

HUSSMANN[®]
IMPACT[™] Merchandisers



F2 Frozen Meat and Seafood

Wall Merchandiser



Installation & Operation Manual

Shipped With Case Data Sheets

IMPORTANT
Keep in store for
future reference!

P/N 0424382_B

Impact Series
August 2010



TABLE OF CONTENTS

INSTALLATION

NSF Certification	1-1
Location	1-1
Shipping Damage	1-1
Exterior Loading	1-1
Merchandisers Shipped with End Installed	1-2
Shipping Braces	1-2
Leveling	1-2
Heater Mounting	1-3
Joining Instructions	1-3
Splashguard Bracket and Joint Support	1-5
Offsetting Bumpers and Top Rail	1-5

REFRIGERATION / ELECTRICAL

Refrigerant	2-1
Refrigerant Piping	2-1
Insulation	2-2
Suction Line	2-2
Liquid Line	2-2
Refrigeration Thermostat	2-2
Defrost Termination Thermostat	2-2
Defrost Sequences	2-2
Merchandiser Electrical Data	2-3
Electrical Connections	2-3
Field Wiring	2-3
Identification of Wiring	2-4

DRIP PIPING AND SPLASHGUARDS

Waste Outlet and Water Seal	3-1
Installing Drip Piping	3-1
Installing Splashguards	3-2
Sealing Splashguard to Floor	3-2

START UP / OPERATION

Start up	4-1
Load Limits	4-1
Stocking	4-2
Multi-deck Shelf Alignment	4-2
Multi-deck Shelf Configuration	4-3
Shelf Maximum Weight Limits	4-4
Installing NSF Required Thermometer	4-4

MAINTENANCE

Care and Cleaning	5-1
Cleaning Under Merchandiser	5-2
Removing Scratches from Bumper	5-2
Cleaning Honeycomb Assemblies	5-2
Removing Interior Back Panels	5-2

SERVICE

Replacing Evaporator Fan Motors and Blades	6-1
Replacing Muffin Fan Assembly	6-3
Replacing Reheat Heaters	6-4
Replacing Modular Electric Defrost Heater	6-5
Replacing Anti-Sweat Heater	6-6
Replacing Multi-glass Assembly with Anti-Sweat Heater	6-7
Replacing Electronic Ballasts	6-8
Replacing Fluorescent Lamps	6-8
Replacing Lamp Holders and End Caps	6-9
Replacing Damaged Drain Fitting	6-9
Repairing Aluminum Coils	6-10

IMPORTANT

KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards.

12999 St. Charles Rock Road • Bridgeton, MO 63044 U.S.A.

U.S. & Canada 1-800-922-1919 • Mexico 1-800-522-1900

www.hussmann.com

© 2010 Hussmann Corporation

HUSSMANN®

WARRANTY

REVISION HISTORY


REVISION B — AUGUST 2010


- 1. Added shelf weight limits table, page 4-3.
- 2. Added installing NSF Thermometer 4-5.


REVISION A

- 1. Changed application to frozen meat and seafood throughout.
- 2. Added NSF[®] certification.

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.

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.

 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 case.



WARNING

Do NOT remove shipping braces until the merchandisers are positioned for installation.

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.

NOTE:

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.

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.

LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. *Ice may build up from defrost water not draining out of merchandiser if merchandiser is not leveled.*

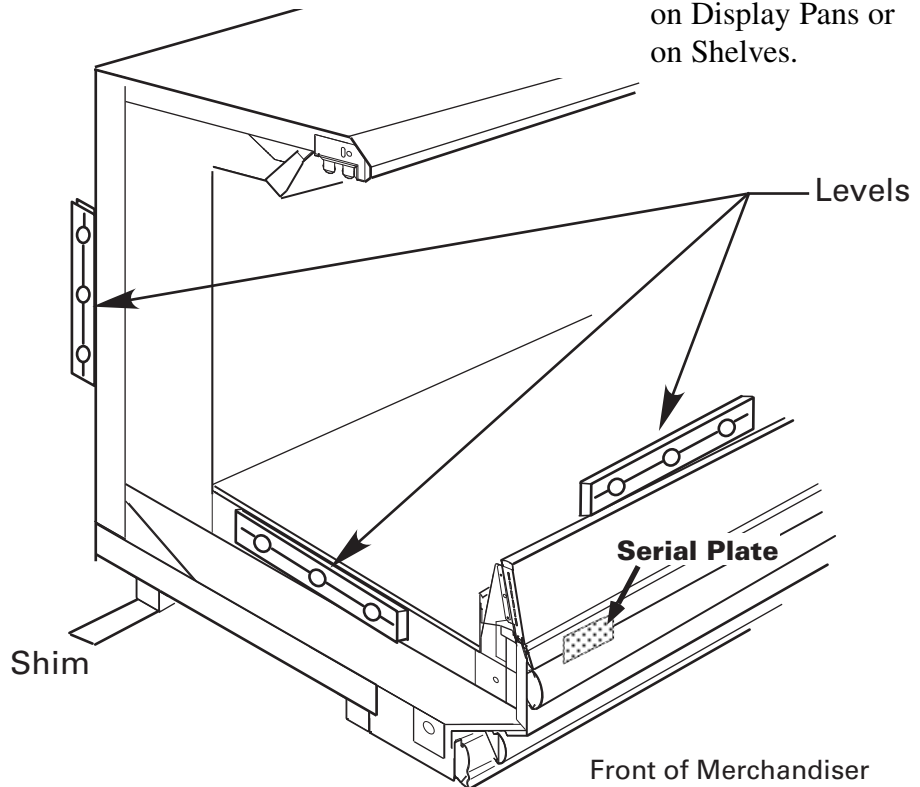
When leveling merchandisers, use a carpenter's level as shown. Leveling shims are provided with each merchandiser for use if needed. The shims are big enough so that you can level adjoining merchandisers at the same time using one shim.

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.

NOTE: Do not place levels on Display Pans or on Shelves.





WARNING

Make certain defrost heaters are secured and do not touch bottom liner.

Make certain mounting plates for reheat heaters are horizontal across air flow and reheat heaters are secure.

HEATER MOUNTING

The F2 models use two types of heater that can vibrate loose during shipment. Verify that each defrost heater is secure in its bracket and does not touch the bottom liner. Also verify that each reheat heater is secure in its brackets and the mounting plate horizontal across the air flow. Refer to *Section 6 – Service* for location and access.

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.

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

Prepare Case

1. Check to be sure that merchandisers are level and that the factory-installed nut retainers and alignment pins are in place. Locate Joint Kit and compare contents to parts list.
2. Remove shelves (if installed), display racks, pans, front shelf supports and front air grilles from the right end.
3. Remove the rear panel from the right end. To remove a panel, lift it up from its bottom edge and out. No tools are required.

Apply Gaskets

1. Apply 1⁵/₈ in. (31 mm) gasket in the horizontal recess across the bottom and up the front of the merchandiser as shown. Gasket should cover slots.
2. Apply the 1⁵/₈ in. (31 mm) gasket to cover foam-to-metal gap at rear of case and across the top as shown. Be sure to overlap gaskets as shown on next page. Check to be sure that there are no gaps between gasket and merchandiser.

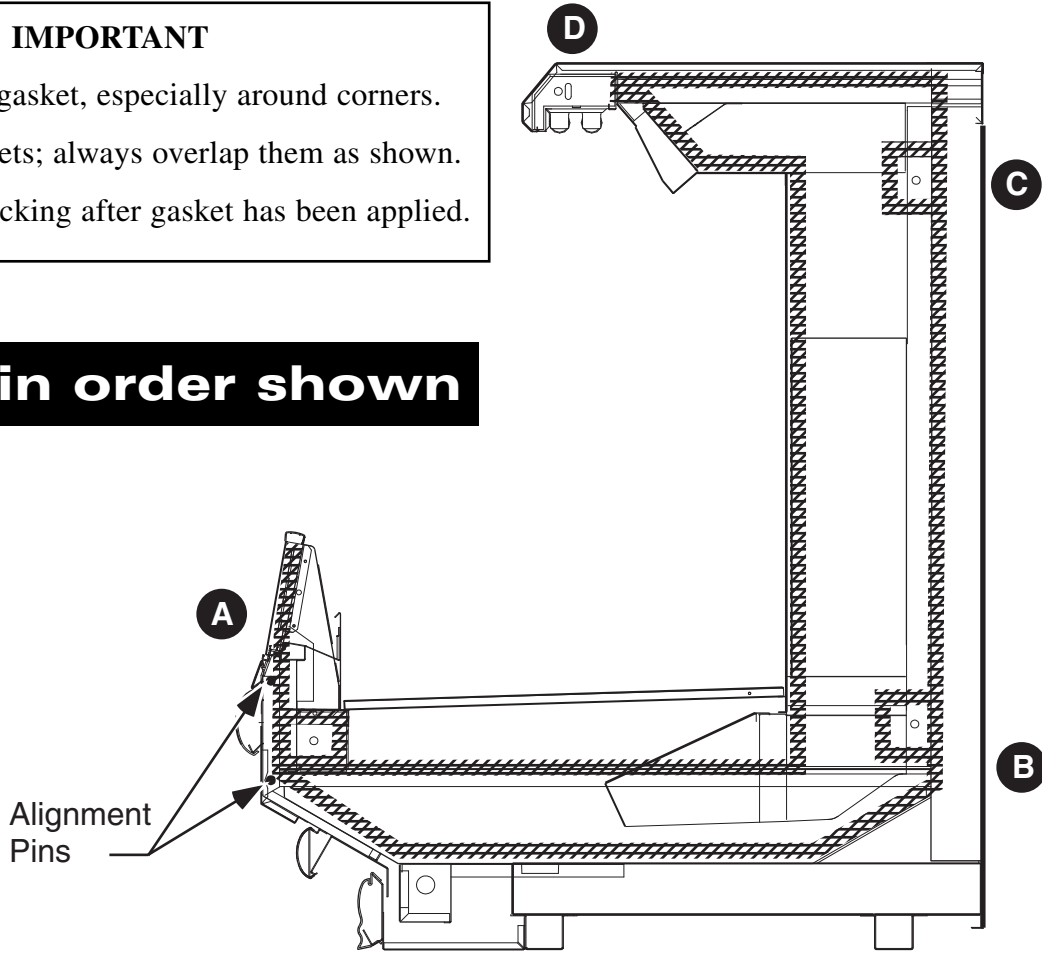
Fasten Cases

1. Move the second merchandiser into position against the first. Match the alignment pins with the corresponding holes.
2. Fasten fronts together using cap screws, flat washers, lock washers and nuts. Tighten only until front panels touch. **Do not tighten fully.**
3. Use the cap screws, flat washers and lock washers provided in the joint kit to draw merchandisers together at rear. **Do not tighten fully.**
4. Draw canopies together using cap screws, flat washers, lock washers and nuts. **Tighten only until canopies touch.**
5. Tighten joints in the order shown (A, B, C, D) until gaskets are compressed, and cases join smoothly.

IMPORTANT

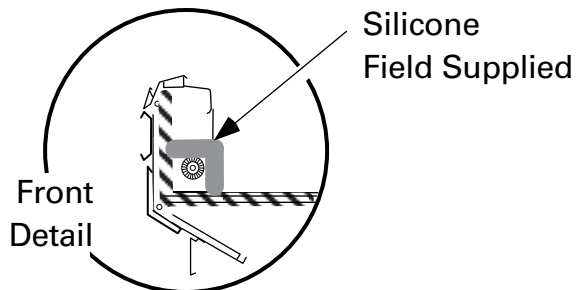
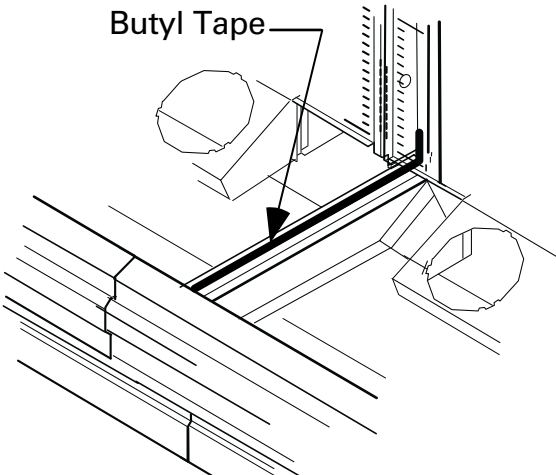
- Do not stretch gasket, especially around corners.
- Do not butt gaskets; always overlap them as shown.
- Remove paper backing after gasket has been applied.

Tighten in order shown



Seal Merchandisers

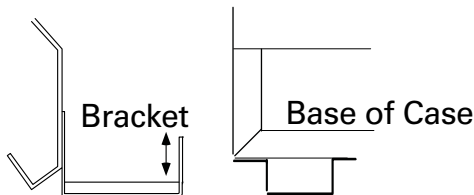
1. Apply Butyl Tape across the bottom joint. Be sure to extend the tape up the back and front of the merchandiser.
2. Use field-supplied silicone to fill any gaps between the front support brackets.



SPLASHGUARD BRACKET AND JOINT SUPPORT

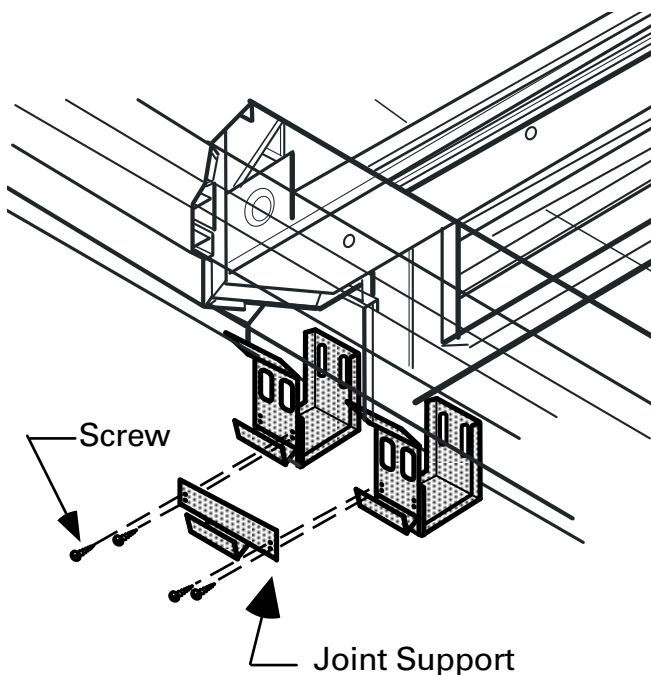
Install Splashguard Bracket

Position splashguard brackets to the merchandiser and level to the floor. Each bracket has a 1½ in. (38 mm) slot at the rear of the bracket where it attaches to the merchandiser. Tighten screws to secure the brackets.



Install Splashguard Joint Support

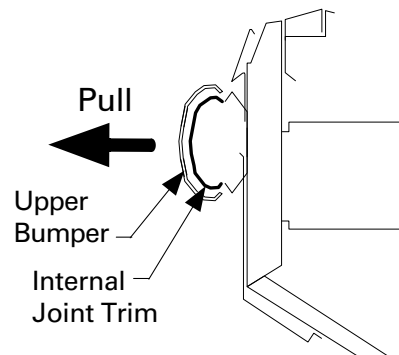
Position the joint support across the brackets as shown above. Fasten with hex head sheet metal screws.



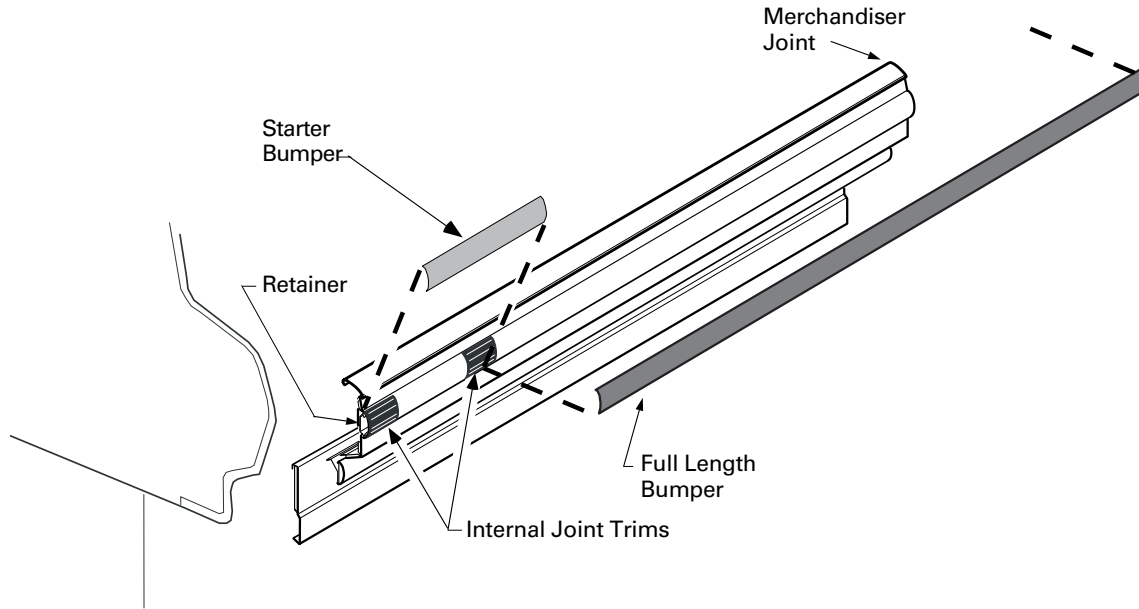
OFFSETTING BUMPERS AND TOP RAIL

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

1. Locate 2 ft (610 mm) starter bumpers and glass trim. They are shipped with the left-end kit.
2. Remove factory installed glass trim and bumpers from cases as follows:
 - a. Standard plastic glass trim is friction fit. Start at left end and lift up, moving to right end. Pry tools will damage trim.
 - b. Remove upper and lower bumpers by pulling bumper away from bumper retainers. Be careful not to misplace the internal joint trims from the upper bumpers.



3. Starting at the left end of the lineup, 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.
 - 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 lineup. Do NOT install the last bumper section at this time. This section will be installed in the last step.

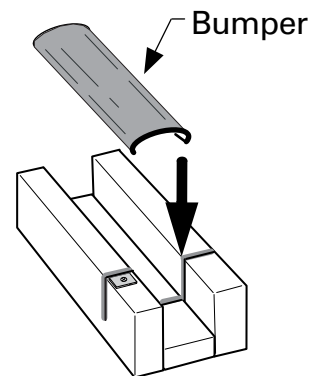


4. Install lower bumper starter and full length lower bumpers by simply pushing them into place. There are no internal joint trims on lower bumpers.
5. Return to left end of line up and position starter section of glass trim.
6. Apply field-supplied silicone sealant to underside of short glass trim. Push short glass trim section down over glass and toward end of case. Press firmly in place.
7. Install full length glass trims using the same procedures. Continue installing glass trims along the length of the line up. Do NOT install last section at this time.
9. Go to right end of case line up and tap glass trim and bumpers to close any gaps.
10. Measure and cut last section of bumpers and glass trim. Use a miter box and fine-tooth saw to cut last bumpers and glass trim to length. Install the last sections.

Apply field-supplied silicone sealant to underside of end trim and press firmly in place.

Note: If part of a section of plastic glass trim becomes loose, remove that section and re-install. Trying to re-install only the popped part may not secure the trim, and may damage the trim.

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



Miter Box

Note: To join unlike fixtures, or like fixtures operating at different temperatures, a 1½ in. (38 mm) partition kit is required. Instructions for installing this partition are included with the kit.

REFRIGERATION / ELECTRICAL

REFRIGERANT

The correct type of refrigerant will be stamped on each merchandiser's serial plate. The case refrigeration piping is leak tested, factory sealed and pressurized. Before making refrigeration hookups, depress the universal line 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.

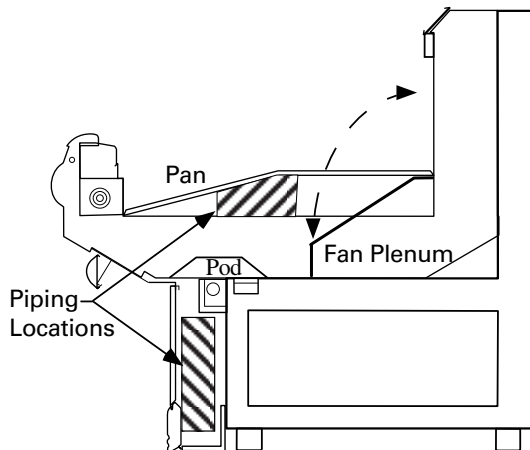
REFRIGERANT PIPING

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 merchandiser.


CAUTION

When brazing pipes be sure to use the insulation blanket shipped with the merchandiser to prevent damage to the plastic case bottom.



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. **DO NOT RUN REFRIGERANT LINES THROUGH MERCHANDISERS THAT ARE NOT ON THE SAME REFRIGERATION SYSTEM BRANCH** as this may result in poor refrigeration control and compressor failure.

Interconnecting piping inside the merchandiser must be located as shown below to allow room for lifting the hinged fan plenums and for clearance beneath the display pans. Or the interconnecting piping may be run outside the case in the wireway area shown.

Line Sizing

Refrigerant lines should be sized as shown on the refrigeration legend that is furnished for the store or according to ASHRAE guidelines. Refer to information on the next page for branch line piping of Hussmann Equipment.

Oil Traps

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

Pressure Drop

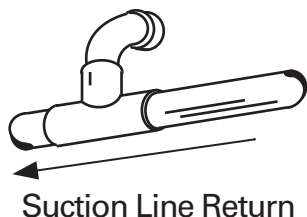
Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep the refrigerant line run as short as possible using a minimum number of elbows. Where elbows are required, **USE LONG RADIUS ELBOWS ONLY.**

INSULATION

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

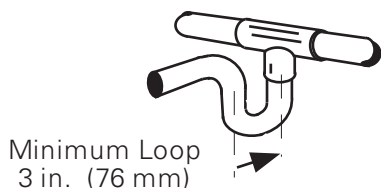
SUCTION LINE

- 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 the case suction line size.
- Case suction lines should enter at the top of the branch line.



LIQUID LINE

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



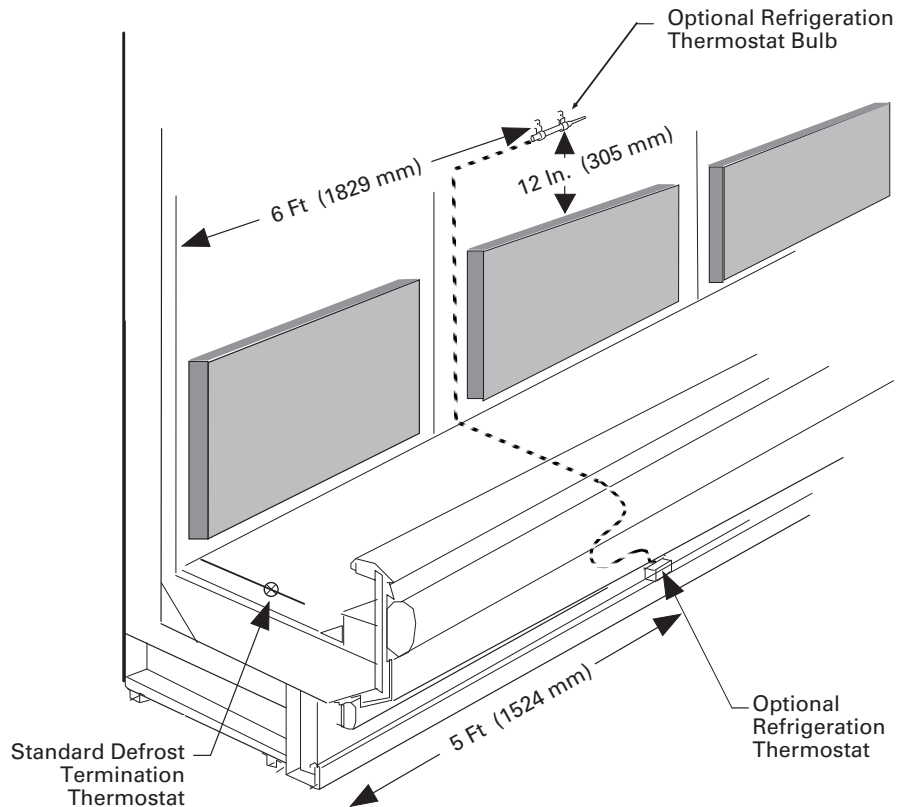
Liquid Line Take Off

REFRIGERATION THERMOSTAT

The bulb for the optional refrigeration thermostat is located approximately 12 in. (305 mm) above the coil and 6 ft (1829 mm) from the left-hand end (facing front) of the merchandiser. The optional refrigeration thermostat is located 5 ft (1524 mm) from the left-hand end, just past the wireway. On wide island models, the thermostat body is located on the serial plate side (front) of the merchandiser.

DEFROST TERMINATION THERMOSTAT

The standard disc type defrost termination thermostat is not adjustable. This thermostat is clamped to the suction line of the coil on the left-hand (facing front) end of the merchandiser.



DEFROST SEQUENCES

The Time Clock initiates defrost. The evaporator fans continue to circulate air across the evaporator coil, melting any frost build-up. Defrost can be terminated by either temperature or time.

Temperature Termination

Temperature termination should be used for the following types of installations:

1. Parallel systems with EPRs or suction stop solenoids
2. Single compressor units without pump-down cycle.

Time Termination

Time termination should be used for the following types of installations:

1. Parallel systems with thermostat and liquid solenoid.
2. Single compressor units with pump-down.

To use time termination, simply do not wire the termination thermostat.

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.

MERCHANDISER ELECTRICAL DATA

Merchandiser data sheets are attached to the front of this manual. The data sheets provide case electrical data, electrical schematics, parts lists and performance data. Refer to the merchandiser data sheets and case serial plate for electrical information.

ELECTRICAL CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made in the electrical wireway or *Handy Box*.



It is the contractor's responsibility to install merchandiser(s) in accordance with all local building and health codes.

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.**

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's wireway.

ALWAYS CHECK THE SERIAL PLATE FOR COMPONENT AMPERES

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. | ORANGE OR | |
| LIGHT BLUE.. | REFRIG. THERMOSTAT NORM TEMP. | TAN | LIGHTS |
| DARK BLUE .. | DEFROST TERM. THERMOSTAT | MAROON... | RECEPTACLES |
| PURPLE..... | CONDENSATE HEATERS | YELLOW.... | DEFROST HEATERS 120V |
| BROWN | FAN MOTORS | RED | DEFROST HEATERS 208V |
| GREEN* | GROUND | | |
- *EITHER COLORED SLEEVE OR COLORED INSULATION

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

THESE ARE MARKER COLORS WIRES MAY VARY.

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 8 ft (2438 mm) and 12 ft (3658 mm) merchandisers (facing case front).

The waste outlet is located in the center of 4 ft (1219 mm) and 6 ft (1829 mm) merchandisers. A water seal is supplied with each fixture. The water seal must be installed to the waste outlet to prevent air leakage and insect entrance into the merchandiser.

NOTE:

Water seal outlet must clear front skid rail.

A tee, adapter, plug and 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. Please follow the recommendations listed below when installing drip piping to ensure good drainage.

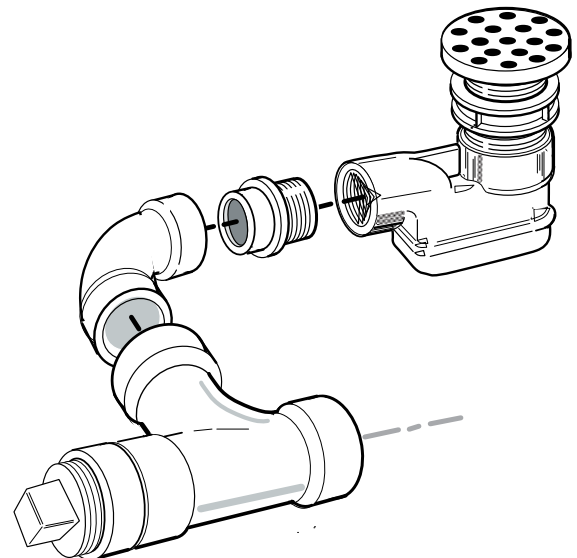
1. Never use drip piping smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
2. When connecting drip piping, the *water seal* must be used as part of the drip piping to prevent air leakage or insect entrance. Never use two water seals in series in any one drip pipe. **DOUBLE WATER SEALS IN SERIES WILL CAUSE AN AIR LOCK AND PREVENT DRAINING.**



CAUTION

Splashguard brackets MUST be installed before piping case.

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.
5. Provide a suitable air break between flood rim of the floor drain and outlet of drip pipe.
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 nonabsorbent 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.

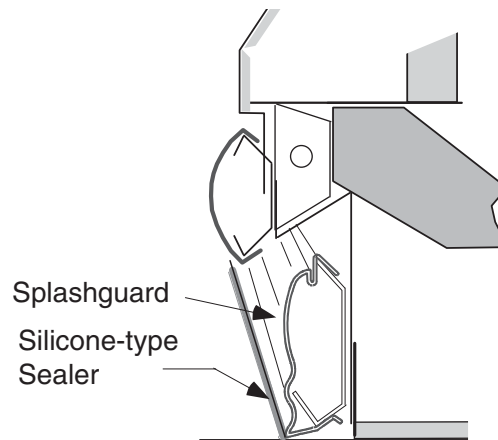
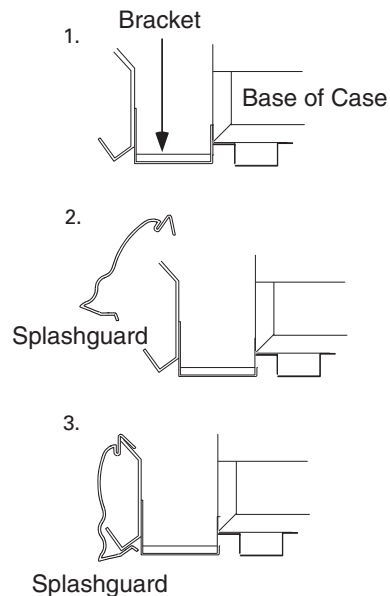


INSTALLING SPLASHGUARDS

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, 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.



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.

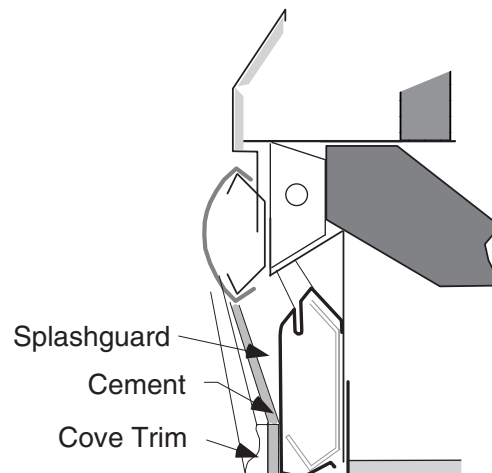
To install the trim to the splashguard:

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.

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.




START UP / OPERATION

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 four foot 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.

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

 CAUTION
REMOVAL OF THE TEV CAP WILL RESULT IN REFRIGERANT LOSS UNLESS THE SYSTEM IS FIRST ISOLATED AND THE REFRIGERANT RECOVERED.

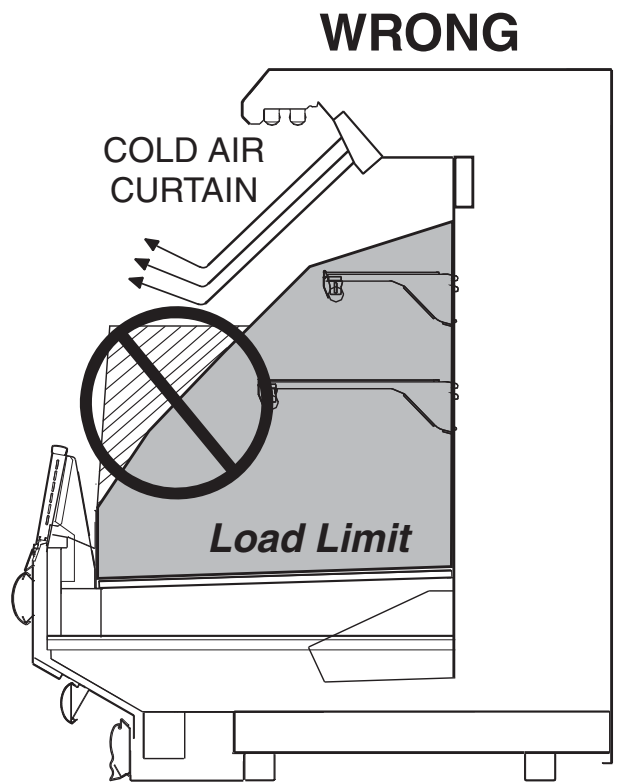
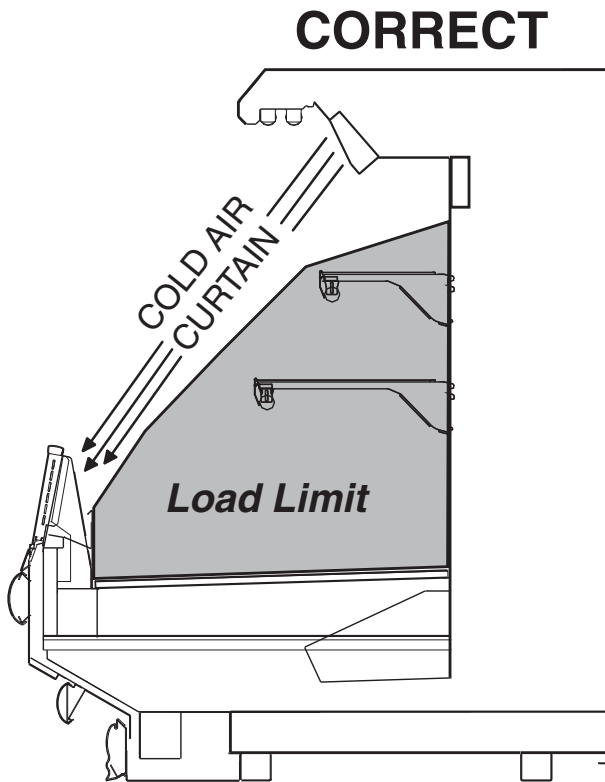
LOAD LIMITS

Each merchandiser has a load limit decal. 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 HONEYCOMBS.



STOCKING

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

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.

Hussmann recommends two or three rows of shelves be used in each F2XLG merchandiser section with the top row of shelves being not more than 10 in. (254 mm) deep.

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

**WARNING**

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

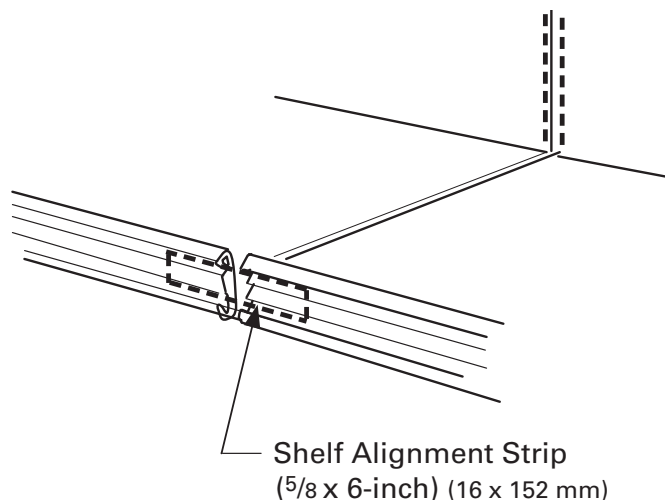
MULTI-DECK SHELF ALIGNMENT

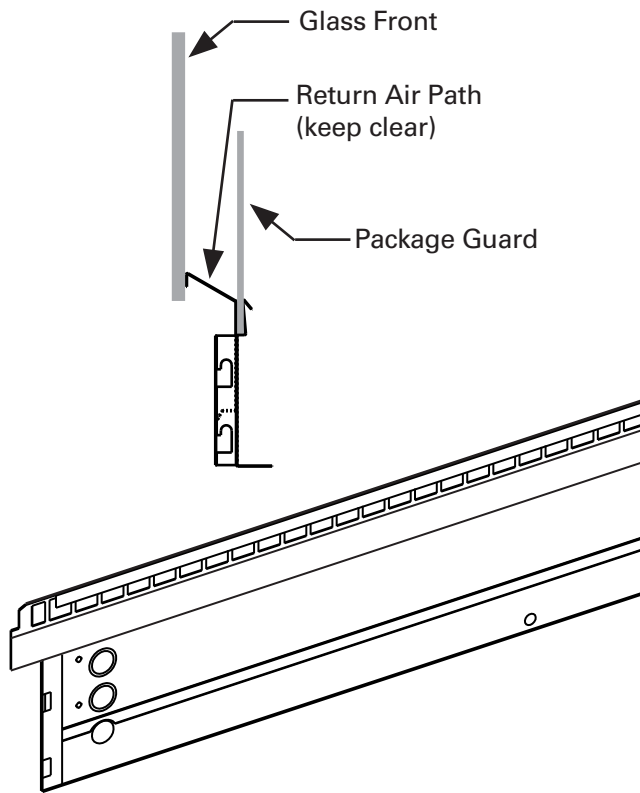
Taped to one of the shelves in each merchandiser is a small plastic bag containing shelf alignment strips. These strips are designed to enhance the appearance of the shelves by aligning the front edge of each shelf with that of an adjacent shelf.

When installing shelves:

1. Insert one of the alignment strips into the slot behind the front edge of each shelf.
2. After all shelves are installed, slide the strip across the shelf joint wherever two shelves are adjacent. This will lock them together.

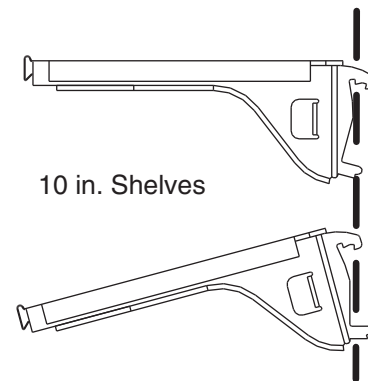
NOTE: Some price tag molding styles are pop riveted to the shelf. In these instances, the alignment strips must be cut in half before insertion.





MULTI-DECK SHELF CONFIGURATION

The bottom display shelves can be adjusted to accommodate shallow or volume displays (bulky items such as hams or chickens). The upper shelves are individually adjusted in 1 in. (25 mm) increments and have two-position brackets permitting shelves to be placed in a flat or down-tilt position (see illustration). Front product stops are recommended when shelves are placed in the down-tilt position.



Lighted shelves do not work in low temperature applications.

SHELF MAXIMUM WEIGHT LIMITS

Hussmann merchandiser shelves are designed to support the maximum weight load limits as indicated in the table above. 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 Hussmann Limited Warranty.

Weight Limits for Merchandiser Shelving

Nominal Shelf Depth	Maximum Load Limit
10 in. (254 mm)	125 lb (56.7 kg)
12 in. (305 mm)	125 lb (56.7 kg)
14 in. (357 mm)	125 lb (56.7 kg)
16 in. (406 mm)	200 lb (90.7 kg)
18 in. (457 mm)	200 lb (90.7 kg)

*Shelf load limits at 0° tilt

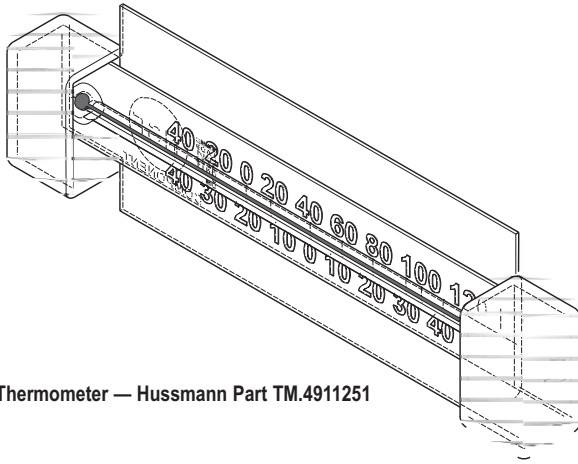
INSTALLING FDA/NSF REQUIRED THERMOMETER

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.

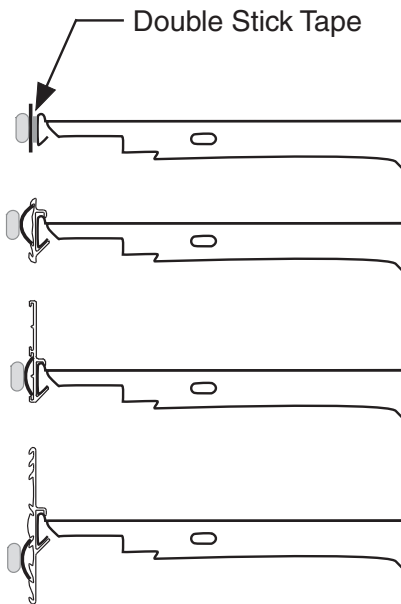
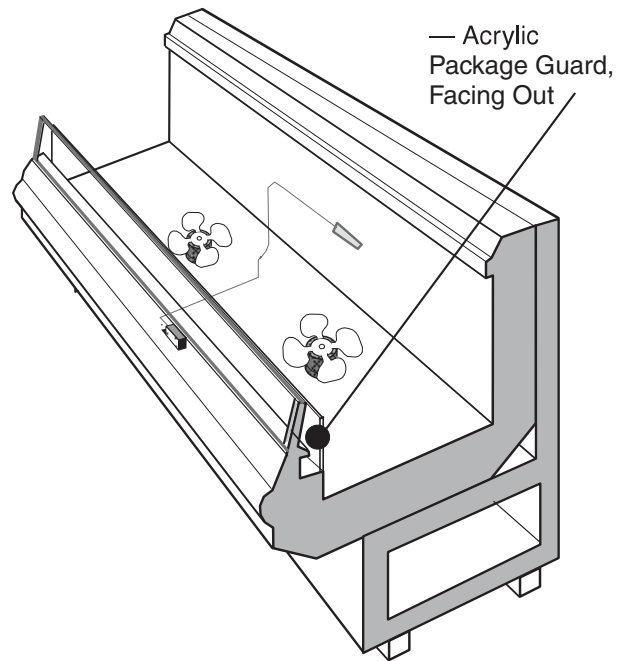
This is an NSF-7 & US FDA Food Code Required Thermometer



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

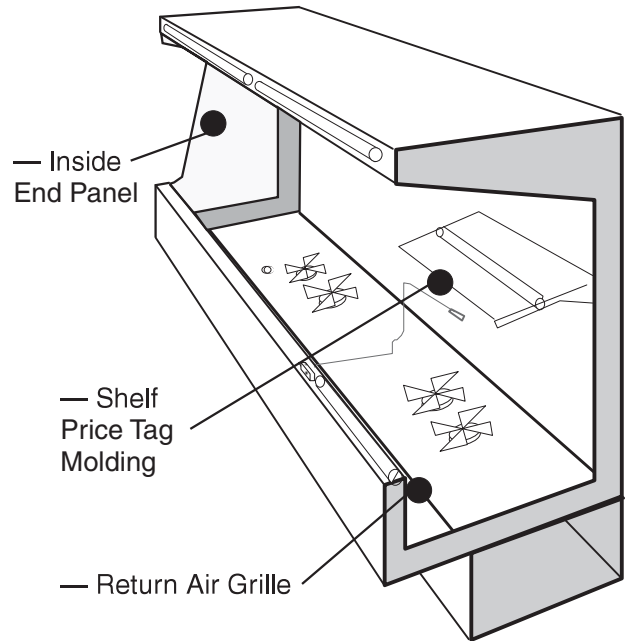
Suggested Mounting Locations in Single Deck Glass Front Impact Merchandisers



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 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.

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.

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.** USING STEAM CLEANERS OR HIGH WATER PRESSURE HOSES 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 and refrigerant to the merchandiser.
- Verify that merchandiser is working properly.

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

ALWAYS SHUT POWER OFF DURING CLEANING PROCESS.

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.

CLEANING STAINLESS STEEL SURFACES

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.

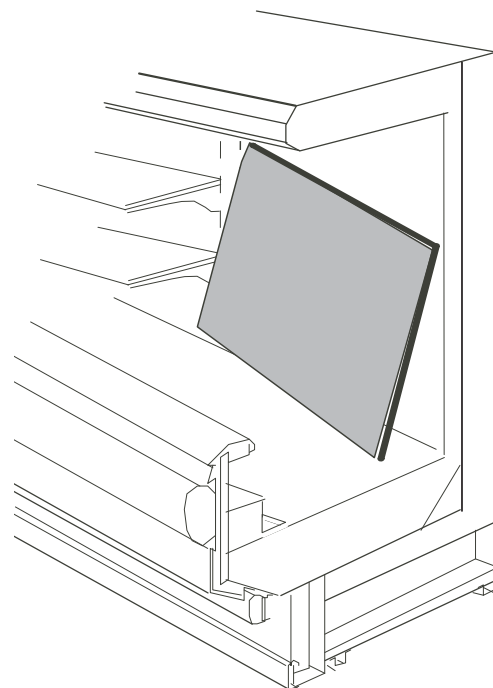
CLEANING HONEYCOMB ASSEMBLIES

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 reinstalling. Be careful not to damage the honeycombs.

REMOVING INTERIOR BACK PANELS

The interior back panels may be removed for cleaning and to gain access to the evaporator coils. Remove the rear interior back panels as follows:

1. **DISCONNECT THE ELECTRICAL POWER TO THE MERCHANDISER.**
2. Remove shelving.
3. Lift the panel up, then pull forward and out.
4. Replace panels.
5. After cleaning or servicing the merchandiser, reconnect the electrical power.



SERVICE

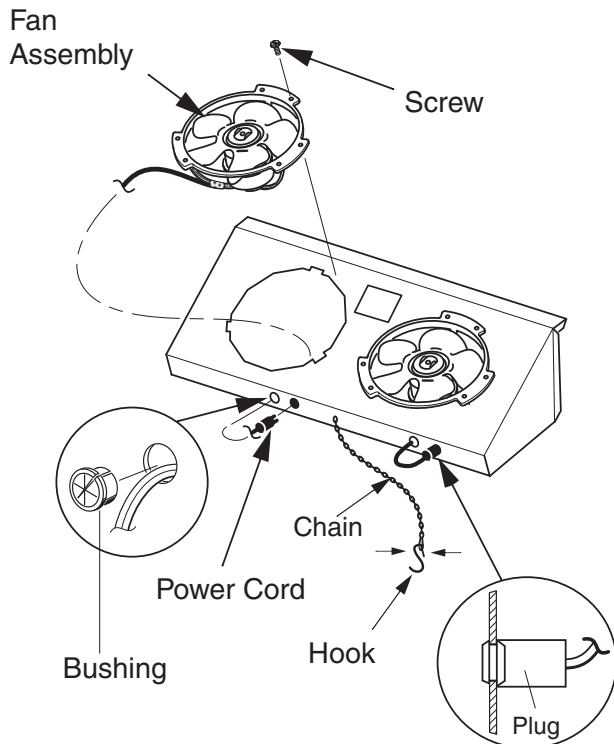
(See next page for location of replaceable parts.)

REPLACING EVAPORATOR FAN MOTORS AND BLADES

Refer to the data sheet shipped with each merchandiser to determine 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. **THE BLADES MUST BE INSTALLED WITH RAISED EMBOSSING (PART NUMBER ON BLADES) POSITIONED AS INDICATED ON THE PARTS LIST OF THE DATA SHEET.**

For access to these fans:

1. Turn off power to the merchandiser.
2. Remove wire racks and bottom display pans.
3. **Disconnect fan motor from wiring harness.**
4. Remove 6 screws attaching fan assembly to plenum. Lift fan assembly out of plenum.

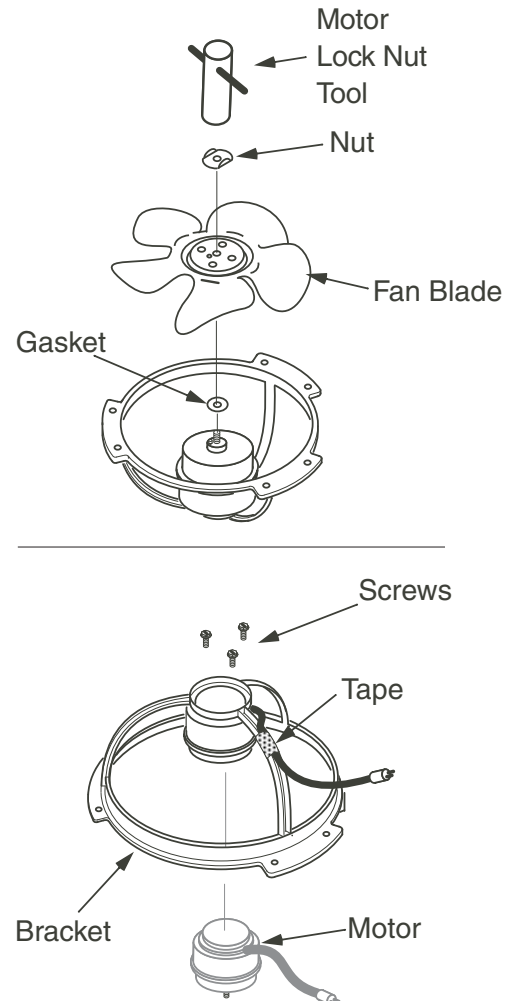


WARNING

— 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. Remove nut, fan blade, and gasket.
6. Remove screws holding bottom of motor to bracket.



7. Replace fan motor. Make certain harnesses are not caught or otherwise damaged. Replace screws.
8. Replace gasket, fan blade, and nut.
9. Position fan assembly in plenum and reattach with 6 screws. Reconnect fan motor to wiring harness. Turn on power.
10. Verify that fan motor is working and fan blade is turning in the correct direction.

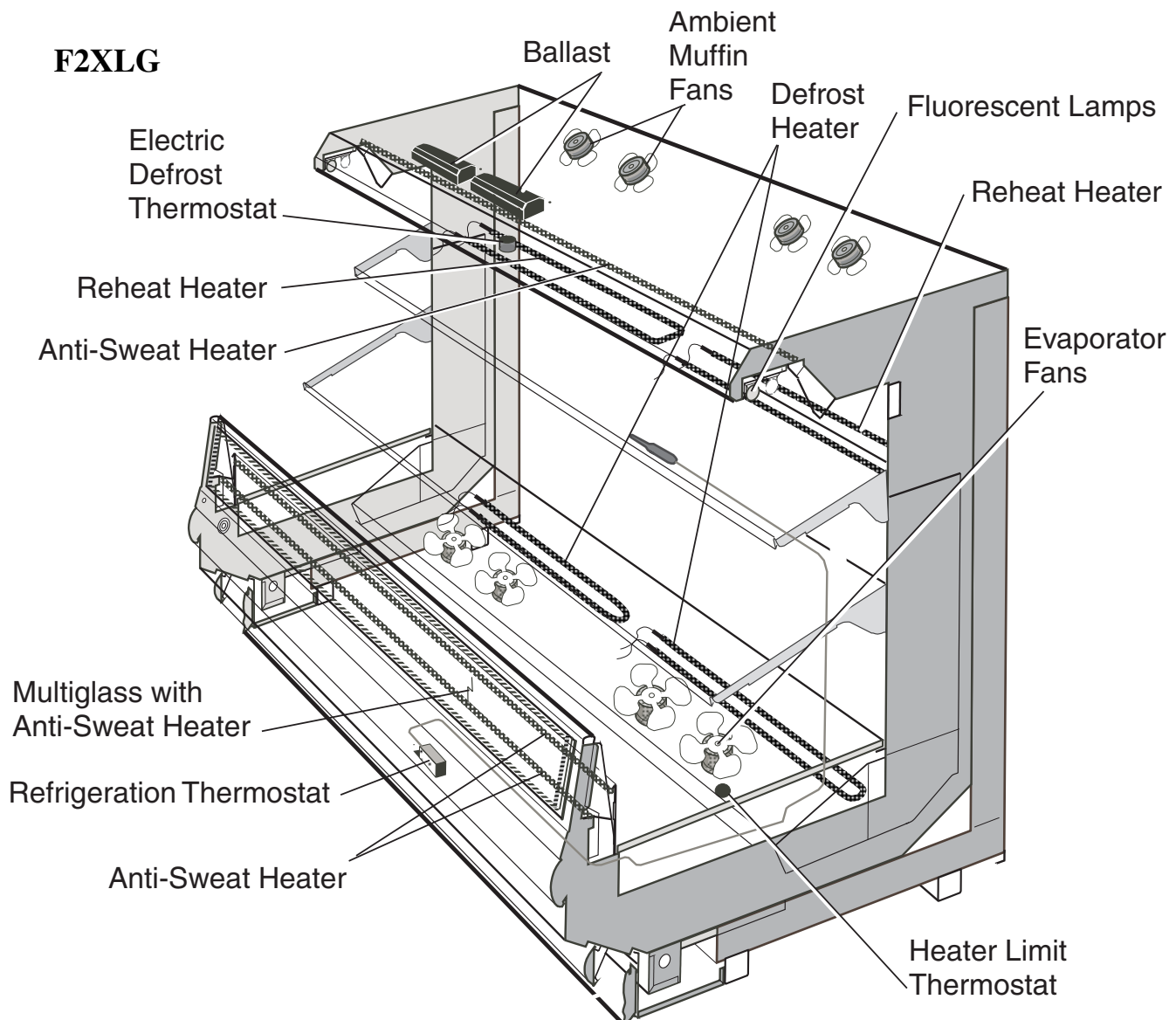
Make sure fan blade spins freely.



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 AMBIENT MUFFIN FAN ASSEMBLY

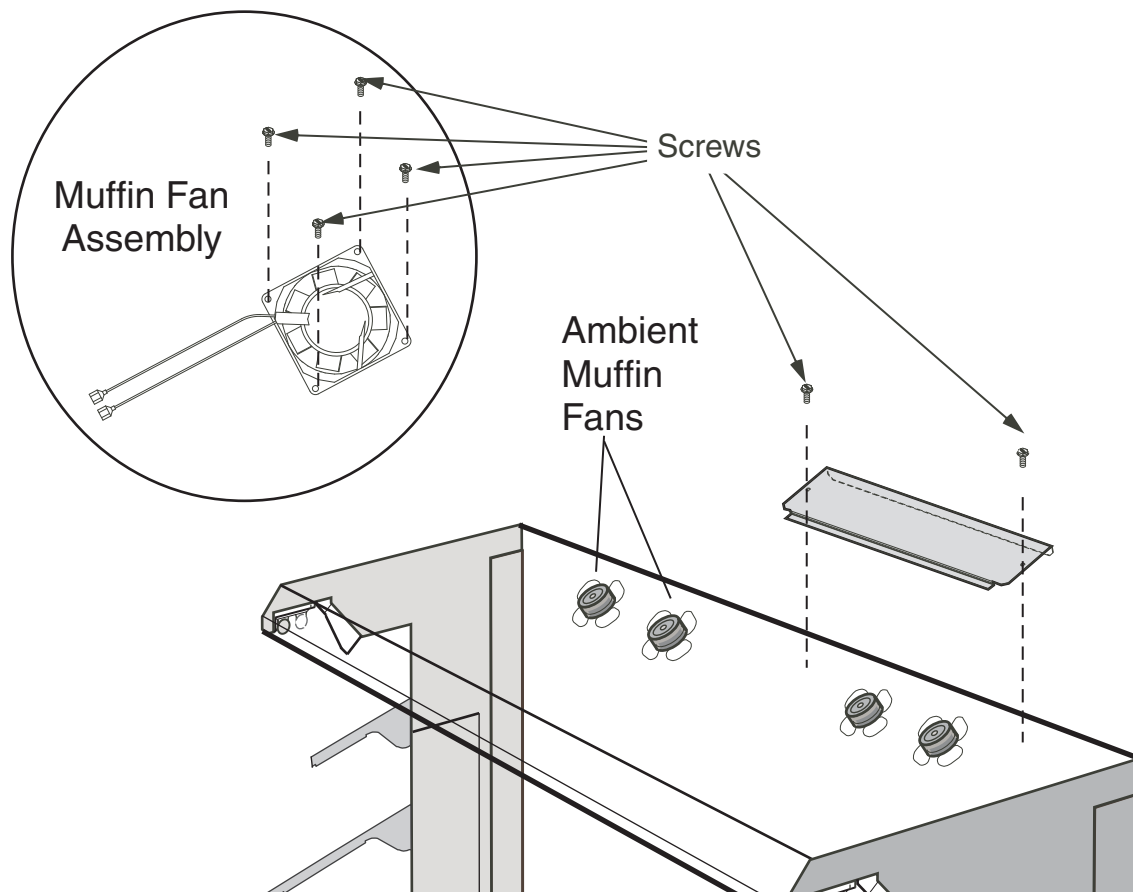
The muffin fan assembly must be replaced in its entirety.

For access to these fans:

1. Turn off power to the merchandiser.
2. Remove access panel.
3. **Disconnect fan motor from wiring harness.**
4. Remove 4 screws holding fan assembly.
5. Remove and replace fan assembly.
6. Replace screws in fan assembly.
7. Reconnect wiring.
8. Verify that fan motor is working and fan blade is turning in the correct direction.

Make sure fan blade spins freely.

9. Replace access panel. Restore 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.

REPLACING REHEAT HEATERS

For access to these heaters:

1. Turn off power.
2. Remove shelves, wire racks, bottom display pans and back panels.
3. **Disconnect heater from wiring harness.**
4. Remove screws and clips holding heater in position. Be sure to save the attachment clips for the new heater.
5. Remove and replace heater.
6. Reconnect heater to wiring harness.
7. Replace clips and screws. Turn power on.
8. Verify that new heater is working properly.
9. Replace back panels, wire racks, display pans and shelves.

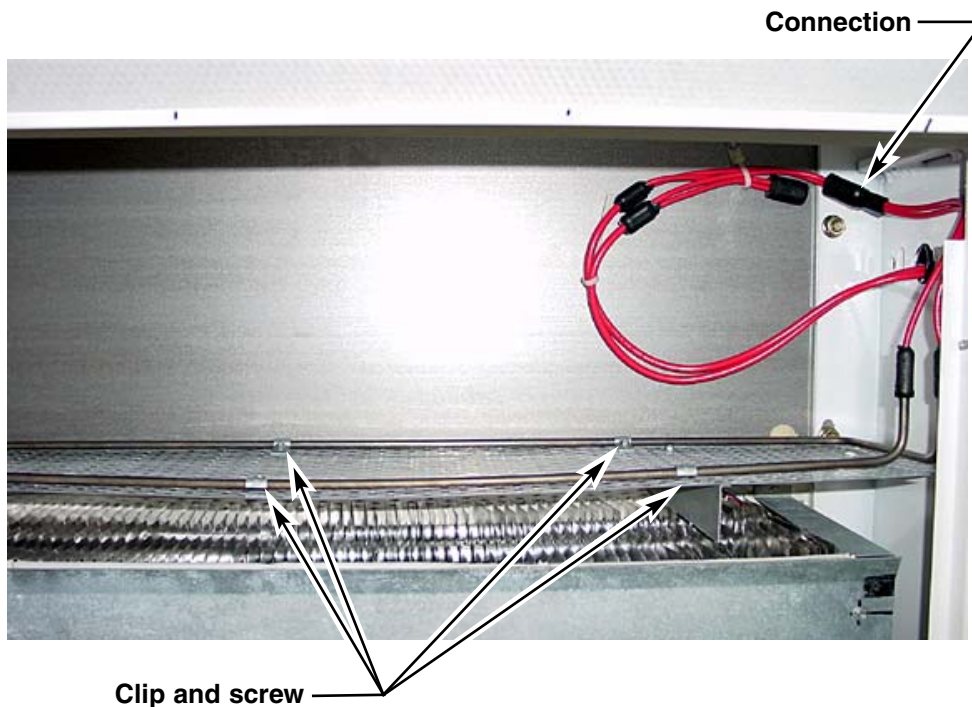


WARNING

— 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.

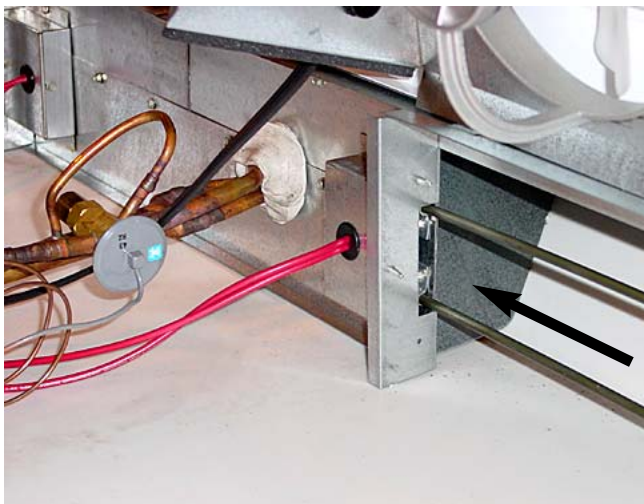
NOTE: Because the reheat heater is 120V, it will be energized at all times, including defrost.




REPLACING MODULAR ELECTRIC DEFROST HEATER

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

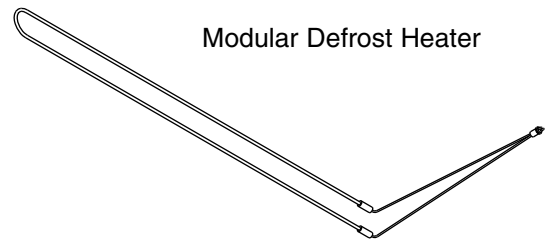
1. Turn off power.
2. Remove shelves, wire racks and display pans from the section of the compartment being serviced.
3. **Disconnect heater from wiring harness.**
4. Lift the modular fan plenum.
5. Remove screws and clips holding heater in position. Be sure to save the attachment clips to install the new heater.
6. Remove screws holding bushing box. Slide old heater out and remove wire from bushing.
7. Feed wire of new heater through bushing and slide heater into place.
8. Replace clips and screws. Replace bushing box.
9. Reconnect heater to wiring harness.
10. Lower plenum. Verify plenum rests flat against liner. Seal gaps. Turn power on.
11. Verify that new heater is working properly.
12. Replace back panel, display pans, wire racks and shelves.




WARNING

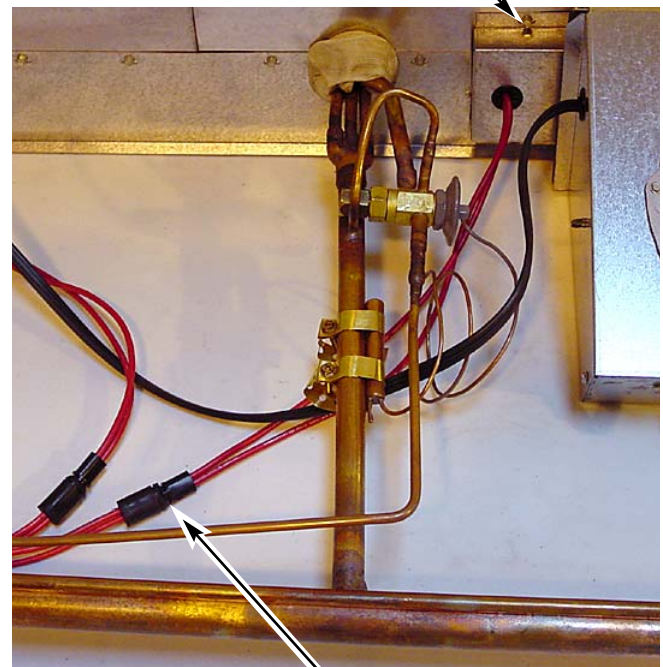
— LOCK OUT / TAG OUT —

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.



Modular Defrost Heater

Screws hold bushing mount

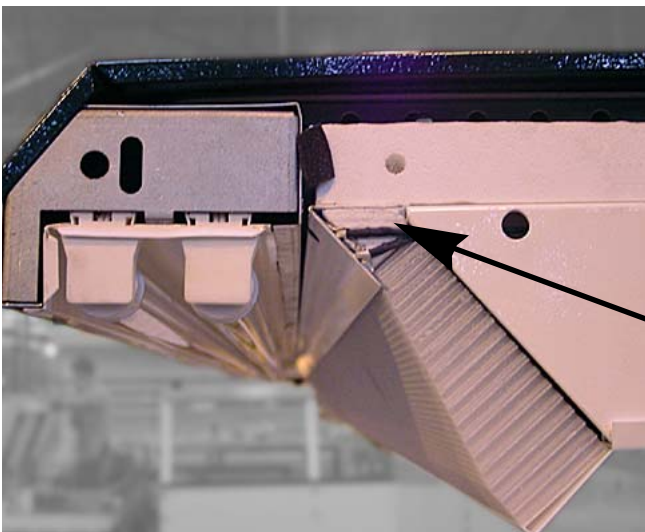
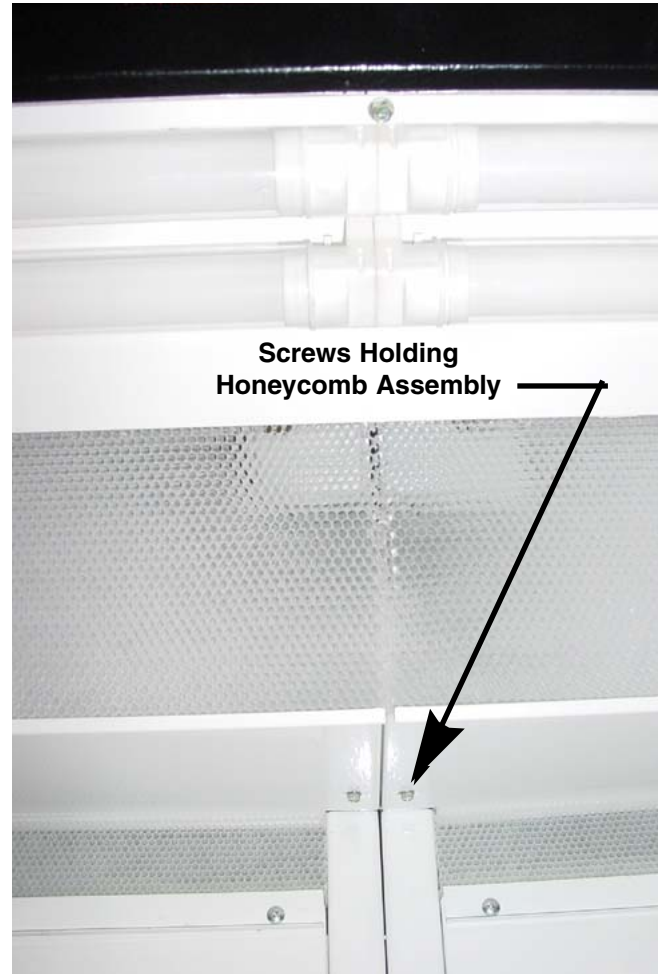


Harness Connection

REPLACING ANTI-SWEAT HEATER

For access to these heaters:

1. Turn off power.
2. Remove shelves.
3. Remove screws holding honeycomb assembly.
4. Pivot honeycomb assembly down; remove honeycomb.
5. **Disconnect heater from wiring harness.**
6. Remove adhesive-backed heater.
7. Clean surface before applying new adhesive-backed heater.
8. Reconnect heater to wiring harness.
8. Replace honeycomb and refasten honeycomb assembly. Turn power on.
9. Verify that new heater is working.



Heater 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.

REPLACING MULTI-GLASS ASSEMBLY WITH ANTI-SWEAT HEATER

Requires TWO (2) people

Note: If this anti-sweat heater fails, the entire glass assembly must be replaced. The heater cannot be replaced by itself.

Always use gloves when handling glass.

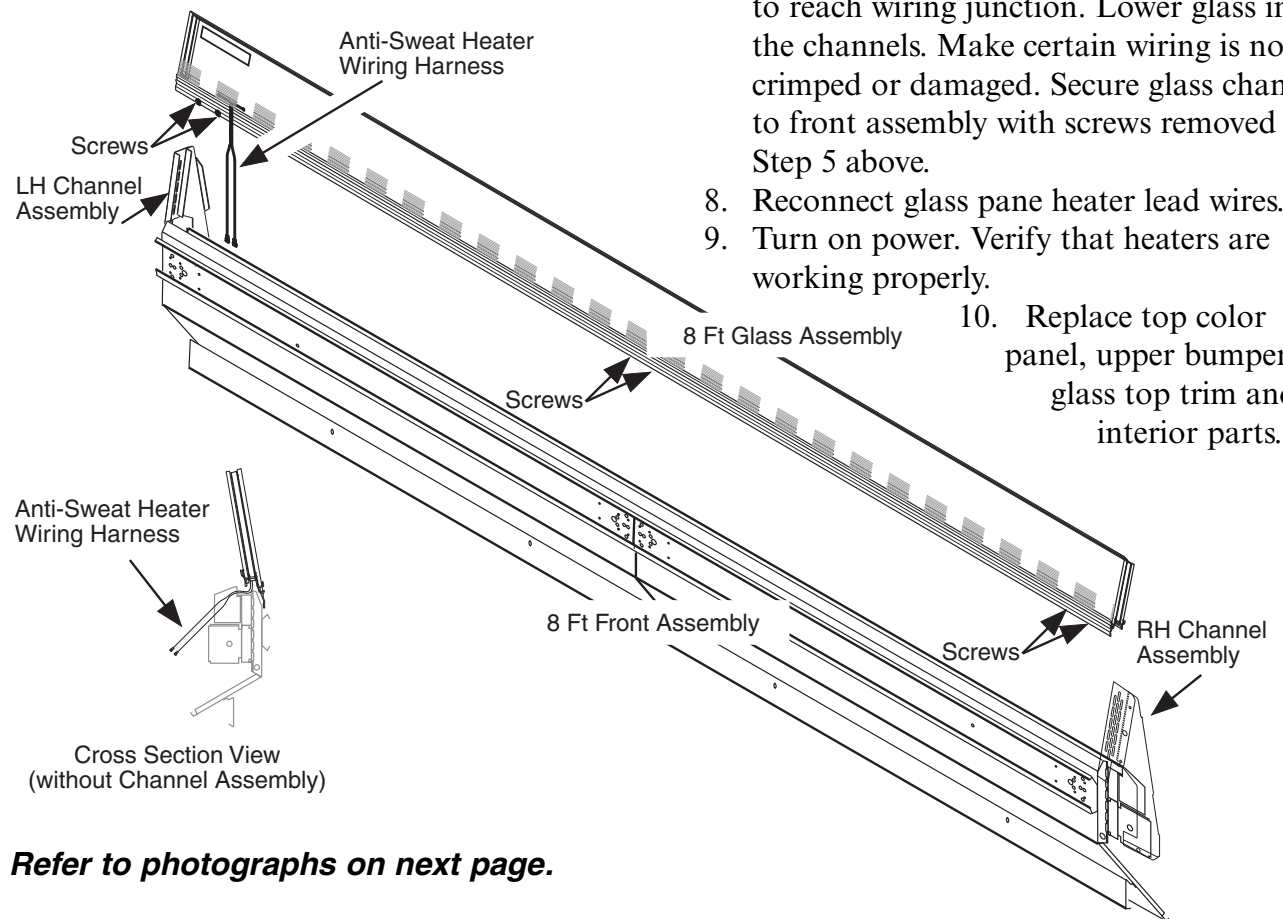
1. Turn off power to merchandiser.
2. Remove shelves, wire racks, drip pans, and return grilles. Remove glass top trim.
3. Remove upper bumper and top color panel.
4. Disconnect the glass pane heater lead wires from the wiring junctions at left end of the case. Connections are located just under the return grille at the end of the glass assembly.


WARNING

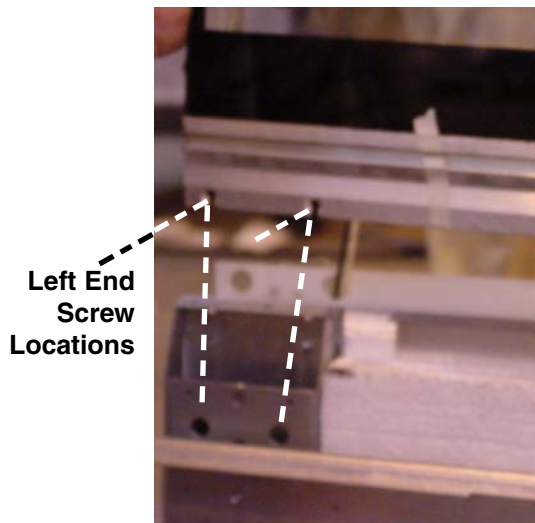
— LOCK OUT / TAG OUT —

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.

5. Remove screws holding glass assembly to front assembly.
6. With one person standing at each end of glass, lift the thermopane glass assembly up to remove it from the left and right channels.
7. To install new glass, have one person hold each end of the thermopane glass assembly with lead wires to left. Carefully feed heater lead wires through insulation and bushing to reach wiring junction. Lower glass into the channels. Make certain wiring is not crimped or damaged. Secure glass channel to front assembly with screws removed in Step 5 above.
8. Reconnect glass pane heater lead wires.
9. Turn on power. Verify that heaters are working properly.
10. Replace top color panel, upper bumper, glass top trim and interior parts.



Refer to photographs on next page.



Detail
Shows Wiring in Place, with Return Grille Installed.

REPLACING ELECTRONIC BALLASTS

Canopy Ballasts

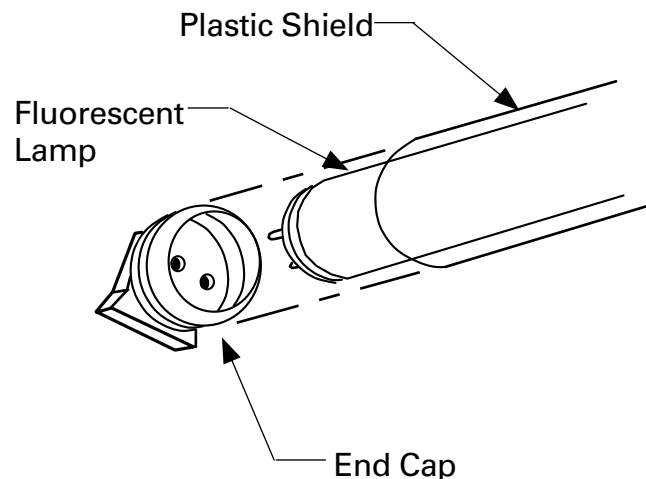
These ballast are located at the top of the merchandiser inside the canopy. The switch in the canopy operates the canopy lamps.

1. **DISCONNECT POWER TO THE MERCHANDISER.**
2. Remove top shelf.
3. Remove the screws that secure the lamp panel.
4. Grasping the light panel at the area where the top of the panel and the top of the merchandiser meet, pull back and down until the panel swings freely.
5. Replace ballast and reassemble parts in reverse order.
6. Reconnect the electrical power.

REPLACING FLUORESCENT LAMPS

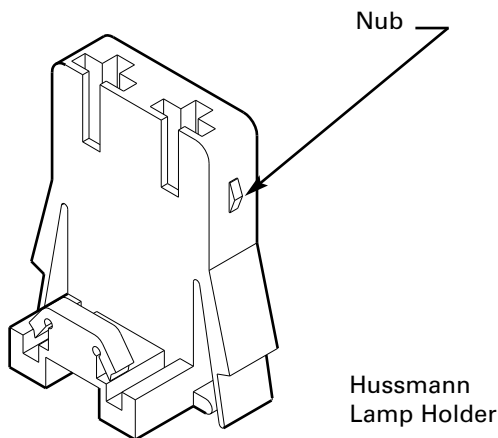
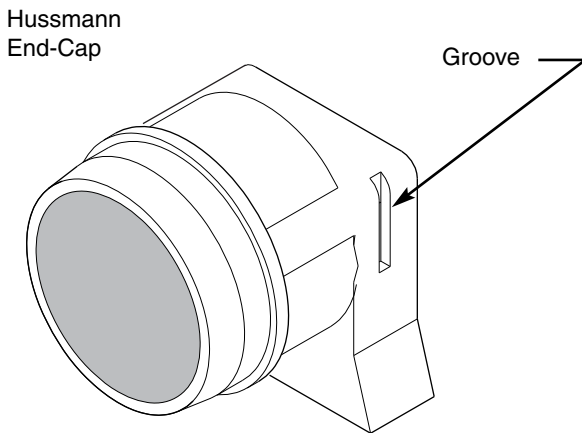
Fluorescent lamps are furnished with moisture resistant lamp holders, shields and end caps. Whenever a fluorescent lamp is replaced, be certain to reinstall the lamp shields and end caps.

The switch in the canopy operates the canopy lamps.



REPLACING LAMP HOLDERS AND END CAPS

The Impact 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!

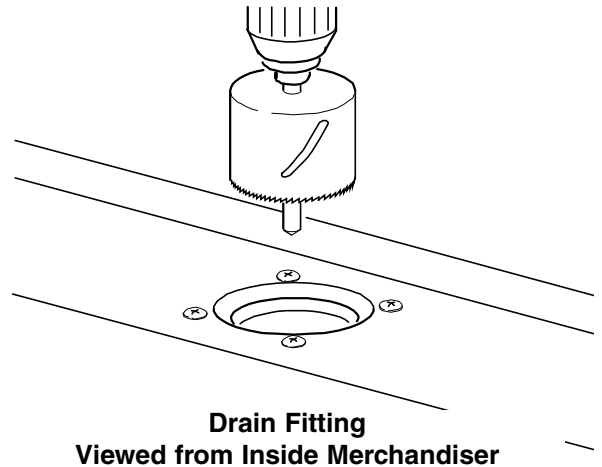
Always replace lamp holders and end caps with Hussmann lamp holders and end caps.

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

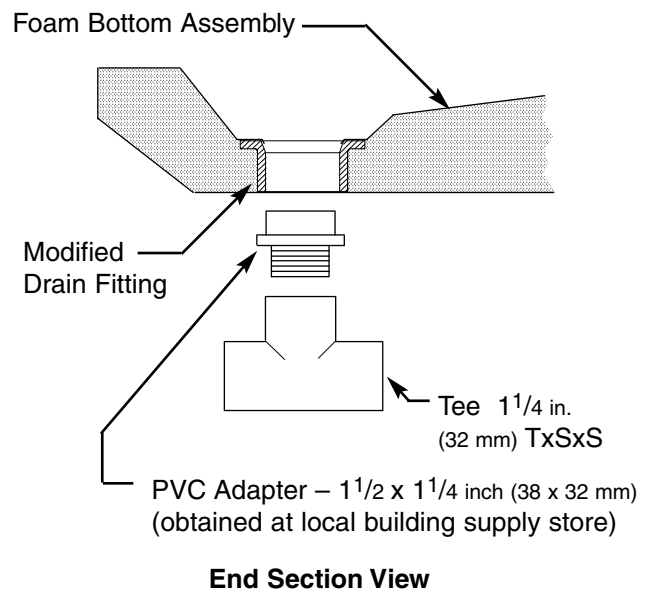
REPLACING DAMAGED DRAIN FITTING

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

1. Use a drill with a 1 7/8-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 (607°C)

Aladdin 3-in-1 rod at 732°F (389°C)

X-Ergon Acid core at 455°F (235°C)



HUSSmann®

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

U.S. & Canada 1-800-922-1919 • Mexico 1-800-522-1900
www.husmann.com

Hussmann Corporation
Ingersoll Rand Climate Solutions
12999 St. Charles Rock Road
Bridgeton, MO 63044
www.hussmann.com

