

# Service Merchandisers

Fresh Meat, Delicatessen, and Seafood Merchandisers (Includes Wedge Installation) **NSF®** Certified







# Installation & **Operation Manual**

Shipped With Case Data Sheets

MPORTANT MPORTANT reference! Keep in store for future

P/N 0420057\_D

**Impact Series** August 2010





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# IMPORTANT KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards! This merchandiser is  $NSF^{\mathbb{R}}$  certified.

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#### **REVISION HISTORY**

#### **REVISION** D - AUGUST 2010

1. Added shelf weight limits table, page 4-3.

#### **REVISION** C

- 1. Updated drip piping pitch, pages 3-1.
- 2. Added Stainless Steel Cleaning, page 5-6.
- 3. Added new back page.

#### **REVISION B**

- 1. Updated image, pages 1-1, 2-1, 2-3, 3-4, and 4-2.
- 2. Updated flexible wiper gasket information, page 1-6.
- 3. Added section for removing protective film from bumper, page 1-10.
- 4. Added NSF Thermometer, pages 4-4 and 4-5.
- 5. Updated acceptable water temperature, pages 5-1 and 5-5.
- Added information on cleaning anti-reflective glass, page 5-6.
- 7. Updated *WARNING*, *CAUTION*, and *NOTICE* boxes . throughout.
- 8. Added Optional Wrapping Board, page 1-9.
- 9. Added Optional Scale Stand, page 1-11.
- 10. Added Call Center telephone numbers to bottom of each page.

#### **REVISION** A

1. Added leveling detail beginning on page 1-3.

#### **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<sup>®</sup>) Standard #7 requirements. Proper installation is required to maintain certification. Near the serial plate, each merchandiser carries a label identifying the type of application for which the merchandiser 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.

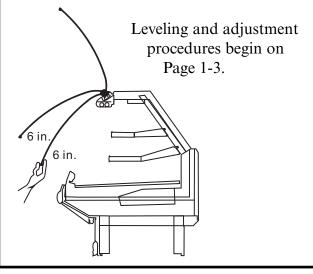
Product should always be maintained at proper temperature. This means that from the time the product is received, through storage, preparation and display, the temperature of the product must be controlled to maximize the life of the product. Read before raising front glass to prevent injury from broken or falling glass.

The top cylinders, which allow the raising and lowering of this glass, have been carefully installed and tested for the proper tension before shipment. However, during shipment and storage, the lubricant inside the cylinders may have settled. This settling can cause excessive or uneven tension on the glass to the point of breakage.

# To avoid any damage, please do the following before completely raising the front glass:

- 1. Slowly raise and lower each glass section 6 times to a height of 6 in. (152 mm).
- 2. Increase the height to about 12 in. (305 mm) and raise and lower the glass 6 times.
- 3. Then raise the glass to the full extension and lower.

This should release any settled lubricant in the cylinders and prevent any stress on the front glass.



# NOTICE

Do NOT remove shipping braces until the merchandisers are positioned for installation. Frames may be damaged.

#### 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.

### **EXTERIOR LOADING**

### Do NOT walk on top of merchandisers or

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

# 

Do not stand or walk on top of merchandiser because falling off could cause serious personal injury.

#### MERCHANDISERS SHIPPED WITH END INSTALLED

If the merchandiser 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. Refer to the detailed information provided in the **separate** *End Kit Instruction* shipped with each end.

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

#### SHIPPING BRACES

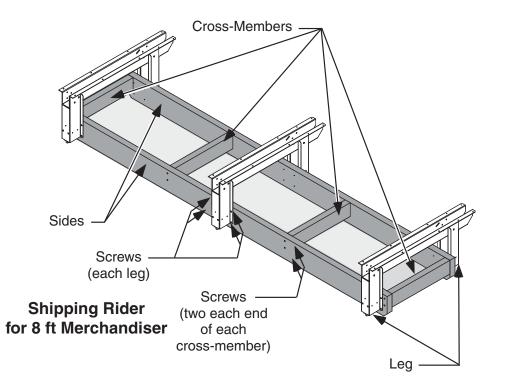
Move the fixture as close as possible to its permanent location and then remove all packaging and shipping braces. Check for damage before discarding packaging. Remove all separately packed accessories such as kits, and shelves.

Remove all nut retainers used with shipping braces. NSF certification requires the use of ANSI Standard nuts and bolts with not more than two (2) threads showing after installation.

#### SHIPPING RIDER

Each merchandiser is shipped on a rider to protect factory-installed legs, and to make positioning the merchandiser easier. Remove the rider after the merchandiser has been positioned.

Note: Once the rider is removed, the merchandiser must be lifted –NOT PUSHED– to reposition.



To remove the rider, remove screws attaching each leg to rider. Remove screws holding rider cross-members, then slide cross-members out from between sides. Once cross-members are out, slide the sides out.

#### MERCHANDISER LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water.

During all steps of setting, joining and leveling merchandisers, close attention to glass position and operation must be maintained. Please review all steps and photos before making any adjustments. DO NOT make any glass adjustments until individual merchandiser is set and level.

#### Preparation

1. Using store blueprints, measure off and mark on floor the exact dimensions/locations of the merchandiser footprint.

- 2. Snap a chalk line for the front and rear positions of the base legs.
- 3. Mark the location of each joint from front to back lines.
- 4. *FLOORS ARE NOT LEVEL!!!* When working with two or more merchandisers to be joined, the whole lineup must be leveled on the same plane, left to right and front to back. This means that the entire lineup must be brought up to the level of the highest merchandiser in the lineup.

Along the lines previously marked, find the highest point of the floor by:

- Walking the floor and noticing any dips or mounds;
- Using a string level; and
- Using a transit.

### 1-4 INSTALLATION

#### Leveler Adjustment

Position the first merchandiser at the highest point. Set a long level (4 ft [1220 mm] or more) on the upper front panel of the merchandiser. Use an open-end wrench to turn leg levelers until the merchandiser is level from end to end and from front to back. Check all 6 legs on 8 ft (2438 mm) merchandisers, or 8 legs on 12 ft (3658 mm) merchandisers.

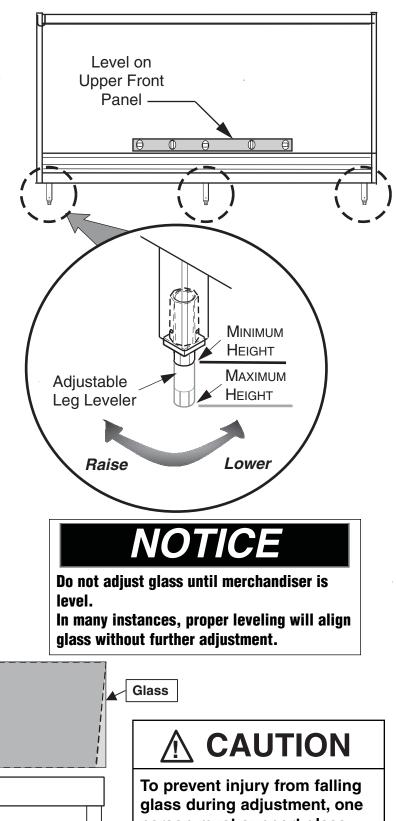
**Note:** To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

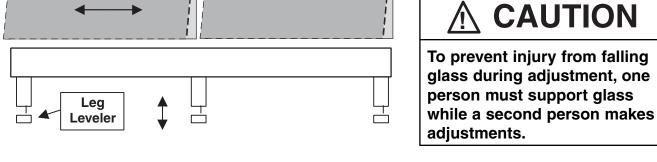
# Attention to glass position is critical during the leveling process.

Adjusting leg levelers will affect the position of the glass. Make certain that the glass is square with the merchandiser, avoiding interference with other glass and merchandiser ends.

If the glass is still out of alignment, refer to the following *Glass Positioning* instructions.

> Glass Movement





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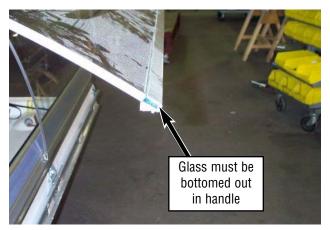
#### **GLASS POSITIONING**

Check the following to improve opening or closing of the merchandiser front glass.

- 1. Has the merchandiser been leveled according to preceding paragraphs?
- 2. Is the glass handle installed correctly?

Verify the glass is bottomed out the length of the handle. A bowed handle indicates the glass may not be bottomed out at the center of the handle.

The handle must be removed before it can be repositioned. The handle is held in place with silicone which must be completely removed from the handle and the glass. Remove the handle by pulling it away from the glass (do not use tools to pry this loose). A damaged or bent handle must be replaced. Apply new silicone into the handle and firmly press onto the glass.

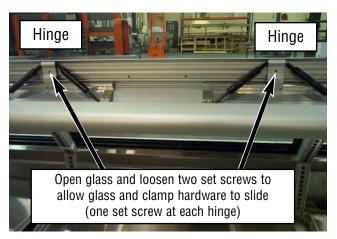


3. Is the glass seated in the clamp hardware correctly?

Verify glass is bottomed out in clamp hardware. If the glass is not bottomed out in the clamp hardware it can be re-positioned as follows:



- A. Remove the glass and clamp hardware from the merchandiser by opening the glass and loosening set screws in hinge, (Metric 3 millimeter set screws).
- B. Slide the glass and clamp hardware to the side out of the hinges and lay them on an appropriate work surface.



Note: adjacent glass must be closed.

- C. Loosen the 8 set screws on the underside of the clamp hardware.
- D. Push the clamp hardware onto the glass until bottomed out.
- E. The clamp hardware must overhang the glass by an equal amount on each side.
- F. Tighten set-screws and re-install on merchandiser.

### 1-6 INSTALLATION

- 4. Is the glass hitting the end or adjacent glass? Slowly open and close the glass to inspect. If the glass is hitting the end or adjacent glass it may not be positioned correctly from left to right. This can be adjusted as follows:
- Loosen the 2 screws holding the hinge to the clamp hardware (Metric 3 millimeter

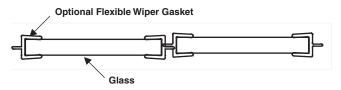
screws).



- Slide the clamp hardware to either side as needed.
- Tighten the screws and check glass for proper operation.
- 5. Is the glass still hitting adjacent glass? Slowly open and close the glass to inspect.

#### **Optional Flexible Wiper Gasket**

There may be an optional flexible wiper gasket that is attached to each side. These are designed to overlap each other, sealing the gap between the glass and allowing side-to-side glass adjustment. After all glass has been adjusted as defined in Step 4, the flexible portion of one gasket at a joint may be trimmed with a razor knife. Be sure that the remaining wiper gasket seals the gap. Verify proper operation.

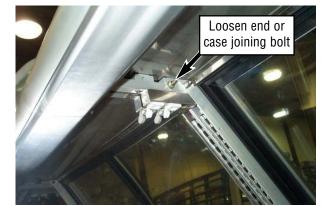


#### ADJUSTMENT BOLT

If the glass still does not open or close correctly, adjustment of the top frame may be necessary.

This merchandiser is equipped with an adjustment bolt at the top rear of the merchandiser to raise or lower the glass. This allows for improvements in the glass operation and sealing. The following outlines how to access the adjustment bolt. The top must be free to move as the adjustment bolt is turned.





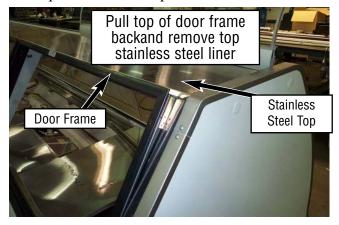
- Loosen joining or end bolts at top of merchandiser, (2 at each end of merchandiser).
- 2. If caulk or silicone has been applied between merchandiser joints or ends in the top area it must be removed.
- 3. Remove rear doors.

#### P/N 0420057\_D

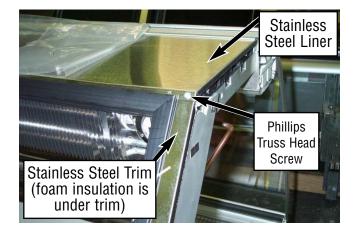
4. Remove screws at top of rear door frame. The bottom screws do not need to be removed.



5. Pull back the top of the door frame approximately 2 inches. This will allow clearance for removal of the stainless steel top liner and trim pieces.

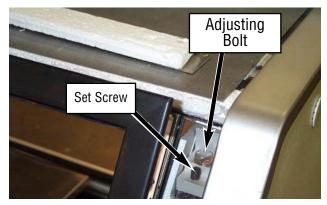


- 6. Some models have a Phillips truss head screw holding the stainless steel liner to the trim. These screws are visible from the rear of the merchandiser to the side of the door frame. These must be removed.
- 7. Remove stainless steel top liner by grabbing the rear flange and pulling back.Note: It is possible to access the adjusting bolt by using a small swivel socket without removing the stainless top liner. To do this, the stainless steel trim and foam noted in Step 8 must be removed.
- 8. Remove stainless steel trim pieces and foam insulation on each side of the door frame.



9. The set screw and adjusting bolt are now accessible.

- The set screw must be backed out before turning the adjusting bolt, (1/8 inch set screw). The set screw serves as a positive stop.
- The adjusting bolt should be turned no more than a half-turn before inspecting glass position and operation.
- Turning the adjusting bolt clockwise will raise the front glass.
- Turning the adjusting bolt counter-clockwise will lower the front glass.
- Once the glass position is set, tighten the set screw (positive stop).

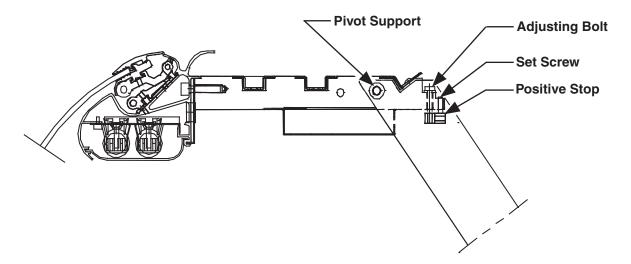


10. Once glass is positioned and operating correctly, re-install components and hard-ware removed.

**Note:** the door frame is designed to have a tight fit. A putty knife between the top of the frame and the insulated panel will help guide it into position.

#### 1-8 INSTALLATION

- 11. Re-apply caulk or silicone as required.
- 12. Verify glass is positioned and operating correctly.



#### 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.

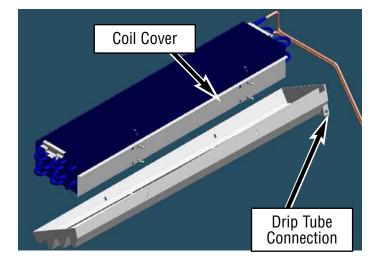
Refer to the detailed information provided in the **separate** *Joining Instruction* shipped with each merchandiser.

#### INSTALLING COIL COVER AND DRIP TRAY

Each gravity coil in these service merchandisers has a 4 ft (1219 mm) stainless steel coil cover and molded plastic drip tray. A condensate drip tube is factory installed.

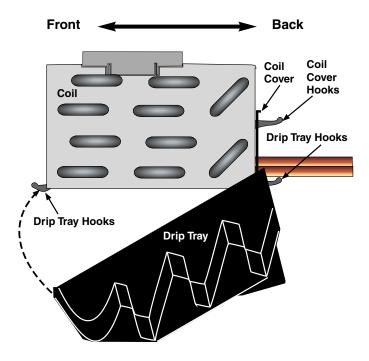
Check the drip tray for obvious damage before installation. Damaged or leaking drip trays must be replaced. Remove any loose debris and clean the drip tray before installing.

Coil cover hooks and drip tray hooks are factory installed at the front and back in each gravity coil. Hanging holes are formed in the cover and drip tray.



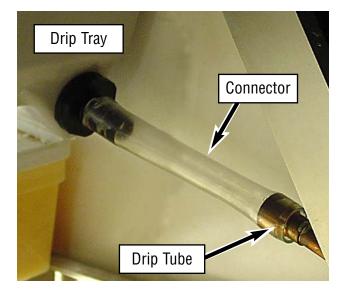
#### P/N 0420057\_D

From the back of the merchandiser, hang the coil cover from the top hooks, then position the drip tray in the merchandiser with the drip tube connection to your right. Hang drip tray on two back hooks and two front hooks.



Connect installed copper drip tube to drip tray using flexible connector supplied.

Ensure condensate flows freely from drip tray through drip tube. Check the drip tube connection for leaks before stocking.



#### **REMOVING PROTECTIVE FILM FROM BUMPER**

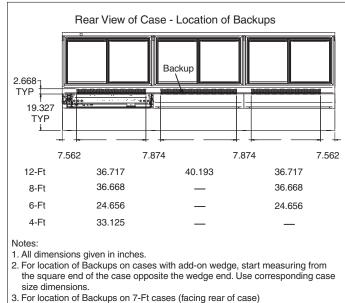
Remove protective film from bumper once installation is complete.



**Installing Optional Wrap Board** MOA 0470438

1. Turn off power to merchandiser.

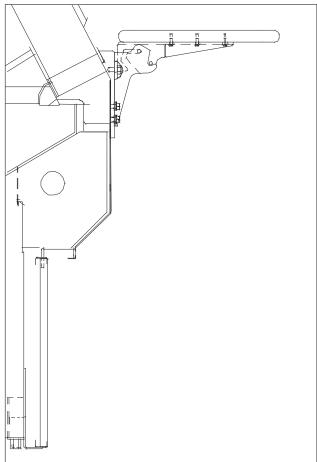
2. Determine location by positioning the wrap board on the rear of the merchandiser between door frames.



use 6-Ft case dimensions on the left and 8-Ft case dimensions on the right.

### 1-10 INSTALLATION

3. Align the assembly on the back of the merchandiser as shown below.



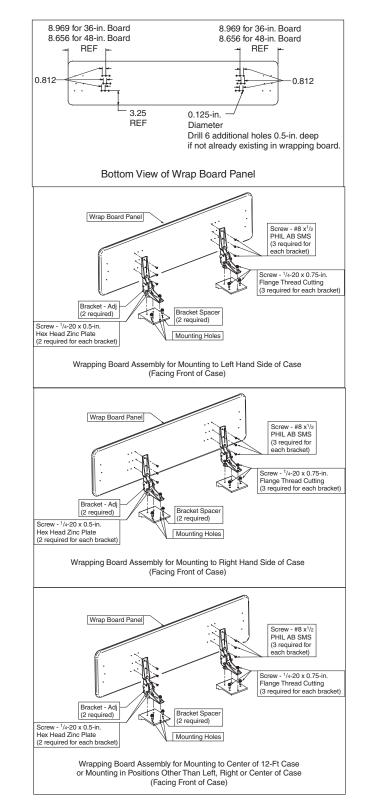
4. Using holes in wrapping board bracket as a template, mark hole locations on rear of merchandiser.

# 5. Remove wireway cover; make sure there are no wires behind hole locations.

6. Drill 3/8-inch (0.1875) diameter holes for three 1/4-20 thread cutting screws through stainless steel and structural members.

7. Securely fasten brackets to merchandiser.

8. Adjust wrapping board as needed. The attach points for hinging brackets on wrapping board is determined by which position the assembly is to be mounted. Refer to figures for LH, RH or Center mounting positions.



9. Replace wireway cover.

#### 10. Restore power.

#### P/N 0420057\_D

#### P/N 0420057\_D

**Installing Optional Scale Stand** MOA 0458960

1. Turn off power to merchandiser.

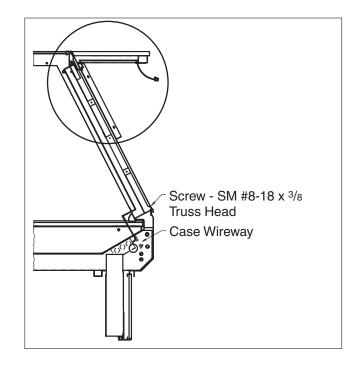
2. Determine location by positioning the scale stand on the rear of the merchandiser between door frames.

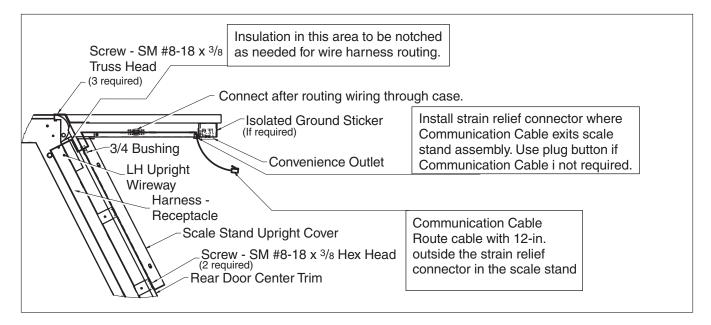
3. Using holes in scale stand bracket as a template, mark hole locations on rear and top of merchandiser.

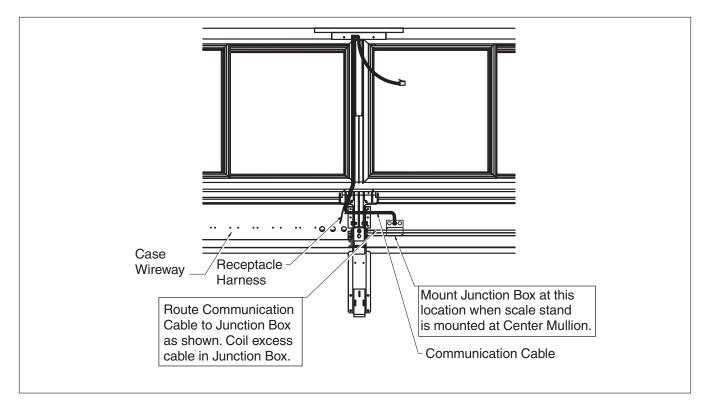
4. Remove scale stand. Drill <sup>1</sup>/8-inch diameter pilot holes through metal liners at the marked locations.

**NOTE:** *Metal liners are less than* <sup>1</sup>/8-*inch thick-- do not drill beyond metal liners.* 

5. Move top panel away from back of merchandiser. Remove center rear door trim and remove LH Upright wireway cover to allow routing of receptacle harness.







6. NOTE: RECEPTACLE HARNESS WIRING MUST HAVE INSULATION SLEEVE INSTALLED PRIOR TO ROUTING. Leaving about 12 inches of harness hang out of merchandiser, route receptacle harness wiring from the <sup>3</sup>/4-in. bushing, down the LH upright wireway through hole and into merchandiser wireway.

NOTE: COMMUNICATION CABLE WIRING CAN BE ROUTED SIMILARLY.

7. Install the rear door center trim with <sup>3</sup>/4-in. bushing by routing wire harness through <sup>3</sup>/4-in. bushing and attach with #8 truss head screws.

8. Reposition top over rear door center trim and attach using #8 truss head screws.

9. Reposition scale stand and attach using #8 truss head screws.

10. Install scale stand upright cover with #8 blunt tip sheet metal screws.

11. Connect wiring to power in wireway.

12. Restore power. Check for proper operation.

Some stores specify an isolated ground for scale stand convenience outlets. If required, apply the following:

• Isolated ground sticker to scale stand.

• Isolated ground tag to ground wire in merchandiser wireway.

# **REFRIGERATION / ELECTRICAL**

#### REFRIGERANT

The correct type of refrigerant will be stamped on each serial plate. The merchandiser refrigeration piping is factory sealed, pressurized and leak tested. Before making refrigeration hookups, depress universal line valve to ensure that coils have maintained pressure during shipment.

# 

Refrigerant vapor is hazardous to your health and can cause death.

Avoid breathing refrigerant and lubrication vapor or mist. Exposure may irritate eyes, nose and throat. If accidental system discharge occurs,ventilate work area before resuming service.

Always wear safety goggles and protective gloves when working with refrigerants. Contact with refrigerant may cause injury. Disconnect hoses with extreme caution! All hoses may contain liquid refrigerant under pressure.

Be sure that any room where you are working is thoroughly ventilated, especially if a leak is suspected.

Read all safety information regarding the safe handling of refrigerant and refrigerant oil, including the Material Safety Data Sheet. MSDS sheets can be obtained from your refrigerant supplier.

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

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

### **REFRIGERANT PIPING**

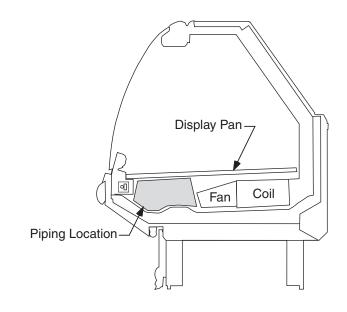
#### **Connection Location**

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. 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. The interconnecting piping may be run outside the merchandiser.



## 2-2 **REFRIGERATION / ELECTRICAL**

#### 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 the 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 wherever condensation drippage is objectionable or lines are exposed to ambient conditions.

#### SUCTION LINE

- Pitch in direction of flow.
- May be reduced by one size at one third of merchandiser run load and again after the second third. Do not reduce below the merchandiser suction line size.
- Merchandiser suction lines should enter at the top of the branch line.



Suction Line Return

#### LIQUID LINE

- May be reduced by one size after one half the merchandiser run load. Do not reduce below the merchandiser liquid line connection size.
- Take-offs to merchandiser 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

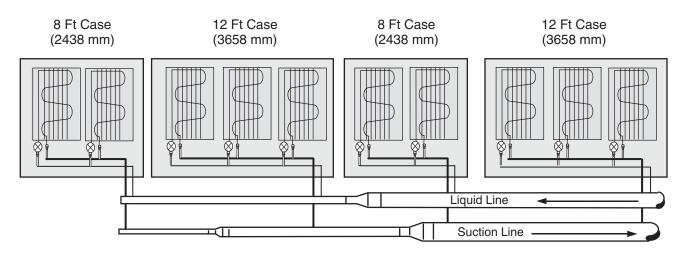
#### **CONTROL SETTINGS**

Merchandiser Technical Data Sheets (TDS) are shipped with this manual. The TDS provide merchandiser control settings and defrost data.

An evaporator pressure regulator or EPR (primary control) and a  $3 - 5^{\circ}F(1.7 - 2.7^{\circ}C)$ differential thermostat (secondary control) must control refrigeration temperature. The EPR must be set to maintain the proper saturated evaporator temperature as listed in the data sheets. The thermostat must be set a couple degrees colder than the discharge air temperature specified in the data sheets. The thermostat will prevent product freezing should the EPR temperature drift downward during reduced load periods (lights off, lower ambient). The thermostat will be wired to control the compressor motor contactor (single compressor) or a liquid line solenoid valve (parallel compressor systems).

Defrost is Off Time. Defrost control settings are listed in the data sheets. When these merchandisers are connected to parallel compressor systems, a suction stop valve must be used to isolate the evaporator during defrost periods.

## **Offtime Defrost**

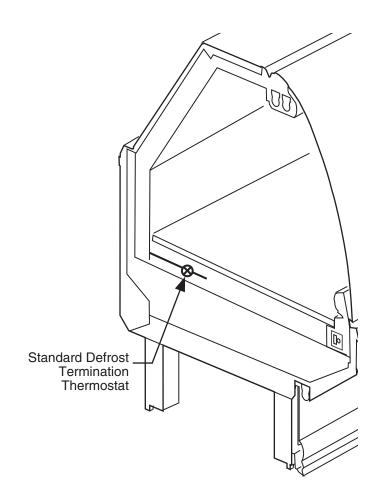


#### **REFRIGERATION THERMOSTAT**

The optional refrigeration thermostat bulb is located in the discharge air of the evaporator. The optional refrigeration thermostat is located behind the exterior rear panel.

#### DEFROST TERMINATION THERMOSTAT

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



# 2-4 **REFRIGERATION / ELECTRICAL**

### MERCHANDISER ELECTRICAL DATA

Merchandiser data sheets are shipped with this manual. The data sheets provide merchandiser electrical data, electrical schematics, parts lists and performance data. Refer to the merchandiser data sheets and merchandiser 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 raceway or *Handy Box*.

#### 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.

#### WIRING COLOR CODE

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

PINK ......REFRIG. THERMOSTAT LOW TEMP. LIGHT BLUE..REFRIG. THERMOSTAT NORM TEMP. DARK BLUE ..DEFROST TERM. THERMOSTAT PURPLE......CONDENSATE HEATERS BROWN ......FAN MOTORS GREEN\* ......GROUND \*EITHER COLORED

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

\*EITHER COLORED SLEEVE OR COLORED INSULATION

#### ELECTRICIAN NOTE: Use copper conductor wire only. 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 of the merchandiser (facing case front) allowing drip piping to be run under the fixture lengthwise. A  $1^{1/2}$  in. (38 mm) water seal is supplied with each fixture. The water seal must be installed to prevent air leakage and insect entrance into the fixture. A tee, adapter, ell, and plug have been shipped to allow field installation to determine direction of drain.

#### NOTES:

Water seal outlet must clear front skid rail. PVC–DWV solvent cement is recommended. Follow the manufacturer's instructions.

#### **INSTALLING DRIP PIPING**

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

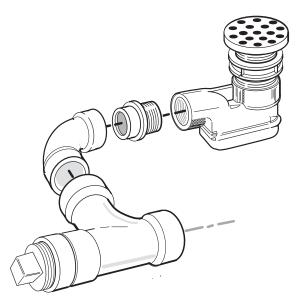
- 1. Never use drip piping smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
- 2. When connecting drip piping, the water seal must be used as part of the drip piping to prevent air leakage or insect entrance. Never use two water seals in series in any one drip pipe. *Double water seals in series will cause an air lock and prevent draining.*
- 3. Pitch the drip piping in the direction of flow. There should be a minimum pitch of <sup>1</sup>/4 in. per foot (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. 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.

**Note:** To prevent condensation problems, the water seal should be insulated.



#### INSTALLING SPLASHGUARD AND LOWER FRONT PANEL

#### Make certain that the end assemblies, end splashguards and end panels have been installed according to the End Kit instruction.

The splashguard and lower front panel are shipped inside each case. After merchandisers have been leveled and joined, and all drip piping, electrical and refrigeration work has been completed, install the splashguard and lower front panel.

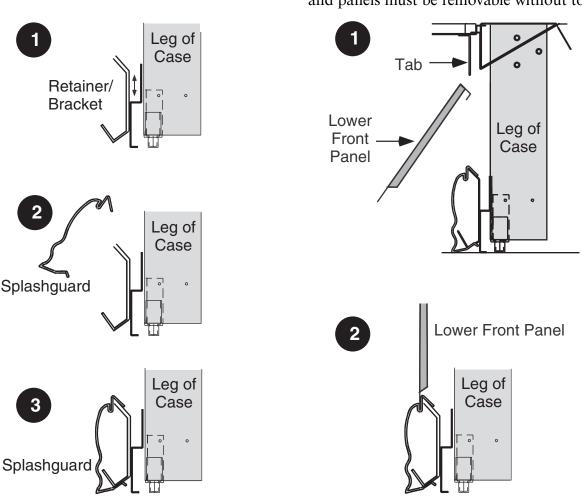
- 1. At front of merchandiser, attach a splashguard retainer/bracket to each leg with sheet metal screws.
- 2. Position top of splashguard over the top edge of the retainer/bracket as shown below.

3. Push the lower edge of the splashguard toward the bottom of the bracket until it snaps into place.

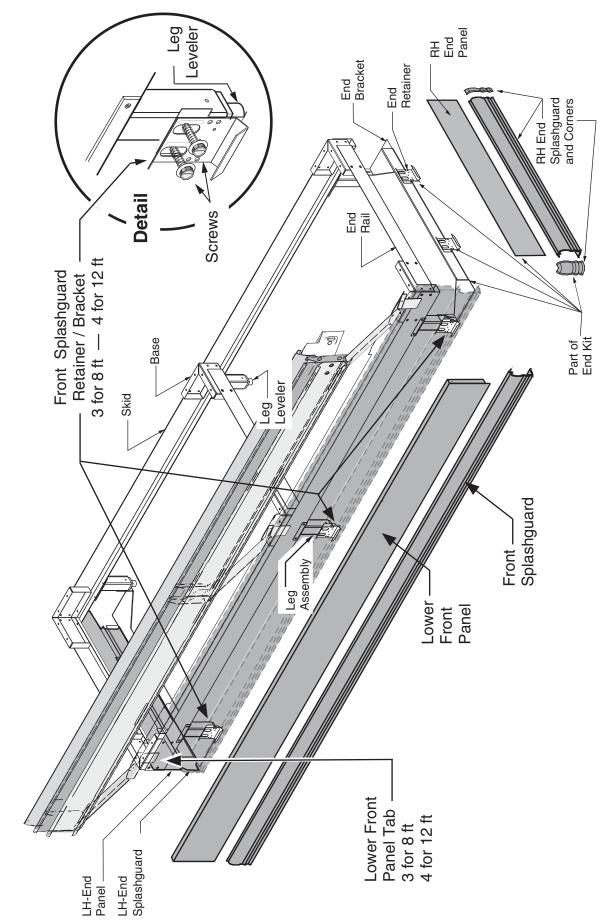
#### **To Install Lower Front Panel**

- 1. Position the lower front panel with the top angled as shown in the illustration. Tabs extending from the upper front assembly are designed to fit into the slots on the top of the lower front panel.
- 2. Once the top is positioned, lift the panel up and drop it into the groove at the top of the splashguard.

Do not use additional fasteners or sealant to hold splashguards or panels in place. To meet NSF cleanability requirements, splashguards and panels must be removable without tools.



3

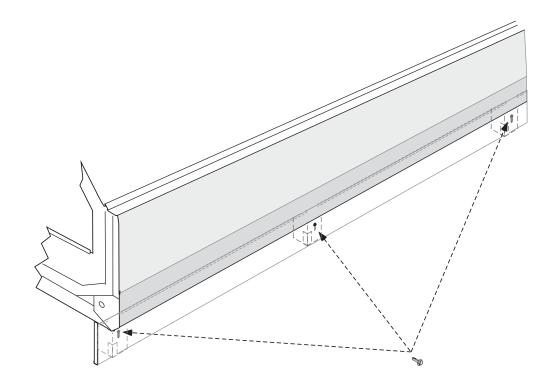


## 3-4 DRIP PIPING AND SPLASHGUARDS

### INSTALLING BOTTOM REAR PANEL

For fixed installation:

- 1. Align slots in bottom rear panel with center of legs.
- 2. Drive a hex head sheetmetal screw through each slot into each leg.



# **START UP / OPERATION**

#### **START UP**

See the specific 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 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.

#### 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.

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



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

#### SHELF MAXIMUM WEIGHT LIMITS

Hussmann 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.

#### Weight Limits for Merchandiser Shelving

Maximum Load Limit
75 lb (34 kg)
125 lb (56.7 kg)
125 lb (56.7 kg)

\*Shelf load limits at 0° tilt

Exceeding the indicated maximum weight load limits constitutes misuse as described in the Hussmann Limited Warranty.

#### LOAD LIMITS

Each merchandiser has a load limit decal.

#### LOAD LIMIT

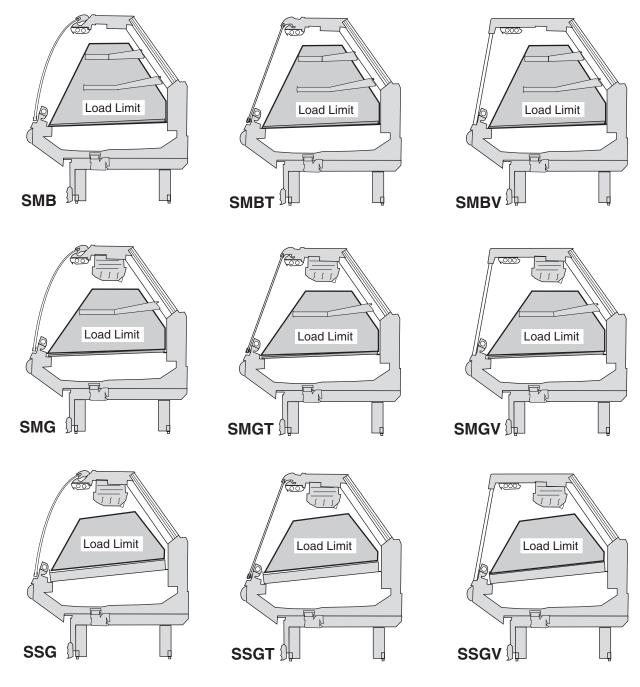
Recommended load limit profiles are shown on the next page. Shelf life of perishables will be short if load limit is violated. Overstocking will adversely affect product temperature and merchandiser efficiency.

# **DO NOT BLOCK AIR GRILLE.**



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

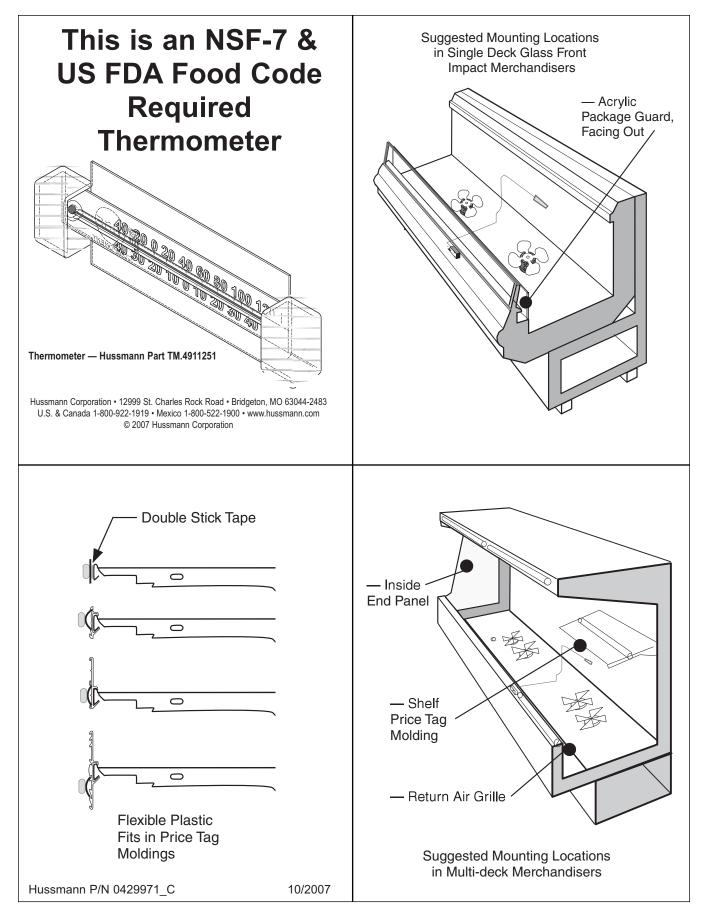
### LOAD LIMIT PROFILES



#### 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.



# 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, at least weekly.

#### **Exterior Surfaces**

The exterior surfaces must be cleaned with a mild domestic detergent and warm water to protect and maintain their attractive finish. NEVER USE ABRASIVE CLEANERS OR SCOURING PADS. DO NOT USE AMMONIA BASED CLEANERS ON ACRYLIC PARTS.

#### **Interior Surfaces**

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions with no harm to the surface. Removable parts are labeled **REMOVE FOR CLEANING**. Removable stainless steel parts may be

cleaned and sanitized in dishwasher.

See next page for detailed direction.

# 

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

# 

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.

# 

## Prevent injury. ALWAYS SHUT POWER OFF during cleaning process.

# 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 cooler. Remove only as much product as can be taken to the cooler in a timely manner.
- Turn off refrigeration, then disconnect electrical power.
- Thoroughly clean all surfaces with mild detergent and water (105 to 140°F / 40 to 60°C). Do not use steam or high water pressure hoses to wash the interior. These will destroy the merchandiser's LINER AND SEALS CAUSING LEAKS AND POOR PERFORMANCE.
- Lift or remove 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 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.

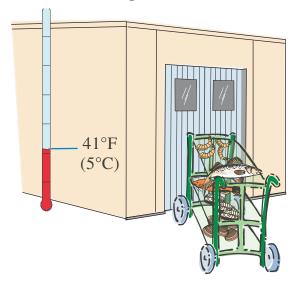
### **INTERIOR CLEANING STEPS**

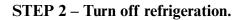
5-2

# \land WARNING

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

**STEP 1 – Remove product to cooler.** 







STEP 3 – Shut power off.

Note that refrigeration controls and power controls are not in the merchandiser. Consult the store legend or facility manager.

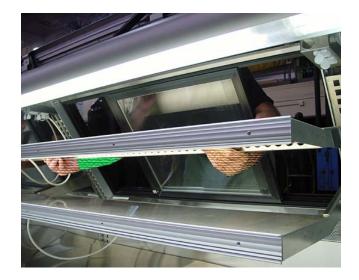
# 

— 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.

STEP 4 – Unplug shelves and close receptacle caps, then



remove shelves.



**STEP 5 – Remove display pans.** 



STEP 6 – Lift out display pan support.



STEP 8 – Lift out interior back panel.



**STEP 9 – Lift out upper shelf supports.** 



STEP 7 – Lift out discharge air grille.



STEP 10 – Lift out lower shelf supports.

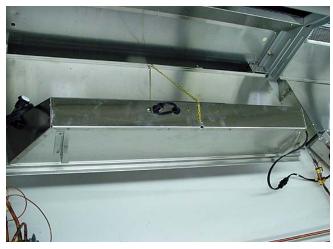


**Service Merchandisers** 

**STEP 11 – Lift out return air grille (from front).** 

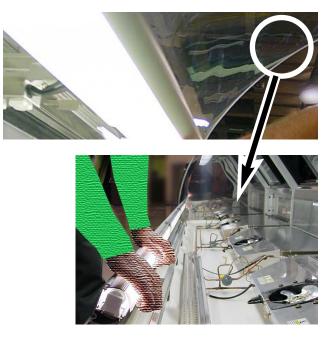


STEP 12 – Rotate fan plenum up and back; hook chain at rear of liner.

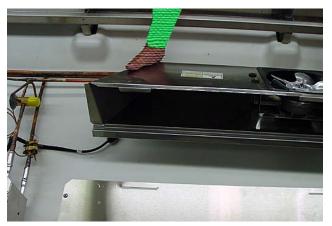


OR

Unplug fan harness.



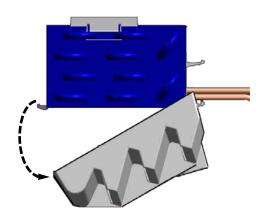
Lift fan plenum up and back to remove. (view is from the back)



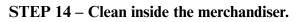
TOWE

#### **STEP 13 – Remove drip trays.**

Separate lower end of flexible connector from drip tube (see page 1-4). Lift and rotate tray as necessary to clear front and back hooks.



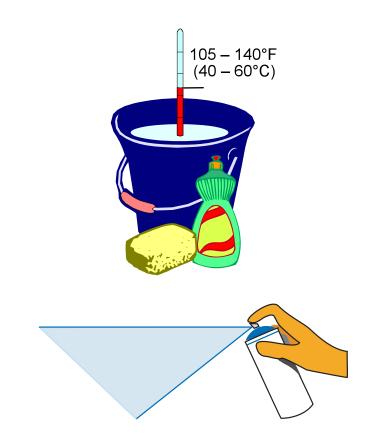
Hand wash drip trays. Sanitize drip trays and drip tubes. Use paper toweling to dry inside and outside of trays before reinstalling.



Once interior parts have been removed, collect loose debris for removal. Do not clog waste outlet.



STEP 15 – Clean and sanitize according to Health Code requirements.



#### 5-6 MAINTENANCE

#### STEP 16 – Reassemble in reverse order.

Turn on power, then refrigeration. Make certain merchandiser has cooled to operating temperature before restocking.



#### **CLEANING ANTI-REFLECTIVE GLASS**

#### **Anti-Reflective Glass**

While the anti-reflective coatings are durable, they are susceptible to scratching if abrasive materials are used for cleaning. Once the glass surfaces are scratched, it is impossible to restore the original finish. Special care must be taken to prevent damage when cleaning the glass.

Anti-reflective glass can be cleaned with clear water or any non-alkaline detergent. However, it is very important to use a soft cloth, a microfiber cleaning cloth or a wet sponge.

Never use the following types of materials to clean glass with anti-reflective coatings:

- Coarse Paper Towels
- Scouring Pads or Powders
- Steel Wool or Steel Fiber Materials
- Blades
- Acidic or highly Alkaline detergents
- Fluorine based detergents

#### **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.

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 (muratic acid) on stainless steel.

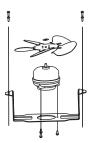
### SERVICE

#### **REPLACING FAN MOTORS AND BLADES**

See cross section for location of evaporator fans. Should it ever be necessary to service or replace the fan motors or blades be certain that the fan blades are re-installed correctly. THE BLADES MUST BE INSTALLED WITH RAISED EMBOSSING (PART NUMBER ON PLASTIC BLADES) POSITIONED AS INDICATED ON THE PARTS LIST. (Refer to the case data sheet for each model.)

For access to evaporator fans:

- 1. Turn off power
- 2. Remove bottom display pans.
- 3. Disconnect fan from wiring harness.
- 4. Lift fan plenum out of case. Place on stable work surface.
- 5. Remove screws holding fan basket to plenum. Fan blade may be removed after fan assembly is removed from plenum.
- 6. Remove screws holding bottom of motor to fan basket.
- 7. Replace fan motor and blade in fan basket.
- 8. Reinstall fan basket in plenum and reinstall plenum in case.
- 9. Reconnect fan to wiring harness. Turn power on.
- 10. Verify that motor is working and blade is turning in the correct direction.

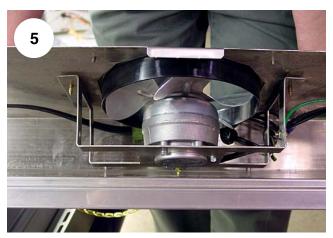




— LOCK OUT / TAG OUT — To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.



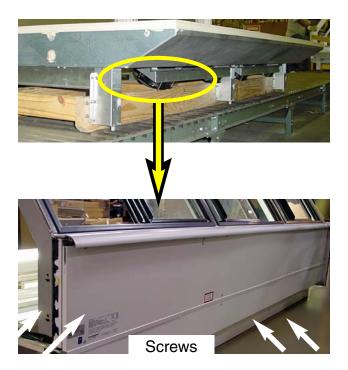




#### 6-2 SERVICE

For access to ambient fans:

- 1. Turn off power.
- 2. Remove lower front panel.
- 3. Disconnect fan from wiring harness.
- 4. Remove screws holding motor and grille.
- 5. Replace fan motor and grille.
- 6. Reconnect fan to wiring harness. Turn power on.
- 7. Verify that motor is working and blade is turning in the correct direction.
- 8. Replace lower front panel.



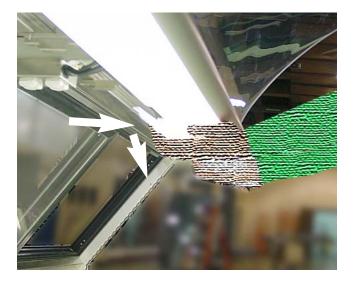


# REMOVING POLYCARBONATE LAMP COVERS

The canopy and rail covers are removed without tools. Apply pressure as shown in the photos until the cover clears the retainer, then pivot out of the retainer. Reinstall in reverse order.

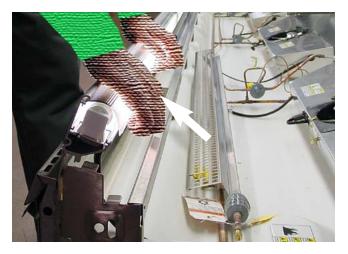
#### **Canopy Fixture**

From the front of the case, grasp the cover with both hands. Pull forward until the back of the cover clears the retainer, then rotate down and out.



#### **Rail Fixture**

From the front of the case, grasp the cover with both hands. Pull forward and up until the back of the cover clears the retainer.



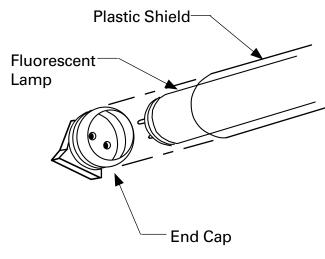
P/N 0420057\_D

#### ELECTRICAL SERVICE RECEPTACLES

The receptacles located on the exterior back of the merchandisers are intended for scales and other light duty appliances that are found in meat and delicatessen departments. The receptacles are not intended for large motors.

#### **REPLACING FLUORESCENT LAMPS**

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

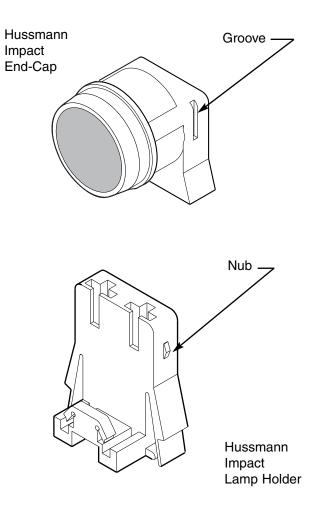


# 

Fluorescent lamps contain mercury vapor. Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages. Do not break or puncture fluorescent lamps. Dispose of, or store, all fluorescent lamps in accordance with Federal (40 CFR 273), State, and local hazardous waste requirements. Refer to http://www.epa.gov/mercury/about.htm

# **REPLACING LAMP HOLDERS AND END CAPS**

The Hussmann 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 ELECTRONIC BALLAST**

#### Lamp Ballast

The lamp ballast are located in the raceway, behind the back lower panel at the left-hand end of the merchandiser (facing rear of case). NOTE: The switch for the lamp is located in this panel.

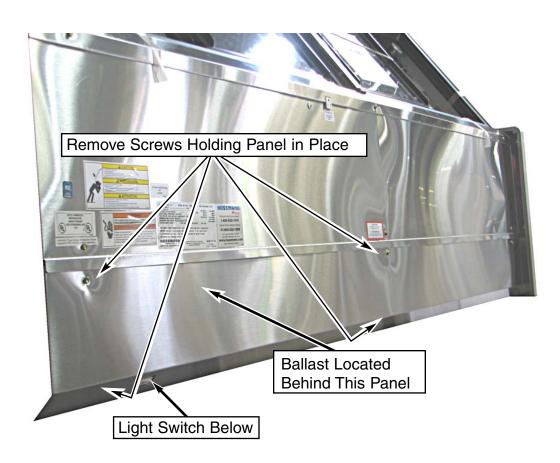
To gain access:

- 1. Disconnect the electrical power to the merchandiser.
- 2. Remove the left lower rear panel.
- 3. Service or replace ballast as required. Reassemble items as they were originally installed.
- 4. Reconnect the electrical power.



#### — 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 CYLINDERS — SINGLE PANE GLASS

# 

Check each glass section monthly to determine if support cylinders are worn and need to be replaced. If the glass does not stay in a raised position, have the cylinders replaced.

Each front curved glass section weighs about 40 lb (18 kg). To prevent glass from falling during installation, use or maintenance and causing injury to customers or personnel, Hussmann recommends one person hold the glass in a raised position while the other person performs cylinder replacement. Support the front glass at all times until cylinder is replaced or the glass is lowered.

NOTICE

Cylinders are a wear item. They are designed:

- to support the glass when fully open.
- to allow the glass to come down (or close) slowly.

Have your Service Contractor replace the cylinders when required.

When cylinders need to be replaced, the lifting force of the cylinder must be known. The lifting force can be determined by the data printed on the cylinder being replaced. The following shows the part number for the 300N and 400N cylinders.

300N Cylinder – P/N 0412539 400N Cylinder – P/N 0406925

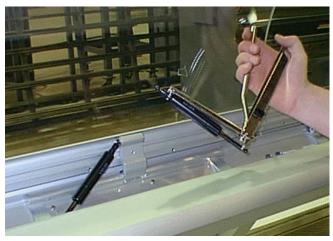
- 1. Raise the front glass to open completely.
- 2. Use special hand tool, shown in photo, to compress and remove cylinder.

**Note**: Cylinders cannot be removed without special hand tool.

Cylinder Removal Tool

P/N 0425326





**Removing a Cylinder** 

# 

Cylinder rods must point down so oil will lubricate the rod and seals. Failure to lubricate will severely shorten cylinder life.

**REPLACING SINGLE PANE FRONT GLASS (Requires more than one person.)** 

# 

Once set screws are loose, the glass and glass clamp have NO support or retainers. Support the front glass at all times until the top glass clamp and set screws are secured, or glass is removed.

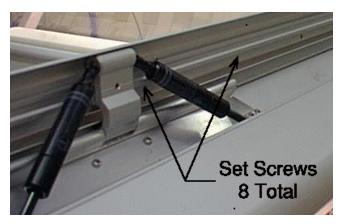
- 1. Raise the front glass to open completely.
- 2. Loosen all set screws along the inside bottom of the glass clamp.

**Note:** All cylinders do not have to be removed to remove the glass

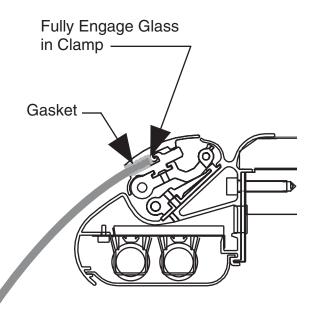
#### IMPORTANT

When reinstalling glass, be certain that:

- 1. Gasket is on glass evenly.
- 2. Glass bottom is fully in retainer.
- 3. When set screws are tightened, glass is firmly held in place by the glass clamps.

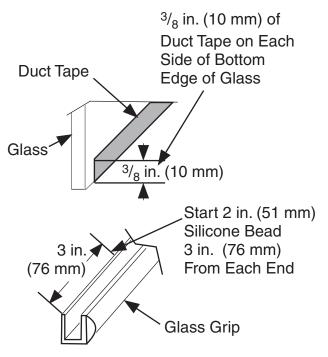


**Set Screw Locations** 



#### **REPLACING GLASS HAND GRIP**

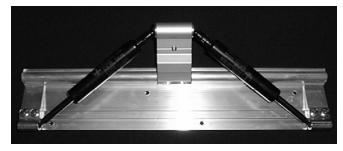
The hand grip is fastened to the curved glass as shown below. A 2 inch (51 mm) bead of silicone needs to be placed 3 inches (76 mm) from each end and in the center of the hand grip. The duct tape is placed on the glass to provide a tight fit.



#### HINGE HARDWARE

Type: Two cylinders and one fastening point. P/N 0401884

Used on: 8 ft and 12 ft (2438 mm and 3658 mm) parent cases and as a joining bracket.



Type: Two cylinders and three fastening points. P/N 0407352

Used on: 30° outside wedge.

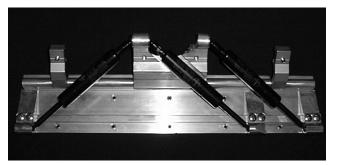


Type: Three cylinders and four fastening points.

P/N 0412538

Used on 90° inside wedge, 45° outside and inside wedge, 30° inside wedge.

Note: This hinge assembly, when used on the 90° and 45° inside wedge, uses only two cylinders.



Type: Four cylinders and five fastening points. P/N 0413170 Used On: 90° outside wedge.



#### 6-8 SERVICE

#### **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 at1125°F (607°C)
Aladdin 3-in-1 rod at	732°F (389°C)
X-Ergon Acid core at	455°F (235°C)

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Refrigerant vapor is hazardous to your health and can cause death.

Avoid breathing refrigerant and lubrication vapor or mist. Exposure may irritate eyes, nose and throat. If accidental system discharge occurs, ventilate work area before resuming service

Always wear safety goggles and protective gloves when working with refrigerants. Contact with refrigerant may cause injury. Disconnect hoses with extreme caution! All hoses may contain liquid refrigerant under pressure.

Be sure that any room where you are working is thoroughly ventilated, especially if a leak is suspected.

Read all safety information regarding the safe handling of refrigerant and refrigerant oil, includingthe Material Safety Data Sheet. MSDS sheets can be obtained from your refrigerant supplier.

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

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

# HUSSMANN

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

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

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