

HUSSMANN[®]
IMPACT[™] Merchandisers



Reach-in Merchandisers

Medium and Low Temperature Cases



IMPORTANT
Keep in store for
future reference!

***Installation &
Operation Manual***

Shipped With Case Data Sheets

P/N 0387183_D

Impact Series
October 2007

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WARRANTY

IMPORTANT

KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards!

HUSSMANN®

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**INSTALLATION
TOOL LIST**

Unloading From Trailer:

Lever Bar (also know as a Mule,
Johnson Bar, J-bar, Lever Dolly, and pry lever)
Moving Dolly

Setting Case Line-Up:

Level, 4 ft suggested
Ratchet
1/4 in. Socket
5/16 in. Socket
1/2 in. Socket
Battery Drill/Screw Gun
Caulking Gun
10 in. Adjustable Crescent Wrench

REVISION D — SEPTEMBER 2007

1. Added front panel text and illustration, Page 1-2.
2. Clarified shimming directions, page 1-3.
3. Added RLT information throughout.
4. Added note to remove bumper protective film, Page 1-6.
5. Added information on Always*Clear™ glass, page 5-1.
6. Removed reference to Anthony doors, Page 6-5.
7. Added repairing aluminum coil, Page 6-12.
8. Changed warranty page.
9. Added Installation Tool List, page iv.
10. Added revision history, page iv.

REVISION C — JUNE 2002

1. Added NSF information, pages 1-1,4-2 through 4-4.
2. Sections 2 through 6 are completely rewritten.
3. Changed warranty to March 15,2002.

NSF CERTIFICATION

These merchandisers are manufactured to meet ANSI / National Sanitation Foundation (NSF®) Standard #7 requirements. Proper installation is required to maintain certification. Near the serial plate, each case carries a label identifying the type of application for which the case was certified.

**ANSI/NSF-7 Type I – Display Refrigerator / Freezer
Intended for 75°F / 55%RH Ambient Application**

**ANSI/NSF-7 Type II – Display Refrigerator / Freezer
Intended for 80°F / 55%RH Ambient Application**

**ANSI/NSF-7 – Display Refrigerator
Intended for Bulk Produce**

LOCATION

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

Placing refrigerated merchandisers in direct sunlight, near hot tables or near other heat sources could impair their efficiency.

Like other merchandisers, these are sensitive to air disturbances. Air currents passing around merchandisers will seriously impair their operation. Do NOT allow air conditioning, electric fans, open doors or windows, etc. to create air currents around the merchandisers.

To prevent sweating on the exterior surfaces of merchandisers, there must be A **MINIMUM CLEARANCE OF 4 INCHES (102 MM)** between the merchandisers and other fixtures or walls.

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

SHIPPING DAMAGE

All equipment should be thoroughly examined for shipping damage before and during unloading.

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

Apparent Loss Or Damage

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

Concealed Loss Or Damage

When loss or damage is not apparent until after equipment is uncrated, a claim for concealed damage is made. Upon discovering damage, make request in writing to carrier for inspection within 15 days and retain all packing. The carrier will supply inspection report and required claim forms.



CAUTION

Do not walk or put heavy objects on case.

EXTERIOR LOADING

Do **NOT** walk on top of merchandisers or damage to the merchandisers and serious personal injury could occur. THEY ARE NOT STRUCTURALLY DESIGNED TO SUPPORT EXCESSIVE EXTERNAL LOADING such as the weight of a person. Do not place heavy objects on the merchandiser.

MERCHANDISERS SHIPPED WITH END INSTALLED

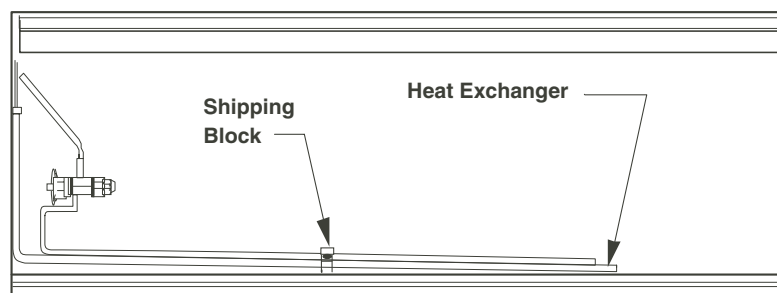
If the case was shipped with the end installed, two long bolts were used to hold the shipping brace to the end. If the shipping bolts are reinserted after removing the brace, they will extend into the product area and may damage the coil. **THEREFORE, BE SURE TO REPLACE THESE BOLTS WITH THE SHORTER BOLTS PROVIDED.**

Be careful not to damage the factory-installed end while moving the merchandiser. Make sure that tools are positioned past the end and beneath the merchandiser's support bar.

SHIPPING BRACES

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

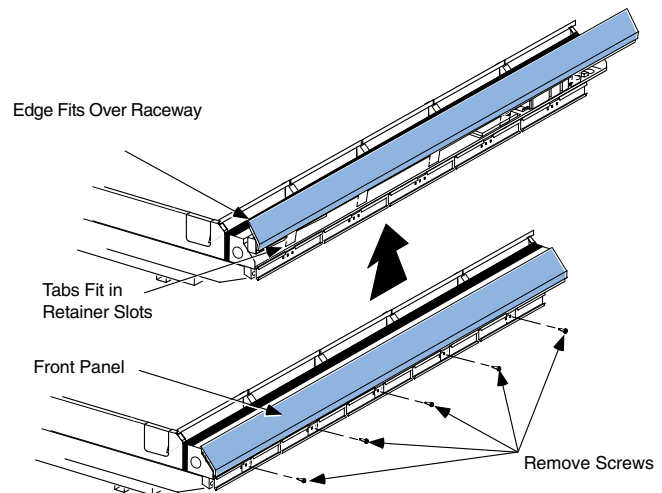
Locate the shipping block in the center of the heat exchanger (see illustration), and remove it before piping the merchandiser. This block was installed to minimize shipping vibration.



Top View of Merchandiser

REMOVE FRONT PANEL (DOES NOT APPLY TO RLT)

Before setting case, remove the front panel as follows: remove screws from front panel tabs, then lift the front panel. Refer to the illustration below. Set panel and screws aside to reinstall once all electrical work is complete.



At completion of all electrical work, installation contractor shall re-install the panels using care to ensure all panels are centered and properly fastened.

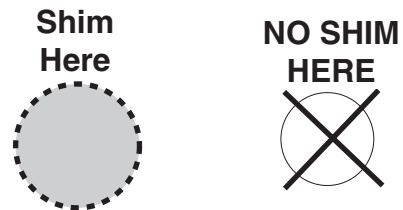
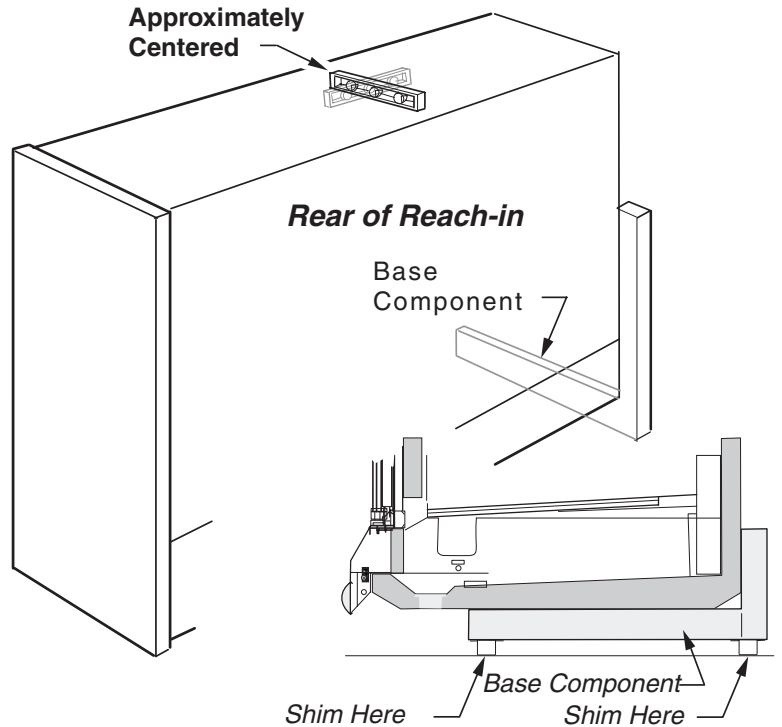
LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. When leveling merchandisers, use a carpenter's level as shown.

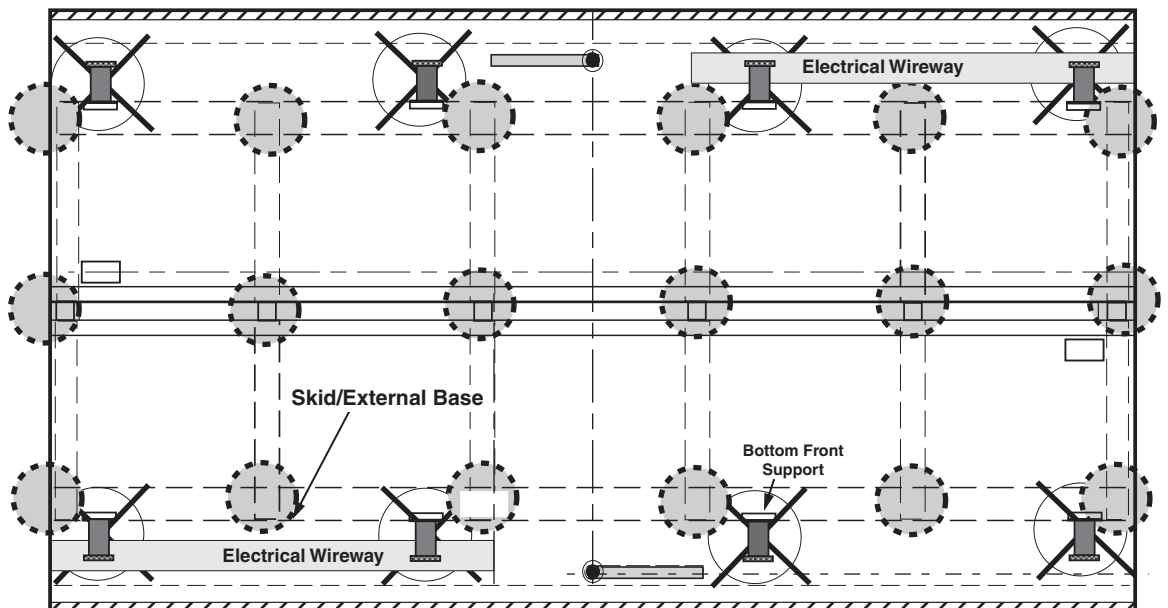
Metal leveling shims or wedges are provided with each merchandiser for use if needed.

NOTE: BEGIN LINEUP LEVELING FROM THE HIGHEST POINT OF THE STORE FLOOR.

Place shims under the rail and make sure that they are positioned at a base component (crossbar). This transfers the weight directly from the loaded case through to the floor. Placing shims at other locations will cause uneven distribution of weight leading to piping leaks, as well as sagging or wracked doors.



5-Door Island Shown



DOOR ADJUSTMENT

After leveling and joining the merchandisers, adjust and level doors according to manufacturer's instructions shipped with each product. Factory settings are lost due to vibration during shipment.

JOINING

Sectional construction means that two or more merchandisers may be joined in line yielding one long continuous display requiring only one pair of ends. **Joining kits and instructions are shipped with each merchandiser.**

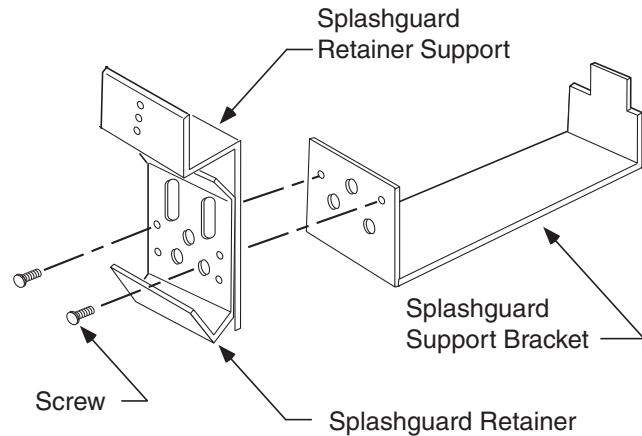
To join like fixtures, a joining kit is required. To join unlike fixtures, or like fixtures operating at different temperatures, a 1 1/2 inch (38 mm) partition kit is required. To join same temperature fixtures on different defrost cycles, a plexiglass partition kit is required.

ALL JOINTS MUST BE AIR-TIGHT TO PREVENT FORMATION OF ICE OR CONDENSATION.

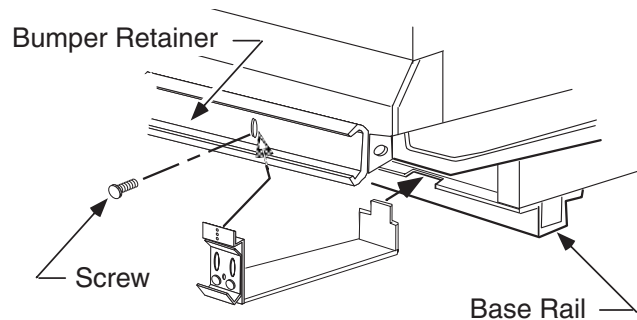
Refer to separate joining instruction shipped with each case

INSTALLING SPLASHGUARD BRACKETS

1. Attach splashguard retainer and splashguard retainer support to splashguard support bracket using two screws per bracket.



2. **INSTALL SPLASHGUARD SUPPORT BRACKETS BEFORE PIPING CASE.** The leveling brackets have a maximum extension of one (1) inch (25 mm) for uneven floors.



DO NOT PLACE SHIMS UNDER SPLASHGUARD BRACKETS.

INSTALLING BUMPERS

Offsetting the bumpers and top rails helps to disguise the joint locations, giving the lineup a smoother look.

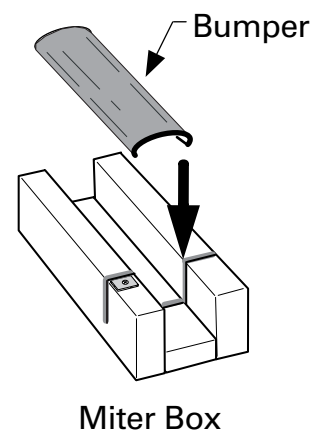
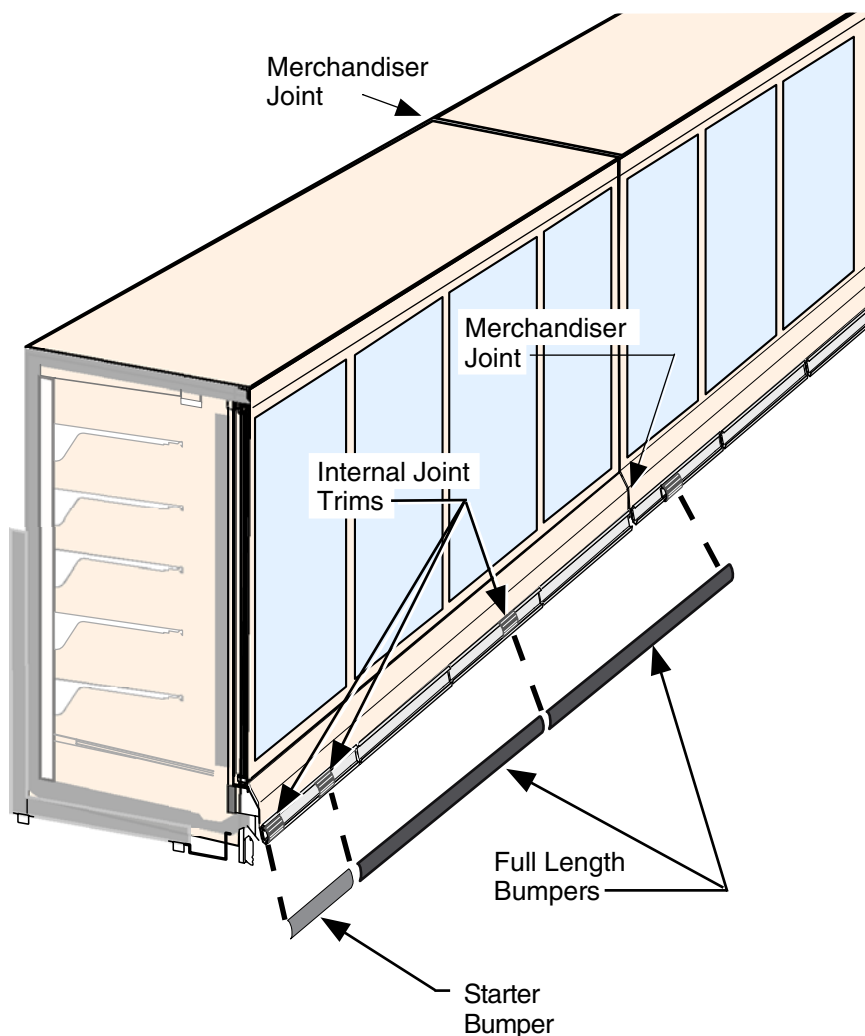
Begin at the left end of the line-up. A starter bumper is factory-installed with end kits. Insert the internal joint trim, then add the full-length bumper.

Align each bumper section with its retainer and push into place, working from the end of the line-up. Install full length bumpers and internal joint trims offset across joints. Make sure that no gaps exist between sections. Continue installing bumpers the length of the line up.

Do NOT install the last bumper sections at this time. These sections will be installed in the last step.

Once all except the last section of bumper have been installed, refrigerate the case line-up for at least six (6) hours. The last sections of bumper should be kept inside a refrigerated case or cooler during this time to allow the bumpers to contract.

Before installing the last full-length section, measure the remaining space. Use a miter box and fine-tooth saw to cut last bumper to length. Install the last section.



Remove protective film from bumpers once installation is complete.



Optional end bumpers are factory-installed.

REFRIGERANT

The correct type of refrigerant will be stamped on each merchandiser's serial plate which is located on the left-hand end of the interior top liner.

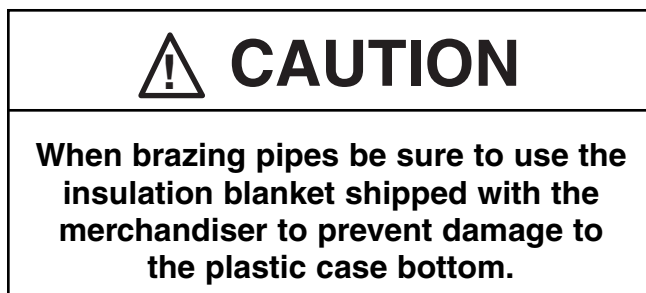


REFRIGERANT PIPING

Connection Location

The refrigerant line connections are at the right-hand end of the merchandiser (as viewed from the front) beneath the display pans.

After connections have been made, seal this outlet thoroughly. Seal both the inside and the outside. We recommend using an expanding polyurethane foam insulation.



Multiplexing

Piping of merchandisers operating on the same refrigeration system may be run from merchandiser to merchandiser through the end frame saddles provided for this purpose. **DO NOT RUN REFRIGERANT LINES THROUGH MERCHANDISERS THAT ARE NOT ON THE SAME REFRIGERATION SYSTEM** as this may result in poor refrigeration control and compressor failure.

NOTE: If Gas defrost is used, the liquid line will need to be increased two sizes larger inside the merchandiser area. This is necessary to ensure even liquid drainage from all evaporators during defrost.

Line Sizing

Refrigerant lines should be sized as shown on the refrigeration legend that is furnished for the store or according to ASHRAE guidelines.

Oil Traps

P-traps (oil traps) must be installed at the base of all suction line vertical risers.

Pressure Drop

Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep the refrigerant line run as short as possible using a minimum number of elbows. Where elbows are required, USE LONG RADIUS ELBOWS ONLY.

INSULATION

With GAS Defrost

The suction and liquid lines should NOT contact each other and should be insulated separately for a minimum of 30 ft (9144 mm) from the merchandiser.

With OTHER Than Gas Defrost

The suction and liquid lines should be clamped or taped together and insulated for a minimum of 30 ft (9144 mm) from the merchandiser.

With All Defrost

Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable or the lines are exposed to ambient conditions.



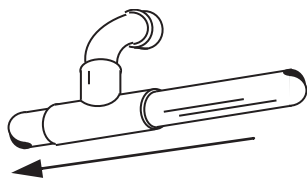
CAUTION

The following information is applicable only for piping Hussmann merchandisers to Hussmann refrigeration equipment.

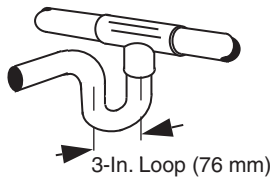
BRANCH LINE PIPING

Suction Line – All Defrosts

- Pitch in direction of flow.
- May be reduced by one size at one third of case run load and again after the second third. Do NOT reduce below evaporator connection size.
- Suction returns from evaporators enter at the top of the branch line.



Suction Line Return



Liquid Line Take Off

Liquid Line – Off-time and Electric Defrost

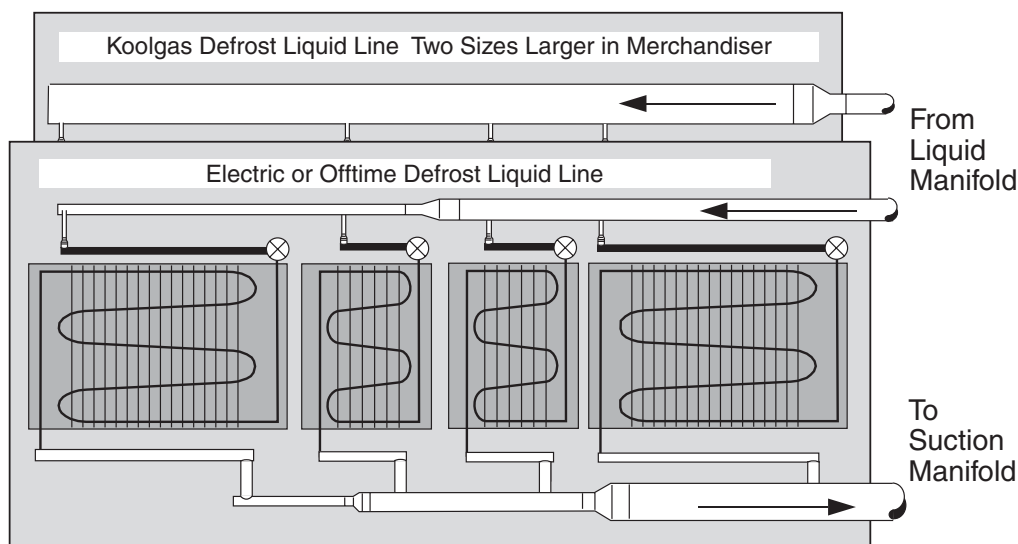
- May be reduced by one size after one half the case load run. Do not reduce below evaporator connection size.
- Take-offs to evaporators exit the bottom of the liquid line. Provide an expansion loop for each evaporator take-off (minimum 3 in. (76 mm) diameter).

Liquid Line – Koolgas Defrost

- Maximum of 6 evaporators per Branch System.
- Increase the liquid line size inside the case by two sizes over the branch size.

Branch Size	In Case Size
1/2	7/8
5/8	1 1/8
7/8	1 3/8
1 1/8	1 5/8
1 3/8	2 1/8

- Take-offs to evaporators exit the bottom of the liquid line. Provide an expansion loop for each evaporator take-off (minimum 3 in. (76 mm) diameter).



EXPANSION VALVE ADJUSTMENT

Expansion valves must be adjusted to fully feed the evaporator. Before attempting to adjust valves, make sure the evaporator is either clear or only lightly covered with frost, and that the merchandiser is within 10 deg F (6.5 deg C) of its expected operating temperature. Adjust valves as follows:

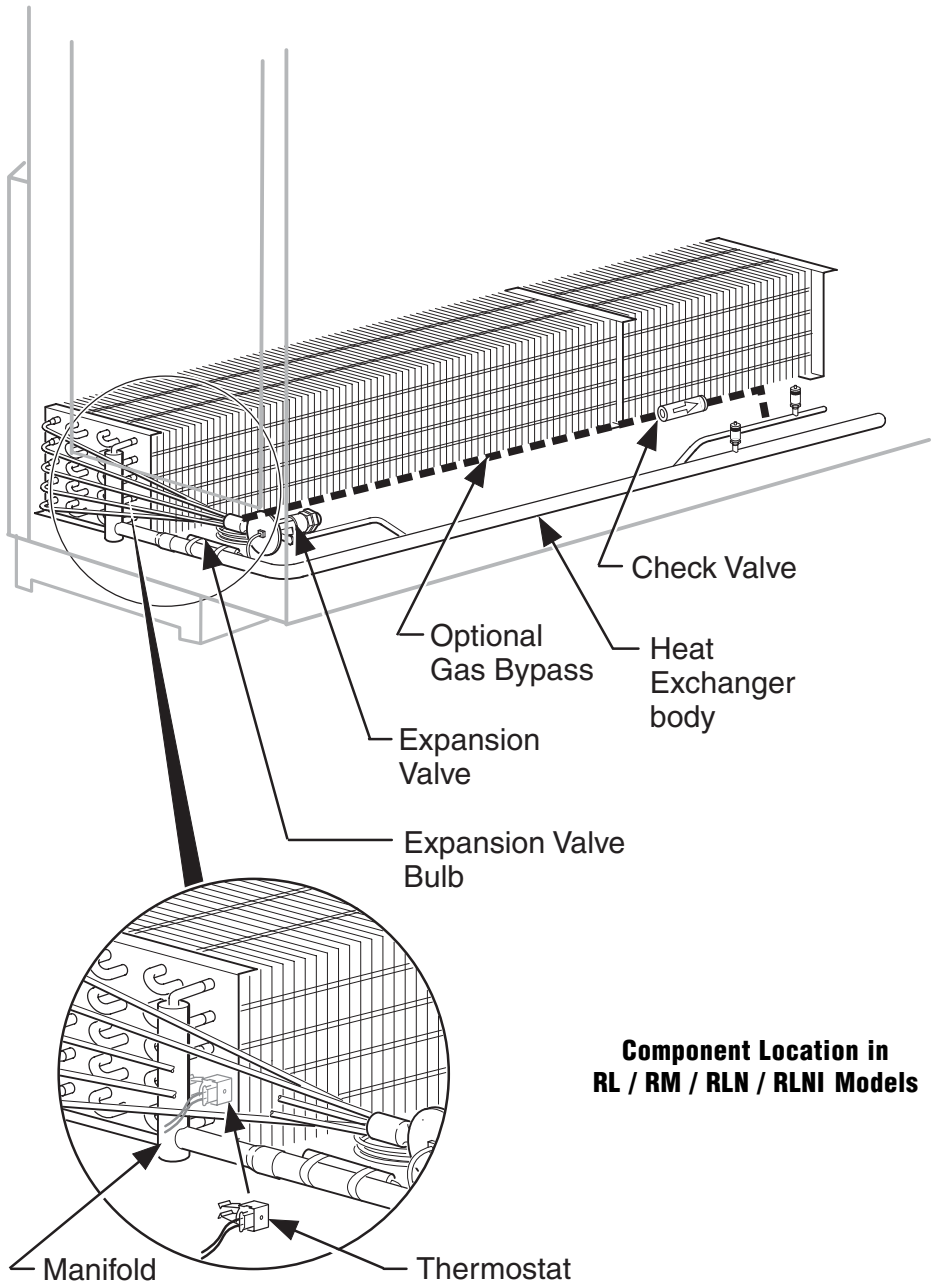
Attach two sensing probes (either thermocouple or thermistor) to the evaporator. Position one under the clamp holding the expansion valve bulb; securely tape the other to the coil inlet line.

Some “hunting” of the expansion valve is normal. The valve should be adjusted so that during the hunting **THE GREATEST DIFFERENCE BETWEEN THE TWO PROBES IS 3–5 deg F (1.7–2.8 deg C)**. With this adjustment, during a portion of the hunting the temperature difference between the probes will be less than 3 deg F (1.7 deg C) and at times 0.

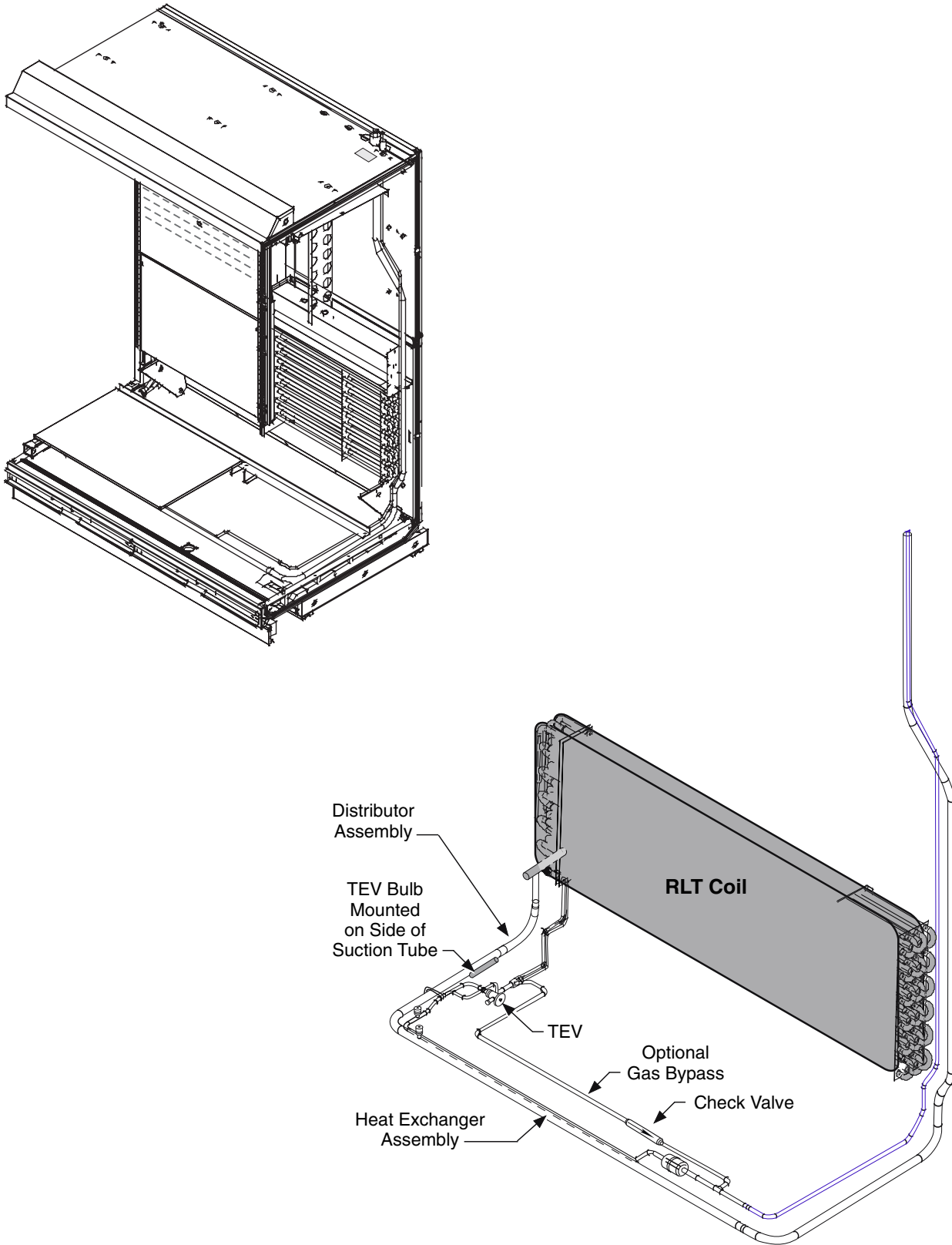
Make adjustments of no more than $\frac{1}{4}$ turn for Balanced Port TEV and $\frac{1}{2}$ turn at a time for other valve models. Wait at least 15 minutes before rechecking the probe temperature or making further adjustments.

REFRIGERATION THERMOSTAT

The thermostat body is located in the electrical raceway near the right-hand end of the merchandiser. Its sensing bulb is located behind the right end interior back panel.



**Component Location in
RL / RM / RLN / RLNI Models**

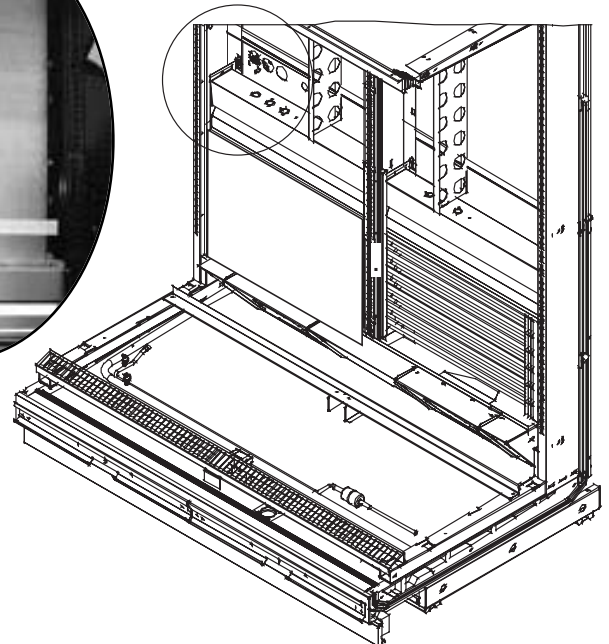
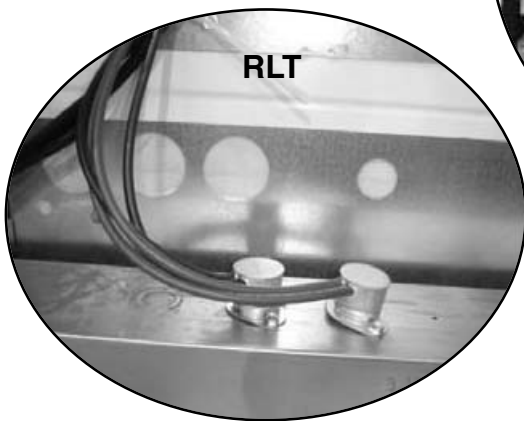
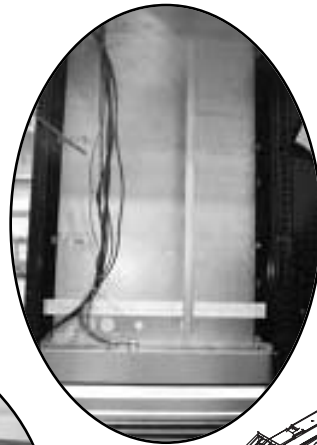
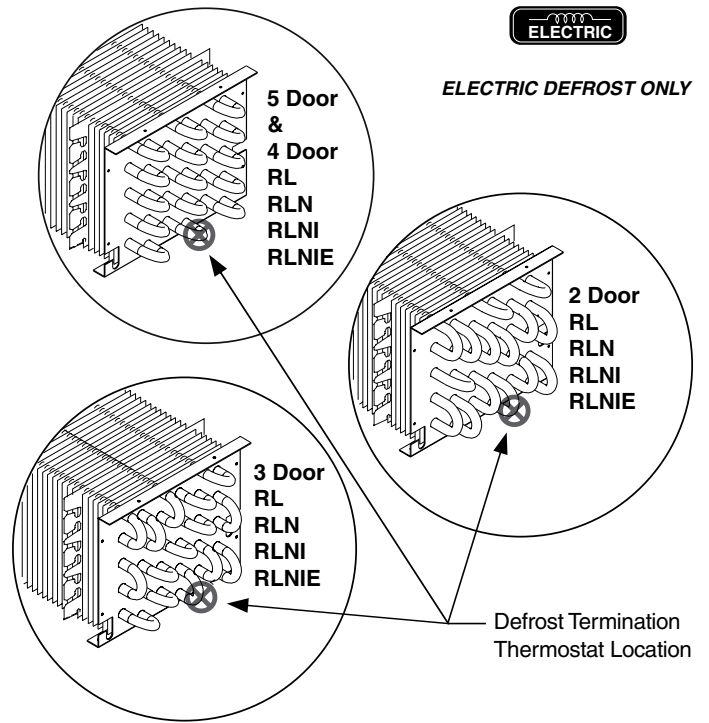
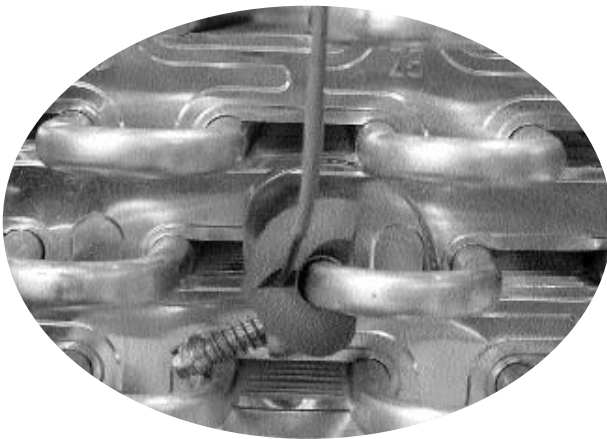


Component Location in RLT Models

DEFROST TERMINATION THERMOSTAT

The standard disc type defrost termination thermostat is not adjustable.

On low-temperature merchandisers, the defrost termination thermostat or optional termination sensor is located on the right end of the coil at the bottom center return bend. If an optional adjustable thermostat is used, the bulb will be clamped to the suction line on the left end of the case.



CONTROL SETTINGS MEDIUM TEMPERATURE

Conventional Single Compressor

Measure Discharge Air Temperature
at the center of the case
at the discharge honeycomb.

Merchandiser temperature must be controlled by a thermostat or other device with a 3–6 deg F (1.7–3.3 deg C) differential. It will be wired to control the compressor motor contactor.

Standard Off Time defrost is temperature terminated. The defrost termination thermostats for all the merchandisers on one compressor are wired in series. On outdoor units the defrost timer will control a liquid line solenoid beginning a defrost pumpdown 4 minutes before defrost.

The defrost frequency and lengths listed may require adjustment for specific store conditions.

Factors include:

- Store temperature and humidity
- Low head pressure
- Long refrigerant line runs
- Seasonal changes
- Merchandiser temperature lower than recommended

When practical, defrost when store is closed.

Low pressure control settings are applicable to outdoor condensing units where ambient does not fall below 0 deg F.

CONTROL SETTINGS LOW TEMPERATURE

Conventional Single Compressor

Measure Discharge Air Temperature
at the center of the case
at the discharge honeycomb.

Merchandiser temperature must be controlled by a thermostat or other device with a 3–6 deg F (1.7–3.3 deg C) differential. It will be wired to control the compressor motor contactor.

Standard Electric defrost is temperature terminated. The defrost termination thermostats for all the merchandisers on one compressor are wired in series. Failsafe must not control defrost cycle length, especially when less than 208V power supply is used for defrost heaters, or if frost build up is heavy from shopping demands.

On outdoor units the defrost timer will control a liquid line solenoid beginning a defrost pumpdown 4 minutes before defrost.

Optional Gas defrost is time terminated and has fan cycling thermostat. The defrost frequency and lengths listed may require adjustment for specific store conditions. Factors include:

- Store temperature and humidity
- Low head pressure
- Long refrigerant line runs
- Seasonal changes
- Merchandiser temperature lower than recommended

When practical, defrost when store is closed.

Low pressure control settings are applicable to outdoor condensing units where ambient does not fall below 0 deg F.

CONTROL SETTINGS MEDIUM TEMPERATURE

Parallel Compressor Rack

Measure Discharge Air Temperature
at the center of the case
at the discharge honeycomb.

Merchandiser temperature must be controlled by a mechanical or electronic pressure regulator or thermostat that will be mounted on the rack.

Standard Off Time defrost is temperature terminated. The defrost frequency and lengths listed may require adjustment for specific store conditions. Factors include:

- Store temperature and humidity
- Low head pressure
- Long refrigerant line runs
- Seasonal changes
- Merchandiser temperature lower than recommended

Stagger defrosts to maintain stable compressor loading and sufficient defrost gas. When practical, defrost when store is closed.

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- Low head pressure
- Long refrigerant line runs
- Seasonal changes
- Merchandiser temperature lower than recommended

Stagger defrosts to maintain stable compressor loading and sufficient defrost gas. When practical, defrost when store is closed.

MERCHANDISER ELECTRICAL DATA

Merchandiser data sheets for specific models are shipped with this manual. The data sheets provide merchandiser electrical data, standard electrical schematics, parts lists and performance data.

Refer to the merchandiser data sheets and case serial plate for electrical information. Refer to the separate wiring diagrams shipped with the case for specific information about the case and any optional wiring kits that may have been applied.

FIELD WIRING

Field wiring must be sized for component amperes stamped on the serial plate. Actual ampere draw may be less than specified. Field wiring from the refrigeration control panel to the merchandisers is required for defrost termination thermostats and for optional refrigeration thermostats. When multiple merchandisers are on the same defrost circuit, the defrost termination thermostats are wired in series.

ALWAYS CHECK THE SERIAL PLATE FOR COMPONENT AMPERES.

Electric Defrost is standard for low temperature merchandisers and requires temperature termination. Gas defrost is optional

Off Time Defrost is standard for medium temperature merchandisers and is time terminated.

When two or more merchandisers with full length raceways are installed in line, remove the splash-guards, end caps and raceway covers, and install the nipple and nuts (supplied) providing electrical passage from one merchandiser to the next.

Following NEC and local codes is the responsibility of the electrical contractor.

ELECTRICAL CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made to the terminal blocks in the electrical raceway behind the lower front panel at the right-hand end of the merchandiser (facing front).



WARNING

Terminal block NOT for case-to-case wire connection.

IDENTIFICATION OF WIRING

Leads for all electrical circuits are identified by colored plastic bands. These bands correspond to the color code sticker (shown below) located inside the merchandiser raceway.

WIRING COLOR CODE

Leads for all electrical circuits are identified by a colored plastic band: neutral wire for each circuit has either White insulation or a White plastic sleeve in addition to the color band.

PINK.....REFRIG. THERMOSTAT LOW TEMP.
 LIGHT BLUE ..REFRIG. THERMOSTAT NORM TEMP.
 DARK BLUE..DEFROST TERM. THERMOSTAT
 PURPLEANTI-SWEAT HEATERS
 BROWNFAN MOTORS
 GREEN*GROUND

ORANGE OR
 TAN.....LIGHTS
 MAROON ..RECEPTACLES
 YELLOW* ..DEFROST HEATERS, 120V
 RED*DEFROST HEATERS, 208V

***EITHER COLORED SLEEVE OR COLORED INSULATION**

**ELECTRICIAN NOTE: Use copper conductor wire only.
 CASE MUST BE GROUNDED**

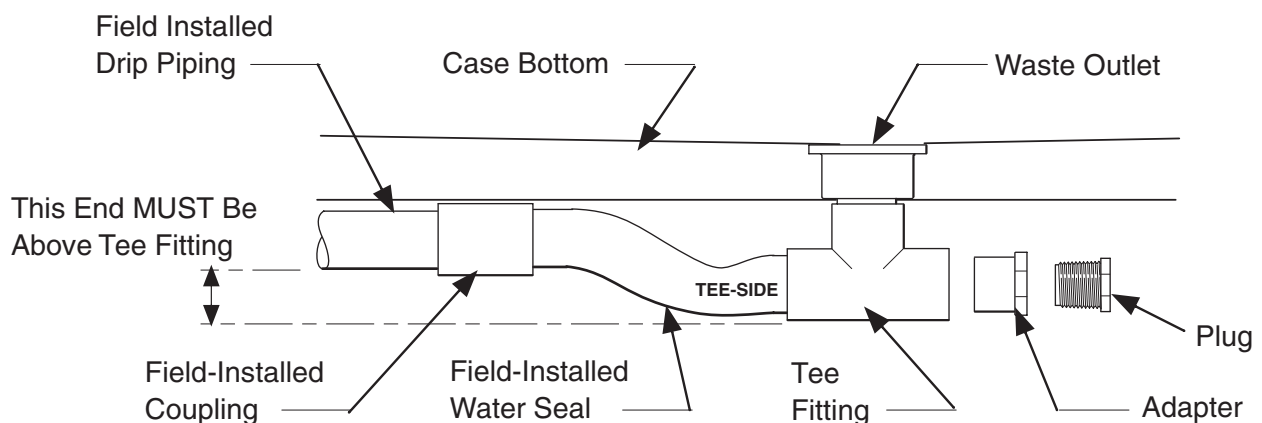
WASTE OUTLET AND WATER SEAL

The waste outlet location varies for each of the 1, 2, 3, 4, and 5 door merchandisers. Drip piping is located between the front case base and the splashguard fixture and runs parallel to the case (see Data Sheet for exact locations).

INSTALLING DRIP PIPING

Poorly or improperly installed drip pipes can seriously interfere with the merchandiser's operation and result in costly maintenance and product losses. Please follow the recommendations listed below when installing drip pipes to ensure proper installation.


1. Never use drip piping smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
2. When connecting drip piping, the *water seal* must be used as part of the drip piping to prevent air leakage or insect entrance. Never use two water seals in series in any one drip pipe. **DOUBLE WATER SEALS IN SERIES WILL CAUSE AN AIR LOCK AND PREVENT DRAINING.**
3. Pitch the drip piping in the direction of flow. There should be a minimum pitch of $\frac{1}{8}$ inch per foot (1 mm per 100 mm).



CAUTION

Splashguard brackets MUST be installed before piping case.

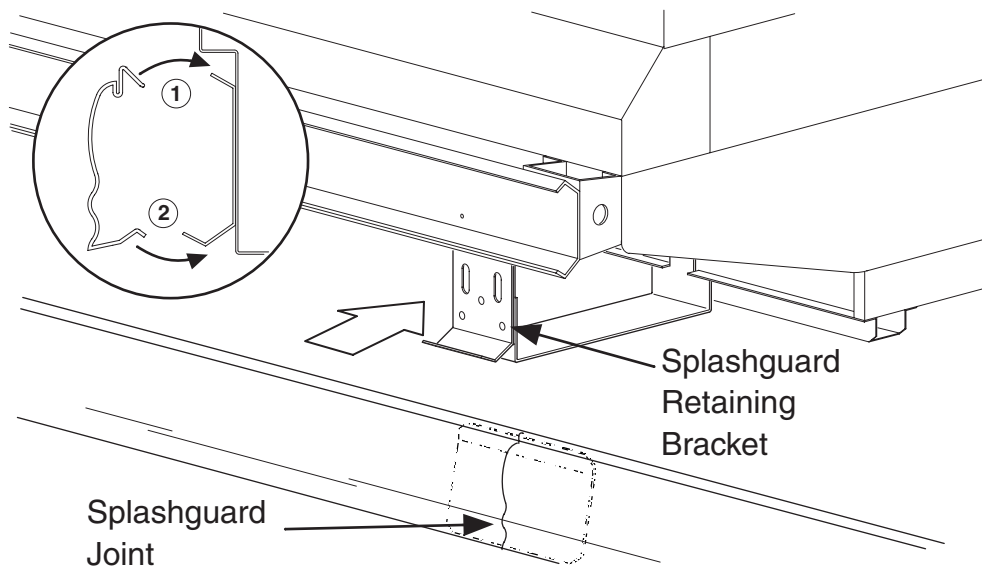
(See Page 1-3)

4. Avoid long runs of drip piping. Long runs make it impossible to provide the pitch necessary for good drainage.
5. Provide a suitable air break between flood rim of the floor drain and outlet of drip pipe. To meet code on low base merchandisers, it may be necessary to install a field-supplied drip pipe reducer. An alternative is to cut the last section of drip pipe at an angle.
 
6. Prevent drip pipes from freezing:
 - A. Do NOT install drip pipes in contact with uninsulated suction lines. Suction lines should be insulated with a non-absorbent insulation material.
 - B. Where drip pipes are located in dead air spaces, such as between merchandisers or between a merchandiser and a store wall, provide means to prevent freezing.

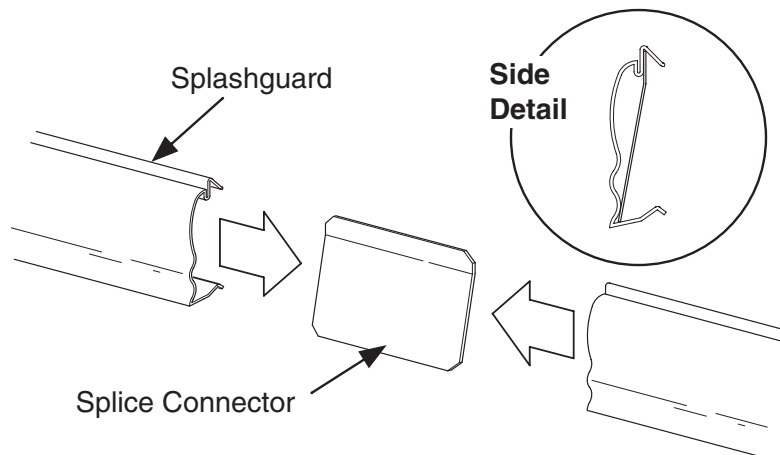
INSTALLING SPLASHGUARDS

The splashguard is shipped inside each merchandiser. **AFTER** merchandisers have been leveled and joined, and all drip piping, electrical and refrigeration work has been completed, re-install the front color panel, then install the splashguards.

First, position top of splashguard over the top edge of the bracket; second, push the lower edge of the splashguard toward the bottom of the bracket until it snaps into place.



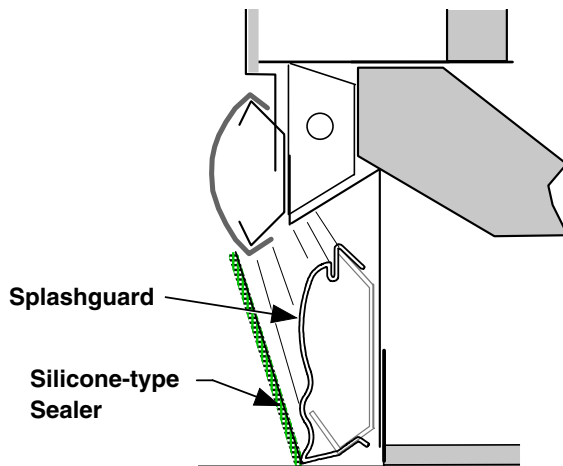
Splashguards are joined with a galvanized metal splice connector that comes with the joint kit. Join the splashguards before installing on case.



SEALING SPLASHGUARD TO FLOOR

IF REQUIRED by local sanitation codes, or if desired by the customer, plastic splashguards may be sealed to the floor using silicone type sealer. The amount needed will depend on how much the floor is out of level.

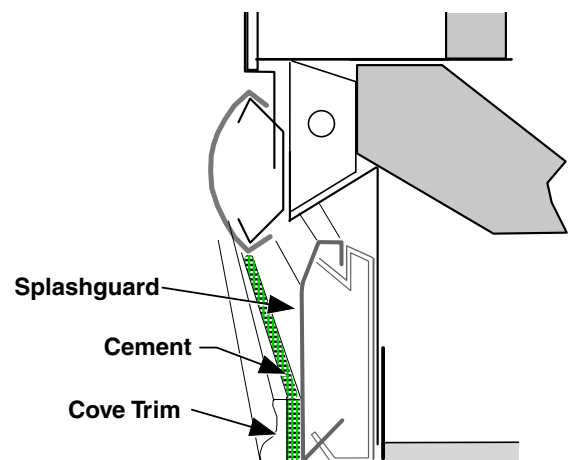
- Remove all dirt, wax and grease from the area of the splashguard where adhesion will be necessary. This is to ensure a good and secure installation.
- Apply a good silicone type sealer along the bottom of the splashguard. Sealant must be removed and replaced when servicing.



OPTIONAL stainless steel splashguards may be sealed to the floor using a vinyl cove base trim. The size of trim needed will depend on how much the floor is out of level.

To install the trim to the splashguard:

- Remove all dirt, wax and grease from the area of the splashguard where adhesion will be necessary. This is to ensure a good and secure installation.
- Apply a good contact cement to the cove trim and allow proper drying time according to the directions supplied with the cement.
- Install the trim to the splashguard so that it is lying flush with the floor. **DO NOT SEAL THE TRIM TO THE FLOOR.**
- **If required by local health codes** Cove Trim may be sealed to the floor using a silicone type sealer. Sealant must be removed and replaced when servicing.



3-4 DRIP PIPING AND SPLASHGUARDS

NOTES

STARTUP

See the merchandiser's Data Sheet Set for refrigerant settings and defrost requirements. Bring merchandisers down to the operating temperatures listed on the data sheet.

STOCKING

Product should NOT be placed in merchandisers until all refrigeration controls have been adjusted and merchandisers are at proper operating temperature.

All shelves and the lower deck are intended to display product. Shelf height is adjustable in one inch increments. Spacing of 12 inches is recommended for most applications. Maximum load per shelf is 170 pounds. Merchandisers may be ordered with optional "L" shaped wire shelves.

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

AIR DISCHARGE AND RETURN FLUES MUST REMAIN OPEN AND FREE OF OBSTRUCTION AT ALL TIMES to provide proper refrigeration and air curtain performance. Do not allow product, packages, signs, etc. to block these grilles. Do not use non-approved shelving, baskets, display racks, or any accessory that could hamper air curtain performance.

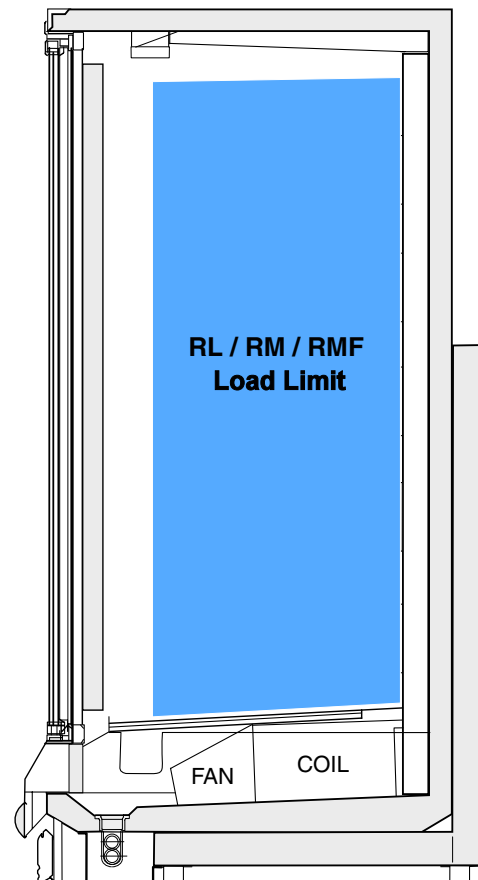
Do not prop doors open while stocking. And keep the doors closed as much as possible to prevent coil frosting and high merchandiser temperature.

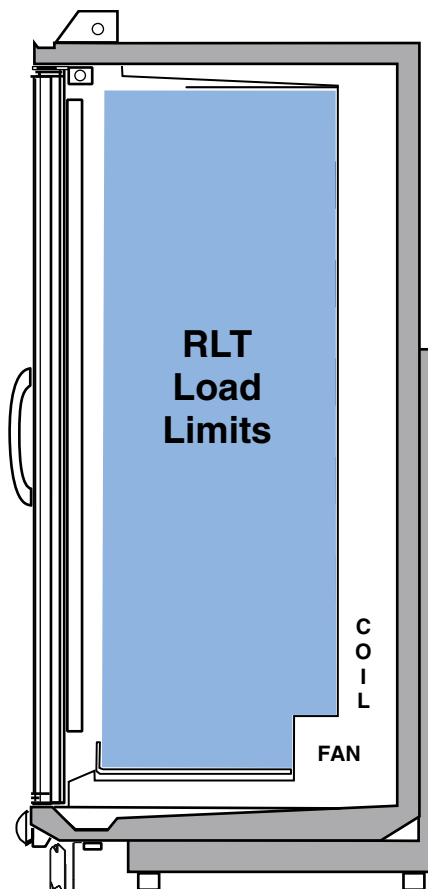
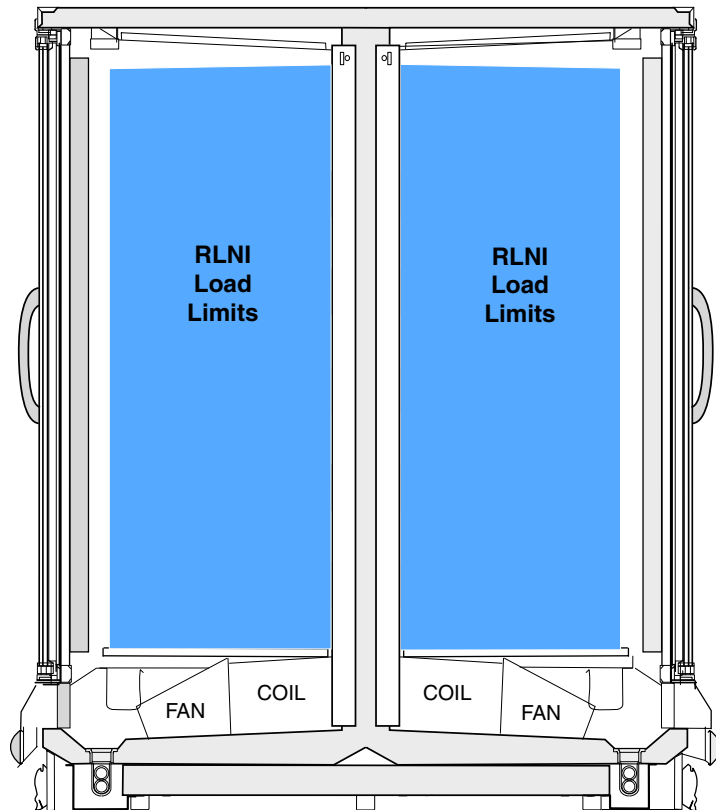
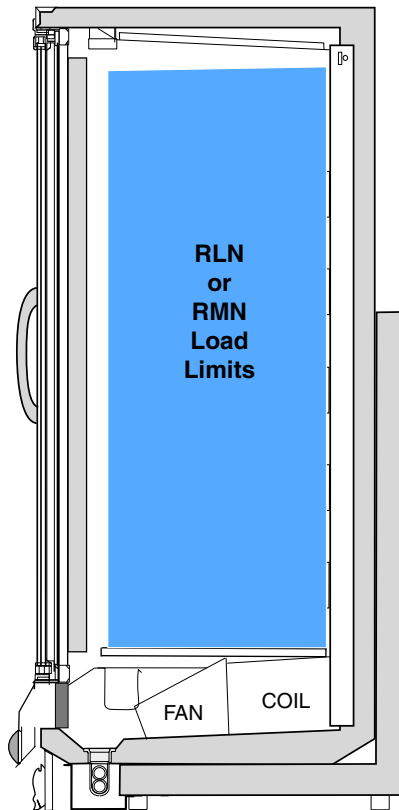
LOAD LIMITS

Shelf life of perishables will be short if load limit is violated. **AT NO TIME SHOULD MERCHANDISERS BE STOCKED BEYOND THE LOAD LIMITS INDICATED.**

DO NOT BLOCK HONEYCOMB.

LOAD LIMIT PROFILES





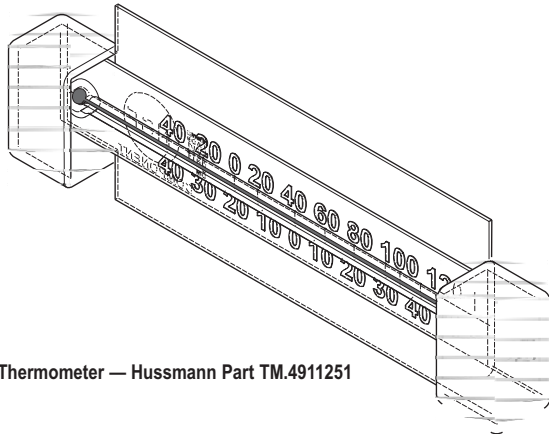
INSTALLING FDA/NSF REQUIRED THERMOMETER

The following pages provide the same information that ships with the thermometer.

This requirement does not apply to display refrigerators intended for bulk produce (refer to page 1-1).

Please note that the tape cannot be exposed after installation.

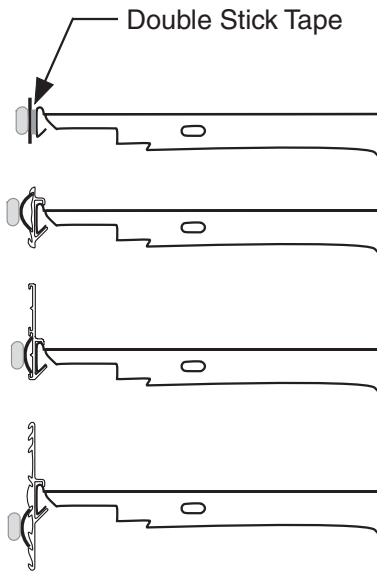
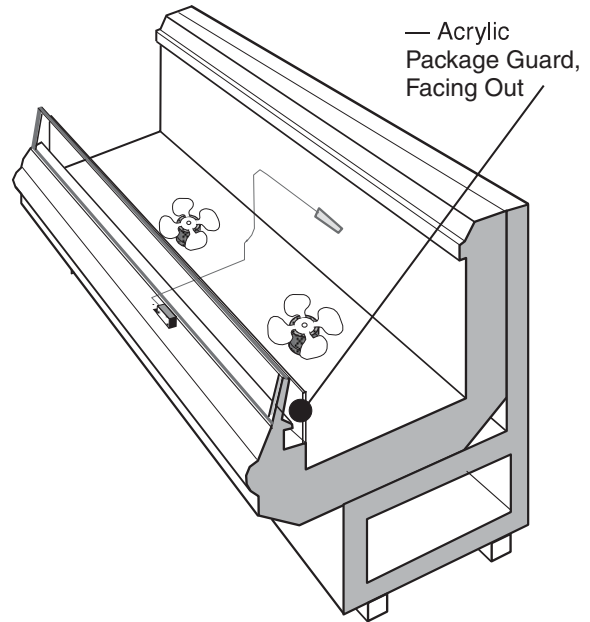
This is an NSF-7 & US FDA Food Code Required Thermometer



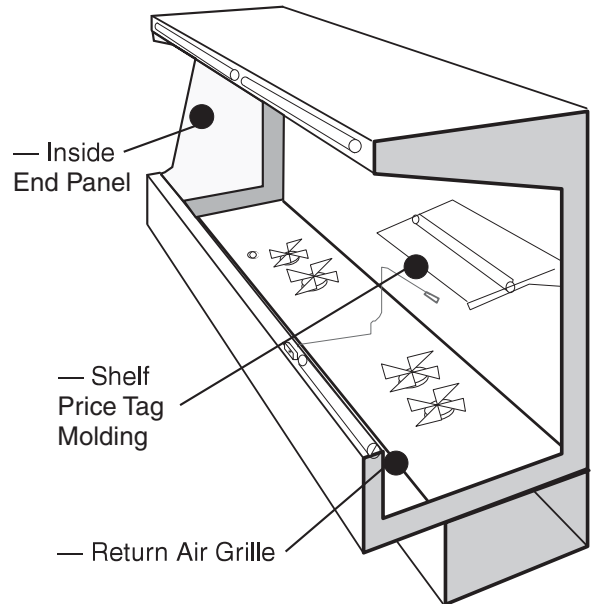
Thermometer — Hussmann Part TM.4911251

Hussmann Corporation • 12999 St. Charles Rock Road • Bridgeton, MO 63044-2483
U.S. & Canada 1-800-922-1919 • Mexico 1-800-522-1900 • www.hussmann.com
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Suggested Mounting Locations in Single Deck Glass Front Impact Merchandisers



Flexible Plastic Fits in Price Tag Moldings



Suggested Mounting Locations in Multi-deck Merchandisers

Hussmann P/N 0429971_C

10/2007

Important – Please read!

This thermometer is provided in response to United States
Food and Drug Administration (US FDA) Food Code [<http://www.fda.gov/>]
and
National Sanitation Foundation (NSF / ANSI) Standard 7 [<http://www.nsf.org/>]

Each installation will be different depending on how the unit is stocked, shopping patterns in the department and ambient conditions of the store. The suggested locations provided herein are possible locations. It is the responsibility of the purchaser / user to determine the location within the food storage area of the unit that best meets the code requirements above.

The thermometer may need to be moved several times to find the warmest location. Mounting options include flexible plastic for price tag molding application, magnet applied to back of flexible plastic for steel end wall, and double stick tape. Tape must not be exposed after installation.

Questions about either code should be addressed to local agencies or other appropriate officials.

**Keep with merchandiser
or give to store manager.**

DO NOT DESTROY.

CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependent upon the care it receives. To ensure long life, proper sanitation and minimum maintenance costs, these merchandisers should be thoroughly cleaned, all debris removed and the interiors washed down, weekly.

Fan Plenum

To facilitate cleaning, the fan plenum is hinged and also fastened with screws at each end. After cleaning be sure the plenum is properly lowered into position and that screws are reinstalled OR PRODUCT LOSS WILL RESULT due to improper refrigeration.

Exterior Surfaces

The exterior surfaces should be cleaned with a mild detergent and warm water to protect and maintain their attractive finish. **NEVER USE ABRASIVE CLEANSERS OR SCOURING PADS.**

Always*Clear™ Glass

Wipe inside of glass with isopropyl alcohol and a soft cloth. Allow surface to dry before closing door. Use of other cleaners or abrasives may damage the Always*Clear surface, and/or void the warranty. Refer to manual that ships with doors.

Interior Surfaces

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions with no harm to the surface.

WARNING

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

WARNING

SHUT FANS OFF DURING CLEANING PROCESS.

Do NOT Use:

- Abrasive cleansers and scouring pads, as these will mar the finish.
- Solvent, oil or acidic based cleaners on any interior surfaces.
- Ammonia based cleaners on acrylic surfaces.

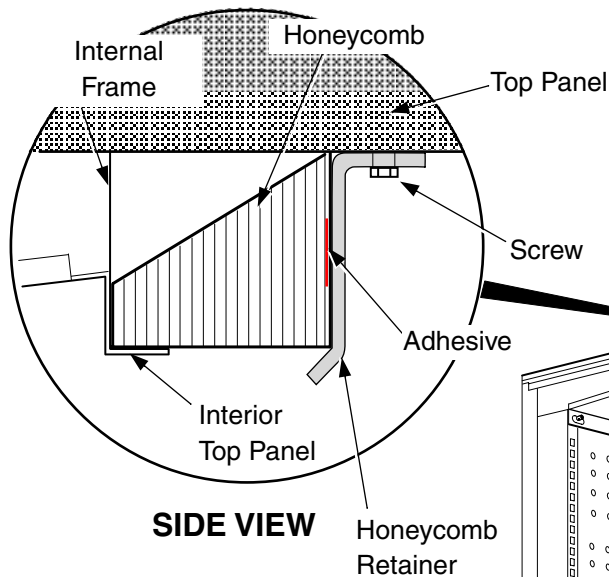
Do:

- Remove the product and all loose debris to avoid clogging the waste outlet.
- Store product in a refrigerated area such as a freezer. Remove only as much product as can be taken to the freezer in a timely manner.
- **First turn off refrigeration, then disconnect electrical power.**
- Thoroughly clean all surfaces with soap and hot water. **DO NOT USE STEAM OR HIGH WATER PRESSURE HOSES TO WASH THE INTERIOR. THESE WILL DESTROY THE MERCHANDISERS' SEALING CAUSING LEAKS AND POOR PERFORMANCE.**
- Remove screws and lift hinged fan plenum for cleaning. **BE SURE TO REPOSITION THE FAN PLENUM AFTER CLEANING MERCHANDISER.**
- Take care to minimize direct contact between fan motors and cleaning or rinse water.
- Rinse with hot water, but do NOT flood. **NEVER INTRODUCE WATER FASTER THAN THE WASTE OUTLET CAN REMOVE IT.**
- Allow merchandisers to dry before resuming operation.
- After cleaning is completed, turn on power and refrigerant to the merchandiser.
- Verify that merchandiser is working properly.

CLEANING HONEYCOMB ASSEMBLIES

Honeycombs should be cleaned every six months. Dirty honeycombs will cause merchandisers to perform poorly. The honeycombs may be cleaned with a vacuum cleaner. Soap and water may be used if all water is removed from the honeycomb cells before reassembling. Be careful not to damage the honeycombs.

1. Remove the sheet metal screws located in the front metal retainer which holds the honeycomb assembly in place.
2. Lift the honeycomb assembly out of the L-bracket to remove it.
3. Clean and dry the honeycomb.
4. After cleaning, reassemble in reverse order of removal.



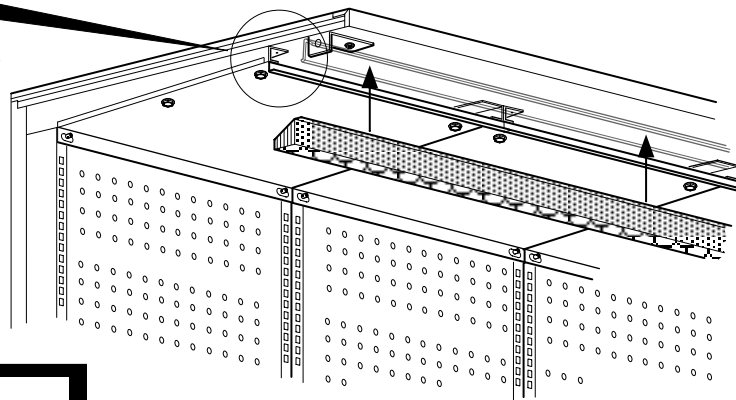
CLEANING UNDER MERCHANDISERS

Remove splashguards not sealed to floor. Use a vacuum with a long wand attachment to remove accumulated dust and debris from under the merchandiser.

REMOVING SCRATCHES FROM BUMPER

Most scratches and dings can be removed using the following procedure.

1. Use steel wool to smooth out the surface area of the bumper or top rail.
2. Clean area.
3. Apply vinyl or car wax and polish surface for a smooth glossy finish.



WARNING

Do NOT allow product to sit in a non-refrigerated area.

REPLACING FAN MOTORS AND BLADES

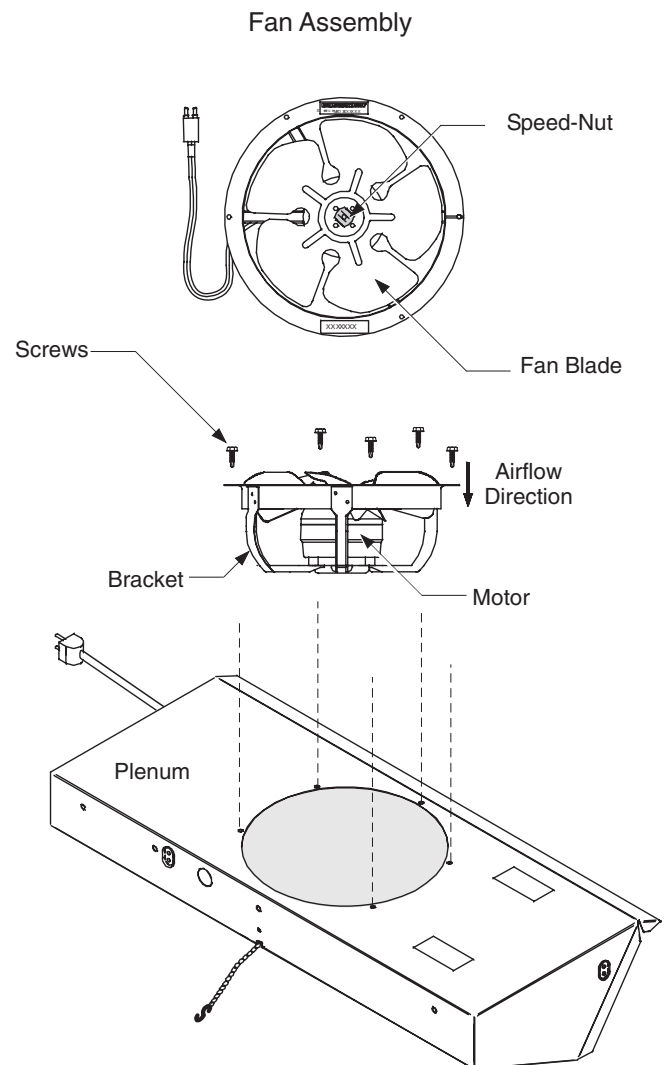
See cross section for location of evaporator fans. Should it ever be necessary to service or replace the fan motors or blades be certain that the fan blades are re-installed correctly.

For access to **RL / RM / RLN / RMN / RLNI / RLNIE** fans:

1. Turn off power.
2. Remove bottom display pans.
3. **Disconnect fan from wiring harness.**
4. Remove fan blade.
5. Remove screws holding fan motor/bracket assembly to plenum and remove assembly.
6. Replace fan motor/bracket assembly and reinstall screws.
7. Reinstall fan blade.
8. Reconnect fan to wiring harness.
9. Turn on power.
10. Verify that motor is working and blade is turning in the correct direction.
11. Close air gaps under fan plenum. Warmer air moving into refrigerated air reduces effective cooling. If the plenum does not rest against the case bottom without gaps, apply foam tape to the bottom of the fan plenum to reduce improper air movement. Use silicone sealant to close other gaps.
12. Replace display pans. Bring merchandiser to operating temperature before restocking.

WARNING

Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.

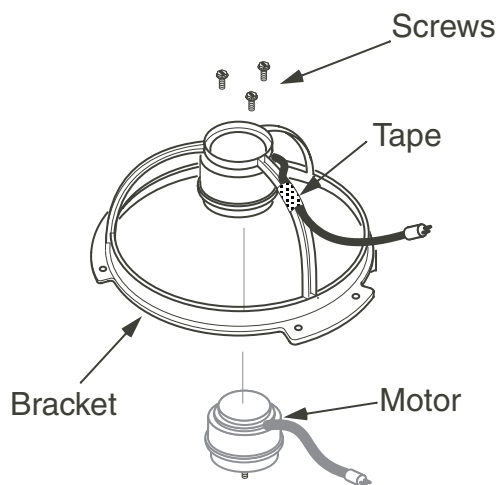
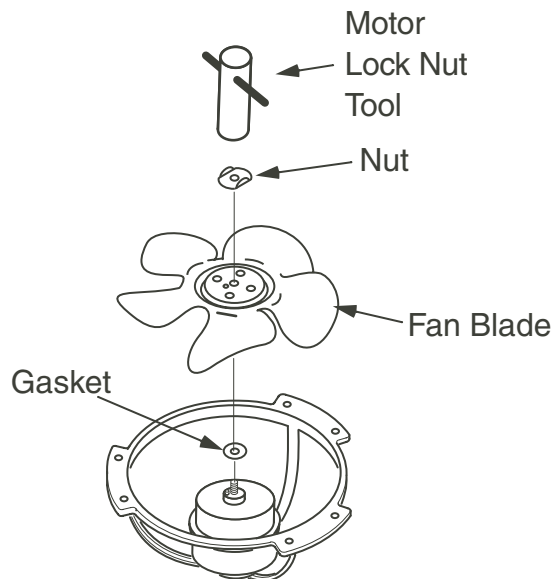


Husmann recommends against frame heater cycling with *Innovator* doors to prevent door seals from freezing to the frames and tearing.

RLT ONLY

For access to these fans:

1. Turn off power.
2. Remove bottom display pans.
3. **Disconnect fan from wiring harness.**
4. Remove fan blade.
5. Lift fan plenum and remove screws holding bottom of motor to fan basket.
6. Replace fan motor and blade.
7. Lower fan plenum.
8. Reconnect fan to wiring harness.
9. Turn on power.
10. Verify that motor is working and blade is turning in the correct direction.
11. Close air gaps under fan plenum. Warmer air moving into refrigerated air reduces effective cooling. If the plenum does not rest against the case bottom without gaps, apply foam tape to the bottom of the fan plenum to reduce improper air movement. Use silicone sealant to close other gaps.
12. Replace display pans. Bring merchandiser to operating temperature before restocking.

**WARNING**

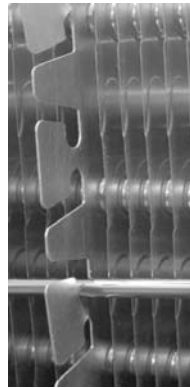
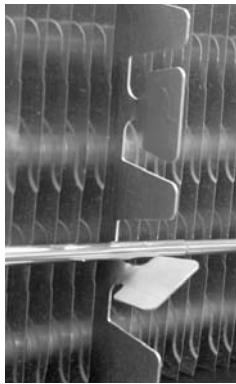
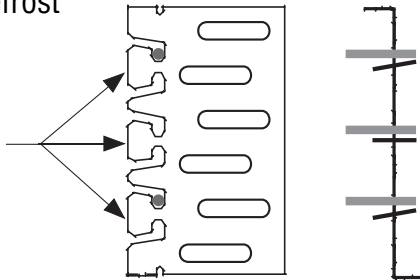
Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.

REPLACING ELECTRIC DEFROST HEATERS (RL / RLN / RLNI / RLNIE Only)

Electric defrost requires a heater on the front and rear of the coil as shown. The heaters are held in place by tabs in the coil brackets.

Electric Defrost

Bend Tabs on Each Bracket to Release or Secure Heaters



Front Defrost Heater

1. Disconnect Power.
2. Lift fan plenum up and back to access the heater.
3. Bend tabs holding heater to horizontal.
4. Remove heater from coil bracket.
5. Position new heater in bracket.
6. Bend tabs back to vertical to hold heater in bracket.
7. Replace the coil cover and lower fan plenum.
8. Turn on power.

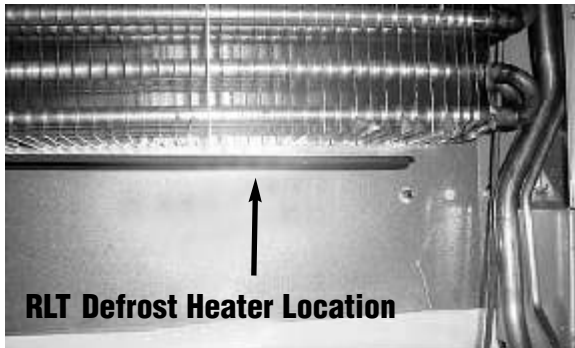
9. Verify that heater is working correctly.
10. Close air gaps under fan plenum. Warmer air moving into refrigerated air reduces effective cooling. If the plenum does not rest against the case bottom without gaps, apply foam tape to the bottom of the fan plenum to reduce improper air movement. Use silicone sealant to close other gaps.
11. Replace display pans. Bring merchandiser to operating temperature before restocking.

Rear Defrost Heater

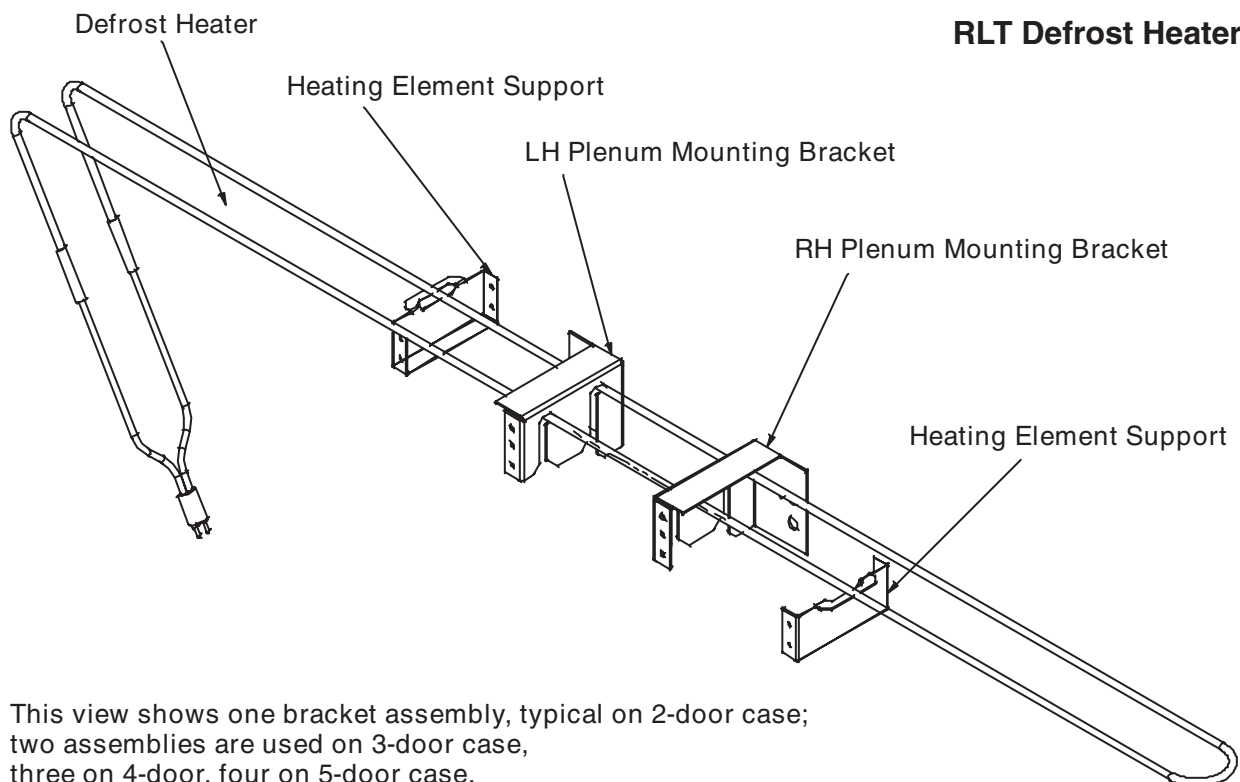
1. Disconnect Power.
2. Remove coil cover.
3. Remove clips holding heater to coil tube.
4. Remove heater from slots in coil bracket.
5. Position new heater in slots.
6. Replace clips.
7. Replace the coil cover.
8. Turn on power.
9. Verify that heater is working correctly.
10. Replace display pans. Bring merchandiser to operating temperature before restocking.

REPLACING ELECTRIC DEFROST HEATERS (RLT Only)

RLT electric defrost heaters are located under the coil as shown in the photo below. Mounting brackets and supports are attached to plenum brackets.



1. Disconnect Power.
2. Remove lower back panels to access the heater.
3. Lift fan plenum up and back to access the heater.
4. Remove heater from bracket.
5. Position new heater in bracket.
6. Close the bracket with the element support
7. Turn on power.
8. Verify that heater is working correctly.



This view shows one bracket assembly, typical on 2-door case; two assemblies are used on 3-door case, three on 4-door, four on 5-door case.

REPLACING DRAIN PAN HEATER — ELECTRIC AND GAS DEFROST (Low Temperature Only)

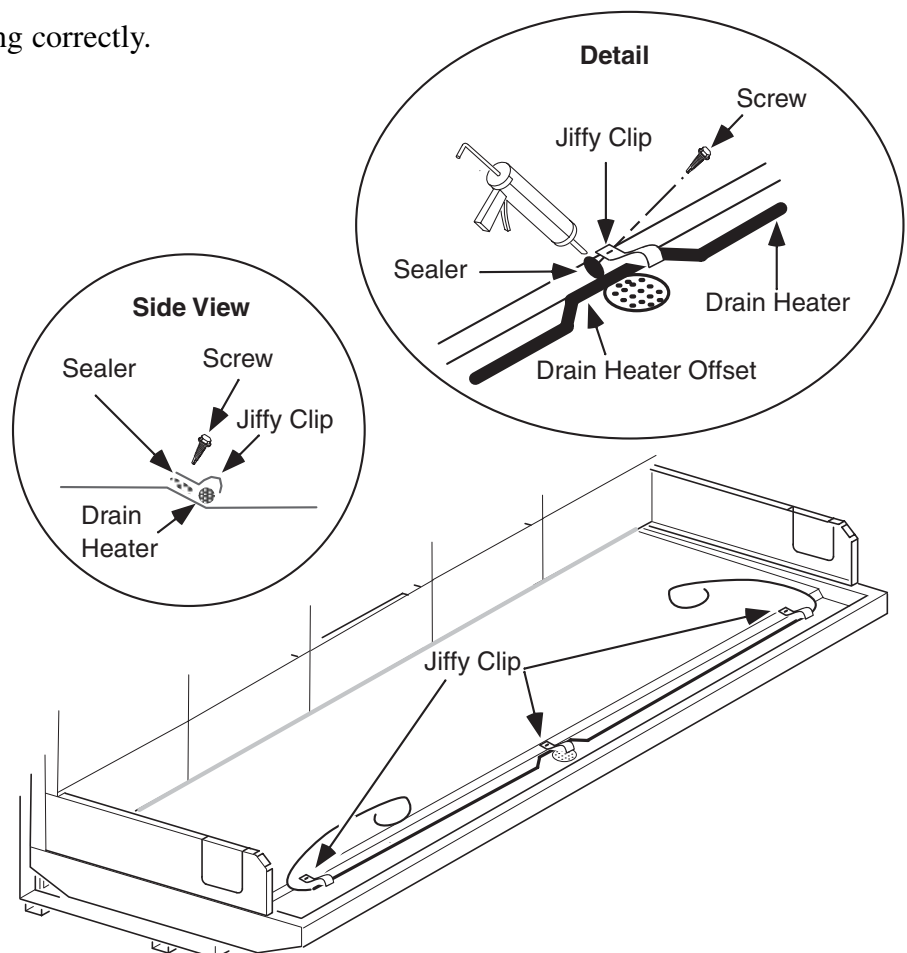
The drain pan heater is located as shown below.

Remove Drain Pan Heater

1. Disconnect power.
2. Pull heater out from under jiffy clips.
3. Position new heater under jiffy clips. Be sure offset is properly positioned around the drain. If jiffy clips are removed, **make certain sealer is replaced.**
4. Reconnect power.
5. Verify that heater is working correctly.

WARNING

Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.

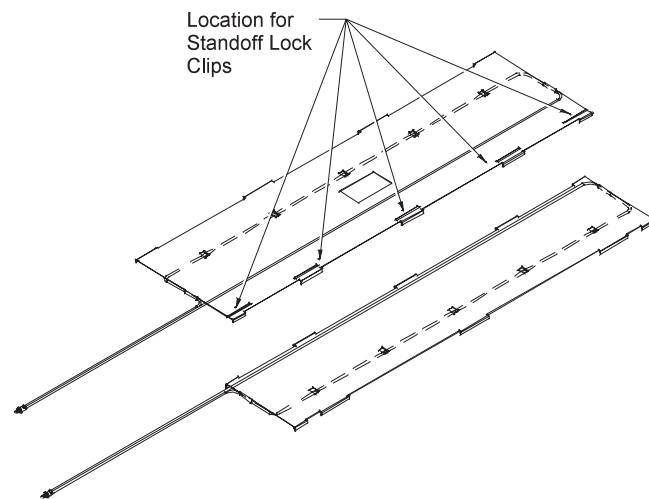
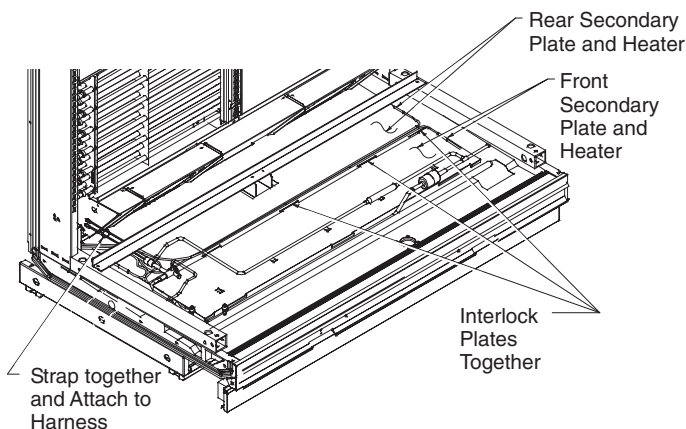
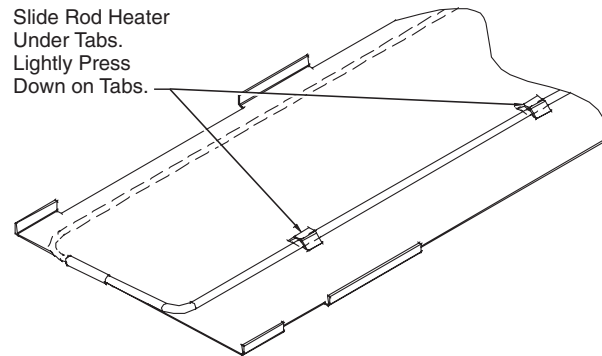


RLT with GAS DEFROST ONLY: REPLACING SECONDARY PLATE HEATER

The secondary plate heater is located as shown below.

Remove Secondary Plate Heater

1. Disconnect power.
2. Pull heater out from under jiffy clips.
3. Position new heater under jiffy clips. Be sure offset is properly positioned around the drain. If jiffy clips are removed, **make certain sealer is replaced.**
4. Reconnect power.
5. Verify that heater is working correctly.



WARNING

Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.

REPLACING LAMP BALLAST (OTHER THAN RLT MODELS)

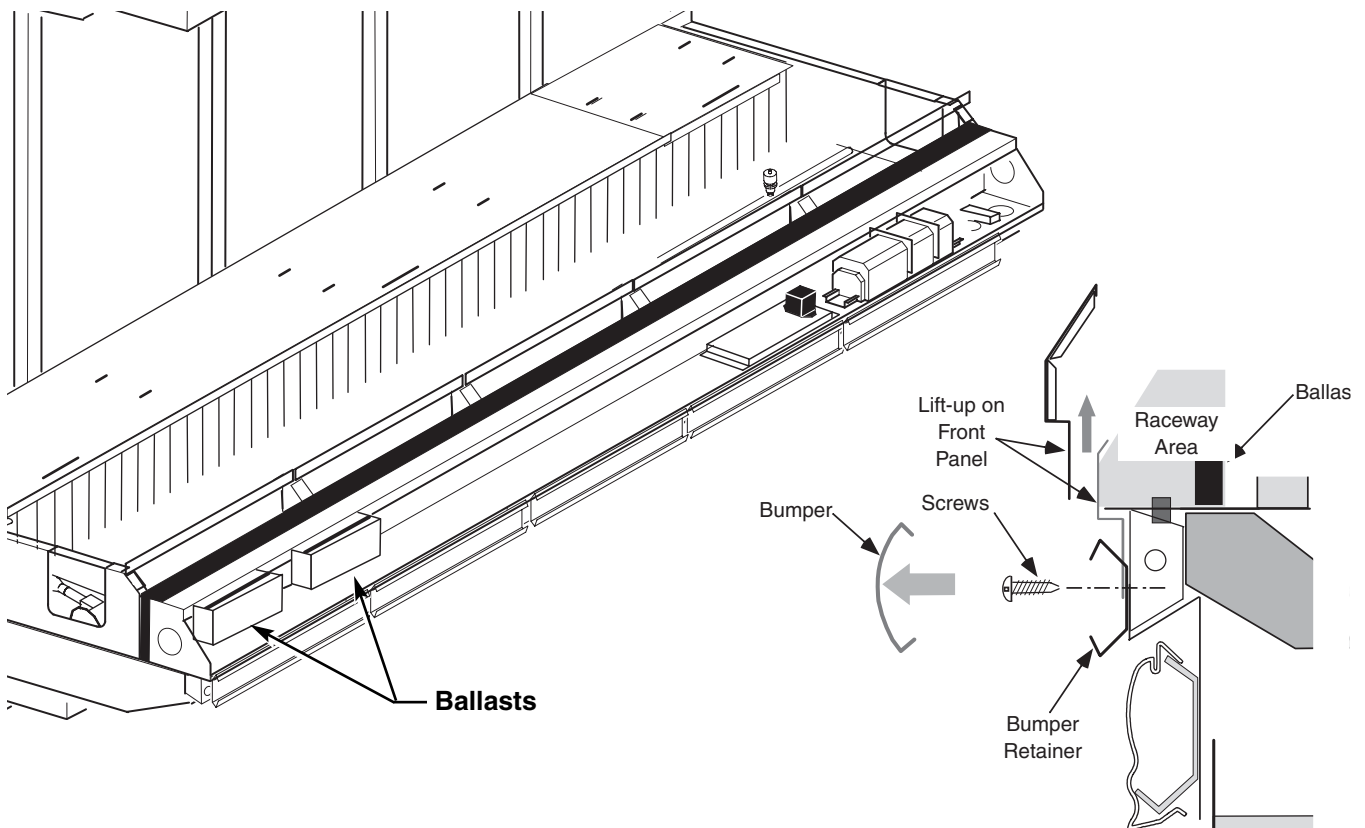
The lamp ballasts are located in the electrical raceway, in the left-hand end of the merchandiser.

To gain access:

1. Disconnect the electrical power to the light fixture.
2. Remove the front panel.
 - A. Pull off the bumper.
 - B. Remove screws from bumper retainer.

NOTE: The front panel is attached by

 - (2) screws (two-door),
 - (3) screws (three -door),
 - (4) screws (four-door),
 - (5) screws (five door), to the front panel
3. Service or replace ballasts as required.
4. Reinstall front panel by sliding it into bumper retainer slots, then reinstall screws.
5. Install bumper.
6. Restore power to merchandiser.

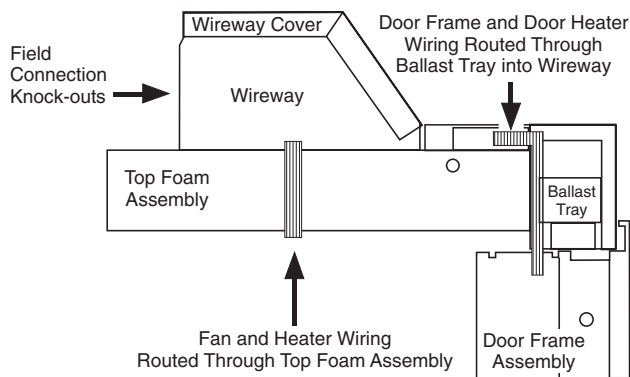


REPLACING RLT LAMP BALLAST

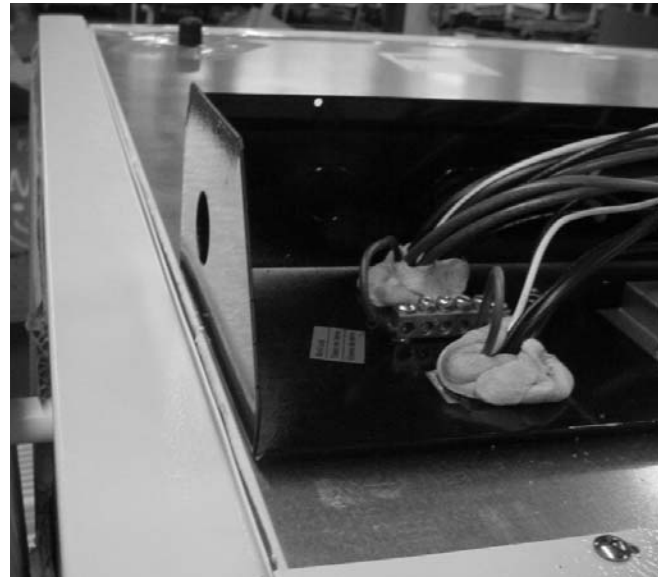
The lamp ballasts are located in the electrical raceway, in the left-hand end of the merchandiser.

To gain access:

1. Disconnect the electrical power to the light fixture.
2. Remove the front panel. Lift the front panel up and out from the front of the case.
3. Service or replace ballasts as required.
4. Reinstall front panel
5. Restore power to merchandiser.



RLT Wiring Routed Up Through Top Panel to Wireway on Top



⚠ WARNING

Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and lights.

Husmann recommends against frame heater cycling with *Innovator* doors to prevent door seals from freezing to the frames and tearing.

SERVICING VERTICAL LIGHTING

Refer to door manufacturer's manual for servicing of vertical lamps.

SERVICING DOORS AND FRAMES

See door manufacturer's service manual for servicing information. One manual is shipped with each merchandiser.

REPLACING DOOR OR DOOR FRAME PARTS

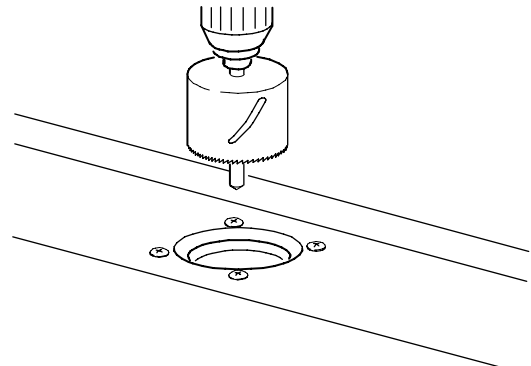
Parts for Reach-in doors and door frame assemblies must be ordered direct from the door manufacturer. This includes the glass doors, door frame assemblies, lamps, ballasts, door handles, hold open slides, and power cords.

Refer to specific warranty supplied with the door. The manufacturers have a warranty against moisture penetration, a warranty against tempered glass breakage, and a warranty on ballasts. Lamps are not covered by Hussmann or the door manufacturer.

REPLACING DAMAGED DRAIN FITTING

The following procedure is for the field repair of a broken drain fitting.

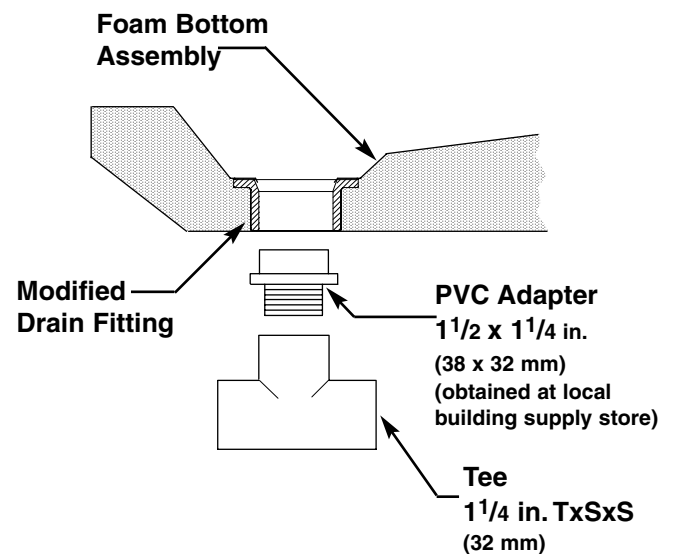
1. Use a drill with a 1⁷/₈-inch (48 mm) hole saw to drill out the bottom of the drain fitting. Be sure to drill completely through fitting and bottom liner.



Drain Fitting Viewed from Inside Case

2. Apply teflon tape to threaded end of adapter and screw into threaded end of tee.

3. Apply an ABS and PVC compatible primer and sealer to adapter and inside of drain. Insert adapter into drain fitting.



End Section View

REPAIRING ALUMINUM COIL

The aluminum coils used in Hussmann merchandisers may be easily repaired in the field.

Materials are available from local refrigeration wholesalers.

Hussmann recommends the following solders and technique:

Solders

Aladdin Welding Products Inc.

P.O. Box 7188

1300 Burton St.

Grand Rapids, MI 49507

Phone: 1-800-645-3413

Fax: 1-800-645-3414

X-Ergon

1570 E. Northgate

P.O. Box 2102

Irving, TX 75062

Phone: 1-800-527-9916

NOTE:

Hussmann Aluminum melts at 1125°F (607°C)

Aladdin 3-in-1 rod at 732°F (389°C)

X-Ergon Acid core at 455°F (235°C)

Technique:

1. Locate Leak.
2. REMOVE ALL PRESSURE.
3. Brush area UNDER HEAT.
4. Use PRESTOLITE TORCH ONLY.
Number 6 tip.
5. Maintain separate set of stainless steel brushes and USE ONLY ON ALUMINUM.
6. Tin surface around area.
7. Brush tinned surface UNDER HEAT, thoroughly filling the open pores around leak.
8. Repair leak. Let aluminum melt solder, NOT the torch.
9. Don't repair for looks. Go for thickness.
10. Perform a leak check.
11. Wash with water.
12. Cover with a good flexible sealant.



HUSSMANN[®]

To obtain warranty information
or other support, contact your
Husmann representative.
Please include the model and
serial number of the product.

Husmann Corporation, Corporate Headquarters: Bridgeton, Missouri, U.S.A. 63044-2483 01 July 2005

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