HUSSMANN®

EVOLVE® R-290

Medium Temperature Self-Contained

Vertical Merchandisers with R-290 Refrigerant

Installation, Operation, and Service Manual

MD8DA

WARNINGS:

- If the information in these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury or death.
- Installation and service must be performed by a qualified installer or service agency only as recommended by the manufacturer.
- **READ THE ENTIRE MANUAL BEFORE INSTALLING OR USING THIS EQUIPMENT.**
- The unit uses R-290 gas as the refrigerant. R-290 is flammable and heavier than air. It collects first in low areas but can be circulated by the fans. If propane gas is present or even suspected, do not allow untrained personnel to attempt to find the cause. The propane gas used in the unit has no odor. The lack of smell does not indicate a lack of escaped gas. If a leak is detected, immediately evacuate all persons from the store, and contact the local fire department to advise them that a propane leak has occurred. Do not let any persons back into the store until the qualified service technician has arrived and that technician advises that it is safe to return to the store. No open flames, cigarettes, or other possible sources of ignition should be used inside or in the vicinity of the units.
- **FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY AND PROPERTY DAMAGE.**

MD8DA

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P/N 3192121_A
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MANUAL - IO MD8DA

BEFORE YOU BEGIN
READ THESE INSTRUCTIONS COMPLETELY AND CAREFULLY.

This manual was written in accordance with originally prescribed equipment that is subject to change. Hussmann reserves the right to change or revise specifications and product design in connection with any feature of our products.

SAFETY INSTRUCTIONS

Personal Protection Equipment (PPE) is required. Wear safety glasses, gloves, protective boots or shoes, long pants, and a long-sleeve shirt when working with this equipment and while handling glass.

SAFETY INSTRUCTIONS

The safety of our customers and employees is paramount. The precautions and procedures described in this manual are intended as general methods for safe use of this equipment. Please be sure to comply with the precautions described in this manual to protect you and others from possible harm.

1. If the information in these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury or death. Observe all precautions on tags, stickers, labels and literature attached to this equipment.
2. Installation and service must be performed by a qualified installer or service agency.
3. This unit is designed only for use with R-290 gas as the designated refrigerant.

⚠WARNING

THE REFRIGERANT LOOP IS SEALED. ONLY A QUALIFIED TECHNICIAN SHOULD ATTEMPT TO SERVICE!

- Propane is flammable and heavier than air.
- It collects first in the low areas but can be circulated by the fans.
- If R-290 is present or even suspected, do not allow untrained personnel to attempt to find the cause.
- The propane gas used in the unit has no odor.
- The lack of smell does not indicate a lack of escaped gas.
- If a leak is detected, immediately evacuate all persons from the store, and contact the local fire department to advise them that a pro pane leak has occurred.
- Do not let any persons back into the store until the qualified service technician has arrived and that technician advises that it is safe to return to the store.
- A hand-held propane leak detector (“sniffer”) shall be used before any repair and/or maintenance.
- No open flames, cigarettes or other possible sources of ignition should be used inside the building where the units are located until the qualified service technician and/or local fire department determines that all propane has been cleared from the area and from the refrigeration systems.
- Component parts are designed for propane and non-incendive and non-sparking. Component parts shall only be replaced with identical repair parts.

FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY AND PROPERTY DAMAGE.

ANSI Z535.5 DEFINITIONS

The definitions below are used to clarify the magnitude and urgency of harm and damage, considering problems arising from misuse. Relative to their potential danger, the definitions are divided into five parts according to ANSI Z535 Series.

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to address practices not related to personal injury.

SAFETY INSTRUCTIONS (or equivalent) signs indicate specific safety-related instructions or procedures.

This warning does not mean that Hussmann products will cause cancer or reproductive harm, or is in violation of any product-safety standards or requirements. As clarified by the California State Government, Proposition 65 can be considered more of a 'right to know' law than a pure product safety law. When used as designed, Hussmann believes that our products are not harmful. We provide the Proposition 65 warning to stay in compliance with California State law. It is your responsibility to provide accurate Proposition 65 warning labels to your customers when necessary. For more information on Proposition 65, please visit the California State Government Website.

A3 flammable refrigerant is used in this unit.

WARNING

- Excessive ambient conditions may cause condensation and therefore sweating of doors. Facility operators should monitor doors and floor conditions to ensure safety of persons.
- Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for build-in.
- Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.
- Do not use electrical appliances inside the food storage compartments of the case(s).
- Do not store items or flammable materials atop the unit. Do not walk on case.
- Do not store explosive substances such as aerosol cans with flammable propellant in this appliance.
- Do not damage the refrigerating circuit.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- In order to reduce flammability hazards the installation of this appliance must only be carried out by a suitably qualified person.
- Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn unit or components.
- Be aware that refrigerants may not contain an odour.

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INSTALLATION

MODEL DESCRIPTION

The MD8DA models are vertical, medium temperature display merchandisers designed for the display of dairy products, deli items, produce and beverages. Each self-contained model has a condensing unit that is factory installed beneath the display area of the case. The unit is ready for operation when electrical service is connected. See Section 2 for electrical information before starting the case.

UL LISTING

These merchandisers are manufactured to meet UL 60335-2-89 standard requirements for safety. Proper installation is required to maintain this listing. This appliance is to be installed in accordance with the Safety Standard for Refrigeration Systems, ANSI/ASHRAE 15.

HUSSMANN PRODUCT CONTROL

The serial number and shipping date of all equipment is recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved. This is to ensure the customer is provided with the correct parts.

SHIPPING DAMAGE

All equipment should be thoroughly examined for shipping damage before and during unloading. This equipment has been carefully inspected at our factory. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports and/or claim forms.

Apparent Loss or Damage

If there is an obvious loss or damage, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim.

Concealed Loss or Damage

When loss or damage is not apparent until after equipment is uncrated, retain all packing materials and submit a written response to the carrier for inspection within 15 days.

FEDERAL / STATE REGULATION

These merchandisers at the time they are manufactured, meet all federal and state/ provincial regulations. Proper installation is required to ensure these standards are maintained. Near the serial plate, each case carries a label identifying the environment (temperature and relative humidity) for which the case was designed for use.

LOCATION

These merchandisers are designed for displaying products in air conditioned stores where temperature is maintained at or below the ANSI / NSF-7 specified level and relative humidity is maintained at or below 55%.

Recommended operating ambient temperature is 75°F (24°C) maximum Relative Humidity is 55%.

Placing refrigerated merchandisers in direct sunlight, near hot tables or near other heat sources could impair their efficiency. Like other merchandisers, these merchandisers are sensitive to air disturbances. Air currents passing around merchandisers will seriously impair their operation. Do NOT allow air conditioning, electric fans, open doors or windows, etc. to create air currents around the merchandiser.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Precautions shall be taken to avoid excessive vibration or pulsation.

Any insulation shall be suitable for use with the material being insulated.

Protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.

SELF CONTAINED (LOCATION)

Product should always be maintained at proper temperature. This means that from the time the product is received, through storage, preparation and display, the temperature of the product must be controlled to maximize the life of the product.

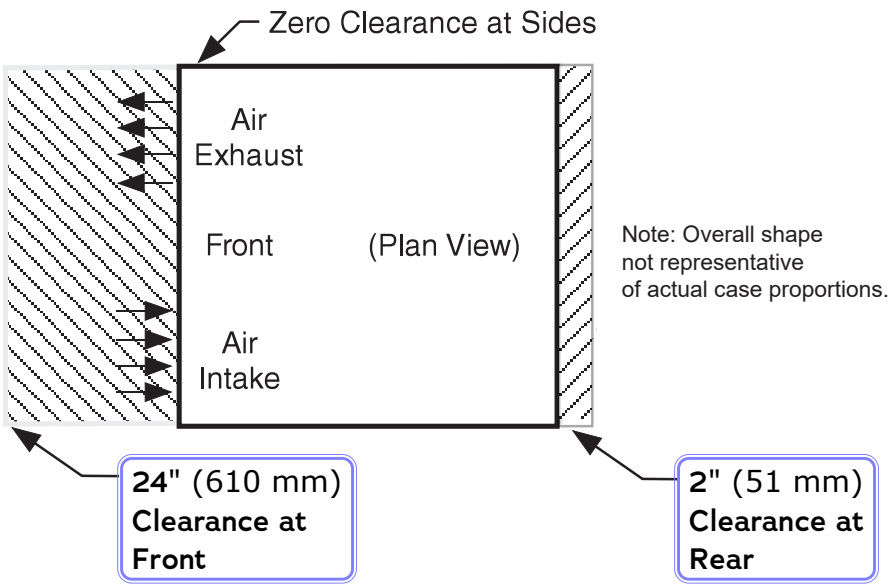
These models have vented base panels to allow air circulation through the condensing unit.

MD8DA units take in air and exhaust air from the front of the case.

Be sure to position self contained merchandisers properly.

Blocking or restricting air flow will adversely affect performance and may damage the refrigeration system.

Model MD8DA



Note: Overall shape not representative of actual case proportions.

ATTENTION

- Merchandiser must operate for 24 hours before loading product!
- Regularly check merchandiser temperatures.
- Do not break the cold chain. Keep products in cooler before loading into merchandiser.
- Merchandisers are designed for loading ONLY pre-chilled products.

MOVING AND TRANSPORTING CASE

The case cannot be moved from the left-hand (LH) side (LH when viewed from the front of case). It must be picked up from right-hand (RH) side only. Take care to not damage drainage tubing while lifting from RH side.

Use J-bar and place case on dolly to move around if possible. This will help prevent damage to the drainage tubing.

⚠WARNING

Do NOT remove shipping braces until the merchandiser is positioned for installation.

UNLOADING

Unloading from Trailer:

Move the merchandiser as close as possible to its permanent location and remove all packaging. Check for damage before discarding packaging. Remove all separately packed accessories such as kits and shelves.

Improper handling may cause damage to the merchandiser when unloading. To avoid damage do not drag the merchandiser out of the trailer. Use a Lever Bar (also known as a Mule, Johnson Bar, J-Bar, Lever Dolly, or Pry Lever).

NOTE:
Do not lift nearby compressor tray to prevent damaging components.

EXTERIOR LOADING

Do NOT walk on top of the merchandiser or damage to the merchandisers and serious personal injury could occur.

Merchandisers are not structurally designed to support excessive external loading such as the weight of a person. Do not place heavy objects on the merchandiser.

Check floor where merchandisers are to be set to if it is a level area. Determine the highest part of the floor.

CABINET LEVELING

Be sure to position merchandisers properly. Level the merchandiser by all four corners. Merchandiser(s) must be installed level to ensure proper operation of the refrigeration system, and to ensure proper drainage of defrost water.

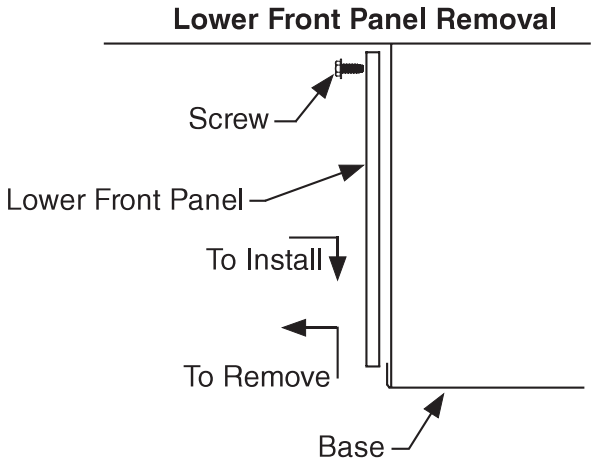
This merchandiser must be installed level (from back to front, and side to side) to allow maximum draining of the condensate water as well as proper door alignment and operation. Choose a level area to install case.

SERIAL PLATE LOCATION

The serial plate is located on the top left front corner of the interior of the unit. Plate contains all pertinent information such as model, serial number, amperage rating, refrigerant type, and charge.

REFRIGERATION UNIT ACCESS

The lower front panel may be removed by lifting the panel straight upward and over the tabs on which it is hanging. In a self contained merchandiser, two screws will have to be removed from either end of the panel. The panel is installed by reversing the above procedure. Ensure lower front panel is flat against the floor when installed to prevent air circulation problems on self-contained merchandisers.



SEALING MERCHANDISER TO FLOOR

If required by local sanitary codes, or if the customer desires, merchandisers may be sealed to the floor using a vinyl cover base trim. The size needed will depend on how much variation there is in the floor, from one end of the merchandiser to the other. Sealing of the lower front and rear panels on self contained models may hamper their removal for servicing or maintenance of the condensing unit.

NOTE

Do not allow trim to cover any intake or discharge grilles located in the lower front panel.

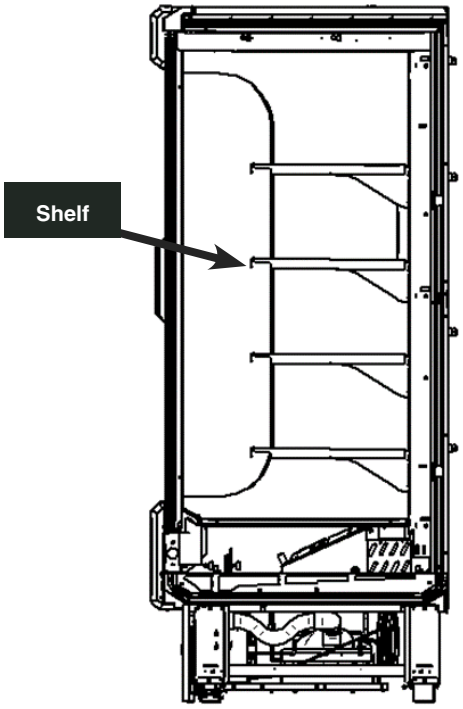
SHELF INSTALLATION

After the cabinet is leveled, the shelves may be installed.

MD8DA models are equipped with four levels o shelves. Heights are adjustable in one-inch increments. Product shelves should be loaded so that the product does not extend over the front edge of the shelf. Product loaded over the edge will interfere with air circulation in the cabinet. It is also desirable to leave a small space between the rear interior wall and the product on the shelves, to allow air to enter the cabinet interior through the perforations in the rear wall.

The standard 20" shelves are rated for 250 lb (113.4 kg) each load capacity. Optional shelves load rating may differ.

Install the shelf support brackets first to the desired height before installing each shelf. Place the rear of the bracket in the desired slot. Raise the front of the brackets towards the rear of the cabinet. Once the ends are in the slot, rotate the bracket forward, locking it in place. Place the shelf on the bracket. The shelves are not to be slanted. They must remain in the horizontal position.



ATTENTION

Merchandiser must operate for 24 hours before loading product!

Regularly check merchandiser temperatures.

Do not break the cold chain. Keep products in cooler before loading into merchandiser.

These merchandisers are designed for only pre-chilled products.

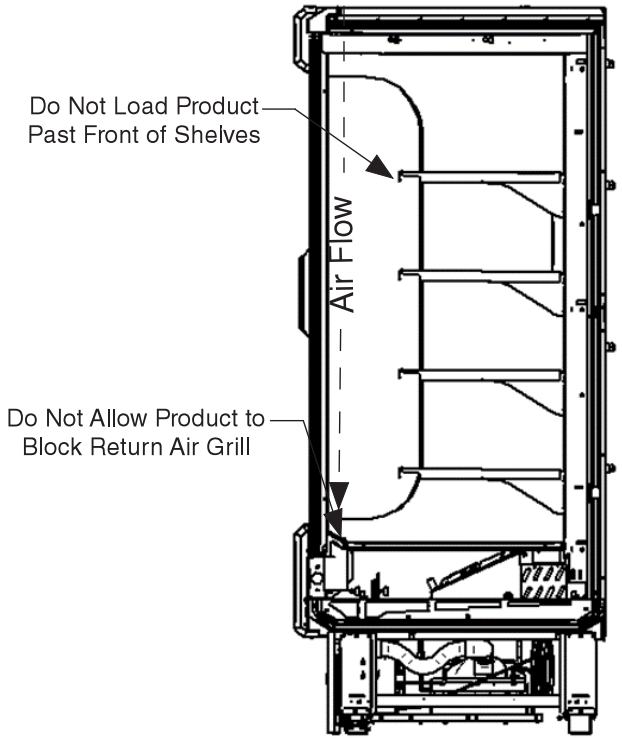
⚠WARNING

Standard 20" shelves are designed to support a maximum load of 250 lb (113.4 kg). Other optional shelf sizes may have different load ratings. Exceeding this load can cause damage to the shelves, case, damage to store products, and potentially create a hazardous condition for customers and store personnel.

LOAD LIMITS

Product must be within designated load limit—250 lb (113.4 kg) for standard 20" shelves—to ensure proper refrigeration and air curtain performance. Load limit may vary with other optional shelf sizes.

Do not violate the load limits or allow product to extend beyond the front of the shelf. Product will block the cold air flow.



Do Not Block Merchandiser Air Flow

Load Limit for MD8DA Merchandisers

STOCKING

Product should not be placed inside the merchandisers until merchandisers are at proper operating temperature.

Allow merchandiser 24 hours to operate before loading product.

Proper rotation of product during stocking is necessary to prevent product loss. Always bring the oldest product to the front and set the newest to the back.

Air discharge and return flues must remain open and free of obstruction at all times to provide proper refrigeration and air curtain performance. Do not allow product, packages, signs, etc., to block these grilles. Do not use non-approved shelving, baskets, display racks, or any accessory that could hamper air curtain performance.

LAMPS

LED mullion lighting is optional for MD8DA cases. LEDs are held in place with clips. The protective light shield is a single piece.

SELF-CONTAINED REFRIGERATION EQUIPMENT START-UP CHECKLIST

Review all safety warnings on the case and in this manual before proceeding.

Step	Startup Activity	Check
1	Locate, read and maintain install/operation manual in a safe place for future reference.	☐
2	Examine unit. Confirm there is NO damage or concealed damage.	☐
3	Level the unit, side to side and front to rear.	☐
4	Remove all shipping brackets/compressor straps/bolts etc.	☐
5	Unit must be run on a dedicated electrical circuit without the use of an extension cord.	☐
6	Ensure that the proper electrical requirements for the equipment are supplied.	☐
7	Verify field electrical connections are tight.	☐
8	Verify all electrical wiring is secured and clear of any sharp edges or hot lines.	☐
9	Verify the condensate drain line is properly trapped and pitched.	☐
10	Verify all required clearances on the sides and back of unit.	☐
11	Verify there are no air disturbances external to the unit. Heat and air registers, fans, and doors etc.	☐
Advise owner/operator that merchandiser must operate at temperature for 24 hrs with product.		

LEGAL DISCLAIMER

Review all safety warnings on the case and in this manual before attempting start-up.

Hussmann shall not be liable for any repair of replacement made without the written consent of Hussmann, or when the product is installed or operated in a manner contrary to the printed instructions covering installation and service which accompanied such product.

Please note that failure to follow this start up document may void your factory warranty.

⚠WARNING

— LOCK OUT / TAG OUT —

» To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

ELECTRICAL / REFRIGERATION

WARNINGS:

» If the information in these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury or death.

» Installation and service must be performed by a qualified installer or service agency only as recommended by the manufacturer.

» **READ THE ENTIRE MANUAL BEFORE INSTALLING OR USING THIS EQUIPMENT.**

» The unit uses R-290 gas as the refrigerant. R-290 is flammable and heavier than air. It collects first in low areas but can be circulated by the fans. If propane gas is present or even suspected, do not allow untrained personnel to attempt to find the cause. The propane gas used in the unit has no odor. The lack of smell does not indicate a lack of escaped gas. If a leak is detected, immediately evacuate all persons from the store, and contact the local fire department to advise them that a propane leak has occurred. Do not let any persons back into the store until the qualified service technician has arrived and that technician advises that it is safe to return to the store. No open flames, cigarettes, or other possible sources of ignition should be used inside or in the vicinity of the units.

» **FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY AND PROPERTY DAMAGE.**

⚠WARNING

» If the supply cord is damaged, it must be replaced by the manufacturer, its service agents or similarly qualified persons in order to avoid hazard.

» Do not remove the power supply cord ground.

» To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

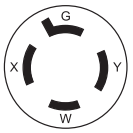
» Merchandiser must be grounded. All wiring must be in compliance with NEC and local codes.

PLUG AND OUTLET

The power cord extends 93 in. (2.4 m) from the case and exits on the right hand rear of the merchandiser. When shipped, the plug end will be strapped to the front of the case. Disconnect power before servicing. MD8DA merchandisers require a dedicated electrical circuit with ground. 12AWG is the minimum sized acceptable wire.

- **MD8DA models require a dedicated 20 AMP, 120/208 V 1-phase circuit (two line and one neutral from a 208Y/120 V 3-phase, plus ground) with a grounded wall receptacle (NEMA L14-20R).**
- **Always use a dedicated circuit with the amperage stated on the unit.**
- **Plug into an outlet designed for the plug.**
- **Do not overload the circuit.**
- **Do not use extension cords. Never use adapters.**
- **If in doubt, call an electrician.**

This unit uses a power cord with a NEMA L14-20P plug.



NEMA L14-20P

Nominal Voltage
120/208 V 1-phase**

**3-wire plus ground, derived from 208Y/120 V / 3 Φ / 60 Hz

BEFORE BEGINNING ANY SERVICE OR REPAIR:

Use a hand-held propane leak detector ("sniffer") to ensure no propane is present in the immediate area, the inside of the display case and the inside of the refrigeration system. R-290 is an odorless refrigerant. Keep the area clear of all customers and non-essential or unauthorized personnel.

Verify that all repair parts are identical models to the ones they are replacing. Do not substitute parts such as motors, switches, relays, heaters, compressors, power supplies or solenoids. Failure to do so can result in an explosion, death, injury and property damage. Parts used on hydrocarbon cases must meet specific UL certification for non-incendive or non-sparking components. Use only Hussmann approved parts approved through the Hussmann Performance Parts Website. https://parts.hussmann.com/

Brazing must not begin before all propane has been cleared from the immediate area — the inside of the displays case and the inside of the refrigeration system.

If a leak is detected, follow store safety procedures. It is the store's responsibility to have a written safety procedure in place. The safety procedure must comply with all applicable codes such as local fire department's codes.

At minimum, the following actions are required:

- **Immediately evacuate all persons from the store, and contact the local fire department to advise them that a propane leak has occurred.**
- **Call Hussmann and/or a qualified service agent and inform them that a propane sensor has detected the presence of propane.**
- **Do not let any persons back into the store until the qualified service technician has arrived and that technician advises that it is safe to return to the store.**
- **The propane gas used in the unit has no odor. The lack of smell does not indicate a lack of escaped gas.**
- **A hand-held propane leak detector ("sniffer") should be used before any repair and/or maintenance is attempted. All repair parts must be identical models to the ones they are replacing.**
- **No open flames, cigarettes or other possible sources of ignition should be used inside the building where the units are located until the qualified service technician and/or local fire department determines that all propane has been cleared from the area and from the refrigeration systems.**
- **Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.**
- **"If case is removed for any reason, comply with proper disposal of refrigeration cabinet that uses R290"**

⚠ DANGER

» DANGER – Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.

» Failure to follow instructions can result in an explosion, death, injury and property damage.

⚠ WARNING

» Component parts shall be replaced with like components, and servicing shall be done by factory authorized service personnel only, so as to minimize the risk of possible ignition due to incorrect parts or improper service.

» WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

» WARNING: Do not damage the refrigerating circuit.

» WARNING: Do not use electrical appliances inside the food/ice storage compartments unless they are of the type recommended by the manufacturer.

STEPS TO RECOVER REFRIGERANT

1. Make sure you are in a well ventilated area before making any service or repair to the refrigeration system.
2. Disconnect all power sources from the system. Some systems may have more than one plug or power supply.
3. Tap system with line tap valves, attaching gauges to the high and low sides of the system.

Refrigeration Line Tapping Valve

4. Connect hose to an evacuated recovery tank. Open refrigeration gauges and recovery tank.
5. With the suction valve in vacuum, the refrigerant will be recovered into the recovery tank.
6. Once recovered, close the tank valve and remove the gauge from the tank and connect nitrogen tank to the system to purge it with nitrogen.
7. Pull vacuum to a minimum of 200 microns or lower.

CHARGING

A calibrated scale with +/-2 gram accuracy must be used to charge the system. The charge amount is shown on the serial plate. Only R-290 grade refrigerant can be used. Standard propane does not meet the purity/moisture content of R-290, and therefore cannot be used to charge cases.

No gas charge adjustments are allowed. When connecting hoses between the refrigeration system, manifold gauges, and refrigerant cylinder, ensure that the connections are secure and there are no potential sources of ignition nearby. Ensure that contamination of different refrigerants does not occur when using charging equipment.

Use dedicated hoses to service R-290 (propane) refrigeration systems. Hoses or lines should be as short as possible to minimize the amount of refrigerant contained in them.

Ensure that the refrigeration system is properly grounded prior to charging the system with refrigerant, to avoid the potential for static build-up.

⚠WARNING

» Component parts shall be replaced with like components, and servicing shall be done by factory authorized service personnel only, so as to minimize the risk of possible ignition due to incorrect parts or improper service.

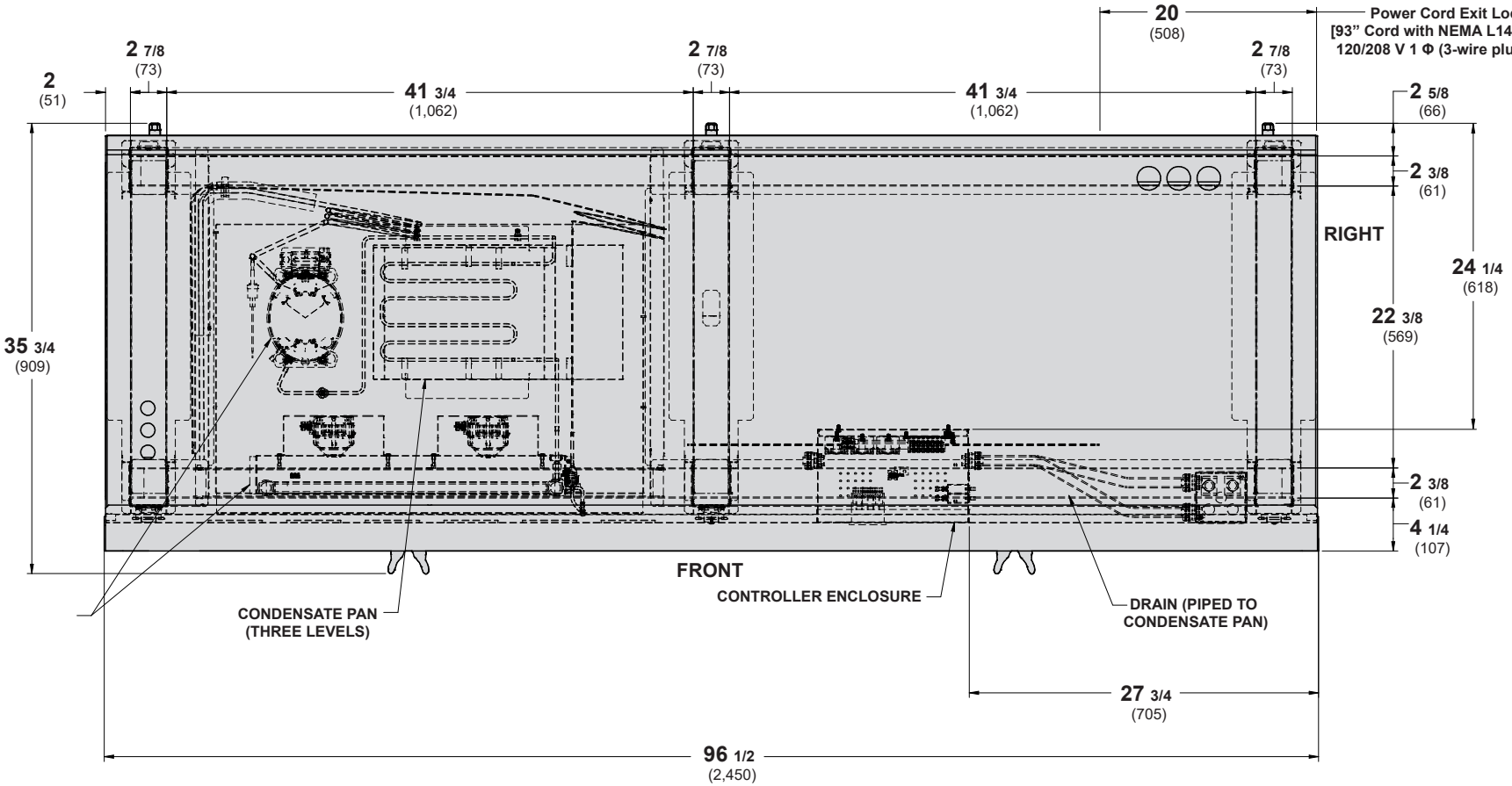
Extreme care must be taken not to overfill the refrigeration system. After charging, carefully disconnect the hoses, attempting to minimize the quantity of refrigerant released. Further leak check the service ports, hoses, refrigerant tanks. The service ports shall be checked for leaks using a hydrocarbon leak detector with a sensitivity of 3 grams/ year (0.106 oz/year) leak rate.

Thoroughly leak check the service ports. If no leak is present, use a pinch-off tool to close the ends of the service tubes before brazing them shut. If a Schrader valve is used on the compressor service tube, it must be removed and the previous steps followed in order to braze the service tube shut.

⚠WARNING

— LOCK OUT / TAG OUT —

» To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.



ELECTRONIC CONTROLLER

Controller Layout

LIGHT: Used to turn mullion LED lighting on/off.

DEF: Used to start a manual defrost by pressing for more than 2 seconds.

SET: Used to display target set point. In programming mode, it selects a parameter or confirms an operation.

UP: Used to see the max. stored temperature. In programming mode, it browses the parameter codes or increases the displayed value.
DOWN: Used to see the min. stored temperature. In programming mode, it browses the parameter codes or decreases the displayed value.

POWER: Used to switch the unit on/off.

Button Combinations

- Press UP and DOWN at the same time to lock/unlock buttons.
- Press SET and DOWN to enter programming mode.
  Note: Do not change preconfigured settings unless advised to do so by a Hussmann representative.
- Press SET and UP to return to the temperature display.

Controller Operation

High and low pressure safety controls are connected to the controller.

The controller controls refrigeration temperature. This is factory installed in the control panel. Defrosts are initiated by time and terminated by time for this system.

1. Plug the merchandiser plug into its receptacle.
   a. The controller display will illuminate.
   b. The interior light will illuminate.
2. After the control preprogrammed time delay of up to 6 minutes, the compressor and evaporator fan(s) will start if the control is calling for cooling.
3. The control will cycle the compressor but may also cycle evaporator fan(s) on and off determined by the Set-Point and Differential temperatures.
   a. The Set-Point is the adjustable preprogrammed temperature.
   b. The Differential is the non-adjustable preprogrammed temperature.
   c. The Control is designed to read and display a cabinet temperature not a product temperature.

This cabinet temperature may reflect the refrigeration cycle of the Set-Point and it's Differential. The most accurate temperature on a cabinets operation is to verify the product temperature.

Display Symbols

The below symbols will appear on the screen under certain circumstances. Use this table to determine the meaning of any symbol that is being displayed.

LED	MODE	FUNCTION
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
❄	ON	Defrost enabled
❄	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Light on
AUX	ON	Auxiliary relay on
°C/°F	ON	Measurement unit
°C/°F	Flashing	Programming phase

Alarm Codes

The below error codes will display if a malfunction occurs. Alarm audio can be canceled by pressing any button.

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. "Con" and "COF"
"P2"	Evaporator probe failure	Defrost end is timed
"P3"	Third probe failure	Outputs unchanged
"P4"	Fourth probe failure	Outputs unchanged
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"HA2"	Condenser high temperature	It depends on the "Ac2" parameter
"LA2"	Condenser low temperature	It depends on the "bLL" parameter
"dA"	Door open	Compressor and fans restarts
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF
"rtc"	Real time clock alarm	Alarm output ON; Other outputs unchanged; Defrosts according to par. "IdF" Set real time clock has to be set
rtF	Real time clock board failure	Alarm output ON; Other outputs unchanged; Defrosts according to par. "IdF" Contact the service

Factory Settings

These settings have been programmed specifically to suit this unit and are critical to the proper operation of the unit. Do not change preconfigured settings unless advised to do so by an authorized Hussmann representative.

Group	Parameter	Description	Edit	Original	Vis. level	Min.	Max.	Unit	Active
Regulation	Hy	Differential	4	4	Pr1	1	45	°F	True
Regulation	LS	Minimum set point	-58	-58	Pr2	-58	25	°F	True
Regulation	US	Maximum set point	230	230	Pr2	25	230	°F	True
Probes	ot	Thermostat probe calibration	0	0	Pr1	-21	21	°F	True
Probes	P2P	Evaporator probe presence	no	no	Pr1				True
Probes	oE	Evaporator probe calibration	0	0	Pr2	-21	21	°F	True
Probes	P3P	Third probe presence	no	no	Pr2				True
Probes	o3	Third probe calibration	0	0	Pr2	-21	21	°F	True
Probes	P4P	Fourth probe presence	yes	yes	Pr2				True
Probes	o4	Fourth probe calibration	0	0	Pr2	-21	21	°F	True
Regulation	odS	Outputs delay at start up	3	3	Pr2	0	255	min	True
Regulation	AC	Anti-short cycle delay	3	3	Pr1	0	50	min	True
Regulation	rtr	P1-P2 percentage for regulation	100	100	Pr2	0	100		True
Regulation	CCt	Continuous cycle duration	0.30	0.30	Pr2			ora	True
Regulation	CCS	Set point for continuous cycle	40	40	Pr2	-58	230	°F	True
Regulation	Con	Compressor ON time with faulty probe	15	15	Pr2	0	255	min	True
Regulation	CoF	Compressor OFF time with faulty probe	30	30	Pr2	0	255	min	True
Regulation	CF	Temperature measurement unit	°F	°F	Pr2				True
Regulation	rES	Resolution	in	in	Pr1				True
Regulation	Lod	Probe displayed	P1	P1	Pr2				True
Regulation	rEd	X-REP display	P1	P1	Pr2				True
Regulation	dLy	Display temperature delay	0.00	0.00	Pr2			min	True
Regulation	dtr	P1-P2 percentage for display	50	50	Pr2	1	99		True
Defrost	tdF	Defrost type	EL	EL	Pr2				True
Defrost	dFP	Probe selection for first defrost	nP	nP	Pr2				True
Defrost	dtE	Defrost termination temperature first defrost	46	46	Pr1	-58	122	°F	True
Defrost	idF	Interval between defrost cycles	12	12	Pr1	0	120	ora	True
Defrost	MdF	(Maximum) length for first defrost	20	20	Pr1	0	255	min	True
Defrost	dSd	Start defrost delay	0	0	Pr2	0	255	min	True
Defrost	dFd	Displaying during defrost	it	it	Pr2				True
Defrost	dAd	Max display delay after defrost	30	30	Pr2	0	255	min	True
Defrost	Fdt	Draining time	0	0	Pr2	0	255	min	True
Defrost	dPo	First defrost after start-up	no	no	Pr2				True

Factory Settings (continued)

Group	Parameter	Description	Edit	Original	Vis. level	Min.	Max.	Unit	Active
Defrost	dAF	Defrost delay after fast freezing	0.00	0.00	Pr2			ora	True
Fan	FnC	Fan operating mode	O_Y	O_Y	Pr1				True
Fan	Fnd	Fan delay after defrost	0	0	Pr1	0	255	min	True
Fan	FCt	Differential of temperature for forced activation of fans	0	0	Pr2	0	90	°F	True
Fan	FSt	Fan stop temperature	40	40	Pr1	-58	122	°F	True
Fan	Fon	Fan on time with compressor off	0	0	Pr2	0	15	min	True
Fan	FoF	Fan off time with compressor off	0	0	Pr2	0	15	min	True
Fan	FAP	Probe selection for fan	nP	nP	Pr2				True
Auxiliary	ACH	Kind of action for auxiliary relay	CL	CL	Pr2				True
Auxiliary	SAA	Set point for auxiliary relay	32	32	Pr2	-58	230	°F	True
Auxiliary	SHy	Differential for auxiliary relay	4	4	Pr2	1	45	°F	True
Auxiliary	ArP	Probe selection for auxiliary relay	nP	nP	Pr2				True
Auxiliary	Sdd	Auxiliary relay switched off during defrost	no	no	Pr2				True
Alarm	ALP	Probe selection for temperature alarms	P1	P1	Pr2				True
Alarm	ALC	Temperature alarms configuration	Ab	Ab	Pr2				True

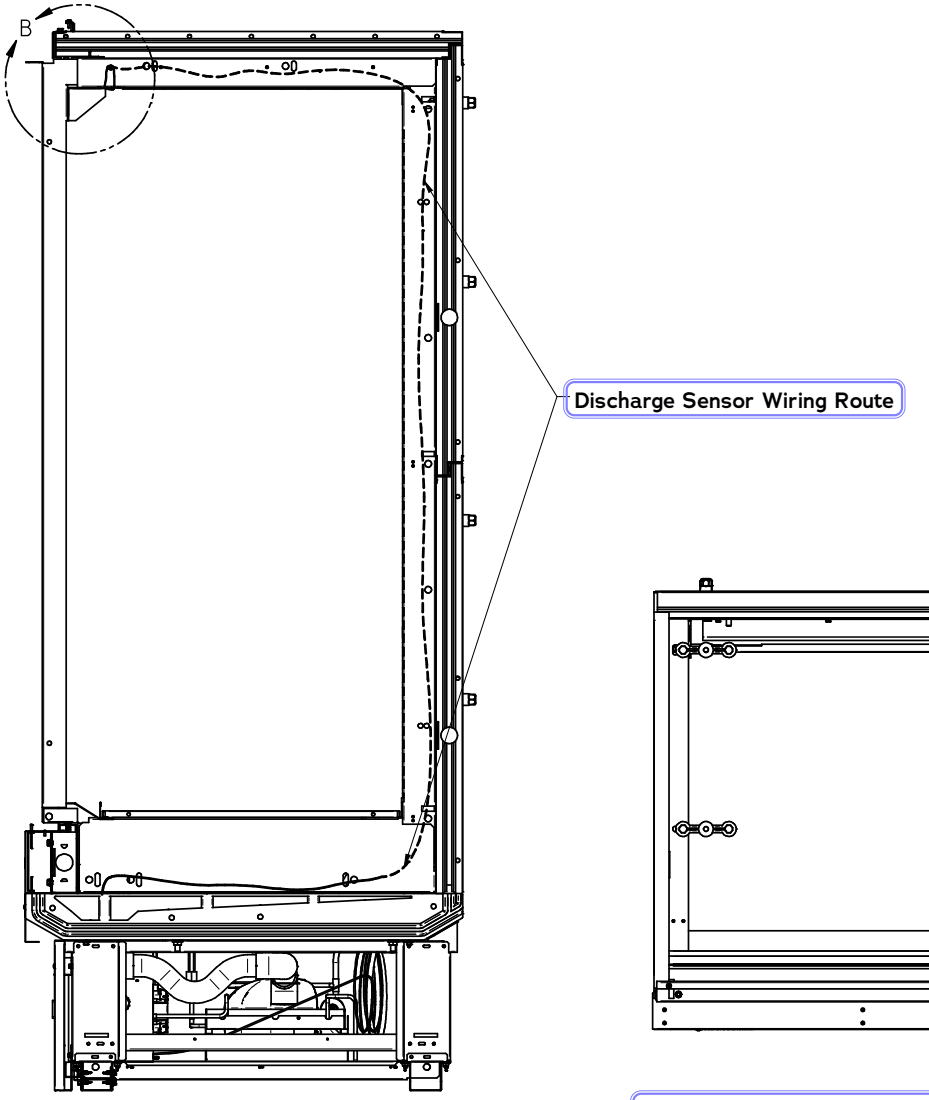
Group	Parameter	Description	Edit	Original	Vis. level	Min.	Max.	Unit	Active
Alarm	ALU	Maximum temperature alarm	230	230	Pr1	-58	230	°F	True
Alarm	ALL	Minimum temperature alarm	-58	-58	Pr1	-58	230	°F	True
Alarm	AFH	Differential for temperature alarm recovery	4	4	Pr2	1	45	°F	True
Alarm	ALd	Temperature alarm delay	15	15	Pr2	0	255	min	True
Alarm	dAo	Delay of temperature alarm at start up	1.30	1.30	Pr2			ora	True
Alarm	AP2	Probe selection for condenser temperature alarms	P4	P4	Pr2				True
Alarm	AL2	Condenser low temperature alarm	40	40	Pr2	-58	230	°F	True
Alarm	AU2	Condenser high temperature alarm	160	160	Pr2	-58	230	°F	True
Alarm	AH2	Differ. for condenser temp. alarm recovery	10	10	Pr2	1	45	°F	True
Alarm	Ad2	Condenser temperature alarm delay	20	20	Pr2	0	255	min	True
Alarm	dA2	Delay of condenser temper. alarm at start up	1.30	1.30	Pr2			ora	True

Factory Settings (continued)

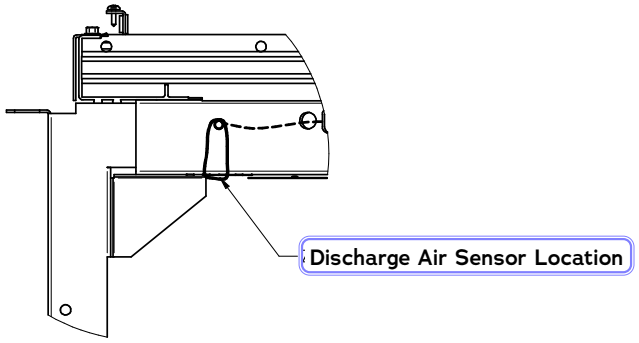
Group	Parameter	Description	Edit	Original	Vis. level	Min.	Max.	Unit	Active
Alarm	bLL	Compressor off for condenser low temperature alarm	no	no	Pr2				True
Alarm	AC2	Compressor off for condenser high temperature alarm	yes	yes	Pr2				True
Alarm	tbA	Alarm relay switched off by pushing a key	yes	yes	Pr2				True
Configuration	oA2	Second relay configuration	LiG	LiG	Pr2				True
Alarm	AOP	Alarm relay polarity	CL	CL	Pr2				True
Digital inputs	i1P	Digital input 1 polarity	CL	CL	Pr1				True
Digital inputs	i1F	Digital input 1 configuration	dor	dor	Pr1				True
Digital inputs	i2P	Digital input 2 polarity	OP	OP	Pr1				True
Digital inputs	i2F	Digital input 2 configuration	PAL	PAL	Pr2				True
Digital inputs	did	Digital input 2 alarm delay	15	15	Pr2	0	255	min	True
Digital inputs	doA	Door alarm delay	15	15	Pr1	0	255	min	True
Digital inputs	nPS	Number of activation of pressure switch	3	3	Pr2	0	15		True
Digital inputs	OdC	Compress and fan status when open door	F-C	F-C	Pr2				True
Alarm	rrd	Regulation restart with door open alarm	yes	yes	Pr2				True

Group	Parameter	Description	Edit	Original	Vis. level	Min.	Max.	Unit	Active
Energy Saving	HES	Differential for Energy Saving	0	0	Pr2	-54	54	°F	True
Other	Adr	Serial address	1	1	Pr2	1	247		True
Probes	PbC	Kind of probe	ntC	ntC	Pr2				True
Configuration	OnF	On/off key configuration	nu	nu	Pr2				True
Other	dP1	Probe 1 value			Pr1			°F	True
Other	dP2	Probe 2 value			Pr1			°F	True
Other	dP3	Probe 3 value			Pr1			°F	True
Other	dP4	Probe 4 value			Pr1			°F	True
Other	rSE	Real Set point (SET + ES + SETd)			Pr2			°F	True
Other	rEL	Firmware Release			Pr2				True
Other	Ptb	Map code	3	3	Pr2	0	65535		True
Regulation	SEt	Set point	25	25		-58	230	°F	True

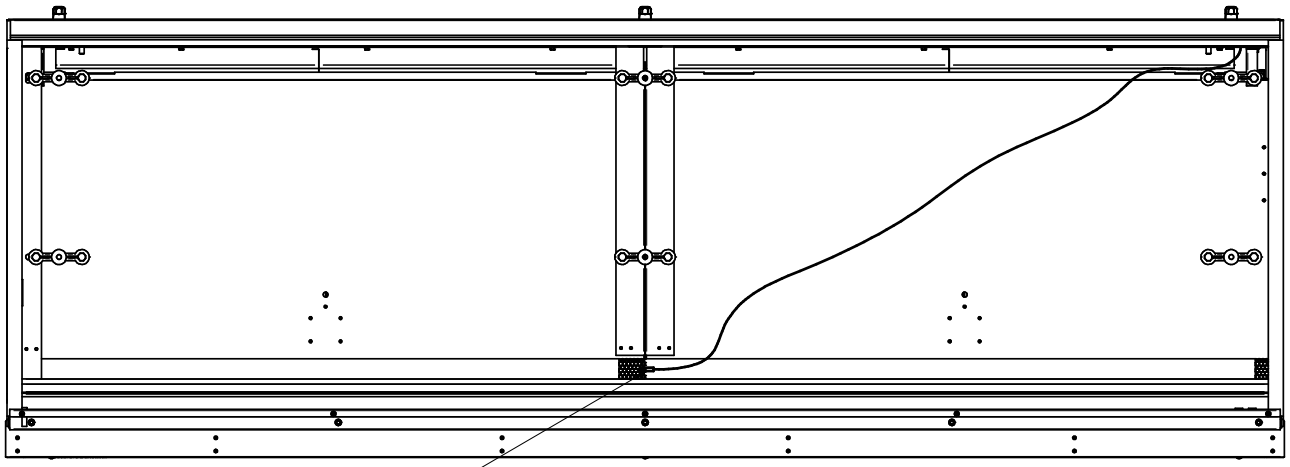
TYPICAL SENSOR TO CONTROL CONFIGURATION



SENSOR ROUTING
RH CASE VIEW
SOME PANELS REMOVED FOR CLARITY
SCALE 1:5
(B)



DETAIL B
SCALE 1:2
(B)



TOP VIEW
SOME PANELS REMOVED FOR CLARITY
SCALE 1:5

HIGH AND LOW PRESSURE SWITCHES

The high pressure switch will shut off the compressor if the high side pressure exceeds 377 psi (26 bar). The low pressure cut-off switch activates at 2.9 psi (0.2 bar). The control settings allow the compressor to re-start automatically up to two times, but if the high or low pressure switch trips 3 times within a 30 minute period the controller must be manually re-set by turning off the control circuit and then back on again. This is an indication that field support is required to diagnose the problem causing the abnormal pressure condition. The alarm may be silenced by pressing any of the buttons on the front of the controller display.

Possible causes of high/low pressure alarm:

- **Excessive refrigerant**
- **Lack of refrigerant**
- **Lack of air flow into the condenser**
- **Superheat too high**
- **High temperatures at startup**
- **Service valves closed**

High and low pressure alarms will show up on the Dixell display as a"CA" alarm. If this alarm condition exists, the unit must be serviced by a qualified technician

High and low discharge temperature alarms will show up on the Dixell display as a "HA2" and "LA2" respectively. This is an indication that the condenser is blocked and needs to be cleaned or have a blockage removed (such as balloons, paper, etc.). Refer to supplemental wiring diagrams for special options and other controllers.

MAINTENANCE

WARNINGS:

- If the information in these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury or death.
- Installation and service must be performed by a qualified installer or service agency only as recommended by the manufacturer.
- **READ THE ENTIRE MANUAL BEFORE INSTALLING OR USING THIS EQUIPMENT.**
- The unit uses R-290 gas as the refrigerant. R-290 is flammable and heavier than air. It collects first in low areas but can be circulated by the fans. If propane gas is present or even suspected, do not allow untrained personnel to attempt to find the cause. The propane gas used in the unit has no odor. The lack of smell does not indicate a lack of escaped gas. If a leak is detected, immediately evacuate all persons from the store, and contact the local fire department to advise them that a propane leak has occurred. Do not let any persons back into the store until the qualified service technician has arrived and that technician advises that it is safe to return to the store. No open flames, cigarettes, or other possible sources of ignition should be used inside or in the vicinity of the units.
- **FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY AND PROPERTY DAMAGE.**

⚠WARNING

- To reduce the risk of fire, electrical shock or injury when cleaning this merchandiser:
- Unplug the merchandiser before cleaning.
- Keep all liquids away from electrical and electronic components.
- Do not use any mechanical device or other means to speed the defrost process, except as recommended by the manufacturer.

CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependent upon the care it receives. To ensure long life, proper sanitation and minimum maintenance costs, this unit should be thoroughly cleaned, all debris removed and the interiors washed down. Cleaning often will control or eliminate odor buildup. Frequency of cleaning is dependent on usage and local health requirements.

EXTERIOR SURFACES

The exterior surfaces must be cleaned with a mild detergent and warm water to protect and maintain their attractive finish.

Never use abrasive cleaners or scouring pads. Never use caustic soda, kerosene, gasoline, thinner, solvents, detergents, acids, chemicals or abrasives. Do not use ammonia-based cleaners on acrylic parts.

INTERIOR SURFACES

Do not use ammonia-based products to clean light shields. Never use abrasive cleansers or scouring pads.

The interior surfaces may be cleaned with most domestic detergents and sanitizing solutions with no harm to the surface. Always read and follow the manufacturer's instructions when using any cleaning product.

Inspect all LED connections and plug/ receptacles for signs of arcing. Replace any component that shows signs of arcing. Make sure all unused receptacles have close-off covers securely attached.

⚠WARNING

» Do NOT use HOT water on cold glass surfaces. This can cause the glass to shatter and could result in personal injury. Allow glass fronts, to warm before applying hot water.

Do Not Use:

- Abrasive cleansers and scouring pads, as these will mar the finish.
- Coarse paper towels on coated glass.
- Ammonia-based cleaners on acrylic parts.
- A hose on lighted shelves or submerge the shelves in water.
- Solvent, oil, or acidic based cleaners on any interior surfaces.
- A hose on rail lights, canopy lights, or any other electrical connection.

Do:

- Remove product and store in an alternate refrigerated area.
- Turn off refrigeration, then carefully disconnect electrical power.
- Remove any loose debris to avoid clogging waste outlet.
- Before washing, disconnect hose from condensate pan under the case and discharge water into a drain.
- Thoroughly clean all surfaces with soap and hot water. Do not use steam or high water pressure hoses to wash the interior. These destroy merchandiser's sealing causing leaks and poor performance.
- Take care to minimize direct contact between fan motors and cleaning or rinse water.
- Rinse with hot water, but do not flood case or submerse components. Never introduce water faster than the waste outlet can remove it.
- Allow merchandiser to dry before resuming operation.
- After cleaning is completed; restore power, turn on the merchandiser, and verify proper operation.

CLEANING UNDERNEATH THE CASE

The case can be moved to facilitate cleaning. Unplug the merchandiser, and move it out if the way in order to sweep and mop the area underneath the case. Brush away all dirt and litter from the area. Ensure there is no dirt build up around the bottom of the case or near the intake or exhaust.

CLEANING SHELVES

Shelves and shelf clips are easily removed for cleaning the interior as well as the shelves themselves.

⚠WARNING

» Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

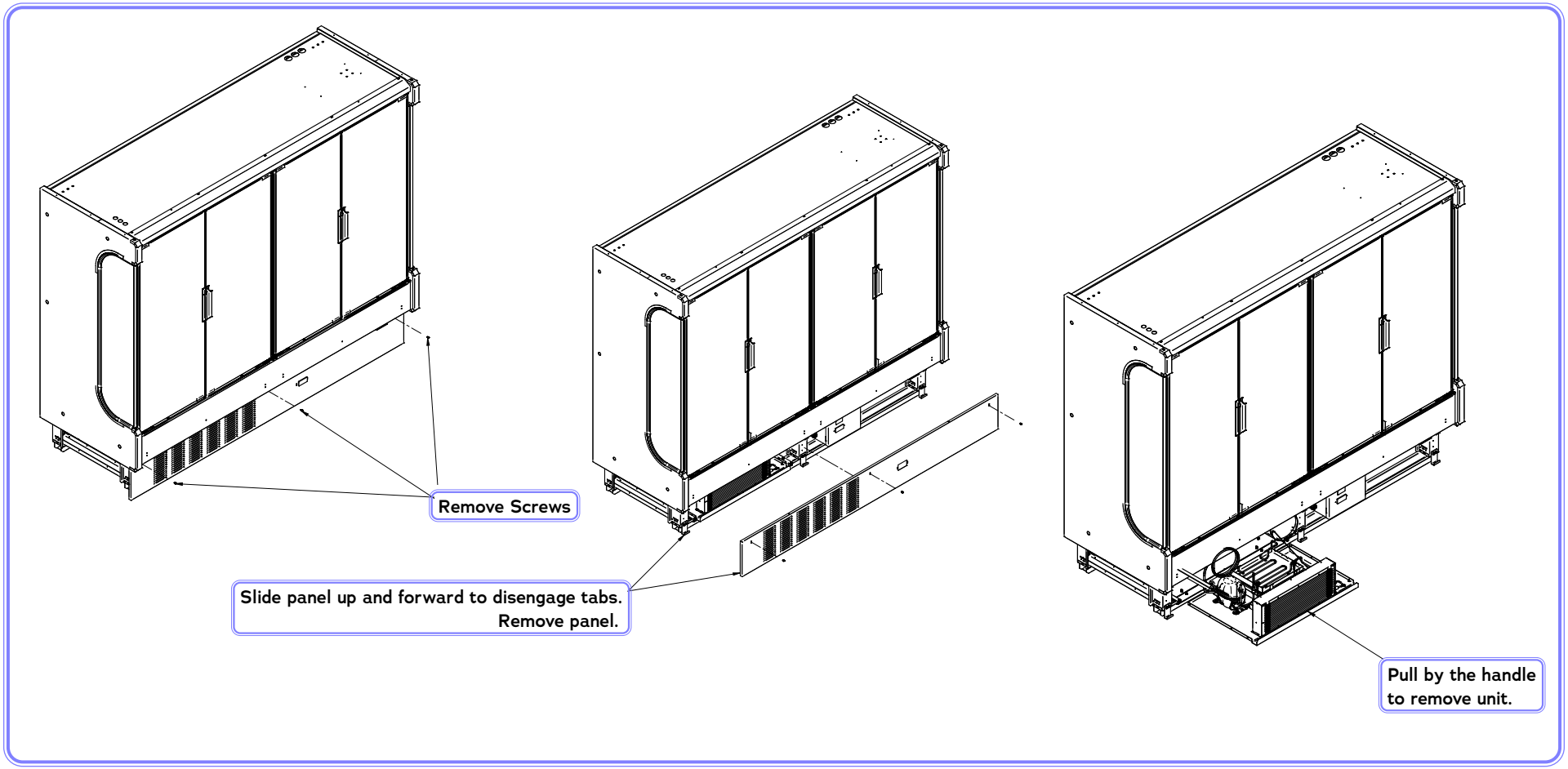
⚠WARNING

» Always wear gloves and protective eye wear when servicing.

CLEANING CONDENSER COILS

To maintain peak operating efficiency, the coil should be cleaned at least once each month. A dirty coil slows product cooling significantly and increases energy consumption by as much as 20%. Dirt buildup on coils can also cause the compressor to lock up damaging the condenser unit. All MD models have the same access panel design for commonality between merchandisers.

1. Remove the lower panel screws.
2. Remove the holding screw to release the condensing unit base. Once the condensing unit base is free, you can slide it out for service. Use base handle to pull out the condensing unit. Pulling on refrigeration lines or others parts will cause damage to the unit.
3. Use a soft hand brush attachment on a vacuum to remove accumulated dust and debris.



TIPS AND TROUBLESHOOTING

Consult an authorized service technician if more extensive cleaning is needed.
If the refrigeration unit is damaged, it can be replaced with a new unit.

There are a few simple things to check before calling for service:

1. Product not cold?

   Refrigeration unit requires 24 hours at initial startup to cool down to operating temperature with no product loaded in merchandiser. Ask when merchandiser was stocked, and what the usage has been. It may take 30 minutes or more for product to chill following stocking.

2. Power Supply:

   Is the unit plugged in? Yes/No

   Is there power to the unit? Yes/No

3. Location:

   What are the ambient conditions — temperature and humidity, direct sun, nearby source of heat, such as oven or grill? Is the unit level? Has the unit been moved recently?

4. Shelves and Stocking:

   Are the standard shelves in the correct places? Is the product stocked properly? Is the bottom shelf at the proper location?

5. Is the case in defrost? Confirm that the defrost schedule is properly set.

IMPORTANT INFORMATION

For prompt service when contacting the factory, be sure to have the case model and serial number from the case serial plate.

SELF-CONTAINED REFRIGERATION EQUIPMENT MAINTENANCE CHECK LIST

***** Warranty does not cover issues caused by improper installation or lack of basic preventative maintenance. *****

Record starting date	
Store Name and Number	
Store Address	
Unit Model Number	
Unit Serial Number	
Contractor/Technician	

	Technician									
	PM date									
PM activity-For visual inspection items, denote "ok or complete" in the column to right when PM has been performed. For measured data requested, record data requested in the appropriate column to the right)	Quarterly	Semi-Annually	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Check in with store manager, record any complaints or issues they have with unit.	x									
Look unit over for any damage, vibrations, or abnormal noise.	x									
Verify unit is level side to side and front to rear.	x									
Confirm refrigerant lines properly are secured and not touching or rubbing other lines, wires, or frame work.	x									
Verify fan motors and motor mounts are tight.	x									
Confirm fan blade(s) are tight and not rubbing or hitting.	x									
Make sure all electrical connections, factory and field, are tight.	x									
Verify electrical connections at lamps are secure and dry.	x									
Check for and replace any frayed or chaffed wiring.	x									
Check all electrical wiring make sure it is secured and not on any sharp edges or hot lines.	x									
Check for air disturbances external l to the unit. Heat and air registers, fans, and doors etc.	x									
Check for water leaks.	x									
Clean evaporator coil(s) and fan blade(s). Do not use an acid base cleaner. Rinse off any cleaner residue.		x								
Clean discharge air honeycombs or grilles. Do not use an acid base cleaner. Rinse off any cleaner residue.		x								
Clean condenser coil(s) and fan blade(s). Do not use an acid base Cleaner. Rinse off any cleaner residue.		x								
Verify condensate drain lines are clear and functioning.		x								
Clean condensate evaporator pan(s).		x								
Record voltage reading at unit with unit off?		x								
Verify condenser and evaporator fans are working.	x									
Record condenser air inlet temperature	x									
Record condenser air outlet temperature	x									
Is condenser air inlet or air exhaust restricted or recirculating?	x									
Use a handheld propane leak detector ("sniffer") to check for refrigerant leaks.	x									
Record voltage reading with unit running.		x								
Record compressor amp draw.		x								
Record defrost heater voltage and amp draw.		x								
Record anti-sweat heater voltage and amp draw.		x								
Record case product temperature.	x									
Record unit discharge air temperature.	x									
Record unit return air temperature.	x									
Record ambient conditions around unit (wet Bulb temperature and dry bulb temperature).	x									
Check product loading, do not load beyond the units load limits.	x									
Verify clearances on sides/back of unit.	x									
Check unit controller for proper operation. See controller or I/0 Manual for proper controller operation.		x								
Confirm door switches function.	x									
Verify unit doors and lids work and are sealed correctly.	x									
Verify that all the panels, shields and covers are in place.	x									

Technician Notes:

SERVICE

Safety Checks

- Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.
- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., non-sparking, adequately sealed, or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. A dry chemical or CO2 fire extinguisher should be adjacent to the charging area.
- No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment shall be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.
- When servicing, ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

a) the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

b) the ventilation machinery and outlets are operating adequately and are not obstructed;

c) if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

d) marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

e) refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

a) that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

b) that no live electrical components and wiring are exposed while charging, recovering or purging the system;

c) that there is continuity of earth bonding.

Leak Detection

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
A halide torch (or any other detector using a naked flame) shall not be used.
The following leak detection methods are deemed acceptable for all refrigerant systems:

- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity might not be adequate, or might need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

Refrigerant Recovery

When breaking into the refrigerant circuit to make repairs—or for any other purpose—conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:
a) safely remove refrigerant following local and national regulations;
b) purge the circuit with inert gas;
c) evacuate;
d) purge with inert gas;
e) open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. The system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

Refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

Refrigerant Recovery (continued)

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available.

All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the supplier. Only electric heating to the compressor body shall be employed to accelerate this process.

When oil is drained from a system, it shall be carried out safely.

Refrigerant Charging

In addition to conventional charging procedures, the following requirements shall be followed:

a) Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
b) Cylinders shall be kept in an appropriate position according to the instructions.
c) Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
d) Label the system when charging is complete (if not already).
e) Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

WIRING DIAGRAM(S)

Wiring Diagram(s) can be found in the product datasheet.

REPLACING EVAPORATOR MOTORS

Should it ever be necessary to service or replace the fan motors be certain that the fan blades are reinstalled correctly. The blades must be installed with raised embossing (part number on plastic blades) positioned as indicated on the parts list.

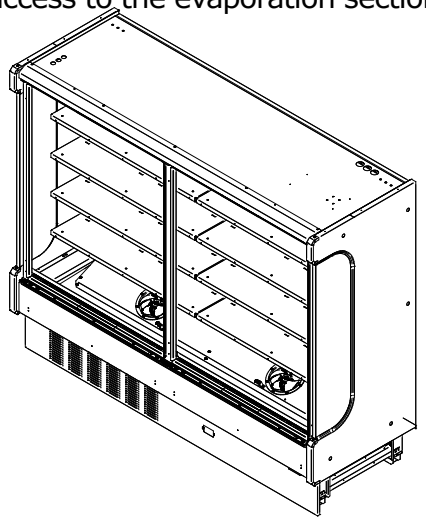
Unplug power cords before servicing.

Required Tools:

- Screwdriver
- 1/4" Hex Key or Hex Bit Socket

For access to these fans:

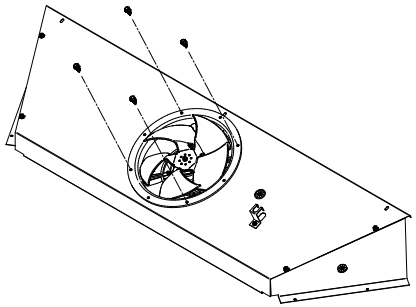
1. Remove product and place in a refrigerated area. Make sure the power is off to the case.
2. Make sure there is no voltage in the refrigerator. Remove pan displays to have access to the evaporation section as shown below.



⚠ DANGER

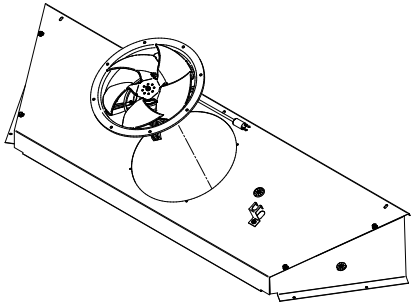
» Risk of fire or explosion. R-290 (propane) refrigerant is flammable, and the refrigeration system should be serviced or repaired only by trained service personnel. Do NOT puncture refrigerant tubing.

3. Remove motor screws as shown below.



4. Take off motors from assembly and disconnect harness.

5. Replace new motors and reverse the process. Make sure everything is hand-tight and is working correctly.



⚠WARNING

— LOCK OUT / TAG OUT —

» To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

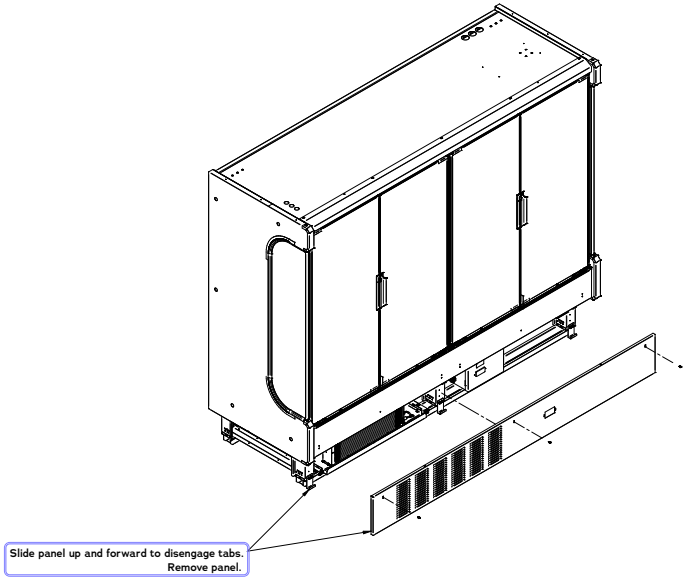
REPLACING COMPRESSOR

Unplug the power cords before servicing.

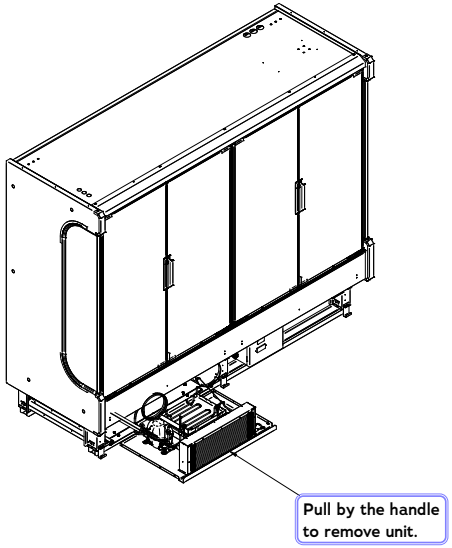
Required Tools:

- Screwdriver / Philips Tip
- 1/4" Hex Key
- Copper Tubing Cutter
- Blow Torch

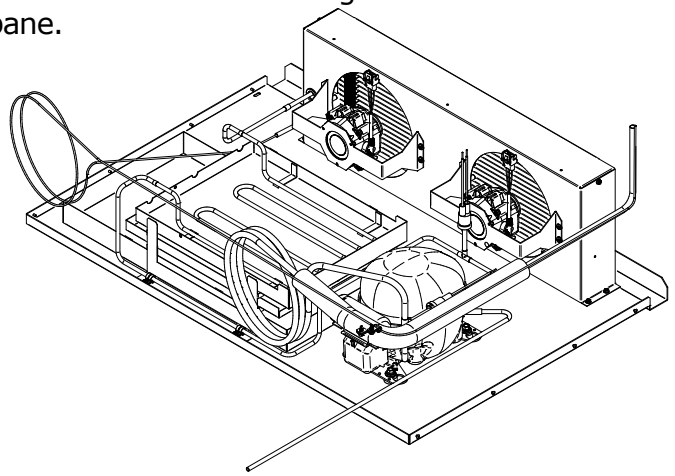
1. Remove product and place in a refrigerated area. Make sure the power is off to the case.
2. Make sure there is no voltage in the refrigerator. Remove lower panel and the screw holding the shipping plate in.



3. Make sure there is no refrigerant left in the system. Refer to Page 2-3 - Steps to Recover Refrigerant.
4. Remove screws and slide out the condensing unit completely. Be careful using the condensing unit base to pull it out. Make sure not to stress or interfere with other parts.
5. Remove welded joints that connect the condensing units and the evaporator.

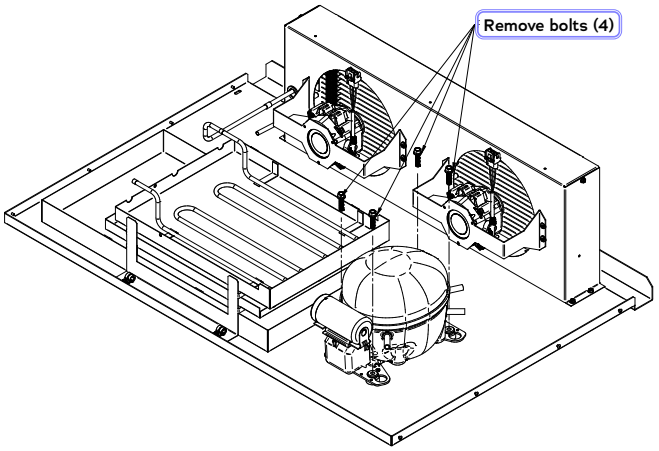


6. Disconnect all wires and harness from the compressor. Carefully clip zip tie holding the cap tube service coil.
   Note: Be careful not to damage service coil as the line contains propane.

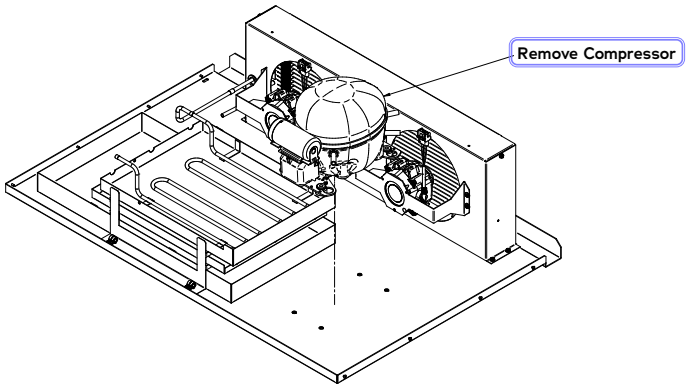


MD8DA Condensing Unit Shown

7. Take off compressor bolts.



8. Remove welded joints to the compressor and replace with new compressor.



Replace Compressor

9. Reverse the process and make sure everything is in place.

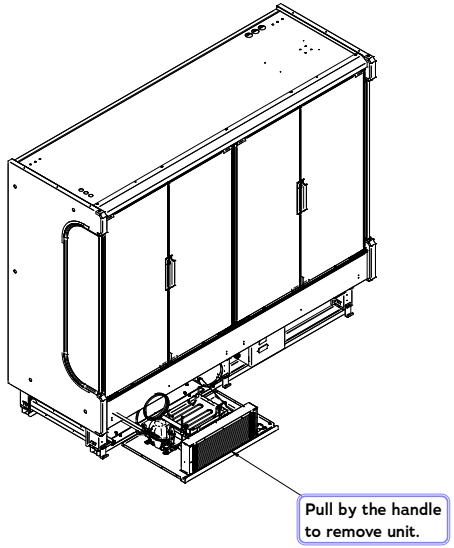
REPLACING CONDENSER MOTOR

Unplug the power cord before servicing.

Required Tools:

- Screwdriver / Philips Tip
- 1/4" Hex Key

1. Remove product and place in a refrigerated area. Make sure the power is off to the case.
2. Make sure there is no voltage in the refrigerator. Remove rear lower panel as shown in the illustration.
3. Remove screws and slide out the condensing unit. Be careful using the condensing unit base to pull it out. Make sure not to stress or interfere with other parts.



4. Disconnect condenser motor harness.

5. If a flexible extension is used, skip Step 6.

6. Release screws to partially remove venturi assembly.

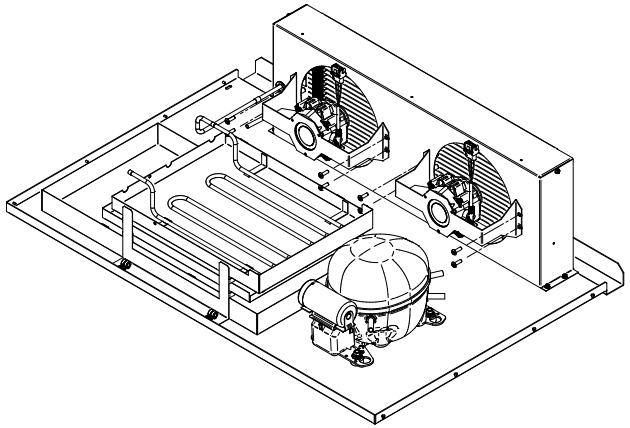
7. Release screws to remove condenser fan assembly.

8. Release motor screws to get to motor / blade assembly.

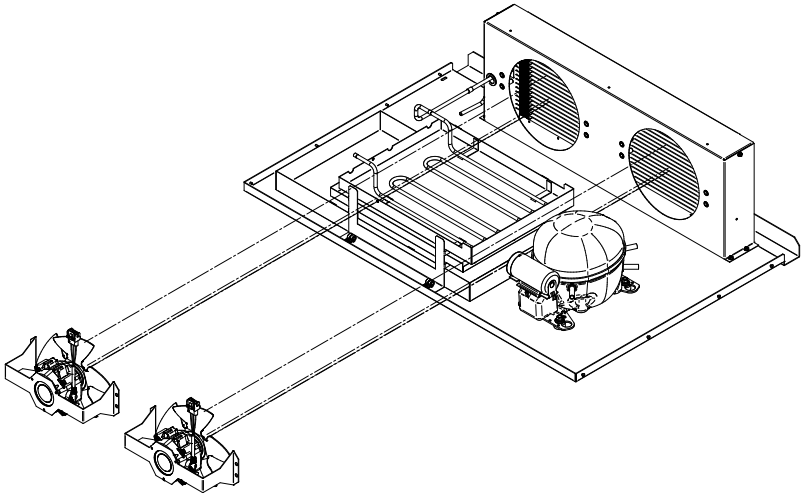
9. Change failed part.

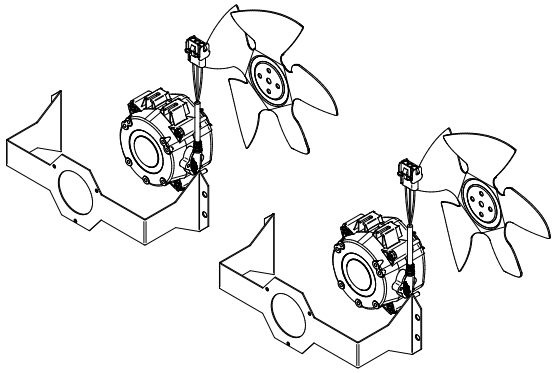
10. If the only damaged part is the motor, remove blade.

11. Reverse the process and make sure everything is in place and working.



Remove fan motor screws





Remove fan blade (Step 8)

Visual Description of Replacement Parts

P/N 3006189
Dixell XR75CX

P/N 3206860
Solid State Relay 10 Amp

P/N 3185659
Circuit Breaker

⚠WARNING

- Component parts are specifically chosen for propane exposure and therefore non-incendive and non-sparkling. Component parts shall be replaced with identical components, and servicing shall be done by factory authorized service personnel only, so as to minimize the risk of possible ignition due to incorrect parts or improper service.
- Replacement parts shall be in accordance with the manufacturer's specifications.
- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of refrigerant in the atmosphere from a leak.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

DECOMMISSIONING PROCESS

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample should be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate the system electrically.

c) Before attempting the procedure, ensure:

i. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.

ii. All personal protective equipment is available and being used correctly.

iii. The recovery process is supervised at all times by a qualified, competent person.

iv. Recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do no overfill cylinders (no more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

WARRANTY

To obtain warranty information or other support, contact your Hussmann representative or visit: https://www.hussmann.com/services/warranty.
Please include the model and serial number of the product.

For questions about your equipment please contact our Technical Support Team 1-866-785-8499
For General Support or Service Calls contact our Customer Support Call Center 1-800-922-1919
For ordering Aftermarket Warranty Parts call 1-855-Huss-Prt (1-855-487-7778) or email hussmann_part_warranty@hussmann.com

REVISION HISTORY

Revision A - September 2024 - Original Issue