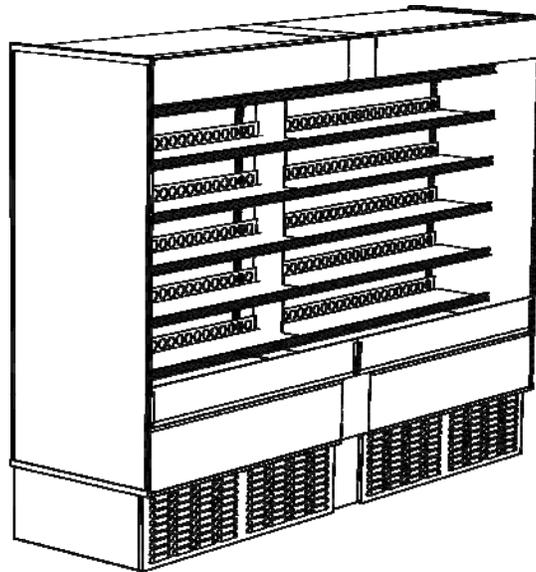




Operation & Installation Manual

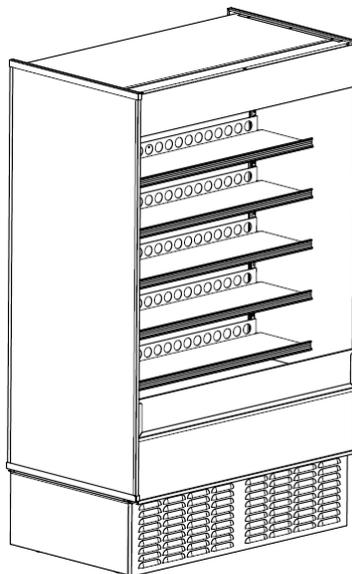
MODEL RD-8 Remote

REFRIGERATED SHOWCASE



MODEL RD-3

REFRIGERATED SHOWCASE



Document Part #: 1160915

Rev: I

ECN: 55118

Rev. Date: 5-28-14



The RD-8 and RD-3 refrigerated display showcase unit has been safety and performance-test approved by various safety regulatory testing agencies. In the course of new installations or periodic inspections, reference to agency approvals may be required. Following are the regulatory agency file numbers:

SAFETY AND PERFORMANCE LISTING



Underwriters Laboratories, Inc.
1655 Scott Blvd
Santa Clara, CA 95050
(408) 985-2400

File Number: SA6934 VOL 4

	TYPE I DISPLAY REFRIGERATOR FOR USE IN AN AREA WHERE THE ENVIRONMENTAL CONDITIONS ARE CONTROLLED AND MAINTAINED SUCH THAT THE AMBIENT TEMPERATURE DOES NOT EXCEED 75°F (24°C).
ANSI/NSF 7 98Z3	THIS EQUIPMENT IS INTENDED FOR THE STORAGE AND DISPLAY OF PACKAGED FOOD ONLY.


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SPECIFICATIONS

MODEL RD8 Remote		
Product Temperature		Below 40°F
Environmental Conditions		Indoor 75°F, 55% relative humidity, Maximum air velocity =60 ft/min
External Dimensions	Height	75.52"
	Width	45.67" for RD-3 / 97.55" for RD-8
	Depth	27.56"
Structure	Outer Box	Glass & baked acrylic resin finish on electrolytic zinc-coated steel.
	Inner Box	Baked acrylic resin finish on electrolytic zinc-coated steel.
	Insulation	Rigid polyurethane foam
Shelves (6 Total)		Depth = 10.6"
Electrical Parts 115V 60Hz 1-Phase	Evaporator Fan Motor	6 Watt, 3 each
	Lighting	25 Watt, 0.39 Amp
12Vac Transformer	Controller	12VAC 16A 2HP 250VAC
Electrical Parts 230V 60Hz,	Compressor(s)	1.25 HP, 10 Amp Left side
	Condenser fans	10 Amp Right side
Input voltage 210-253V 1-Phase		Buck and Boost Transformer required when voltage is below 210VAC or above 253VAC
Refrigerant		HFC-404A (pre-charged 3.0 lbs)
Evaporator		Fin-tube type
Expansion Valve		Internally Equalized Automatic Thermal-expansion Valve.
Solenoid Valve		Hermetic Direct Acting Type Solenoid Valve for Refrigeration
Thermostat		Electronic- Defrost on Demand (10 ~ 30 minutes, every 2 hours)
Drain-pipe Dimension		1.25" copper tube
Internal Volume		26.4 ft ³ for RD-3 / 53.3 ft ³ for RD-8
Weight		560 lbs. for RD-3 / 900 lbs. for RD-8
Noise		Less than 65 DB at 3.3 ft.
Agency Approvals		UL, UL NSF
Top Shelf Tilt		7.5°

NOTE: The manufacturer reserves the right to make product improvements and change specifications without notice



INITIAL SET-UP

The Model RD-8 and RD-3 Remote Refrigerated Showcase, when properly installed and maintained, is designed to provide years of trouble-free operation. This Operation Manual contains information necessary for proper installation, maintenance and cleaning of the unit.

It is the responsibility of the installer to ensure the unit is installed and working properly. The following instructions provide step-by-step set-up, piping, condensate drain connections, wiring, start-up, performance and maintenance guidelines.

Following installation, please review, fill out and sign form for activation of warranty within 5 days of installation. FAX: 1800-561-5684 or email: customerservice@vendoco.com

Additional reference manuals can be obtain at www.vendoco.com

CABINET SET-UP

Step 1: Choose a location for your new refrigerated display case. Avoid placing the cabinet near equipment that releases heat. Avoid direct sunlight. To protect all electrical parts, do not place the cabinet where it will be subjected to rain, splashed liquid, or excessive humidity.

Step 2: Check the airflow around the cabinet, since strong airflow may displace the cooled air in the display case. Place the cabinet where the airflow speed is less than 60 ft/min. Also, avoid areas subject to strong winds (see figures 1-9).

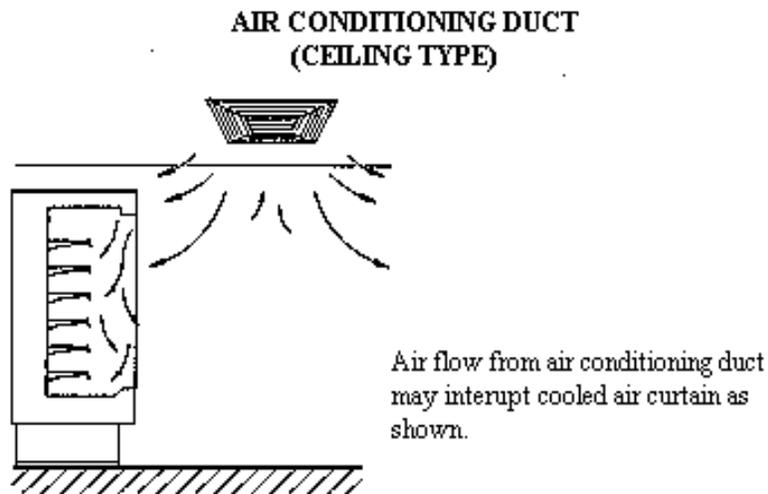


FIGURE 1

**AIR CONDITIONING DUCT (CON'D)
(CEILING TYPE)**

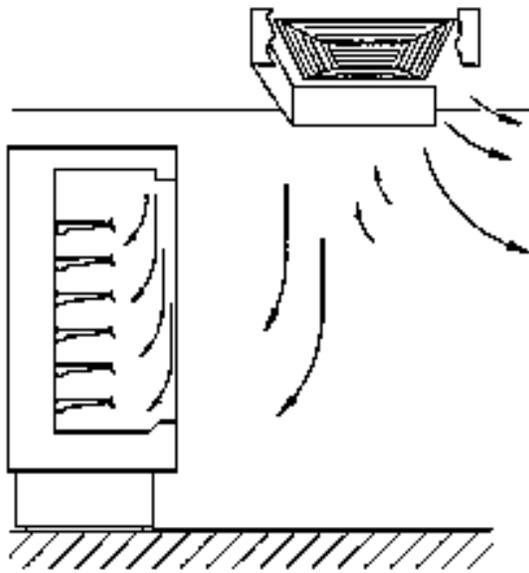
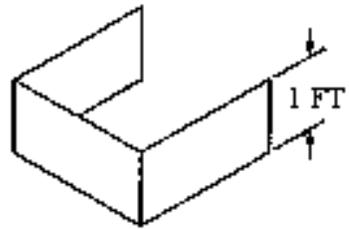


FIGURE 3



**AIR DAM (REF.)
FIGURE 2**

Install the air dam to block the direction of air flow from air conditioning duct as shown.

**AIR CONDITIONING DUCT
(WALL TYPE)**

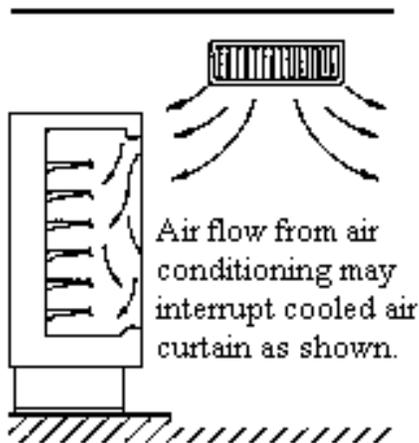


FIGURE 4

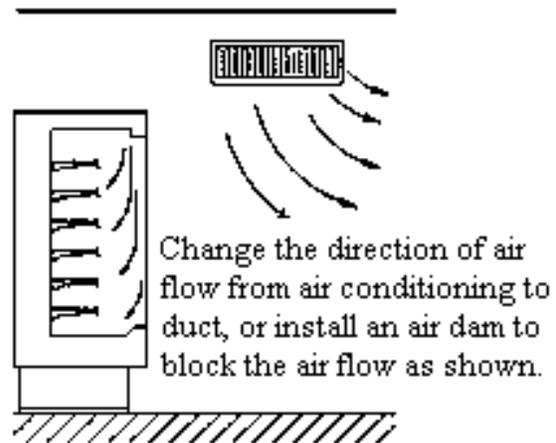


FIGURE 5

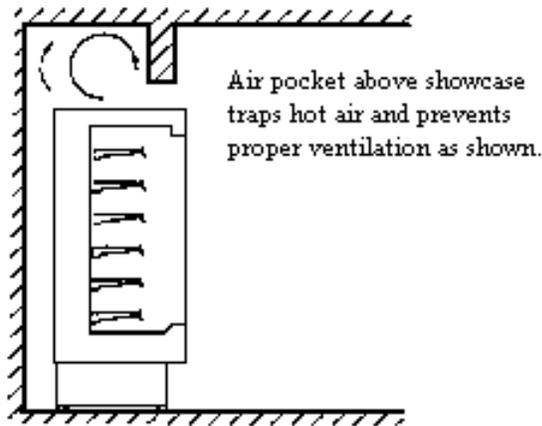


FIGURE 6

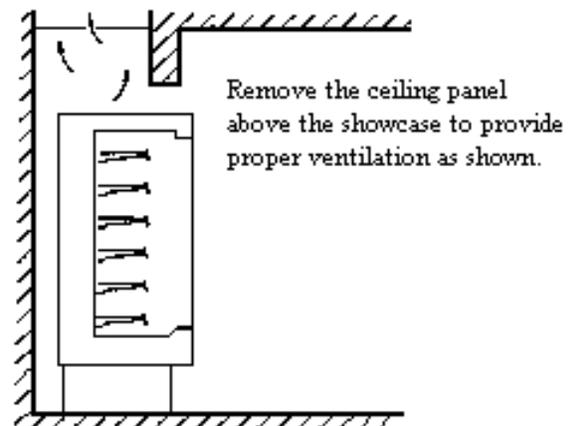


FIGURE 7

TO CHECK AIR CURTAIN

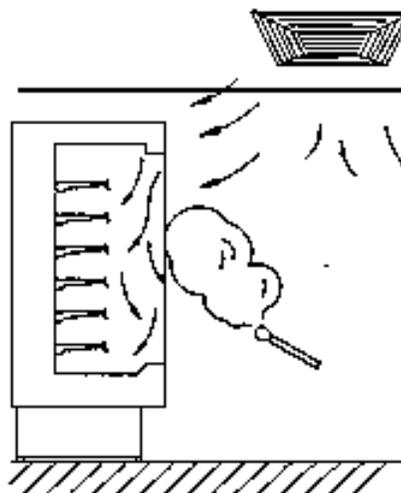


FIGURE 8

Hold smoke stick 1 foot from front opening of showcase as shown. (Figure 8)

If smoke travels upward than the air curtain is present.

If smoke travels into the showcase the air curtain is not functioning correctly.

Another indication of a non-functional air curtain is the presence of condensation on the inside back surface of the showcase unit as shown.

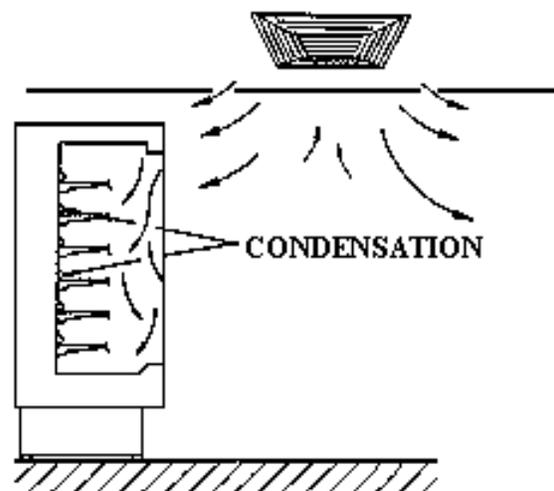
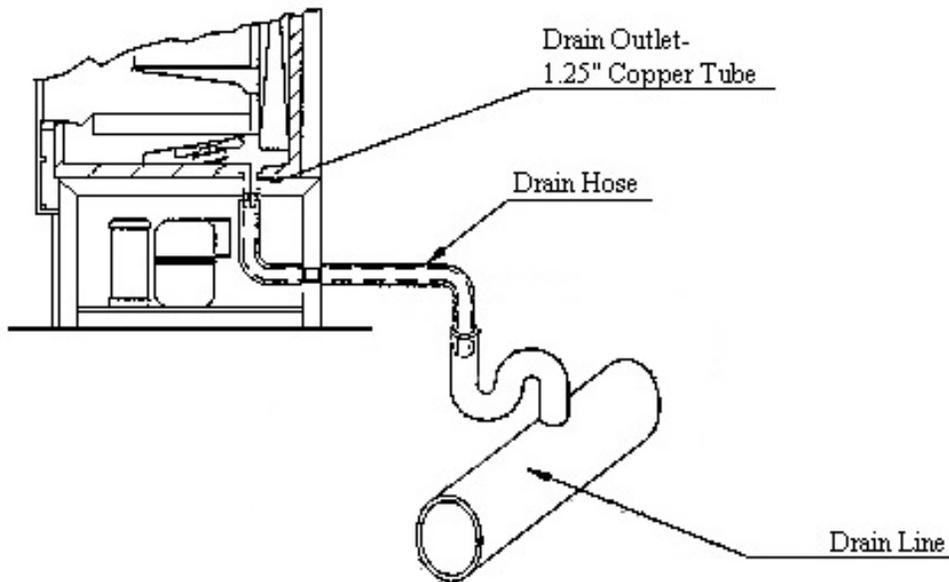
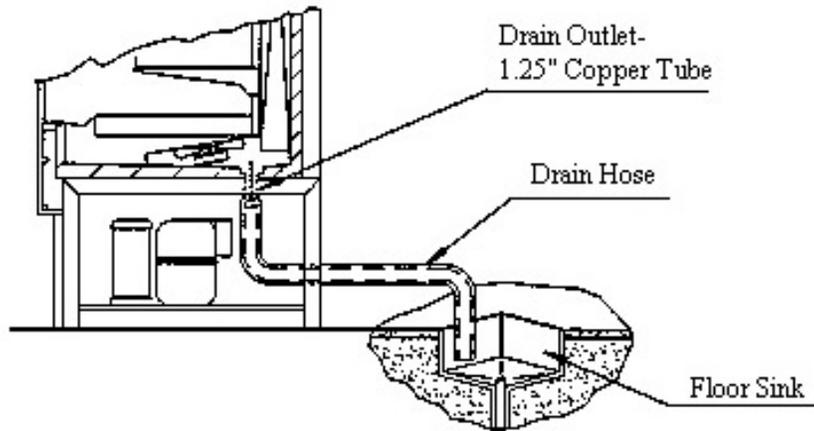


FIGURE 9

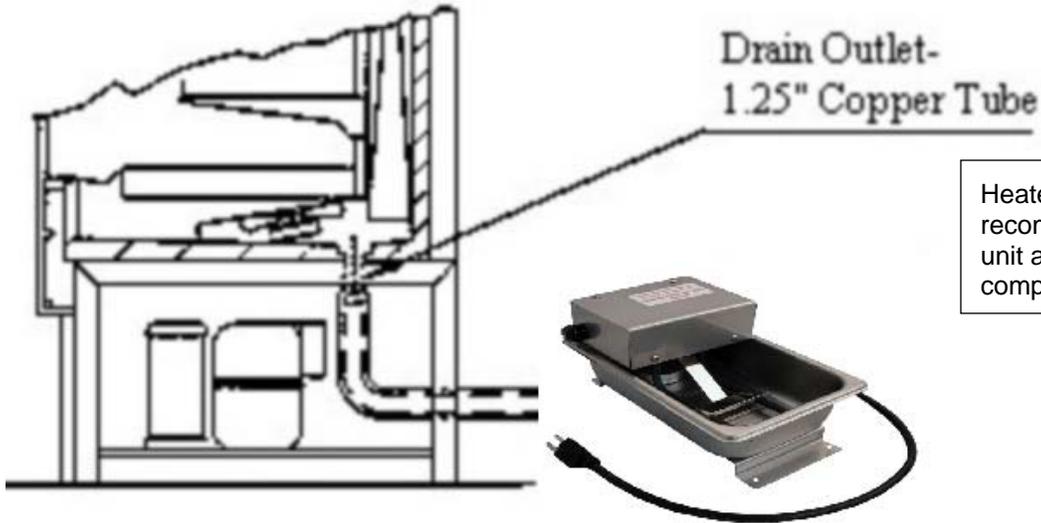
CONDENSATE DRAIN CONNECTION (PREFERRED METHOD)

Install the appropriate condensate drain line between the 1 ¼" copper tube outlet to a floor sink, a drain line or other, allowing a code required air gap.



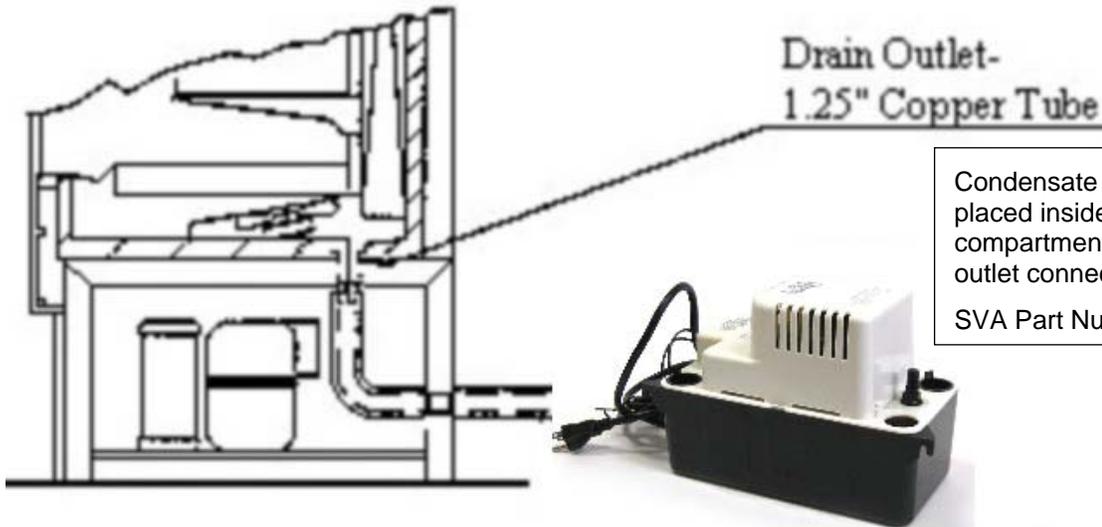
CONDENSATE REMOVAL METHODS (ALTERNATE)

HEATED CONDENSATE PAN



Heated condensate pan, when used, is recommended to be placed behind the unit and not inside the compressor compartment.

CONDENSATE PUMP



Condensate pumps, when used, can be placed inside the compressor compartment or behind the unit with the outlet connected to the nearest drain.

SVA Part Number: 1231359



REMOTE CONDENSER INSTALLATION

For proper operation of the RD-8 and RD-3 showcase the following installation guideline must be followed. Failure to do so may result in loss of refrigeration capacity, premature part failure, and may void all warranty.

Installation Guideline

1. Refrigeration pipe sizing: **Remote condenser discharge 1/2", fitting: 3/8" Flare.**
Remote condenser liquid line 3/8", fitting: 3/8" Flare.
2. Outdoor ambient operating temperature: -20°F (-28°C) to 110°F (43°C)
3. Indoor operating requirements: 75°F, less than 55%RH.
4. Maximum refrigerant line length: 45 ft. (13.7 m) including fittings. 90° long radius elbow fittings should be used to minimize adding length to the line set.
5. Maximum vertical rise without oil trap in discharge line: 15 ft. (4.6 m)
6. Minimum condenser height: Remote condenser for RD-8 and RD-3 must not be installed more than 6 ft. (1.83 m) below the refrigerant line connections at rear of showcase unit. No part of refrigerant lines, between machine and condenser, should fall below this point.
7. Insulate 3/8" liquid line, to limit heat exchange between lines. Liquid lines should be sloped 1/8 inch per foot (10.4 mm/m) in the direction of refrigerant flow and insulated. Trapping is unnecessary.
8. Isolate all lines when passing through walls and room from abrasion. Support all refrigerant lines at minimum intervals with suitable hangers and brackets.
9. Leak check with nitrogen and evacuate remote line set (This will require installation of "Schrader Tee" in the remote air cooled condenser line set). Vacuum to a minimum of 200microns prior to opening service valves.
10. Discharge lines carry both refrigerant vapor and oil. Since refrigerant may condense during the off cycle, the piping should be designed to avoid liquid refrigerant and oil from flowing back into the compressor. Discharge lines should be pitched 1/8 inch per foot (10.4 mm/m) in the direction of refrigerant flow towards the condenser
11. Addition of refrigerant is .7oz per feet of refrigerant line added. View sight glass for minimal vapor bubbles. Properly charged unit will have head pressure 30°F above the ambient conditions
12. If environment is subject to cold weather, use a Head Master valve. Recommend LAC-4-210
13. Check compressor superheat at compressor suction line 15-25°F, Subcooling 4-6°F

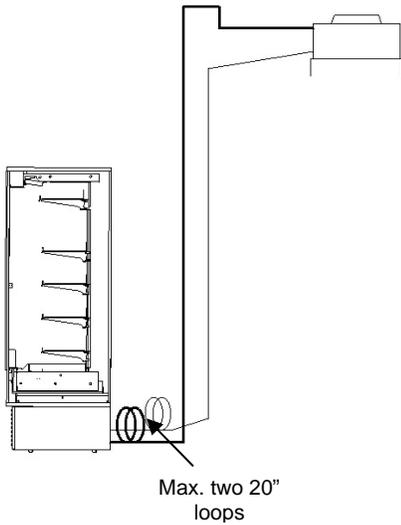
REMOTE LINE SET INSTRUCTIONS

1. Refrigeration pipe sizing: **Remote condenser discharge 1/2", fitting: 3/8" Flare.**
Remote condenser liquid line 3/8", fitting: 3/8" Flare.
2. Maximum refrigerant line length: 45 ft. (13.7 m) including fittings.
3. Maximum vertical rise without oil trap in discharge line: 15 ft. (4.6 m)
4. Minimum condenser height: Remote condenser must not be installed more than 6 ft. below the refrigerant line connections at rear of showcase unit.
5. Insulate 3/8" liquid line, to limit heat exchange between lines.
6. Add 0.7oz of refrigerant per feet of refrigerant line added. View sight glass for minimal vapor bubbles. Properly charged unit will have head pressure 30°F above the ambient conditions.
7. If environment is subject to cold weather, use a Head Master valve. Recommend LAC-4-210.
8. Minimum allowable voltage is 210V. For lower voltages use buck and boost model number SQUARE D 500SV43B.

<p style="text-align: center;"><u>Condenser above the unit</u></p> <p style="margin-left: 20px;">IMPORTANT: Inverted 1/2 x 1/2 copper P-Trap to prevent liquid draining from condenser to compressor.</p> <p style="margin-left: 20px;">IMPORTANT: In cold weather conditions, use Headmaster valve LAC-4-210. See manual for additional instructions.</p> <p style="margin-left: 20px;">Max. two 20" loops</p>	<p style="text-align: center;">Correctly installed roof top discharge line P-Trap and insulated liquid line.</p> <p style="text-align: center;">Do not install more than two 20" loops.</p>
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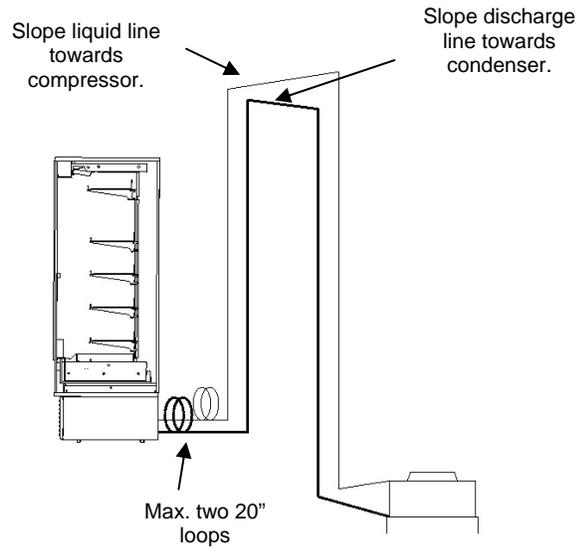
When installing the condenser above the machine.

DO Slope refrigerant lines downward toward compressor.



When installing the condenser below the machine.

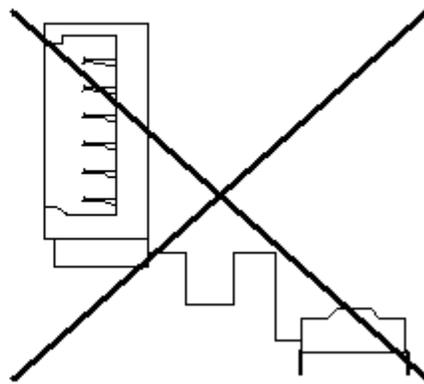
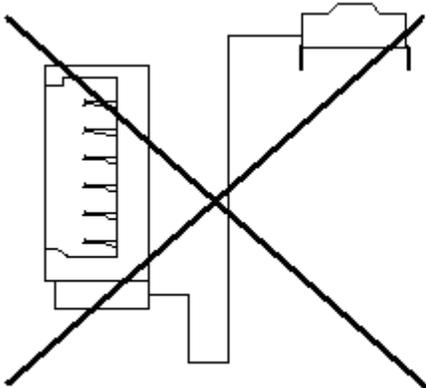
DO Slope refrigerant lines downward toward condenser.



DO NOT Install any part of the refrigerant lines below the connection fittings at rear of machine.

DO NOT Install the condenser lower than 6 ft. (1.83m) below the connection fittings at rear of machine.

DO NOT Create oil trap in refrigerant lines by sloping lines downward than rising upward.



Condenser sizing and placement

The condenser should be designed for proper capacity for RD-8 or RD-3. (9850BTU per side)

The location of the remote condenser should be such that the ambient air temperature does not exceed 110°F (43°C). If ambient temperature exceeds 110°F (43°C) cabinet performance might suffer.

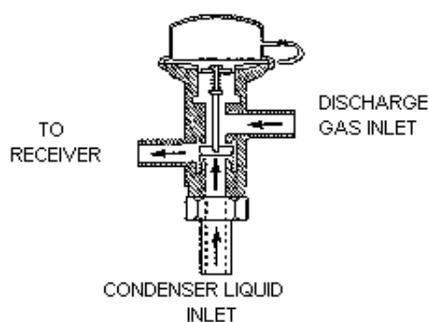
The condenser coil and fan blades must be kept clean. The condenser can be cleaned with compressed air or by using a brush. If a brush is used, brush in the direction of the fins taking care not to be bend the fins.

If condenser fins are bent this will also restrict air flow through the condenser and the fins will need to be straightened with a fin comb.

If the air flow is restricted or the condenser is dirty the head pressure will be excessively high, no heat exchange will result and the compressor will overheat and eventually become damaged. Problems related to dirty condenser or poor air flow will not be covered under warranty.

Head Pressure Control Valve

When the temperature at the condenser is above 70°F (21°C), the refrigerant flow from the compressor is directed by the head pressure control valve through the condenser and into the receiver. When the temperature at the condenser drops below 70°F (21°C), the pressure in the bellows of the head pressure control valve becomes greater than the pressure of the liquid refrigerant coming from the condenser. This change allows the valve to partially restrict the flow of liquid refrigerant leaving the condenser. This allows discharge gas to by-pass the condenser and flow directly into the receiver, mixing with the liquid refrigerant from the condenser. The amount of discharge gas that by-passes the condenser increases as the ambient temperature at the condenser decreases. This action of head pressure valve allows the head pressure to be maintained at approximately 240 p.s.i. (16.5 bar) on RD-8 unit during low ambient conditions. The remote system depends on an adequate refrigerant charge in order for the system to remain balanced during ambient temperature changes. If the refrigeration system is undercharged and the ambient temperature is below 70°F (21°C) the head pressure control valve will not work properly. The head pressure control valve will allow too much refrigerant to bypass the condenser.



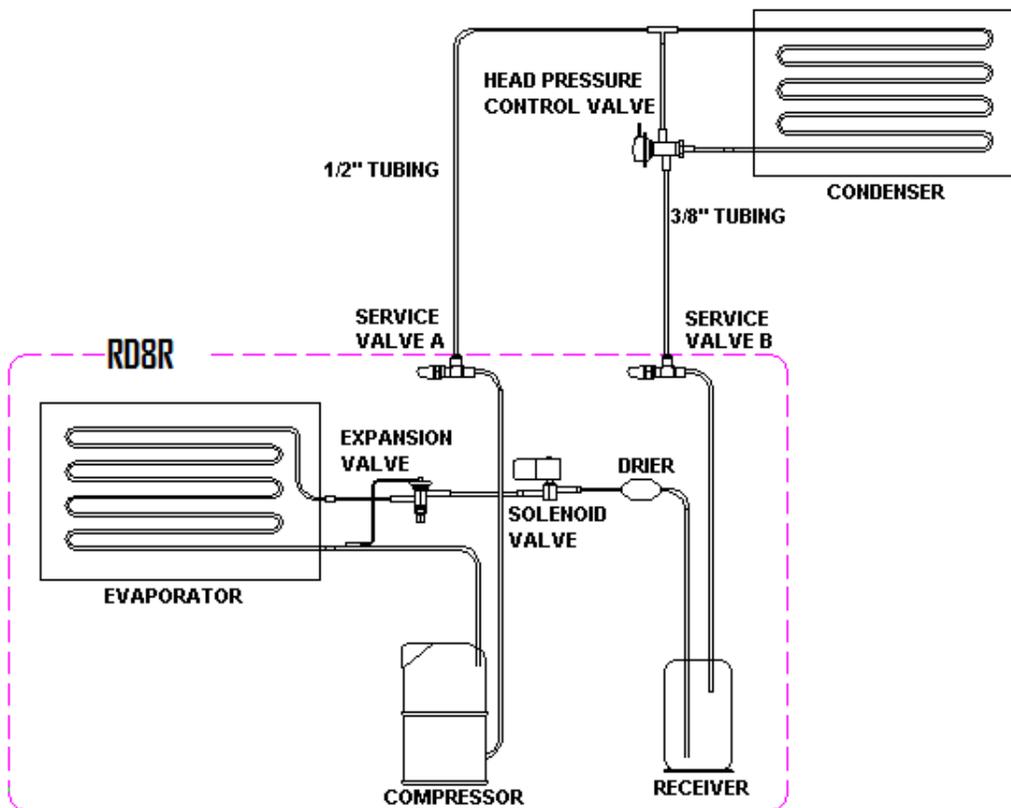
Problem	Possible Cause	Remedy
1. Head pressure low / liquid line between valve and receiver cold. Ambient condenser temp. below 70°F (21°C)	a. Valve defective, not allowing discharge gas into receiver	a. Replace valve.
2. Head pressure low / liquid line between valve and receiver hot.	a. System low charged. b. Valve defective, not allowing enough sub-cooled liquid into receiver.	a. Find and repair leak if present. Recover refrigerant and weigh in proper charge. b. Replace valve.
3. Head pressure high/ liquid line returning from condenser is cool. Ambient condenser temp. above 70°F (21°C).	a. Valve defective, not allowing refrigerant to circulate through condenser.	a. Replace valve.

Pump Down System

A pump-down system consists of a normally closed solenoid valve installed in the liquid line and a low-pressure control that senses suction pressure.

The system operation is as follows: A thermostat is wired to the liquid line solenoid valve. On a call for cooling, the thermostat contacts close. This causes the solenoid coil to be energized, opening the valve. Liquid refrigerant flows into the evaporator and the suction pressure rises above the low-pressure control setpoint. The contacts on the low-pressure control close and the compressor begins to run.

When the thermostat is satisfied, its contacts open, causing the solenoid valve to close. This stops refrigerant flow into the evaporator. As the compressor continues to run, refrigerant is pumped out of the evaporator coil and suction pressure falls. When the suction pressure reaches the cut-out setting on the low-pressure control, its contacts open, stopping the compressor. This removes most of the refrigerant from the low side of the system and prevents liquid migrating to the compressor crankcase during the off-cycle and the ensuing possibility of liquid slugging at compressor startup.

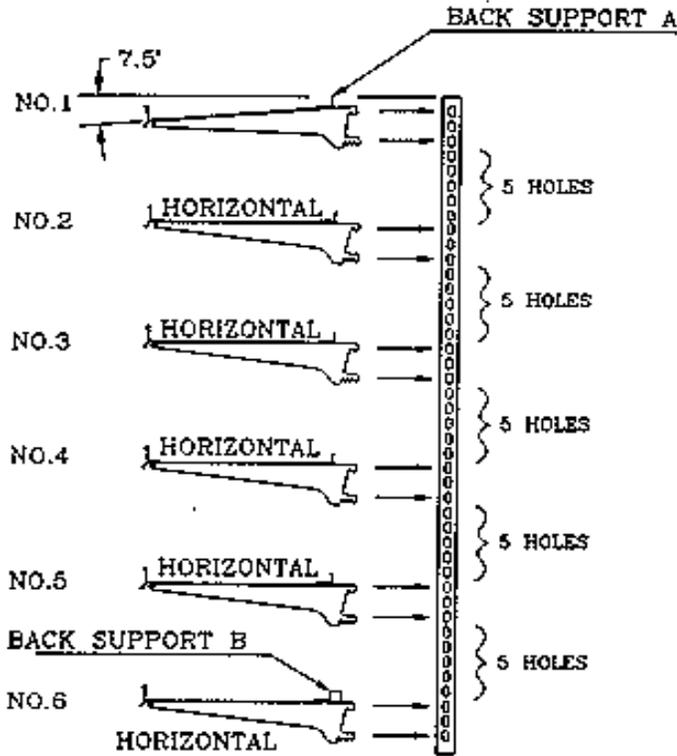


CABINET ELECTRICAL WIRING

- Step 1: Ensure proper voltage input, minimum 210VAC 60Hz maximum 253VAC 60Hz.
If voltage is below the 210VAC or above 253VAC, a BUCK and BOOST transformer is required.
- Step 2: Remove the lower-rear and left-side compressor access panel.
- Step 3: Remove the left-side junction-box panel and locate the electrical wiring diagram on the inside of the panel.
- Step 4: Install permanently connected field wiring to the 230V/ 60Hz/ 1 Phase (4-wire) compressor circuit.
The pigtail wires are provided. See the circuit amperage ratings located on the unit nameplate.

SHELF & ACCESSORY INSTALLATION

- Step 1: Ensure that the shelves are setup as pictured below.



Put back support "A" on NO.1 - NO.5 shelves
Put back support "B" on NO.6 shelf.

- Step 2: A price card slides into the shelf as shown





START-UP & OPERATING INFORMATION

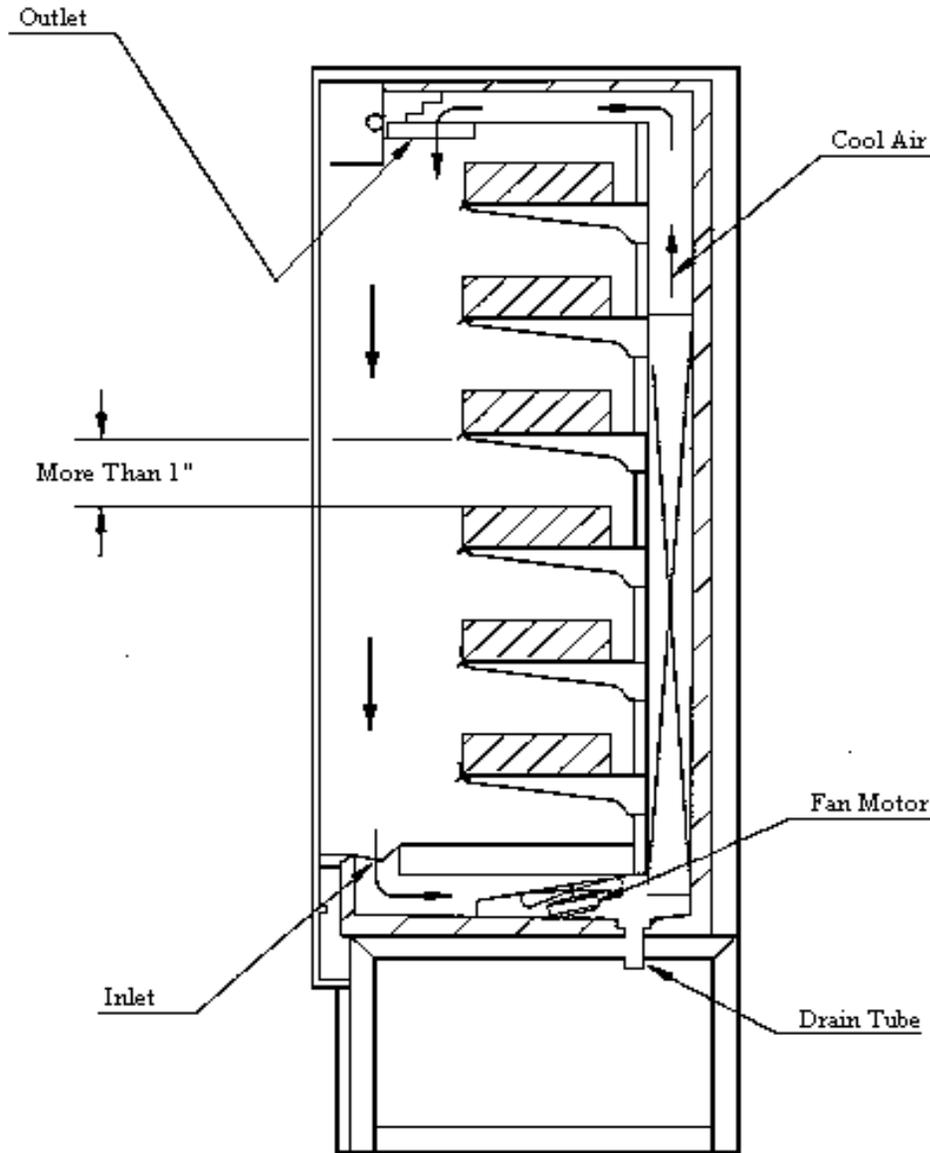
START-UP INFORMATION AND PERFORMANCE EVALUATION

- Step 1: Open the front panel and flip the toggle switch to the “ON” position for both left and right side unit. Both the condensing unit, and the evaporator fans should operate, and the fluorescent lighting should turn on.
- Step 2: While the condensing unit and evaporator fans are running, verify that there is a flow of cold air from the honeycomb, at the top of the cabinet for each left and right side unit.
- Step 3: Observing the controller in the upper-left corner, monitor the cabinet temperature, and verify that both left and right side unit cools to 40°F within 20-30 minutes.
- Step 4: Continue to monitor temperature performance through the complete run cycle, until the system enters the defrost cycle. The defrost cycle (condensing unit shutdown) is programmed to run for 10 ~ 30 minutes every two hours.
- Step 5: Verify that all unit access-cover panels have been replaced, and the cabinet is ready to be loaded by store personnel.

OPERATING GUIDELINES

1. For best results, pre-cool all products before stocking the display case.
2. Stock products only after the cabinet has cooled.
3. When loading the cabinet, do not place merchandise outside of the shaded area.
4. Allow at least 1” between the upper surface of the displayed product and the shelf directly above it.
5. Do not overload product. Improper loading of merchandise may result in refrigeration inefficiency.
6. Do not remove the glass side panels during operation.
7. Do not stock the shelves with all bottles or cans. Heavy merchandise should not be loaded on the glass shelves.

COOLING AIRFLOW PATTERN



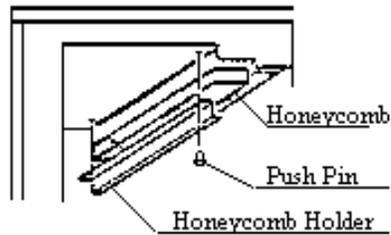
Airflow pattern inside open air showcase

Evaporator fan motor = 6W each.

GENERAL MAINTENANCE

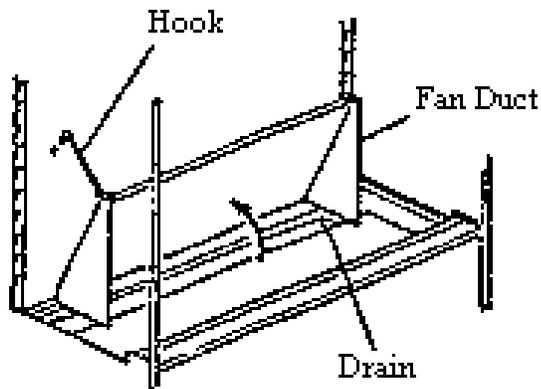
CLEANING THE HONEYCOMB

In order to maintain peak operating performance, remove the honeycomb (as shown below) and rinse it with clean water to remove dust. Under normal conditions, inspect and clean every 30 days.



CLEANING THE BOTTOM OF THE INNER BOX & DRAIN

Lift the fan duct, as shown below, and clean the bottom of the inner box with a mild detergent and a soft, damp cloth. Check the drain hole for proper water flow and remove any blockage. Rinse with clean water.



CLEANING THE CABINET

To clean the cabinet and shelves, use a mild detergent and a soft, damp cloth. Rinse with clean water. Do not use paint thinner, laundry detergent, or harsh chemicals.

LIGHTING

Power must be turned OFF prior to servicing fluorescent bulbs. Failure to switch power OFF will damage the ballast.

Replace inoperable fluorescent lights.



PRECAUTIONS

CAUTION: Do not operate the unit with the access panels removed.

STORING THE CABINET

Step 1: Disconnect the unit from its power source.

Step 1: Wipe the interior of the cabinet with a damp cloth.

Step 1: Polish the interior of the cabinet with a dry cloth.

Step 1: Store the unit in a clean, dry place. Do not choose a location where the unit will be exposed to direct sunlight, high temperature, or high humidity.

TROUBLE SHOOTING

Before calling your serviceman, please make these simple checks:

If the unit is not operating:

1. Is the cabinet plugged in?
2. Is there a main-power failure?
3. Is there a blown fuse?
4. Has the refrigeration unit cycled off, because it is at the designated operating temperature?

If the fluorescent light is off:

1. Is the fluorescent-light tube properly connected to the socket?
2. Does the fluorescent light need to be changed?

If the cabinet temperature is too warm:

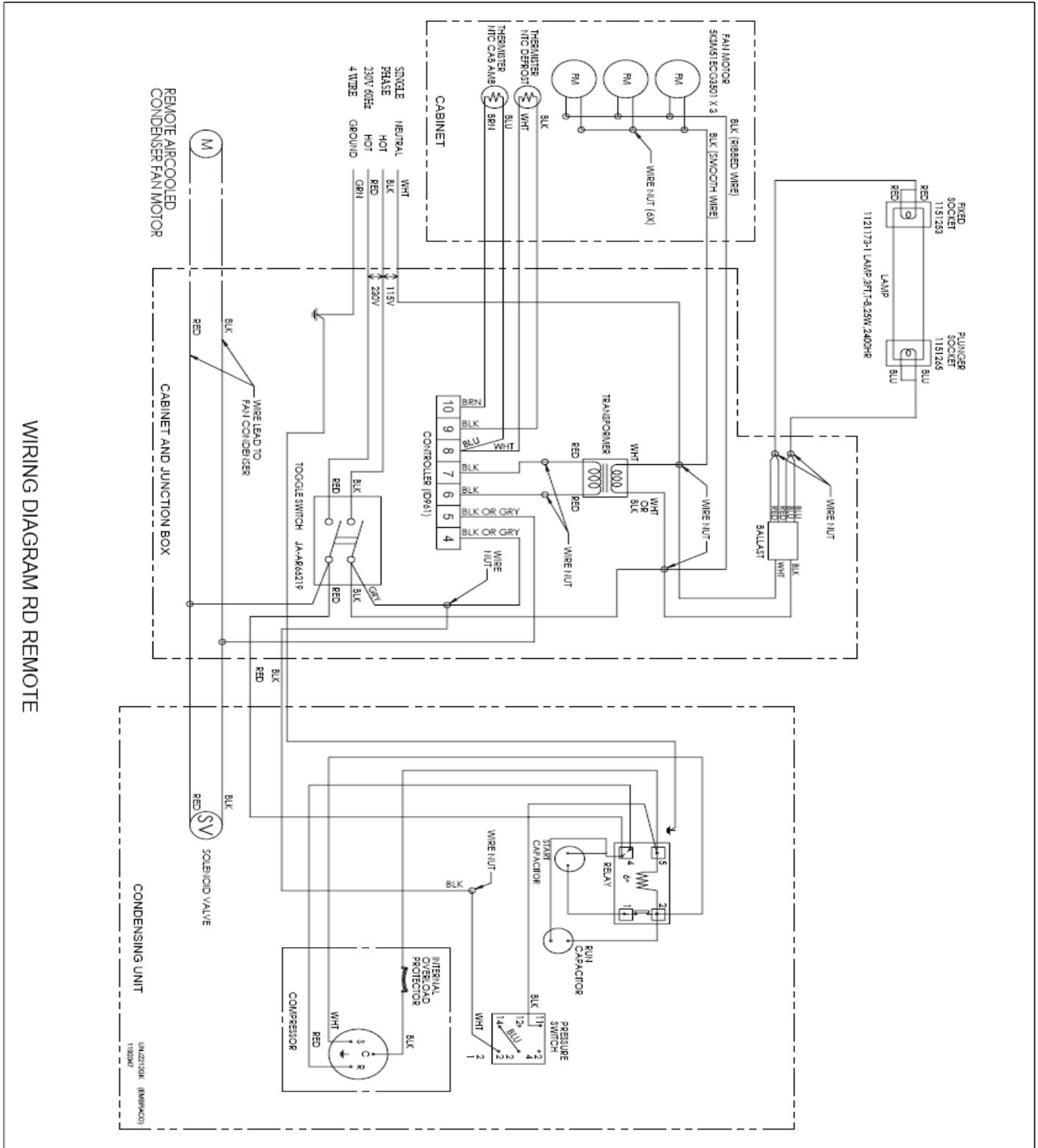
1. Is the thermostat set correctly?
2. Is the cabinet located in direct sunlight?
3. Is the cabinet located in a strong air-flow path?
4. Is the distance between the upper surface of the displayed merchandise and the shelf directly above it at least 1”?
5. Is the air temperature around the cabinet above 75°F?

Reasons for high pressure trips:

1. Overcharge or Non-condensable.
2. Dirty condenser.
3. TXV sensor bulb loose or power head defective.
4. TXV sensor bulb poorly insulated.

REFER TO THE ENVIRONMENTAL CONSIDERATIONS, ON PAGES 5 THROUGH 9, THAT WILL AFFECT COOLING PERFORMANCE.

Wiring Diagram RD Remote



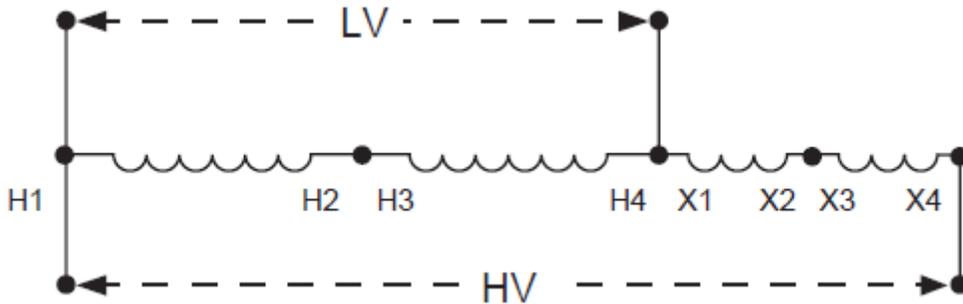
IMPORTANT: When using a Heatcraft Flexpack, connect the condenser fan motor wires shown above to the relay dedicated for the RD refrigerated showcase.



Wiring Diagram (buck and boost model number Square D 500SV43B)

Measure line voltage; if line voltage is less than 210V, use buck and boost per instructions below.

1. Connect line voltage supply (LV) side to H1 and H4/X1 terminal.
2. Measure output voltage between terminals H1 and X4. **Do not connect to unit if voltage exceeds 253V.**
3. Connect load side or unit side to H1 and X4 terminals.





Warranty Activation

		Form No.: QF-PE-0047-C	
		Date Issued: 4/20/2010	
		PART NUMBER: 1189633A	
Document Name:		RD8 Warranty Activation and Checklist	
To activate the warranty for this machine the following information must be returned to SandenVendo's Customer Service Department within 5 days of Installation			
<Contact Information> FAX : 1-800-561-5684 or e-mail : customerservice@vendoco.com			
Customer		Store Address :	
Store No. & Store Name			
Date of Installation :		Installer's Name	
Model Name :	RD2 RD-8 (Self Contain)	RD3 RD-8 REMOTE	
Serial No. :	Cabinet :	Remote Condenser :	
Asset Management No. :	Cabinet :	Remote Condenser :	
ShockWatch State (Color)	at Front :	at Rear :	
Installation: Manuals can be obtained at www.vendoco.com (http://www.vendoco.com/Documents.aspx?ID=8)			
	Check Items	Result	Note
1	Inspect for damages on cabinet.		
2	When you joined the two halves together, did you follow the "RD8 Instructions" (document #1142811) ?	Yes No	
3	Refrigeration piping Size (Outer Diameter)		
	- Remote Condenser Discharge Line (actual) : 1/2"	in.	
	- Remote Condenser Liquid Line (actual) : 3/8"	in.	
4	Refrigerant Line Length (actual) Max. Length is 45 ft.	ft.	
5	Refrigerant Line Vertical Rise Max. Vertical Rise is 15 ft.	ft.	
6	Was the Oil Return considered in Refrigerant Line set ?	Yes No	
7	Pressurized line set with nitrogen prior to opening service valve, leak test and evacuate.		
8	Vacuum remote line set to 200micron.		
9	How much additional refrigerant R404a was added (Remote)		
10	If Remote Air-cooled Condenser was installed higher than 15 ft. above the Cabinet, is the Discharge Pipe higher than Remote Condenser ? Inverted "P trap"	Yes No	
11	When you installed "Remote Condenser, did you follow "REMOTE CONDENSER INSTALLATION" written in the Operation Manual 1160915?	Yes No	
Notes :			
If the result is NG, please write down the detail in the Note column.		Date :	
It is preferable that there is a photo of NG part.		Signature :	



Cabinet and Remote Condenser			
	Check Items	Result	Note
1	Input Voltage to Case 208-253VAC 60Hz		
	Left side case input voltage:	V	
	Right side case input voltage:	V	
	If Voltage is below 208VAC, is a Buck Boost Transformer installed, what is voltage input with transformer:	Yes No	
		V	
2	Environment Condition		
	- Outside Ambient Temperature of Store :	°F	
	- Inside Ambient Temperature of Store :	°F	
3	Temperature inside Cabinet after pull down		
	Temperature in the Cabinet : Left side	°F	
	Temperature in the Cabinet : Right side	°F	
4	What is the compressor superheat ; range 15-25F	°F	
5	Is a Head master valve added for cold weather environment? LAC-4-210		
6	Number of Shelves excluded bottom plate :	Shelves	
7	Lighting		
	- Lighting of FL Lamp :	OK NG	
	- No Flickering of FL Lamp :	OK NG	
8	No Abnormal Noise		
	- Cabinet :	OK NG	
	- Remote Condenser :	OK NG	
9	No Abnormal Vibration		
	- Cabinet :	OK NG	
	- Remote Condenser :	OK NG	
	- Refrigerant Line :	OK NG	
10	No Water Leakage		
	- Cabinet :	OK NG	
	- Drain Line :	OK NG	
11	No Scratch, No Dent & No Deformation on the appearance		
	- Cabinet :	OK NG	
	- Remote Condenser :	OK NG	
12	When you set-up, did you follow "CABINET SET-UP" and "CONDENSATE DRAIN CONNECTION" written in the Operation Manual 1160915 ?	Yes No	
Notes :			
If the result is NG, please write down the detail in the Note column.		Date :	
It is preferable that there is a photo of NG part.		Signature :	