SERVICE MANUAL

FOR

UNDERCOUNTER REFRIGERATORS
FREEZERS
PREPERATION TABLES/SANDWICH UNITS
GRAB N GO UNITS
UTILIZING FLAMMABLE REFRIGERANTS

Please fill in the following information for your NEW unit, carefully read the instructions in this manual and file it for future reference.

MODEL NO. _____

SERIAL NO. _____

PURCHASED FROM _____

INSTALL DATE _____

EMI Industries – Florida Division
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301 Division St., Boonton, NJ 07005

Customer Service: 800-322-9925 ext. 233

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Refrigeration Schematics:

Warnings and Cautions Before Servicing

This service guide applies to equipment that has been designed to utilize flammable refrigerant, namely R290. Thorough precautions must be taken to safely service this equipment.

Misuse of the equipment and failure to comply with the operating and servicing instructions supplied by EMI Industries can be dangerous.

Most of the equipment described in this manual operates at 115 Volt. There are some products that require a 230 Volt electrical supply. An unprotected experience with 230 volts of electricity can be extremely dangerous. Before working on electrical circuits, make sure that the power cord has been disconnected.

All refrigerant gas charges specified on the serial nameplate of the unit must be strictly adhered to and accurately measured by weight. EMI Industries will accept no responsibility for the consequences of using inaccurately measured charges.

Equipment maintenance, replacement of components and internal adjustments must **ONLY** be carried out by qualified and experienced refrigeration personnel with proper training in servicing equipment utilizing flammable refrigerants.

Safety at Work:

Service personnel are responsible for familiarizing themselves with the equipment owner's safety policy and regulations.

Disclaimer Notice:

EMI Industries reserves the right to change information in this document without notice. Updates to information in this document reflect our commitment to continuing product development and improvement.

General Information And Important Facts

This manual has been compiled to aid in the installation, operation, and maintenance of your new equipment. Please take the time to read all of the material in order to become more familiar with your equipment and its operation.

● Self contained models are self defrosting and use automatic defrost condensate water evaporating systems. All self contained mechanical cold pans must be discharged to an indirect drain.

● All models require adequate time to reach normal operating temperatures before placing any food inside the cabinet or pans if provided (see "Operation Section" for information on typical pulldown times and cabinet temperatures).

● On all open top refrigerators, it is advised to keep the top lid closed when the unit is not in use. Never operate open top models without pans in place.

The carrier signs to this effect when he accepts the product for shipping.

Important Note: **To ensure maximum compliance with respect to safety and sanitation, units are listed under re-examination service with the following agencies:**

- **U.L. (Underwriter's Laboratories)**
- **E.T.L. (Electrical Testing Laboratories)**
- **N.S.F. (National Sanitation Foundation)**

Per UL 60335-2-89 the "Test Room Climate Class" must be stated and explained. These units are classified as Climatic Class 8 [24°C (75.2°F) and 55% relative humidity]. This appliance is to be installed in accordance with the Safety Standard for Refrigerated Systems, ANSI/ASHRAE 15.

TYPE 1 DISPLAY REFRIGERATOR
RÉFRIGÉRATEUR D'AFFICHAGE DE TYPE 1

Intended for use in ambient conditions which do not exceed 75°F.
Destiné à l'utilisation en conditions ambiantes qui ne dépassent pas 23.9°C.

Installation and Location

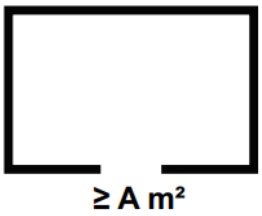
Ventilation:

The final location of the unit is very important for efficient, trouble-free operation. Environments which provide adequate quantities of clean, dry air circulation are preferred. On models with open top refrigeration, avoid locations near direct sunlight.

Important Note: **The condensing unit, located behind the louvered door panel requires an adequate air supply. Restricting the louvers reduces the flow of air creating an undesired heat load on the compressor causing an adverse operating condition.**

Important Note: **This appliance shall not be installed in public corridors or lobbies because it has a refrigerant charge greater than three times the lower flammability limit of R290 (3m3 x 0.038kg/m3 = 114 grams).**

Minimum Floor Area:



This symbol is IEC 60417-6412:2019-03 and specifies the minimum floor area required for this unit. This value is determined by the refrigerant charge in the system. Closed refrigerators are limited to 300 grams of R290. This results in a worst-case scenario for the minimum floor area to be 24 m^2. All EMI units are to be used in a minimum floor area of 24 m^2.

Leveling Unit:

Your unit is equipped with adjustable stainless steel heavy duty legs to help level your model. Each leg is screwed to a mounting plate attached to the bottom of the unit. The bullet – type leveling foot shown in Figure 1 can be turned by hand or with a wrench to level the unit.

Important Note: **During installation, make sure each leg is tightened extremely well. Loose fitting legs could cause the unit to sway when opening and closing the doors.**

If the unit is not leveled properly, it will not operate at maximum efficient conditions.

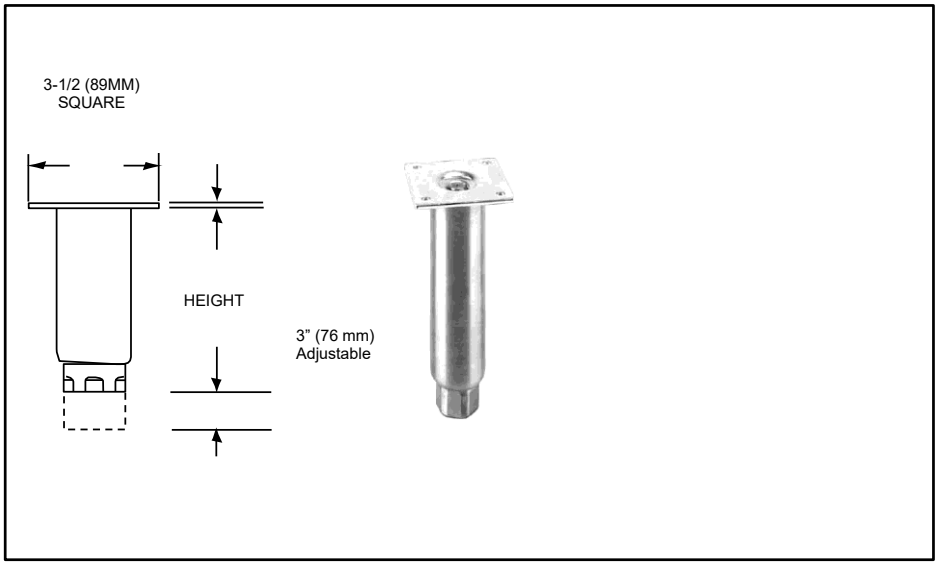


Figure 1 (Bullet – type)

Optional Casters:

If you ordered your unit with optional casters, it will be shipped to you with the casters factory installed. Each caster is a full swivel type. At least (2) of the casters provided have brakes.
Each caster can be replaced if necessary by removing the (4) bolts holding the plate to the unit. A replacement can be ordered from the factory.

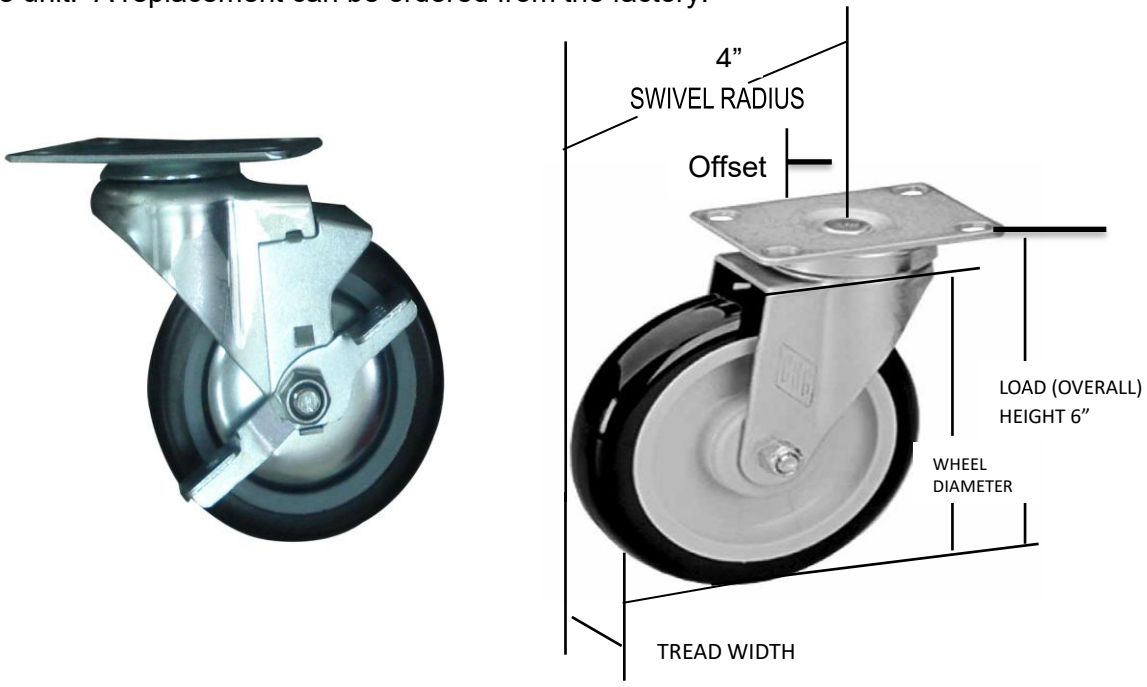


Figure 2 Swivel Plate Casters

Cabinet doors:

Refrigerator and freezer models come with self-closing doors and removable gaskets which feature a snap–in design for easy replacement. These doors have been developed for easy removal from the cabinet allowing them to be placed on a convenient work surface for gasket replacement.

1. Grooved extruded plastic strips with mitered corners are installed into foamed outer stainless steel cabinet doors.
2. V-shaped section located on bottom side of gasket and extend around entire perimeter is aligned with grooves in strips.
3. The gasket is then pressed down against the grooved strip providing a very reliable snap fit.
4. To remove gasket, simply pull away from door to separate V-shaped section of gasket from grooves in extruded strips.

Figure 3

All doors have been aligned at the factory prior to shipping. During shipping, vibration may cause doors to shift. If the doors require realignment, proceed as follows:

1. Swing door to open position and loosen, but "**Do Not Remove**" the screws holding the hinge to the body.
2. Relocate the door to its required position by hand or by tapping lightly on the door edge with a hammer and a block of wood.
3. Tighten all screws securely.

To remove the hinge assembly from the door, remove the door from the unit as explained above.

1. Remove cover plate
2. Remove all screws holding hinge block to face of unit.
3. Remove all screws that hold hinge to the door edge.
4. Install new hinge assembly to unit and door.
5. Return door to unit and realign by following procedure described above.

Installation, Service, and Decommissioning

General:

Due to the use of a flammable refrigerant, this unit must be stored in a well-ventilated room without continuously operating flames or other potential sources of ignition. In the event that the case is installed in an unventilated area, this area must be constructed such that a refrigerant leak will not stagnate and create a fire or explosion hazard.

These R290 cases are only to be used in areas with a minimum floor area of 24 m^2 (258 ft^2). These cases are not to be used in public lobbies or corridors.

For installation information reference pages 5 – 6 “Installation and Location”. For cleaning information reference pages 15 – 17 “Maintenance”**.**

Important Note: **This appliance shall not be installed in public corridors or lobbies because it has refrigerant charge greater than three times the lower flammability limit of R290 (3m3 x 0.038kg/m3 = 114 grams).**

Important Note: **This R290 case is only to be used in areas with a minimum floor area of 24 m2 (258 ft2**

Warnings:

The symbols below are used for the flammable refrigerant warning and the minimum floor area warning. These are used to inform the customer and servicer that a flammable material is being used. Additional warnings provided below:

WARNING	MISE EN GARDE
• Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.	• Ne pas utiliser de moyens autres que ceux recommandes par le fabricant pour accelerer le processus de degivrage ou pour nettoyer l'appareil.
• 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).	• L'appareil doit tre entrepose dans un local ne contenant pas de sources d'inflammation permanentes (flammes nues, appareil a gaz ou dispositif de chauffage electrique en fonctionnement, par exemple).
• Do not pierce or burn.	• Ne pas percer ou bruler.
• Be aware that refrigerants may not contain odor.	• Attention, les fluides frigorigenes peuvent ne pas dégager d'odeur.

WARNING – All ventilation openings must be clear of obstructions. Damage to the refrigeration system can occur if this is not properly done. Reference **Figure 1** for specific information on minimum clearances.

Piping:

Piping material, pipe routing, and installation shall include protection from physical damage in operation and service and be in compliance with national and local codes and standards, such as ANSI/AHSRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

The installation of pipe work shall be kept to a minimum.

Pipe work in the case of flammable refrigerants shall not be installed in an unventilated space, if that space is smaller than 24 m^2. In the case of field charge, the effect on refrigerant charge caused by the different pipe length shall be quantified.

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.

Piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system.

Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces, and that they should be checked for mechanical damage annually.
Precautions shall be taken to avoid excessive vibration or pulsation.

Service:

Cases should only be serviced by qualified technicians. These cases do utilize flammable refrigerant, so only technicians approved to work with flammable refrigerants should service these cases.

An approved flammable gas leak detector must be used before and during the servicing of a case that utilizes a flammable refrigerant. This must be kept on the entire time the case is being serviced.

Leak detectors must be properly calibrated before use. The servicer must always verify they are working in a well-ventilated area. The 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 to the atmosphere. Before servicing, the area around the case must be surveyed to make sure that there are no flammable hazards or ignition risks.

If any hot work (i.e. brazing) is being done to the case, an appropriate fire extinguisher must be available on hand. Before any braze work can be done to this system, all of the refrigerant must be recovered, or vented out of the system.

No person carrying out work in relation to a refrigeration system utilizing a flammable refrigerant shall use any sources of ignition, which may lead to the risk of fire or explosion. All possible ignition sources including cigarette smoking, should be kept sufficiently far away from the servicing location. “No Smoking” signs must be displayed while servicing.

Recovery of R290 is not required per EPA regulations. Propane is a Hydrocarbon, and it can be vented into the atmosphere. The servicer must always check local or national codes and regulations before venting these gases. If the gas is being vented, take the following precautions below before venting:

- Move the case to an outdoor area before the venting begins
- Use a hose ling enough to discharge to the outside air

If a recovery cylinder is being used to pull the refrigerant out of the case, the servicer must ensure they are using Hydrocarbon approved recovery equipment.

All refrigerant must be recovered from the case before it is disposed of. Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed.

If electrical components are being replaced, they must be fit for the purpose and to the correct specifications. 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 must be reported to the owner of the equipment, so all parties are advised.

Initial safety checks for electrical component installation include:

- Verifying that capacitors have been discharged in a safe manner to avoid any possibility of sparking.
- There are no exposed components or wiring while charging, recovering, or purging the system.
- There is continuity of the earth bonding.

During repairs to sealed components, all electrical supplies must be disconnected from the equipment being worked on prior to the removal of the sealed component. If it is necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection must be located at the most critical point to warn of any potentially hazardous situations.

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, and damage to seals. Ensure that the apparatus is mounted securely. Ensure that the 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.

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 working on while live in the presence of flammable atmosphere. Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of refrigerant in the atmosphere from a leak.

Checks should be done on cabling to ensure that it will not be subjected to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The checks shall also consider the effects of aging or continual vibration from sources such compressors or fans.

If piercing valves are used to infiltrate the system, they must be removed prior to completion of service, and the system must be properly sealed with red indicators applied to each process tube.

Verify that the system is free of any leaks using approved and calibrated flammable gas leak detector.

At all times, the manufacturer’s maintenance and service guidelines must be followed. If in doubt, consult the EMI’s technical department for assistance at 800-322-9925 ext. 233.

Startup Procedure

Before starting your unit and placing food inside, the interior of the cabinet should be carefully cleaned. Follow the sequence below:

1. Using a sponge, wash with mild warm water solution.
2. Clean with a soap and warm water solution.
3. Rinse with clear water.
4. Dry with soft cloth.

Important Note: **Never use harsh detergents, cleaners, scouring powders or chemicals when cleaning your model. Failure to dry interior surfaces after cleaning may result in streaking or staining of the metal.**

Electrical Connections:

The refrigerator or freezer must be plugged into its own dedicated electrical outlet that can supply full voltage as stated on the serial nameplate. Certify this information matches the electrical characteristics at the installation location.

1. 115 Volt, 60 Hz, 1 Phase Model. These models are provided with a U.L. approved power cord and polarized NEMA plug (5-15P or 5-20P style).

2. 230 Volt, 60 Hz, 1 Phase Model. These models are provided with a power cord and plug or an electrical "junction box" located in the condensing unit compartment.

Important Note: **The condensing unit supplied with all self-contained models is designed to operate with a voltage fluctuation of ± 10 % of the voltage indicated on the cabinet serial nameplate. Full voltage of the correct service, on an individual line not affected by the operation of other electrical appliances, must be available to the condensing unit at all times. Burnout of the compressor can occur due to exceeding high or low voltage limits.**

After your model has been installed, leveled, cleaned, and electrically connected in accordance with this manual the system should run smoothly in accordance with generally accepted commercial standards.

If any unusual noises are heard, turn the unit off immediately and check for any obstructions of the condenser or evaporator fans. Fan motors, fan blades or fan housings can be jarred out of position through rough handling in transit or during installation.

Remote Applications:

All models are also available for purchase as remote units. These units are provided with the following features:

- Expansion valve within the evaporator housing.
- Liquid and suction lines brazed closed.
- Refrigeration system supplied with nitrogen holding charge.

Important Note: **Installation of the refrigeration accessories, condensing unit, and electrical hook-up should be performed by qualified refrigeration personnel from a competent refrigeration company only. The wiring must conform to all local electrical codes.**

Operation

Both refrigerators and freezers require an appropriate amount of time to reach normal operating temperatures before food should be placed into the cabinet or pans (if provided). Pans should be in installed with top lid closed during initial pulldown.

Model	Pull down time	Factory design cabinet temperature range
Refrigerators	**1 hour**	**36^0 to 40^0 F (2.2^0 to 4.4^0C)**
Freezers	**2 hours**	**0° - 10° F (-17.8º to – 12.2º C)**

Table 1: Refrigerator Temperature Design

REFRIGERATION SYSTEM AND ADJUSTMENT:

All self-contained refrigerators are designed, and factory set to maintain an average cabinet temperature of 37º F. If an adjustment is necessary to maintain the temperature range shown in ***Table 1***, refer to the following controls and instructions for the Digital Controller used for refrigerators shown in ***Figure 5***.

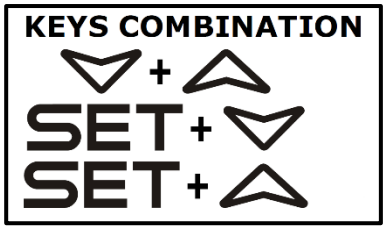
Figure 5: Dixell Controller

Press this button to display the target temperature set point. While in programming mode, this button is used to select a parameter or confirm an operation.

Press this button to start a manual defrost.

In programming mode, pressing this button browses the parameter codes or increases the displayed value on the controller screen.

In programming mode, pressing this button browses the parameter codes or decreases the displayed value on the controller screen.



Locks and unlocks the keyboard.

Changes the controller settings to programming mode.

Returns the controller to room temperature display.

LED	MODE	SIGNIFICANCE
❄	On	Compressore enabled
	Flashing	Anti short cycle delay enabled (AC parameter)
❄	On	Defrost in progress
	Flashing	Dripping in progress
°C	On	Measurement unit
	Flashing	Programming mode
°F	On	Measurement unit
	Flashing	Programming mode

Table 2: Temperature Controller LED Symbol Definitions

HOW TO SEE THE SET POINT

1. Push and immediately release the **SET** key, the set point will be showed;
2. Push and immediately release the **SET** key or wait about 5s to return to normal visualisation.

HOW TO CHANGE THE SETPOINT

1. Push the SET key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the "°C" or "°F" LED starts blinking;
3. To change the Set value push the o or n arrows within 10s.
4. To memorise the new set point value push the SET key again or wait 10s.

HOW TO START A MANUAL DEFROST (ONLY XR02CX)

Push the **DEF** ❄ key for more than 2 seconds and a manual defrost will start

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the **SET**+ ⌄ keys for 3s ("**°C" or "°F"** LED starts blinking).
2. Select the required parameter. Press the "**SET**" key to display its value
3. Use ⌃ or ⌄ to change its value.
4. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET**+ ⌃ or wait 15s without pressing a key.
NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

Figure 6: Temperature Controller Instructions

Important Note: **All refrigerators are designed with an automatic "off-cycle" defrost system. Defrosting occurs automatically when the compressor is not operating during an off-cycle. Do not set the thermostat too cold where the cabinet temperature can fall below 34º F.**

Freezer System and Adjustment:

All self-contained freezers are designed and factory set to maintain an average cabinet temperature of 5º F. If an adjustment is necessary to maintain the temperature range shown in **Table 1**, refer to the following controls and instructions for the Digital Controller used for freezers shown in **Figure 7**.

Figure 7

All freezers are designed for the purpose of holding pre-frozen food and freezing small quantities of fresh food. They are not to be used as fast or blast freezers. **Do not** attempt to freeze bulk quantities of fresh foods.

Important Note: **Further adjustments outside of the factory design temperature range must be made by a qualified refrigeration technician only.**

Cold Rail/Mechanical Cold Pan:

If the unit has a cold rail, a switch is provided to turn it on or off. Typically, the switch, shown in **Figure 8**, is mounted on the front apron above the condensing unit compartment or inside the compartment housing.

The rail temperature can be changed to a colder or warmer setting by adjusting the temperature controller shown in **Figure 9**. This controller will present a temperature reading that is significantly lower than the temperature of the air in the rail due to the position of the temperature probe. Adjust in small increments until the desired temperature is reached in the rail section.

Note: The defrost time on the cold rail is controlled manually by turning off the rail switch until the walls are frost free.

Figure 8

Figure 9

Important Note: **Temperature controller for a cold rail will read significantly lower than the actual temperature of the air in the cold rail. An accurate and precise thermometer should be used to check the temperature of the air in the cold rail. Adjustments should be made in small increments until the desired temperature of air in the cold rail is reached.**

Evaporator Assembly:

All under counter refrigerators, freezers, and preparation tables have an easily accessible, easily serviceable, forced-air evaporator assembly.

Important Note: **Evaporator air flow fan must be kept free from any obstruction.**

Multiple Evaporators:

Some units are supplied with more than one evaporator blower and/or cold pan. These designs will have a low pressure switch located next to the compressor. When the temperature of each evaporator/cold pan is satisfied, the temperature controller will close a solenoid valve stopping refrigerant flow into the evaporator/cold pan. If all solenoid valves are closed, the compressor will pump down until the low pressure switch turns off the compressor.

Refrigeration schematics with low pressure switch are shown in the Appendix.

Interior Accessories

The standard interior accessory package that is supplied from the factory with your unit consists of standard pilaster strips and pilaster clips. (4) clips per shelf and (1) epoxy coated shelf per section.

In addition to the standard epoxy coated shelf, custom perforated stainless steel shelving can also be provided.

Maximum loading of each shelf is 200 lb.

Shelving Installation:

Pilaster strips which support the shelving are secured to the cabinet walls with thumb screws which allow the strips to be readily removed for cleaning without the use of tools. Shelf clips are easily installed by inserting them into the pilasters at the desired shelf location and shelf installation is as simple as placing the shelf on the clips. See Figure 11.

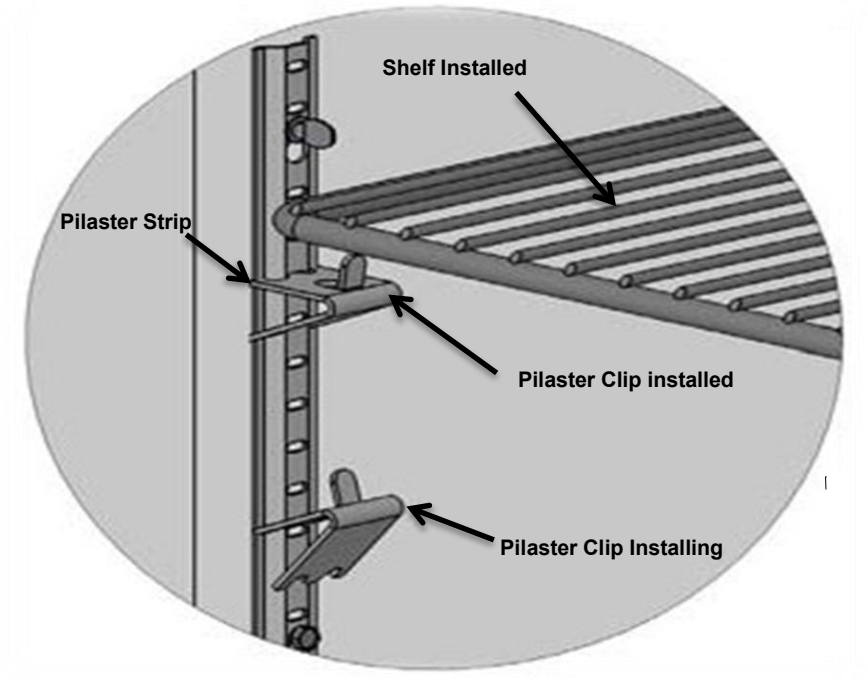


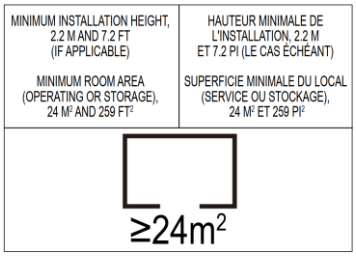
Figure 13

Safety Precautions

The following safety precautions should be followed when operating any appliances:

1. Always disconnect the power cord before attempting to replace light bulb or clean any equipment to avoid electrical shock.
2. **Never** unplug the unit by pulling on the power cord. Always grip the plug firmly and pull straight out from the receptacle to prevent damaging the power cord.
3. Disconnect the power cord when the appliance is not in use.
4. **Do not** attempt to service this unit yourself as removing any covers may cause exposure to dangerous voltage.
5. Always route the power cord so that it is not likely to be walked on or pinched by other appliances. **Never** use extension cords.
6. **Do not** overload outlets with more than one appliance. This can result in fire or electrical shock.
7. **Do not** plug the unit into an electrical outlet controlled by a wall switch to prevent the refrigerator/freezer from being turned off accidentally.
8. Your model is equipped with a grounded and polarized plug. **Do not** defeat the purpose of this plug by removing the ground post or using a non-polarized adapter without properly grounding the outlet.
9. When a replacement part is required, always insist on factory authorized parts only.
10. **Never** store explosive substances such as aerosol cans with flammable propellant in this application.
11. **Never** use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

Safety Labels:



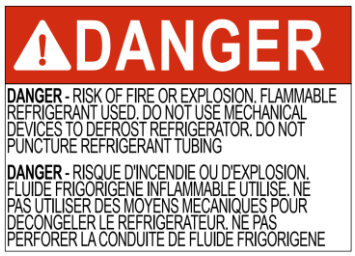
Minimum Room Area Label

Applied near all exposed refrigerant tubing.

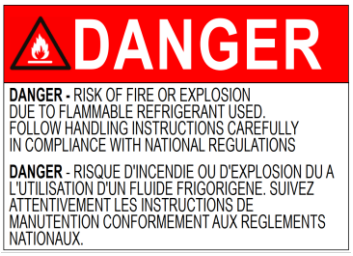
Applied to outside of unit.

Applied to inside of compressor housing.

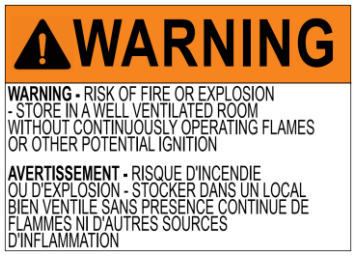
Applied to outside of unit, near the machine compartment.



Applied near evaporator.



Applied to outside of packing box.



Applied to outside of unit.

Applied to rear of unit near power cord.

Maintenance

Periodic Cleaning Procedure:

It is best to clean your refrigerator or freezer when the product load is at its lowest level inside your cabinet. To clean the interior or exterior cabinet surfaces, the following procedure is recommended:

1. Disconnect your model from its power supply and remove all food products from inside the cabinet.
2. Open all doors and allow the cabinet to reach room temperature. Remove all accessories (shelves, racks, pilasters, clips, etc.). Wash the interior, exterior, and accessories with a soap and warm water solution. Rinse thoroughly with clear water and dry with a soft, clean cloth.
3. Allow condensate evaporator heating element and refrigerant lines to cool. Remove any debris from the condensate collection pans. Use warm water to clean condensate collection pans, condensate heating elements (where present), and condensate heating refrigerant tubing with a soft, clean cloth.
4. Return all accessories to their respective positions and reconnect electric power supply to the unit.
5. Energize unit and allow appropriate amount of time to reach normal operating temperature before returning food product to cabinet (see “operation Section” for pulldown times and cabinet temperatures).

Important Note: **Failure to dry all surfaces completely may cause water stains or streaking on stainless steel finish.**

Precautions:

1. Never use harsh detergents, cleaners, scouring powders, or chemicals when cleaning your unit.
2. Strong bleaches tend to corrode many materials and should never come in contact with stainless steel.
3. Tincture of iodine, or iron should not come in contact with stainless steel. These solutions, which cause stainless steel to discolor, should be rinsed off immediately if contact occurs.
4. Gritty, hard abrasives will mar the finish of stainless steel and are not recommended.

Alternate Material Care:

Your refrigerator or freezer may be constructed with materials other than stainless steel. Alternate materials and their cleaning instructions are shown below:

- **Wood/Laminate**

Cleaning Instructions:
Wipe dirty surface with a clean cloth dampened with a mild soap/ detergent and water solution (most household dishwashing detergents are acceptable).

Warning:
Excessive prolonged exposure to direct sunlight, high temperatures and high humidity should be avoided as they can damage the finish. Avoid ammonia based and/or silicone-containing cleaners as they can cause damage or discoloration to the finish over time.

- **Solid Surface**

Cleaning Instructions:
Routinely clean surfaces with a clean cloth dampened with a mild soap/ detergent and water solution (most household dishwashing detergents are acceptable).
If you prefer, use an ammonia based cleaner, such as Windex or 409, and wipe dry.

Warning:
Do not expose surface to harsh chemicals, such as paint removers, turpentine, nail polish removers or stove and drain cleansers. If contact occurs, immediately wash surface off with water.

General Preventative Maintenance:

The performance of the air cooled condenser coil located inside of the condensing unit compartment of your new unit depends primarily on the amount of air passing through the condenser fins.

1. Your refrigerator or freezer will run more efficiently, consume less energy, and provide maximum trouble free service throughout its lifetime if the condenser is kept clean and an adequate supply of clean air is provided at all times. Once a month, inspect the condenser coil and check for blockage. If the condenser coil is dirty or blocked, disconnect the power supply to your unit and remove the dirt from the condenser fins. Using a vacuum cleaner with a brush attachment may help in the cleaning process. After cleaning, restore electrical service to your unit.

2. Each unit has a drain tube located inside the cabinet that removes the condensation from the evaporator coil housing and routes it to an external condensate evaporator pan. The drain tube can become loose or disconnected during normal use. If you notice water accumulation on the inside of the unit, be sure the drain tube is connected to the evaporator drain pan. If water is collecting underneath the unit,

make sure the end of the drain tube is in the condensate evaporator pan. The leveling of the unit is important as the units are designed to drain properly when level. Be sure all drain lines are free of obstructions.

3. Over time and with heavy-use doors, the hinges may become loose. If this happens, tighten the screws that mount the hinge brackets to the frame of the unit. Loose or sagging doors can cause the hinges to pull out of the frame, which may damage both the doors and the hinges. In some cases this may require qualified service agents or maintenance personnel to perform repairs.

4. Wipe casters with a damp cloth monthly to prevent corrosion.

Parts and Service:

When contacting the factory for authentic replacement parts provide the following:

1. Cabinet model
2. Serial number (located on the serial nameplate inside cabinet wall)
3. Date of purchase

Trouble Shooting and Service Guide

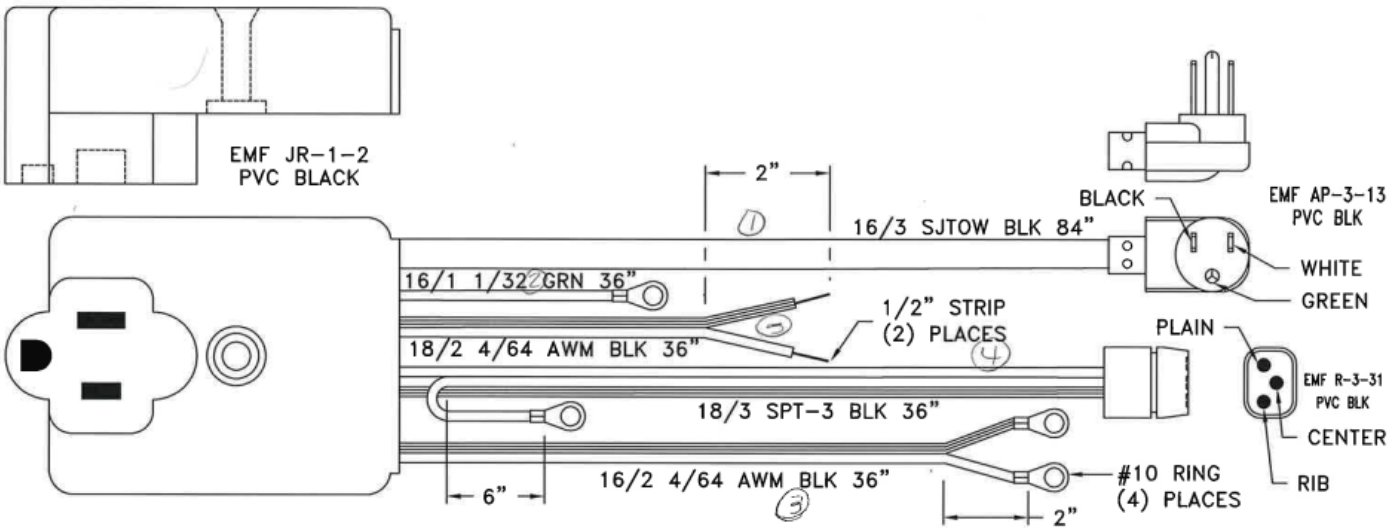
Use the following as a guide to determine possible cause and corrective action procedure for customer issues.

SYMPTOM	POSSIBLE CAUSE	PROCEDURE
Unit doesn't run	1. No power to unit 2. Fuse blown or circuit breaker tripped 3. Temperature control set too high 4. Temperature control “off” 5. Cabinet in defrost cycle (freezer models)	1. Make sure main power cord is plugged in 2. Replace fuse or reset circuit breaker 3. Set control to lower temperature 4. Turn temperature control on 5. Wait for defrost cycle to finish
Unit short cycles	1. Overload repeatedly tripping due to extreme high side pressure	1. Insufficient airflow due to dirty condenser coil. Clean coil.
Unit runs continuously or long periods of time.	1. Excessive heat load placed into cabinet 2. Prolonged door openings or door(s) ajar 3. Evaporator coil iced, reducing airflow 4. Condenser coil dirty 5. Gaskets not sealing	1. Allow sufficient time for removal of latent heat 2. Make sure door(s) are closed when not in use 3. Turn unit off and defrost evaporator coil 4. Clean coil 5. Check gasket condition. Adjust door or replace gasket if necessary
Product zone temperature too high	1. Temperature control set too high 2. Poor air circulation in cabinet 3. Dirty condenser coil 4. Excessive amount of warm product placed in cabinet 5. Prolonged door openings or door(s) ajar. 6. Evaporator coil iced over	1. Set control to lower temperature 2. Re arrange product load to improve air circulation 3. Clean coil 4. Allow adequate time for product to cool down 5. Make sure door(s) are closed when not in use. Avoid prolonged door openings. 6. Turn unit off and allow coil to defrost. Make sure control is not set too cold. Check condition of door gaskets
Product zone temperature too cold	1. Temperature control set too low	1. Set control to higher temperature
Rail not cold enough, base temperature is okay	1. Rail temperature control set too high 2. Dirty condenser coil	1. Set control to lower temperature 2. Clean coil
Base not cold enough, rail temperature is okay	1. Base temperature control set too high 2. Dirty condenser coil	1. Set control to lower temperature 2. Clean coil
Water leak inside unit	1. Condensate drain tube from evaporator housing not installed properly 2. Unit not level	1.Check operations manual for installation 2. Make sure unit is level or pitched back slightly

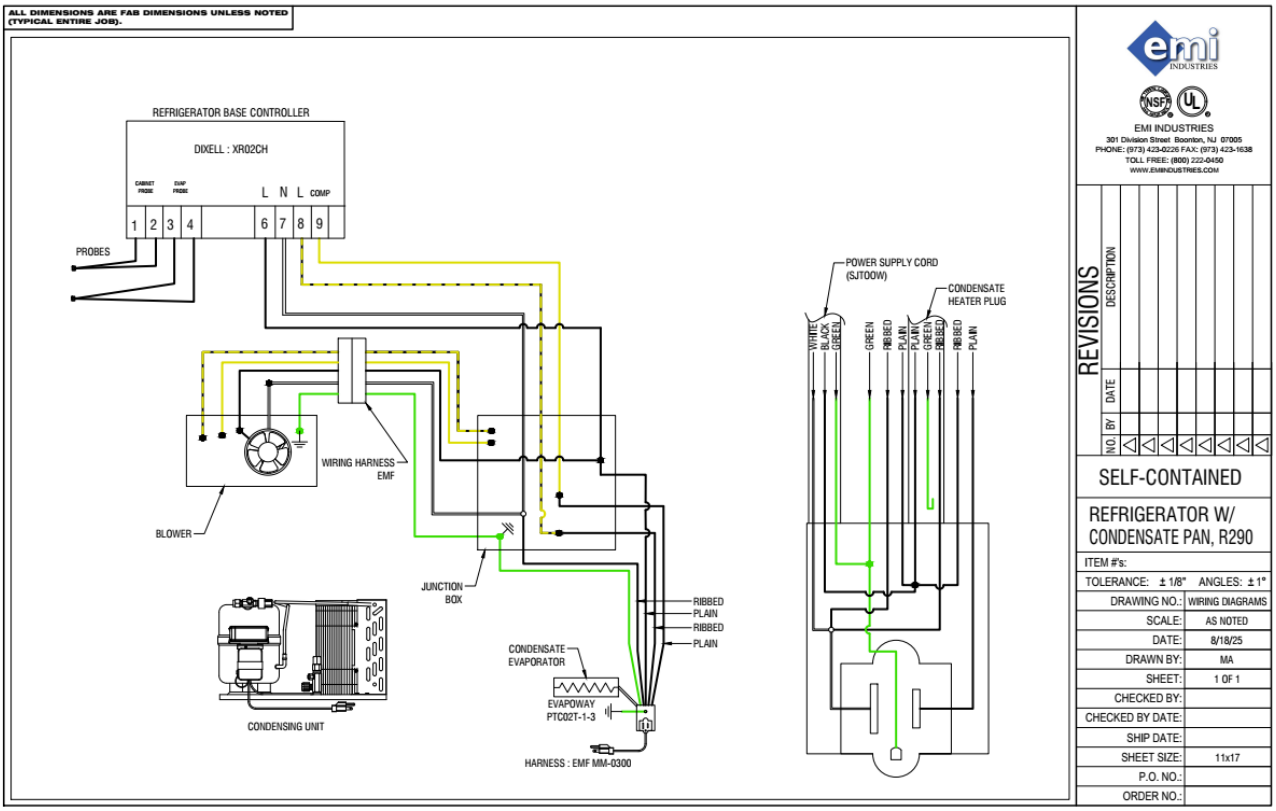
Compressor Related Service Issues

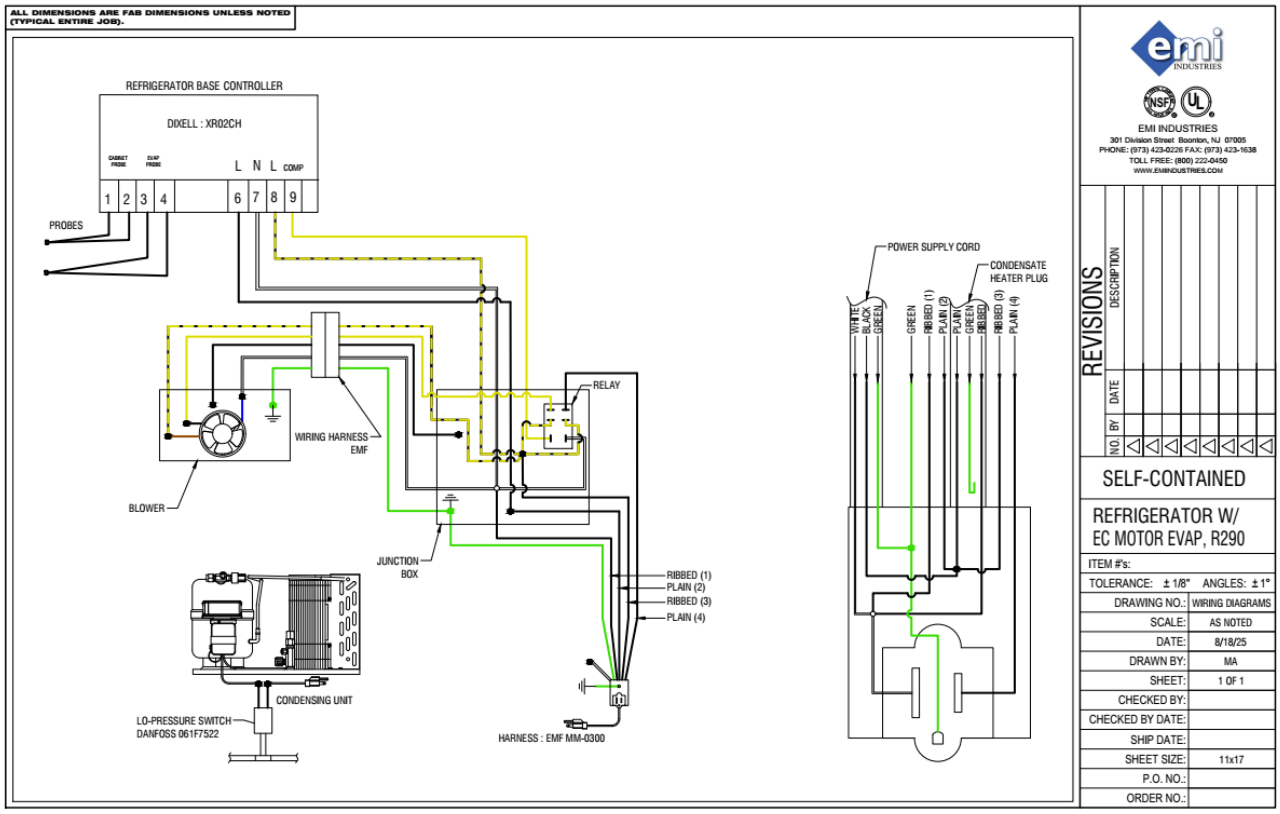
SYMPTOM	POSSIBLE CAUSE	PROCEDURE
Condensing unit will not start. Hums but trips on overload protector.	1. Improperly wired. 2. Low voltage to unit. 3. Start capacitor defective. 4 Relay defective. 5 Compressor motor has a shorted or open winding. 6. Internal mechanical issues inside compressor.	1.Compare wiring to diagram and check for loose or broken connections. 2.Determine cause and correct. 3.See “Start Capacitor Issues” below. Replace if necessary. 4.See “Relay Issues” below. Replace if necessary. 5.Replace compressor. 6.Replace compressor.
Condensing unit starts and runs, but short cycles on overload protector.	1.Overload protector defective. 2.Run capacitor defective. 3.Excessive discharge pressure. 4.Insufficient air supply.	1. Replace overload. 2. See “Run Capacitor Issues” below. Replace if necessary. 3.Check restrictions in refrigeration system from compressor to condenser coil. 4.Check airflow path to condenser inlet. Clear any obstructions
Start capacitor open, shorted, or out of specification	1. Relay contacts pitted, sticking, or not opening properly. 2. Prolonged starting cycle due to: a. low voltage to unit b. starting load too high 3. Low capacitance	1.Clean contacts or replace relay. Replace Start capacitor. 2.Replace start capacitor after: a. determine cause for low voltage and correct. b. evacuate and recharge 3.Measure capacitance and replace if out of specification.
Run capacitor open, shorted, or out of specification	1. Low capacitance 2. Excessive high side voltage (exceeds 110% of rated maximum).	1. Measure capacitance and replace if out of specification. 2. Determine cause and correct.
Relay defective	1. Contacts pitted or sticking due to voltage exceeding 110% of maximum or less than 90% of minimum voltage. 2.Loose or vibrating mounting position. 3.Loose wiring on relay.	1.Determine cause and correct voltage issue. Clean or replace relay if necessary. 2.Secure to a rigid mounting position. 3.Tighten all wiring screws.

Wiring Harness:



Wiring Schematics:





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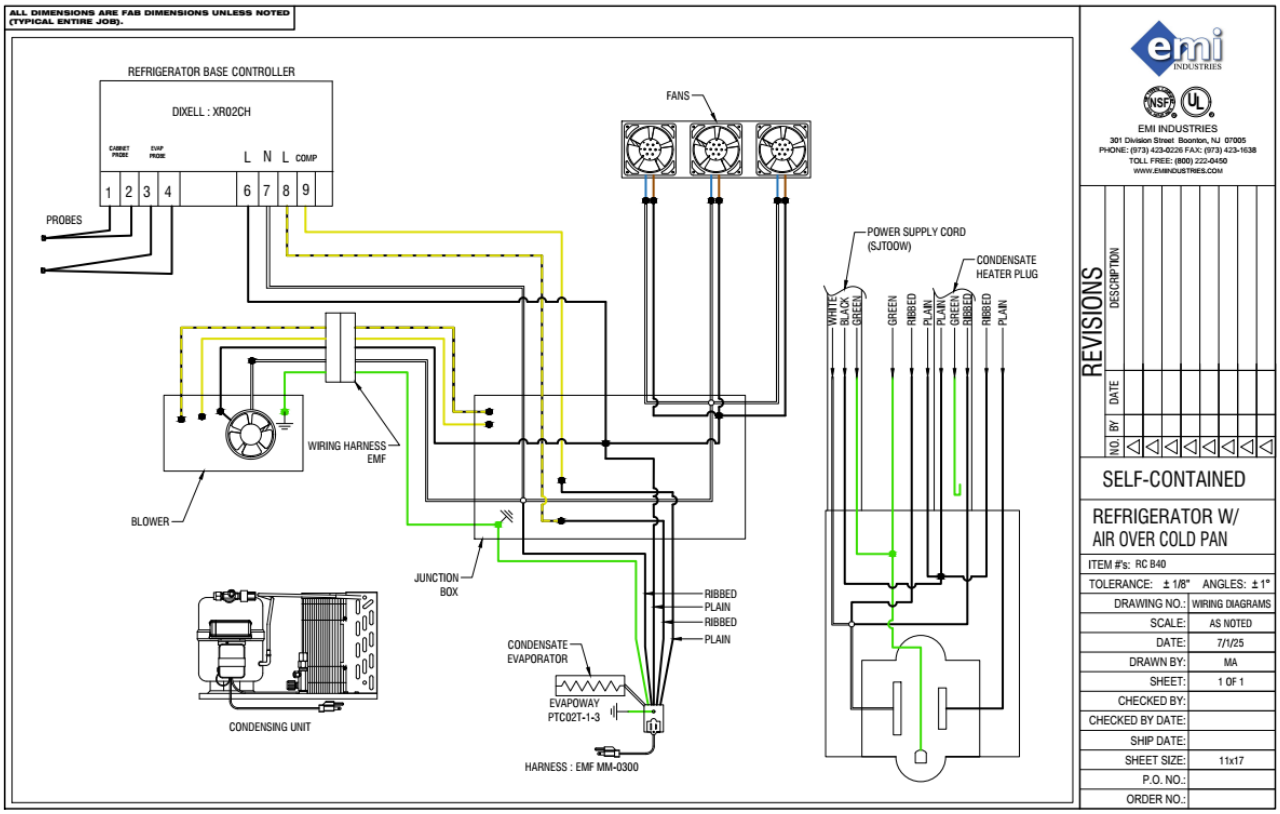
REVISIONS

NO.	BY	DATE	DESCRIPTION

SELF-CONTAINED

REFRIGERATOR W/ EC MOTOR EVAP, R290

ITEM #'s:	
TOLERANCE: ± 1/8" ANGLES: ± 1°	
DRAWING NO.:	WIRING DIAGRAMS
SCALE:	AS NOTED
DATE:	8/18/25
DRAWN BY:	MA
SHEET:	1 OF 1
CHECKED BY:	
CHECKED BY DATE:	
SHIP DATE:	
SHEET SIZE:	11x17
P.O. NO.:	
ORDER NO.:	



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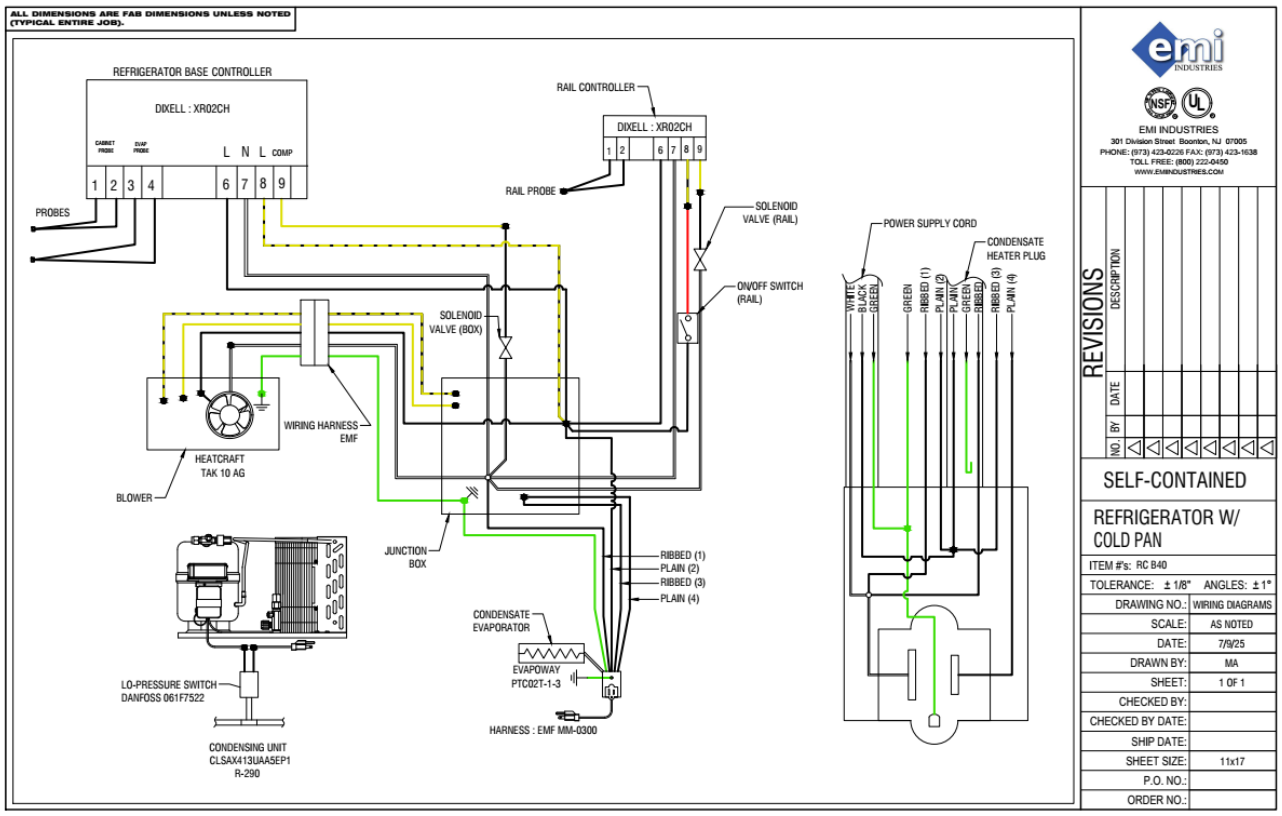
REVISIONS

NO.	BY	DATE	DESCRIPTION

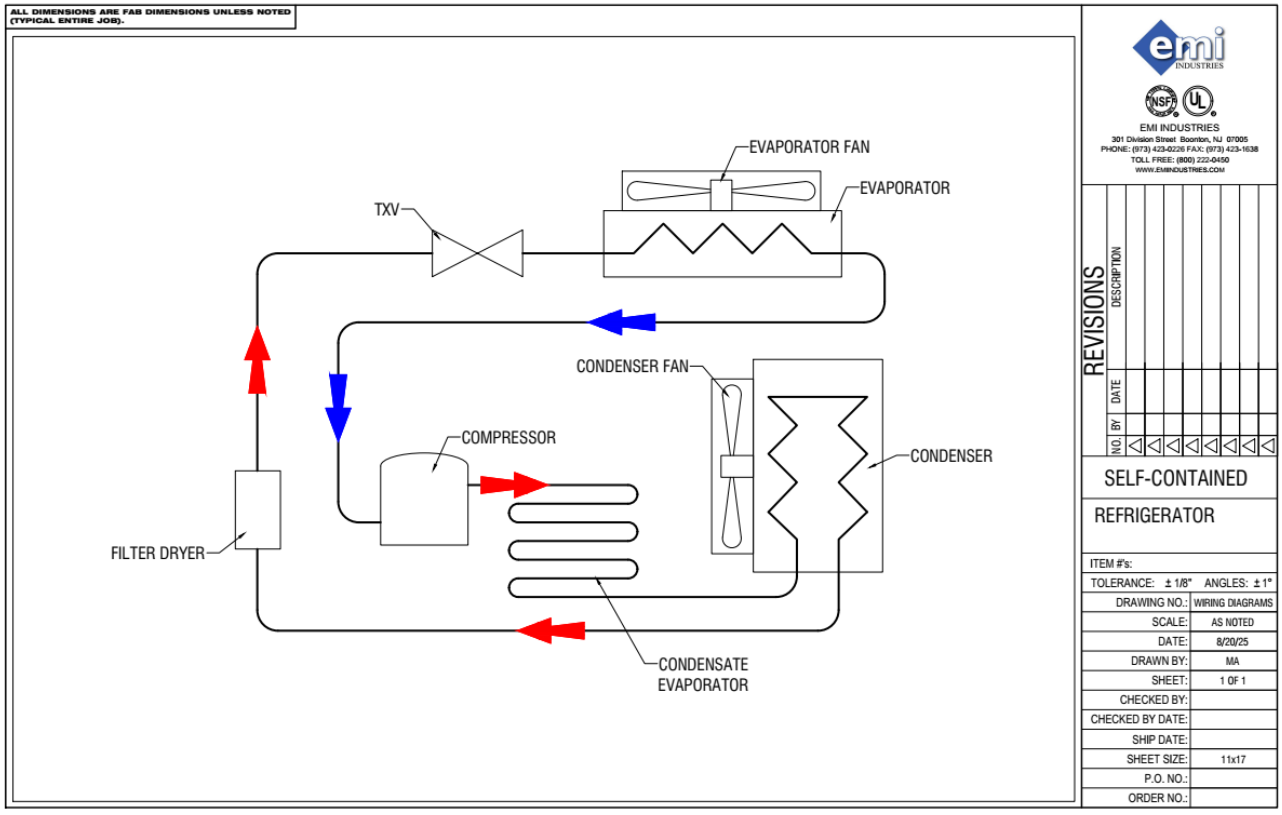
SELF-CONTAINED

REFRIGERATOR W/ AIR OVER COLD PAN

ITEM #'s: RC B40	
TOLERANCE: ± 1/8" ANGLES: ± 1°	
DRAWING NO.:	WIRING DIAGRAMS
SCALE:	AS NOTED
DATE:	7/1/25
DRAWN BY:	MA
SHEET:	1 OF 1
CHECKED BY:	
CHECKED BY DATE:	
SHIP DATE:	
SHEET SIZE:	11x17
P.O. NO.:	
ORDER NO.:	



Refrigeration Schematics:



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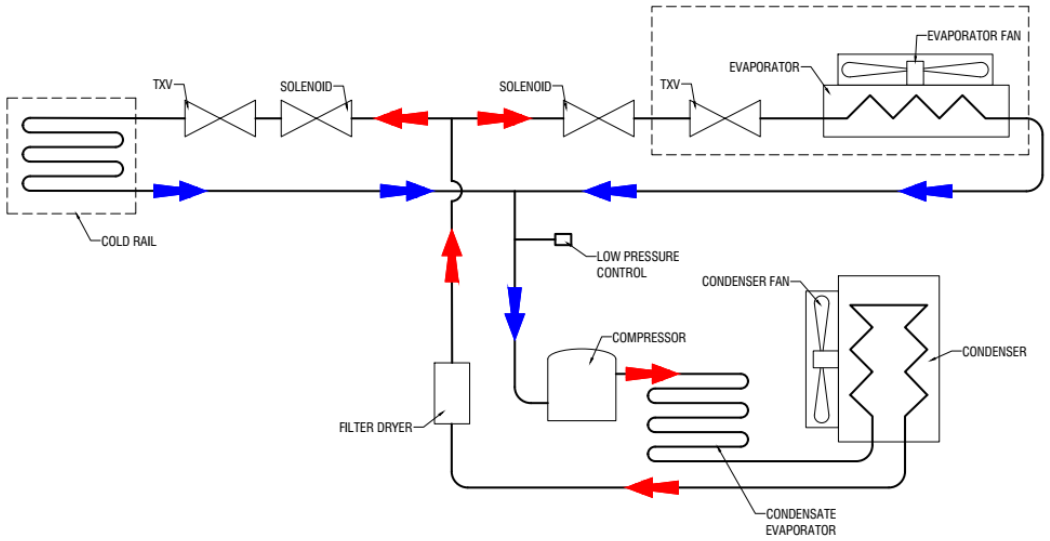

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REVISIONS

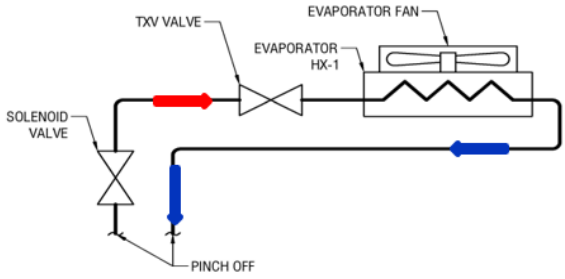
NO.	BY	DATE	DESCRIPTION

SELF-CONTAINED

REFRIGERATOR W/ COLD RAIL

ITEM #'s:	
TOLERANCE: ±1/8" ANGLES: ±1°	
DRAWING NO.:	WIRING DIAGRAMS
SCALE:	AS NOTED
DATE:	8/20/25
DRAWN BY:	MA
SHEET:	1 OF 1
CHECKED BY:	
CHECKED BY DATE:	
SHIP DATE:	
SHEET SIZE:	11x17
P.O. NO.:	
ORDER NO.:	

ALL DIMENSIONS ARE FAB DIMENSIONS UNLESS NOTED (TYPICAL ENTIRE JOB).



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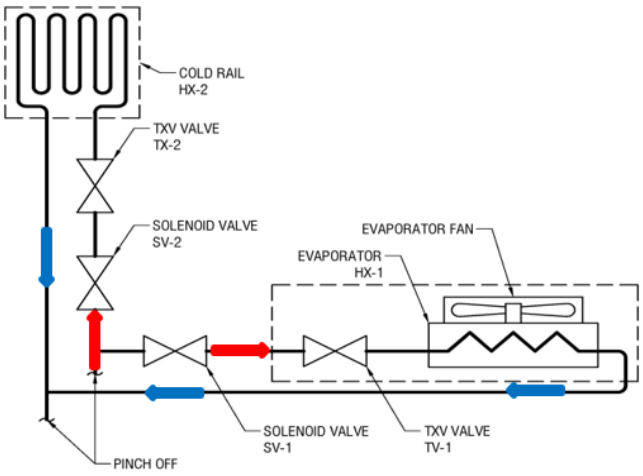
REVISIONS

NO.	BY	DATE	DESCRIPTION

REMOTE REFRIGERATOR

ITEM #'s:	
TOLERANCE: ±1/8" ANGLES: ±1°	
DRAWING NO.:	REFRIGERATION
SCALE:	AS NOTED
DATE:	6/19/18
DRAWN BY:	DO
SHEET:	
CHECKED BY:	
CHECKED BY DATE:	
SHIP DATE:	
SHEET SIZE:	8.5 x 11
P.O. NO.:	
ORDER NO.:	

ALL DIMENSIONS ARE FAB DIMENSIONS UNLESS NOTED (TYPICAL ENTIRE JOB).



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REVISIONS

NO.	BY	DATE	DESCRIPTION
△			
△			

REMOTE

REFRIGERATOR W/ RAIL OR COLD PAN

ITEM #'s:	
TOLERANCE: ±1/8"	ANGLES: ±1°
DRAWING NO.:	REFRIGERATION
SCALE:	AS NOTED
DATE:	6/19/18
DRAWN BY:	DO
SHEET:	
CHECKED BY:	
CHECKED BY DATE:	
SHIP DATE:	
SHEET SIZE:	8.5 x 11
P.O. NO.:	
ORDER NO.:	

Appendix

Minimum Current Ampacity (MCA) Calculation:

Per UL 60335-2-89, Section 7.1DV.2, b),

$$\boldsymbol{MCA = (1.25 * LOAD_1) + (1.25 * LOAD_3) + LOAD_2 + LOAD_4}$$

Where,

***MCA* = Minimum Current Ampacity**
***LOAD*$_1$ = Current of largest motor or branch circuit section current, if marked**
***LOAD*$_2$ = Sum of currents of all motors not including largest motor**
***LOAD*$_3$ = Current of electric resistance heater**
***LOAD*$_4$ = Any other load rated 1.0 A or more**

Maximum Rating of Overcurrent Protective Device (MOP) Calculation:

Per UL 60335-2-89, Section 7.1DV.3,

$$\boldsymbol{MOP = (2.25 * LOAD_1) + LOAD_2 + LOAD_3 + LOAD_4}$$

Where,

***MOP* = Maximum rating of overcurrent protective device**
***LOAD*$_1$ = Current of largest motor or branch circuit section current, if marked**
***LOAD*$_2$ = Sum of currents of all motors not including largest motor**
***LOAD*$_3$ = Current of electric resistance heater**
***LOAD*$_4$ = Any other load rated 1.0 A or more**

Product Limited Warranty

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EMI shall not be responsible for economic loss, profit loss, including without limitation, losses or damages arising from food or product spoilage claims, whether or not, they were cause by refrigeration failure.