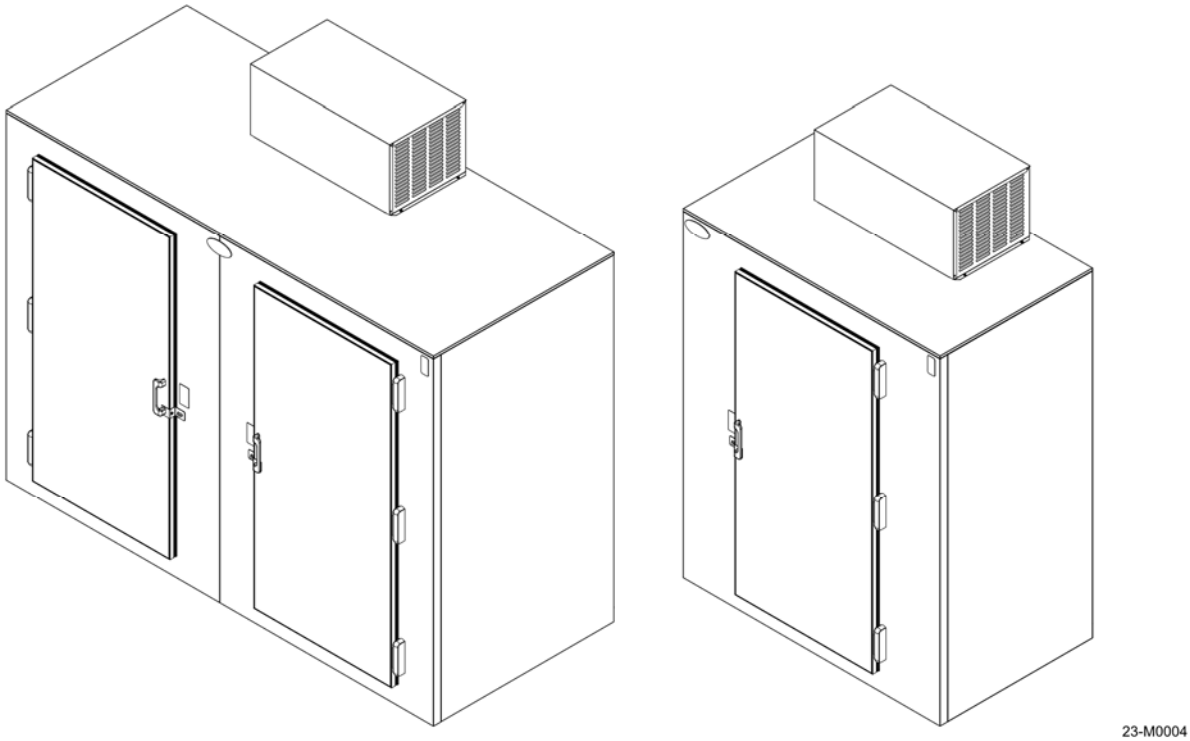

23-M0004

S85 & S40
INSTALLATION, OPERATION AND SERVICE MANUAL

MADE IN THE USA
100% EMPLOYEE OWNED

1070340R2 12-23

Leer, Inc.
206 Leer Street
P.O. Box 206
New Lisbon, WI 53950
1-800-766-5337
www.leerinc.com

This manual provides information and procedures to safely operate and maintain your LEER product. For your own safety and protection from physical injury, carefully read, understand and observe the safety instructions described in this manual. Keep a copy of this manual with the unit at all times. Additional copies are available from LEER, Inc. or can be found by scanning the QR code on the unit or the front cover of this manual. The information contained in this manual was based on equipment in production at the time of publication. LEER, Inc. reserves the right to change any portion of this information without notice.

UNIT MODEL NUMBER:_____

UNIT SERIAL NUMBER:_____

Leer, Inc. is 100% Employee-Owned and we believe it's those employee owners that make a distinctive difference, to Leer's dedication to quality and service across all our product lines, because you have the commitment not just of one owner - but over 225 owners.

Our Mission

To partner with our customers to design and develop the highest quality, innovative, temperature-controlled storage solutions to meet their ever-changing needs and to provide our customers exceptional quality and outstanding customer service at every stage of every interaction.

WARNING: This product can expose you to chemicals including nickel, which is known in the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov.

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Section 1 – Safety and General Information

1.1 Safety Rules

Study these SAFETY RULES carefully before set-up, operation or service of the unit. Become familiar with this operating manual and the unit itself. The unit can operate safely, efficiently and reliably only if it is properly setup, operated and maintained. Many accidents are caused by failure to follow simple and fundamental rules or precautions.

This manual contains DANGERS, WARNINGS, CAUTIONS and NOTES which must be followed to prevent the possibility of improper service, damage to the equipment, personal injury or death.
The following formatting options will apply when calling the reader's attention to the DANGERS, WARNINGS, CAUTIONS and NOTES.

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 AND could result in property or equipment damage.

NOTE: Notes contain additional information important to a procedure and will be found within the regular text body of this manual.

1.2 Safety Symbols

This equipment has been supplied with numerous safety and operating decals. These decals provide important operating instructions and warn of dangers and hazards. Replace any missing or hard-to-read decals and use care when washing or cleaning the unit. Decal placement and part numbers can be obtained by contacting Leer direct at **1-800-766-5337**.

All safety decals are available free of charge with a valid model and serial number.

Below is a summary of the intended meanings for the symbols used on the decal. Some or all of these symbols may be part of your Leer product:

	**WARNING! FLAMMABLE REFRIGERANT USED** This unit uses R290 propane as a refrigerant. Avoid any sparks or open flame when performing service on the refrigeration components. Unit to be repaired by trained service personnel only.
	**WARNING! ELECTRICAL SHOCK HAZARD** This unit operates on voltages that can cause injury if contact is made with terminals or bare wires while energized. Disconnect power before performing any maintenance tasks.

	**WARNING! MOVING PARTS** Moving fan blade. Do not operate the unit with the compressor cover removed or missing. Contact with a rotaing fan blade can cause severe injury.
	**WARNING! HOT SURFACES** Some parts may become hot during operation and contact with them could cause injury. Do not operate the unit with the compressor cover removed or missing.
	**DO NOT ENTER - ENTRAPMENT HAZARD!** Do not climb into unit and keep doors locked when in use. Remove the doors before disposal of unit.
	**DO NOT REMOVE COVER** Do not operate unit with compressor cover removed. Contact with moving parts, live electrical terminals, wiring or hot parts may cause severe injury. Keep cover secured with the OEM hardware.
	**NO UNAUTHORIZED SERVICE** Only a trained and certified refrigeration technican should perform any service work on the refrigeration system.
	**UNPLUG UNIT BEFORE SERVICE** ALWAYS disconnect unit from the source receptacle before performing any service or maintenance work AFTER moving the power switch to the off position.
	**KEEP DOORS LOCKED** ALWAYS keep the doors closed and locked when unattended to prevent accidental entrapment. Remove the doors before disposal of the unit.
	**2 MINUTE START DELAY** At initial start up or after a power reset, such as power loss, disconnect/reconnect, or cycling of the power switch, the unit may not start the compressor until the system is equalized.

Section 2 - Specifications

2.1 System Specifications

S40 and S85 Models		
MODEL	S40	S85
Freezer	S040UASPF	S085UASPF
Refrigerator	S040UASPR	S085UASPR
General Specifications		
Interior Space - cu/ft (cu/m)	38 (1.08)	80.0 (2.27)
Door Opening - in (cm)	25.4 x 57.7 (64.5 x 146.6)	25.4 x 57.7 (64.5 x 146.6)
Exterior - in (cm)	33.00 x 50.5 x 76.50 (83.8 x 127.5 x 194.3)	38.50 x 84 x 76.50 (97.8 x 213.4 x 194.3)
Unit Weight - lb (kg)	410 (186.0)	665 (301.6)
Temperature and Controls		
Freezer °F (°C)	-4 to 0 (-20 to -17.8)	-4 to 0 (-20 to -17.8)
Refrigerator °F (°C)	+34 to 40 (2.2 to 3.3)	+34 to 40 (2.2 to 3.3)
Control Type	Electronic	Electronic
Electrical Specifications		
Voltage (V/Hz)	120/60	120/60
Minimum Circuit (Amps)	15	15
Refrigeration Specifications		
Refrigerant	R290	R290
Certifications	UL, ULC	UL, ULC
DOE Compliant	Yes	Yes
NRCan Compliant	Yes	Yes
NSF Certification	Yes	Yes

2.3 Dimensions

Figures 2-1 and 2-2 for the interior and exterior dimensions of the S85 and S40.

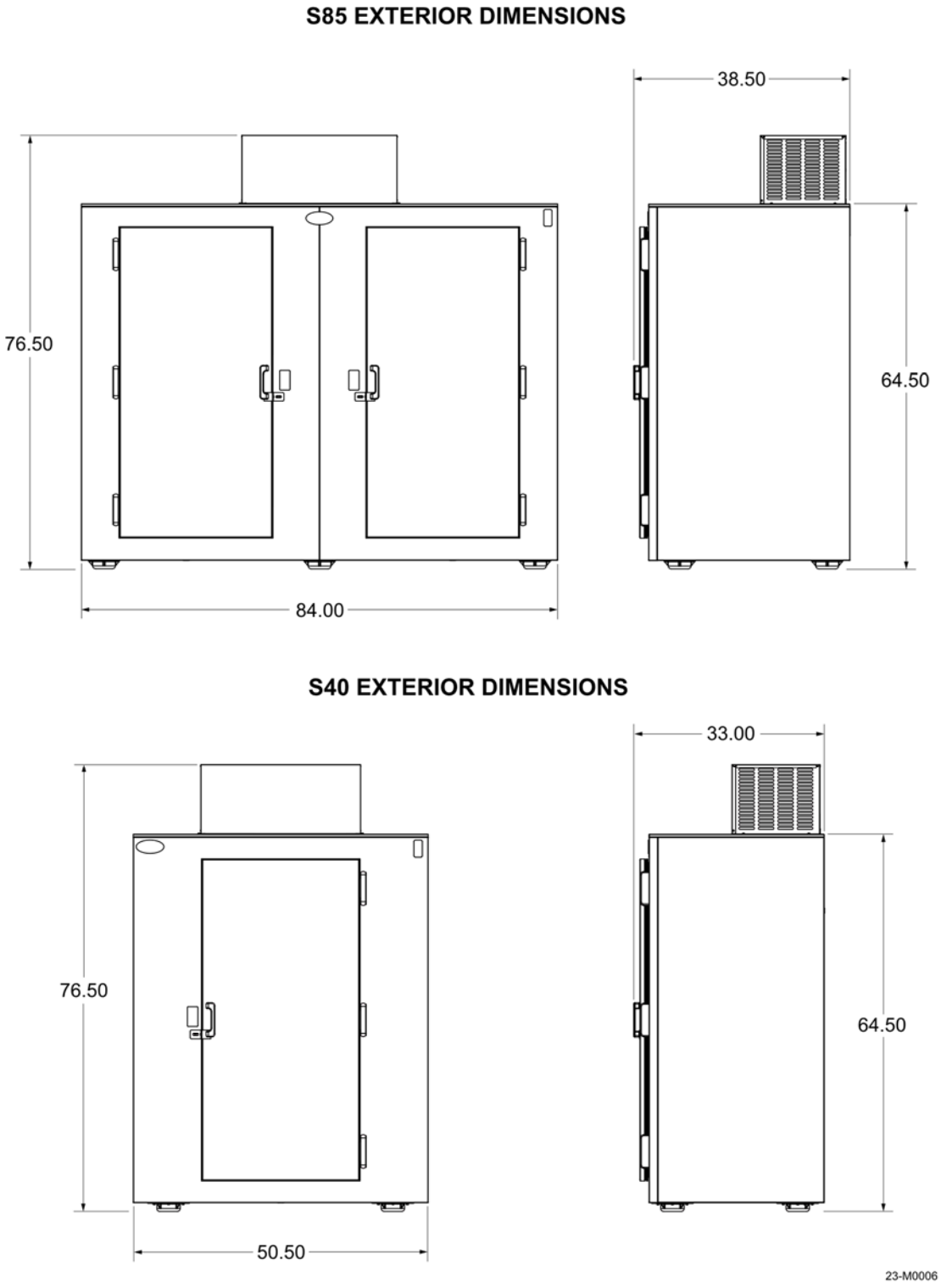

Figure 2-1

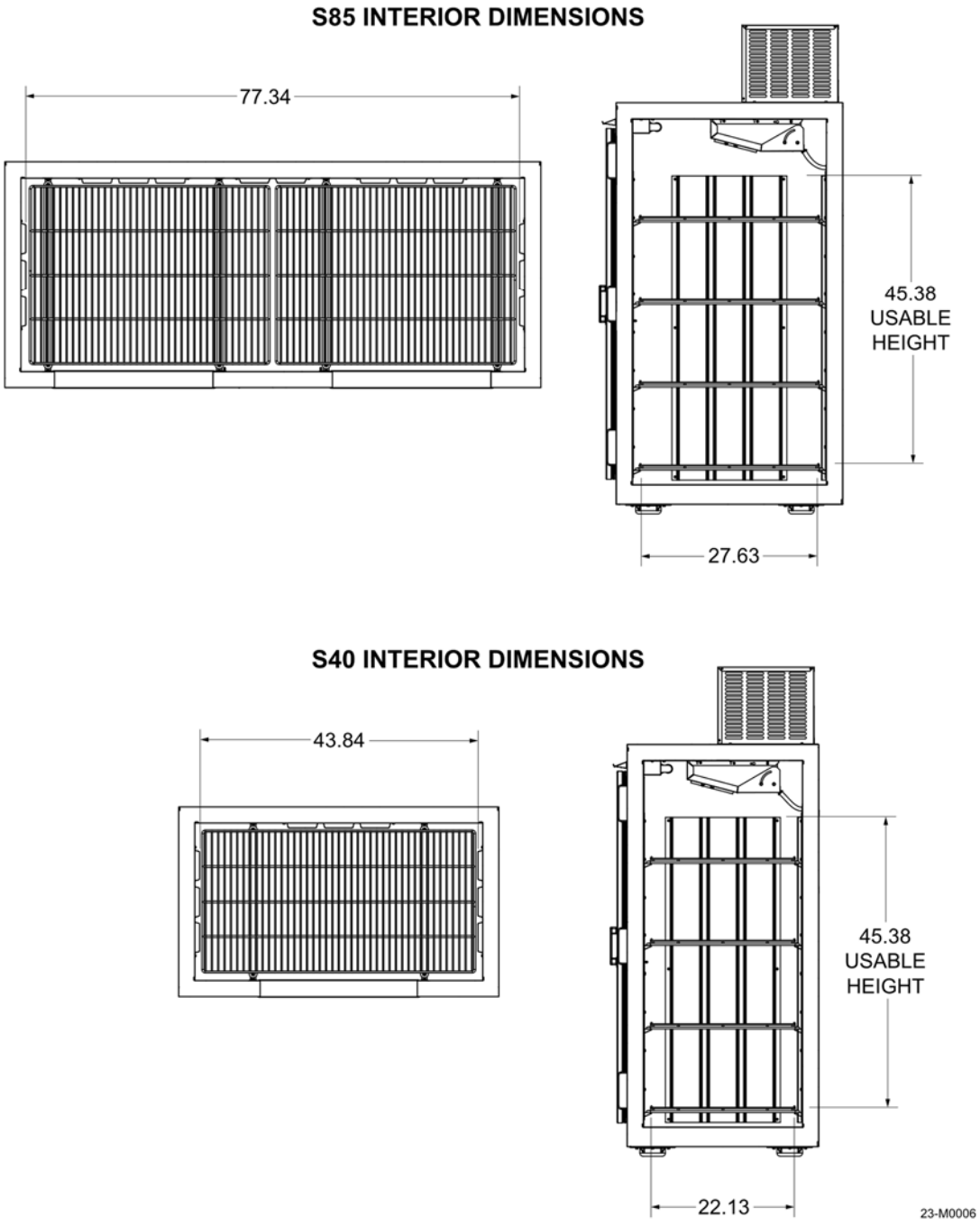
S85 INTERIOR DIMENSIONS
77.34
45.38
USABLE
HEIGHT
27.63
S40 INTERIOR DIMENSIONS
43.84
45.38
USABLE
HEIGHT
22.13
23-M0006

Figure 2-2

2.4 Model Component Locations

Refer to Figures 2-3 to 2-5 for the location of components.

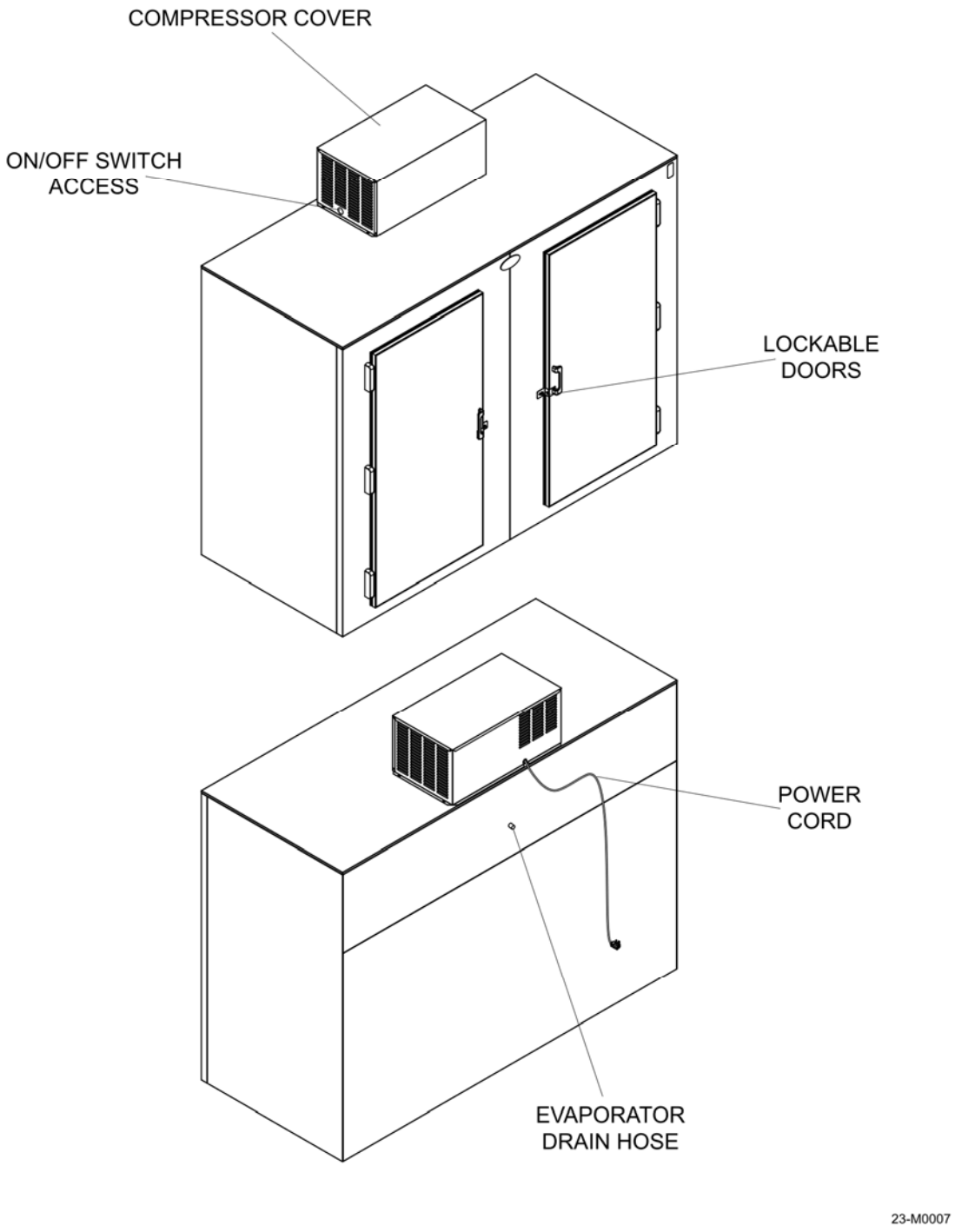

Figure 2-3

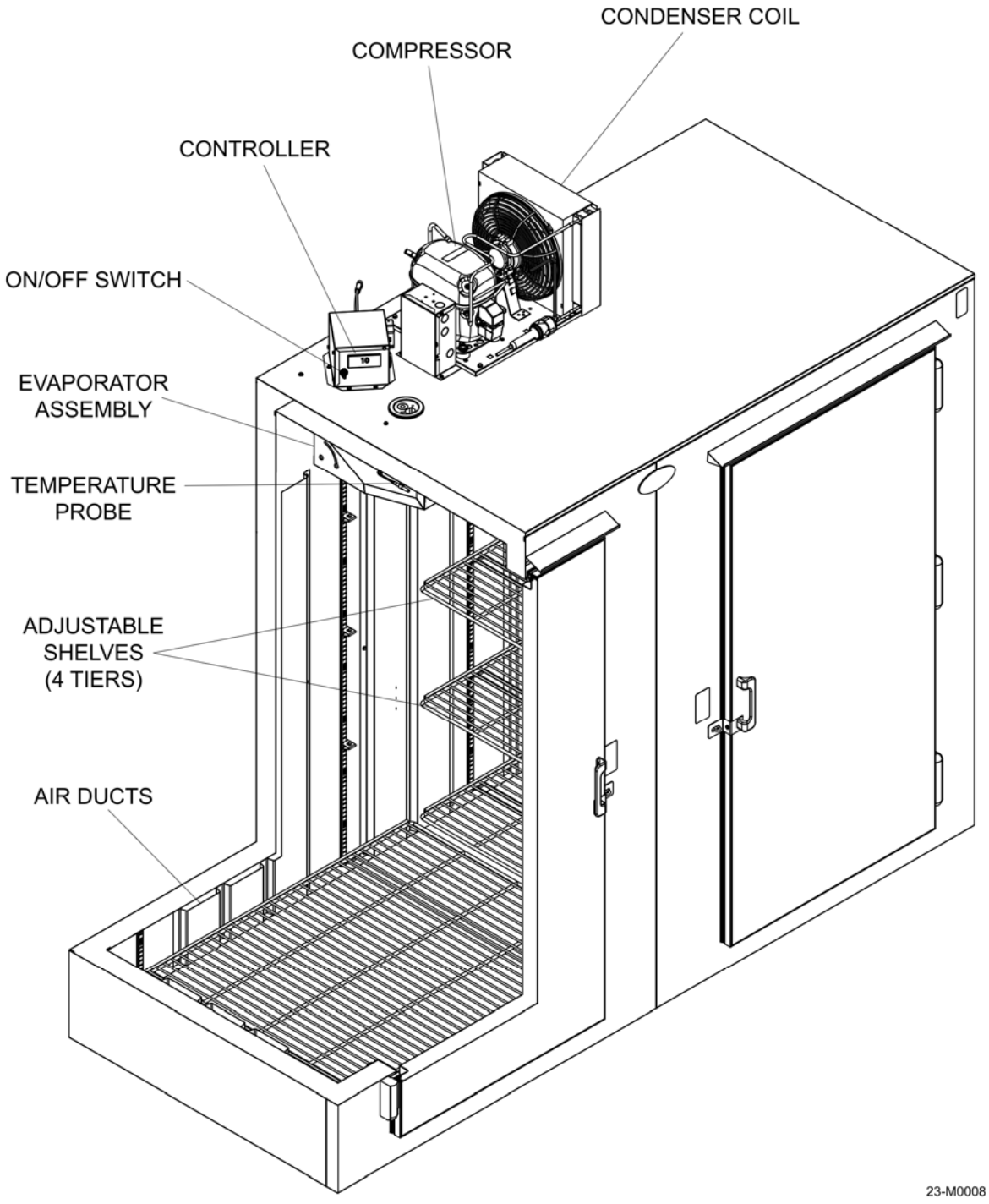
CONDENSER COIL
COMPRESSOR
CONTROLLER
ON/OFF SWITCH
EVAPORATOR ASSEMBLY
TEMPERATURE PROBE
ADJUSTABLE SHELVES (4 TIERS)
AIR DUCTS
23-M0008

Figure 2-4

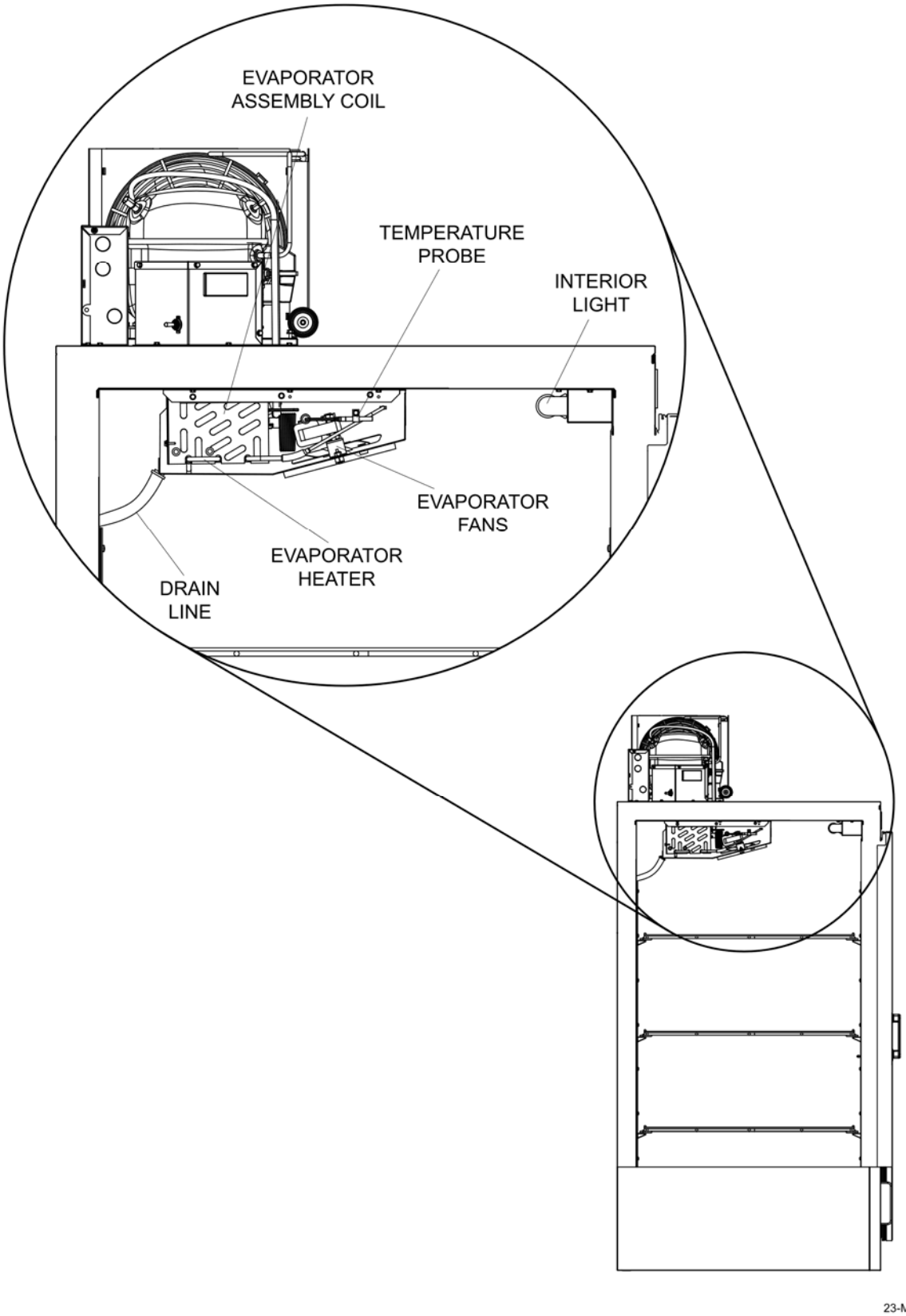
EVAPORATOR
ASSEMBLY COIL
TEMPERATURE
PROBE
INTERIOR
LIGHT
EVAPORATOR
FANS
EVAPORATOR
HEATER
DRAIN
LINE
23-M0009

Figure 2-5

Compressor Cover: The compressor cover protects the refrigeration components from access by unauthorized persons. Keep the cover secured to the top of the unit at all times.

ON/OFF Switch Access: The hole in the cover allows the unit to be turned on or off without the need to remove the cover.

Lockable Doors: The doors on the S40 and S85 can be secured with a padlock if necessary.

Merchandiser Power Cord: The unit is equipped with a 3-prong 15A plug. Always plug the unit into a dedicated circuit – DO NOT USE EXTENSION CORDS TO POWER THE UNIT.

Evaporator Drain Hose: The drain hose carries meltwater from the evaporator assembly drain pan to the exterior of the unit.

Condenser Coil: Used to extract heat from the refrigerant when it is a high-pressure, high-temperature gas to a high-pressure, high temperature liquid, see Section 4.

Compressor: Device that makes low-pressure, low-temperature gas to an outgoing high-pressure, high-temperature gas, see Section 4.

Air Ducts: Ducting allows for better airflow along the back and side of the unit for better temperature control.

Controller: Programmable digital controller; used to set operating parameters of the unit.

On/Off Switch: Turns the power on/off for the unit.

Evaporator Assembly: Cools the interior of the unit to the programmed temperature set on the controller.

Adjustable Shelves: Shelves for loading product – 4 shelves are sent with the S40 and 8 shelves are sent with the S85.

Evaporator Assembly Coil: As the refrigerant passes through the coil, fans push the warmer air from the interior of the unit across the coil so the heat is absorbed by the lower temperature liquid in the coil, see Section 4.

Temperature Probe: Detects the temperature inside of the unit for input to the controller.

Interior Light: LED light to illuminate the interior of the unit.

Evaporator Fans: Fans circulate air inside the unit.

Evaporator Heater: Used to defrost the evaporator coil at programmed intervals.

Drain Line: Carries water melted by the evaporator heater to the exterior of the unit.

Section 3 - Transport, Unpacking, & Installation

3.1 Transporting the unit

When unloading and moving the Leer box from the truck to the permanent location:

1. Verify the lifting device has adequate capacity to move the box, see the specifications in Section 2 for the unit's size and weight.

2. Make sure the fork tines of the forklift are long enough and positioned wide enough to provide adequate support of the shipment, refer to Figure 3-1.

NOTE: DO NOT tip the unit when transporting! If the unit is moved at an angle (45 degrees or more) oil from the compressor may leak into the refrigerant tubing path and cause premature failure of the refrigeration system.

3. A thorough inspection of the unit must take place to make sure that no damage has occurred during the shipping process.

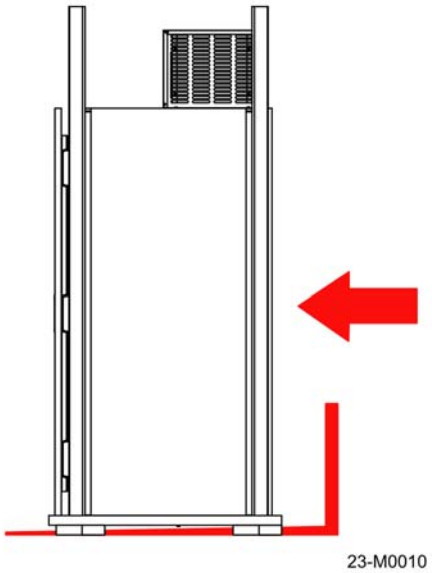

Figure 3-1

3.2 Unpacking the unit

NOTE: Thoroughly inspect this unit before and after uncrating for possible damage that may have occurred during the shipping process. If damage is apparent, note damage on the delivery receipt before the driver leaves. Damage claims not noted on the delivery <u>WILL NOT</u> be assessed.

Remove the outer wrapping and any crating from the sides of the shipment first, then remove the shipping base from the bottom, refer to Figure 3-2. The base is held on with hex-head screws that will require a 3/8" socket or wrench to remove. Optional items may be included in separate boxes that are shipped inside the unit.

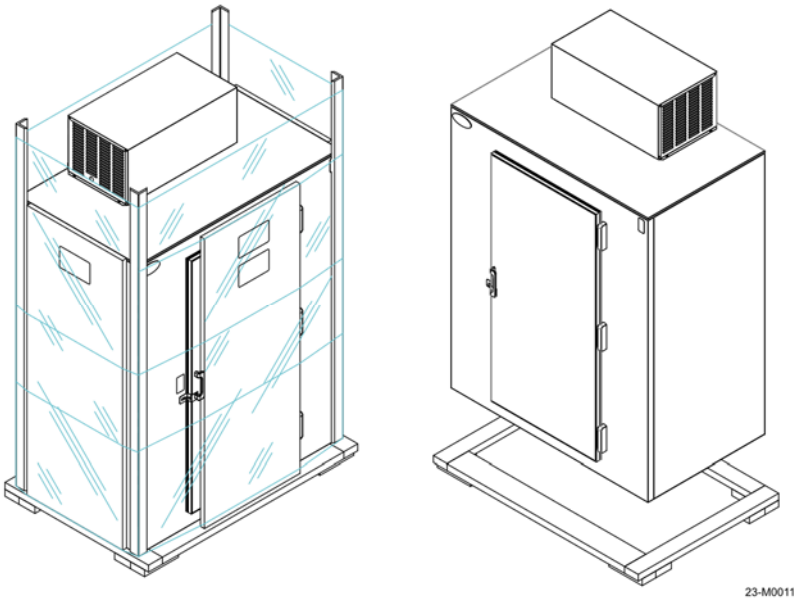

Figure 3-2

Be sure to remove and inventory these items as well as check for possible shipping damage to the optional items and the inside of the unit.

3.3 Installation

Electrical connections: Electrical service connections must be in accordance with the National Electrical Code, as well as any state or local codes that may apply. The electrical voltage and frequency must coincide with the serial tag. All units are equipped with a 3-prong NEMA 5-15P or 20P plug, refer to Figure 3-3.

WARNING!
Improper use or removal of the grounding plug can result in a risk of electrical shock.

The refrigeration system must be connected to a dedicated 120-volt, 60 Hz grounded electrical outlet with a circuit breaker or fuse. The condensing unit data plate will indicate the maximum circuit breaker size required.

NOTE: DO NOT use standard extension cords! Extension cords will decrease the voltage to the refrigeration unit and ultimately cause the compressor to fail prematurely.

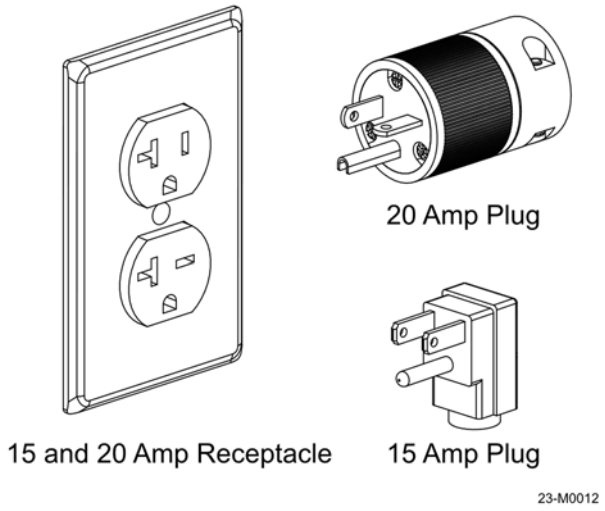

Figure 3-3

3.4 Placement

Avoid placing the unit in direct sunlight or next to dark colored surfaces, if possible, to reduce the amount solar heat the unit may be exposed to. Do not place the unit under or near downspouts, low areas or roof overhangs that may be subject to high water flows. Allow for an air gap of 3” behind the unit to allow for air circulation around the box – this will aid in the operation of the refrigeration system. Place the unit on a firm, level surface. If the unit is leaning to the front, the doors may not seal properly and the drain tube on the evaporator assembly may not empty completely, leading to ice buildup. Place a level on the top of the unit and shim/adjust the feet until the unit is level in both directions, refer to Figure 3-4.

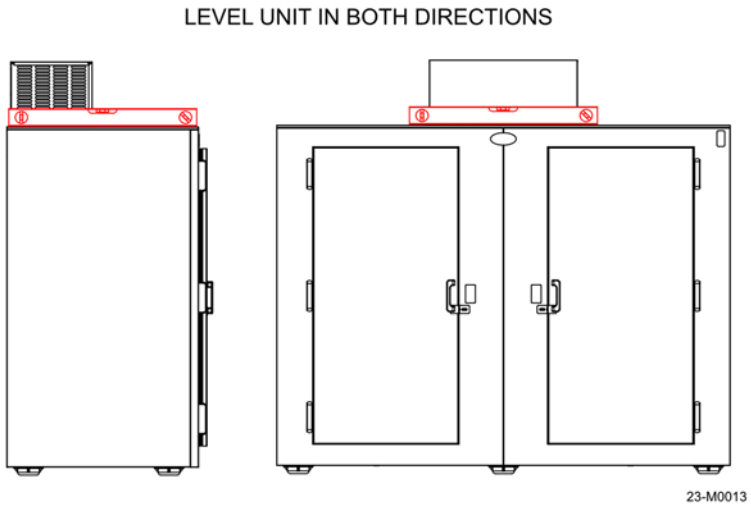

Figure 3-4

3.5 NSF Spacer Kit

R290 units shipped in the USA can only be certified as NSF compliant by the addition of the leveling kit. This kit is required by NSF to maintain a 6-inch clearance from bottom of unit to the floor. This kit must be installed on location to maintain compliance.

To install, use a proper lifting device to raise the merchandiser from the ground. Allow enough room to get the full kit under the skid plates/feet on the bottom of the unit.

DO NOT TIP THE MERCHANDISER beyond 45° of vertical as mentioned in section 3.1. Insert the stem of the leveling kit into the bottom of the skid plates as shown in Figure 3-5. Lower the merchandiser, making sure the weight of the unit is equal across all of the feet. Check the level of the unit in both directions and adjust as necessary.

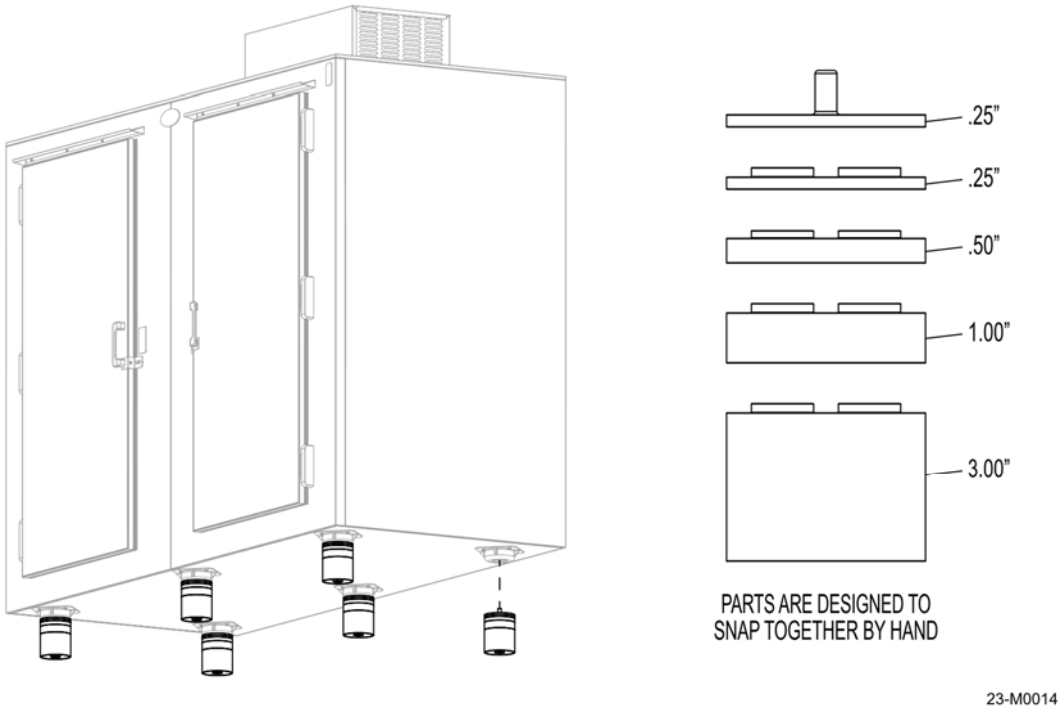

Figure 3-5

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Section 4 – Operation

4.1 How the System Works

There are four main elements to a refrigeration system:

- The Compressor
- The Condenser
- The Metering/Expansion Device
- The Evaporator

As with any refrigeration system, it cannot create cold – it can only remove heat. If a system is operating at 0°F and the interior of the unit is 20°F, the 0°F temperature is lower than the 20°F temperature, so the heat is transferred (absorbed into the cold) from the higher temperature to the lower one until an equilibrium is achieved.

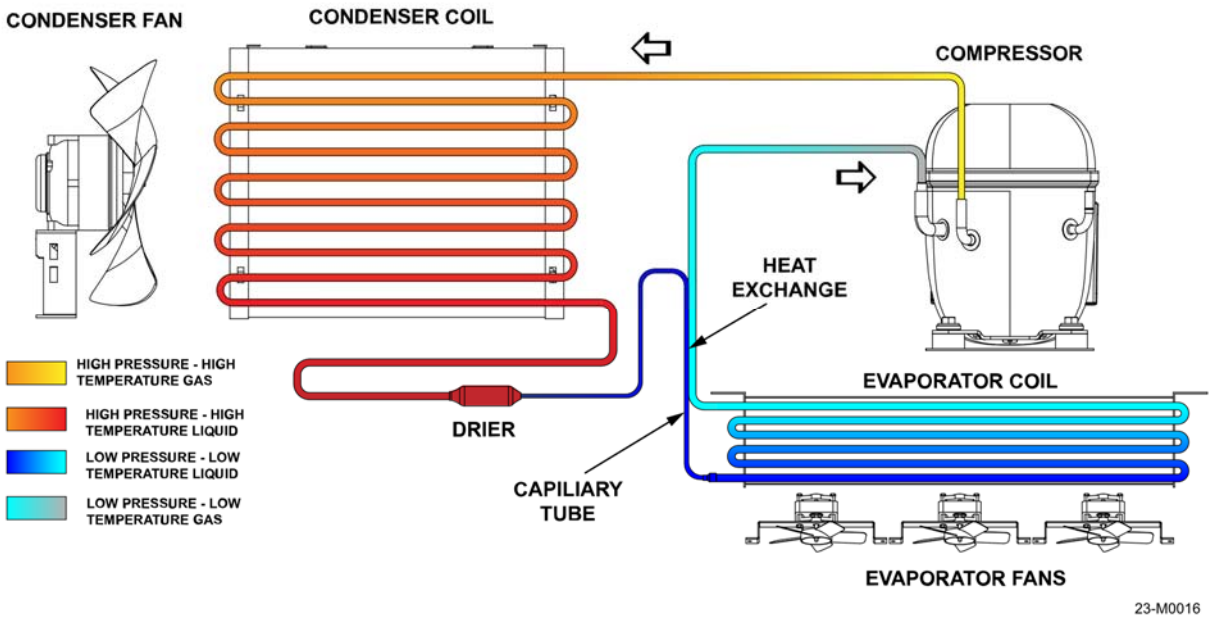

Figure 4-1

The compressor: Compression is the first step in a refrigeration cycle. A motor driven compressor is used to convert the refrigerant medium from an incoming low-pressure, low-temperature gas to an outgoing high-pressure, high-temperature gas.

The condenser: The condenser (or condenser coil) is one of two types of heat exchangers used in a refrigeration cycle. The high-pressure, high-temperature gas from the compressor is routed through the coil and a fan removes heat from the hot refrigerant vapor gas vapor until it condenses into a saturated liquid state. The medium is now a high-pressure, high-temperature liquid.

The metering/expansion device: When the refrigerant enters a thermostatic expansion, a pressure drop occurs. This pressure drop will cause some of that refrigerant to quickly boil, creating a two-phase mixture (liquid and gas). This phase change is called flashing and the medium is now a low-pressure, low temperature liquid.

The evaporator: The evaporator is the second heat exchanger in a standard refrigeration circuit and it absorbs the heat form the interior of the unit. Remember, even 20°F air has heat in it - if the evaporator has 0°F (20 degrees colder) refrigerant, the heat will move from warm to cold.

On auto defrost models an evaporator coil has fans pushing air across the coil to remove heat in the air as it passes over the colder coil. As the heat is absorbed the refrigerant is returned to the compressor as a low-pressure, low-temperature gas. The cycle continues until the thermostat tells the system an equilibrium has been achieved, refer to Figure 4-1

4.2 Powering Up

All units are pre-wired with 3-prong plug. The refrigeration unit must be connected to a dedicated 120-volt, 60 Hz grounded electrical outlet with a circuit breaker. A 20-amp circuit may be required, due to the shape of the cord plug (see Figure 3-3). Turn the unit on with the power switch located under the compressor cover. **After a 2-minute delay, the compressor and the condenser fan should start.** The evaporator fans and the interior light (if equipped) will operate immediately when power is applied. The condensing unit will continue to run until the air temperature in the cabinet reaches the temperature set point on the controller.

4.3 Controller Operation

The controller is located under the compressor cover on the top of the unit, refer to Figure 2-1. The controller features are described below, refer to Figure 4-2**.**

Figure 4-2

1. **Defrost button:** Used to initiate defrost cycle – see controller manual.
2. **Defrost mode:** Defrost enabled when on.

3. **Compressor mode:** Compressor operating when on, flashing when delaying between cycles.
4. **Temperature display:** Display of current temperature, temperature setpoints.
5. **Temperature units (°F/°C):** Temperature in degrees Fahrenheit or Celsius.
6. **UP arrow:** Used to display parameter codes or increase the displayed value.
7. **DOWN arrow:** used to display parameter codes or decrease the displayed value.
8. **Fan operation:** Fan operating when on, flashing when delayed after defrost.
9. **Set button:** Used to display target set point and the real set point; in programming mode it selects a parameter or confirms an operation.

The control also offers monitoring of the operational status of the unit via the icon and digital temperature display. The controller has been programmed by Leer to operate within the design parameters of the refrigeration system. The condensing unit will continue to run until the air temperature in the cabinet reaches the factory set point temperature of -4°F on freezer models and, with a differential of 4°F (-4 to 0°F) and +36°F, with a differential of 2°F (36 to 38°F) for the refrigerator units.

4.4 Changing the Operating Temperature

To change the operating temperature of the remove the compressor cover and locate the controller, refer to Figure 2-4. The units can be set to operate at a maximum low temperature of -4°F to a maximum high temperature of +44°F; to view the current set point press the “SET” button on the controller.

To change the temperature, refer to Figure 4-3.

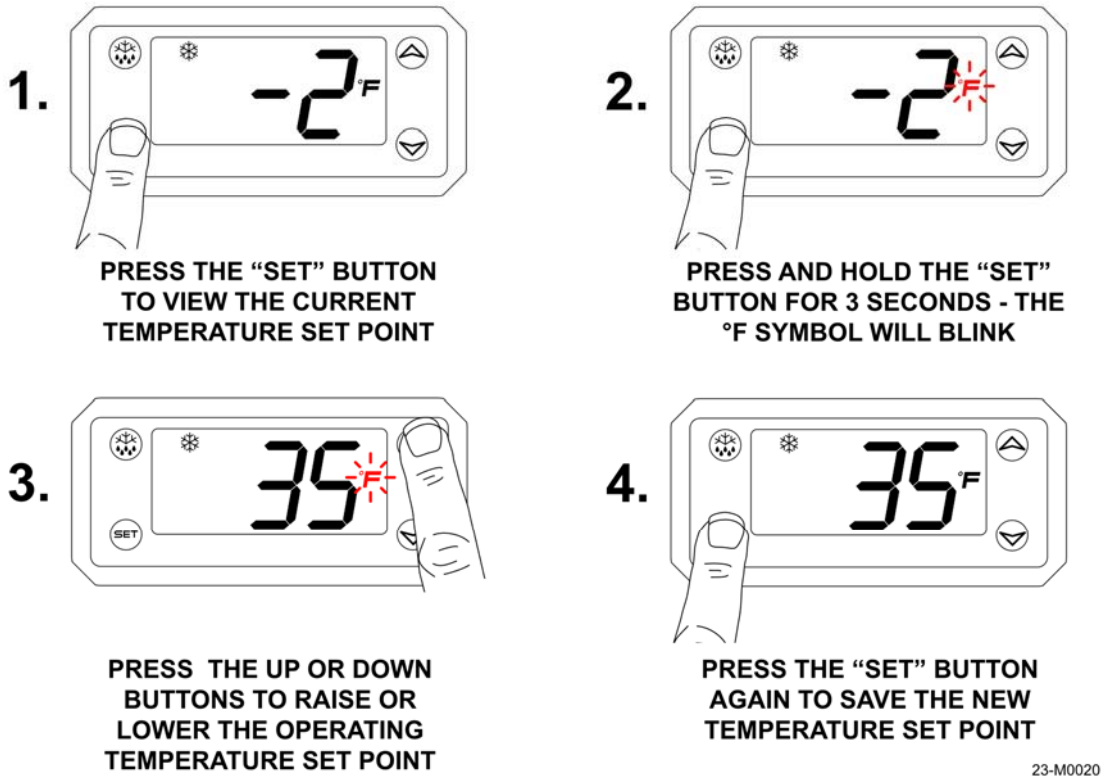

Figure 4-3

NOTE: When operating refrigerator models in sustained temperatures of 32°F or lower, contact Leer Inc. for alternate controller settings for your model. These alternate settings may allow your unit to operate more reliably in colder climates.

4.5 Adjusting the Shelving

The S85 and S40 units have 4 tiers of adjustable shelving. The maximum load for each shelf is 100 pounds (45.36 kilograms) when all four shelf brackets are set at the same height; refer to Figure 4-4. The shelves can be adjusted up or down to allow for greater loading flexibility or removed for bulkier items as needed. Make sure all 4 brackets are secure and at the same level in each channel before loading any product.

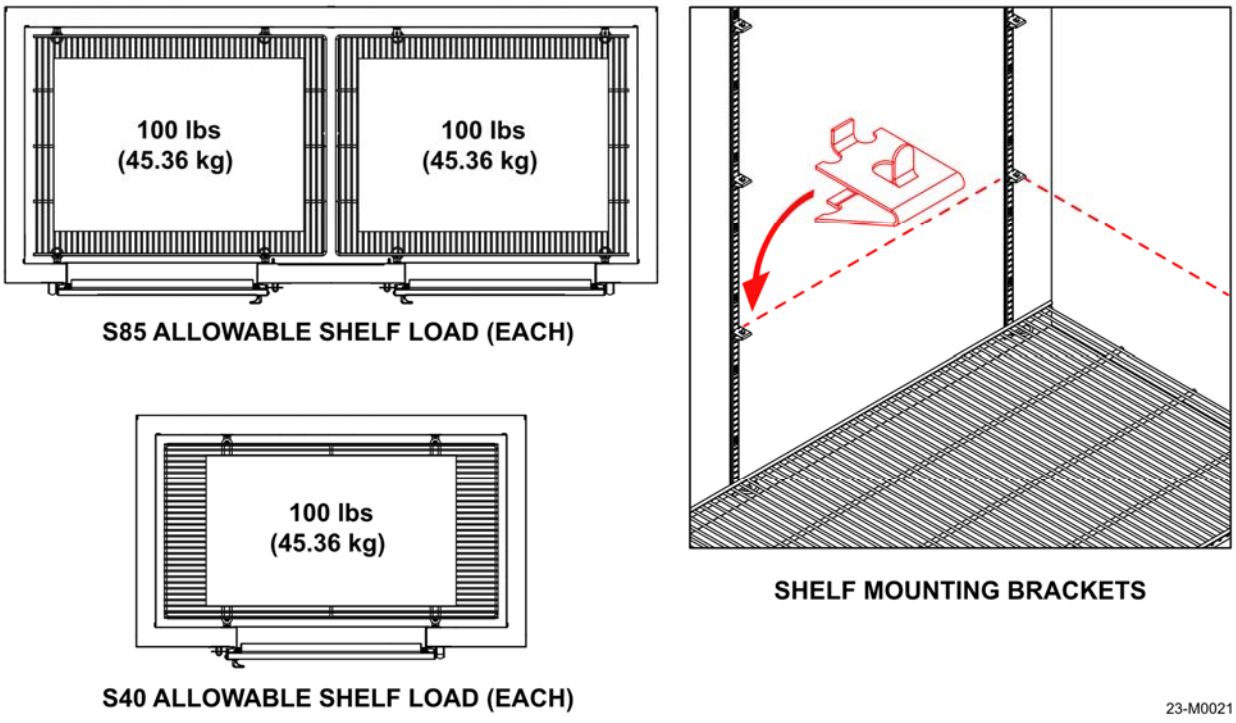

Figure 4-4

4.6 Loading the Unit

The unit should be pre-chilled before loading any product by allowing it to run for 2-4 hours after powering up. This will allow the unit to reach the programmed temperature faster once it is loaded and reduce the risk of products stored melting or softening.

Also, make sure the product going into the unit is cold and at storage temperature if possible. This will allow the unit to operate more efficiently since it will not have to run to remove heat from the product being stored in the box.

In very warm and humid climates try to limit the amount and duration of door openings, to reduce the amount of moisture entering into the box. Damp or humid air that enters the box will form frost on the colder parts of the interior and products stored inside, reducing the efficiency of the system.

For proper product loading and placement, refer to Figure 4-5. For the best possible performance of the unit, NEVER place any product on or near the following locations:

1. In front of or directly under the evaporator fans near the ceiling of the unit; this will reduce the air circulation.

2. On top of or past the tops of the air duct channels on the back and sides of the box.

3. In front of or next to the temperature probe on the left side of the evaporator housing. The probe will not detect the interior temperature accurately and the compressor may not operate as needed.

4. Do not allow products to overhang past the sides of the shelves.

5. Do not place items directly on the floor of the unit. Place items on the bottom shelf, which can be installed at the lowest setting on the mounting channels.

Always allow for air circulation around the products being stored when loading. Packing the interior too tightly will not allow the products to chill evenly and maintain a steady temperature.

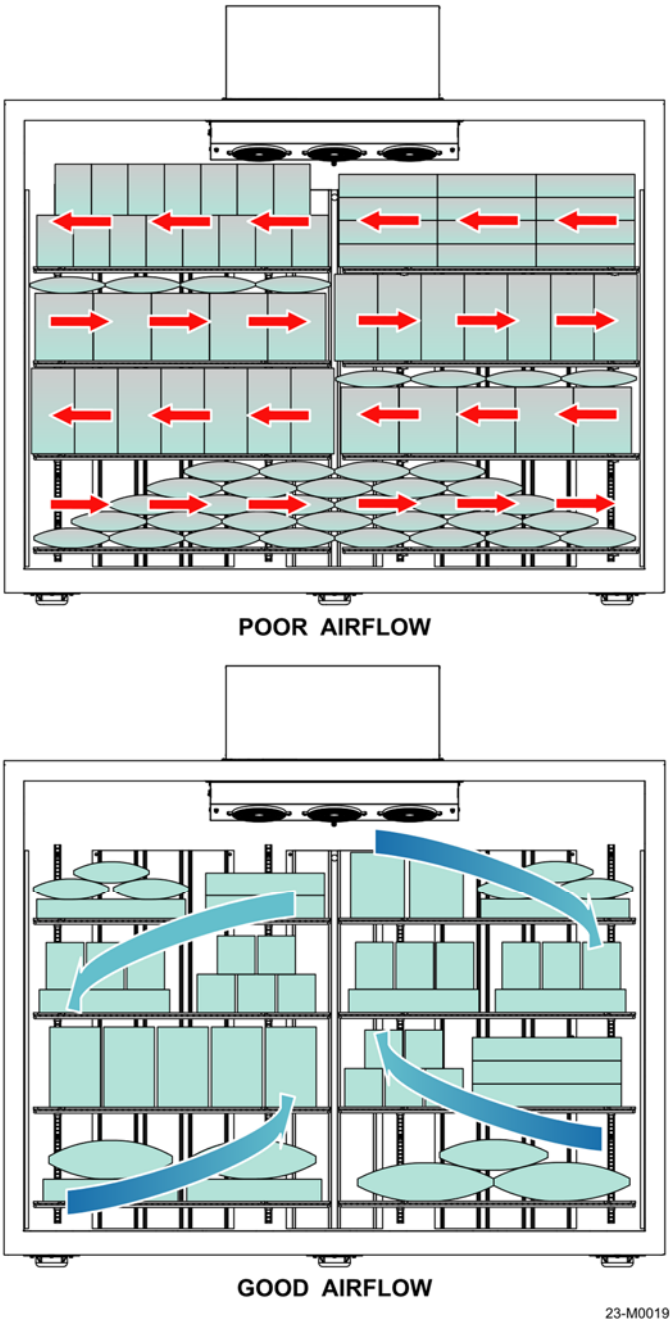

Figure 4-5

Section 5 - Maintenance

5.1 General Information

Regular service and upkeep will keep your freezer/cooler operating at peak efficiency.

WHEN THE UNIT IS IN OPERATION:	EVERY DAY	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY YEAR	AS NEEDED
Verify operation on the electronic display	■				
Verify the doors close tight and there are no gaps in the door gaskets	■				
Verify drain line is open and free of ice	■				
Remove compressor cover and inspect for leaks or damage		■		■	
Clean condenser coils and fan		■		■	■
Verify evaporator heater is working on Auto-Defrost models		■		■	
Clean the evaporator coils, fans and drain pan		■		■	■
Check for leaks/broken caulk lines, repair as needed			■	■	■
Check door hinges for worn or missing components, repair as needed			■	■	■
Perform defrost and clean the interior and door gaskets			■	■	■
Check compressor cut-in and cut-out temperatures				■	
Check interior temperature and perform calibration				■	
Clean the exterior				■	■

NOTE: Component parts shall only be replaced with like components. Maintenance and repair of the electrical and refrigeration systems should only be done by trained and qualified personnel. Disconnect power before performing service, certain models may contain multiple voltages.

5.2 Cleaning the Unit

In corrosive environments such as coastal regions the unit should be cleaned as needed. When cleaning the interior of the unit, use dilluted household dishwashing detergents with low or no odor,followed with a clear water rinse.

DO NOT use detergents with strong odors (i.e. citrus based cleaners or solvent based cleaners) or cleaners with abrasive or scouring compounds. They may leave objectionable odors or particles inside the cabinet which may be absorbed by the product being stored in the unit. Rinse and allow the unit to air dry with the doors open before returing it to service.

NOTE: Do not use bleach or ammonia to clean the inside of the unit as it may cause damage to the evaporator coil aluminum fins.

Door gaskets: Door gaskets may mildew and stiffen over time. The gasket is made of a soft, flexible rubber-like material that can be cleaned using most kitchen and bath cleaners designed for mildew removal, refer to Figure 5-1. Review manufacturer information and instructions on any cleaning agent prior to use to determine the cleaner's compatability with the surface being cleaned.

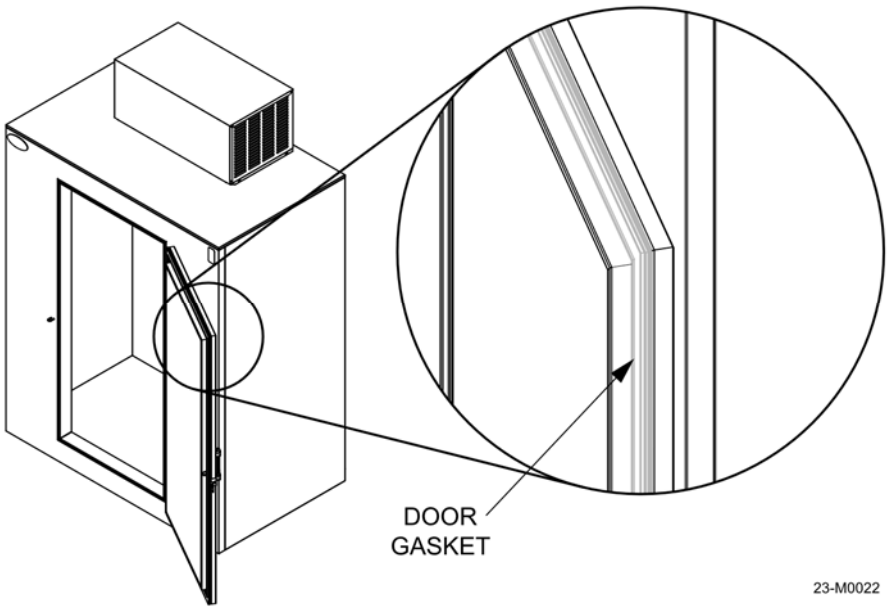

Figure 5-1

Visually inspect the unit for damage, corrosion or loose or missing hardware before washing. The exterior of the unit can be cleaned with the use of household automotive detergents diluted in warm water followed with a clear water rinse. Take extreme care to avoid spraying water into the condensing unit and electrical controls.

The exterior paint is capable of withstanding the use of standard automotive polishing compounds and most solvents. If using stronger cleaning agents, they should be tested on a small, inconspicuous areas prior to application onto visible surfaces of the

5.3 Defrosting

Auto-Defrost models: Auto-Defrost models are designed to be self-defrosting and enter defrost mode once every few hours on a programmed cycle. During the defrost operation power is sent to the defrost heating coil and the condensing unit. The evaporator fans do not run.

The heat generated by the defrost coil at the bottom of the evaporator will melt the ice and frost buildup on the coil tubes and fins. The resulting water will drain through a tube through the back wall of the box. It is recommended to check the operation and condition of the evaporator coil and for signs of excessive ice buildup every 3 months.

WARNING:

DO NOT use metal ice scrapers, ice picks, or hammers as these tools may inadvertently penetrate through the wall of the cabinet, puncture the evaporator tubing or wiring, and cause irreparable damage to the unit.

5.4 Door Hinge Install and Adjustment

Hinge assembly: The hinge components are shown in Figure 5-2; The hinge body, spring cartridge, thrust washer, adjustment rod, stop pin and cover.

NOTE: Wear eye protection when doing andy servcing or adjustment of door hinges.

To replace the hinge spring assembly:

1. Install (No. 220 shown) hinge with adjustment plate.

2. Assemble the spring cartridge as shown in figure 5-2. Grease both ends of the cartridge with petroleum jelly.

3. Insert the thrust washer over the round spring mount. Insert the stationary (square end) of the spring cartridge over the stationary end and compress the spring assembly with the adjustment rod until it can be placed over the round spring mount on the hinge, refer to Figure 5-2.

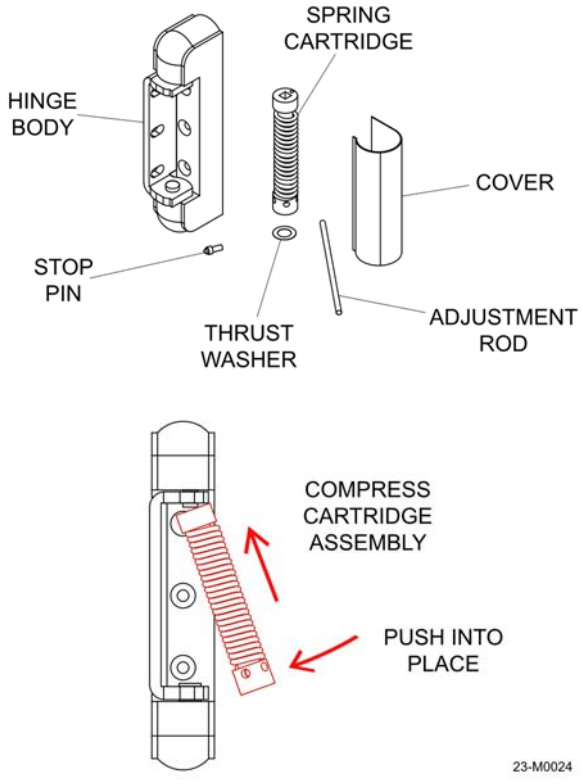

Figure 5-2

4. After installation, adjust the spring tension.

To adjust the spring tension follow the steps below and refer to Figure 5-3:

1. Insert the adjustment rod in the hole closest to the hinge on the adjustment collar and turn the rod clockwise until it contacts the other side of the hinge.

2. Hold the adjusting rod in place and insert a second rod. Use this to hold tension, remove the first rod, and continue rotating the second rod in the adjustment collar clockwise until it contacts the hinge again, and repeat the process one more time. The maximum tension is 6 holes or approximately 1 1/4 turns. Do not put the adjustment rod more than halfway through the adjustment collar.

3. Insert the stop pin into the hole closest to the hinge and slowly release tension until the pin contacts the hinge. Make sure the stop pin is fully seated in the adjustment collar before releasing the tension!

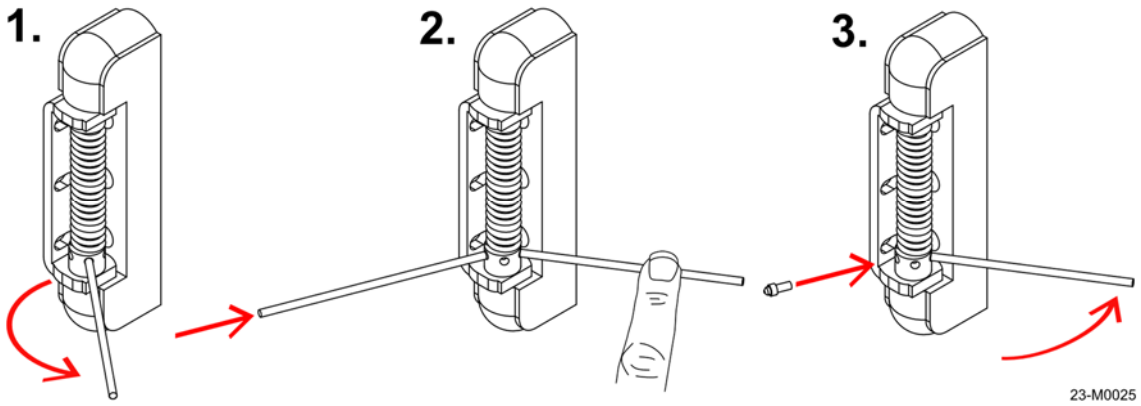

Figure 5-3

4. Install the hinge cover by placing it over the hinge and pushing until it locks in, refer to Figure 5-4.

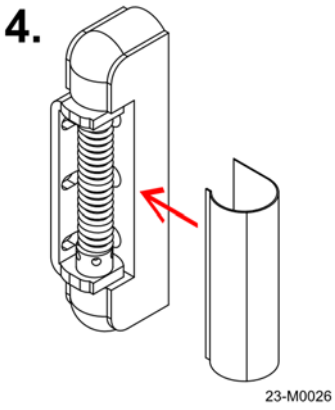

Figure 5-4

5.5 Refrigeration System Maintenance

Cleaning the condenser coils: Dirty or clogged condenser coils will cause poor performance of the refrigeration system by not allowing efficient heat transfer to take place, causing the compressor to run for longer periods of time. The condenser fan and coils should be cleaned every three months to ensure proper operation. If operating in very dusty conditions, the cleaning frequency will need to increase. To clean the coils follow the steps below and refer to Figure 5-5.

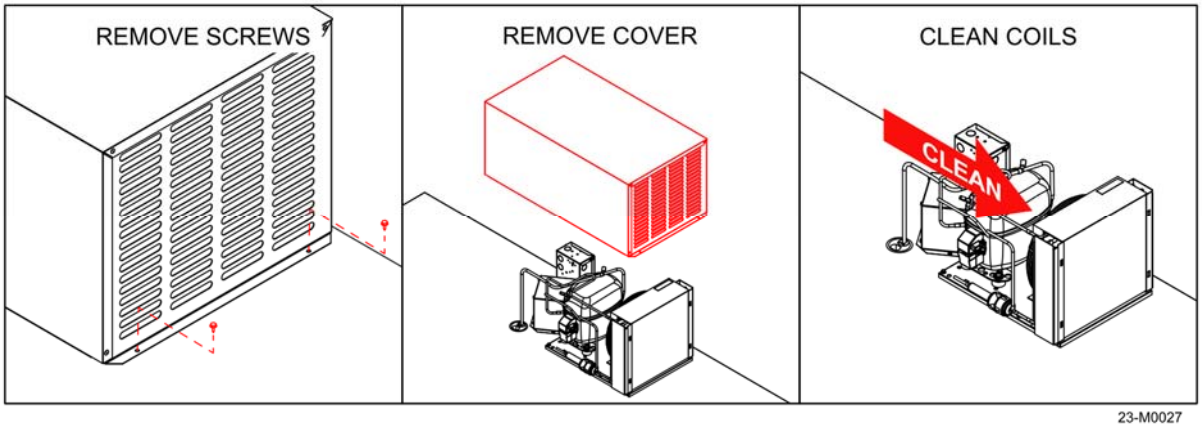

Figure 5-5

1. Move the power switch to the OFF position and once the unit is powered down, disconnect the power cord from the source receptacle.

2. Move the unit outdoors if possible.

3. Remove the the screws securing the compressor cover to the unit (4 places, 2 per side).

4. Lift the compressor cover straight up to remove.

5. Blow the coils and fan clean with compressed air in the opposite direction as the airflow – from the compressor side through the coil as shown.

6. Check the fan for any loose blades. Inspect the coil and fins for any damge or leaks.

7. Repalce the cover and secure it with the screws removed in step 3.

Cleaning the evaporator assembly: Dirty or clogged evaporator coils will cause poor performance of the refrigeration system by not allowing efficient heat transfer to take place inside the box. Clogged evaporator coils will not allow cold air to circulate freely, causing uneven temperatures and possible thawing/melting of product.

1. Move the power switch to the OFF position and once the unit is powered down, disconnect the power cord form the source receptacle.

2. Disconnect the drain hose from the evaporator pan. The pan is secured with quarter-turn screws, one on each side. Push the screw in with a Phillips head screwdriver, rotate and carefully lower the pan down, refer to Figure 5-6.

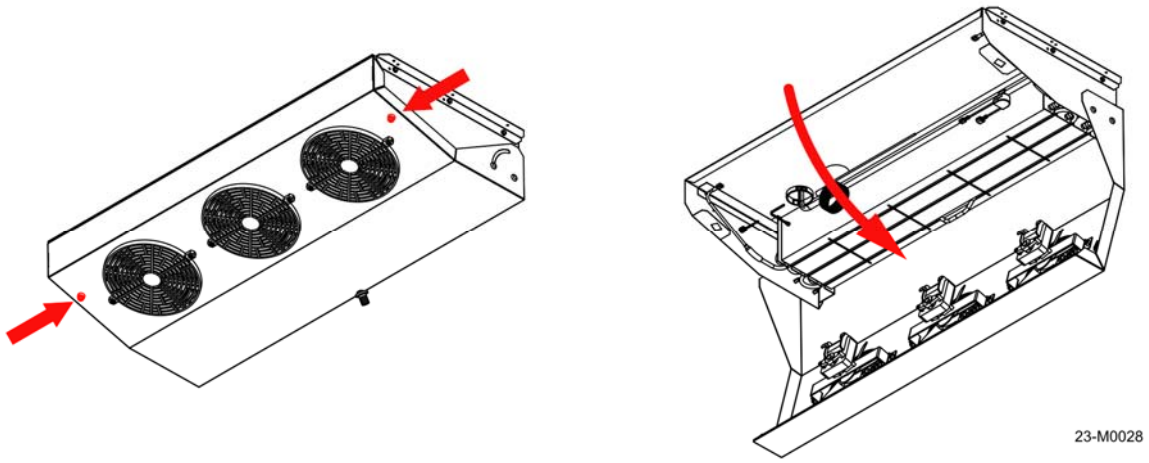

Figure 5-6

3. Check the drain pan for ice, which may be a sign of a blocked drain hose or the heater coil not functioning properly. Remove any buildup and check the drain hose that is on the outside of the unit as well for blockage, refer to Figure 2-3.

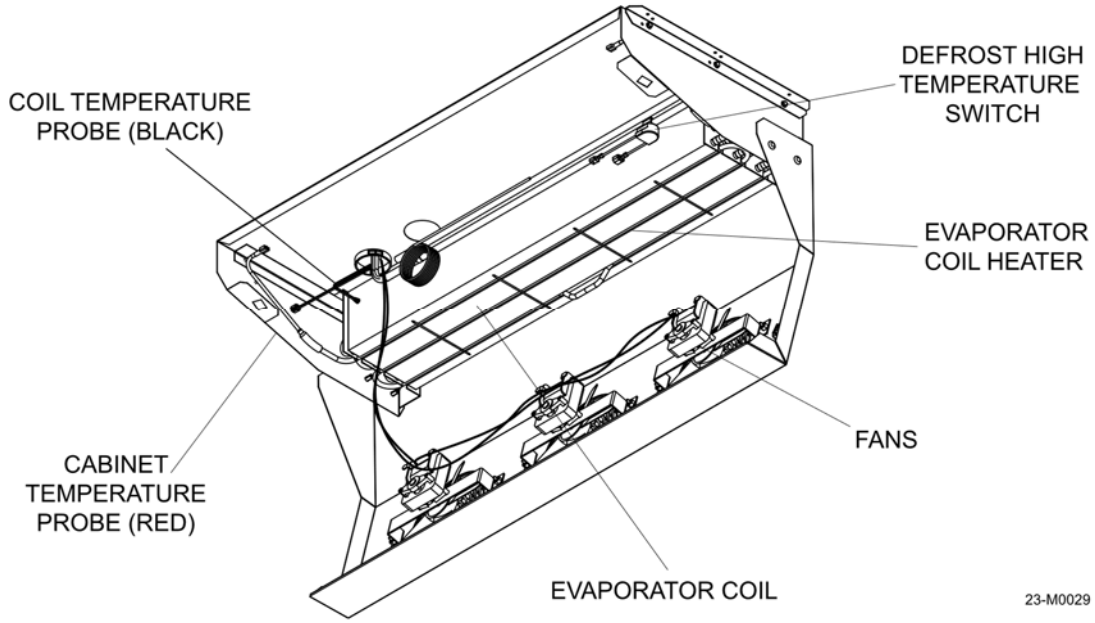

Figure 5-7

4. Inspect the evaporator for dust and dirt; clean the coils with compressed air if necessary. Make sure the evaporator fans spin freely and check them for loose blades or harware; repair or replace them as necessary, refer to Figure 5-7.

Checking the evaporator coil heater operation: The evaporator coil heater is the main component that makes Auto-Defrost models possible. The heater operates at pre-set intervals, usually every 3 hours, to melt any accumulated frost on the evaporator coil assembly. The compressor and evaporator fans will stop, the heater element will warm up, and the resulting melt water will drain out of the unit via the drain tube in the rear wall. Excessive ice buildup can be an indication of a faulty heater, a blocked drain, or both. To check the coil heater operation:

1. Remove the compressor cover to can access to the electronic controller. Initiate the defrost cycle by pressing the defrost button – the display will show a dripping snowflake symbol and “dF” for defrost; refer to Figure 5-8.

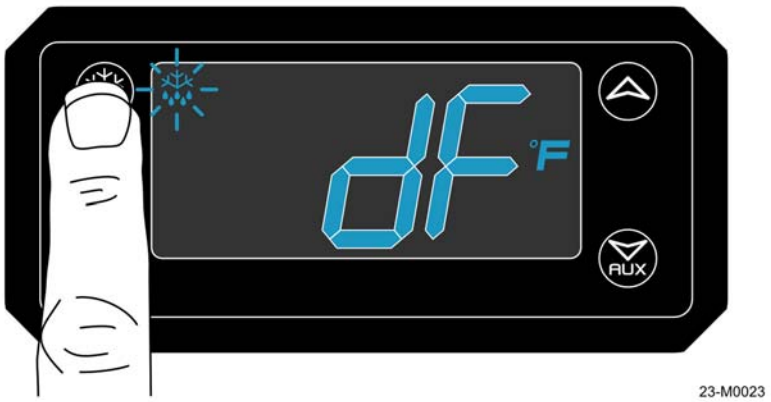

Figure 5-8

NOTE: Probe “P2” (inserted into the finned section of the evaporator coil) must be below the termination temperature set on the controller.

2. Inside the unit, heat should be felt at the drain pan nipple within 2 minutes of defrost cycle initiation. If not, lower the evaporator pan and fans to carefully check if the defrost heater is warming the coils.

WARNING:
ELECTRIC SHOCK HAZARD. This unit operates on electrical voltages that may cause injury or death. Use extreme care when servicing the electrical components of this unit.

3. If the heating element is not getting warm, check for voltage at the yellow wire (position 7) on the back of the digital XR06 controller – it should reflect the incoming line voltage when in defrost mode. If voltage is not present, the controller should be replaced.

4. Check for voltage before and after the defrost high temperature switch when in defrost mode. The termination switch must be below 70°F – if the temperature is higher the switch will remain open and not send voltage to the coil heater. If voltage is present after the termination switch, the heating element itself may be faulty.

Checking the evaporator coil heater: To check the function of the coil heater:

1. Move the power switch to the OFF position and once the unit is powered down, disconnect the power cord from the source receptacle.

2. Locate the spade terminals on each end of the coil heater. Unplug the connectors and use a multimeter set to Ohms to measure the resistance of the coil heater, refer to Figure 5-9. Resistance must be checked at 70°F for the best accuracy, with a tolerance range of +/- 10%; refer to the table for the size and resistance value of the heater. If the reading is not within the specified range the coil heater must be replaced.

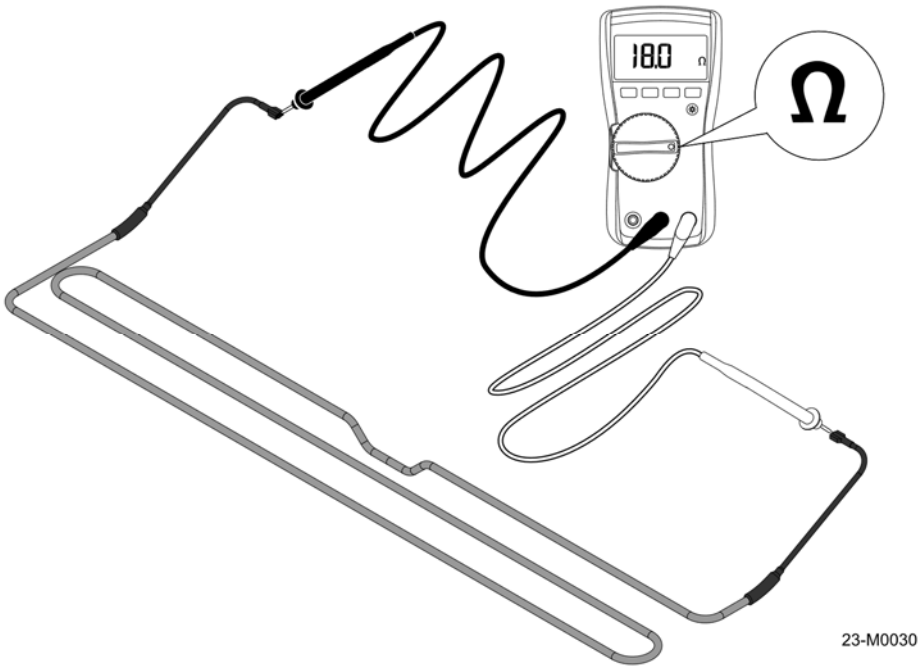

Figure 5-9

Defrost Heater Resistance @70°F			
	Heater Size	Resistance	Range
S40 Freezer	400 watts	36 ohms	39.6 - 32.4 ohms
S40 & S85 Refrigerator	600 watts	24 ohms	26.4 - 21.6 ohms
S85 Freezer	800 watts	18 ohms	19.8 - 16.2 ohms

Section 6 - Troubleshooting

6.1 Troubleshooting Tables

Some of the problems with your Leer unit can be solved by using the troubleshooting table. Use extreme care when diagnosing the unit if the cover on the refrigeration system is removed.

WARNING:
ELECTRIC SHOCK HAZARD. This unit operates on electrical voltages that may cause injury or death. Use extreme care when servicing the electrical components of this unit.

If a problem cannot be resolved after consulting the table call Leer technical service at **1-800-766-5337.**

Problem	Possible Cause	Action
Unit is not operating.	Power switch located on the controller box turned off.	Turn power switch on.
	Power cord unplugged.	Plug in power cord.
	Fuse blown / circuit breaker tripped.	Replace fuse/reset circuit breaker.
	dF showing on controller display (if equipped).	At initial startup the controller will check to see if a defrost cycle is needed by the P2 probe temperature.
	Receptacle for power cord not working.	Check receptacle for power with power meter.
	Improper voltage supplied to cabinet / overload of power circuit.	Remove extension cords or other equipment on the same circuit. Check receptacle voltage with power meter.
Unit not getting cold but compressor is operating.	Ambient temperature is too high from other sources (exhaust fans or similar).	Try to shield unit from heat sources.
	Door not closing properly.	Level the unit. Check door gasket condition. Check the door latch mechanism.
	Refrigerant leak.	Contact a certified refrigeration technician to evaluate the unit.
	Improper or low input voltage.	Check power source and verify line voltage is 115-120VAC 60 Hz
	Condenser clogged with dust/debris.	Clean Condenser (see maintenance section).
Electronic control blank, flashing, or displaying incorrect characters.	Wires disconnected at back of electronic control.	Check wiring to controller.

Problem	Possible Cause	Action
Condensing unit operating for a prolonged period or continuously.	Unit loaded with excessive amount of warm product.	Allow enough time for product to cool down.
	Prolonged door opening or door ajar.	Close door when not in use. Avoid prolonged door openings.
	Door not closing properly.	Level the unit. Check door gasket condition. Check the door latch mechanism.
	Condenser clogged with dust/debris.	Clean Condenser (see maintenance section).
	Evaporator coil blocked with ice or frost.	Defrost manually if required (see maintenance section).
Unit cabinet temperature too high.	Electronic control set too high.	Adjust control setting.
	Poor air circulation in cabinet.	Follow instructions for product loading.
	Insufficient clearance around cabinet or ambient temperature too high.	Keep at least 6” (15.24cm) free space around all sides of the unit. Make sure the air flow to the compressor is not blocked.
	Condenser clogged with dust/debris.	Clean Condenser (see maintenance section).
Door does not close tight.	Unit is not leveled.	Level the unit.
	Hinges are loose / not adjusted.	Adjust / tighten the hinge screws.
	Gasket is out of the groove.	Check gasket condition. Adjust position or replace gasket.
	Ice or frost in door opening or latches.	Check door for ice buildup or obstructions.
	Door hinge pins or bushings worn.	Check and repair door pins/bushings.
Evaporator fan does not run.	Unit in defrost cycle.	Fans do not operate during defrost cycles.
	Fan wire disconnected.	Check wiring.
	Fans blocked by ice.	Defrost manually if required (see maintenance section).
	Defrost probe not attached to the evaporator coil.	Check the location of defrost probe.
Evaporator cabinet is noisy.	Part(s) loose.	Locate and tighten loose part(s).
	Tubing vibrating.	Ensure tubing is not in contact with other tubing or components.

Problem	Possible Cause	Action
Excessive ice buildup Inside unit.	Unit is not leveled.	Level the unit; slight angle toward compressor is desirable.
	Door hinges are loose / not adjusted.	Adjust / tighten the hinge screws.
	Gasket is out of the groove.	Check gasket condition. Adjust position or replace gasket.
	Defrost probe not attached to the evaporator coil.	Check the location of defrost probe.
	Ambient humidity too high.	To prevent condensation, limit the amount of door openings.
	Evaporator fans not working.	Check fan wiring. Fans blocked with ice from clogged drain tube, defrost manually. Failed timer cycle, check controller programming.
	Evaporator coil blocked with ice or frost.	Check evaporator heat coil for operation (see maintenance section). Defrost manually if required (see maintenance section).
	Evaporator drain pan hose blocked with ice or frost.	Defrost manually if required (see maintenance section).
Electronic Display Fault Codes.	P1	Air Probe failure: The control will override the “P1” functions and cycle the compressor at 5-minute intervals, until the probe fault can be corrected.
	P2	Evaporator Probe failure: The control will override the “P2” function and operate with a timed defrost cycle, until the probe fault can be corrected.
	HA	Maximum Temperature Alarm: The cabinet air temperature has exceeded programmed temperature for a period exceeding 15 minutes. The alarm will continue to display until the cabinet temperature drops below the set maximum level of 39°F.
	LA	Minimum Temperature Alarm: The cabinet air temperature has dropped below the programmed minimum. This alarm will continue to display until the cabinet temperature rises above the minimum level.
LED lighting not working.	Light switch is off (if equipped).	Check if the light switch is on.
	Faulty LED lamp.	Replace the LED lamp.

Section 7 – Wiring Diagrams

7.1 Wiring Diagrams.

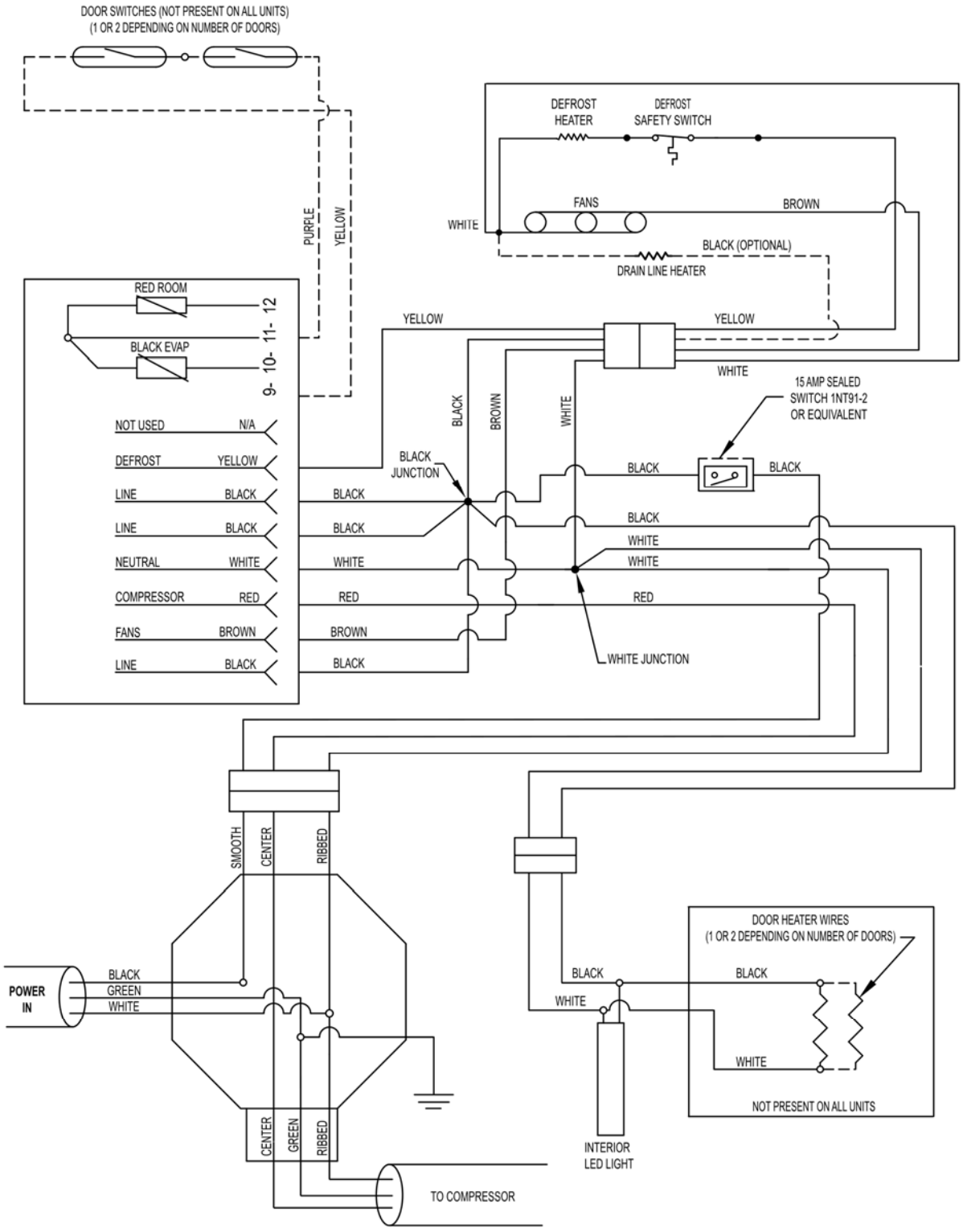

DIAGRAM 1070198R2

23-W0001

Warranty

Freezer and Refrigerated Storage Units: Seller warrants the unit under normal use and service, for one (1) year for the component parts (to be shipped by seller), and ninety (90) days for repair labor from the date of original shipment. The unit compressor motor is warranted for five (5) years from the date of original shipment. SELLER MUST BE CONTACTED AND PROVIDED UNIT SERIAL NUMBER FOR WARRANTY CLAIM. This applies only to goods installed in the United States, Canada or Mexico. Seller's obligation under this warranty shall be limited to repair (subject to the limitations below) or replacement of any part(s), F.O.B. Seller's factory, which prove(s) defective within the applicable warranty period. Seller reserves the right to inspect defective part(s) and may at Seller's discretion require return of part(s) to Seller's factory for inspection. The determination as to whether any defect exists shall be made in Seller's sole judgement.

GENERAL PROVISIONS APPLICABLE TO ALL WARRANTIES AND PRODUCTS: Seller shall not be liable for any breach of any express warranty set forth above unless Seller is informed immediately upon the discovery of defective part(s). The warranties described above are not assignable and shall operate only in favor of the original buyer/user. In event of any claim for breach of express warranty, Seller shall be responsible for labor charges for repair or replacement of any defective part(s) or assembly only for defects reported to Seller within ninety (90) days after the date of installation. ALL LABOR CHARGES SHALL BE AUTHORIZED OR APPROVED BY SELLER PRIOR TO THE REPAIR OR REPLACEMENT OF PART(S). In all other events, Seller shall not be responsible for any labor charges. Labor charges shall only include standard straight time labor hours at the site of product installation, and shall exclude charges for travel time, mileage, or other premium charges. These warranties shall not apply to any goods, or any part thereof, which may have been subject to any damage in transit, accident, negligence, abuse or misuse, unauthorized alteration or repair, acts of nature or failure to follow any of the Seller's manuals or instructions, if in Seller's sole judgement, such act, omission or event has detrimentally affected the physical condition, use or operating qualities of the product.

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