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INSTRUCTION MANUAL

Models: SBD 100, SBD 125, SBD 150
SBD 200, SBD 250, SBD 300
SBD 425

SAYLOR-BEALL MANUFACTURING CO.

ENGLISH

SBD SERIES

REFRIGERATED

COMPRESSED

AIR DRYERS

SERVICE DEPARTMENT: (724) 746-1100

INTRODUCTION

The dryers use mechanical refrigeration to dry compressed air. See Table 6 for rated capacity and other dryer specifications.

To ensure continuous good performance and safe operation, everyone who installs, uses or maintains the dryer must read and carefully follow the instructions in this manual.

SAFETY

The dryers are designed and built with safety as a prime consideration; industry-accepted safety factors have been used in the design. Each dryer is checked at the factory for safety and operation. All necessary adjustments are made before shipment.

Follow the maintenance schedules outlined in this manual for good performance and safe operation. Maintenance should be done only by qualified personnel with proper tools.

Carefully read the following safety rules before proceeding with installation, operation or maintenance. The rules are essential to ensure safe dryer operation. Failure to follow these rules void the warranty or result in dryer damage or personal injury.

1. Do not install or try to repair a dryer that has been damaged in shipment. See Receiving and Inspection for instructions.
2. Compressed air and electricity have the potential to cause personal injury or equipment damage. Before doing any work in the dryer, be sure the electrical supply has been locked and tagged and the internal pressure of the dryer has been vented to the atmosphere.
3. Do not operate the dryer at pressures or temperatures above the maximum conditions shown on the data plate.
4. Always supply electrical power that complies with the voltage shown on the data plate.
5. Do not readjust the dryer without factory authorization.
6. Work on the refrigeration system must be done only by a competent refrigeration mechanic.
7. Use only manufacturer's genuine replacement parts. The manufacturer bears no responsibility for hazards caused by the use of unauthorized parts.

SAFETY INSTRUCTIONS

Safety instructions in this manual are boldfaced for emphasis. The signal words **DANGER**, **WARNING** and **CAUTION** are used to indicate hazard seriousness levels as follows:

DANGER -------- Immediate hazard which WILL result in severe injury or death.

WARNING ------- Hazard or unsafe practice which COULD result in severe injury or death.

CAUTION ------- Hazard or unsafe practice which COULD result in minor injury or in product or property damage.

DATA PLATE

The dryer data plate contains identification information. If the data plate is missing or damaged, contact your local distributor and request a replacement.

RECEIVING AND INSPECTION

Inspect the dryer closely when it is received. Record any indication of damage on the delivery receipt, especially if the dryer will not be immediately uncrated. Obtain the delivery person's signed agreement to recorded damages to facilitate future insurance claims.

Since the dryer is shipped F.O.B. Shipping Point, the manufacturer's responsibility for the shipment ceases when the carrier signs the bill of lading.

If goods are received short or in damaged condition, notify the carrier and insist on a notation of the loss or damage across the face of the freight bill. Otherwise no claim can be enforced against the carrier.

If concealed loss or damage is discovered, notify your carrier at once and request an inspection. This is absolutely necessary. Unless you do this, the carrier will not consider any claim for loss or damage. The carrier will make an inspection and may grant a concealed damage notation. If you give the carrier a clear receipt for the goods that have been damaged or lost in transit, you do so at your own risk and expense.

The manufacturer is willing to assist you in collecting claims for loss or damage. Willingness does not make the manufacturer responsible for collecting claims or replacing material. Claim filing and processing is your responsibility.

INSTALLATION

AMBIENT AIR TEMPERATURE

Locate the dryer indoors where the ambient air temperature will be between 40°F and 100°F. Intermittent operation at ambient temperatures up to 113°F will not damage the dryer but may result in a higher dew point or dryer shutdown due to high refrigerant discharge pressure (see Field Service Guide).

Do not operate air-cooled dryers at ambient air temperatures below 40°F. Such operation may result in low suction pressure, causing freeze-up.

LOCATION AND CLEARANCE

Mount the dryer on a level base and bolt down if the base vibrates. If the dryer is air-cooled, install it in a clean, well-ventilated area to reduce fouling of the condenser coils with dirt and dust. Allow 6 inches clearance on the sides and the front of the dryer for cooling airflow on air-cooled dryers and for service access on air-cooled dryers.

SYSTEM ARRANGEMENT

Liquid water adversely affects dryer performance. To prevent "slugging" the dryer with liquid water, locate the dryer downstream of an aftercooler and a mechanical separator. Install drain valves to discharge condensate that collects in these areas.

If the airflow is relatively constant and will not cause short term overloading of the dryer, it is recommended that the dryer be located downstream of the receiver tank. If the nature of the application is such that the air demand regularly exceeds the dryer flow rating, it is recommended that the dryer be located upstream of the receiver.

For safety and convenience, install inlet and outlet shutoff valves and depressurization valves at the locations indicated. These valves allow the dryer to be isolated and depressurized for servicing. Bypass piping may be installed around the dryer for uninterrupted airflow when the dryer is serviced. If the compressed air operation cannot tolerate undried air for short periods, install a second dryer in the bypass line.

Compressed air systems commonly require filters to remove compressor oils, particulates, condensed liquids and other contaminants. When an oil-removal filter is used, install the filter downstream of the dryer. At this location, the life of the replaceable filter element is prolonged since some of the entrained oil is removed by the dryer and drained through the separator.

Piping and Connections

Piping must be furnished by the user unless otherwise specified. Connections and fittings must be rated for the maximum operating pressure given on the dryer data plate and must be in accordance with applicable codes. Support all piping; do not allow the weight of any piping to stress the dryer or filters. Inlet and outlet shutoff valves and a valved bypass are recommended. Piping should be at least the size of the inlet and outlet connections to minimize pressure drop in the air system. See Table 3 for dryer inlet and outlet connections.

Drains

Condensate must be drained from the dryer to prevent its re-entrainment. The dryers are equipped with automatic drain valves and internal drain hoses up to the drain connections on the dryer cabinets. The user must install a discharge line from the drain connection and run it to a waste disposal collection system that meets applicable regulations. Pipe or copper tubing ½ inch or larger is recommended for condensate discharge lines. Install the drain lines so that condensate can be seen as it drains.

Electrical Connections (See Figure 3)

The dryers are constructed according to NEMA Type 1 electrical standards. Field wiring must comply with local and national fire, safety and electrical codes. Installation must be in accordance with the National Electrical Code. Confirm that your line voltage is the same as the voltage listed on the dryer data plate. Refer to Figure 3 for electrical schematics.

CAUTION

Operation of dryers with improper line voltage constitutes abuse and could affect the dryer warranty.

HOW IT WORKS

AIRFLOW (SEE FIGURE 4)

The dryers use refrigeration cooling to condense entrained moisture out of the air stream.

Model 100 to Model 150; Warm saturated air enters the air-to-refrigerant heat exchanger where it is cooled by refrigerant evaporation.

Model 200 through Model 425; Warm saturated air enters the air-to-air heat exchanger where it is cooled by outgoing cold air. The inlet air is further cooled in the refrigeration chiller. The cold, dry air is reheated by incoming warm air as it passes back through the air-to-air heat exchanger. Using the outgoing air to pre-cool the inlet air condenses up to 65 percent of the moisture out of the inlet air before it reaches the chiller. Pre-cooling the inlet air reduces the heat load on the refrigerant compressor, permitting the use of a smaller refrigerant compressor.

REFRIGERATION SYSTEM

The refrigeration system is designed and fabricated in accordance with recognized commercial / industrial practices. It consists of a compressor and the controls, safety interlocks and associated equipment necessary for safe performance.

All models use expansion devices and hot gas bypass valves (HGBV) to modulate the refrigerant flow.

The HGBV delivers hot refrigerant gas to the refrigerant compressor in response to changes in the refrigerant pressure. This prevents icing in the chiller and short cycling in the refrigerant compressor during extended periods of system operation at low load. The HGBV is adjusted at the factory; operation is fully automatic.

INSTRUMENTATION

ON-OFF SWITCH

All dryers are equipped with an ON-OFF switch on the front panel. A green light signals when the dryer is on.

COLOR INDICATOR

This series is equipped with a dew point indicator, which indicates dryer conditions as follows; It is normal for the indicator color to be in the red zone when the dryer is first turned on and then move to the green zone when the dryer reaches its normal operating temperature. If this indicator is in the red zone during normal operation, turn the dryer off to avoid compressor damage. For more information, call your local distributor.

DRYER SYSTEM MONITOR (DSM)

Models 100 through Model 425 are equipped with LED type dew point indicator.

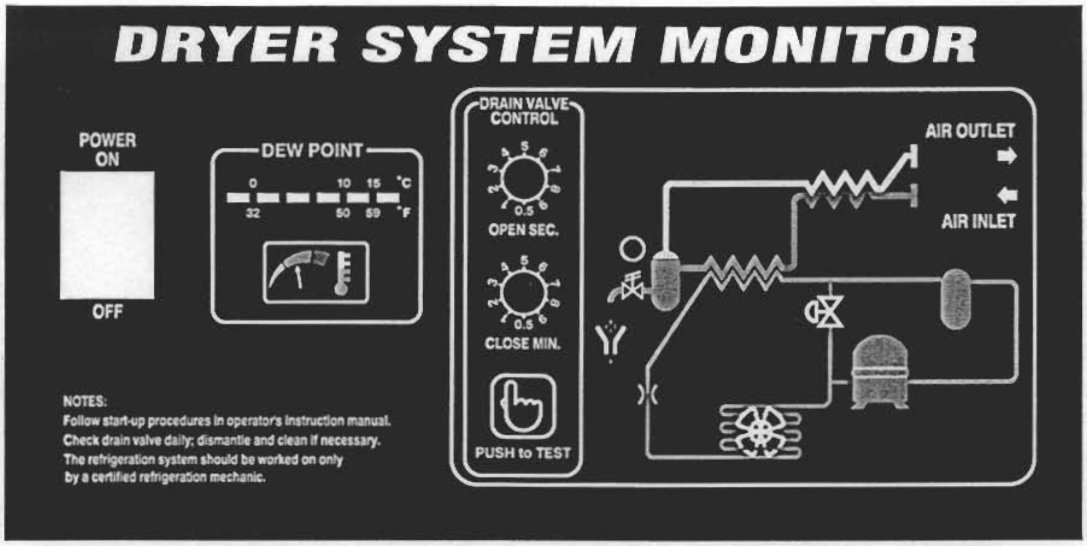


Figure 1

DRYER SYSTEM MONITOR

DSM has LED type dew point indicators and electronic drain valve operation time adjusting, When the dryer is normal running, the green LED will light on. The red or yellow indicator lights indicating a need for dryer operating condition checking. Under no load or very low load, the yellow LED will light on momentarily as soon as cycling condenser fan stops. If all LED's light on, the sensor for dew point monitor is malfunction. The automatic drain valve controls allow the period of drain opening to the set from 0.5 sec to 9 sec and drain valve closed time to be set from 0.5 min to 9 min. When the "PUSH TO TEST" button is pushed, the drain port clicks open with a cleaning audible sound.

AUTOMATIC DRAIN VALVE (ADV)

Models 100 to 425 are equipped with an electronic drain valve that automatically discharges condensate from the dryer. The drain valve and its controls are accessible from the DSM (Dryer System Monitor). The DSM has LED type dew point indicator and electronic drain valve controller with a test button to help verify operation. Pushing the test button causes the drain port to click open. If either indicators fails to turn on at the proper time, refer to the maintenance section of this manual. Drain valve operation is controlled by a drain valve controller on DSM. The drain opening can be set from 0.5 sec to 9 sec. The drain cycle can be set from 0.5 min to 9 min.

ELECTRONIC DRAIN VALVE ADJUSTMENT

To minimize air losses, the drain valve control time should be adjusted to open the drain port just long enough to discharge accumulated condensate. Set the drain valve operating time so that only air discharges at the end of the open period. Recommended initial settings are a 1 to 2-second drain opening and a 30-second drain closed time (cycle). If liquid discharges as the port is closing, set the timer for a shorter cycle or a longer opening.

START-UP

Follow the procedure below to start your dryer. Failure to follow the prescribed start-up procedure will invalidate the warranty. If problems arise during start-up, call your distributor.

1. Turn the dryer ON/OFF switch to OFF.
2. Turn on the main electrical power to the dryer.

To start dryer :

1. Turn the power switch to ON. The refrigerant compressor will turn on.
2. Confirm that condensate is discharging from the drain valve.
3. Check drain valve timing. See Electronic Drain Valve section for drain valve adjustment procedure.
4. Check that the main electrical supply voltage matches the voltage specified on the dryer data plate.
5. Check customer-supplied circuit breakers or fuses. Reset or replace as required.
6. Check proper connection and support of compressed air lines to the dryer; check bypass valve system, if installed.
7. Ensure adequate ventilation for air-cooled dryers.
8. Confirm that the inlet air temperature, pressure and airflow to the to the dryer meet the specified requirements (see Table 4 & 5)
9. Confirm that the condensate lines from the drain valve discharge into a collection tank or an environmentally-approved disposal system.
10. If the refrigerant Dew Point Indicator is out of range, refer to the Field Service Guide for information or contact your local distributor.

The dryer is designed to run continuously. Let the dryer run even when the demand for compressed air is interrupted; the dryer will not freeze up.

SHUTDOWN

When the dryer must be shut down for maintenance or other reasons, use the following procedures.

If electrical repairs must be made:

1. Turn off the power switch.
2. Disconnect the main power supply.
3. Lock out and tag the power supply in accordance with OSHA requirements.

DANGER
Portions of the control circuit remain energized when the power switch is in the OFF position. Disconnect supply power to the dryer before performing maintenance on the electrical system.
Dismantling or working on any component of the compressed air system under pressure may cause equipment failure and serious personal injury. Before dismantling any part of the dryer or compressed air system, completely vent the internal pressure to the atmosphere.

If mechanical repairs must be made, vent the internal pressure of the dryer to atmospheric pressure. After the refrigerant compressor becomes cool, restart the dryer according to the start-up instructions.

MAINTENANCE

The dryers require little maintenance for satisfactory operation. Good performance can be expected if the following routine maintenance steps are taken.

> **DANGER**
>
> **Dismantling or working on any component of the compressed air system under pressure may cause equipment failure and serious personal injury. Before dismantling any part of the dryer or compressed air system, completely vent the internal pressure to the atmosphere.**

GENERAL

For continued good performance of your refrigerated dryer, all refrigeration system maintenance should be performed by a competent refrigeration mechanic. Before corrective maintenance is done during the warranty period, call your local distributor and proceed according to instructions.

DAILY

Check the operation of the electronic drain valve and filter/separator drain mechanism at least once during each 8-hour shift. See the Field Service Guide for remedies to drain valve malfunctions. See the ELECTRONIC DRAIN VALVE section for drain valve adjustment.

MONTHLY

For air-cooled condensers, it is recommended to inspect the condenser coils monthly. If necessary, remove dirt or other particles with compressed air from an OSHA-approved air nozzle that limits its discharge pressure to 30 psig.

RETURNS TO MANUFACTURER

If the dryer or a component of the dryer must be returned to the manufacturer, first call your local distributor for a return authorization number and shipping address. Your distributor will inform you whether the dryer or only a component must be returned. Mark the package with the return authorization number and ship freight prepaid as directed by your local distributor.

ELECTRONIC DRAIN VALVE DISASSEMBLY AND SERVICING

The valve body is mounted on the frame bottom; a hose connects the valve body to the heat exchanger vessel.

CAUTION

Do not disassemble drain valve timer or attempt to repair electrical parts. Replace timer if defective.

The drain valve discharges condensate through a full-port drain opening. The valve body may need to be cleaned under conditions of gross particulate contamination.

To disassemble the drain valve body for cleaning and other maintenance :

1. Turn power switch off.
2. Disconnect main power supply to dryer.
3. Lock out and tag power supply in accordance with OSHA requirements.

WARNING

If power supply is not disconnected before disassembly, serious personal injury and valve damage may result.

4. Remove hoses that connect the drain valve to the drain valve strainer.
5. Remove screw and washer from front of the drain valve.
6. Remove the power supply connector and gasket (with the timer assembly if attached) from the solenoid coil housing. Do not damage or lose the gasket.
7. Remove coil fixing nut and spring washer from top of solenoid coil housing.
8. Lift solenoid coil housing off solenoid core in valve body.
9. Unscrew solenoid core from valve body.

Once the drain valve is disassembled, the following maintenance can be performed.

1. Inspect internal parts of valve body; clean or replace as required.
2. Remove debris from valve body.
3. Wipe solenoid core components with a clean cloth or blow out debris with compressed air from an OSHA-approved air nozzle that limits its discharge pressure to 30 psig.
4. Check that the inside part assembly is clear and solenoid coil moves freely in housing

. If timer is attached to valve body, check electrical continuity across timer assembly.

To reassemble the drain valve, reverse the sequence of the preceding steps. After the drain valve is reassembled, connect the main power supply to the dryer. When the dryer is returned to service, check the drain valve for air or condensate leaks; tighten connections as required to correct leaks. Check the drain cycle; adjust the timer according to the procedure in the drain valve adjustment section.

FIELD SERVICE GUIDE

Problems most frequently encountered with refrigerated dryers are water downstream of the dryer and excessive pressure drop. Most causes can be identified and remedied by following this guide.

DANGER

Closed refrigeration systems are potentially dangerous. Work on the refrigeration system must be done only by a competent licensed refrigeration mechanic.

Do not release fluorocarbon refrigerants to the atmosphere. Do not discharge liquid refrigerants into floor drains. Refrigerant vapors may accumulate in low places. Inhalation of high concentrations may be fatal.

Do not smoke while working on the refrigeration system or when a refrigerant leak is suspected. Burning materials may decompose refrigerants, forming toxic gas or acids that may cause serious injury and property damage.

The refrigerant valves are adjusted at the factory with the refrigerant system operating and no airflow through the dryer.

FIELD SERVICE GUIDE

PROBLEM	SYMPTOM	POSSIBLE CAUSE	REMEDY
Water downstream of dryer.	No discharge from automatic drain valves (ADV).	ADV failure or accumulation of dirt in drain valve strainer.	Dismantle drain valve: clean, repair or replace. See maintenance section.
	Inlet air temperature is too high.	Aftercooler malfunction.	Check aftercooler discharge temperature. Reduce temperature to 49 max.; reduce airflow if temperature is above 38 . (See Table 4 &Table 5).
	Liquid water entering dryer.	Aftercooler drain valve malfunction.	Dismantle aftercooler drain valve; clean, repair or replace.
	Excessive airflow (may also cause high pressure drop).	Dryer improperly sized.	Check airflow and dryer capacity (see Table 4). Reduce airflow or resize and replace dryer.
	Compressor cuts out on internal overload.	Inadequate ventilation of refrigerant compressor.	Ensure adequate ventilation of the condensing unit(see Clearance). Motor will restart automatically when compressor is cool.
		Leak in refrigeration system.	Locate leak, repair and recharge. Motor will restart automatically when compressor is cool.
	Compressor windings read open or shorted.	Compressor burned out.	Have a refrigeration mechanic check and replace.
	The red LED light on	Improper adjustment of HGBV.	Remove cap from the HGBV and screw out HGBV 1/2 turn to lower suction pressure to the level listed in Table 1.
		Inlet air temperature too high.	Reduce aftercooler discharge temperature to design conditions (see Table 4 & 5).
		Excessive airflow.	Check airflow and system capacity. Reduce airflow or resize and replace system.
		Condenser fouled or clogged.	Clean or replace condenser.
		Fan motor inoperative.	Replace fan motor.
		High ambient temperature.	Ventilate area. See Table 4 & Table 5.
High pressure drop across dryer.	Inlet air temperature is too low.	Low ambient temperature.	Consult your local distributor.
	Excessive airflow (may also cause water downstream of dryer).	Dryer improperly sized.	Check airflow and dryer capacity. Reduce airflow or resize and replace dryer.
	Yellow LED indicator light on	Dryer Icing up	Adjust operating conditions to meet sizing conditions.
			Adjust HGBV to raise suction pressure to the level listed in Table 1.

PROBLEM	SYMPTOM	POSSIBLE CAUSE	REMEDY
No condensate from automatic drain valve (ADV)	Valve venting. But no condensate from valve.	Accumulation of dirt in valve strainer.	Dismantle valve strainer. Strainer clean or replace.
	Valve continuously venting.	Clogged valve orifice.	Replace valve.
		Short in electrical component.	Check and replace connector or DSM assembly.
	Valve not cycling.	No electrical power.	Check and correct power supply and connections.
		DSM malfunction.	Replace DSM assembly.
		Solenoid coil malfunction.	Replace solenoid coil.
	No response when test button is pushed.	No electrical power.	Check and correct power supply and connections.
		Burn out fuse	Check solenoid coil and wiring cable and replace fuse.
Dew Point indicator malfunction	All LED indicator light on	Sensor malfunction	Replace sensor assembly

Table 1

SUCTION PRESSURE

REFRIGERANT	WITHOUT AIRFLOW	WITH AIRFLOW
R-22a	58±4 psig	72.5±14.5 psig

Do not adjust refrigerant valves without factory authorization. Adjustments must be made only with no airflow into the dryer.

CAUTION

Do not introduce mineral oils into the refrigeration system of the dryers. Servicing equipment should contain NO TRACE OF MINERAL OILS.

Table 2

REFRIGERANT PRESSURE SWITCH SETTINGS

(MODELS 100 to 300)

Fan Cycle Control	
Fan Pressure Switch Setting	
R-22	
ON	OFF
320 ± 14.5 psig	217 ±14.5 psig

(HG 425)

Refrigerant Compressor Control		
High Pressure Switch Setting		
Sensor Location	R-22	
	Cut-out	Cut-in
Compressor discharge	377 ± 14.5 psig Manual Reset	290 ± 14.5 psig

Table 3

DIMENSIONS AND CONNECTION SIZES

MODEL	DIMENSIONS (inch)			INLET-OUTLET CONNECTIONS (inch)
	W	D	H	
100	12.9	29.8	27.2	1
125	16.1	38.8	35.1	1
150	16.1	38.8	35.1	1½
200	16.1	38.8	35.1	2
250	16.1	38.8	35.1	2
300	19.7	46.1	42.9	2½
425	19.7	46.1	42.9	2½

Table 4

DRYER SPECIFICATIONS

MODEL NO.	RATED CAPACITY[a] (SCFM)	POWER SUPPLY[b] (V / PH/Hz)	REF. COMP RATING (hp)	INPUT POWER (kW)	REFRIGERANT TYPE[c]
100	100	115 / 1/60	3/4	1.05	R-22
125	125	115 / 1/60	3/4	1.05	R-22
150	150	220 / 1/60	1	1.30	R-22
200	200	220 / 1/60	1	1.30	R-22
250	250	220 / 1/60	1-1/4	1.44	R-22
300	300	220 / 1/60	1-7/8	2.23	R-22
425	425	460 / 3/60	2	2.49	R-22

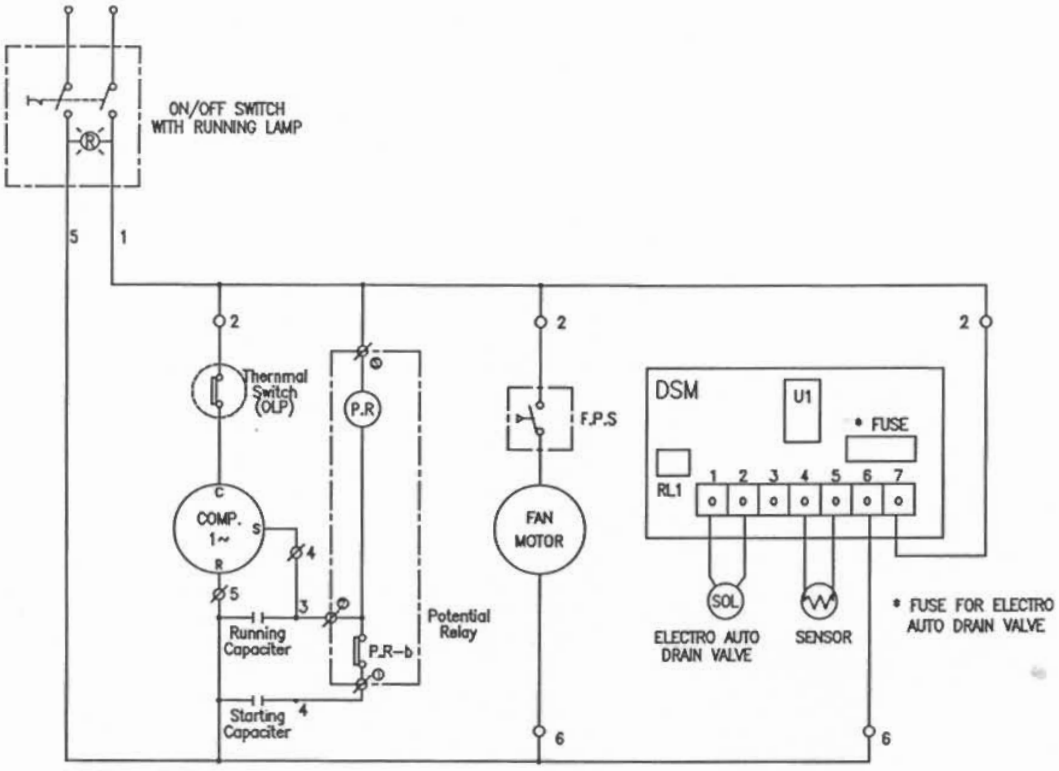
[a] Rating conditions are 100°F inlet temperature, 100psig inlet pressure, 100% inlet relative humidity, 100°F ambient temperature @ 60Hz.
[b] 460/3/60 are option for Model 425.
[c] Refer to dryer data plate for refrigerant charge.

Table 5

DRYER OPERATING CONDITIONS

MODEL NO.	Maximum Inlet Air Pressure	Minimum Inlet Air Pressure	Maximum Inlet Air Temperature	Minimum Inlet Air Temperature	Maximum Ambient Air Temperature	Minimum Ambient Air Temperature
All models	175 psig	10 psig	120°F	40°F	113°F	40°F

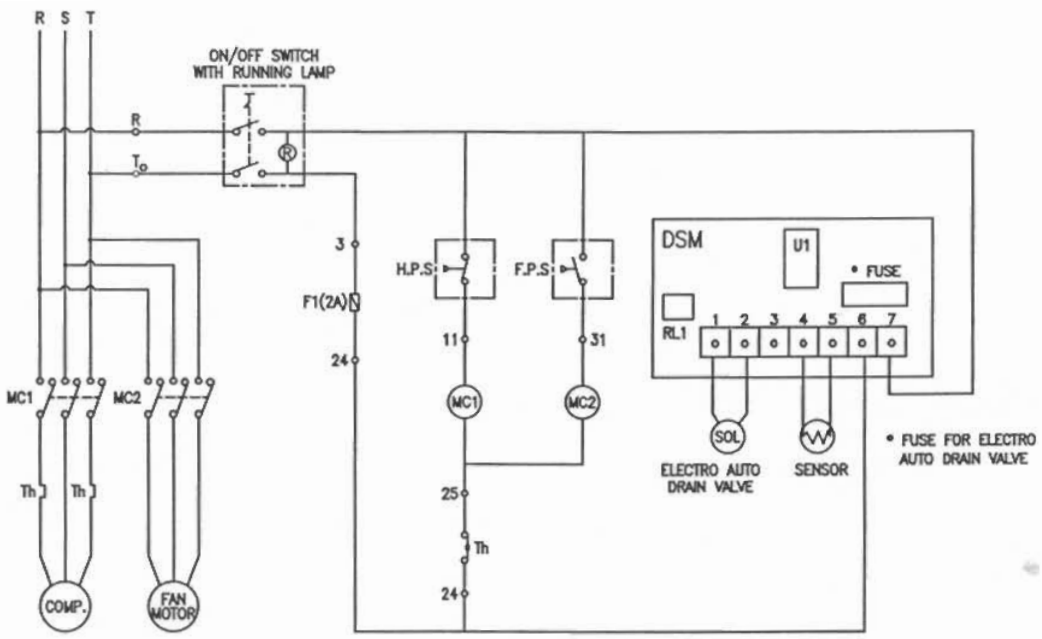
Note: Continuous operation in the above maximum and minimum operating conditions is not allowable.



Model 100 to Model 300

Figure 3a

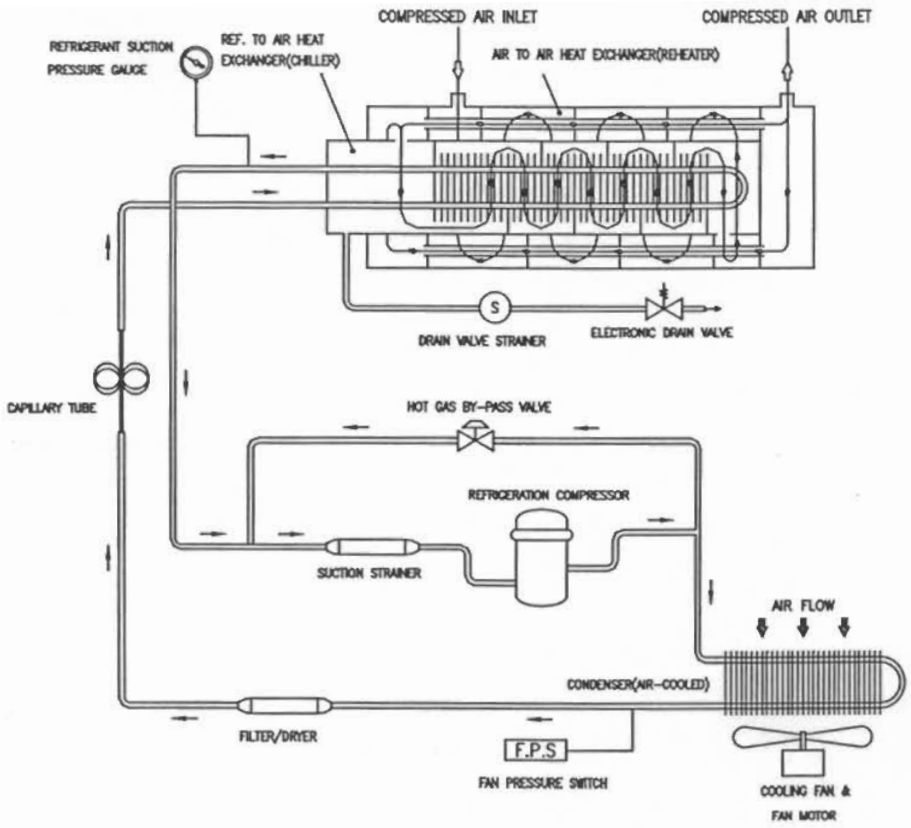
ELECTRICAL SCHEMATIC



Model 425

Figure 3b

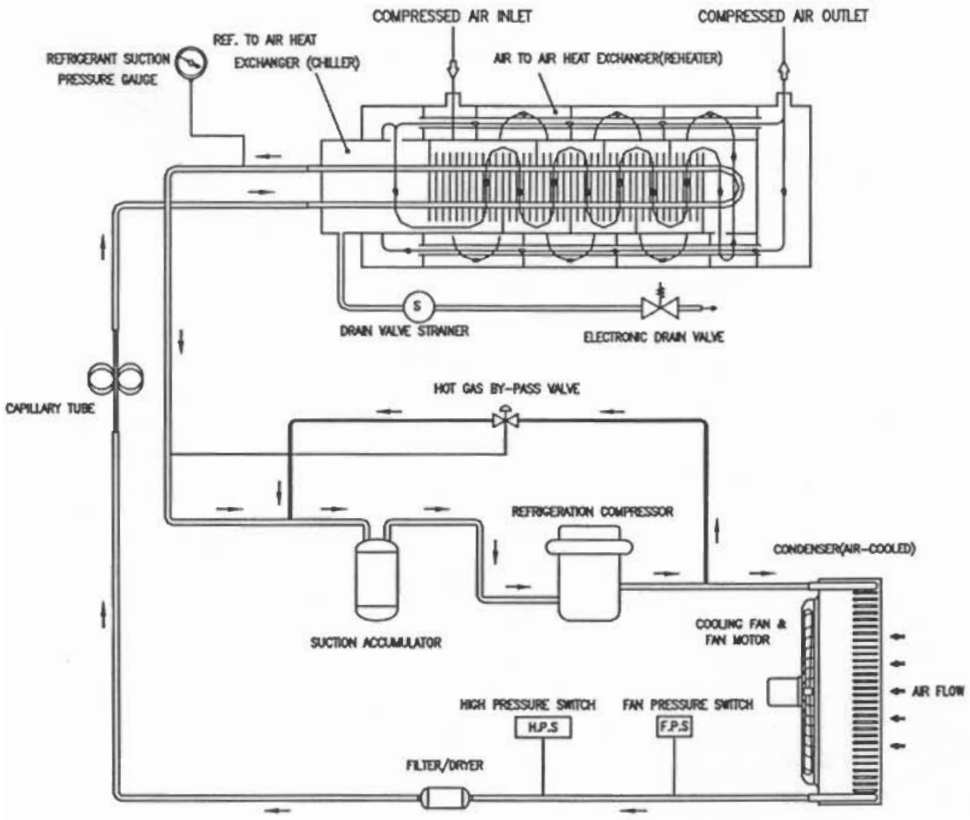
ELECTRICAL SCHEMATIC



Model 100 to Model 300

Figure 4a

AIR AND REFRIGERANT FLOW SCHEMATIC



Model 425

Figure 4b

AIR AND REFRIGERANT FLOW SCHEMATIC

REPLACEMENT PARTS

ITEM	DESCRIPTION	Model 100	Model 125	Model 150	Model 200
1	Refrigerant compressor	3146984	3154832	3154833	3147820
2	Condenser(air-cooled)	1283302	1283302	1283340	1283340
3	Fan Blades	3041956	3041956	3041956	3041955
4	Fan Motor	1283635	1283635	1283304	1283304
5	Filter/Dryer	1283273	1283273	1283273	1283273
6	Suction Strainer/Accumulator	-	-	3154837	3154837
7	Hot Gas Bypass Valve(HGBV)	1283275	3041920	3041920	3041920
8	Electronic Drain Valve(EDV)	3146977	3146977	3146977	3146977
9	EDV Valve Body	3142600	3142600	3142600	3142600
10	EDV Solenoid Coil	3154851	3154851	3154851	3154851
11	EDV Timer	-	-	1283280	1283280
12	Fan Pressure Switch	3146975	3146975	3146975	3146975
13	On/Off Switch with Running Lamp	3041494	3041494	3041494	3041494
14	Drain Valve Strainer	3146976	3146976	3146976	3146976
15	DSM Board	3146978	3146978	3146978	3146978
16	DSM Panel	3152353	3152353	3152353	3152353
17	Temp. Sensor	3146979	3146979	3146979	3146979

ITEM	DESCRIPTION	Model 250	Model 300	Model 425
1	Refrigerant compressor	3147821	3045836	3154834
2	Condenser(air-cooled)	3154835	1283372	1283372
3	Fan Blades	3041957	3041958	3041958
4	Fan Motor	1283304	3127739	3127739
5	Filter/Dryer	1283273	1283369	1283369
6	Suction Strainer/Accumulator	3154838	3154839	3154839
7	Hot Gas Bypass Valve(HGBV)	3041920	3154841	3154841
8	Electronic Drain Valve(EDV)	3146977	3146977	3146977
9	EDV Valve Body	3142600	3142600	3041155
10	EDV Solenoid Coil	3154851	3154851	3154851
11	EDV Timer	1283280	1283280	1283280
12	Fan Pressure Switch	3146975	3146975	3146975
13	On/Off Switch with Running Lamp	3041494	3041494	3041494
14	Drain Valve Strainer	3146976	3146976	3146976
15	High Pressure Switch	N/A	N/A	3154852
16	DSM Board	3146978	3146978	3146978
17	DSM Panel	3152353	3152353	3152353
18	Temp. Sensor	3146979	3146979	3146979

ENGLISH

WARRANTY

The manufacturer warrants the product manufactured by it, when properly installed, operated, applied, and maintained in accordance with procedures and recommendations outlined in manufacturer's instruction manuals, to be free from defects in material or workmanship for a period as specified below, provided such defect is discovered and brought to the manufacturer's attention within the aforesaid warranty period.

The manufacturer will repair or replace any product or part determined to be defective by the manufacturer within the warranty period, provided such defect occurred in normal service and not as a result of misuse, abuse, neglect or accident. Normal maintenance items requiring routine replacement are not warranted. The warranty covers parts and labor for the warranty period unless otherwise specified. Repair or replacement shall be made at the factory or the installation site, at the sole option of the manufacturer. Any service performed on the product by anyone other than the manufacturer must first be authorized by the manufacturer.

Unauthorized service voids the warranty and any resulting charge or subsequent claim will not be paid. Products repaired or replaced under warranty shall be warranted for the unexpired portion of the warranty applying to the original product.

The foregoing is the exclusive remedy of any buyer of the manufacturer's product. The maximum damages liability of the manufacturer is the original purchase price of the product or part.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, OR STATUTORY, **AND IS EXPRESSLY IN LIEU OF THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** THE MANUFACTURER SHALL NOT BE LIABLE FOR LOSS OR DAMAGE BY REASON OF STRICT LIABILITY IN TORT OR ITS NEGLIGENCE IN WHATEVER MANNER INCLUDING DESIGN, MANUFACTURE OR INSPECTION OF THE EQUIPMENT OR ITS FAILURE TO DISCOVER, REPORT, REPAIR, OR MODIFY LATENT DEFECTS INHERENT THEREIN.

THE MANUFACTURER, HIS REPRESENTATIVE OR DISTRIBUTOR SHALL NOT BE LIABLE FOR LOSS OF USE OF THE PRODUCT OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE BUYER, WHETHER ARISING FROM BREACH OF WARRANTY, NEGLIGENCE OR STRICT LIABILITY IN TORT.

The manufacturer does not warrant any product, part, material, component, or accessory manufactured by others and sold or supplied in connection with the sale of manufacturer's products.

Warranty Period

Parts and labor for two (2) years from the date of shipment from the factory; heat exchangers are covered (parts only) for an additional three (3) years (total of five [5]). On units that manufacturer requests be returned to the factory, a one time removal/reinstallation labor allowance as noted in the Service Warranty Policies and Procedures Handbook will apply. Freight to the factory from the installation site and to the installation site from the factory will be paid by the manufacturer; means of transportation to be specified by manufacturer.

2/96

AUTHORIZATION FROM THE SERVICE DEPARTMENT IS NECESSARY BEFORE MATERIAL IS RETURNED TO THE FACTORY OR IN-WARRANTY REPAIRS ARE MADE

SERVICE DEPARTMENT: (724) 746-1100

S/B
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