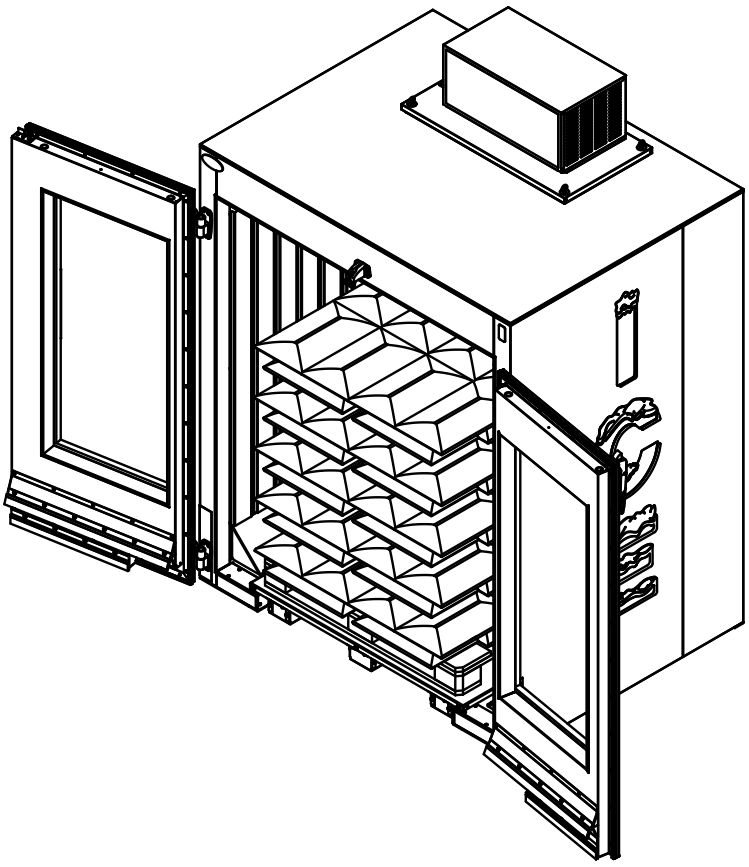


25-M0037

PALLET LOAD MERCHANDISER INSTALLATION, OPERATION AND SERVICE MANUAL

MADE IN THE USA
100% EMPLOYEE OWNED

1070310R2 6-25

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.

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.

Contents

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.

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** Risk of Fire or Explosion! DO NOT Puncture Refrigerant Tubing! To Be Repaired Only By Trained Service Personnel. Dispose of Properly In Accordance With Federal or Local Regulations.
	**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! 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.

24-M0028

	**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.
	**DO NOT CUT DRAIN HOSE/HEAT WIRE** Do not cut the drain hose; the drain hose contains an electrically heated wire and cutting the wire may damage the unit and cause personal injury.

24-M0029

Replace any missing or hard-to-read decals and use care when washing or cleaning the unit. All safety decals are available free of charge with a valid model and serial number by contacting Leer direct at **1-800-766-5337**.

Section 2 - Specifications

2.1 Outdoor Merchandiser System Specifications

	Model PL150	Model 225	Model 225 (Outdoor)
Auto Defrost - R290	L150UAGPPL	L225UAGPPL	L225UASPPL
Cold Wall - R290	N/A	N/A	N/A
Capacities and Dimensions			
7 lb Bags - Auto Defrost	280	520	520
20 lb Bags - Auto Defrost	100	200	200
7 lb Bags - Cold Wall	N/A	N/A	N/A
20 lb Bags - Cold Wall	N/A	N/A	N/A
Interior Space - cu/ft (cu/m)	150 (4.25)	225 (6.37)	225 (6.37)
Door Opening - in (cm)	28 x 58 (71.1 x 147.3)	28 x 58 (71.1 x 147.3)	28 x 58 (71.1 x 147.3)
Loading Door - in (cm)	64 x 75 (162.6 x 190.5)	50 x 78 (127 x 198.1)	50 x 78 (127 x 198.1)
Dimensions (W x D x H) - in	72 x 54 x 101	108 x 56 x 96.5	108 x 56 x 96.5
Auto Defrost weight - lb (kg)	1470 (666.8)	1780 (807.4)	1780 (807.4)
Cold Wall weight - lb (kg)	N/A	N/A	N/A
Operating Temperature			
Degrees F (Degrees C)	16 to 24 (-8.8 to -4.4)	16 to 24 (-8.8 to -4.4)	16 to 24 (-8.8 to -4.4)
Control Type	Electronic	Electronic	Electronic
Electrical			
Voltage (V/Hz)	115/60	115/60	115/60
Minimum Circuit (Amps)	20	20	20
Auto Defrost (Amps)	N/A	13	13
Cold wall (Amps)	N/A	N/A	N/A
230V/50Hz	Available	Available	Available
Other			
Compressor hp (kw)	3/4 (.55)	3/4 (.55)	3/4 (.55)
Refrigerant	R290	R290	R290
Certifications	UL, cUL	UL, cUL	UL, cUL
DOE Compliant	Yes	Yes	Yes
CARB Compliant	R290 units	R290 units	R290 units
NSF Certification	No	No	No

1. Height includes compressor. Add 3″ to depth for upright solid door & handle
2. Merchandiser storage capacities are approximate & may vary due to type of ice, bag size, and methods of loading.

2.2 Model Component Locations

Refer to Figures 2-1 to 2-3 for the location of components on the PL225 and PL150 units.

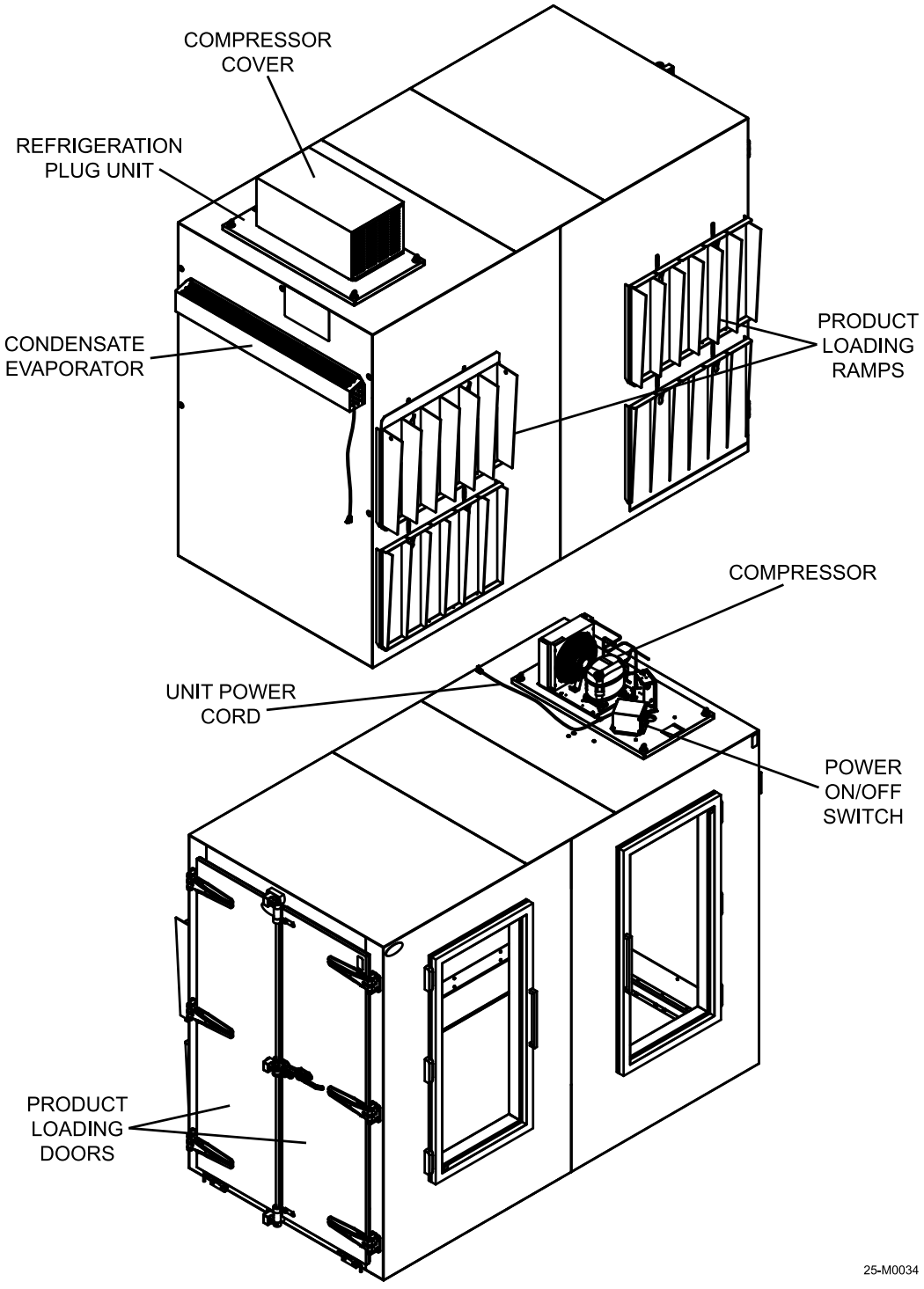


Figure 2-1

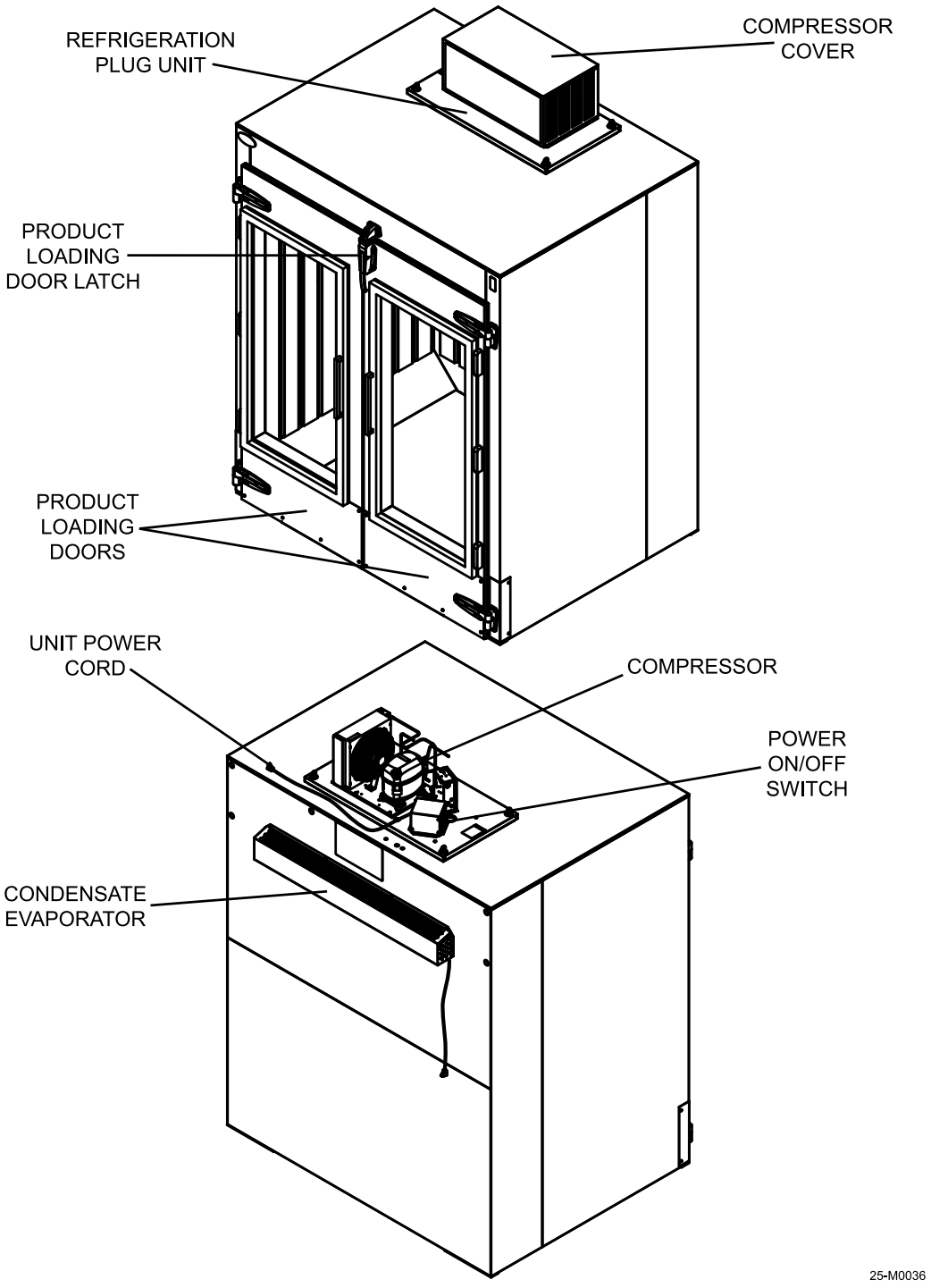

REFRIGERATION
PLUG UNIT
COMPRESSOR
COVER
PRODUCT
LOADING
DOOR LATCH
PRODUCT
LOADING
DOORS
UNIT POWER
CORD
COMPRESSOR
POWER
ON/OFF
SWITCH
CONDENSATE
EVAPORATOR
25-M0036

Figure 2-2

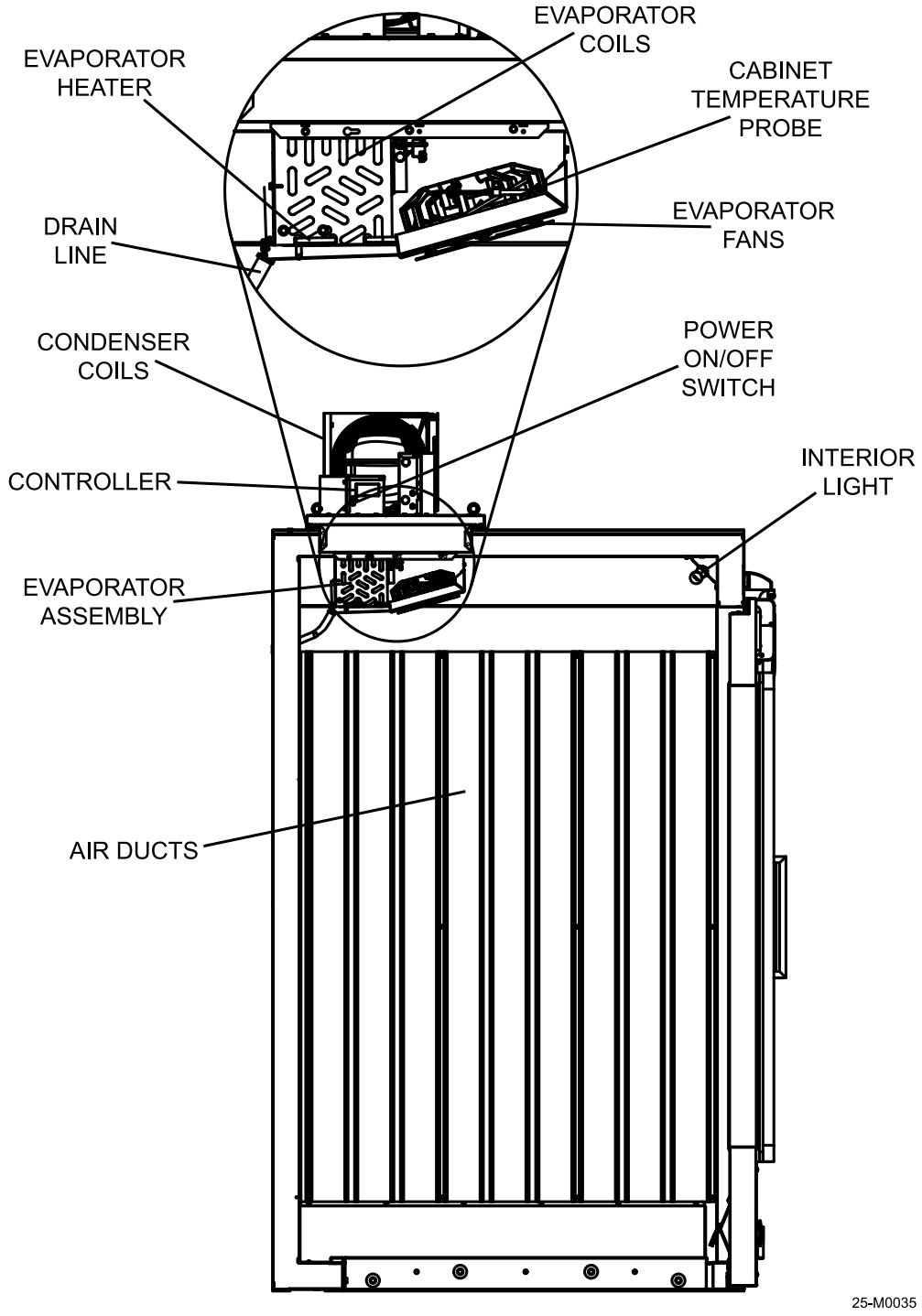

EVAPORATOR COILS
EVAPORATOR HEATER
CABINET TEMPERATURE PROBE
DRAIN LINE
EVAPORATOR FANS
CONDENSER COILS
POWER ON/OFF SWITCH
CONTROLLER
INTERIOR LIGHT
EVAPORATOR ASSEMBLY
AIR DUCTS
25-M0035

Figure 2-3

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.

Unit 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.

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.

Cabinet 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. Units cannot be moved through an 8-foot door.

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.

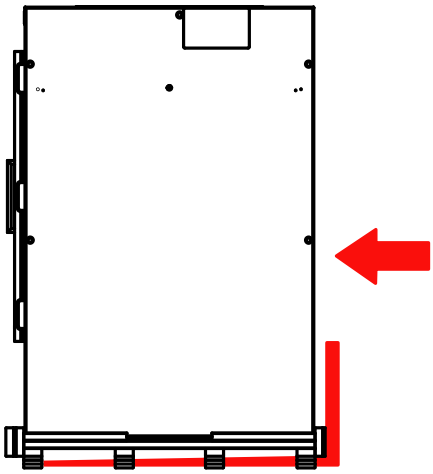


Figure 3-1

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

3.2 Unpacking the units PL225 & PL150

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 WILL NOT be assessed.

On both models, 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. Remove any metal or plastic shipping brackets that are in the product door jambs.

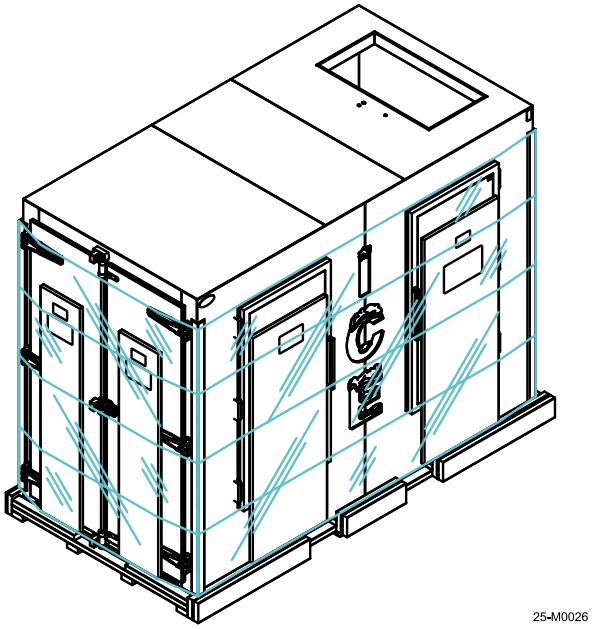


Figure 3-2

PL 225 units may have additional items that are shipped inside the unit, typically the plug

refrigeration unit and loading ramps. Be sure to remove and inventory these items as well as check for possible shipping damage to each of the components separately, refer to Figure 3-3. On plug refrigeration units, be sure to remove any vertical supports before removing the plug unit from the interior.

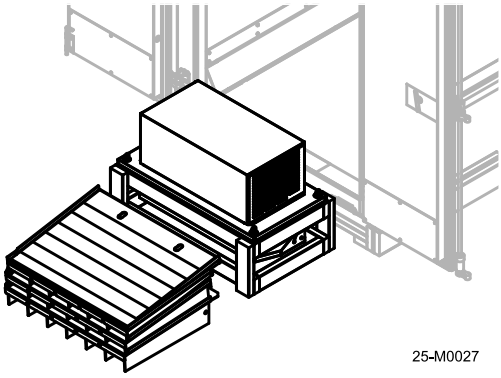


Figure 3-3

PL150 units can be moved into position with the included galvanized ice pallets and shipping brackets, after the plug unit crate has been removed. Once the unit is in the desired location, remove the shipping brackets as shown in Figure 3-4. Replace the hardware that was used for the brackets into the holes and keep the shipping brackets for future use.

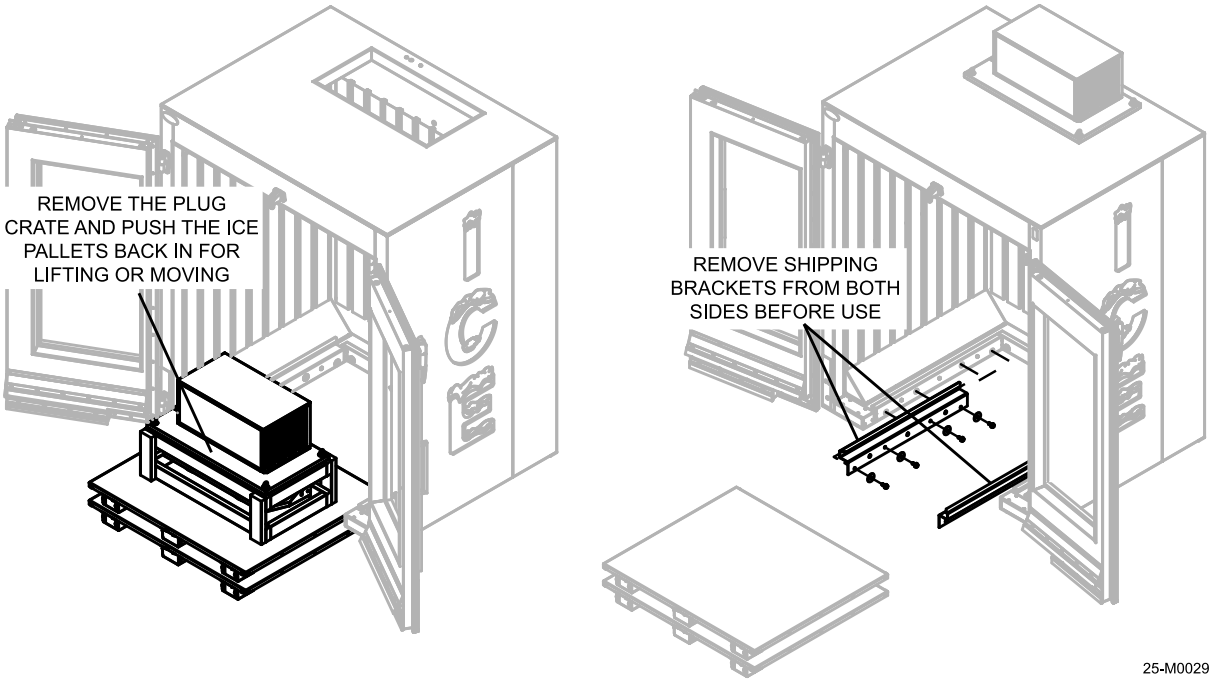


Figure 3-4

3.3 Plug Unit Installation

Units that have a plug style condensing unit and evaporator will need to have it installed on top of the unit. The completed plug unit weighs approximately 150 pounds, so the use of a lifting device of sufficient capacity MUST be used. Use caution to prevent damage to the drain pan nipple upon installation. Do not lay the evaporator housing directly on any surface as the weight of the compressor could damage the fans or drain nipple. Once installed, lighting, grounding, and door switch connections (if applicable) will need to be made on top of the unit.

NOTE: DO NOT tip the plug 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.

1. Always attach suitable lifting straps or chains to all four eye bolts on the plug unit when lifting, refer to Figure 3-5.
2. Lift the plug unit out of the wooden crate and center it in the designated slot on top of the pallet load cabinet. The completed plug weighs approximately 150 pounds, use caution when lowering to prevent damage to the drain pan nipple upon installation. The plug unit will sit on the attached gasket: no additional sealing is required after placement.

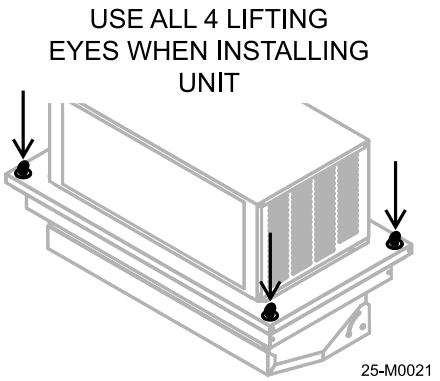


Figure 3-5

After the plug is installed, any electrical connections will need to be made between the box and the plug unit. Remove the split bushing from the compressor cover and place the wires from the plug and the box through the bushing as shown in Figure 3-6. Connect the white and black interior light wires with the molded pug and then connect the door switch wires (if equipped) with the spade connectors, purple to purple and yellow to yellow.

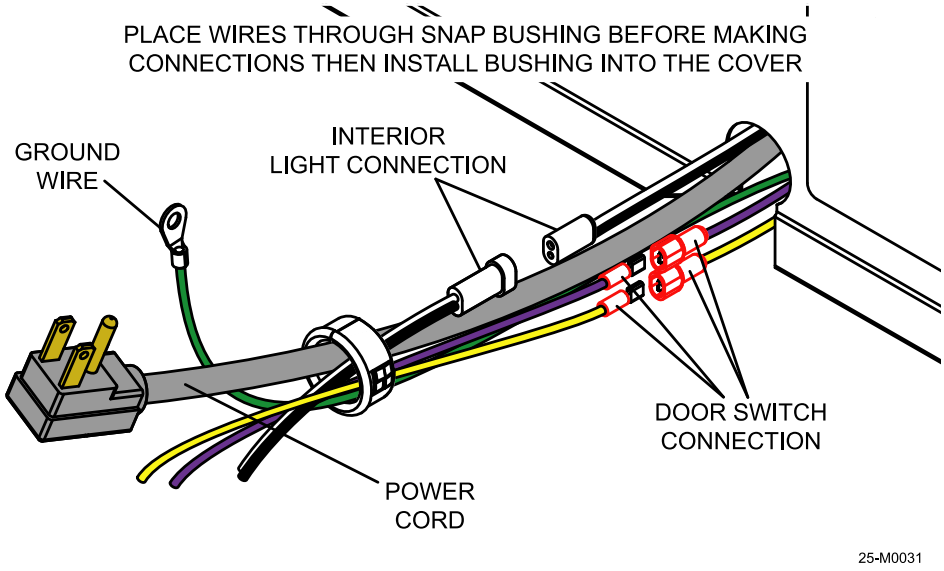


Figure 3-6

Pull the power cord out and then push any wire slack and connectors into the area under the compressor cover and snap the split bushing into place.

Connect the plug ground wire to the top of the box with the provided screw, refer to Figure 3-7, making sure the star washer is under the ring terminal before tightening the screw.

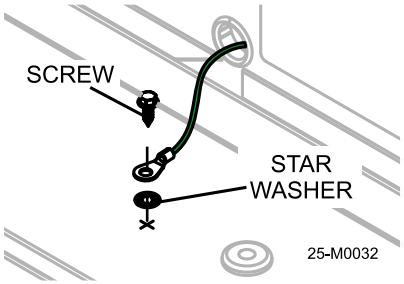


Figure 3-7

3.4 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 3-8.

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.

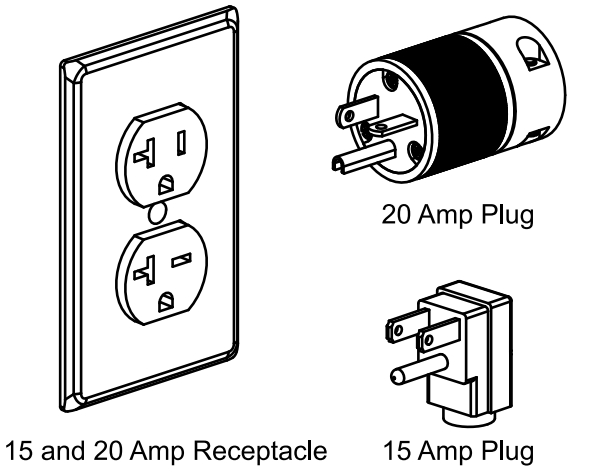


Figure 3-8

3.5 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 at least 3” behind the unit and on all sides 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 3-9.

WARNING!
Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.

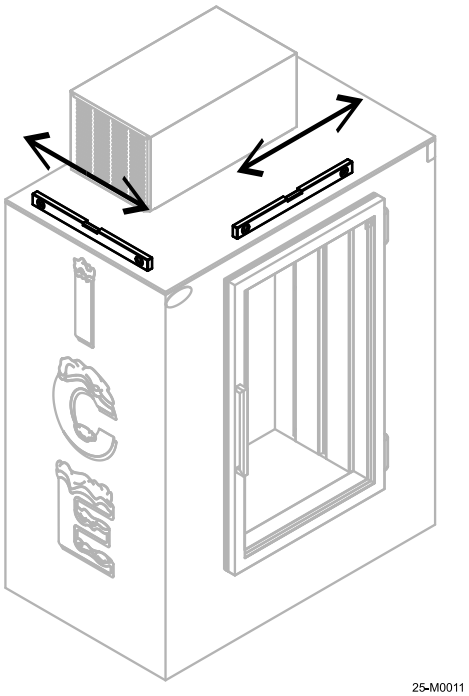


Figure 3-9

3.6 Condensate Evaporator

On auto defrost models, the defrosting cycle melts any accumulated frost and ice on the evaporator coil inside the unit. The water is collected into a drain pan and then the water drains out of the back of the unit by a hose. Depending on the climate, and the frequency of door openings, the water must be dissipated by evaporation. Failure to install this assembly will result in water draining directly onto the floor during the defrost cycle on indoor units.

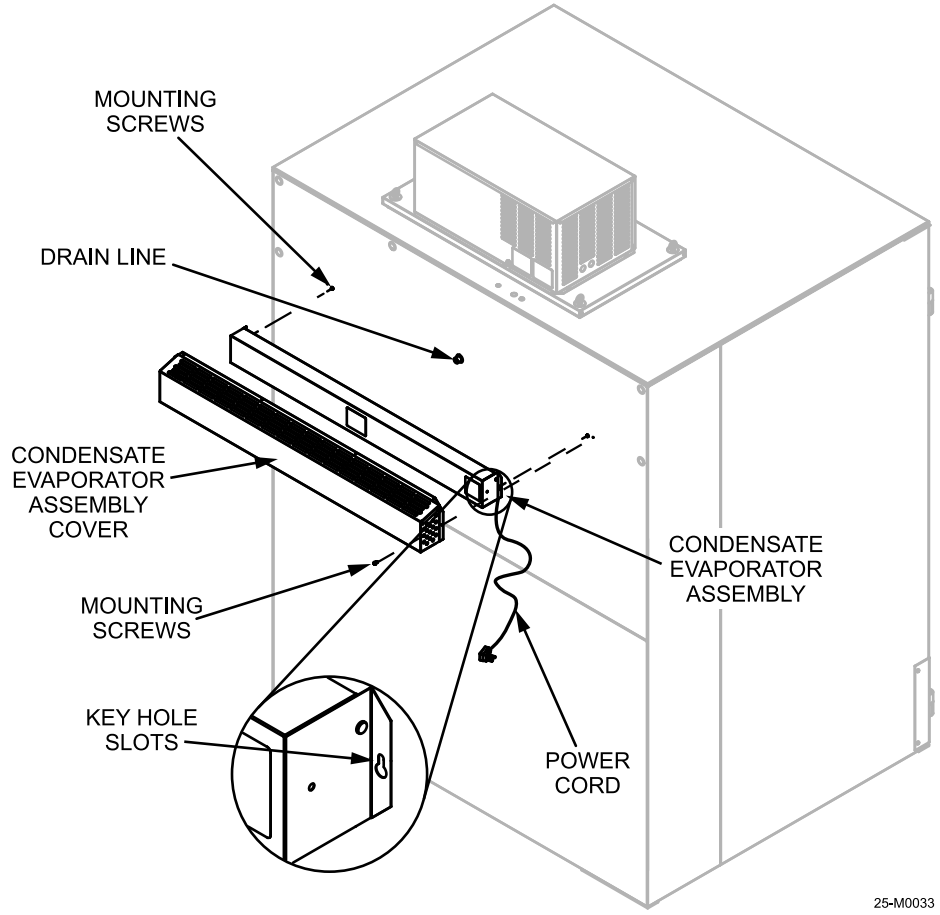


Figure 3-10

Place the evaporator assembly onto the screws on the back of the unit, making sure the drain hose will empty into the pan and that the power cord is not pinched or kinked; refer to Figure 3-10. Install the evaporator cover over the evaporator assembly, making sure there is at least 1” clearance between the cover and any other materials. Secure the cover in six places with the included screws.

Section 4 – Operation

4.1 How the System Works

There are four main elements to a refrigeration system, refer to Figure 4-1:

- The Compressor
- The Condenser
- The Expansion Device/Capillary Tube
- The Evaporator or Cold Wall Tubing

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.

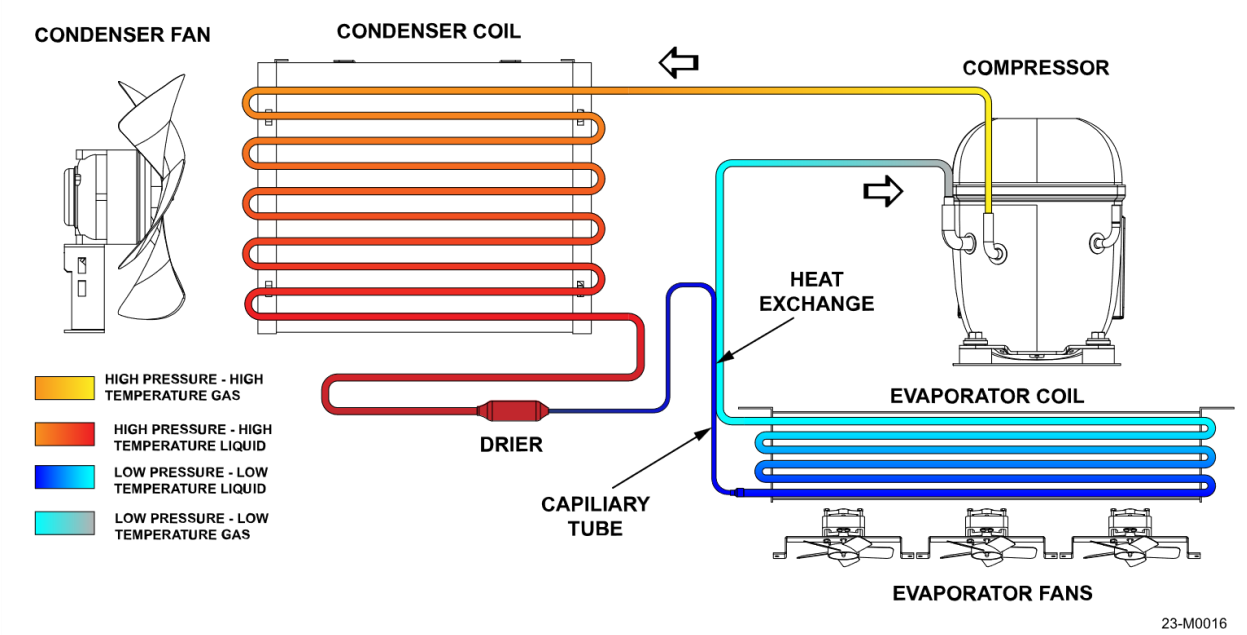


Figure 4-1

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 expansion device/capillary tube: When the refrigerant enters the capillary tubing it expands and 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 heat exchange is a soldered

connection between the capillary tubing and the suction line which removes any residual heat from the vapor returning to the compressor.

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 4-3**.**

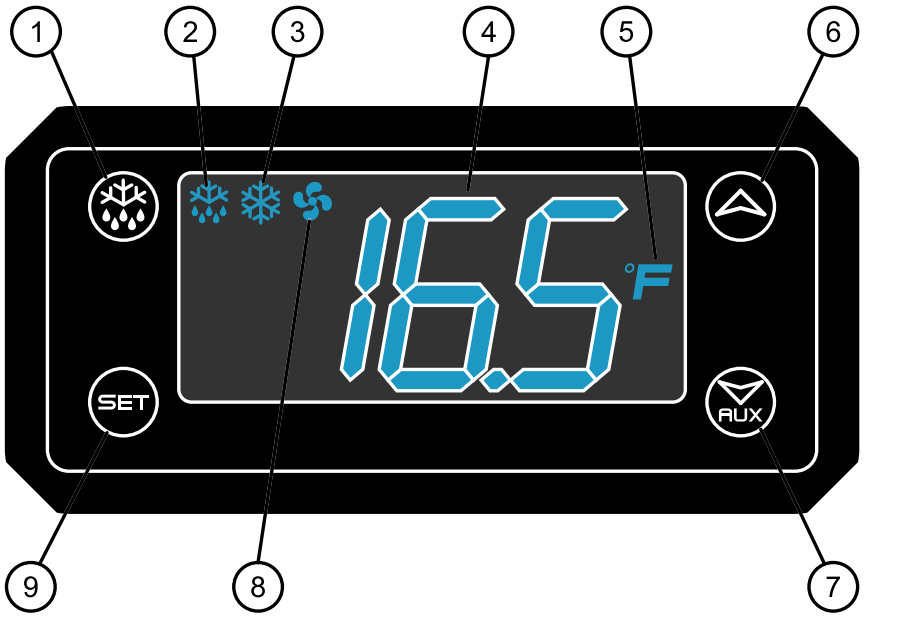


Figure 4-2

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.

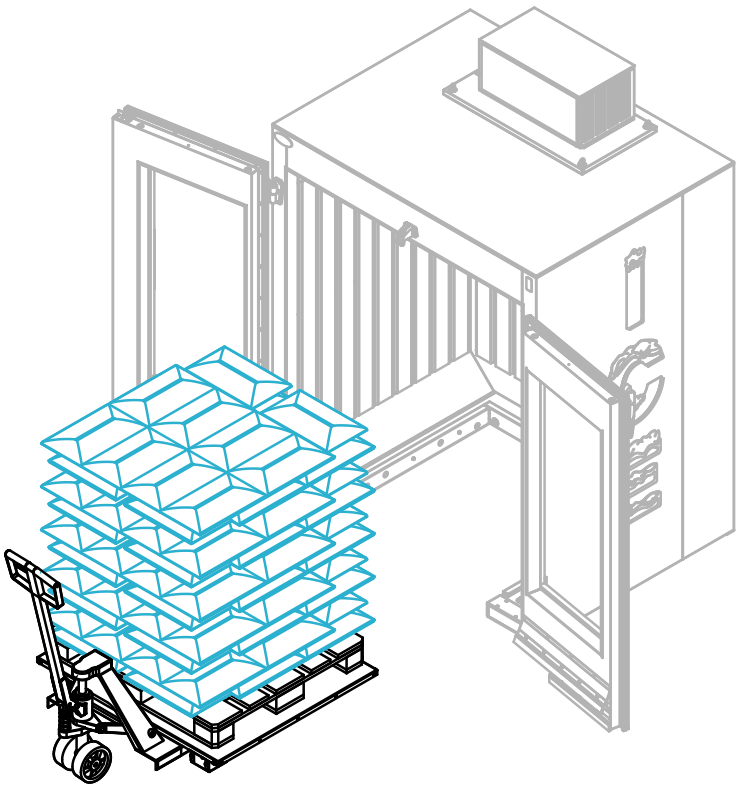
The control also offers monitoring of the operational status of the unit via the icon and digital temperature display. The controller has been programmed by Leer to operate within the design parameters of the refrigeration system. The condensing unit will continue to run until the air temperature in the cabinet reaches the factory set point temperature of 14°F with a differential of 6°F (14 to 20°F).

4.6 Loading the Unit PL150

WARNING:
Flammable refrigerant used! Do not store explosive substances such as aerosol cans with flammable propellants in this appliance

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 also help in operational efficiency.

PL150 units are shipped with two galvanized steel pallets, specifically designed to fit in the unit to allow for faster loading. Place the pallet of on the galvanized pallet, then load the pallets into the PL150 refer to Figure 4-3.



25-M0010

Figure 4-3

NOTE: Any ice stored in the PL150 MUST be loaded on the factory supplied pallets before being put in the unit.

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.

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 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.

4.6 Loading the Unit PL225

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

Using the ramps: The loading ramps are stored on the back of the unit on supplied J-hooks.

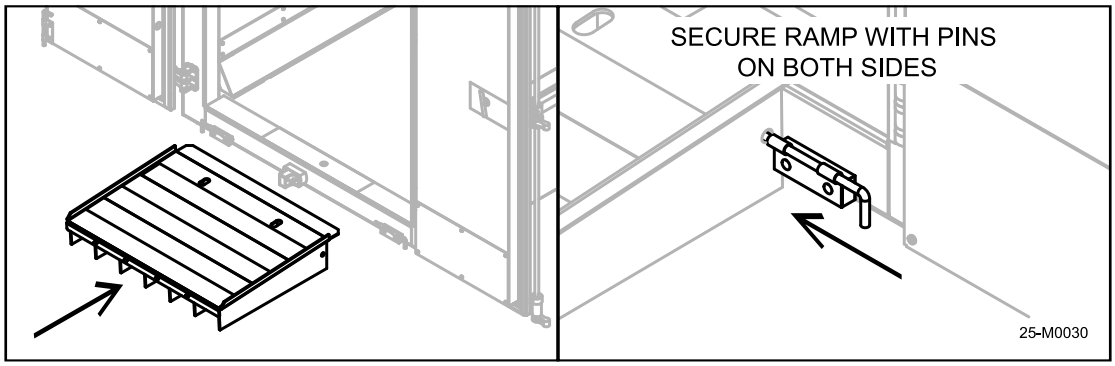


Figure 4-4

Remove all four ramp sections and locate the tallest ramp section. Open the doors and install the first ramp section, then secure the ramps with the spring-loaded pins on both sides; refer to Figure 4-4.

NOTE: Always secure the ramp on both sides to prevent ramp from moving during loading.

Add the remaining ramp sections in order, tallest to shortest, by sliding the notches on the ramp over the protruding bolts as shown on Figure 4-5. If the ramp won't slide into place, loosen the screw slightly until the ramp section falls into place.

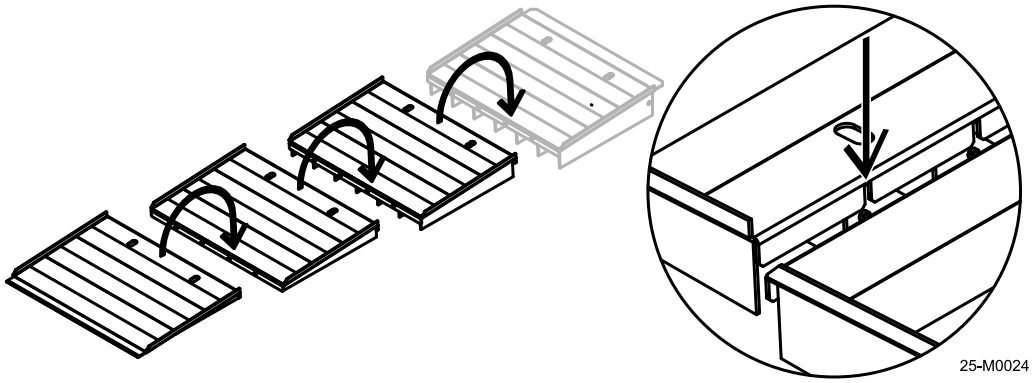


Figure 4-5

Once the ramp is in place with all of the sections attached, use a pallet jack to load a full pallet of ice into the unit, refer to Figure 4-6. Remove the ramp when complete and replace the ramp section on the storage hooks.

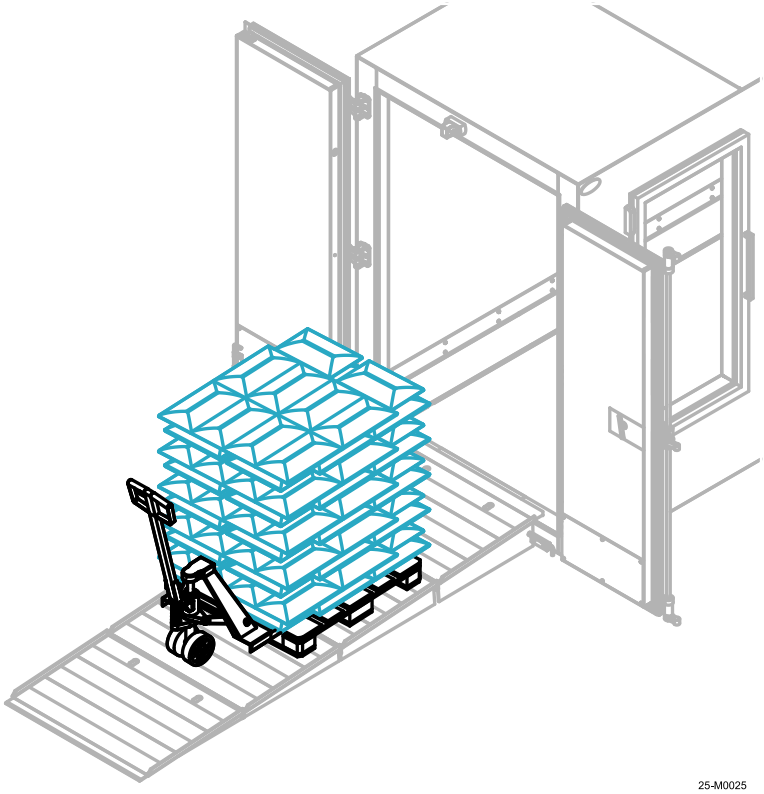


Figure 4-6

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.

WARNING:
Flammable refrigerant used. Do not pierce or burn. Be aware that refrigerants may not contain an odor. Do not damage the refrigeration circuit.

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.

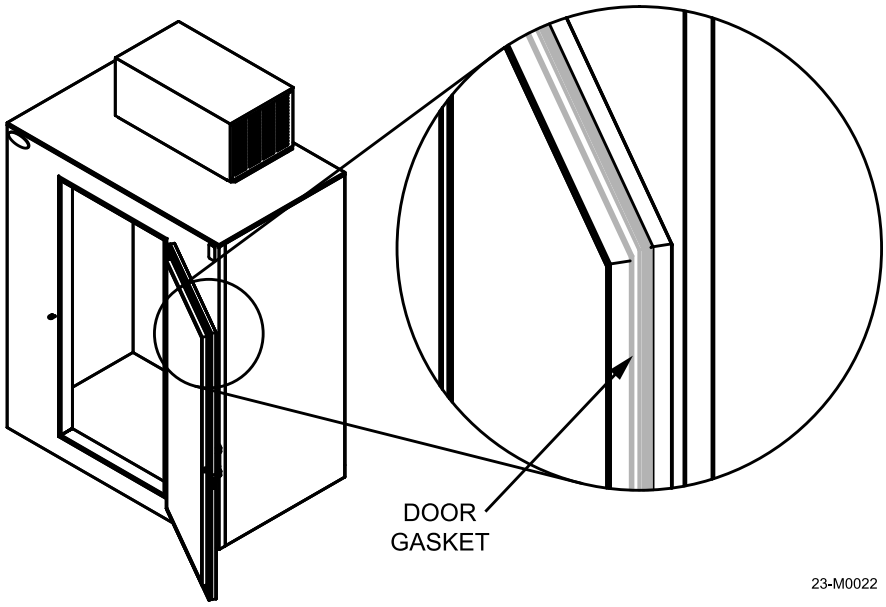


Figure 5-1

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 unit.

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:
Flammable refrigerant used. 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.

WARNING:
Flammable refrigerant used. Do not use electrical appliances inside the storage compartments of the appliance, unless they are of the type recommended by the manufacturer.

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 any 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

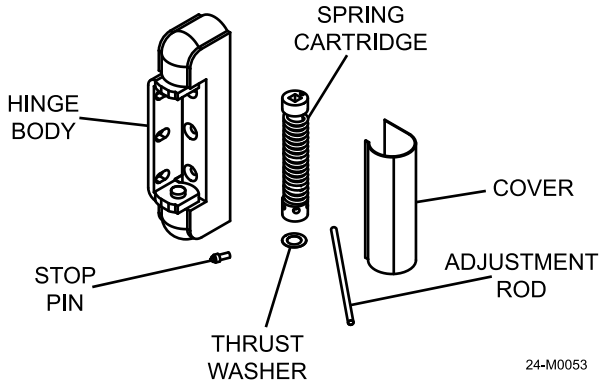


Figure 5-2

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 5-3.

4. After installation, adjust the spring tension.

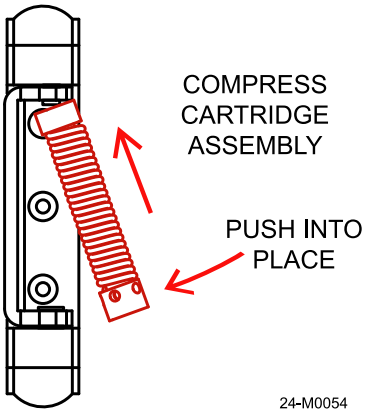


Figure 5-3

To adjust the spring tension follow the steps below and refer to Figure 5-4:

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 4 holes or approximately 1 full turn. 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!

4. Install the hinge cover by placing it over the hinge and pushing until it locks in.

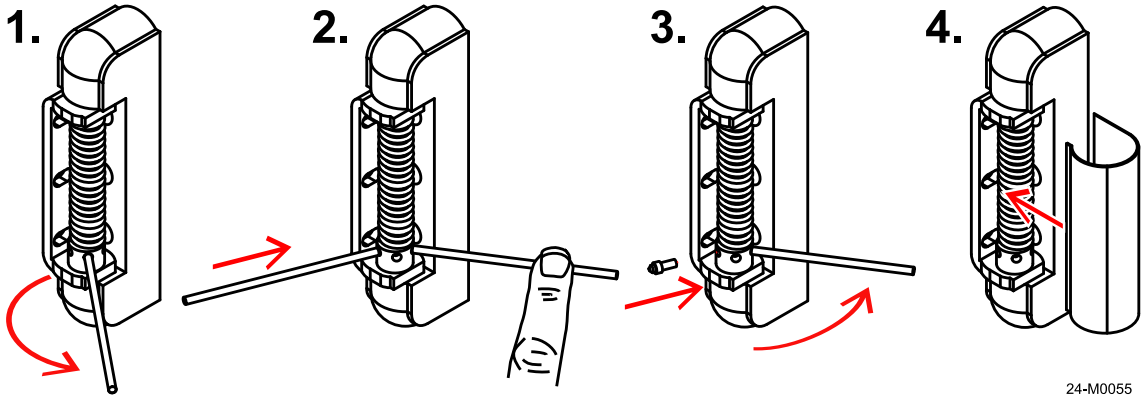


Figure 5-4

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.

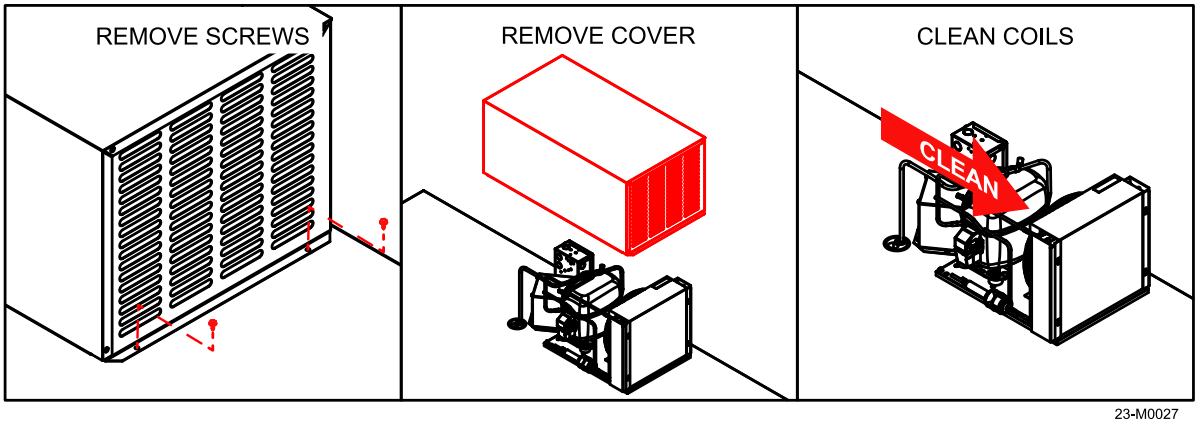


Figure 5-5

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.

WARNING:
Flammable refrigerant used. Do not damage the refrigeration circuit!

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.

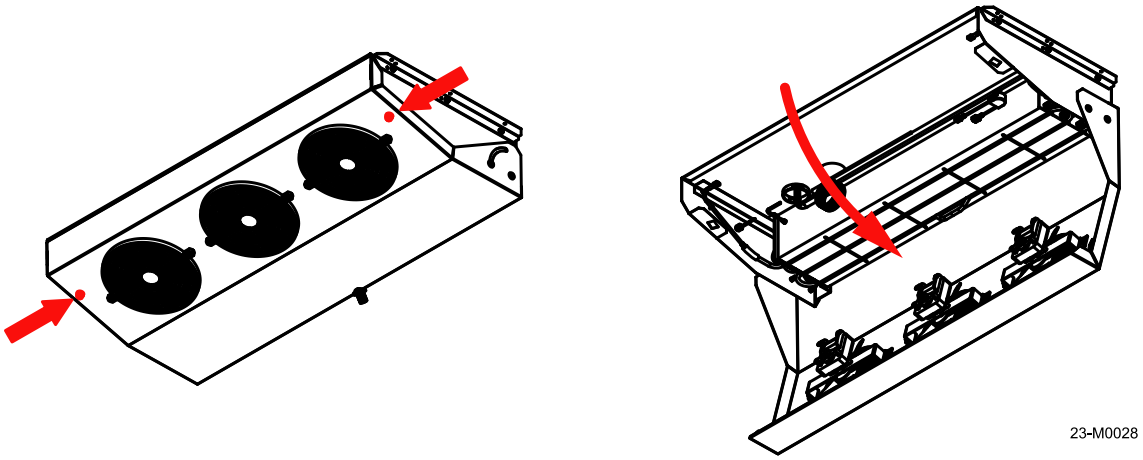


Figure 5-6

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.

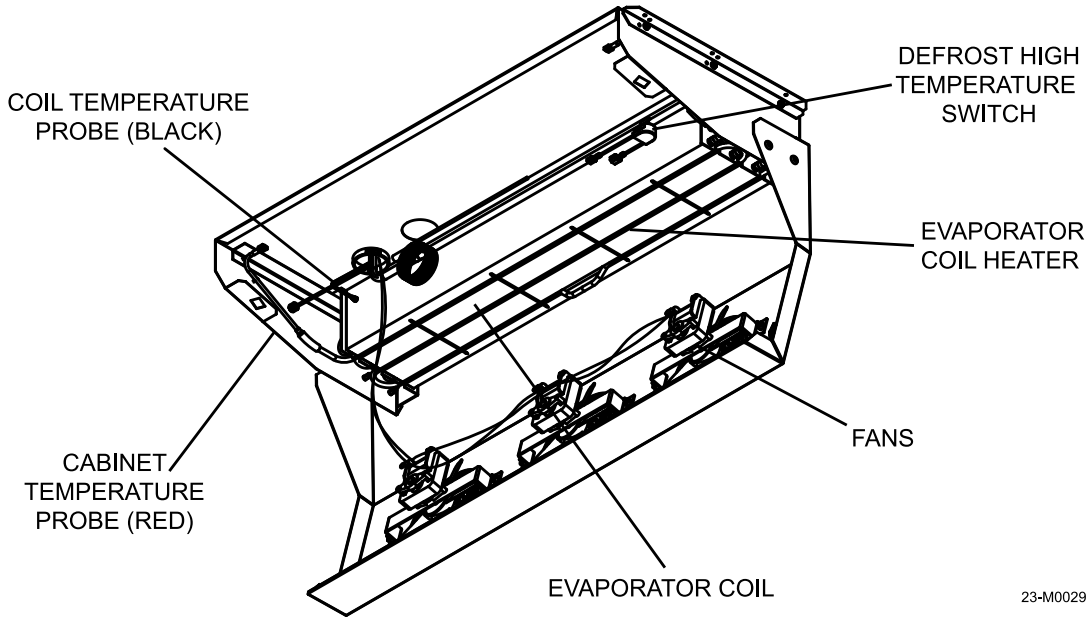


Figure 5-7

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 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.

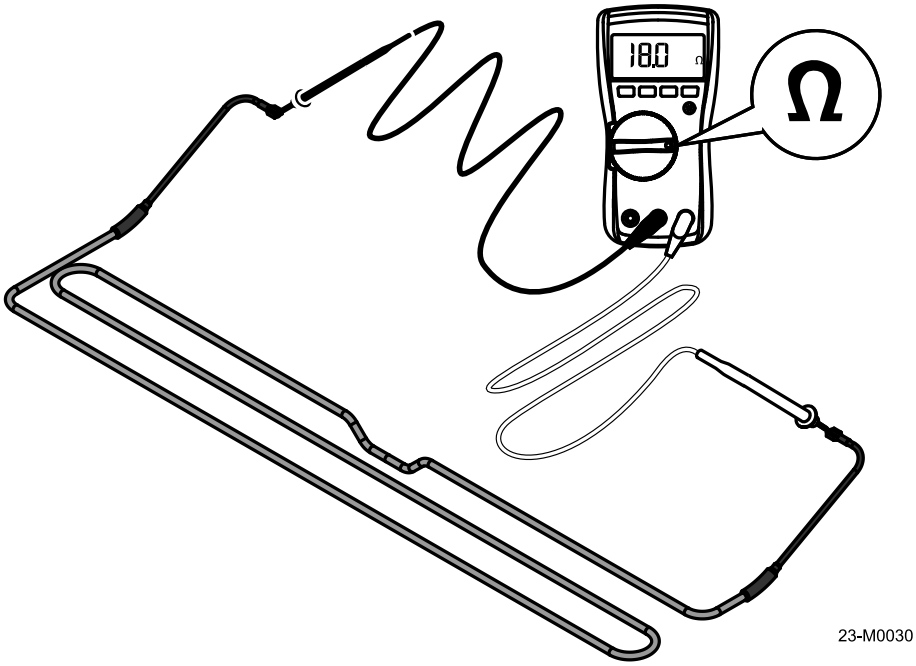


Figure 5-9

Defrost Heater Resistance @70°F		
Heater Size	Resistance	Range
400 watts	36 ohms	39.6 - 32.4 ohms
600 watts	24 ohms	26.4 - 21.6 ohms
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. Make sure shipping brackets are removed.
	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 3” (7.62cm) of 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).
Loading 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 45 minutes. The alarm will continue to display until the cabinet temperature drops below the set maximum level of 32°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.
	Light wires disconnected.	Check connections on light wires.
	Faulty LED lamp.	Replace the LED lamp.

Section 7 – Wiring Diagram

7.1 Merchandiser Wiring Diagram

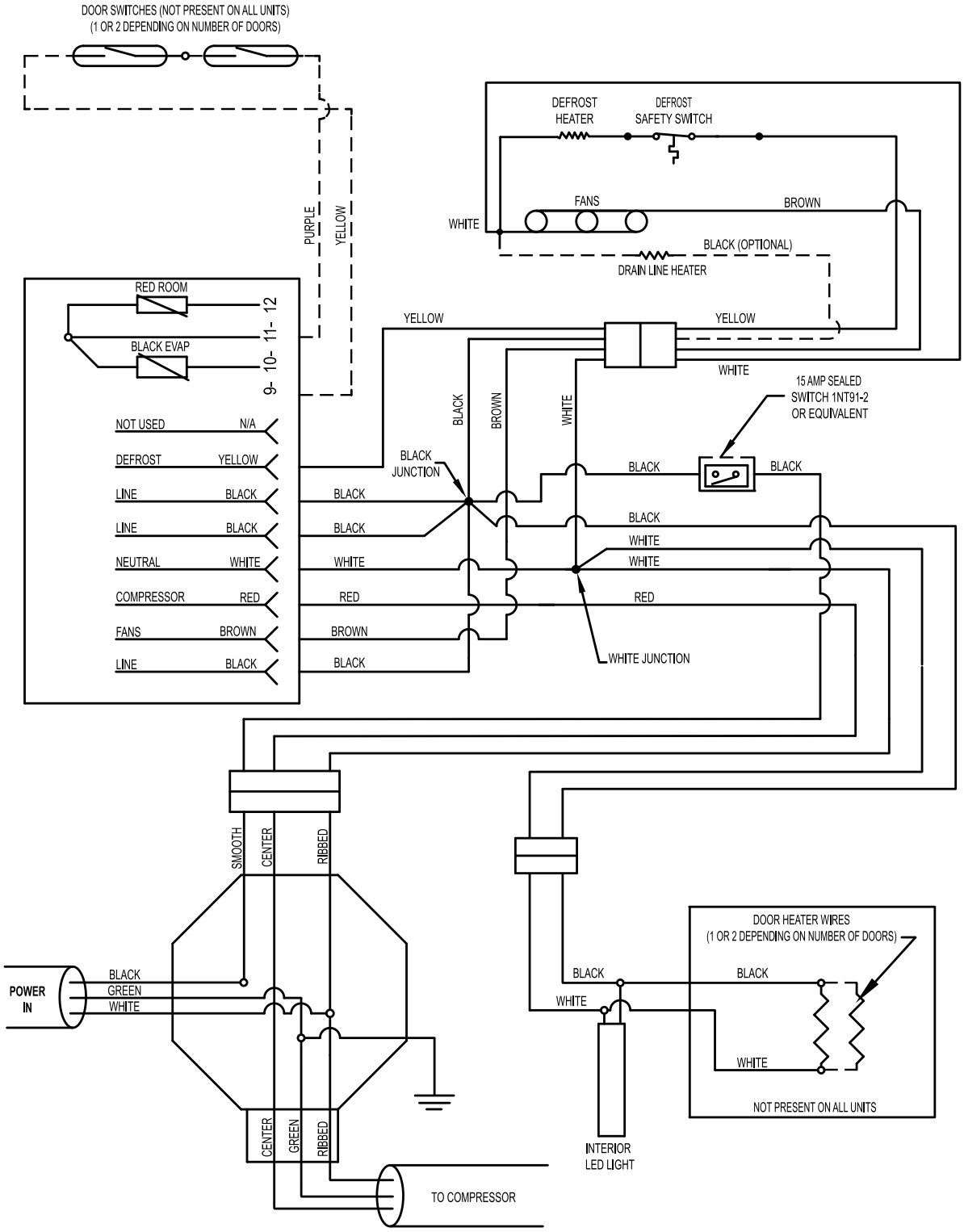


DIAGRAM 1070198R2

23-W0001

Warranty

WARRANTY: Leer, Inc., an Iowa corporation (**"Seller"**) warrants to the original purchaser (**"Purchaser"**) that the parts manufactured by Seller (such parts, the **"Parts"**) of the Ice Merchandiser product sold by Seller directly to Purchaser (the **"Product"**) will be free from defects in materials and workmanship under normal use and service, beginning on the date of shipment thereof to Purchaser and continuing for the applicable Warranty Period (this **"Warranty"**). The **"Warranty Period"** means (a) for the Product's compressor motor (the **"Compressor Motor"**), five (5) years, and (b) for all component Parts of the Product other than the Compressor Motor, one (1) year.

IN ORDER TO MAKE A WARRANTY CLAIM, PURCHASER MUST COMPLY WITH SELLER'S CLAIMS PROCESS AS SET FORTH AT WWW.LEERINC.COM AND PROVIDE TO SELLER THE PRODUCT MODEL NUMBER, SERIAL NUMBER, AND ITEMIZED INVOICE FOR THE WARRANTY CLAIM. Seller shall not be liable for any breach of this Warranty unless Seller is informed immediately upon the discovery of defective Part(s). The remedies set forth in this Warranty are available only with respect to Products installed in the United States or Canada. **Subject to the limitations set forth in this Warranty, Seller's sole obligation and Purchaser's sole and exclusive remedy for a defective Part or Product shall be limited to one of the following remedies, as selected by Seller in its sole discretion: (i) repair of any Part(s) that prove(s), to Seller's satisfaction, to be defective within the applicable Warranty Period, (ii) replacement of such Part(s) or the Product, or (iii) refund of the purchase price paid to Seller by the Purchaser for the Product of which such defective Part(s) are components.** 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 at Purchaser's sole cost and expense. The determination as to whether any defect exists shall be made in Seller's sole judgement. A Part repaired or replaced under this Warranty is warranted only for the balance of the Warranty Period on the original Part that was repaired or replaced. All Replacement Parts will be provided by Seller to Purchaser; Purchaser will not be reimbursed by Seller for Parts Purchaser replaces from another supplier of parts. This Warranty is not assignable and shall operate only in favor of the Purchaser.

LIMITATIONS ON LABOR COVERAGE: In the event of any claim for breach of this Warranty for which Seller selects repair or replacement of the Part as the remedy, Seller shall be responsible for labor charges for repair or replacement of any defective Part(s) or defective assembly of Part(s) only for defects reported to Seller within the first ninety (90) days of the Warranty Period. **TO BE ELIGIBLE FOR SUCH REIMBURSEMENT: ALL LABOR CHARGES MUST BE PERFORMED BY AN HVAC REPAIR COMPANY SELECTED BY PURCHASER THAT IS LICENSED UNDER APPLICABLE LAWS, AND ALL LABOR CHARGES SHALL BE AUTHORIZED OR APPROVED BY SELLER IN WRITING 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.

WARRANTY EXCLUSIONS: The remedies under this Warranty are not available with respect to any Product, or any Part thereof, which may have been subject to any damage in transit, damage caused by normal wear and tear, accident, negligence, abuse or misuse, unauthorized alteration or repair, acts of nature or failure to follow any of 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.

DISCLAIMER OF IMPLIED WARRANTIES AND LIMITATIONS ON LIABILITY: THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES; SELLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, BY REASON OF LAW, STATUTE OR OTHERWISE, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE AND ANY WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OF TRADE, AND ALL IMPLIED WARRANTIES ARE HEREBY DISCLAIMED. SELLER SHALL NOT BE LIABLE, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY), STATUTE OR OTHER LEGAL THEORY, FOR ANY SPECIAL, INDIRECT, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, INCLUDING FOR LOSS OF GOODS, MERCHANDISE OR OTHER PROPERTY, OR LOSS OF PROFITS, RESULTING FROM PRODUCT OR PART DEFECTS OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT SELLER WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CIRCUMSTANCES FOR ANY BREACH OF CONTRACT OR FOR ANY OTHER CLAIM BY PURCHASER AGAINST SELLER EXCEED THE PRICE OF THE PRODUCTS SOLD BY SELLER WITH RESPECT TO WHICH SUCH CLAIM ARISES.

The invalidity or unenforceability of any provision of this warranty shall not affect the validity or enforceability of any other provision. If any provision of this warranty is determined to be invalid or otherwise unenforceable, then this warranty shall be construed in accordance with the remaining terms as if the invalid or unenforceable provision was not contained therein. This Warranty is governed by the laws of the province of Ontario and any federal laws applicable therein, without regard to conflict of laws principles.

For Quebec-based Purchasers Only: The parties hereto have required that this Agreement, and all related documents, be drafted in English, at their express wish. A French version of this Agreement has been provided to the customer or adhering party. *Les parties aux présentes ont requis que la présente convention, ainsi que tous les documents qui s'y rattachent, soient rédigés en anglais, selon leur volonté expresse. Une version française de la présente convention a été remise au consommateur ou à l'adhérent.*