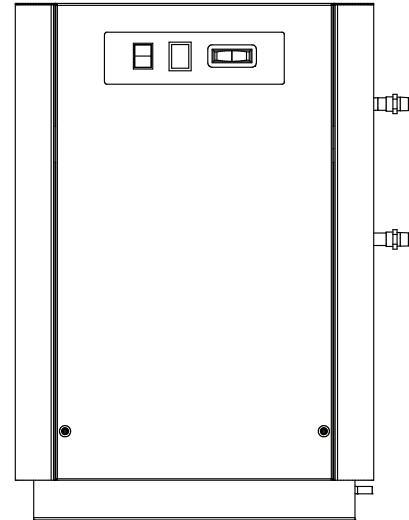




INSTRUCTION MANUAL

CRN SERIES

Models: CRN25, CRN35, CRN50, CRN75



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REFRIGERATED

TYPE

COMPRESSED

AIR DRYERS

GENERAL SAFETY INFORMATION

1. PRESSURIZED DEVICES:

This equipment is a pressure containing device.

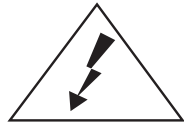
- Do not exceed maximum operating pressure as shown on equipment serial number tag.
- Make sure equipment is depressurized before working on or disassembling it for service.



2. ELECTRICAL:

This equipment requires electricity to operate.

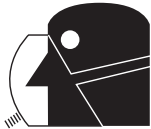
- Install equipment in compliance with all applicable electrical codes.
- Standard equipment is supplied with electrical enclosures not intended for installation in hazardous environments.
- Disconnect power supply to equipment when performing any electrical service work.



3. BREATHING AIR:

- Air treated by this equipment may not be suitable for breathing without further purification.

Refer to applicable standards and specifications for the requirements for breathing quality air.



RECEIVING, MOVING, AND UNPACKING

A. RECEIVING

This shipment has been thoroughly checked, packed and inspected before leaving our plant. It was received in good condition by the carrier and was so acknowledged.

Check for Visible Loss or Damage. If this shipment shows evidence of loss or damage at time of delivery to you, insist that a notation of this loss or damage be made on the delivery receipt by the carrier's agent.

B. UNPACKING

Check for Concealed Loss or Damage. When a shipment has been delivered to you in apparent good order, but concealed damage is found upon unpacking, notify the carrier immediately and insist on his agent inspecting the shipment. Concealed damage claims are not our responsibility as our terms are F.O.B. point of shipment.

C. MOVING

In moving or transporting dryer, do not tip dryer onto its side.

D. STORAGE/SHUT DOWN

CAUTION Dryer should not be stored outside (either packed or unpacked) or exposed to the weather. Damage to electrical and control components may result.

IMPORTANT: Do not store dryer in temperatures above 130°F (54.4°C).

IMPORTANT:

READ PRIOR TO STARTING THIS EQUIPMENT

1.0 INSTALLATION

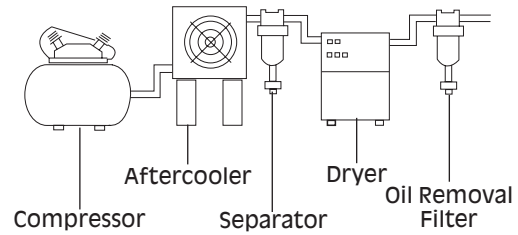
1.1 Location

- For typical placement in a compressed air system, see drawing.
- Air compressor intake – Locate air compressor so that contaminants potentially harmful to the dryer (e.g. ammonia) are not drawn into the air system.
- Dryer should be installed in a moderately heated, well ventilated area. Avoid locations immediately adjacent to cold exterior windows or walls, or adjacent to high temperature ovens or boilers.
- Clearances: Minimum requirements for free air flow and service access
 - Front and Right Side Panel: 18 inches (610 mm)
 - Left Side Panel: 12 inches (305 mm)
 - Rear Panel: No Clearance Required
- Standard units are designed to operate in 40 to 110°F (4 to 43°C) ambient temperatures.
- Installations in altitudes above 4500 feet (1370 meters) – Dryer is adjusted to operate in altitudes up to 4500 feet (1370 meters). If dryer is installed in an altitude above this, and has not been preset at the factory for this altitude, contact manufacturer's Service Department.
- The installation of a flexible connection prior to the dryer is recommended to prevent possible damage from vibration.

NOTE: Outdoor installation—Standard units are designed for indoor installation. Contact manufacturer if installing outdoors.

1.2 Mounting

Mount the dryer on a level solid surface. Holes are provided in the dryer base to permanently mount the dryer to the floor.



1.3 Piping connections

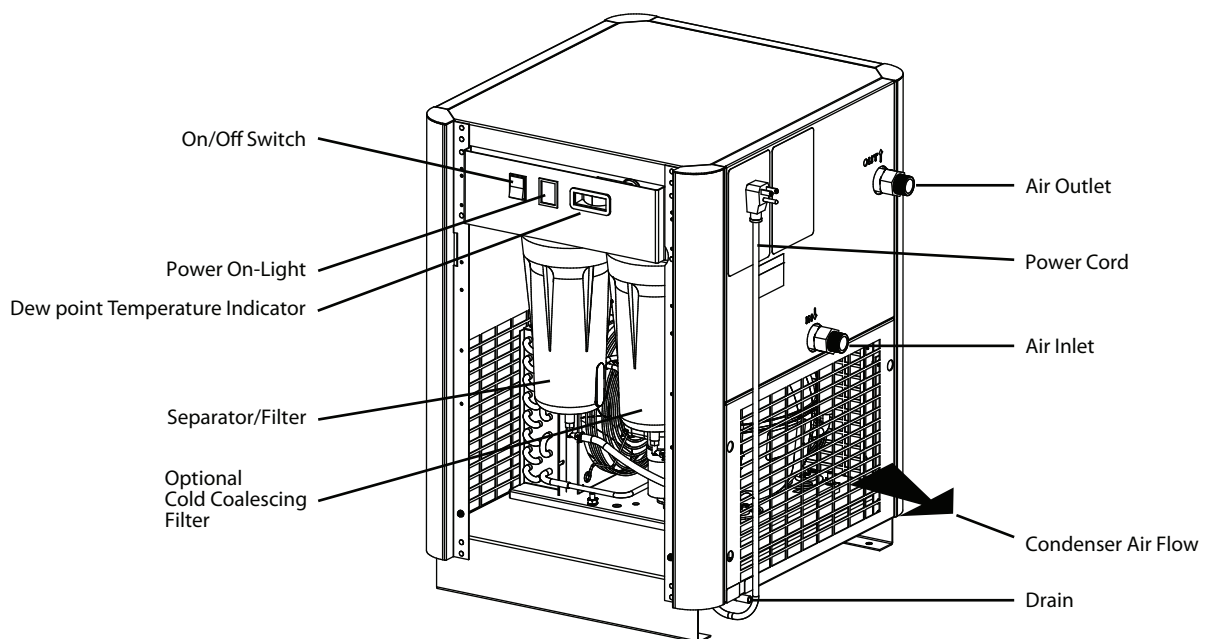
- Air Inlet - Connect compressed air line from air source to air inlet. (Reference markings on dryer, or see callout drawing below for air in/outlet connection locations.)

WARNING Refer to Serial Number Tag for maximum working pressure. Do not exceed dryer's Maximum Working Pressure.

NOTE: Install dryer in air system at highest pressure possible (e.g. before pressure reducing valves).

NOTE: Install dryer at coolest compressed air temperature possible. Maximum inlet compressed air temperature: 120°F (49°C). If inlet air exceeds this temperature, precool the air with an aftercooler.

- Air Outlet—Connect air outlet to downstream air lines.
- By-pass piping—
If servicing the dryer without interrupting the air supply is desired, piping should include inlet and outlet valves and an air by-pass valve.



1.4 Electrical connections

- A. Dryer is designed to operate on the voltage, phase, and frequency listed on the serial number tag.
- B. Install in a receptacle of proper voltage.

NOTE: Refrigeration condensing unit is designed to run continuously and should NOT be wired to cycle on/off with the air compressor.

1.5 Moisture separator

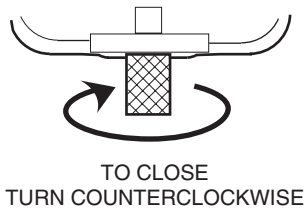
- A. Separator (and Oil Removal Filter where applicable) has an external drain which automatically discharges collected condensate. It may be desirable to pipe the condensate from the Automatic Drain outlet to a suitable drain.

NOTE: Discharge is at system pressure. Drain line should be anchored.



NOTE: Condensate may contain oil. Comply with applicable laws concerning proper disposal.

- B. Separator has a knurled fitting with flexible drain tubing attached. Be sure knurled fitting is tightened by turning it counter-clockwise before operating dryer.



2.0 OPERATION

2.1 Minimum/Maximum operating conditions

- A. Maximum inlet air pressure: refer to dryer serial number tag
- B. Minimum inlet air pressure: 30 psig (2.1 barg)
- C. Maximum inlet air temperature: 120°F (49°C)
- D. Maximum ambient temperature: 110°F (43°C)
- E. Minimum ambient temperature: 40°F (4°C)

2.2 Start-up

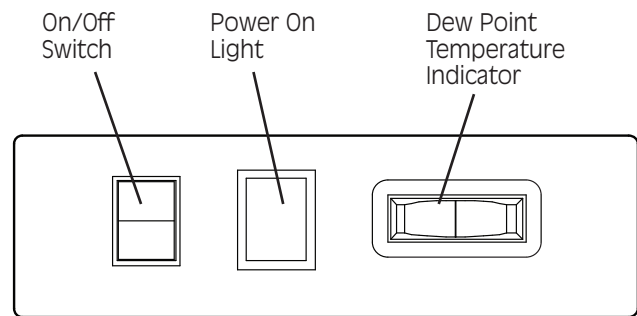
1. Confirm On/Off Switch is in the "Off" position.
2. Energize dryer. Green power-on light will illuminate.

2.3 Operating check points

Check the following on a periodic basis:

- A. Green power on light is illuminated.
- B. Dewpoint indicator is in green area.
- C. Condensate is discharging from drain.

Standard Control Panel



3.0 MAINTENANCE

3.1 Condenser coil

Clean off accumulated dust and dirt monthly or as necessary in dirty environments.

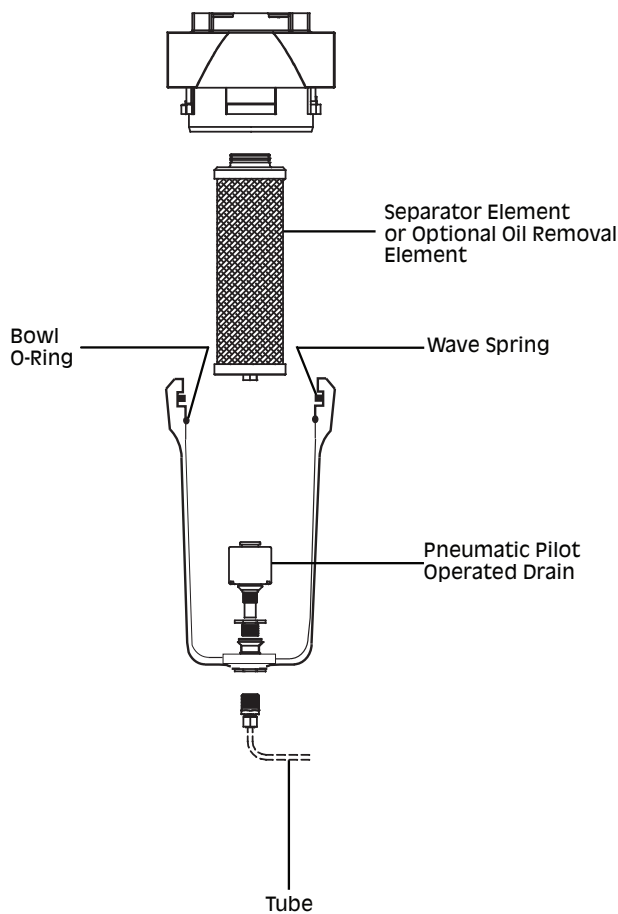
3.2 Moisture Separator/Filter and optional Oil Removal Filter

Replace filter element when pressure drop across dryer is excessive or annually.

3.3 Check separator daily to be sure automatic drain is discharging.

3.4 Replace drain mechanism annually.

To facilitate service, maintenance kits are available. Please refer to page 11.



SIZING

To determine the maximum inlet flow capacity of a dryer at various operating conditions, multiply the rated capacity from Table 1 by the multipliers shown in Table 2.

Example: How many scfm can an air-cooled model CRN50 handle when compressed air to be dried is at 80 psig and 90°F; and ambient air temperature is 80°F?

Answer: $50 \times 1.17 \times 1.12 = 66$ scfm.

TABLE 1

Rated capacity (scfm) and pressure drop @ 100 psig inlet pressure, 100°F inlet temperature, and 100°F ambient temperature

MODEL		25	35	50	75
Rated capacity (scfm)	60 Hz	25	35	50	75
	50 Hz	21	29	42	63

TABLE 2

Air capacity correction factors (Multipliers)

INLET COMPRESSED AIR CONDITIONS					
INLET PRESSURES		INLET TEMPERATURES			
psig	kg/cm ²	80°F 27°C	90°F 32°C	100°F 38°C	110°F 43°C
50	3.5	1.35	1.05	0.84	0.69
80	5.6	1.50	1.17	0.95	0.79
100	7.0	1.55	1.23	1.00	0.82
125	8.8	1.63	1.31	1.07	0.91
150	10.5	1.70	1.37	1.13	0.95
175	12.3	1.75	1.42	1.18	0.99
200	14.0	1.80	1.47	1.22	1.03

COOLING MEDIUM		
AMBIENT TEMPERATURE		MULTIPLIER
°F	°C	
80	27	1.12
90	32	1.06
100	38	1.00
110	43	0.94

ENGINEERING DATA

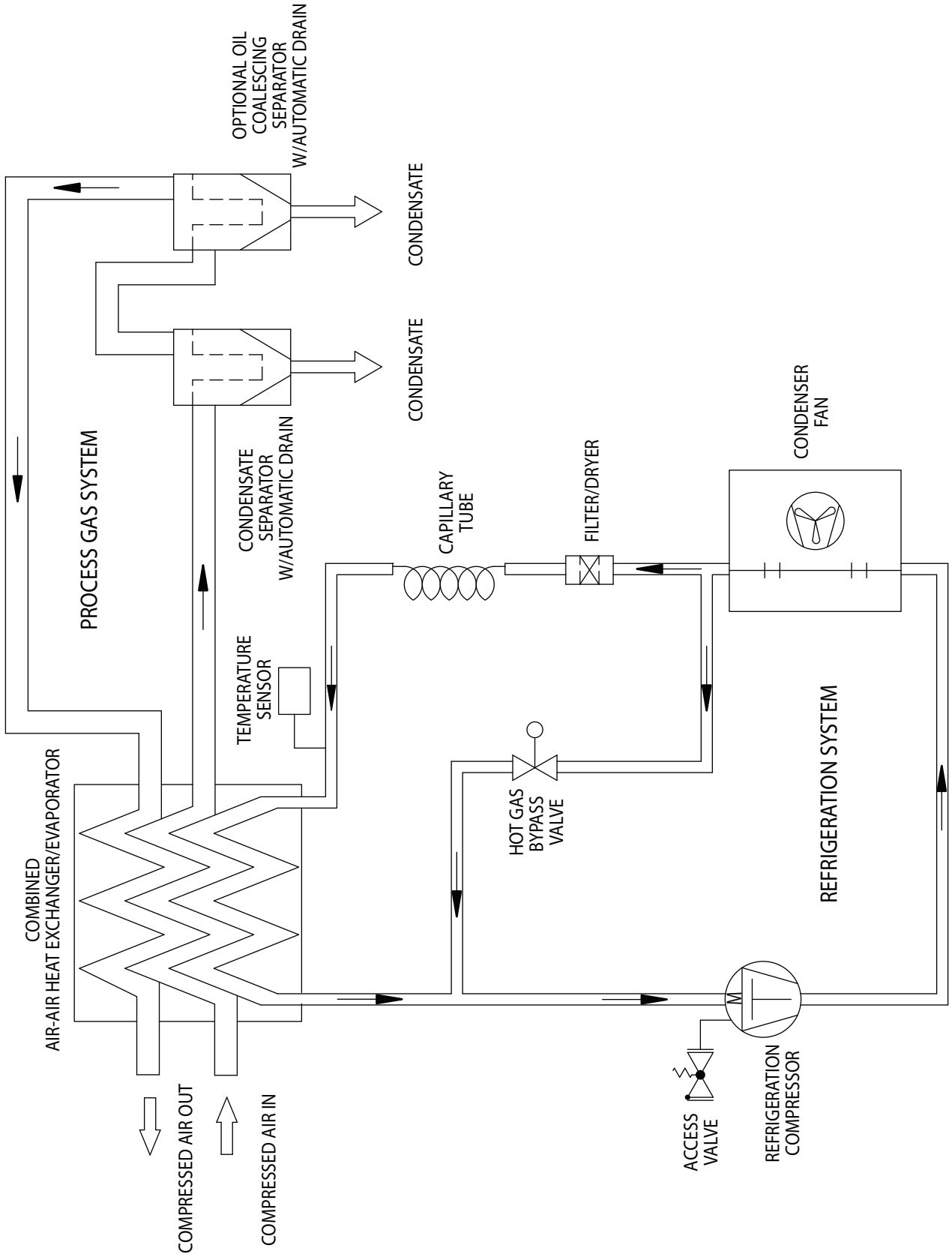
MODEL		CRN25	CRN35	CRN50	CRN75
AIR SYSTEM DATA					
Rated Air Flow at 100°F & 100 psig Inlet, 100°F Ambient (scfm)	60 Hz	25	35	50	75
Rated Air Flow at 95°F & 100 psig Inlet, 77°F Ambient (scfm)	50 Hz	27	37	53	80
Minimum / Maximum Inlet Compressed Air Pressure		30 / 232 psig (2.1 / 16.0 barg)			
Minimum / Maximum Inlet Compressed Air Temperature		40° / 120°F (4 / 49°C)			
Minimum / Maximum Ambient Temperature		40° / 110°F (4 / 43°C)			
Outlet Air Temperature (nominal at rated conditions)		85°F (29°C)			
REFRIGERATION SYSTEM DATA					
Compressor Type		Hermetic - Capacitor Start, Induction Run - Non-Cycling			
Refrigeration Capacity @ Rated Flow (BTU/h)*	60 Hz (115V)	1,087	1,619	2,184	2,971
	60 Hz (230V)	1,080	1,678	1,885	2,441
	50 Hz	1,296	2,040	1,796	2,506
Refrigerant Type		R-134a			
Refrigerant Charge		See Serial Tag on Dryer			
Suction Pressure Setting (hot gas by-pass valve)		30.5 psig (2.1 barg)			
Air-Cooled Condenser					
Air Flow Across Condenser (cfm)	60 Hz	206	206	200	188
	50 Hz	165	165	160	150
ELECTRICAL DATA					
Nominal Voltage		115/1/60			
Voltage Range		90 - 135			
Input Power @ Rated Flow (watts) *		205	253	410	589
Minimum Circuit Ampacity		4.2	3.5	6.3	9.3
Maximum Overcurrent Protector (amps)		15	15	15	15
Compressor Rated Load Amps		2.9	2.4	4.7	7.1
Compressor Locked Rotor Amps		14.2	20.1	28.0	40.0
Compressor Winding Resistance, Main / Start (ohms)		3.2 / 3.4	3.3 / 3.8	1.9 / 6.6	1.0 / 2.9
Nominal Voltage		208-230/1/60			
Voltage Range		198 - 254			
Input Power @ Rated Flow (watts) *		—	—	—	—
Minimum Circuit Ampacity		2.0	2.9	4.1	4.8
Maximum Overcurrent Protector (amps)		15	15	15	15
Compressor Rated Load Amps		1.2	2.0	3.1	3.7
Compressor Locked Rotor Amps		5.7	9.2	11.7	16.1
Compressor Winding Resistance, Main / Start (ohms)		14.5 / 14.8	10.2 / 16.4	7.1 / 15.4	6.1 / 17.5
Nominal Voltage		220-240/1/50			
Voltage Range		198 - 254			
Input Power @ Rated Flow (watts) *		—	—	—	—
Minimum Circuit Ampacity		2.0	2.9	4.1	4.9
Maximum Overcurrent Protector (amps)		15	15	15	15
Compressor Rated Load Amps		1.2	2.0	3.1	3.7
Compressor Locked Rotor Amps		5.7	9.2	11.7	16.1
Compressor Winding Resistance, Main / Start (ohms)		14.5 / 14.8	10.2 / 16.4	7.1 / 15.4	6.1 / 17.5

Notes:

*60 Hz: 35°F Evaporator & 100°F Ambient; 50 Hz: 35°F Evaporator & 77°F Ambient.

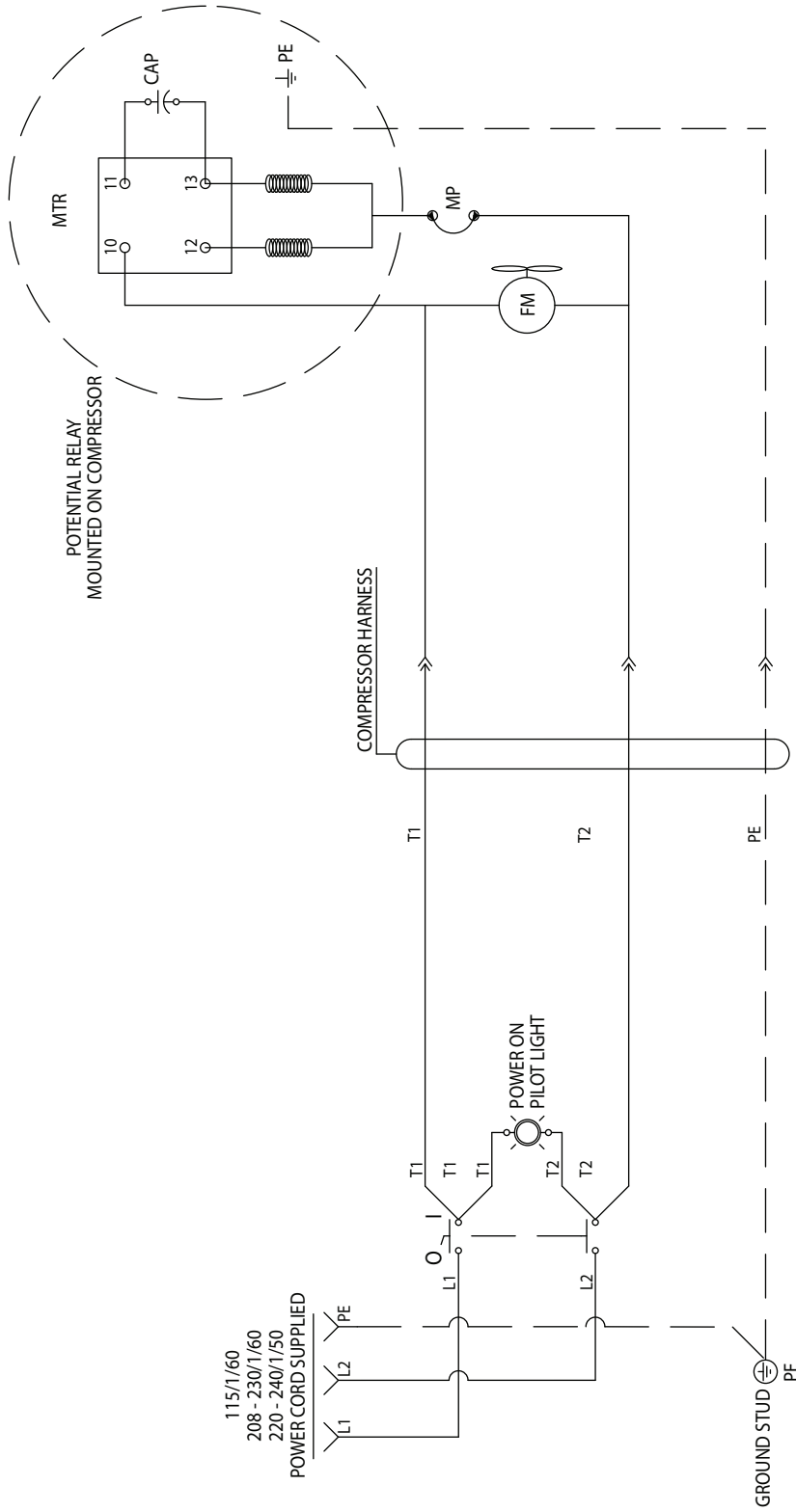
P&I DIAGRAM

Models CRN25 through CRN75



WIRING DIAGRAM

Models CRN25 through CRN75



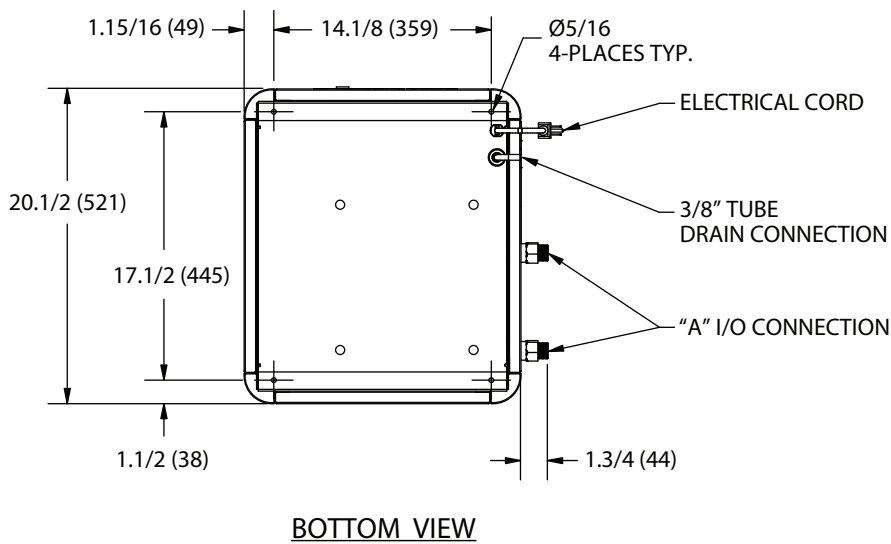
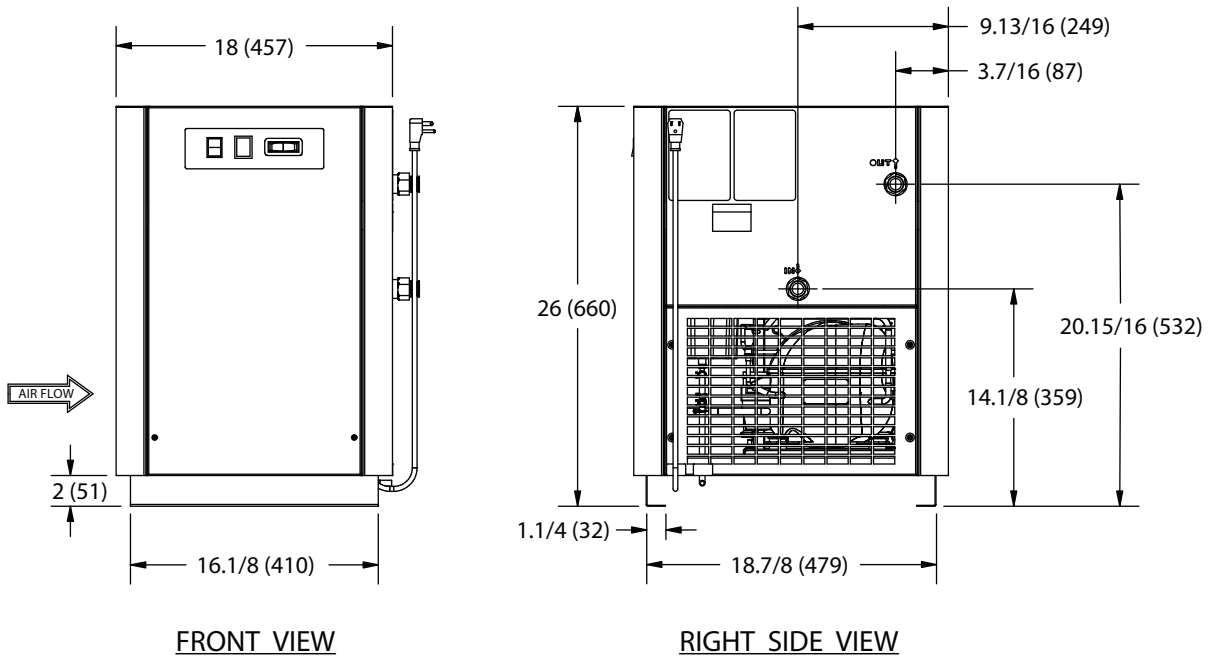
LEGEND

- CAP - Start Capacitor
- FM - Fan Motor
- MP - Motor Protector
- MTR - Compressor

DIMENSIONS / WEIGHTS

MODEL	CRN25	CRN35	CRN50	CRN75
FLOW RATE (SCFM)	25	35	50	75
DIM "A" – AIR I/O CONNECTIONS	1/2" MPT			3/4" MPT
WEIGHT, lbs (kg)	86 (39)	90 (41)	95 (43)	106 (48)

NOTE: Dimensions and Weights are for reference only. Request certified drawings for construction purposes.



TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
A. Water downstream of dryer.	<ol style="list-style-type: none"> 1. Residual free moisture remaining in downstream pipelines. 2. Air by-pass system is open. 3. Inlet and outlet connections are reversed. 4. Temperatures surrounding air lines downstream of dryer have dropped below dryer's dew point rating. 5. Excessive free moisture (bulk liquid) at dryer inlet. 6. Condensate not being automatically drained. Drain mechanism is clogged or inoperative. Drain line is restricted or frozen. 7. Dryer overloaded resulting in elevated dew point. 8. Refrigeration system not functioning properly resulting in elevated dew point. 	<p>Blow out system with dry air.</p> <p>Check valve positions. Check for correct connection.</p> <p>Insulate or heat trace air lines exposed to low ambients or dry air to lower dew point.</p> <p>Install separator ahead of dryer.</p> <p>Replace drain mechanism if inoperative.</p> <p>Open drain line. Check inlet air temperature and pressure, flow rate (compressor capacity) and ambient air temperature. See D below.</p>
B. High pressure drop across dryer.	<ol style="list-style-type: none"> 1. Excessive air flow. 2. Freezing of moisture in evaporator because of refrigeration system improperly functioning. 3. Separator or optional oil removal filter element clogged. 	<p>Check flow rate. See D below.</p> <p>Replace filter element(s).</p>
C. Dew point indicator in red area.	<ol style="list-style-type: none"> 1. Dryer overloaded resulting in high air outlet temperature. 2. Refrigeration system not functioning properly resulting in high air outlet temperature. 3. Temperature sensor not properly attached, uninsulated, or malfunctioning. 	<p>See A7.</p> <p>See D below.</p> <p>Check sensor bulb.</p>
D. Refrigeration system not functioning properly. <ol style="list-style-type: none"> 1. Power on light off. 2. Refrigerant compressor cycles on and off. 	<ol style="list-style-type: none"> a. ON/OFF switch is "OFF". b. Line disconnect switch open. c. Blown fuses, open breaker. d. Faulty wiring, loose terminals. <ol style="list-style-type: none"> a. High or low ambient conditions. b. Dirty, clogged condenser fins, obstructed air flow across condenser, or non functioning fan motor. 	<p>Turn switch "ON". Close disconnect switch. Check for continuity. Have electrician check electrical connections.</p> <p>Check min./max. temperature ranges Clean condenser and check for free air flow, if problem persists contact qualified refrigeration repairman or manufacturer's service department.</p>

PARTS LIST

PARTS DESCRIPTION - 115/1/60	CRN25	CRN35	CRN50	CRN75
Condensing Unit	G5004703	G5004704	G5004705	G5004706
Compressor	G5004855	G5004856	G5004857	G5004858
Start Relay	G5004863	G5004864	G5004865	G5004866
Start Capacitor	G5004870	G5004871	G5004872	G5004873
Fan Motor	G5004876	G5004876	G5004877	G5004876
Fan Blade	G5004808	G5004808	G5004879	G5004808
Hot Gas By-Pass Valve	G3232557	G3232557	G3232557	G3232557
Refrigerant Filter/Dryer	G5004781	G5004781	G5004781	G5004781
Dew Point Temperature Indicator	G3224008	G3224008	G3224008	G3224008
Condensate Drain	G3152270	G3152270	G3152270	G3152270
On-Off Switch	G3230777	G3230777	G3230777	G3230777
Indicator Light	G3227421	G3227421	G3227421	G3227421

PARTS DESCRIPTION - 220-240/1/50-60	CRN25	CRN35	CRN50	CRN75
Condensing Unit	G5004842	G5004843	G5004844	G5004845
Compressor	G5004859	G5004860	G5004861	G5004862
Start Relay	G5004867	G5005419	G5004868	G5004869
Start Capacitor	G5004874	G5004875	G5004875	G5005420
Fan Motor	G5004878	G5004878	G5004878	G5004878
Fan Blade	G5004808	G5004808	G5004879	G5004808
Hot Gas By-Pass Valve	G3232557	G3232557	G3232557	G3232557
Refrigerant Filter/Dryer	G5004781	G5004781	G5004781	G5004781
Dew Point Temperature Indicator	G3224008	G3224008	G3224008	G3224008
Condensate Drain	G3152270	G3152270	G3152270	G3152270
On-Off Switch	G3230777	G3230777	G3230777	G3230777
Indicator Light	G5004850	G5004850	G5004850	G5004850

Maintenance Kits

Model	CRN25	CRN35	CRN50	CRN75
Standard	CRNMK2	CRNMK2	CRNMK3	CRNMK4
With Optional Cold Coalescer	CRNMK12	CRNMK12	CRNMK13	CRNMK14

Kit Includes: condensate drain, filter element, O-ring, threaded adapter, wave spring, drain tube, lubricant, instruction sheet

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.

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

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