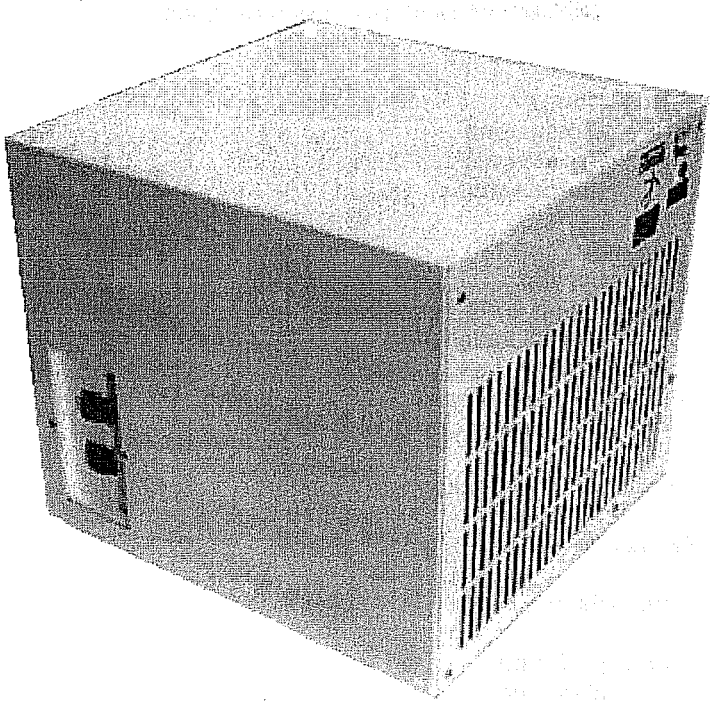
HRDM10-35 SCFM REFRIGERATED DRYER
OPERATIONS & MAINTENANCE



Hill-Rom®

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SECTION 1 START-UP AND SHUT-DOWN PROCEDURES

Start-up

BEFORE STARTING THIS DRYER , FOLLOW THE INSTALLATION INSTRUCTIONS AND PROCEDURES COMPLETELY.

SERIOUS PERSONAL INJURY CAN RESULT IF INSTRUCTIONS ARE NOT CAREFULLY AND COMPLETELY FOLLOWED.

DO NOT REMOVE, REPAIR, OR REPLACE ANY ITEM ON THE DRYER WHILE THE DRYER IS UNDER PRESSURE.

After pushing the start button, the power indicating light will illuminate. The fan will cycle in accordance with head (High Side) pressure on 15-35 SCFM models. On 10 SCFM models the fan will run continuously.

The refrigerant suction pressure gauge reading while running under rated load should read 30.5-32.5 psig.

Running Operation

1. The non-cycling operation of the refrigerated dryer is controlled by a Hot Gas Bypass Valve. The fan control is used in conjunction to maintain head pressure during light or no load running condition.
2. The Hot Gas valve is preset at the factory. The suction pressure gauge should indicate 30.5 PSIG for R-134a with **NO LOAD ON THE DRYER.**

If adjustment is necessary refer to Fig. 1 (Hot Gas Valve Setting & Adjustment)

System Monitor

1. Dryer "Power on" light (GREEN) illuminates to indicate power is on to the dryer.
2. Optional Refrigerant Suction Gauge displays refrigeration system suction pressure.
3. High temperature warning light (RED) indicates the compressor is not running.

Shutdown

1. Isolate dryer by opening bypass valve and closing the inlet and outlet isolation valves.
2. After dryer is depressurized , turn the On/ Off switch to the off position de-energizing the unit.

Hot Gas Valve Setting & Adjustment

With No Load (Air Off) Adjust the valve according to the diagram below. Do not adjust in large increments. Make small adjustment and let dryer equalize. Proper setting is 30.5 PSIG with NO LOAD

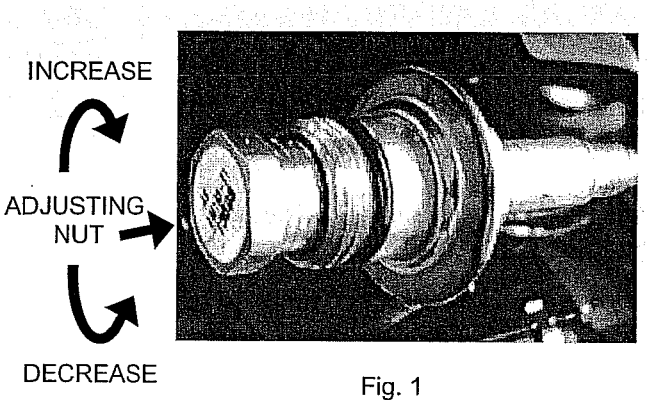


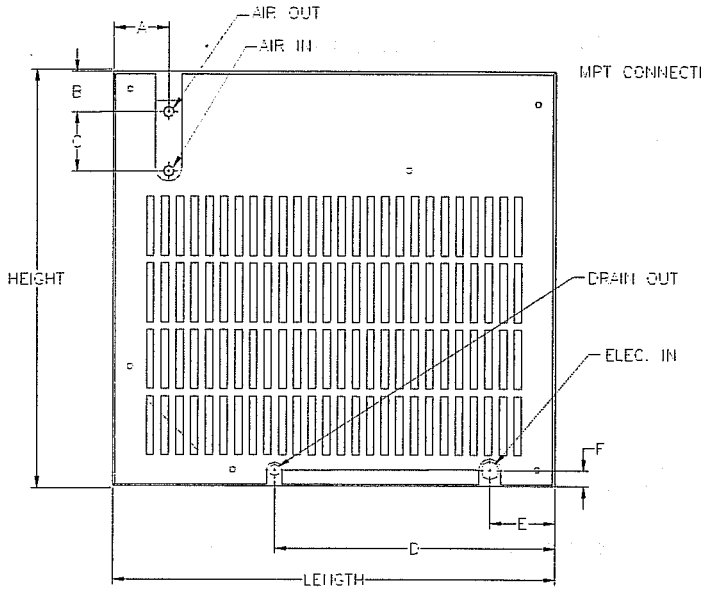
Fig. 1

Temperature-Pressure Chart (R-134a)

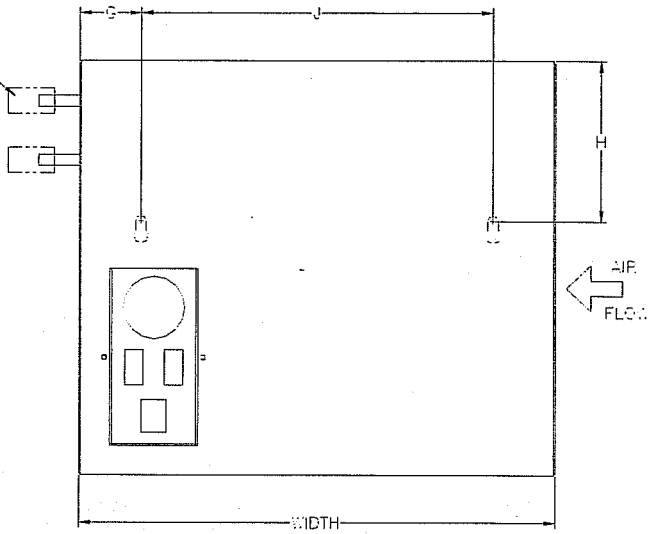
Temperature (F)	Pressure (PSIG)
28	24.0
30	26.1
32	27.5
34	29.3
35	**30.5**
36	31.2
38	32.5
40	35.1
45	40.3

SECTION 2 SPECIFICATIONS

2.1 DIMENSIONS



LEFT SIDE



FRONT

MODEL	Capacity SCFM	BTU	Fan CFM	Std Voltage	HP	Kw	Differential Pressure	Length inches	Width inches	Height inches	A	B	C	D	E	F	G	H	I	In/Out Conn. NPT	Wt. lb
HRDM10	10	1400	200	115/1/60	.25	.40	2.4	15	16	14	1.88	1.38	2.00	9.50	2.25	.56	2.00	5.50	12.00	1/4"	65
HRDM25	25	3000	250	115/1/60	.33	.73	2.5	16	21	17	3.38	9.50	3.50	10.52	3.50	.56	N/A	N/A	N/A	1/2"	70
HRDM35	35	4000	250	115/1/60	.50	.89	3.5	16	21	17	3.38	9.50	3.50	10.52	3.50	.56	N/A	N/A	N/A	1/2"	75

MODEL	FLOW (SCFM)	VOLTAGE	COMP. RLA	COMP. LRA	COMP. HP	MINIMUM CIRCUIT AMPS	FAN MOTOR FLA (EA)	UNIT FLA	MAX FUSE	CHARGE* (R-22)	STD. OPERATING INLET AIR PRESS.	STD. OPERATING INLET AIR TEMP.	STD. OPERATING AMBIENT AIR TEMP.	LOW SIDE DESIGN PRESS.	HIGH SIDE DESIGN PRESS.
HRDM10		115/60/1	3.2	18	0.25	15	0.46	3.6	15	4.5 .oz	100 PSIG	100° F	100° F	190 PSIG	400 PSIG
HRDM10		208-230/60/1	2	8.5	0.25	15	0.23	2.3	15	4.5 oz.	100 PSIG	100° F	100° F	190 PSIG	400 PSIG
HRDM25		115/60/1	5.8	29	0.33	15	0.46	6.3	15	9 oz.	100 PSIG	100° F	100° F	190 PSIG	400 PSIG
HRDM25		208-230/60/1	3	14	0.33	15	0.23	3.5	15	9 oz.	100 PSIG	100° F	100° F	190 PSIG	400 PSIG
HRDM35		115/60/1	7.2	32.7	0.5	15	0.46	7.7	15	9 oz.	100 PSIG	100° F	100° F	190 PSIG	400 PSIG
HRDM35		208-230/60/1	4	19	0.5	15	0.23	4.5	15	9 oz.	100 PSIG	100° F	100° F	190 PSIG	400 PSIG

*** ENSURE UNIT IS COMPLETELY EVACUATED PRIOR TO CHARGING.**
SEE CHARGING INSTRUCTIONS PG 9

SECTION 3 INSTALLING THE DRYER

3.1 LOCATION

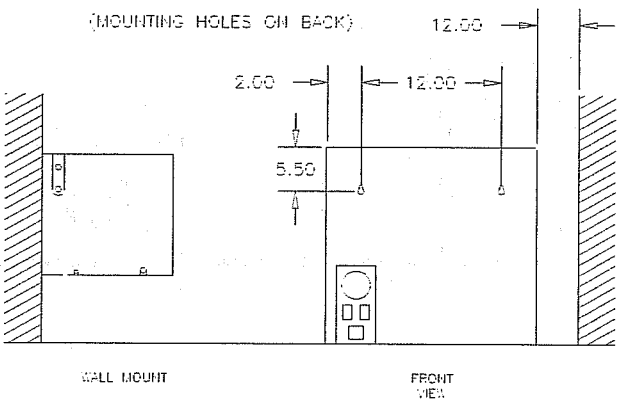
DO NOT INSTALL DRYER IN AN ENVIRONMENT OF CORROSIVE CHEMICALS, EXPLOSIVE GASSES, POISONOUS GASSES, STEAM HEAT, AREAS OF HIGH AMBIENT CONDITIONS, OR EXTREME DUST AND DIRT.

Install the dryer in a protected, well ventilated area where the ambient temperatures are between **40 degrees and 100 degrees F.** The dryer will generate the amount of heat listed in the BTU/HR column of the specification table. It must be installed in an area that has ventilation and air flow sufficient to handle the required heat removal.

FAILURE TO INSTALL DRYER IN THE PROPER AMBIENT CONDITIONS WILL AFFECT THE DRYERS ABILITY TO CONDENSE REFRIGERANT GAS. THIS CAN CAUSE HIGHER LOADS ON THE COMPRESSORS, LOSS OF DRYER EFFICIENCY AND PERFORMANCE, OVERHEATED CONDENSER FAN MOTORS, ELECTRICAL COMPONENT FAILURE, AND DRYER FAILURE DUE TO THE FOLLOWING: COMPRESSOR LOSS, FAN MOTOR FAILURE, AND ELECTRICAL COMPONENT FAILURE. FAILURES OF THIS TYPE WILL AFFECT WARRANTY CONSIDERATIONS.

Install the dryer in a clean, dry, non-corrosive environment. Clearance around the dryer should be no less than **12 "** on all sides to ensure room for maintenance and proper air circulation to air cooled components. Some jurisdictions have codes requiring specific clearances around equipment. Check with all local authorities to ensure compliance with all applicable state, local, and national codes.

Refrigerated air dryers have water present in them at all times. Fumes from things such as formaldehyde, carbon dioxide, sulfur compounds, and ammonia will combine with water in the dryer to form acids such as carbonic, sulfuric, and nitric which are extremely corrosive to the dryer. Install the air inlet to the air compressor in a manner that ensures that corrosive fumes are not introduced into the air system.



DRYER FAILURE DUE TO ACID OR CORROSIVE SUBSTANCE ATTACK IS CONSIDERED OWNER ABUSE AND WILL NOT BE COVERED AS A WARRANTY ITEM. IT IS THE USERS RESPONSIBILITY TO ENSURE THAT AIR SUPPLIES ARE CLEAN AND CONTAMINANT FREE.

Install the dryer indoors. Dryers are not meant to be installed outdoors exposed to the weather. If the dryer must be installed outdoors, it must be in a weatherproof enclosure that provides for adequate air flow to the dryer.

3.2 PIPING AND CONNECTIONS

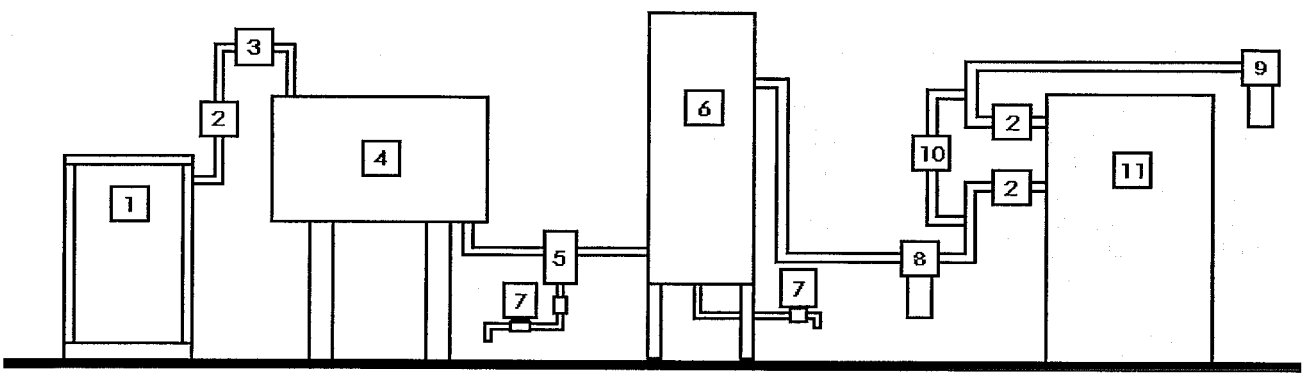
Connect the inlet and outlet piping to the dryer using the markings on the dryer as a guide. Pipe size for dryer is specified in the dimension table (Section 3). Piping should be full flow if possible with the least amount of turns, bends, or reductions. If the dryer is connected to a machine with excessive vibration, flexible connections should be used to isolate the dryer from the rest of the system. Use Figure 4.2.1 as a suggested guide for the installation of system components.

Use di-electric unions to isolate copper from iron piping and reduce possibility of electrolytic action on pipes and other iron components.

All pipe should be deburred and threaded to a proper depth and length before installation. Threads should be inspected for cleanliness and depth of cut. Good quality pipe compound should be used in the makeup of joints to ensure a good, airtight fit of piping components.

Pipe should be anchored separately from the dryer. At no time should the dryer be expected to support the weight or load of the pipe. Acceptable pipe mounting devices would be unistrut supports anchored to walls, hangers suspended from ceilings, or pedestals mounted from the floor. Be sure all pipe installation conforms to all building and fire codes.

Air dryers are part of a complete air treatment system that includes filters, moisture separators, etc. To achieve maximum benefit from the dryer, install proper filtration. Coalescing filters should be used in conjunction with a good particulate filter. The particulate filter is used to extend the life and the function of the coalescing element.



1 Air Compressor
2 Shut-off Valve
3 Flex Connector
4 Aftercooler
5 Liquid Separator
6 Storage Tank
7 Drain Valve
8 Prefilter
9 Afterfilter
10 By-pass Valve
11 Refrigerated Air Dryer

FIGURE 3.2.1 SUGGESTED PIPING CONFIGURATION

SECTION 4 MAINTENANCE AND REPAIR

DO NOT REMOVE, REPAIR, OR REPLACE ANY ITEM ON THE DRYER WHILE THE DRYER IS UNDER PRESSURE.

BEFORE BEGINNING ANY REPAIRS, MAINTENANCE, OR INSTALLATION WORK, ENSURE THAT THE POWER IS OFF AND THE DRYER IS AT ATMOSPHERIC PRESSURE.

BEFORE WORKING ON THE DRYER OR RELATED EQUIPMENT, ENSURE THAT ALL PERSONNEL HAVE READ AND UNDERSTAND THE SAFETY AND OPERATION INSTRUCTIONS IN THIS MANUAL.

CHARGING INFORMATION

Charging Procedure

1. **Evacuate unit with recovery machine**
2. **Draw a vacuum on dryer**
3. **Weigh or measure with "Dial-a-Charge" the proper amount of refrigerant as stated on nameplate.**

NEVER ESTIMATE THE CHARGE AS THESE DRYERS ARE "CRITICAL CHARGE" MACHINES IMPROPER REFRIGERANT CHARGE WILL LEAD TO COMPRESSOR AND/OR DRYER FAILURE

EVACUATE AND CHARGING TO BE DONE ONLY BY A CERTIFIED EPA TECHNICIAN !

PREVENTIVE MAINTENANCE SCHEDULE

This is a suggested schedule based on **Average** dryer conditions. As conditions such as dirty environment, humidity conditions, ambient temperature, etc. change, the frequency and duration of the inspections may change.

DAILY

1. Inspect the dryer for proper operation .
2. Check the control panel for alarms.
3. Verify proper inlet and ambient air conditions.

WEEKLY

1. Assure drain is functioning properly.
2. Inspect and log pressure differential readings across filters. Inspect filters if they are out of range. Change as necessary.

MONTHLY

1. Blow entire unit out with compressed air.
2. Blow condenser coils out with compressed air.
3. Inspect refrigeration compressor for overheating.

SEMI-ANNUALLY

1. Inspect entire assembly for loose connections, screws, panels etc.
2. Inspect refrigeration circuit for signs of oil and refrigerant leakage.
3. Clean fan blades, casing, motors and internal components. Use light mixture of detergent. No oil based cleaning solvents should be used for cleaning the unit.

ANNUALLY

1. Tighten all electrical connections. Look for broken, cracked, or bare wires.
2. Measure and record amperage. Verify that readings are within acceptable parameters as listed in specification table.
3. Clean the condenser coil with a mild detergent mixture and brush

SECTION 5 TROUBLESHOOTING GUIDE

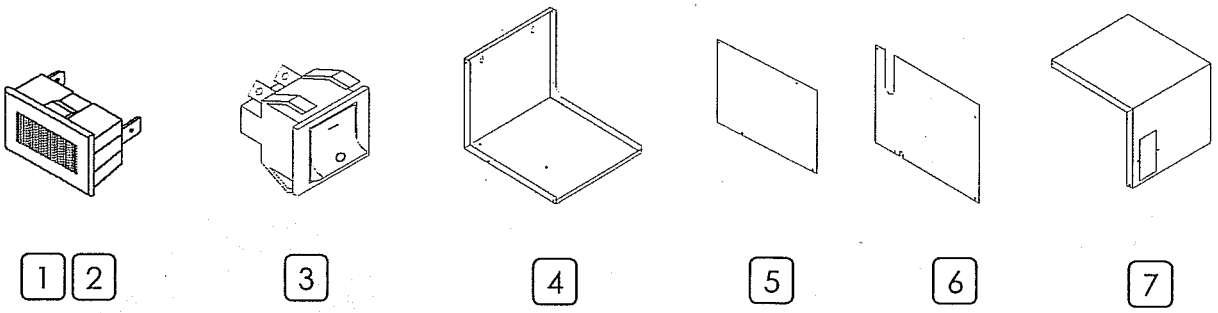
Symptom	Cause
Dryer not running "Power ON" light is ON	a. Low voltage to the dryer b. Compressor over-load open c. Defective compressor start components d. Compressor windings open
Dryer not running "Power ON" light is OFF	a. Switch not turned on b. No power c. Circuit breaker fuse improperly wired d. ON/OFF switch defective
High discharge pressure (Above 125 psig)	a. Fan not operating b. Dirty or blocked condenser c. High ambient conditions d. excessive air load exceeding the capacity of the dryer
High suction pressure (30.5-32.5 normal)	a. Excessive air load exceeding the capacity of the dryer b. HGV setting too high c. High ambient temperature
Low suction pressure (30.5-32.5 normal)	a. Low or no air load b. Fan not cycling at low load c. HGV setting too low d. Refrigerant leak(low on refrigerant) e. Low ambient temperature and fan not cycling
Moisture in the air system downstream	a. Dryer over loaded (air flow) b. Separator drain not functioning c. Air bypass valve open d. Refrigeration system not operating e. Improper air piping
High pressure drop in dryer air circuit	a. Dryer over loaded (air flow) b. Heat exchanger clogged c. Iced evaporator coil
High temperature light ON (Refrigerant compressor OFF)	a. Air inlet temperature too high b. Refrigerant shortage c. Blocked condenser

SECTION 6 REPLACEMENT PARTS

ITEM	DESCRIPTION	HRDM10 -1	HRDM10 -2	HRDM25 -1	HRDM25 -2	HRDM35 -1	HRDM35 -2
1	LIGHT,POWER (GRN)	WPP-88-008-002	WPP-88-008-002	WPP-88-008-002	WPP-88-008-002	WPP-88-008-002	WPP-88-008-002
2	LIGHT,HIGH TEMPERATURE (RED)	WPP-88-008-000	WPP-88-008-000	WPP-88-008-000	WPP-88-008-000	WPP-88-008-000	WPP-88-008-000
3	SWITCH, ON/OFF	WPP-88-007-000	WPP-88-007-000	WPP-88-007-000	WPP-88-007-000	WPP-88-007-000	WPP-88-007-000
4	BASE	WPP-63-992-000	WPP-63-992-000	WPP-63-992-001	WPP-63-992-001	WPP-63-992-001	WPP-63-992-001
5	PANEL,INLET (RH)	WPP-63-982-000	WPP-63-982-000	WPP-63-982-002	WPP-63-982-002	WPP-63-982-002	WPP-63-982-002
6	PANEL,EXHAUST (LH)	WPP-63-982-001	WPP-63-982-001	WPP-63-982-003	WPP-63-982-003	WPP-63-982-003	WPP-63-982-003
7	PANEL,TOP	WPP-63-983-000	WPP-63-983-000	WPP-63-983-001	WPP-63-983-001	WPP-63-983-001	WPP-63-983-001
8	COMPRESSOR	WPP-52-025-016	WPP-51-025-017	WPP-51-025-018	WPP-51-025-057	WPP-51-025-019	WPP-51-025-020
9	HEAT EXCHANGER ASSEMBLY	WPP-59-226-000	WPP-59-226-000	WPP-59-230-000	WPP-59-230-000	WPP-59-227-000	WPP-59-227-000
10	CONDENSER	WPP-51-025-024	WPP-51-025-024	WPP-51-025-025	WPP-51-025-025	WPP-51-025-026	WPP-51-025-027
11	FAN MOTOR	WPP-51-025-028	WPP-51-025-029	WPP-51-025-030	WPP-51-025-031	WPP-51-025-030	WPP-51-025-031
12	FAN BLADE	WPP-51-025-032	WPP-51-025-032	WPP-52-025-032	WPP-52-025-032	WPP-51-025-032	WPP-51-025-033
13	FAN CONTROL / Pressure Switch	N/A	N/A	WPP-87-121-000	WPP-87-121-000	WPP-87-121-000	WPP-87-121-000
14	HOT GAS VALVE	WPP-52-173-000	WPP-52-173-000	WPP-52-173-000	WPP-52-173-000	WPP-52-173-000	WPP-52-173-000
15	FILTER DRYER	WPP-54-136-000	WPP-54-136-000	WPP-54-136-000	WPP-54-136-000	WPP-54-140-000	WPP-54-140-000
16	STRAINER	WPP-43-984-000	WPP-43-984-000	WPP-43-984-000	WPP-43-984-000	WPP-43-984-000	WPP-43-984-000
17	RELAY	WPP-51-025-034	WPP-51-025-035	WPP-51-025-036	WPP-51-025-037	WPP-51-025-038	WPP-51-025-039
18	OVERLOAD	WPP-51-025-042	WPP-51-025-043	WPP-51-025-044	WPP-51-025-045	WPP-51-025-046	WPP-51-025-047
19	START CAPACITOR	N/A	N/A	WPP-51-025-050	WPP-51-025-051	WPP-51-025-052	WPP-51-025-053

SEPARATOR PARTS

AUTODRAIN W/NUT & SEAL	GRP-95-981	GRP-95-981	GRP-95-981	GRP-95-981	GRP-95-981	GRP-95-981
BOWL W/AUTODRAIN & SEALS	FRP-95-950	FRP-95-950	GRP-95-960	GRP-95-960	GRP-95-960	GRP-95-960



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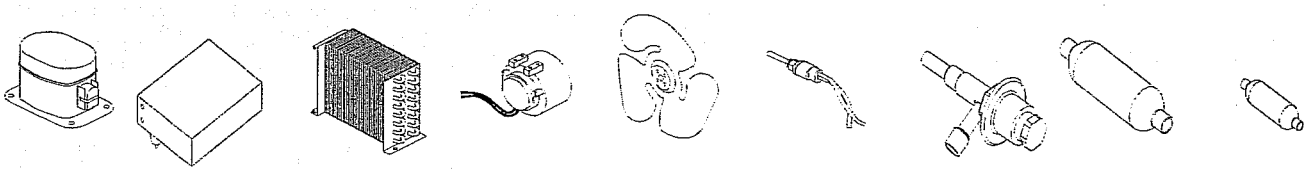

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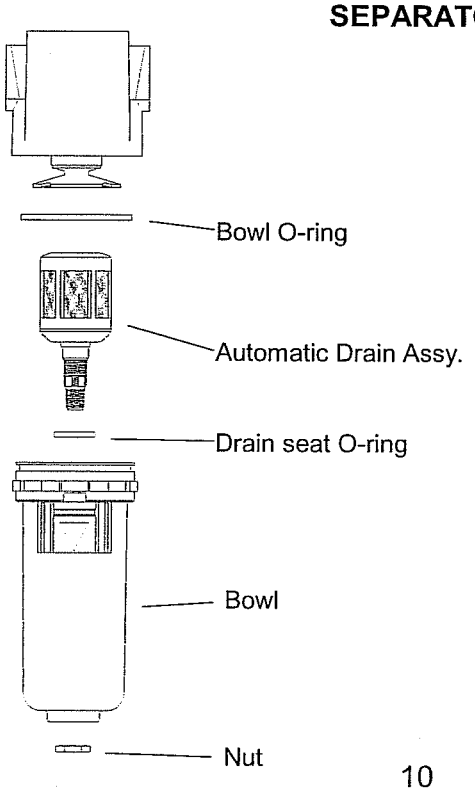
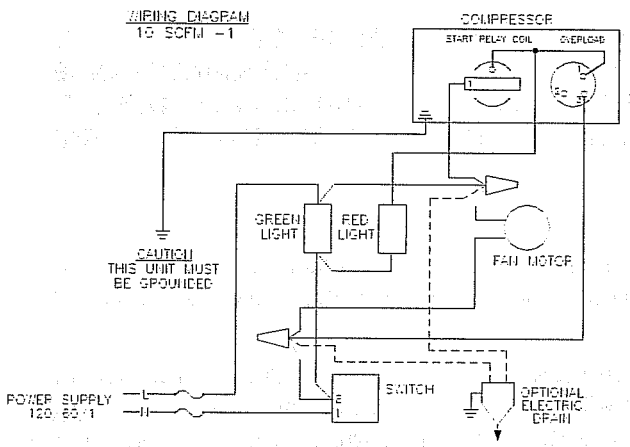
ITEMS 17&18 NOT SHOWN

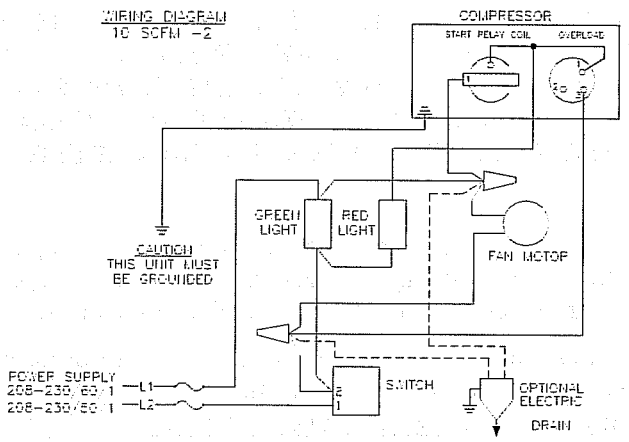
SEPARATOR REPLACEMENT PARTS

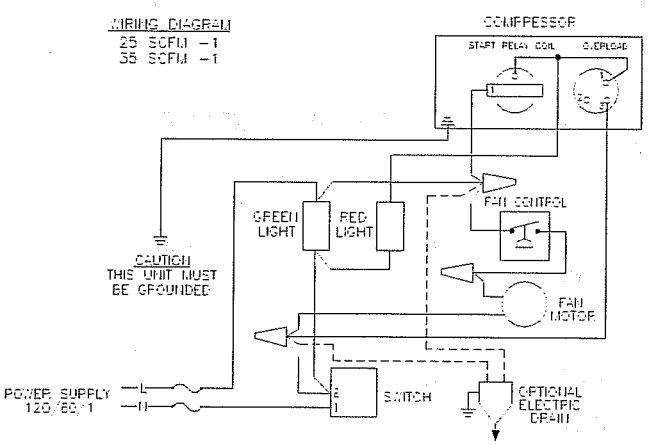


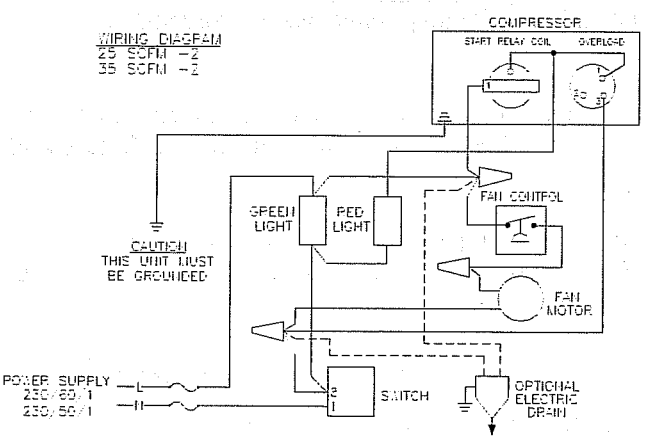
DESCRIPTION OF OPERATION

Power is supplied to Terminal one (1) on Switch - Switch on Power flows to Terminal three (3) on Overload, If Overload is closed (normal), Power goes to Start Relay Coil energizing Compressor. Fan Motor energizes when on/off Switch is closed & runs continuously on 10 SCFM Models. On 25-35 SCFM Models the Fan will cycle according to High Side Pressure. If on/off Switch is closed and Overload Opens, High Temperature Light illuminates indicating a Compressor shutdown/abnormal condition.









SECTION 8 WARRANTY AND WARRANTY CLAIM INFORMATION

The refrigerated air dryer is warranted to be free of defects in materials and workmanship under proper use, installation, and application. This warranty shall be for a period of 27 months from date of shipment from our factory or other stocking facilities or 24 months from date of installation. Proof of installation date will be required. All dryers outside the U.S. and Canada carry a parts only warranty.

ALL FREIGHT DAMAGE CLAIMS ARE NOT THE RESPONSIBILITY OF THE MANUFACTURER AND ARE NOT COVERED UNDER WARRANTY AS ALL PRODUCTS ARE SHIPPED F.O.B. SHIPPER.

PLEASE DIRECT ALL FREIGHT CLAIMS TO THE SHIPPER IN QUESTION.

MAINTENANCE AND ADJUSTMENTS

ADJUSTMENTS TO THE HOT GAS BYPASS VALVE AND MAINTENANCE OF FLOAT AND AUTOMATIC DRAINS AND CONDENSER COILS ARE CONSIDERED TO BE ROUTINE MAINTENANCE AND THEREFORE NON-WARRANTABLE ITEMS AND ARE THE SOLE RESPONSIBILITY OF THE END USER. CONSULT THE INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR THE ADJUSTMENT AND MAINTENANCE PROCEDURES.

This warranty does not apply to any unit damaged by accident, modification, misuse, negligence, or misapplication. Damage to heat exchangers by exposure to ammonia, any other corrosive substance or sub freezing environment will be considered misuse.

Any refrigerated dryer part or material found defective will be repaired, replaced refunded, at the sellers option free of charge, provided that manufacturer is notified within the above stated warranty period. **All returns of allegedly defective equipment must have prior written authorization.** Said authorization may be obtained through our refrigerated dryer service department. All refrigerated dryers, parts, materials must be returned **freight prepaid** to the factory within 30 days of return authorization date. Any shipment returned to the factory collect will be refused.

If an item is found to be warrantable, the repaired item or replacement will be returned normal ground freight prepaid within the continental United States and Canada.

Any replacement part or material is warranted only to the extent of the remaining warranty period of the dryer or to the extent as provided by the supplier, whichever is longer.

WHO TO CONTACT IF YOU HAVE A WARRANTY CLAIM:

Compressed Air Treatment Division	Phone	(303) 783-2322
	Fax	(303) 783-2333

All freight damage claims should be filed within 15 working days and should be directed to the carrier.

REFRIGERATED COMPRESSED AIR DRYER WARRANTY PROCEDURES

1. Customer (distributor) contacts (303) 783-2322

2. CUSTOMER PROVIDES MANUFACTURER WITH A P.O. NUMBER AT THIS TIME. THIS IS REQUIRED BEFORE CALL CAN BE ENTERED INTO THE SYSTEM. IF WARRANTY IS VALID, CUSTOMER WILL NOT BE CHARGED FOR SERVICE CALL.

3. Manufacturer will work with the distributor, end user, etc. to get a service company to be dispatched and assess the dryer and the dryer problems.

4. Prior to repair, a warranty claim number will be issued to authorize service. The service house and the customer (distributor) will receive this number and receive a copy of a claim authorization letter by fax.

5. Service house or distributor submits an itemized invoice showing the work performed. This should be submitted within 30 days of the issuance of a warranty number to ensure prompt processing of the claim. Warranty claim number should appear on all correspondence relating to the claim to further ensure prompt processing of the claim.

6. Manufacturer evaluates the claim and pays the invoice or issues credit.

WHAT IS COVERED:

1. DEFECTS IN MATERIAL.

2. DEFECTS OF WORKMANSHIP IN THE MANUFACTURE OF THE DRYER.

3. A MAXIMUM OF 250 MILES ROUND TRIP FOR ONE SERVICE TECHNICIAN AT A MAXIMUM RATE OF $50.00/HR. AND .35 PER MILE.

WHAT IS NOT COVERED:

1. TEMPORARY SERVICE ASSISTANT FOR HELP WITH HEAVY ITEMS (ON SITE MAINTENANCE PEOPLE SHOULD HELP WHEN NECESSARY).

2. OVERTIME, WEEKEND LABOR RATES.

3. SALES TAX.

4. AIR FREIGHT OF UNIT OR PARTS.

5. REMOVAL AND REINSTALLATION OF EQUIPMENT.

6. ADDITIONAL PIPING TO BYPASS EQUIPMENT.

7. NORMAL ADJUSTMENT OF HOT GAS BYPASS VALVE.

8. AMPERAGE OR VOLTAGE READINGS.

9. MAINTENANCE OF FLOAT AND AUTOMATIC DRAINS AND CONDENSER COILS.

10. DAMAGE DUE TO MISAPPLICATION.

11. RENTAL CHARGES ON LOANER MACHINES.

12. CONSEQUENTIAL DAMAGES.

13. FREIGHT DAMAGE.

REFRIGERATED DRYER WARRANTY CLAIM INITIATION FORM

FILL IN INFORMATION AND FAX TO (303) 783-2333

UNIT MODEL NUMBER

UNIT SERIAL NUMBER

INSTALLATION DATE

DISTRIBUTOR P.O. NUMBER (INITIATES SERVICE CALL)

FAX NUMBER WHERE WARRANTY CLAIM NUMBER CAN BE FAXED