-329-XXX	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365
Applicable Model Number	DEX-XXXX	0200	0250	0300	0400	0500	0600	0800	0900	1000	1250	1500	2000	2500	3000	3500
Part Description	Part Number	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
Pilot Air Filter Element	02250193-577	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PLC Siemens	N6ES72162BD230XB0AC/DC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Contact cable	N6ES79013EB100XA0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Battery back-up	N6ES72918BA200XA0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PLC display	N6ES72720AA300YA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Switch Push button	NHW1B-M1-R22MM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SWITCH 2-POS	NHW1S-2TF10	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Pilot light Green	NHW1P-1FQD-G-120V	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pilot light Red	NHW1P-1FQD-R-120V	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
pressure switch 2-10	N3460K21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pressure switch6-30	N3460K41	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Pressure switch 20-120	N3460K61	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Temperature controller	NETR-9300-411111	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Control Transformer	N-250VA-480X120	1	1	1	1	1	1	1	1	1	1	1	1	1		
Control Transformer	N-500VA-480X120														1	1
Fuse primary	NFNQ-R-3	1	1	1	1	1	1	1	1	1	1	1				
Fuse primary	NFNQ-R-5												1	1	1	1
Thermocouple wire Type K T/C	NATS-1117-20GA-S-GG	20ft	20ft	20ft	20ft	20ft	20ft	20ft	20ft	20ft	20ft	30ft	30ft	30ft	30ft	30ft
Temperature Probe (type K)	NKSE2U-006A-J3H10001	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Inlet Timer Drain valve	NTD-10	1	1	1	1	1	1	1	1	1	1	1				
Inlet Timer Drain valve	NTD-20												1	1	1	1
Tank Pressure Gauge	NPSB25-200	2	2	2	2	2	2									
Tank Pressure Gauge	NPSB40-200							2	2	2	2	2	2	2	2	2
Lbs of Desiccant	NACF-200-316	250	320	375	500	625	750	1000	1125	1250	1565	1875	2500	3125	3750	4375
Pressure Relief Valve (1/2")	NMCSF50-200	2	2	2												
Pressure Relief Valve (3/4")	NMCSB75-200				2	2	2									
Pressure Relief Valve (1")	NMCSW10-200							2	2							
Pressure Relief valve (1 1/4")	NMCSW12-150									2	2					
Pressure Relief Valve ( 1 1/2")	N19MGG-150										2	2				
Pressure Relief Valve (2")	N19MHH-150												2	2	2	
Pressure Relief Valve ( 2 1/2")	N19MJJ														2	2
Purge Exhaust Valves (1/2")	N8290B002							2	2							



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Applicable Model Number	DEX-XXXX	0200	0250	0300	0400	0500	0600	0800	0900	1000	1250	1500	2000	2500	3000	3500
Part Description	Part Number	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
Purge Exhaust Valves (3/4")	N8290B005	2								2	2	2				
Purge Exhaust Valves (1")	N8290B010		2	2									2	2	2	
Purge Exhaust Valves (1.5")	N8290A020				2	2	2									2
Purge Exhaust Valves (2")	N8290A025														2	2
Purge Exhaust valves (3")	N400300-11001466							2	2	2	2	2	2			
Purge Exhaust valves (4")	N40040011001066													2	2	
Purge Exhaust valves (6")	N400600-11001066															2
Purge Exhaust Mufflers (1/2")	NM05															
Purge Exhaust Mufflers (3/4")	NM07	2								2	2	2				
Purge Exhaust Mufflers (1")	NM10		2	2									2	2	2	
Purge Exhaust Mufflers (1.5")	NM15				2	2	2		2	2						2
Purge Exhaust Mufflers (2")	NM20														1	1
Purge Exhaust Mufflers (3")	NM30							1	1	1	1	1	1	1	1	1
Air Inlet valve (1") angle N/O	N8290A028	2														
Air Inlet Valve 1 1/2" angle N/O	N8290A032		2	2												
Air Inlet Valve (2") Angle N/O	N8290A035				2	2	2			1	1					
Air Inlet Valve (3")	N40030011001066							2	2	2	2	2	2			
Air Inlet valve (4")	N40040011001066													2	2	
Air Inlet valve (6")	N400600-11001066															2
Outlet Check Cvalves (1 ")	NUPC205-6	2														
Outlet Check Valves ( 1 1/2")	NUPC205-8		2	2												
Outlet Check Valves (2")	NUPC205-9				2	2	2		2	2	2					
Outlet Check Valves (3")	NDR3150SSSV							2	2	2	2	2	2			
Outlet Check Valves (4")	NDR4150WSSSV													2	2	
Outlet Check Valves(6")	NDR6150WSSSV															2
Purge Check Valves ( 1 ")	NSCY-100	2														
Purge Check Valves ( 1 1/2")	NSCY-150		2	2												
Purge Check Valves (2")	NSCY-200				2	2	2									
Purge Check Valves (3")	NDR150WSSSM10-3							2	2	2	2	2	2			
Purge Chcek Valves (4")	NDR150WSSSM10-4													2	2	
Purge Check Valves (6")	NDR150WSSSM10-6															2
Purge Exhaust Solenoid Valve (1/8")	NSC8356A001V	2	2													
Purge Exhaust Solenoid Valve (1/4")	NSC8320G184			2	2	2	2	2	2	2	2	2	2	2	2	2
Inlet Solenoid Valve	NSC8320G184	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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Applicable Model Number	DEX-XXXX	0200	0250	0300	0400	0500	0600	0800	0900	1000	1250	1500	2000	2500	3000	3500
Part Description	Part Number	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
Repressurization valve	NAS1000 (1/2")							1	1	1	1					
Repressurization valve	NAS1012B (1")											1	1	1	1	1
Gauge Pressure Snubber	NPS-25	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1/4" Control air Tubing	NUP-44-GN	100FT	100FT	100FT	100FT	100FT	100FT	150FT	150FT	150FT	150FT	200FT	200FT	200FT	200FT	200FT

*Section 10*

**COMPONENT BULLETINS**

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# NOTES

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