

HUSSmann® ***Excel***



F-6 Multi-deck Frozen Food

Wall Merchandisers



Installation & Service Manual

Shipped With Case Data Sheets

P/N 0518253_B

October 2013

IMPORTANT
**Keep in store for
future reference!**

English P/N 0518253
Spanish P/N 0538811
French P/N 0538812

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REVISION HISTORY

REVISION B — October 2013

1. Added warning box, page 1-1.
2. Added *Maintaining Fluorescent Lamps*, page 5-5.
3. Added *Cleaning Coils*, page 5-5
3. Revised *Replacing Fluorescent Lamps*, page 6-9.

REVISION A — November 2010

Original Issue

WARRANTY

ANSI Z535.5 DEFINITIONS



• **DANGER** – Indicate[s] a hazardous situation which, if not avoided, will result in death or serious injury.



• **WARNING** – Indicate[s] a hazardous situation which, if not avoided, could result in death or serious injury.



• **CAUTION** – Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.

• **NOTICE** – *Not related to personal injury* – Indicates[s] situations, which if not avoided, could result in damage to equipment.

INSTALLATION

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.

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.



WARNING

Exercise caution at all times when moving merchandisers with “L” shaped riders. They are top heavy and should NEVER be left in the vertical position.

The exterior frames on these cases provide space for air circulation. However, in high ambient conditions, sweating may still occur. If this happens install a method of forced ventilation such as a fan ventilation kit.

SHIPPING DAMAGE

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

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

Apparent Loss Or Damage

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

Concealed Loss Or Damage

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



WARNING

Do NOT walk on or store flammable materials atop the unit.



WARNING

Do NOT remove shipping braces until the merchandisers are properly anchored to the floor. Merchandisers are top heavy and could tip over causing serious injury.

Merchandisers must be braced before removing the lag bolts.

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.

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 case.

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. THEREFORE, BE SURE TO REPLACE THESE BOLTS WITH THE SHORTER BOLTS PROVIDED.

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

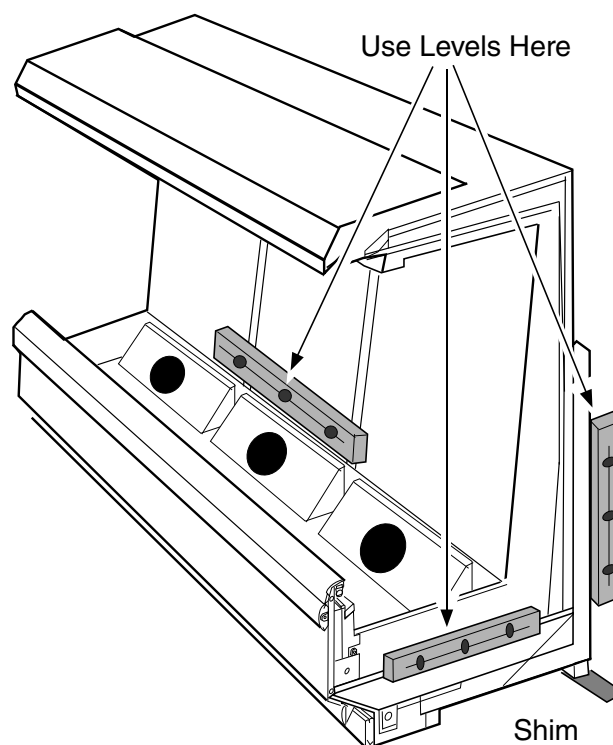
ANCHORING

Because of the merchandisers' forward projection, they must be anchored to the floor to prevent them from tipping forward. Each merchandiser should be lagged to the floor through its rear skid. Anchors should be placed approximately 8 to 12 in. (203 mm to 305 mm) from each end and in the center of the rear skid. Some merchandisers have holes in the rear skid for this purpose.

Once the merchandisers are properly anchored, remove shipping braces.

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. Leveling shims are provided with each merchandiser for use if needed. The shims are 12 in. (305 mm) long and 3 in. (76 mm) wide so that you can level adjoining merchandisers at the same time using one shim.



Notes:

•BEGIN LINEUP LEVELING FROM THE HIGHEST POINT OF THE STORE FLOOR.

•If shimming two corners, check to see if a shim is needed in the center of the merchandiser. If a gap exists between the support rail of the merchandiser and the floor, a shim should be placed in the center.

JOINING INSTRUCTIONS

Sectional construction means that two or more merchandisers may be joined in line yielding one long continuous display requiring only one pair of ends. To join like fixtures, a joint kit is required. To join unlike fixtures, or fixtures of different temperature applications, an insulated partition kit is required. Joint and partition kits are shipped separately; instructions are included with each kit.

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

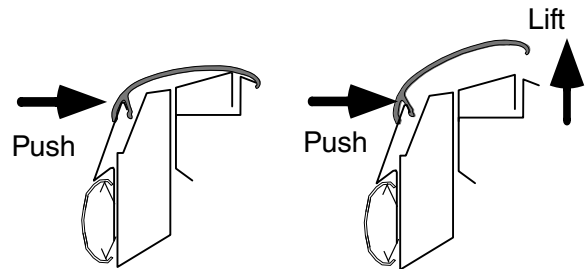
Refer to separate Joint Instruction shipped with case.

OFFSETTING BUMPERS AND TOP RAIL

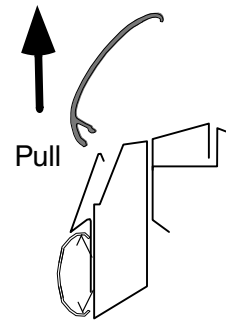
Offsetting the bumpers and top rails helps to disguise the joint locations, giving the lineup a smoother look.

1. Locate short starter bumpers and top rail. They are shipped with the left-end kit.
2. Remove factory installed top rails and bumpers from cases as follows:

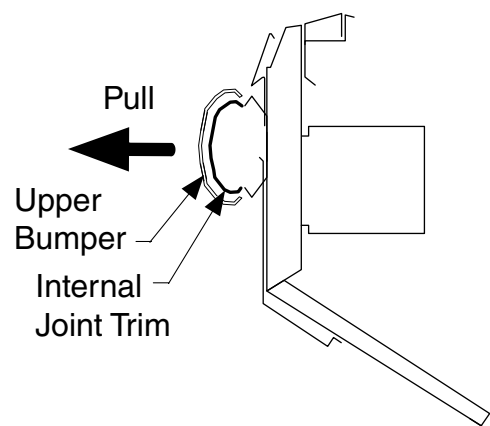
- a. To remove top rails, push rail toward the back of the case with one hand while lifting the top edge off the light channel with the other hand. See following drawing.



- b. Starting at one end, carefully peel bottom of top rail free of color panel and set the rail inside the case.

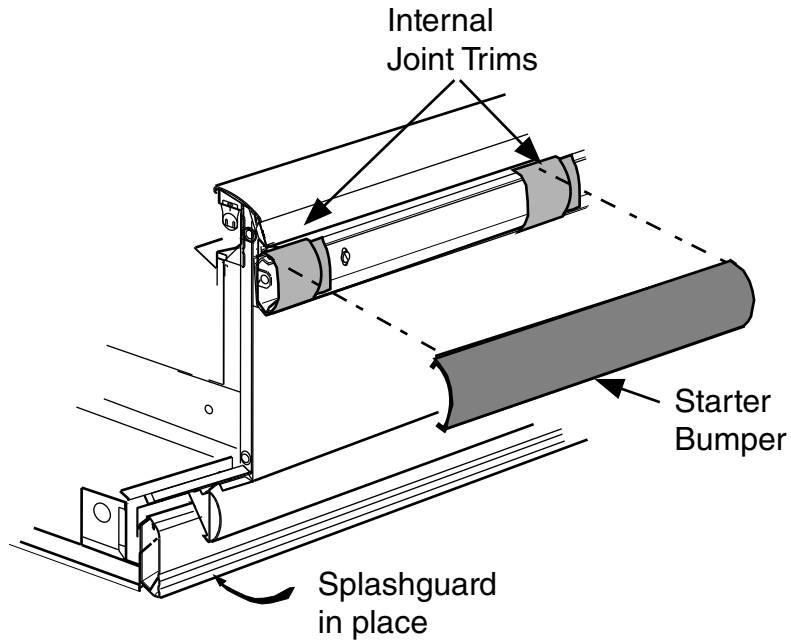


- c. Remove upper and lower bumpers by pulling bumper away from bumper retainers. Be careful not to lose the internal joint trims on the upper bumpers.

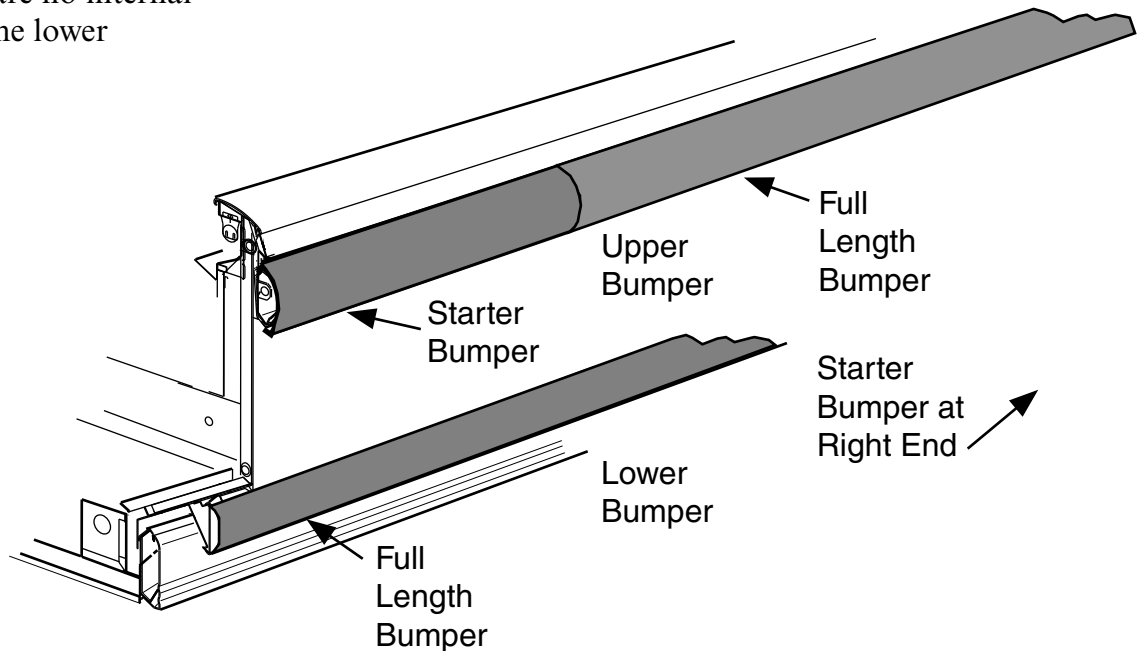


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3. Starting at the left end of the line up, install the upper bumper starter section first. To install,
 - a. Position internal joint trims so that the first is flush to the left-end panel and the second is centered between the starter bumper and the full length bumper as shown below.
 - b. Install full length bumpers and internal trims offset across joints. Make sure that no gaps exist between sections. Continue installing the upper bumpers the length of the line up. Do NOT install the last upper bumper section at this time. This section will be installed in the last step.

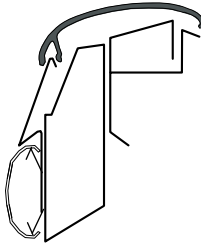


4. Install lower bumper starter and full length lower bumpers by simply pushing them into place. Start at the right end of the line-up for additional camouflage. There are no internal joint trims on the lower bumpers.



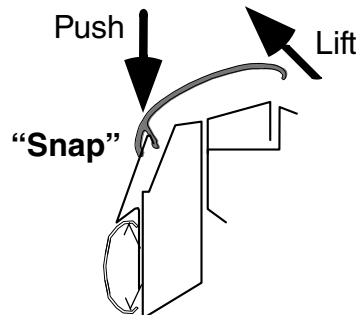
5. Return to the left end of the line up and position the starter section of the top rail as shown.

NOTE: The top rail should not be installed until the upper bumper is securely in place.



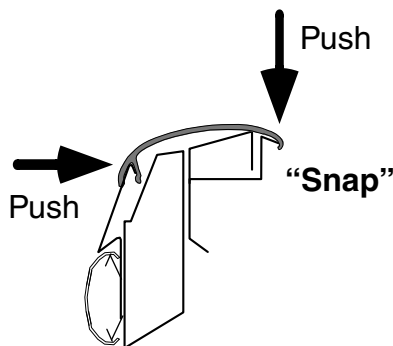
6. Push the bottom portion of the short top rail section down over the color panel. It helps if you lift the top with your other hand as shown. You will hear and feel the trim “snap” into place.

NOTE: The trim must “snap” to be properly positioned.



7. Use one hand to push the top rail toward the rear of the case while using the other hand to “snap” the top section down over the edge of the light channel as shown.

Again, be sure it “snaps” into place.

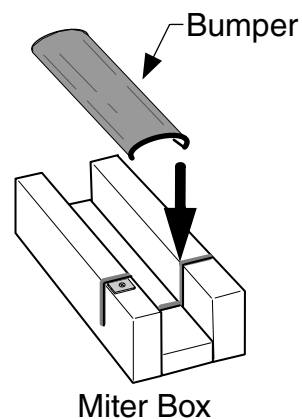


8. Install full length top rails using the same procedures. Continue installing the top rails the length of the line up. Do NOT install last section at this time.

9. Once all except the last sections of upper bumper and top rail have been installed refrigerate the case line up for at least six (6) hours. **The last sections of upper bumper and top rail should be kept inside a refrigerated case or cooler during this time.** This will allow the bumpers and top rails to contract.

10. Go to the right end of the line up and tap the top rail and bumpers to close any gaps.

11. Measure and cut last sections of top rail and bumpers. Use a miter box and fine-tooth saw to cut last bumpers and top rail to length. Install the last sections.

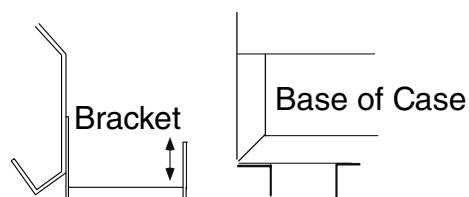


Note: If part of plastic top rail pops loose, remove that section of top rail and re-install according to Steps 6 and 7 above. Trying to re-install only the popped part may not secure the top rail, and may damage the top rail, color panel and light channel.

SPLASHGUARD BRACKET AND JOINT SUPPORT

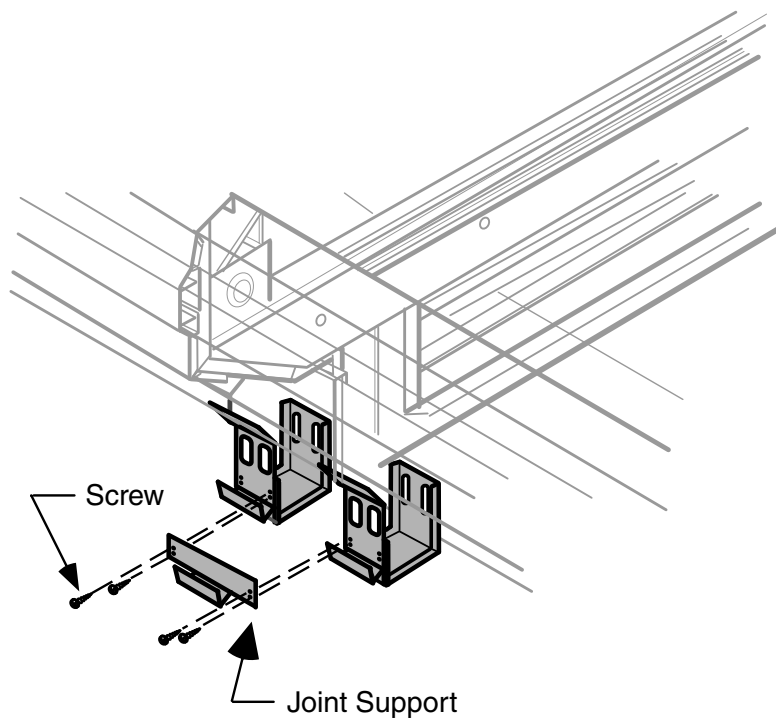
Install Splashguard Bracket

Position splashguard brackets to the merchandiser and level to the floor. Each bracket has a slot at the rear of the bracket where it attaches to the merchandiser. Tighten screws to secure the brackets.



Install Splashguard Joint Support

Position the joint support across the brackets as shown below. Fasten with sheet metal



screws.

REFRIGERATION / ELECTRICAL

REFRIGERANT

The correct type of refrigerant will be stamped on each merchandiser's serial plate located on the left-hand end of the interior top liner. The case refrigeration piping is leak tested, factory sealed and pressurized. Before making refrigeration hookups, depress Schrader valve to ensure that coils have maintained pressure during shipment.



WARNING

Refrigeration lines are under pressure and should be depressurized before attempting to make any connections.

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. A sticker marks the location of the connection "pod." The installer must saw a hole through the pod to exit the case.

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



CAUTION

Splashguard brackets MUST be installed before piping case.

Multiplexing

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

Interconnecting piping inside the merchandiser must be positioned to allow room for lifting the hinged fan plenums and for clearance beneath the display pans.

Line Sizing

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

Note: If Koolgas 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.

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.

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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 EITHER of Above

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

REFRIGERATION THERMOSTAT

The refrigeration thermostat body is located in the electrical wireway. The bulb, when factory installed, is located in the discharge flue.

DEFROST TERMINATION THERMOSTAT

The standard disc type defrost termination thermostat is not adjustable. This thermostat is clamped to the coil inlet tube.

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 fixture is within 10°F of its expected operating temperature. Adjust valves as follows.

Attach two (2) sensing probes (either thermocouple or thermistor) to the evaporator. Put one under the clamp holding the expansion valve bulb and 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°F (1.7–2.7°C)*. With this adjustment, during a portion of the hunting, the temperature difference between the probes will be less than 3°F (1.7°C). Make adjustments of no more than one-half (1/2) turn of the valve stem at a time and wait for at least 15 minutes before rechecking the probe temperature and making further adjustments.

CDA SENSOR (OPTIONAL)

Factory installed optional CDA sensor is located where the thermostat bulb would normally be located. Its leads will be routed through the electrical wireway and to the rack control panel. Leads are tagged in the wireway.

MERCHANDISER ELECTRICAL DATA

Merchandise data sheets for specific models are shipped with this manual. The data sheets provide case electrical data, electrical schematics, parts lists and performance data. Refer to the merchandise data sheets and case serial plate for electrical information.

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.

ELECTRICAL CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made in the electrical wireway on the serial plate side of the case (front).

IDENTIFICATION OF WIRING

Leads for all electrical circuits are identified by wire insulation color or colored plastic bands. These bands correspond to the color code sticker (shown below) located inside the merchandiser's wireway.

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.

PINKREFRIG. THERMOSTAT LOW TEMP.
 LIGHT BLUE..REFRIG. THERMOSTAT NORM TEMP.
 DARK BLUE ..DEFROST TERM. THERMOSTAT
 PURPLE.....CONDENSATE HEATERS
 BROWNFAN MOTORS
 GREEN*GROUND

ORANGE OR
 TANLIGHTS
 MAROON...RECEPTACLES
 YELLOWDEFROST HEATERS 120V
 REDDEFROST HEATERS 208V

*EITHER COLORED SLEEVE OR COLORED INSULATION

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

THESE ARE MARKER COLORS WIRES MAY VARY.

NOTES

DRIP PIPING AND SPLASHGUARDS

WASTE OUTLET AND WATER SEAL

The waste outlet is located in front of the fan plenum 6 ft (1829 mm) from the left-hand end of the merchandiser (facing case front). A water seal is supplied with each fixture. The water seal must be installed at the waste outlet to prevent air leakage and insect entrance into the fixture.

NOTE:

Water seal outlet must clear front skid rail.

Refer to Data Sheets for dimensions.

A tee fitting, an adapter, a plug and a street ell are also supplied with each merchandiser.

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. Improperly installed drip pipes can cause condensate to form on the outside of drip pipes.

The Water Seal Must Be Level

The residual defrost water in the water seal is a barrier that will prevent air movement through the drip piping. Condensation and frost may form if a water seal is improperly installed.

Refer to the data sheet shipped with each model to correctly locate piping. 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.



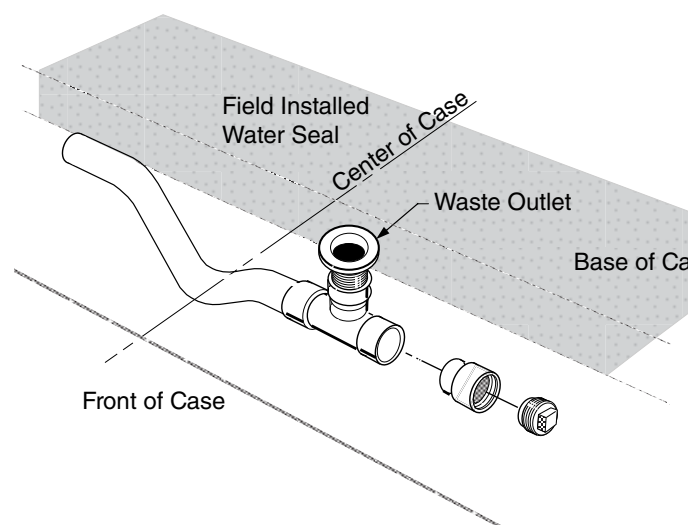
CAUTION

Splashguard brackets MUST be installed before piping case.

2. When connecting drip piping, the water seal must be used as part of the drip piping to prevent air leakage or insect entrance. The water seal must be installed with the waste outlet at the main drain point of each merchandiser. 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 1/4 in. per ft (20 mm per 1 m).
4. Avoid long runs of drip piping. Long runs make it impossible to provide the pitch necessary for good drainage.



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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

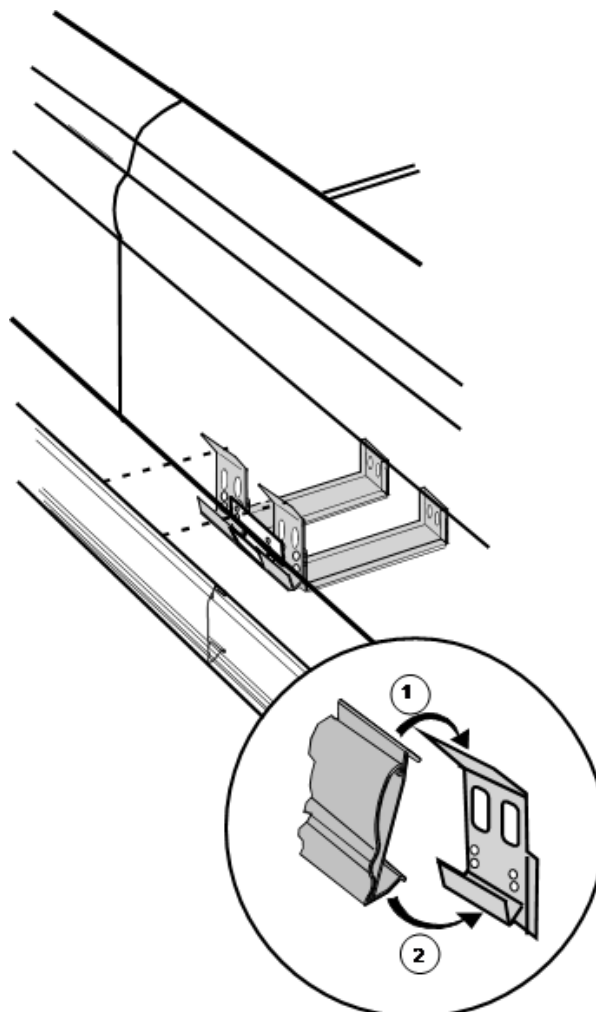
The splashguard and brackets are shipped inside each case.

Install splashguard brackets before piping case. Use two screws per bracket; attach brackets every 4 ft (1219 mm) at pre-drilled locations.

After merchandisers have been leveled and joined, and all drip piping, electrical and refrigeration work has been completed, install the splashguard.

To Install Splashguards:

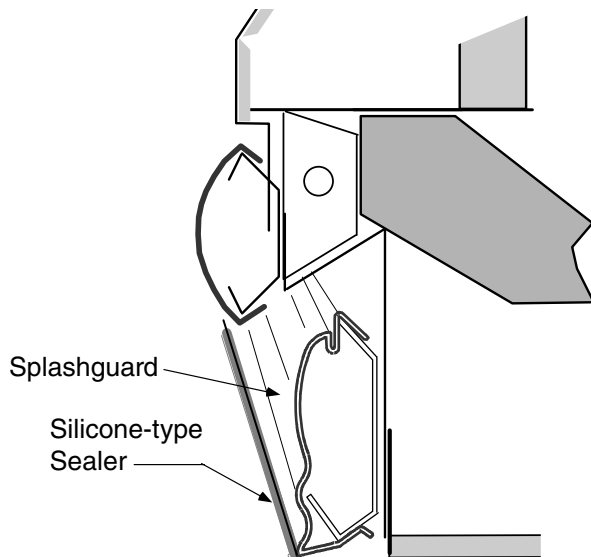
1. Check to be sure that all splashguard brackets are level with the floor.
2. Position top of splashguard over the top edge of the bracket as shown below.
3. Push the lower edge of the splashguard toward the bottom of the bracket until it snaps into place.



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.

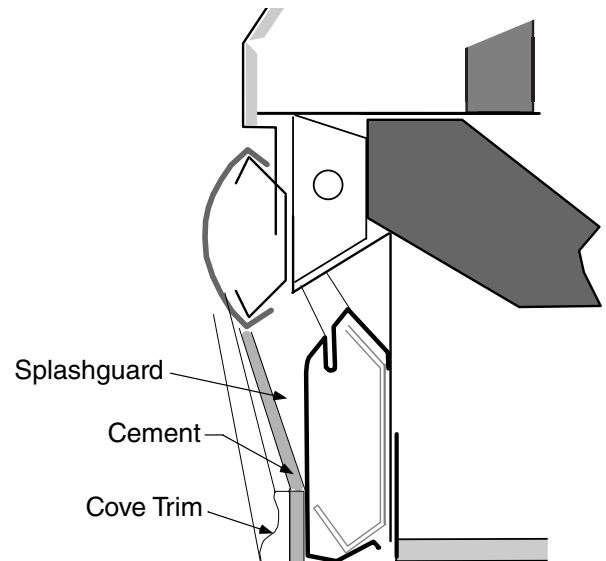
1. Remove all dirt, wax and grease from the area of the splashguard where adhesion will be necessary. This is to ensure a good and secure installation.
2. Apply a good silicone type sealer along the bottom of the splashguard. Sealant must be removed and replaced when servicing.



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:

1. 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.
2. Apply a good contact cement to the cove trim and allow proper drying time according to the directions supplied with the cement.
3. Install the trim to the splashguard so that it is lying flush with the floor. **DO NOT SEAL THE TRIM TO THE FLOOR.**
4. **If required by local health codes** the 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

START UP

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.

Each 4 ft (1219 mm) section has its own evaporator coil and pre-set non-adjustable thermostatic expansion valve (TEV). No adjustment is required. **DO NOT REMOVE THE CAP ON THE TEVS.** This cap is to be removed only for valve disassembly. Removal of this cap during case maintenance will result in refrigerant loss unless the system is first isolated and the refrigerant recovered.

CAUTION

Removal of the TEV cap will result in refrigerant loss unless the system is first isolated and the refrigerant recovered.

The TEV has been factory set to provide the recommended performance settings as specified on the merchandiser data sheets.

AMBIENT AIR FILTERS

The ambient air filters on top of the case should be checked for possible debris accumulated during construction, shipping and installation. Refer to *Care and Cleaning* in **Section 5 – Maintenance**.



Ambient Air Filter on Top Front of Case

CAUTION

At no time should merchandisers be stocked beyond the load limits indicated. Improper stocking can cause poor performance that results in spoiled food.

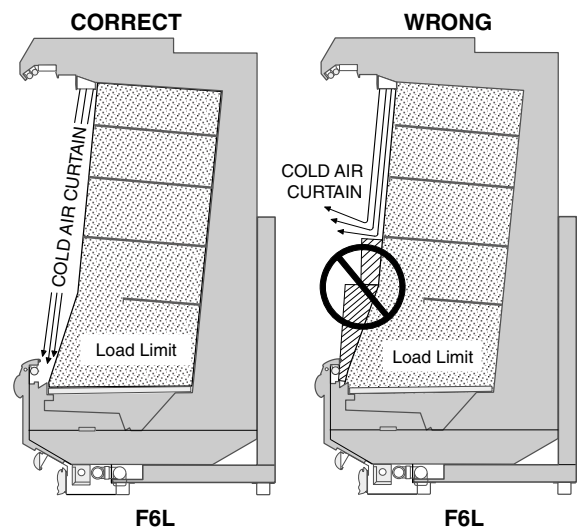
STOCKING

Product should NOT be placed in merchandisers until case is at proper operating temperature.

Display cases are not intended to freeze foods, but to maintain frozen foods at the proper temperature while displayed. 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 unapproved shelving, baskets, display racks, or any accessory that could hamper air curtain performance.

DO NOT BLOCK AIR GRILLE.



F6L

F6L

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SHELF SIZE AND LOCATION

Standard Shelves

All shelves and racks are 48 in. (1219 mm) wide. The standard shelf depth is 22 in. (559 mm) in F6 and F6L cases. At least three, but not more than five, 22 in. (559 mm) standard shelves **must** be used in each F6 or F6L case. **The standard shelf cannot be the lowest shelf** in either F6 or F6L cases.

Each standard front (F6) case must have no more than 16 open slots below the lowest standard shelf. Each low front (F6L) case must have no more than 12 open slots below the lowest standard shelf.

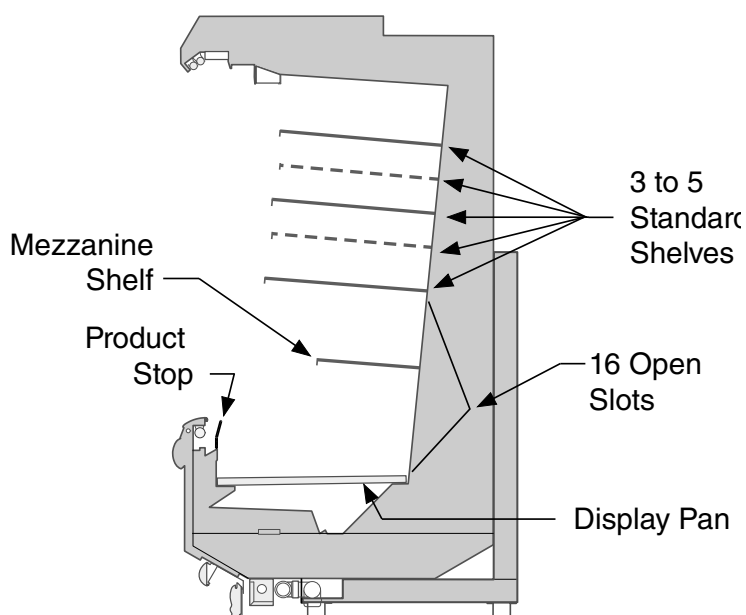
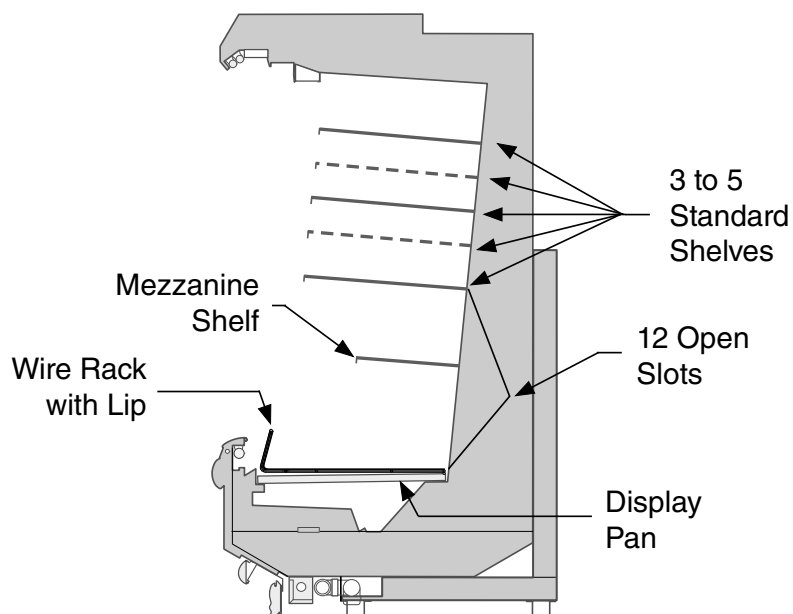
Mezzanine Shelf

The mezzanine, or lowest shelf depth may be 18, 16, or 14 in. (457, 406, or 356 mm). This shelf must be positioned below the lowest standard shelf.

**WARNING**

Do NOT store flammable materials atop the unit.

Shelf Placement

**F6****F6L**

Bottom Rack

Standard front (F6) cases use a telescoping wire rack with a 3 in. (76 mm) acrylic product stop mounted on the product side of the return grille, angled toward the product.

Low front (F6L) cases should not use the telescoping rack. Instead, F6L cases use a wire rack with a built-in wire lip product stop in one of three heights: 2, 6, or 12 in. (51, 152, or 305 mm).

**NOTICE**

Do not put heavy objects on case because it could lead to structural damage.

SHELF MAXIMUM WEIGHT LIMITS

Husmann merchandiser shelves are designed to support the maximum weight load limits as indicated in the table below.

Exceeding these maximum weight load limits may cause damage to the shelf or shelves, damage to the merchandiser, damage to store products, and potentially create a hazardous condition for customers and staff. Exceeding the indicated maximum weight load limits constitutes misuse as described in the Husmann Limited Warranty.

Weight Limits for F6 Merchandiser Shelving

Nominal Shelf Depth	Maximum Load Limit
14 in. (357 mm)	125 lb (56.7 kg)
16 in. (405 mm)	200 lb (90.7 kg)
18 in. (457 mm)	200 lb (90.7 kg)
20 in. (508 mm)	250 lb (113.4 kg)
22 in. (559 mm)	250 lb (113.4 kg)

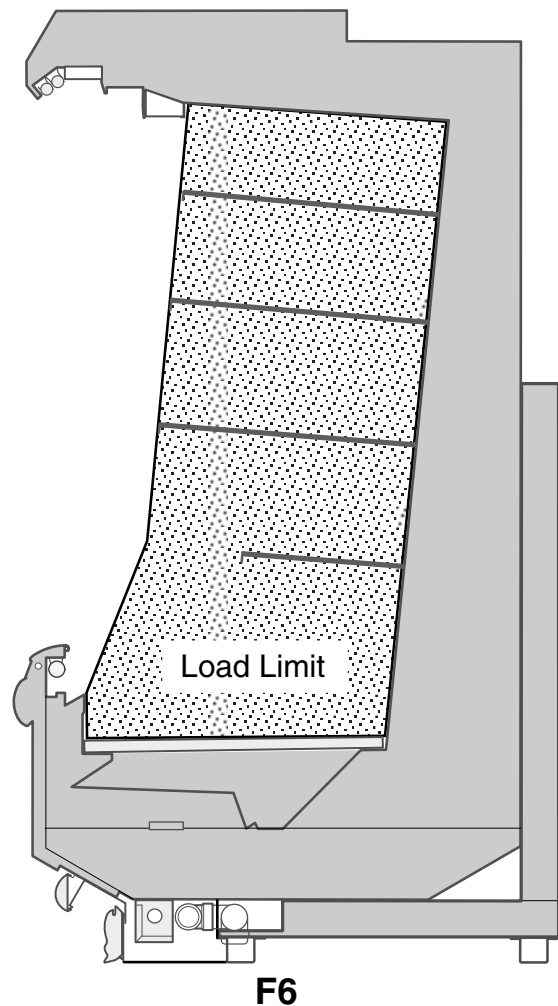
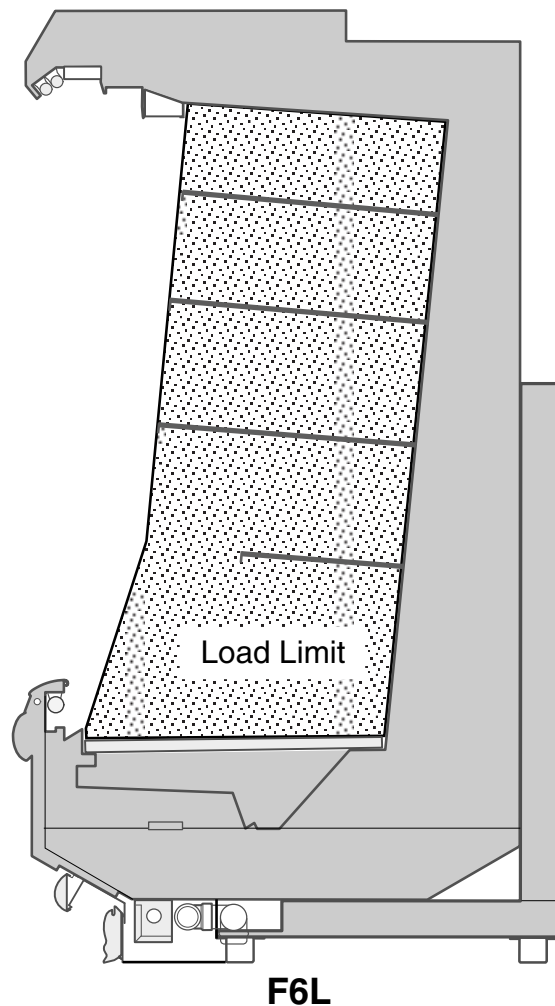
*Shelf load limits at 0° tilt

LOAD LIMITS

Each merchandiser has a load limit decal. Overstocking will adversely affect product temperature and case efficiency. Recommended load limit profiles are shown below.



LOAD LIMIT PROFILES



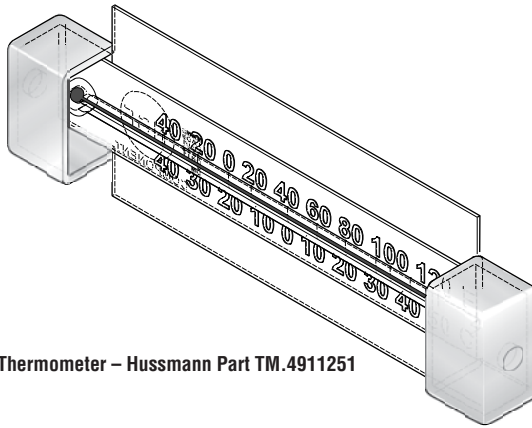
INSTALLING FDA/NSF REQUIRED THERMOMETER

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.

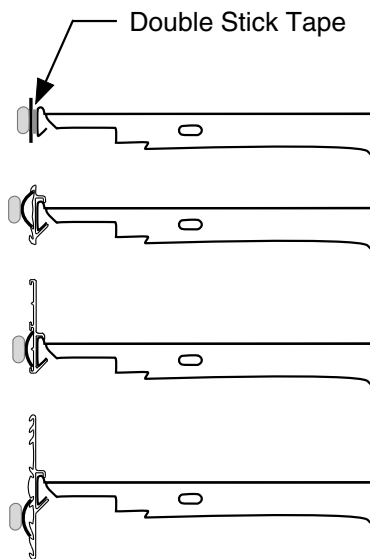
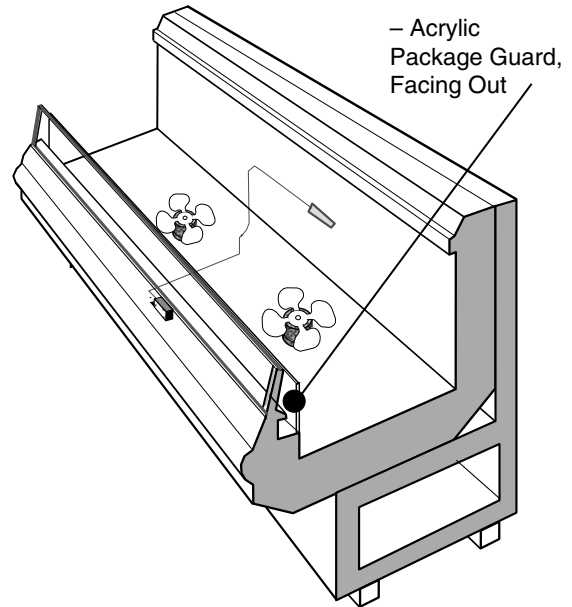
This is an NSF-7 & US FDA Food Code Required Thermometer



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
© 2007 Hussmann Corporation

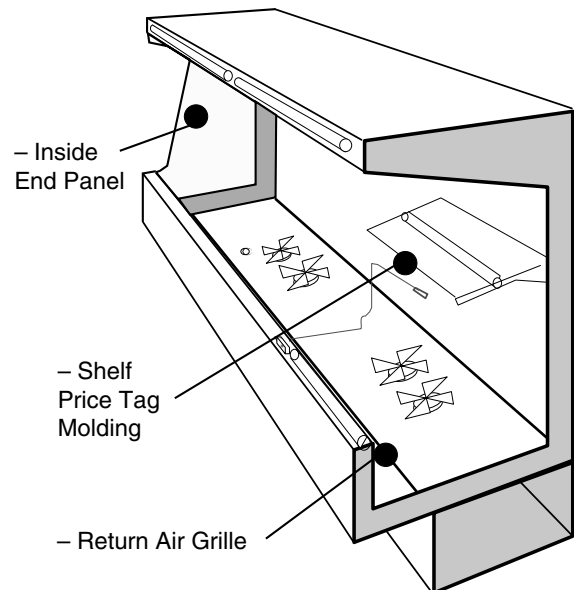
Suggested Mounting Locations in Single Deck Glass Front Impact Merchandisers



Flexible Plastic
Fits in Price Tag
Moldings

Hussmann P/N 0429971_C

10/2007



Suggested Mounting Locations
in Multi-deck Merchandisers

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 with 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.

MAINTENANCE

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. After cleaning be sure the plenum is properly lowered into position OR PRODUCT LOSS WILL RESULT due to improper refrigeration.



WARNING

SHUT POWER OFF DURING CLEANING PROCESS.

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.**

Interior Surfaces

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

Do NOT Use:

- Abrasive cleansers and scouring pads, as these will mar the finish.
- A hose on lighted shelves or submerge the shelves in water.
- Solvent, oil or acidic based cleaners on any interior 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.**

- Lift hinged fan plenum for cleaning. Hook chain in rear panel to secure plenum during 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 to the merchandiser.

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.



WARNING

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

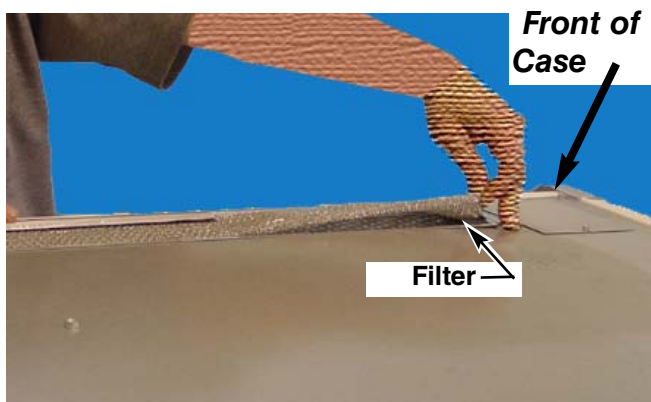
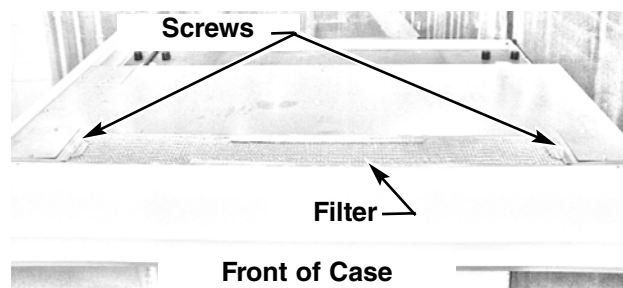
**Low Temperature
Multi-deck Frozen Food**

CLEANING AMBIENT AIR FILTER

For proper refrigeration performance, the ambient air filters should be cleaned or replaced at least every six months. The filters are located on top of the case and measure 36 x 4 x 1/4 inches (914 x 102 x 6.4 mm). There are two filters in an 8 ft (2438 mm) case, three filters in a 12 ft (3658 mm) case, and one filter in a 4 or 6 ft (1219 or 1829 mm) case.

The metal mesh filter can be lifted out without tools. If preferred, the filter and its frame can be removed together by removing sheetmetal screws holding the frame. Gently shake the filter to remove loose debris, then wash the filter with soap and hot water. Allow to dry completely before re-installing.

Replacement filters should be UL Class II type filters.



REMOVING SCRATCHES FROM BUMPER

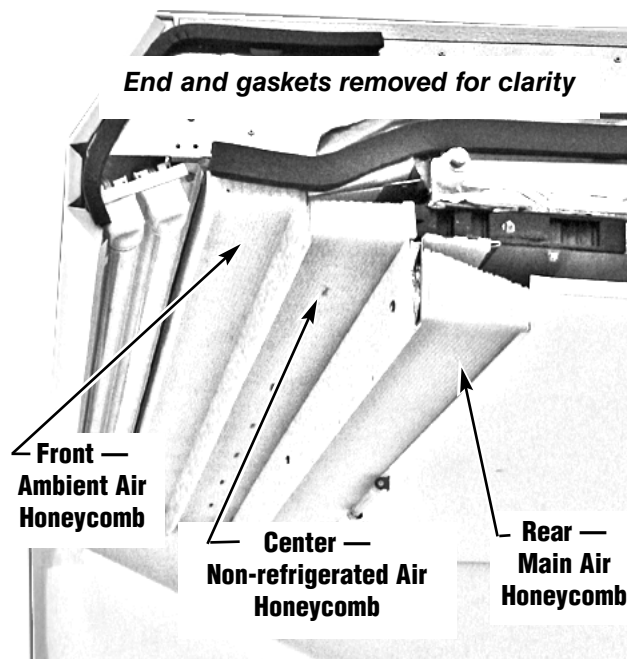
Most scratches and dings can be removed using the following procedure.

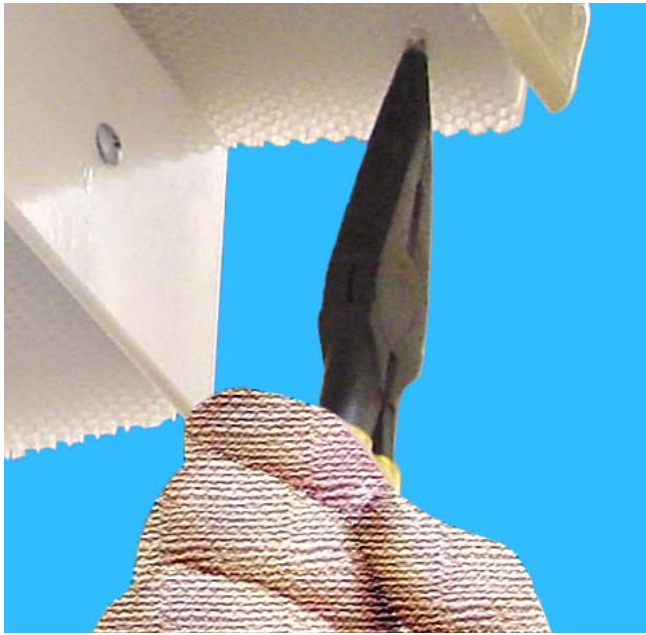
1. Use steel wool to smooth out the surface area of the bumper or top rail.
2. Clean area.
3. Apply vinyl or car wax and polish surface for a smooth glossy finish.

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 the honeycomb is removed from the case.

Damaged honeycombs should be replaced.

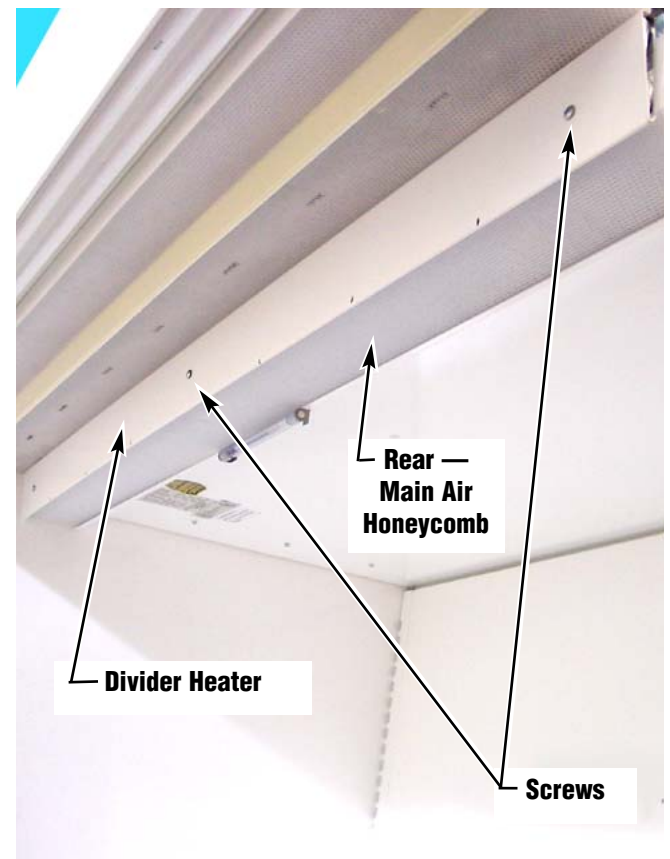
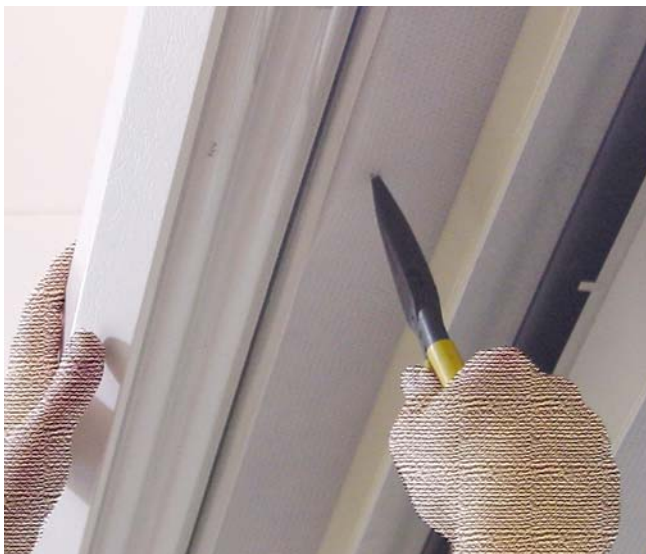




These models have three honeycombs. Begin with the center honeycomb. Work carefully—a damaged honeycomb will cause merchandisers to perform poorly. Use a needle-nose plier to grasp one cell membrane near one corner, *Pull gently* until the bottom of the corner clears the retainer. Move the plier further along and repeat until fingers can grasp the side of the honeycomb. Remove the honeycomb.

Remove the front honeycomb using the same technique.

Remove screws in the divider heater before removing the main air honeycomb at the rear. Use care to prevent damage to the foil bonded heater or wiring.



Clean the honeycombs with soap and water. Be careful not to damage honeycombs. When completely dry, re-install honeycombs in retainers.

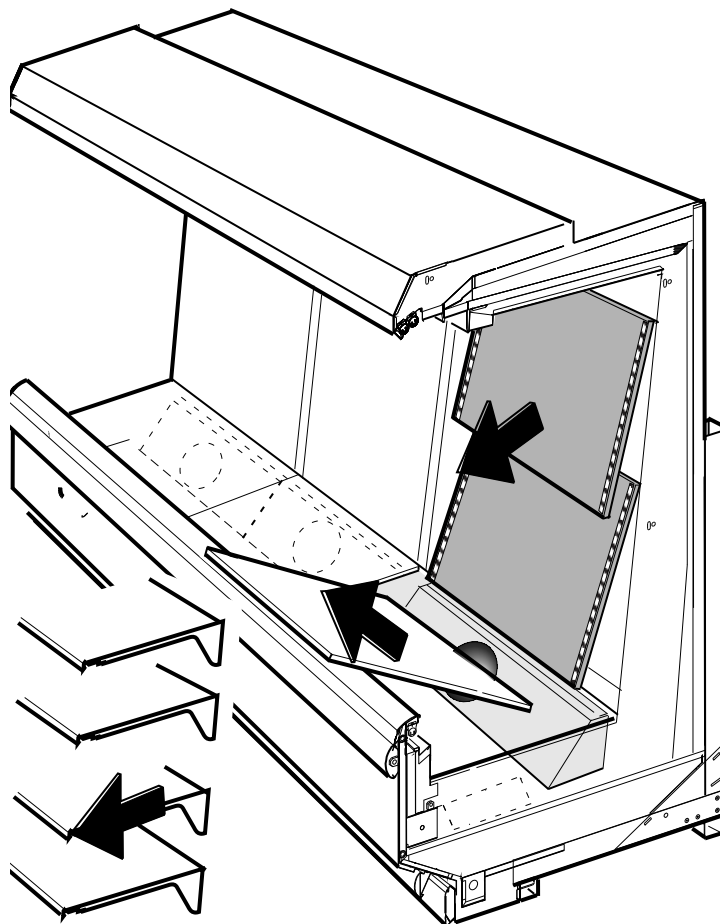
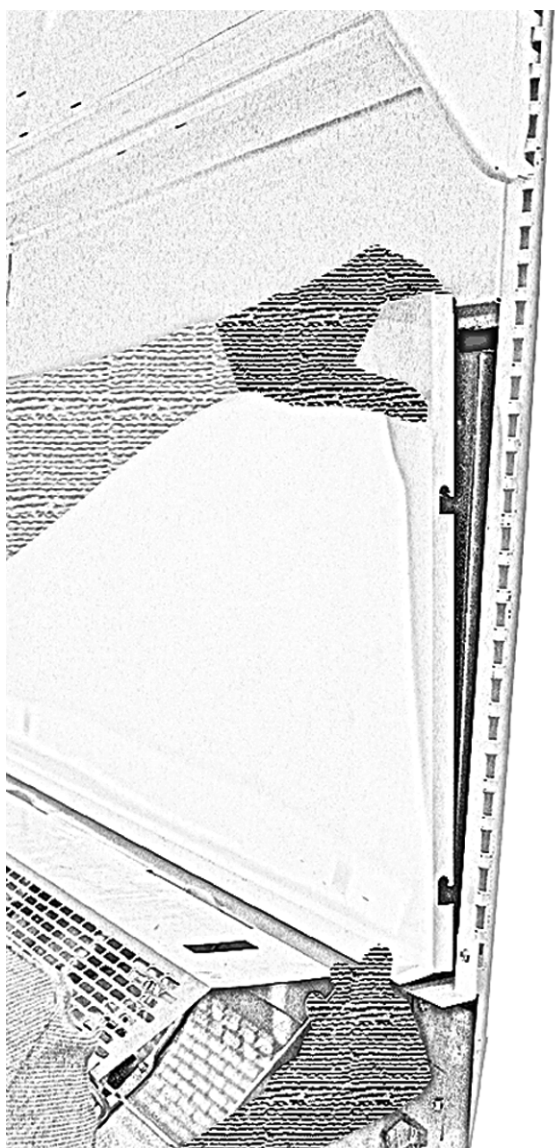
**Low Temperature
Multi-deck Frozen Food**

REMOVING PANS AND INTERIOR PANELS

All interior shelves, drip pans, and shelf support panels may be lifted out without tools.

Rear panels rest on fillister screws. Do not pry at edges of panels. If panels do not lift easily, insert a screwdriver into a rack support hole and lightly tap the screwdriver to raise the panel.

Reinstall in reverse order.



CLEANING STAINLESS STEEL RAILS

Use non-abrasive cleaning materials, and always polish with grain of the steel. Use warm water or add a mild detergent to the water and apply with a cloth. Always wipe rails dry after wetting.

Use alkaline chlorinated or non-chlorine containing cleaners such as window cleaners and mild detergents. Do not use cleaners containing salts as this may cause pitting and rusting of the stainless steel finish. Do not use bleach.

Clean frequently to avoid build-up of hard, stubborn stains. A stainless steel cleaning solution may be used periodically to minimize scratching and remove stains.

Rinse and wipe dry immediately after cleaning. Never use hydrochloric acid (muriatic acid) on stainless steel.

CLEANING COILS

NEVER USE SHARP OBJECTS AROUND COILS. Use a soft brush or vacuum brush to clean debris from coils. Do not puncture coils!

Do not bend fins. Contact an authorized service technician if a coil is punctured, cracked, or otherwise damaged.

ICE in or on the coil indicates the refrigeration and defrost cycle is not operating properly. Contact an authorized service technician to determine the cause of icing, and to make adjustments as necessary. To maintain product integrity, move all product to a cooler until unit has returned to normal operating temperatures.

MAINTAINING FLUORESCENT LAMPS

Fluorescent lamps should not be allowed to run to failure. If a re-lamp schedule is not in place, the tubes should be inspected for signs of degradation (blackened ends). Degraded or failed tubes should be replaced.

Allowing severely degraded lamps to operate may cause a ballast failure or could expose the lamp holder to excessive heat. Replacing degraded bulbs is more cost effective than replacing ballast and lamp-holders.

Traditional re-lamp programs are 18- to 24-month intervals. In the absence of a re-lamp program, a yearly inspection of the lightning system is recommended.

1. Inspect all lamp sockets and plug-receptacle connections for signs of arcing. Replace any component that shows signs of arcing.
2. Make sure all unused receptacles have their close-off covers securely installed.
3. Make sure proper cleaning procedures are followed. Lights and fans **MUST** be turned off when a case is cleaned and **MUST** be allowed to dry before turning power back on.
4. Do not use a pressure nozzle to clean inside a case.

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.

SERVICE

GENERAL

See the case data sheet set for wiring diagrams and other detailed information on specific fans and heaters. The illustration below identifies the various fans, heaters and thermostats.

Always move food product from case to freezer when power to case is turned off. Do not allow product to sit in a non-refrigerated area.



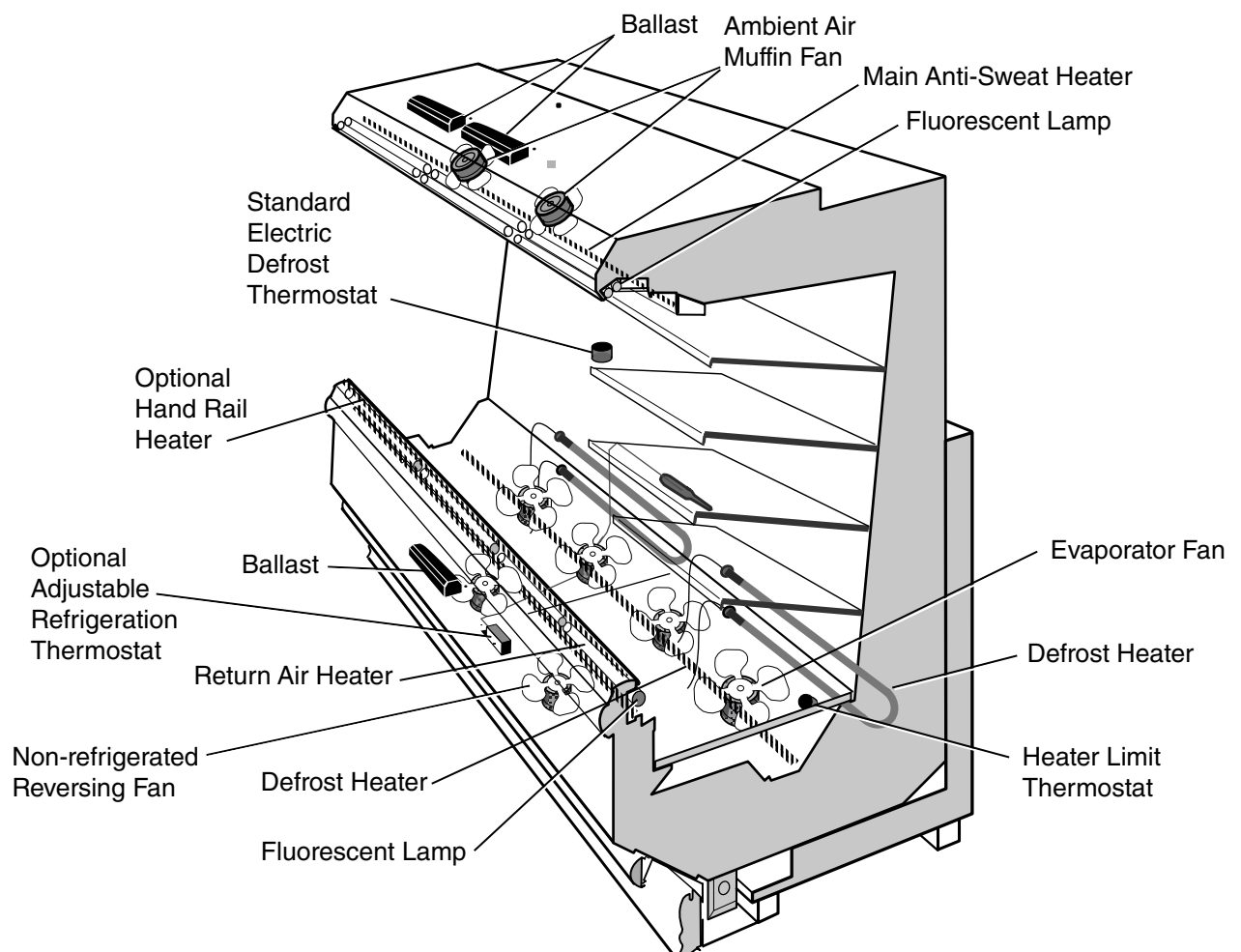
WARNING

— LOCK OUT / TAG OUT —

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

REPLACING FAN MOTORS AND BLADES

Should it ever be necessary to service or replace the fan motors or blades be certain that the fan blades are re-installed correctly. **THE BLADES MUST BE INSTALLED WITH RAISED EMBOSING (PART NUMBER ON PLASTIC BLADES) POSITIONED AS INDICATED ON THE PARTS LIST OF THE DATA SHEET.**

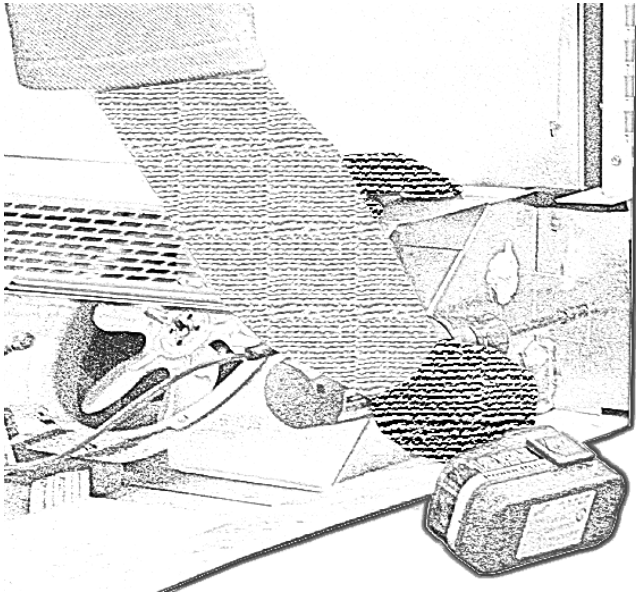


**Low Temperature
Multi-deck Frozen Food**

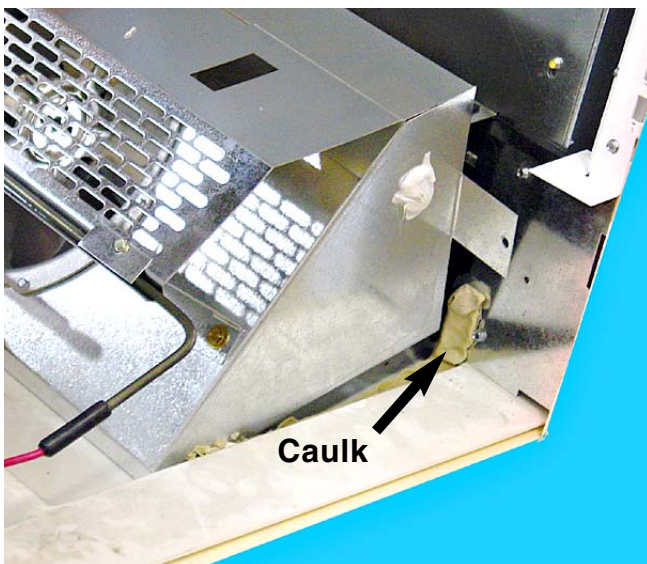
Evaporator Fans

For access to these fans:

1. Turn off power.
2. Remove bottom display racks and pans.
3. Remove screws on both ends of the plenum assembly.



4. Free the plenum assembly from the caulk at both ends of the assembly. Rotate the assembly forward and to rest in the case.



WARNING

— LOCK OUT / TAG OUT —

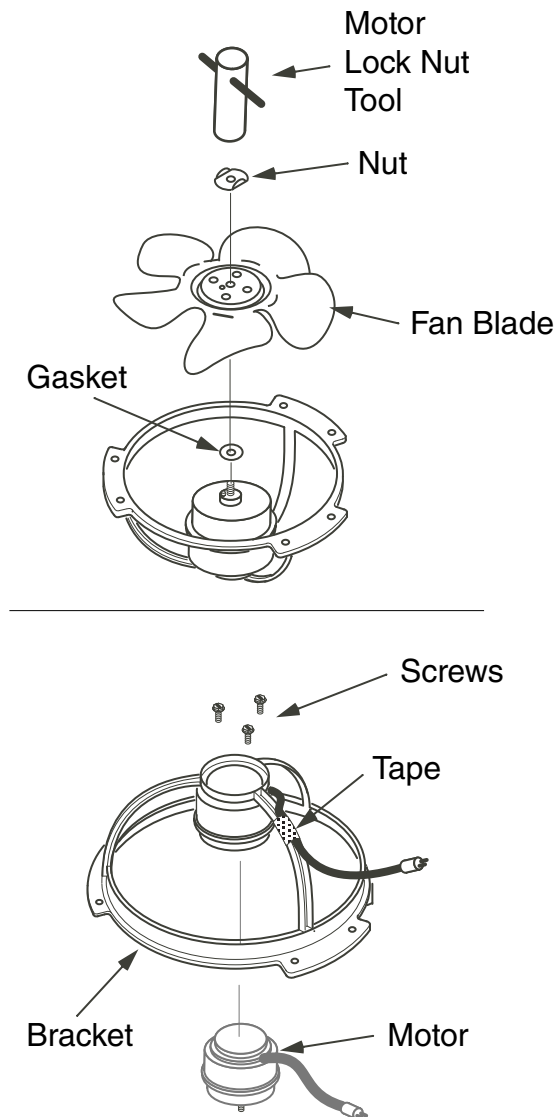
To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

5. Disconnect fan from wiring harness. The fan wiring harness is sealed at the left front of the case. Cut the fan wiring at the left end, leaving sufficient wire to connect the new fan.



6. Remove screws holding fan basket to plenum. Fan blade may be removed after fan assembly is removed from plenum.
7. Remove screws holding bottom of motor to fan basket.
8. Replace fan motor and blade in fan basket.
9. Reinstall fan basket in plenum.
10. Reconnect fan wiring at the left end. Follow NEC and UL approved methods.
11. Reposition plenum assembly in caulk and replace screws at each end of plenum assembly.

12. Turn on power.
13. Verify that motor is working and blade is turning in the correct direction.



Non-refrigerated Fans

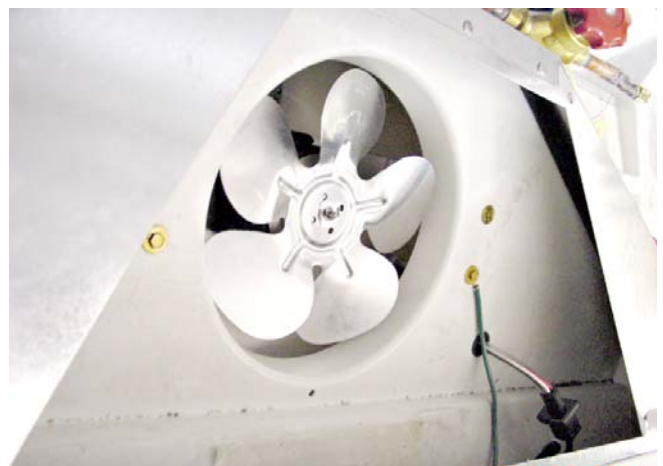
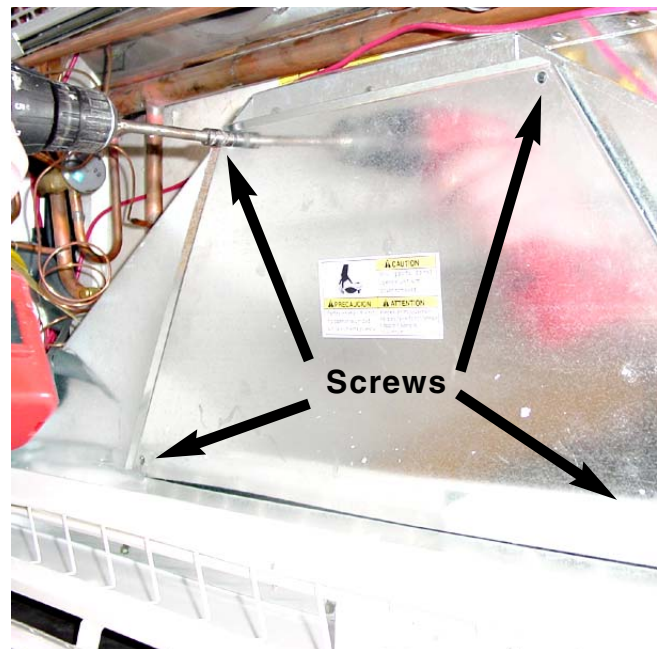
For access to these fans:

1. **Turn off power.**
2. Remove bottom display racks and pans.
3. Remove screws and cover, exposing fan assembly.

WARNING

— LOCK OUT / TAG OUT —

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

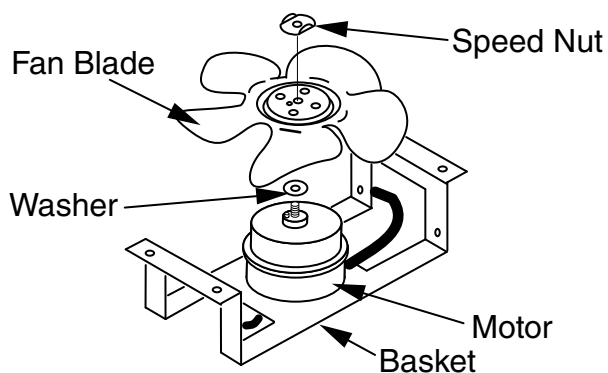


**Non-Refrigerated Reversing Fan
with Cover Removed**

**Low Temperature
Multi-deck Frozen Food**

Non-refrigerated Fans (Continued)

3. **Disconnect fan from wiring harness. The fan wiring harness is sealed at the left front of the case. Cut the fan wiring at the left end, leaving sufficient wire to connect the new fan.**
4. Remove fan blade.
5. Remove screws holding bottom of motor to fan basket.



6. Replace fan motor and blade.
7. Reconnect fan wiring at the left end. Follow NEC and UL approved methods.
8. Replace cover and screws.
9. Turn on power.
10. Verify that motor is working and blade is turning in the correct direction.

Do not operate fans without covers!

Ambient Air Muffin Fans

For access to these fans:

1. Turn off power.
2. Remove ambient air filter.



3. **Disconnect fan from wiring harness.**

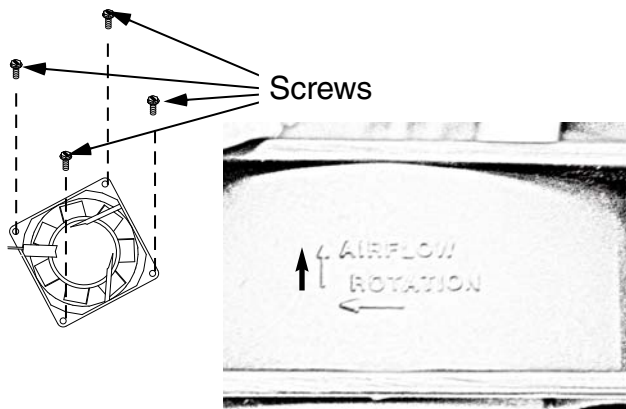
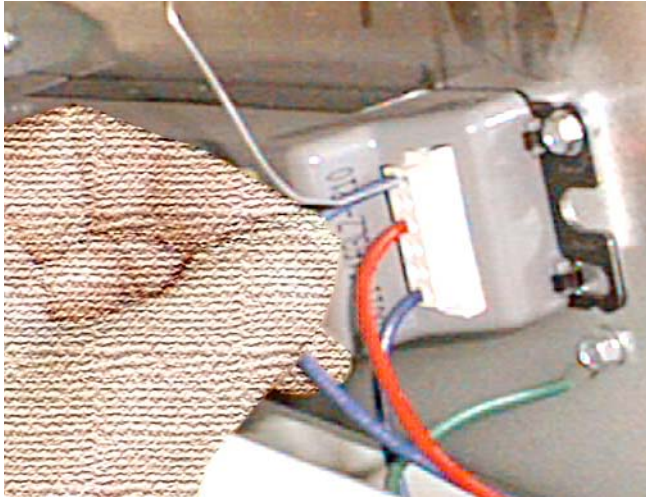


⚠ **WARNING**

— LOCK OUT / TAG OUT —

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

4. Remove and replace muffin fan assembly.
Airflow arrow must point toward plenum.



5. Reconnect fan to wiring harness.
6. Replace ambient air filter.
7. Turn on power.
8. Verify that motor is working and blade is turning in the correct direction.

REPLACING MODULAR ELECTRIC DEFROST HEATER

These heaters are attached to the front of the modular coils. They may be accessed by lifting the fan plenums. To replace:

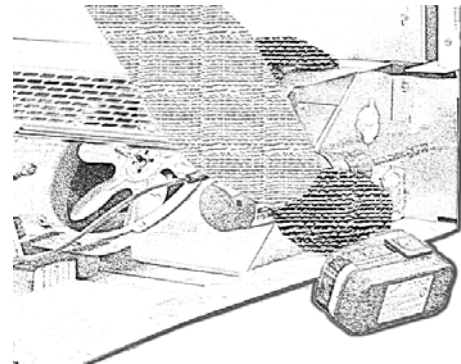
1. **Turn off power.**

WARNING

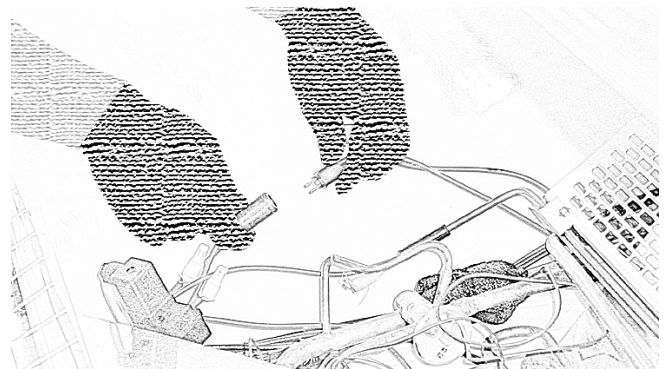
— LOCK OUT / TAG OUT —

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

2. Remove wire display racks and bottom display pans from the section of the compartment being serviced.
3. Remove screws on both ends of the plenum assembly. Free the plenum assembly from the caulk at both ends of the assembly. Rotate the assembly forward to rest in the case.



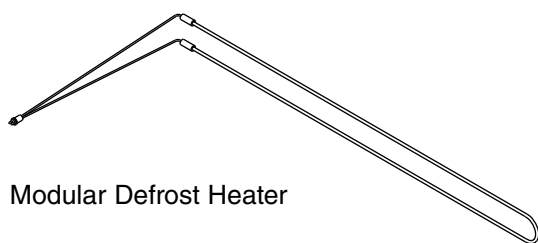
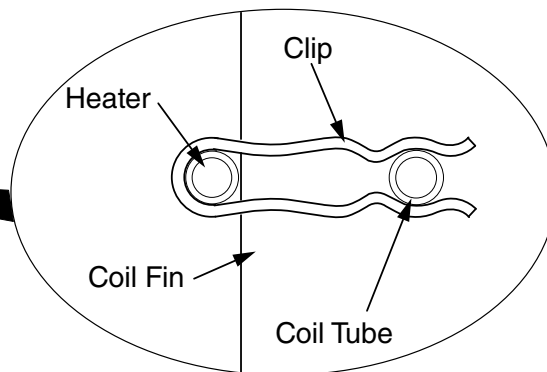
4. Unplug the heater from the heater wiring harness.



**Low Temperature
Multi-deck Frozen Food**



Clips to be located 5 to 6 inches from bracket



Modular Defrost Heater

5. Remove the heater from the face of the coil. Be sure to save the attachment clips for the new heater.
6. Install new heater.
7. Reposition fan plenum.
8. Turn on power.
9. Verify that heater is working properly.



WARNING

— LOCK OUT / TAG OUT —

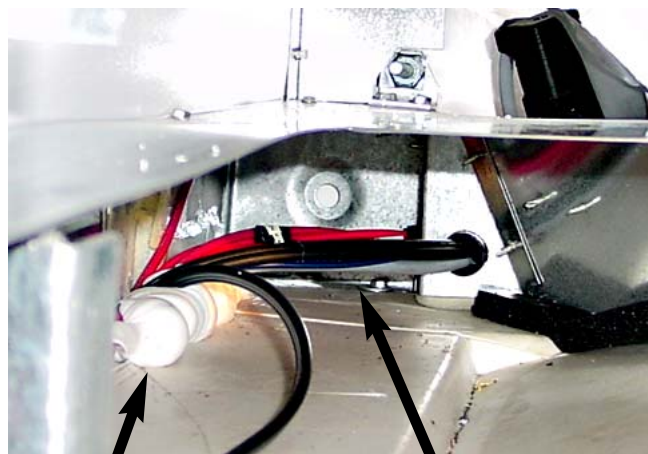
To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

3. Cut the heater from the heater wiring harness.

REPLACING ELECTRIC DEFROST HEATER

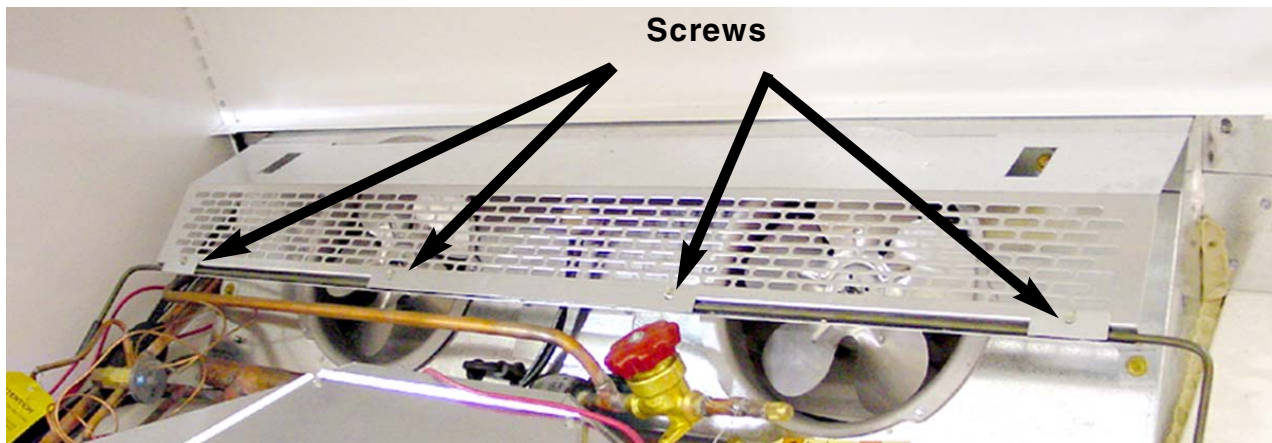
These full-length heaters are attached to the front of the coils. They may be accessed by removing the fan plenums. To replace:

1. **Turn off power.**
2. Remove wire display racks and bottom display pans from the entire case.

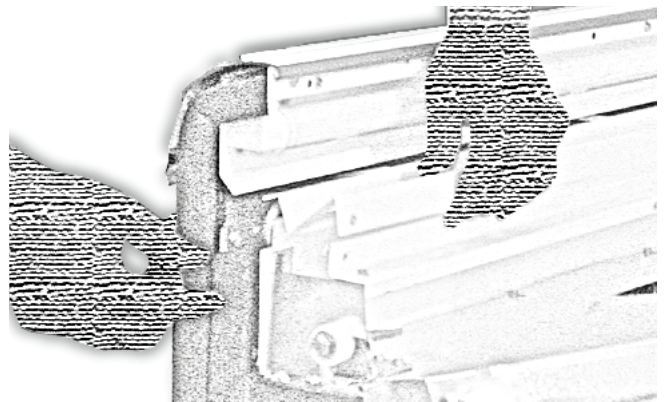


Sealant

Wiring Harness



4. Remove the heater from the face of the *frost collector* by loosening or removing screws in the attachment clips.
5. Install new heater.
6. Reconnect heater wiring at the left end. Follow NEC and UL approved methods.
7. Turn on power.
8. Verify that the heater is operating correctly.



REPLACING RETURN AIR HEATER

The return air heater is located in front of the case under the return air grille.

To replace the heater:

1. Turn off power to fan/anti-sweat heater circuit.
2. Remove wire display racks and bottom display pans.



3. Remove return air grille.
4. Unplug the heater lead.
5. Remove the foil barrier tape and remove the heater.
6. Install new heater, being sure to thoroughly clean the surface and to install new foil barrier tape.

WARNING

— LOCK OUT / TAG OUT —

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

REPLACING MAIN ANTI-SWEAT HEATER (HONEYCOMB DIVIDER) HEATER

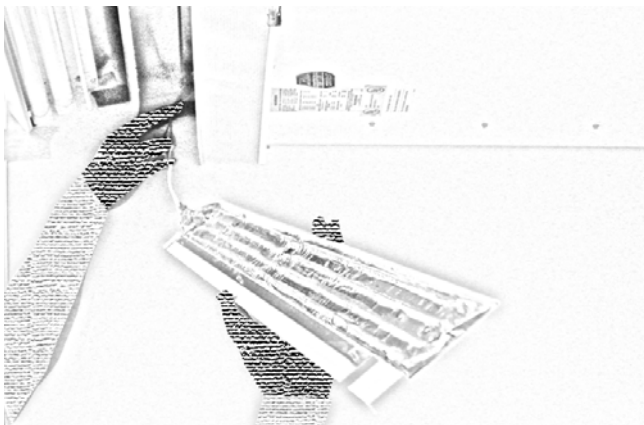
The main divider anti-sweat heater is located in front of the rear case honeycomb.

To replace the heater:

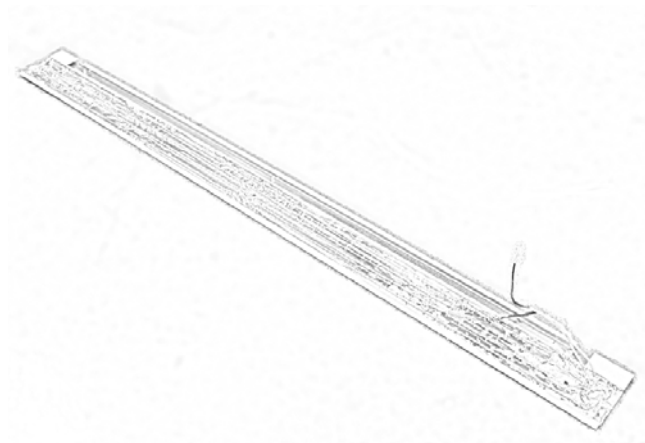
1. **Turn off power.**
2. Remove screws.



3. Remove divider.
4. Unplug the anti-sweat heater lead.



5. Remove the foil barrier tape from the back of the divider and remove the heater.
6. Install new heater, being sure to thoroughly clean the back surface of the divider and to install new foil barrier tape.
7. Plug in heater and reinstall divider.



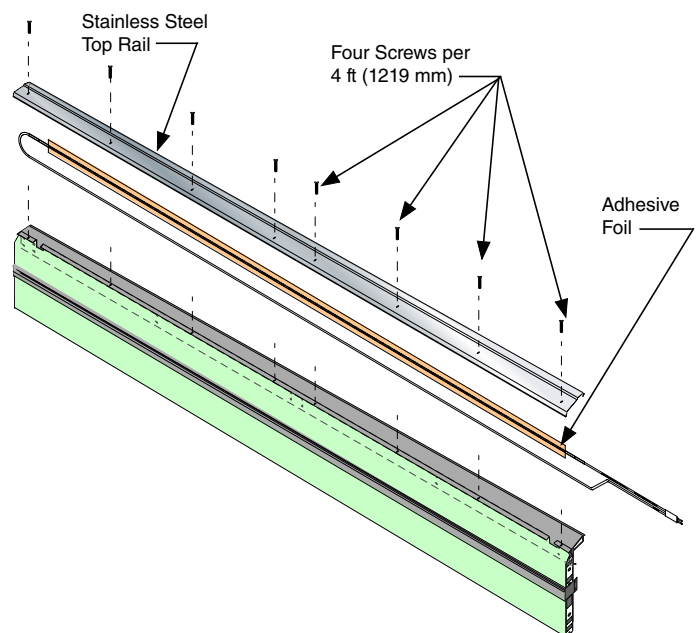
8. Turn power on.
9. Verify heater is working properly.

REPLACING OPTIONAL HANDRAIL ANTI-SWEAT HEATER

The optional handrail anti-sweat heater is located in front of the case under the handrail.

To replace the heater:

1. **Turn off power.**
2. Remove screws holding stainless steel hand rail and turn rail to expose heater.

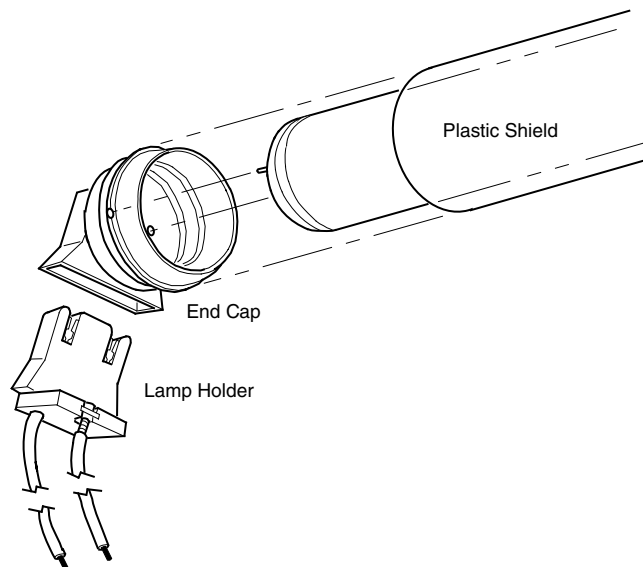


3. Unplug the anti-sweat heater lead.
4. Remove the foil barrier tape from the bottom of the rail and remove the heater.
5. Install new heater, being sure to thoroughly clean the bottom surface of the rail and to install new foil barrier tape.
6. Plug in heater and reinstall hand rail.
7. Turn power on.
8. Verify heater is working properly.

Note: Optional handrail heaters are full-length 4, 6, 8 or 12 ft (1219, 1829, 2438 or 3658 mm) and either 120V or 220V.

REPLACING FLUORESCENT LAMPS

Fluorescent lamps are furnished with moisture resistant lamp holders, shields and end caps. Whenever a fluorescent lamp is replaced, be certain to reinstall the lamp shields and end caps.



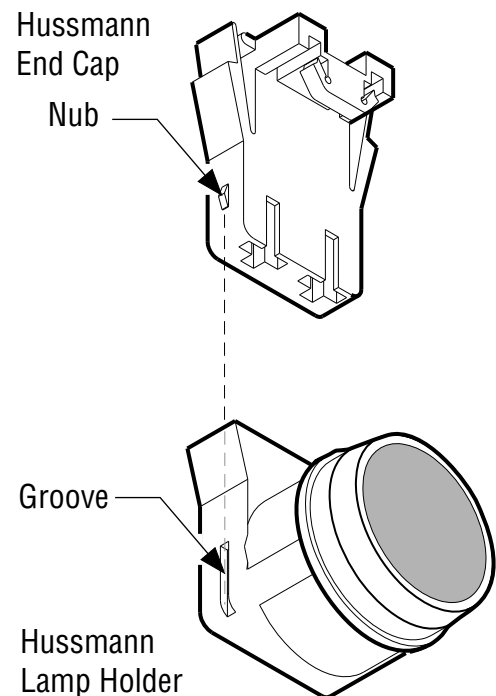
The switch in the canopy operates both the canopy and the shelf lamps. The rail lamp switch is located on the rail.

Inspect all lamp sockets and plug-receptacle connections for signs of arcing. Replace any component that shows signs of arcing.

Make sure all unused receptacles have their close-off covers securely attached.

REPLACING LAMP HOLDERS AND END CAPS

The Hussmann lamp holder is designed to snap into the sheet metal of the case. The lamp holder has a locking 'nub' which fits inside the groove of specially designed end caps.



IMPORTANT!

Always replace lamp holders and end caps with Hussmann lamp holders and end caps.

Use of non-Hussmann parts may result in poor electrical contact and short lamp life.

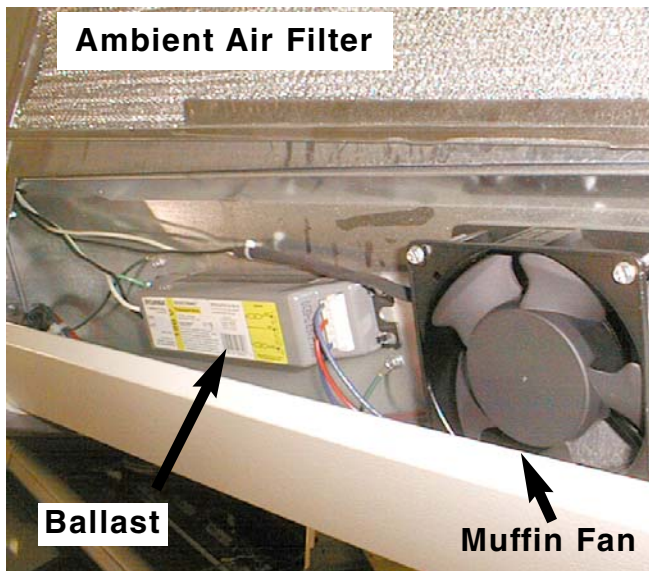
REPLACING ELECTRONIC BALLASTS

Canopy Ballast

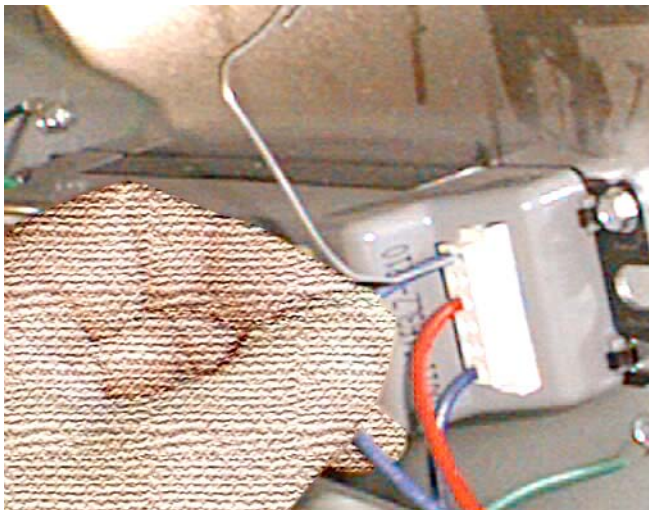
The canopy ballast is located on top of the case, to the left of the muffin fans.

To gain access:

1. **Turn off power.**
2. Remove ambient air filter.



3. Unplug wires in ballast with tool that will release the wires.



4. Remove and replace ballast.
5. Reconnect the ballast wires.

6. Replace ambient air filter.
7. Turn on power
8. Verify proper operation of ballast.

Rail Lamp Ballast

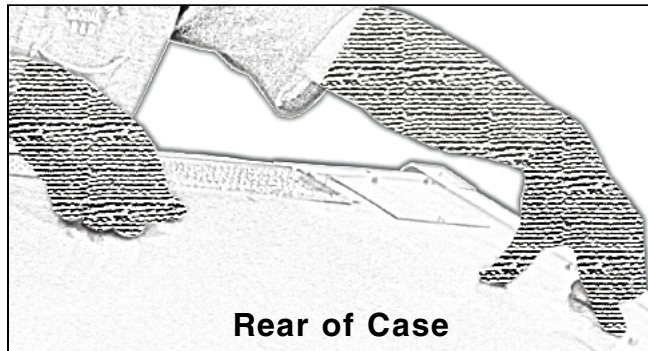
The rail lamp ballast is located in the raceway, behind the lower front panel at the left-hand end of the merchandiser. **NOTE:** The switch for the rail lamp is separate from the canopy and shelf lighting. The rail lamp switch is located on the rail.

To gain access:

1. **Turn off power.**
2. Remove the lower front panel by lifting it up and out.
3. Remove screws attaching the raceway cover, then remove cover.
4. Service or replace ballast as required. Reassemble items as they were originally installed.
5. Reconnect the electrical power.
6. Verify proper operation.

MAIN ELECTRICAL CONNECTIONS

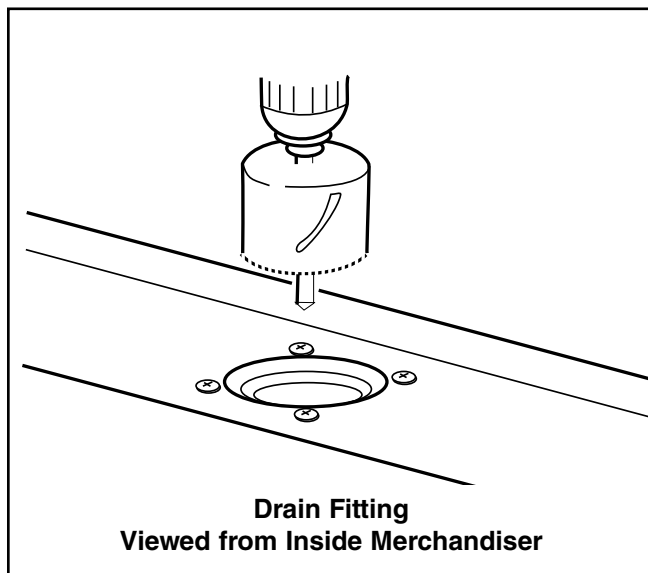
The main case connection access is at the top left end of the case.



REPLACING DAMAGED DRAIN FITTING

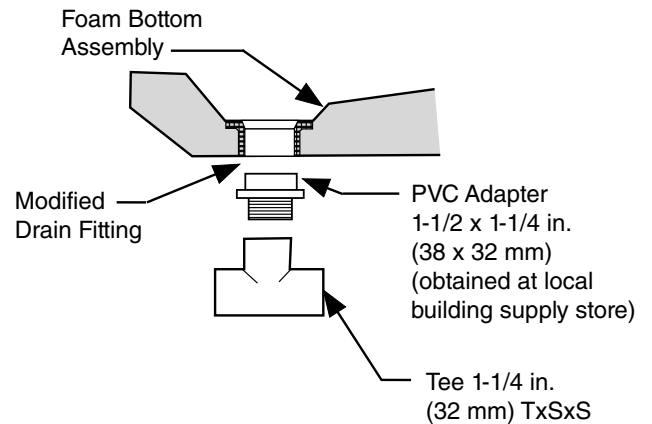
The following procedure is for the field repair of a broken drain fitting.

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



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.



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

Aladdin 3-in-1 rod at 732°F

X-Ergon Acid core at 455°F

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.

A decorative border made of a repeating blue geometric pattern, resembling interlocking squares or a Celtic knot, frames the entire page.

HUSSmann®

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

Hussmann Corporation

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