

HUSSMANN[®]
IMPACT[™] Merchandisers



Service Merchandisers

Fresh Meat, Delicatessen, and Seafood Merchandisers
(Includes Wedge Installation)

NSF[®] Certified



IMPORTANT
Keep in store for future reference!

Installation & Operation Manual

Shipped with Technical Data Sheets

P/N 0420057_B

Impact Series

July 2008

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IMPORTANT
KEEP IN STORE FOR FUTURE REFERENCE
Quality that sets industry standards.

This merchandiser is NSF® certified.

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REVISION HISTORY




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.
6. 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.

SAFETY

There are two main hazard areas that service technicians may encounter on a day-to-day basis. They are: working within close proximity to the public, and personal safety. Before starting work, review these hazards by completing the following checklist:

WORKING NEAR THE PUBLIC

KEEPING THE PUBLIC OUT:

The following techniques reduce the risk of injury to third parties (shoppers, store employees, etc.):

Cordon off all work areas with cones, caution tape, warning signs and/or barricades.

Maintain a work area of at least five feet from the public.

Is a second person required to prevent the public from entering the work area when the work area cannot be adequately cordoned off?

HAZARDOUS MATERIALS

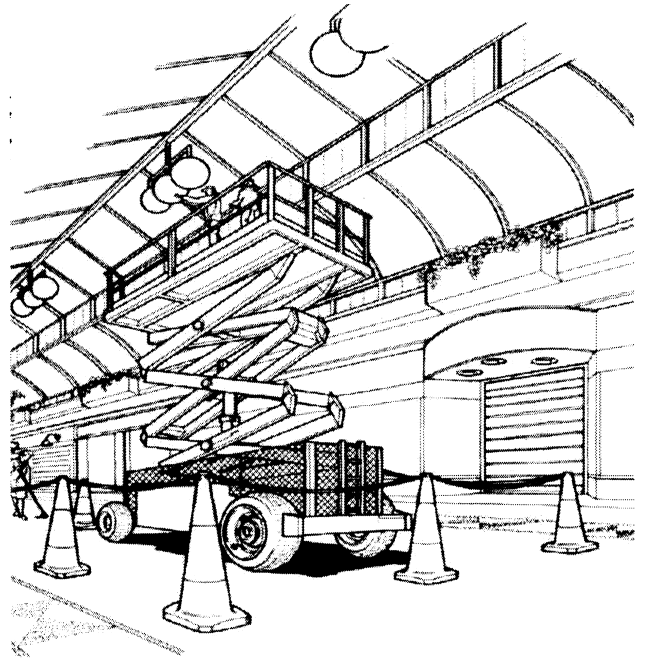
Can the public be exposed to any chemicals, refrigerants or fumes? If yes, can steps be taken to eliminate or reduce the risk of exposure? to guard against accidental release of refrigerants, make sure the work area is adequately cordoned off (instead of posting a *WET FLOOR* sign, use *CAUTION* tape to prevent the public from entering the area).

Are wet floors going to create a slip hazard for pedestrians? If yes, be sure to post *WET FLOOR* signs and establish a schedule for clean up as soon as the work is complete.

ELECTRICAL HAZARDS

Are all live electrical hazards protected from public access; i.e., de-energized/locked out or cordoned off? Is proper signage in place?

Do light bulbs need to be replaced: If yes, will high work be conducted from a ladder or a scissor lift? Make sure the work area is cordoned off as shown below.



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>

PERSONAL SAFETY

Over 90% of accidents are due to human error or from complacency about the job. This checklist is provided to remind you of the potentially hazardous conditions at the job-site.

WORKING AT HEIGHT

Will you be working more than six feet off the ground? If yes, have you received appropriate training (i.e., ladder, scissor lifts and personal fall-arrest systems)?

Do you have the appropriate personal protective equipment (PPE) for working at height (safety harness/lanyard)?

Will you be working on roofs with unprotected edges? If yes, make sure actions are taken to prevent a fall (i.e., identification of adequate anchor points for safety harnesses).

CONFINED SPACE WORK

Will you be working in any confined spaces? If yes, have you received appropriate training? A confined space has limited means of entry/egress, is not designed for human occupancy, and is large enough for bodily entry.

Is permit-required confined space entry required? If yes, have appropriate steps been taken for safe entry, such as permit issuance. **If in doubt, DO NOT ENTER and inform the client.**

ELECTRICAL / LOTO

Does the project require you to work with live electricity? If yes, have you received appropriate training?

Do you have appropriate locks and tags to de-energize or isolate the electrical supply?

REMOTE AND LIMITED USE LOCATIONS

Is there the potential to contact poisonous plants (ivy, oak or sumac)? If yes, make sure you wear proper PPE (gloves, long pants and long sleeves).

Check for snakes, vermin and bees / wasps.

If stung or bitten, do you have reactions that require medical treatment, such as Epinephrine EpiPen? **If yes, inform the client prior to starting work.**

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• **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.

CAUTION

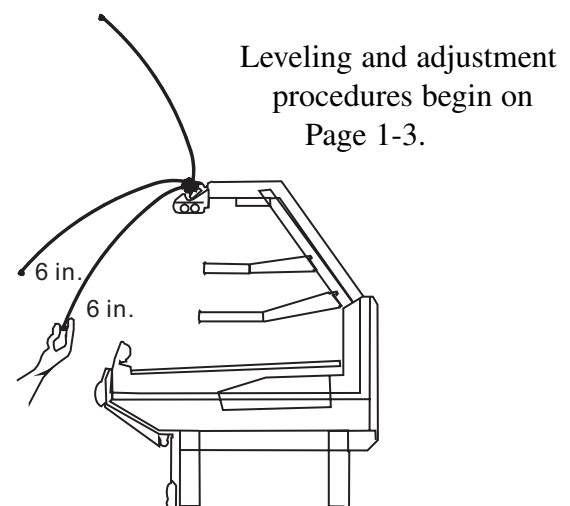
Read before raising front glass to prevent injury from broken or falling glass.

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.



WARNING

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

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 case.

MERCHANDISERS SHIPPED WITH END INSTALLED

If the case was shipped with the end installed, two long bolts were used to hold the shipping brace to the end. If the shipping bolts are re-inserted 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 case. Make sure that tools are positioned past the end and beneath the merchandiser's support bar.

SHIPPING BRACES

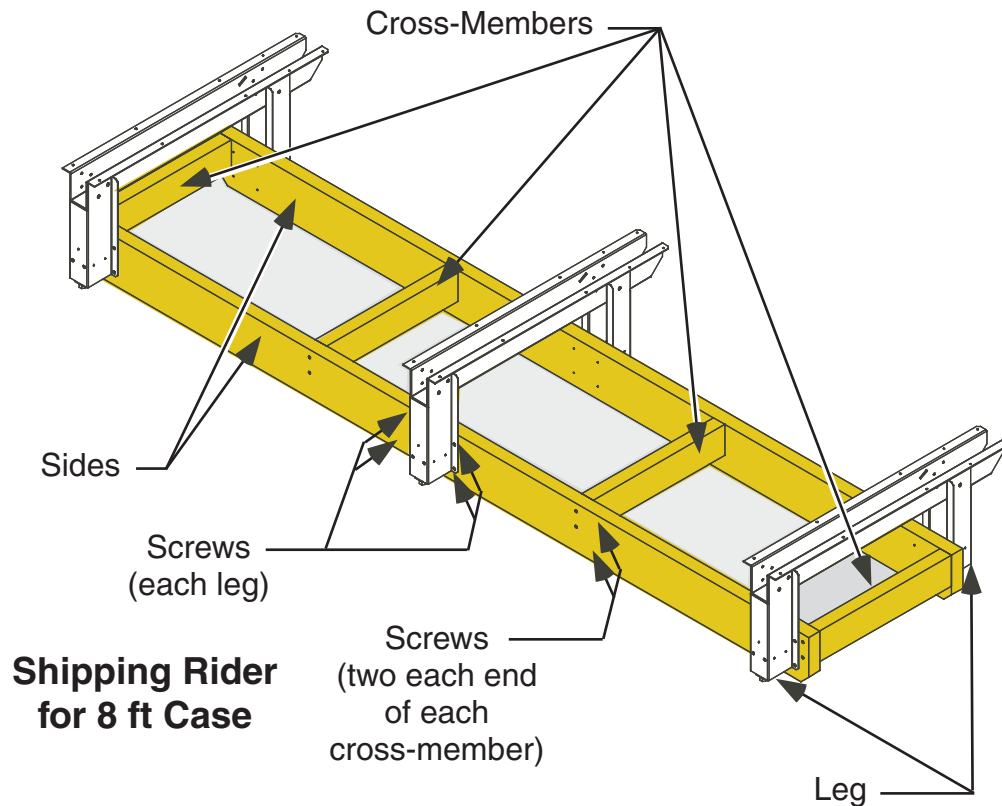
Move the fixture as close as possible to its permanent location and then remove all packaging and shipping braces. Check for damage before discarding packaging. Remove all separately packed accessories such as kits, and shelves.

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

Note: Once the rider is removed, the case 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.

CASE 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 cases, 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 case is set and level.

Preparation

1. Using store blueprints, measure off and mark on floor the exact dimensions/locations of the case 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 cases 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 case in the lineup.

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

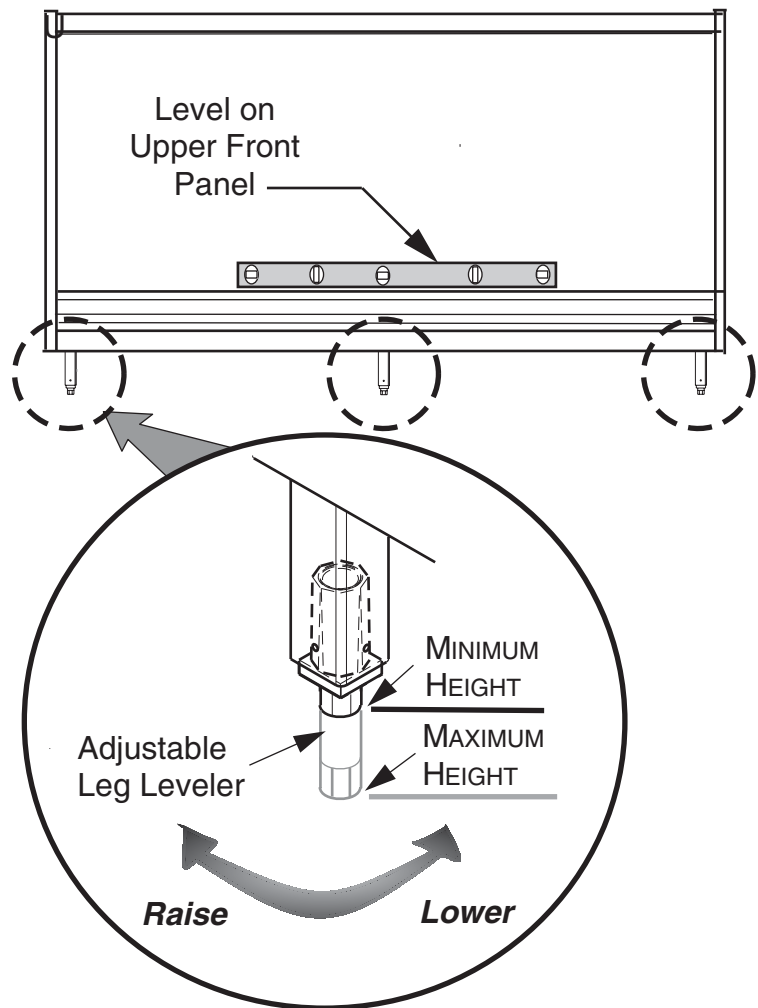
- Walking the floor and noticing any dips or mounds;
- Using a string level; and
- Using a transit.

1-4 INSTALLATION

Leveler Adjustment

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

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



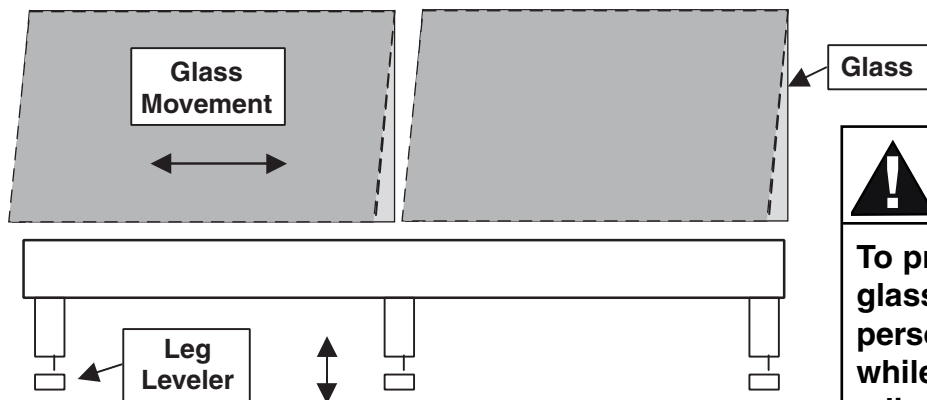
Attention to glass position is critical during the leveling process.

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

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

NOTICE

Do not adjust glass until case is level. In many instances, proper leveling will align glass without further adjustment.



CAUTION

To prevent injury from falling glass during adjustment, one person must support glass while a second person makes adjustments.

GLASS POSITIONING

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

1. Has the case 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.



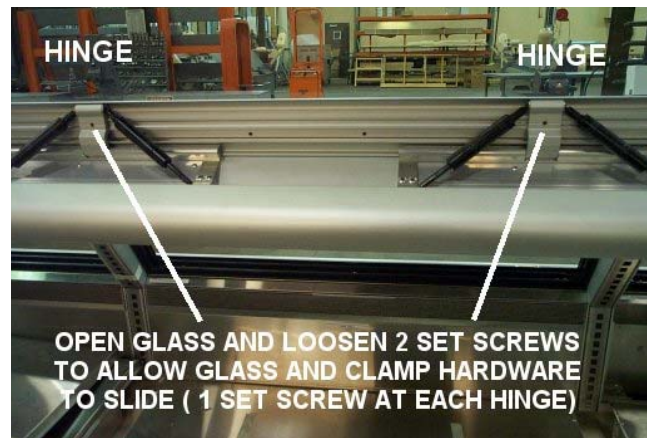
3. Is the glass seated in the clamp hardware correctly?

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 case 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.

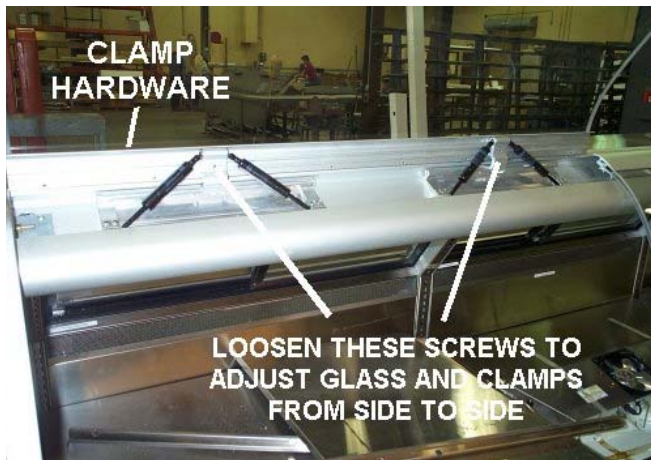
Note: adjacent glass must be closed.

- 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 case.

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:

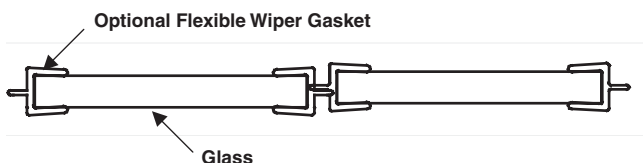


- Loosen the 2 screws holding the hinge to the clamp hardware (Metric 3 millimeter screws).
- Slide the clamp hardware to either side as needed.
- Tighten the screws and check glass for proper operation.

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 case is equipped with an adjustment bolt at the top rear of the case 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.

1. Loosen joining or end bolts at top of case, (2 at each end of case).



2. If caulk or silicone has been applied between case joints or ends in the top area it must be removed.
3. Remove rear doors.

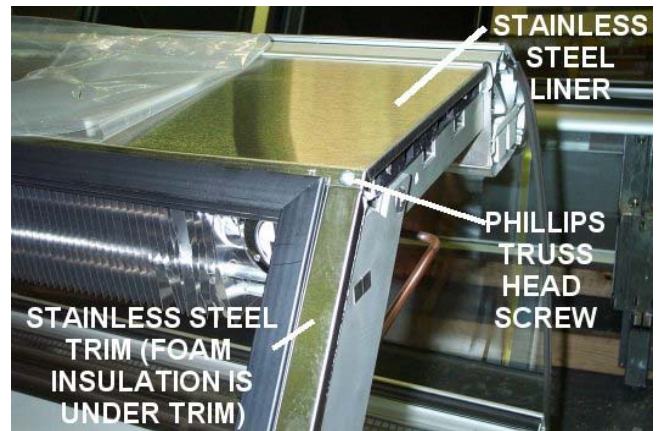
- Remove screws at top of rear door frame. The bottom screws do not need to be removed.



- 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.

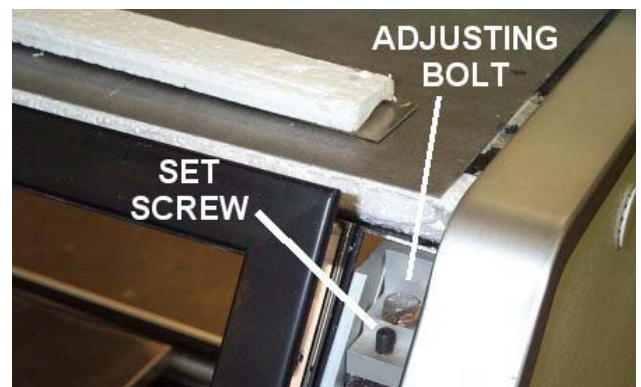


- Some models have a Phillips truss head screw holding the stainless steel liner to the trim. These screws are visible from the rear of the case to the side of the door frame. These must be removed.
- Remove stainless steel top liner by grabbing the rear flange and pulling back. Note: It is possible 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.
- Remove stainless steel trim pieces and foam insulation on each side of the door frame.



- 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).

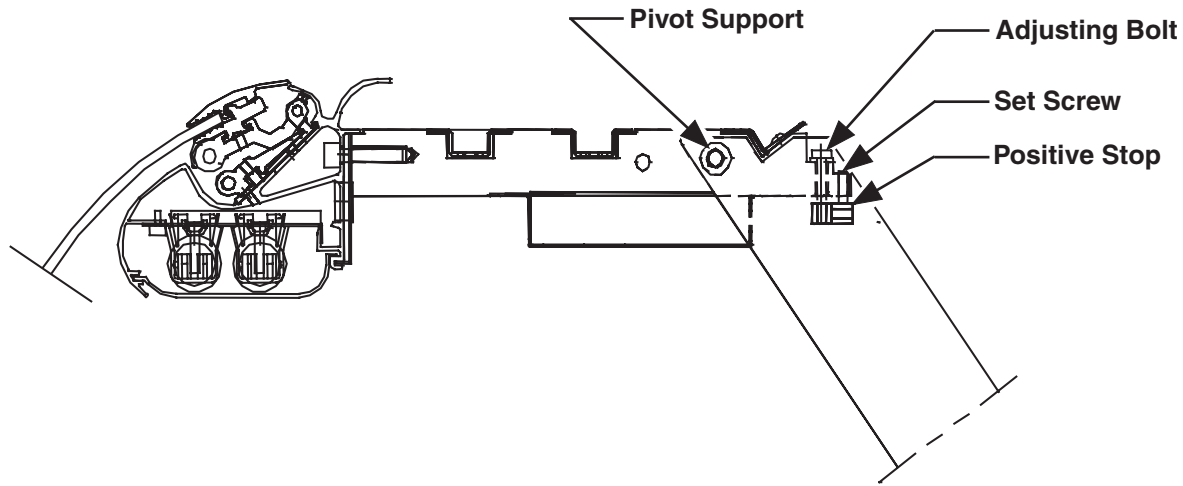


- Once glass is positioned and operating correctly, re-install components and hardware removed.

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.

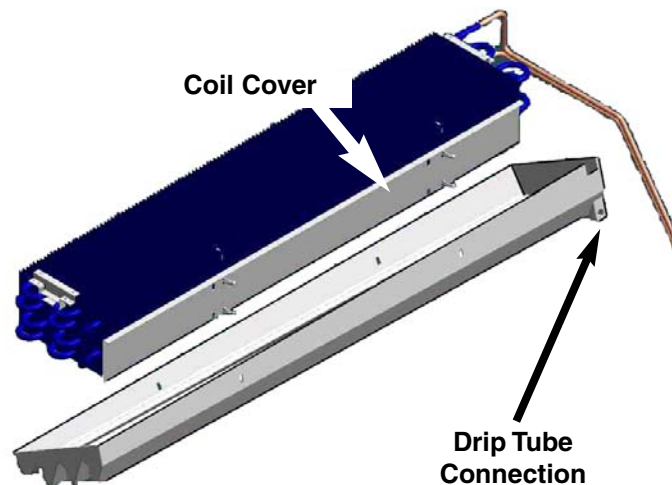
Refer to the detailed information provided in the separate *Joining Instruction* shipped with each case.

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.

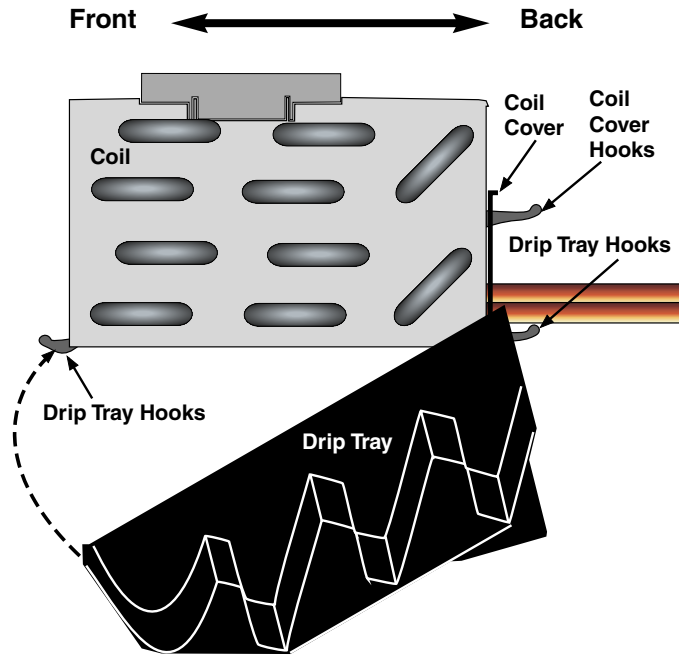
Coil cover hooks and drip tray hooks are factory installed at the front and back in each gravity coil. Hanging holes are formed in the cover and drip tray.

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.

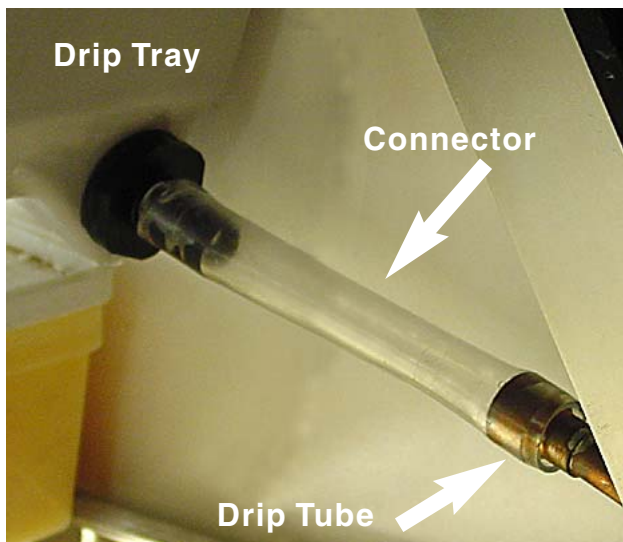


From the back of the case, hang the coil cover from the top hooks, then position the drip tray in the case with the drip tube connection to your right. Hang drip tray on two back hooks and two front hooks.



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.



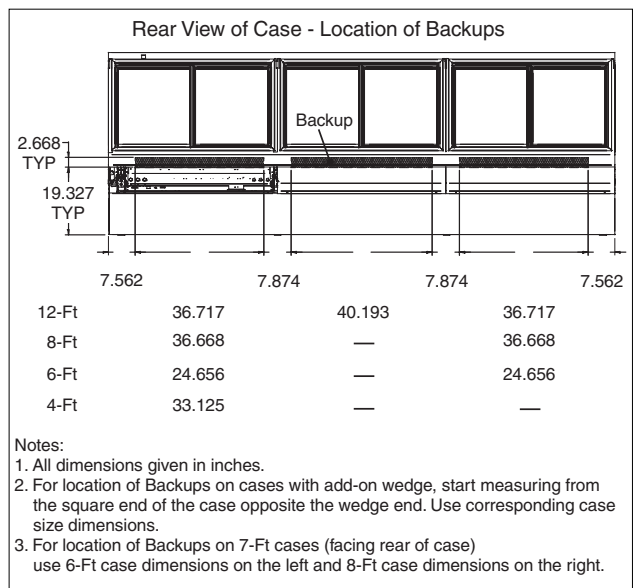
REMOVING PROTECTIVE FILM FROM BUMPER

Remove protective film from bumper once installation is complete.



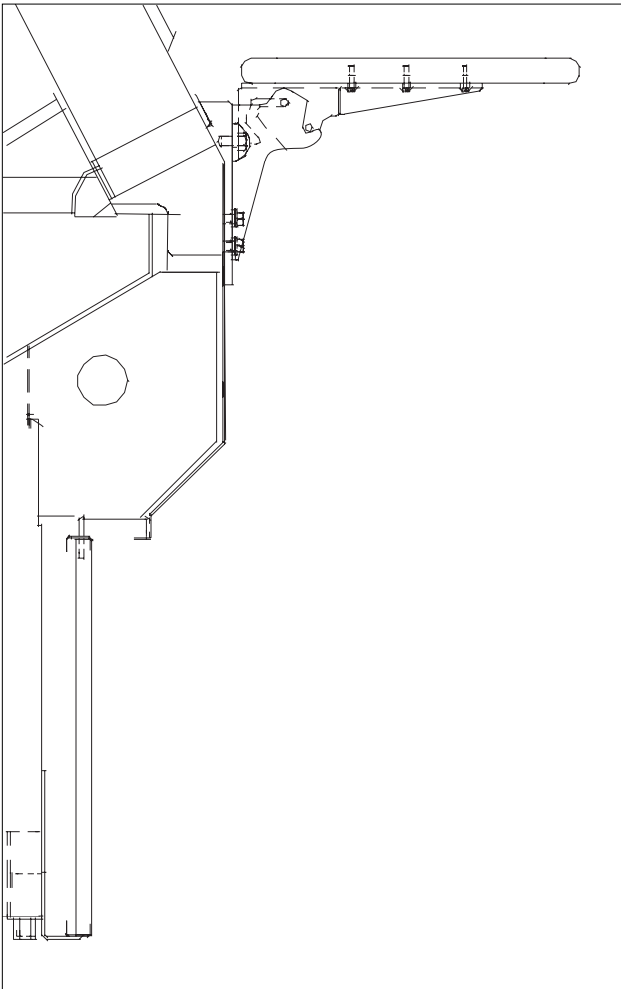
Installing Optional Wrap Board
MOA 0470438

1. Turn off power to case.
2. Determine location by positioning the wrap board on the rear of the case between door frames.



1-10 INSTALLATION

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



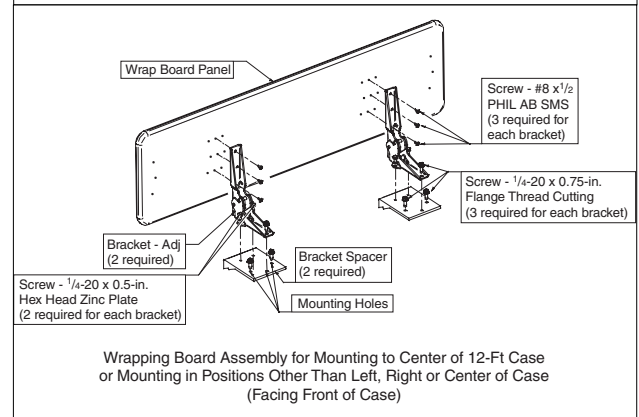
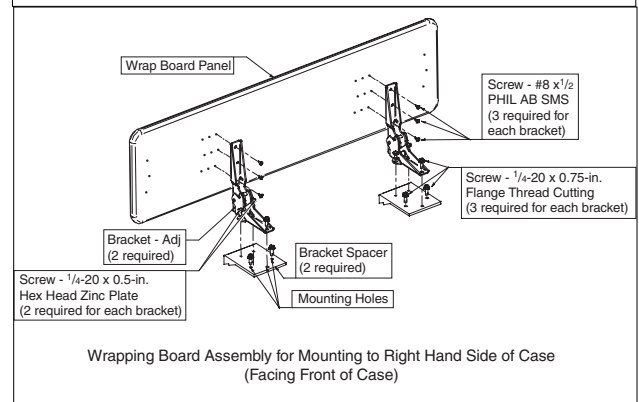
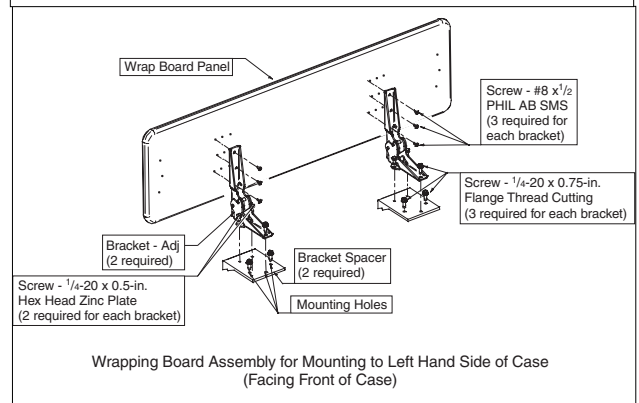
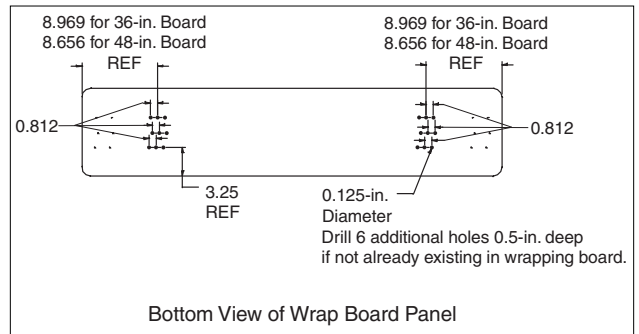
4. Using holes in wrapping board bracket as a template, mark hole locations on rear of case.

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

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

7. Securely fasten brackets to case.

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.

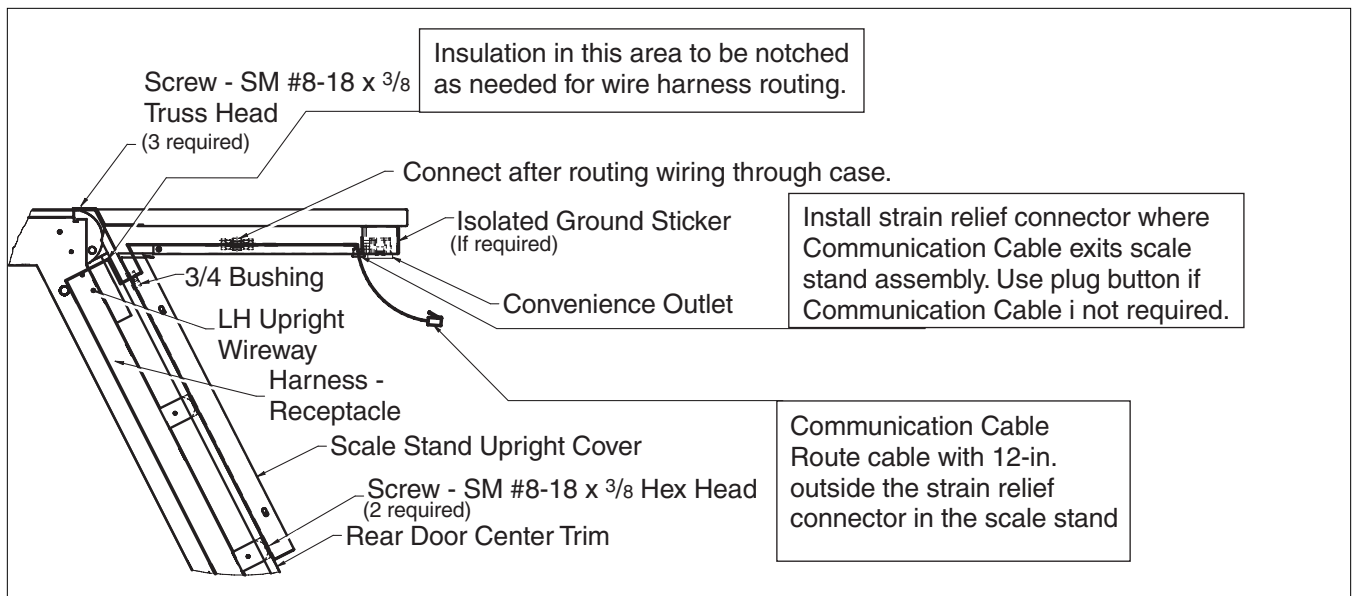
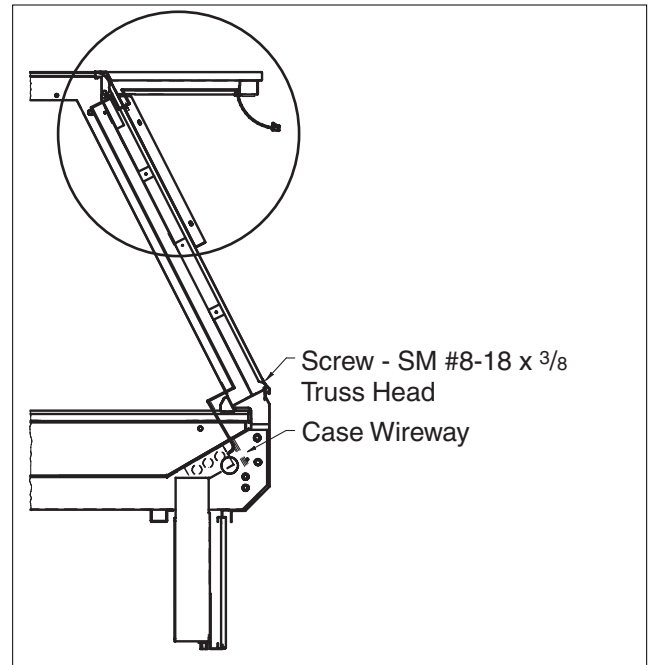
Installing Optional Scale Stand

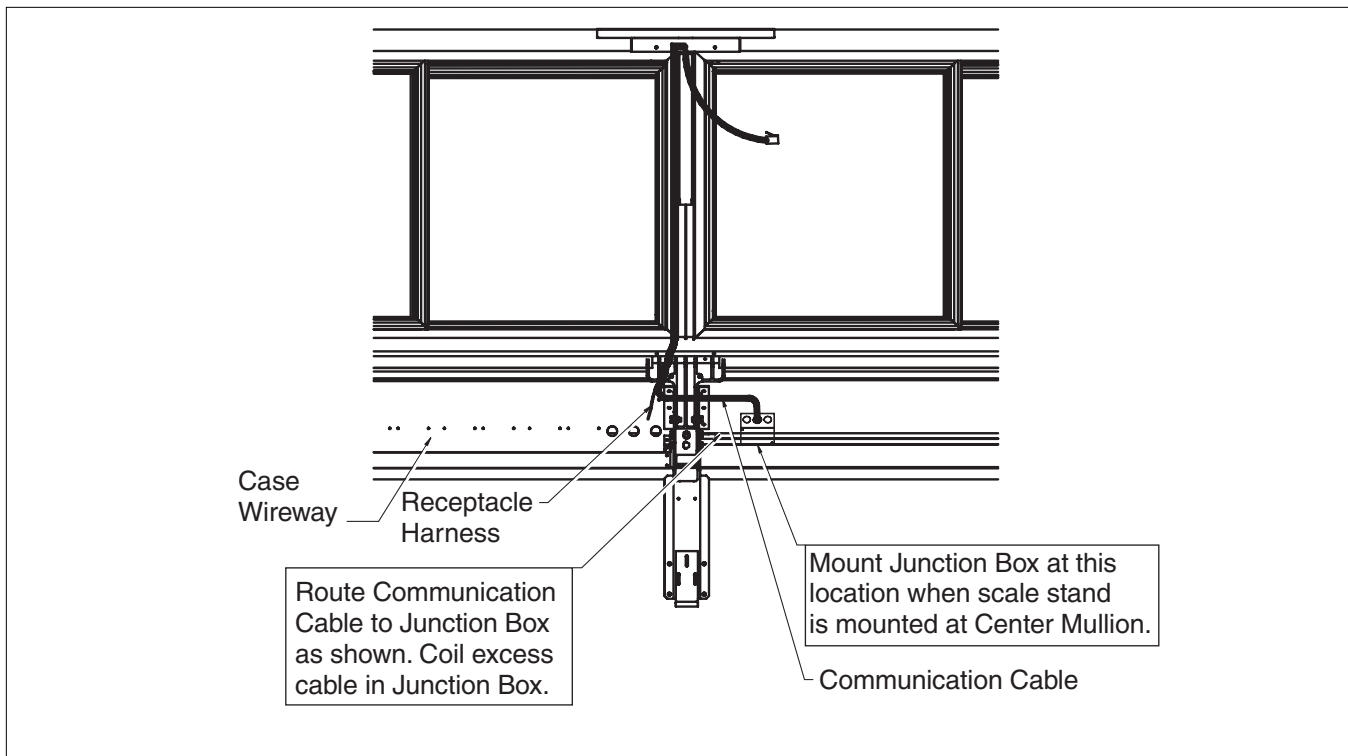
MOA 0458960

1. Turn off power to case.
2. Determine location by positioning the scale stand on the rear of the case between door frames.
3. Using holes in scale stand bracket as a template, mark hole locations on rear and top of case.
4. Remove scale stand. Drill $\frac{1}{8}$ -inch diameter pilot holes through metal liners at the marked locations.

NOTE: METAL LINERS ARE LESS THAN $\frac{1}{8}$ -INCH THICK-- DO NOT DRILL BEYOND METAL LINERS.

5. Move top panel away from back of case. 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 case, route receptacle harness wiring from the $\frac{3}{4}$ -in. bushing, down the LH upright wireway through hole and into case wireway.

NOTE: COMMUNICATION CABLE WIRING CAN BE ROUTED SIMILARLY.

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 case wireway.

7. Install the rear door center trim with $\frac{3}{4}$ -in. bushing by routing wire harness through $\frac{3}{4}$ -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.

REFRIGERATION / ELECTRICAL

REFRIGERANT

The correct type of refrigerant will be stamped on each serial plate. The case 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 case bottom.

REFRIGERANT PIPING

Connection Location

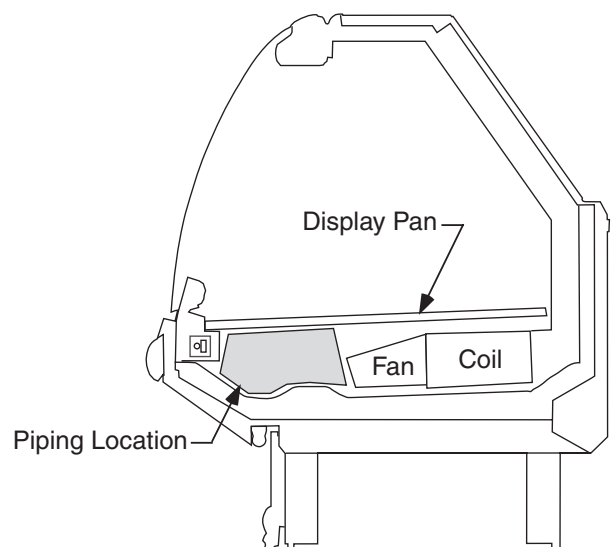
The refrigerant line connections are at the right-hand end of the merchandiser (as viewed from the front) beneath the display pans. A sticker marks the location of the connection “pod.” The installer must saw a hole through the pod to exit the case.

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

Multiplexing

Piping of cases operating on the same refrigeration system may be run from case to case. **DO NOT RUN REFRIGERANT LINES THROUGH CASES 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 case.



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

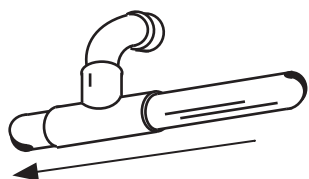
Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep the refrigerant line run as short as possible using a minimum number of elbows. Where elbows are required, USE LONG RADIUS ELBOWS ONLY.

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

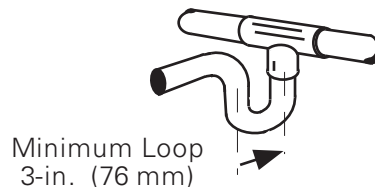
- Pitch in direction of flow.
- May be reduced by one size at one third of case run load and again after the second third. Do not reduce below the case suction line size.
- Case suction lines should enter at the top of the branch line.



Suction Line Return

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

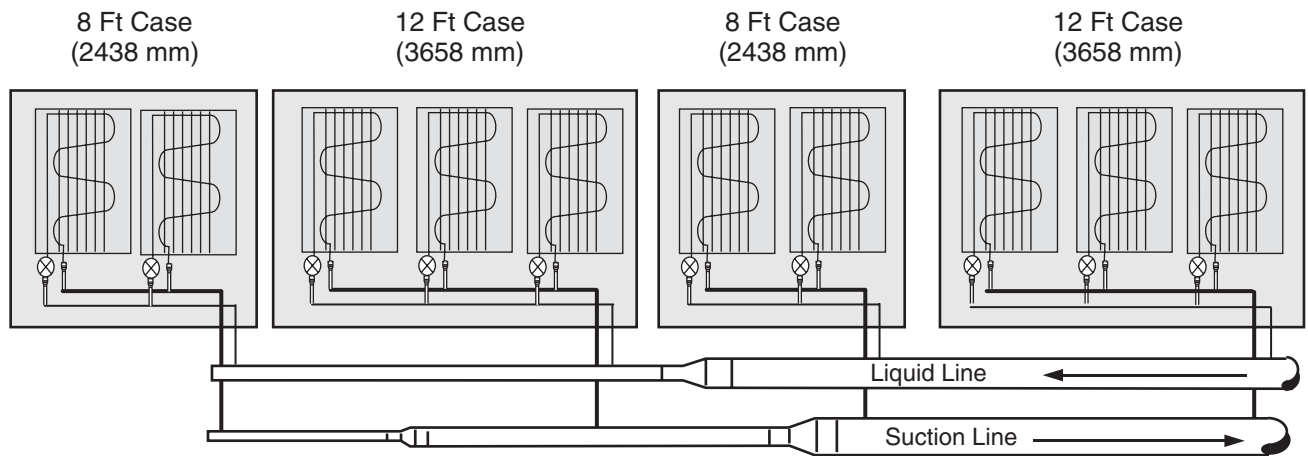
CONTROL SETTINGS

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

An evaporator pressure regulator or EPR (primary control) and a 3 – 5°F (1.7 – 2.7°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

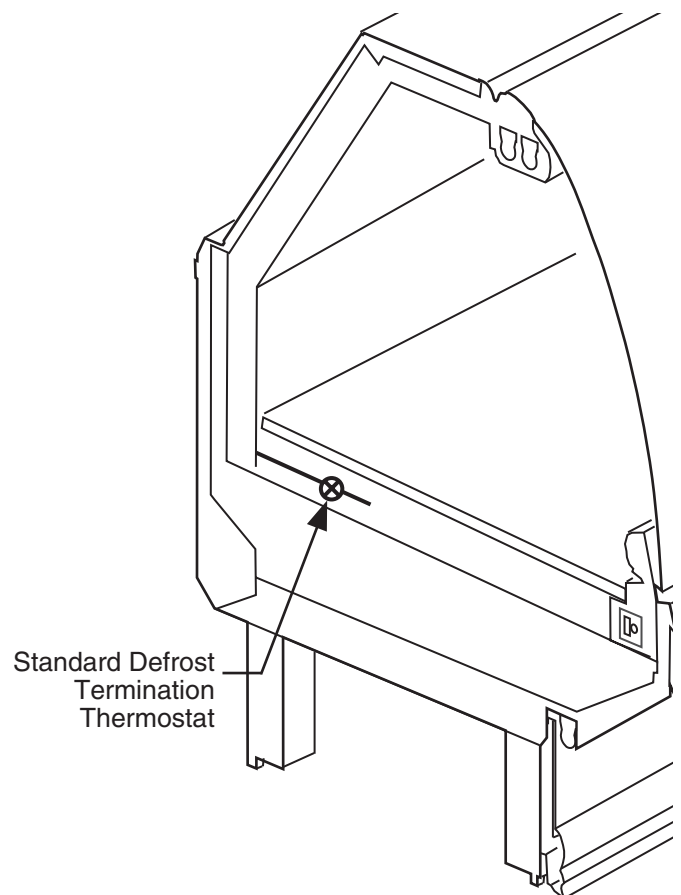


REFRIGERATION THERMOSTAT

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 case.



MERCHANDISER ELECTRICAL DATA

Merchandiser data sheets are shipped with 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 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 raceway.

WIRING COLOR CODE

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

PINK	REFRIG. THERMOSTAT LOW TEMP.	ORANGE OR
LIGHT BLUE..	REFRIG. THERMOSTAT NORM TEMP.	TAN
DARK BLUE ..	DEFROST TERM. THERMOSTAT	MAROON...
PURPLE.....	CONDENSATE HEATERS	YELLOW....
BROWN	FAN MOTORS	RED
GREEN*	GROUND	

*EITHER COLORED SLEEVE OR COLORED INSULATION

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

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 1½ 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 1/8 in. per foot (3 mm per 300 mm).

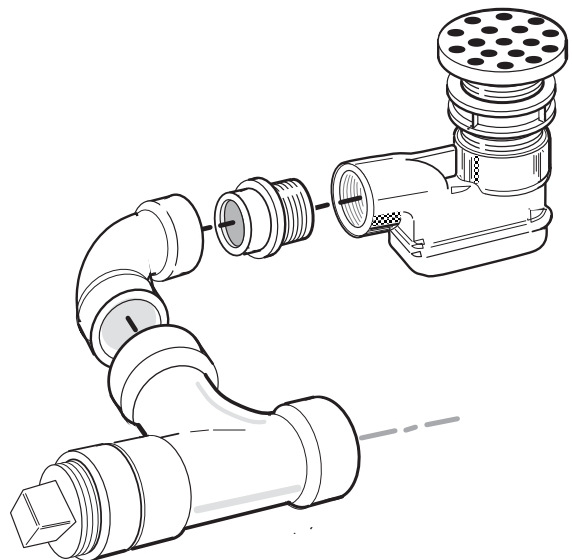
4. Avoid long runs of drip piping. Long runs make it impossible to provide the pitch necessary for good drainage.

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.



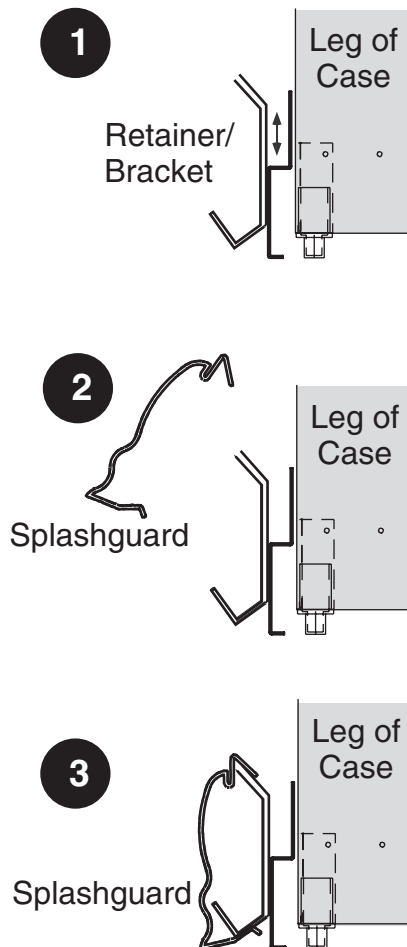
3-2 DRIP PIPING AND SPLASHGUARDS

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.

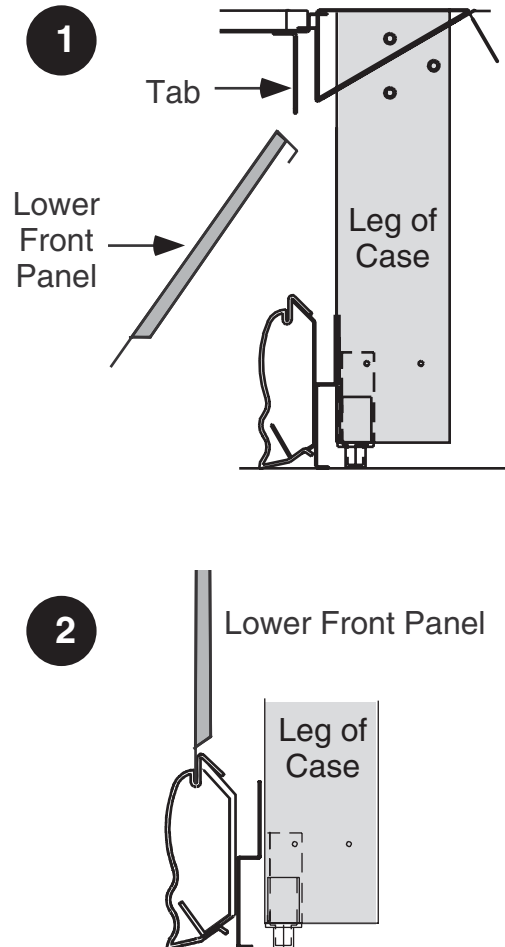


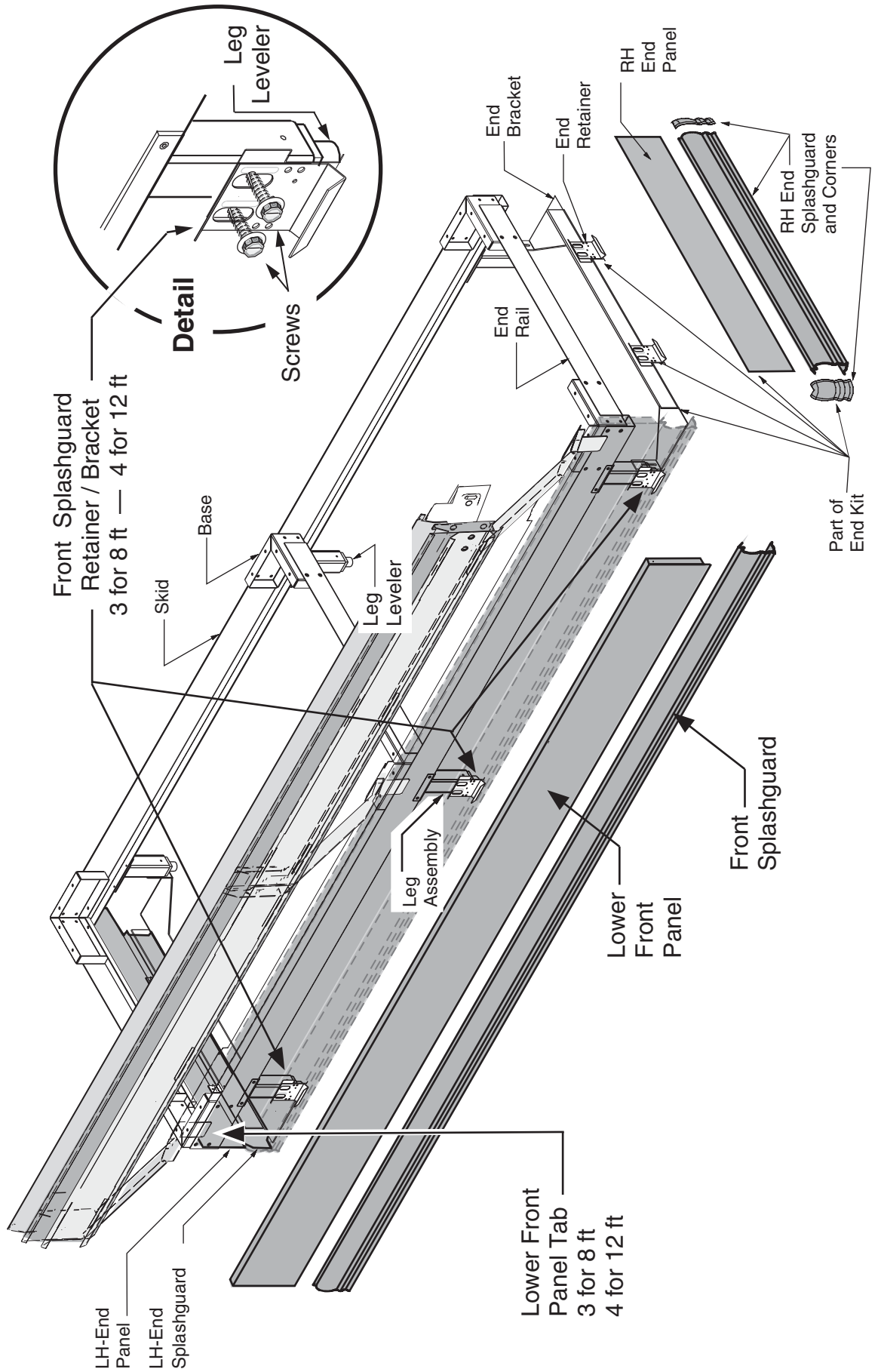
3. Push the lower edge of the splashguard toward the bottom of the bracket until it snaps into place.

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.



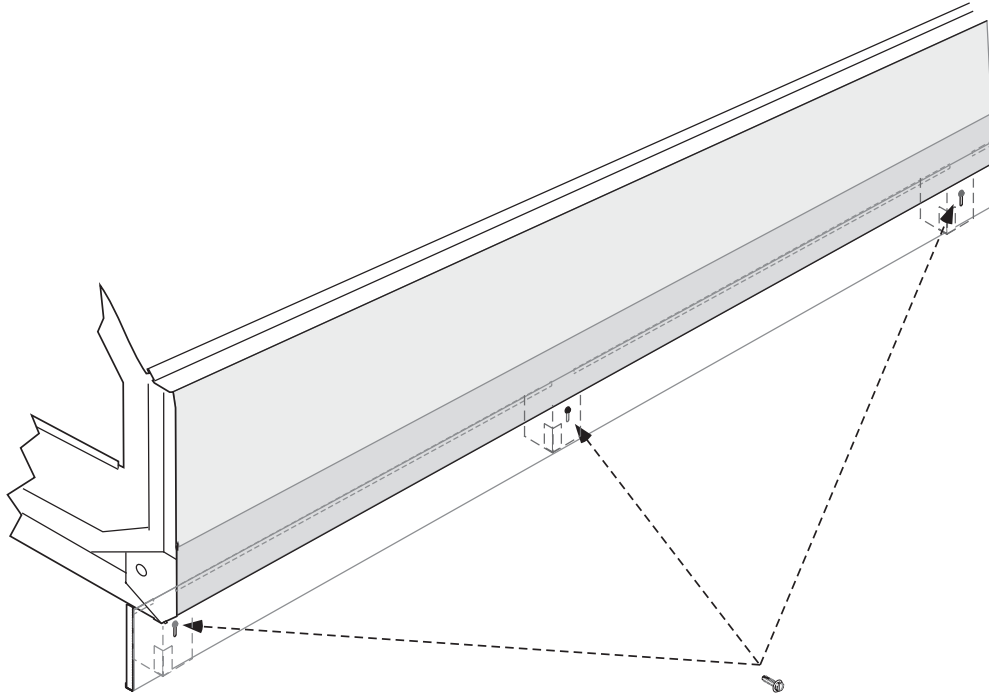


3-4 DRIP PIPING AND SPLASHGUARDS

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.

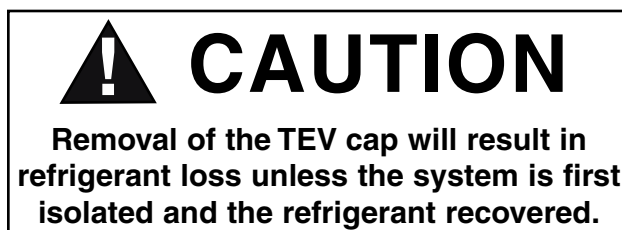


START UP / OPERATION

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.



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.

LOAD LIMITS

Each merchandiser has a load limit decal.



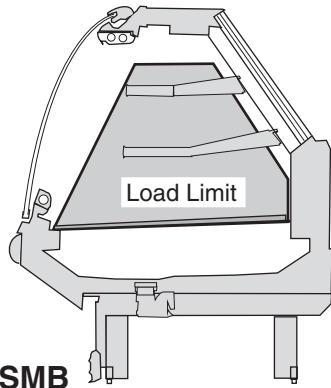
Recommended load limit profiles are shown on the next page.

Shelf life of perishables will be short if load limit is violated. Overstocking will adversely affect product temperature and merchandiser efficiency.

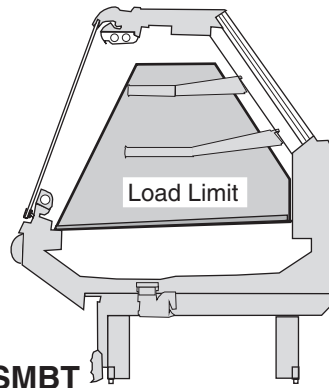
DO NOT BLOCK AIR GRILLE.



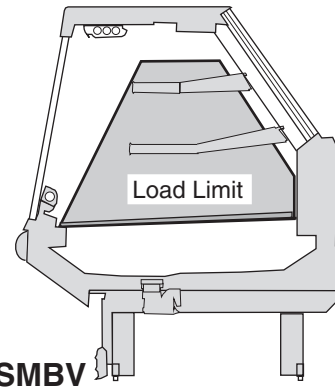
LOAD LIMIT PROFILES



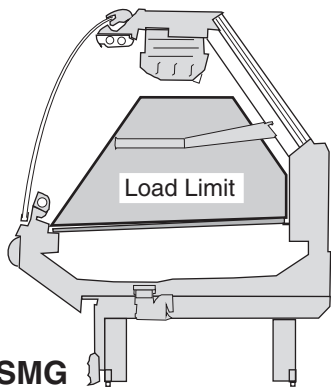
SMB



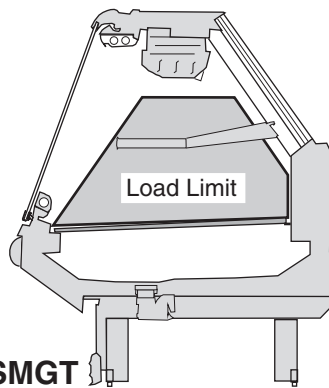
SMBT



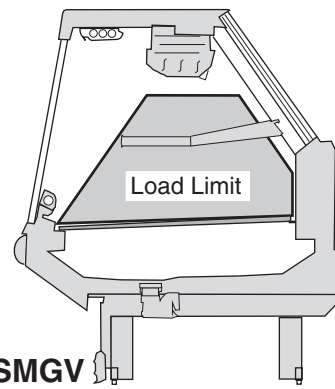
SMBV



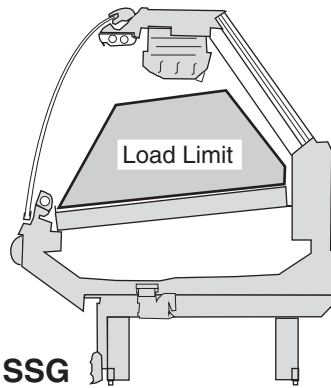
SMG



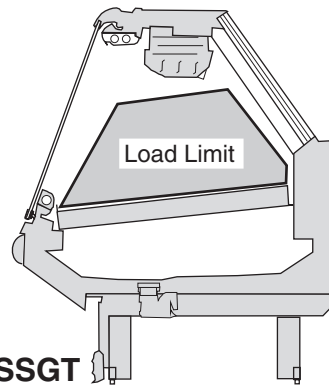
SMGT



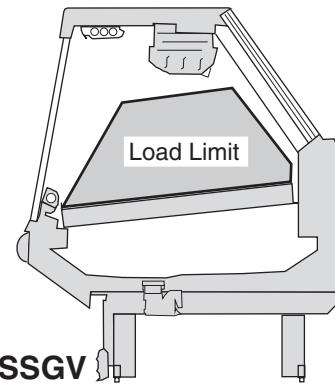
SMGV



SSG



SSGT



SSGV

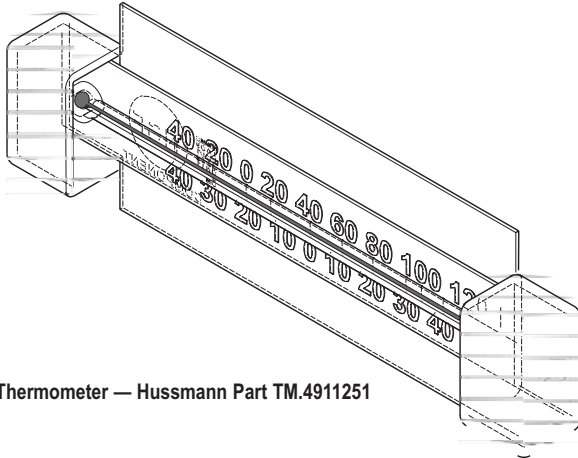
INSTALLING FDA/NSF REQUIRED THERMOMETER

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

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

Please note that the tape cannot be exposed after installation.

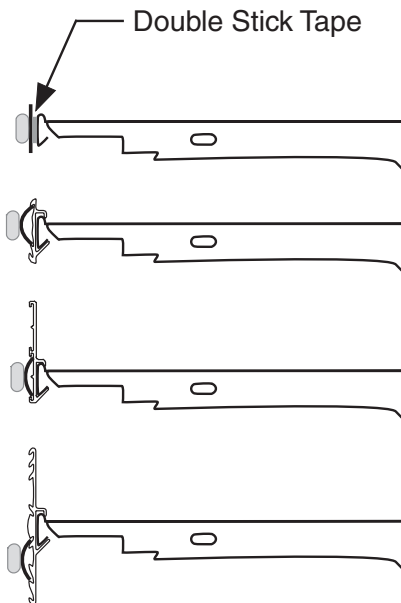
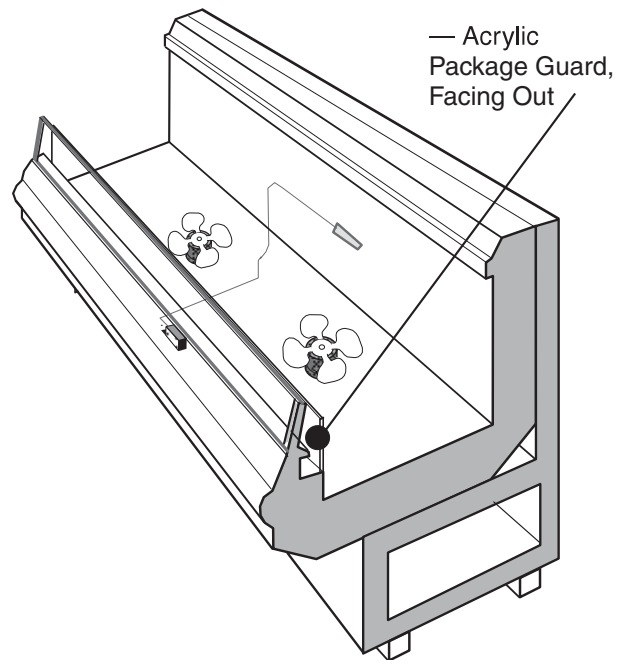
This is an NSF-7 & US FDA Food Code Required Thermometer



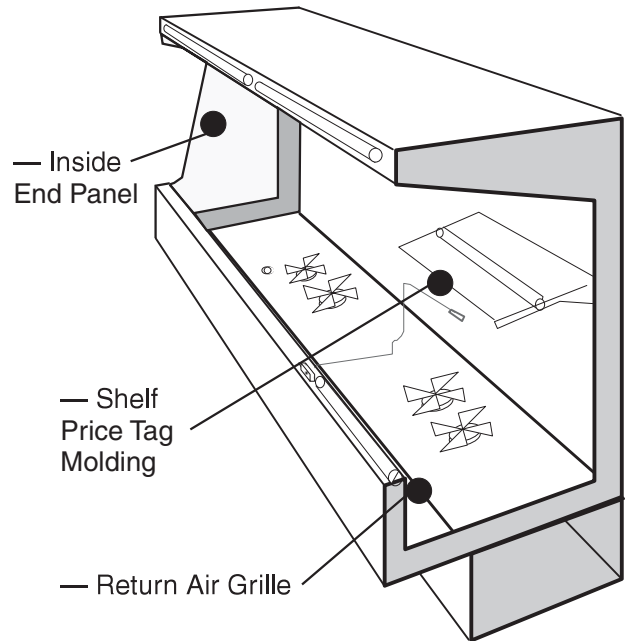
Thermometer — Hussmann Part TM.4911251

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



Flexible Plastic Fits in Price Tag Moldings



Suggested Mounting Locations in Multi-deck Merchandisers

Hussmann P/N 0429971_C

10/2007

Important – Please read!

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

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

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

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

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

DO NOT DESTROY.

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.

NOTICE

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

CAUTION

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

**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:

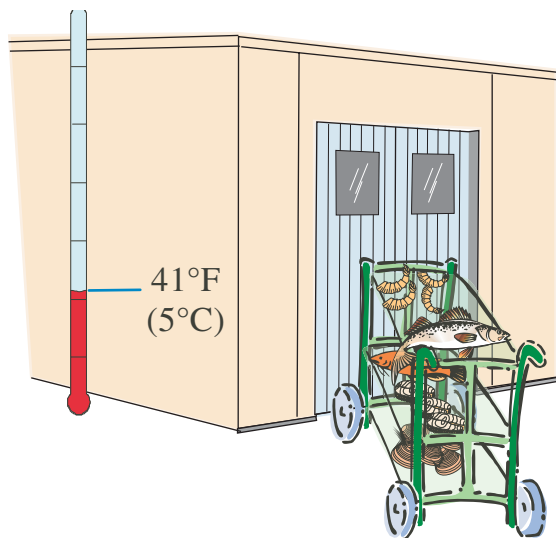
- Remove the product and all loose debris to avoid clogging the waste outlet.
- Store product in a refrigerated area such as a cooler. Remove only as much product as can be taken to the cooler in a timely manner.
- **Turn off refrigeration, then disconnect electrical power.**
- Thoroughly clean all surfaces 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

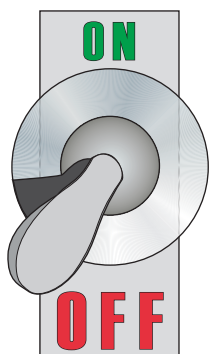
NOTICE

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

STEP 1 – Remove product to cooler.



STEP 2 – Turn off refrigeration.



STEP 3 – Shut power off.

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

⚠ 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.

STEP 4 – Unplug shelves and close receptacle caps, then



remove shelves.



STEP 5 – Remove display pans.



STEP 6 – Lift out display pan support.



STEP 7 – Lift out discharge air grille.



STEP 8 – Lift out interior back panel.



STEP 9 – Lift out upper shelf supports.



STEP 10 – Lift out lower shelf supports.

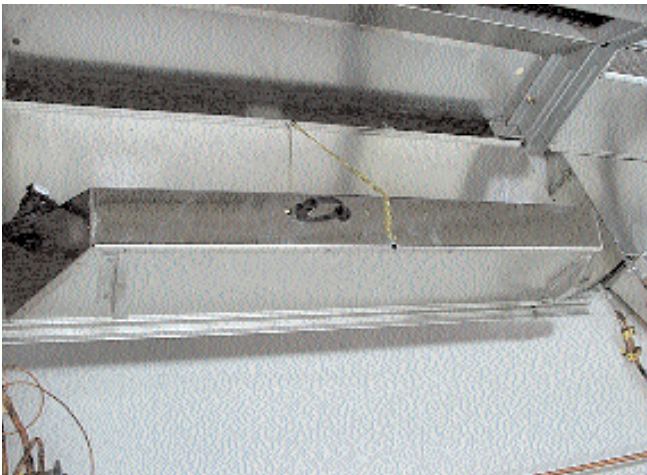


5-4 MAINTENANCE

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

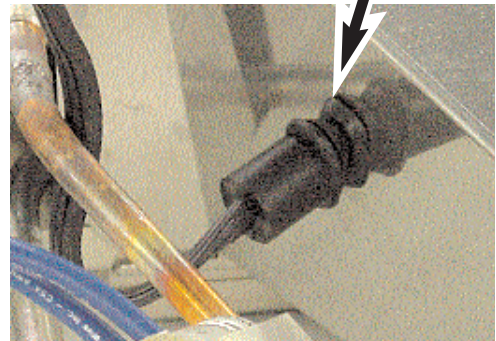


STEP 12 – Rotate fan plenum up and back; hook chain at rear of liner.



OR

Unplug fan harness.

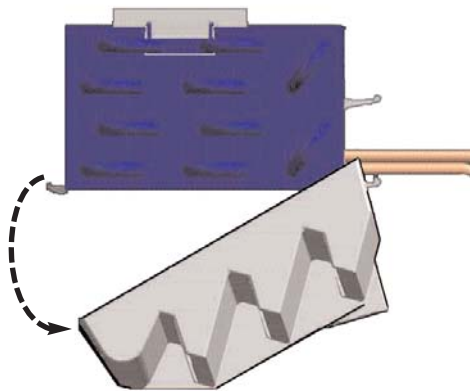


Lift fan plenum up and back to remove.
(view is from the back)



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.

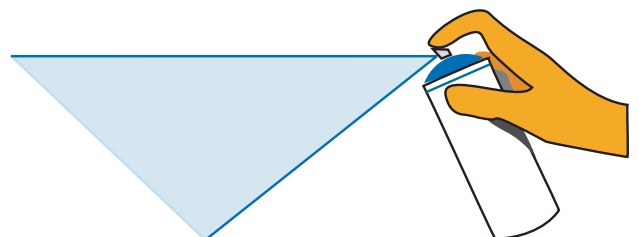
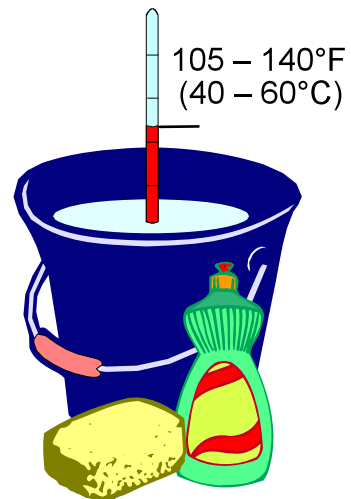


STEP 14 – Clean inside the merchandiser.

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

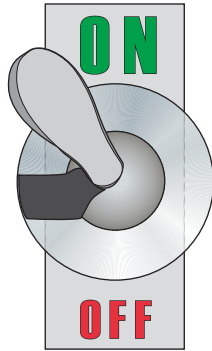


STEP 15 – Clean and sanitize according to Health Code requirements.



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 micro-fiber 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.

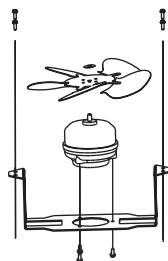
SERVICE

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 EMBOSSED (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:

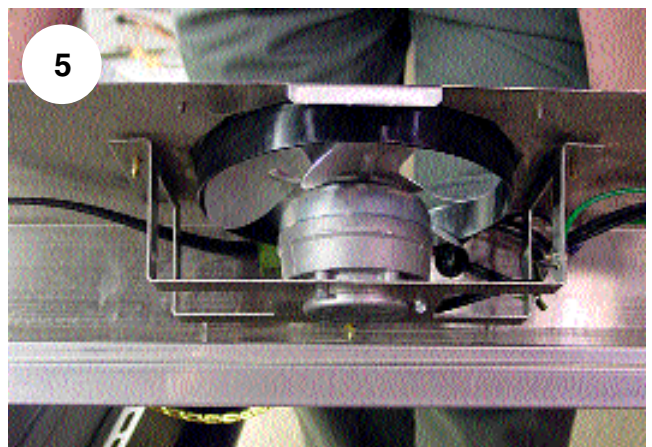
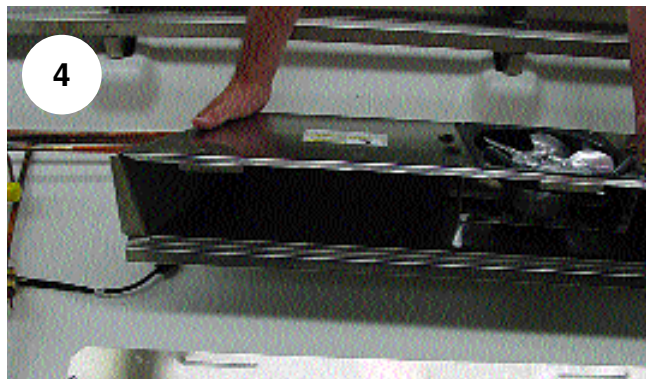
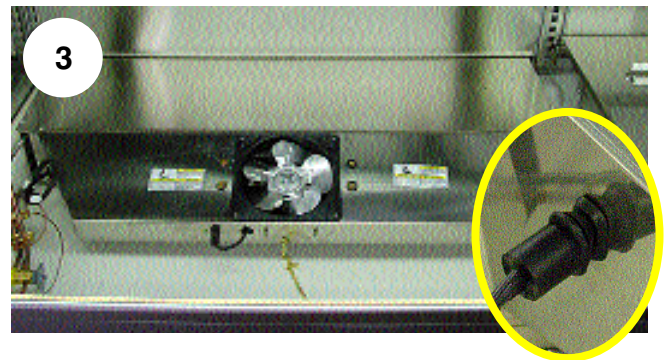
1. Turn off power
2. Remove bottom display pans.
3. **Disconnect fan from wiring harness.**
4. Lift fan plenum out of case. Place on stable work surface.
5. Remove screws holding fan basket to plenum. Fan blade may be removed after fan assembly is removed from plenum.
6. Remove screws holding bottom 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.



WARNING

— LOCK OUT / TAG OUT —

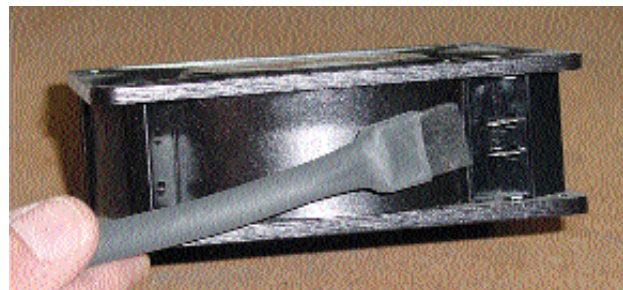
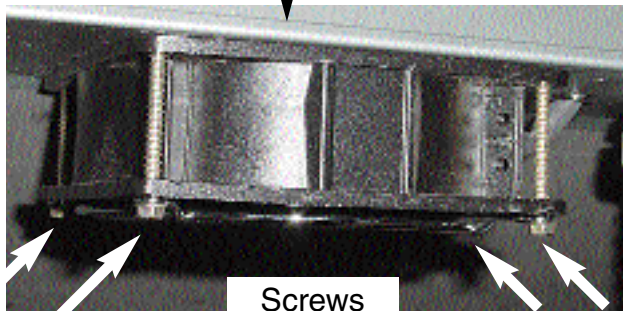
To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.



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.

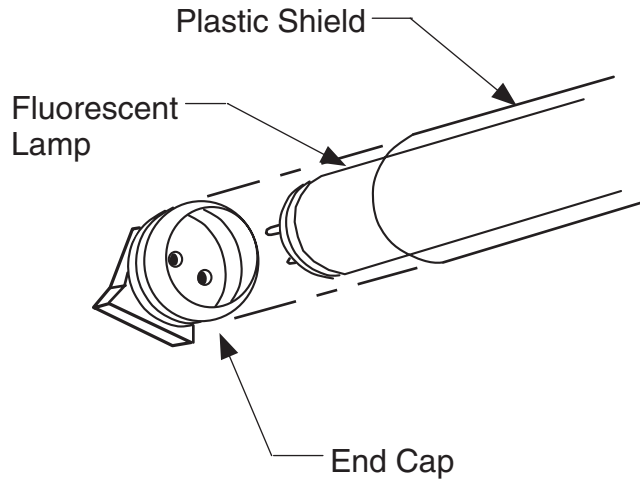


ELECTRICAL SERVICE RECEPTACLES

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.

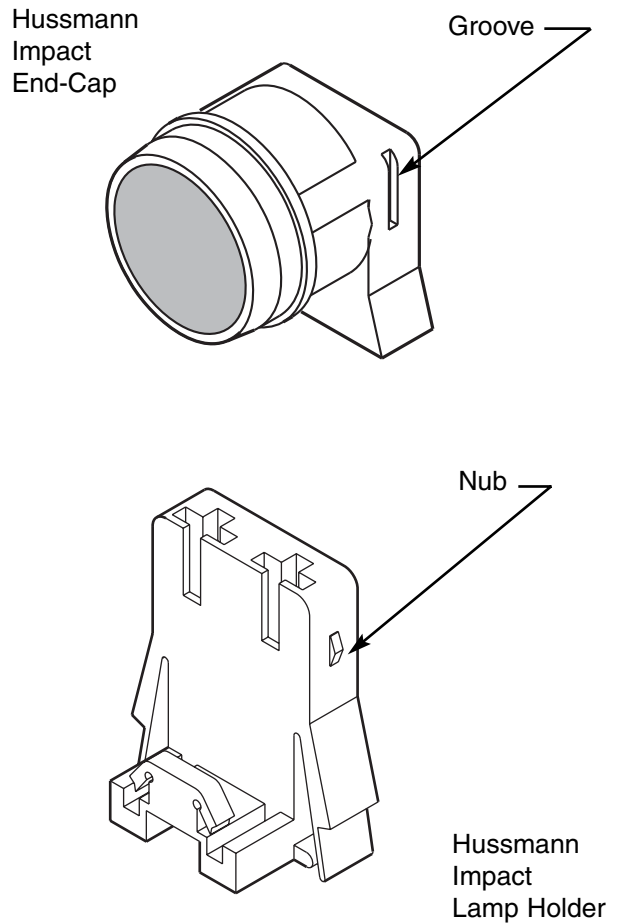
REPLACING FLUORESCENT LAMPS

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 re-install the plastic shields and end caps.



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.





CAUTION

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>

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.

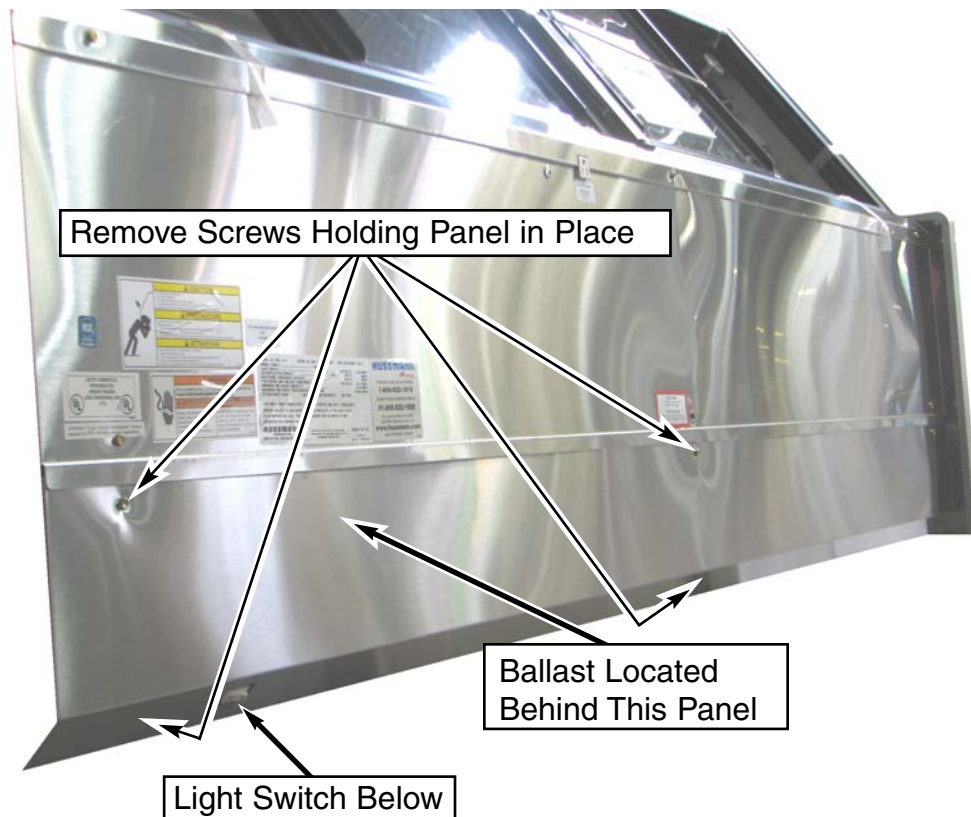
To gain access:

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.

**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 CYLINDERS — SINGLE PANE GLASS



WARNING

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

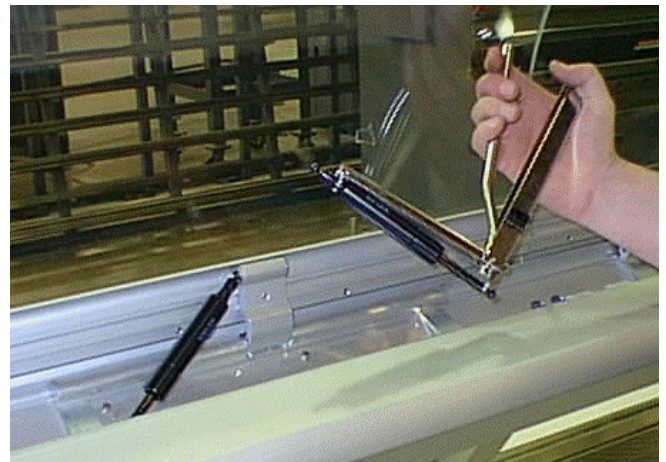
400N Cylinder – P/N 0406925

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



CAUTION

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.)



WARNING

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.

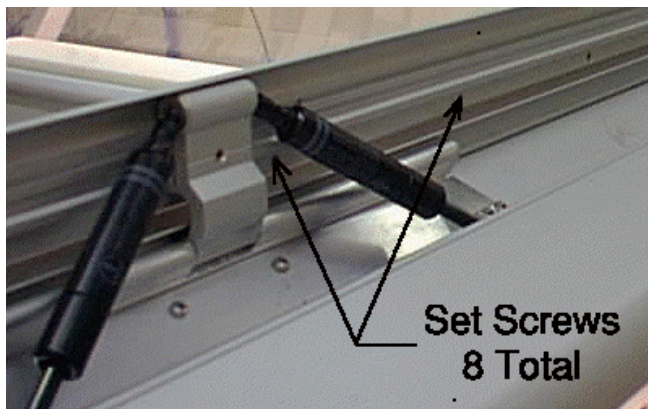
1. Raise the front glass to open completely.
2. Loosen all set screws along the inside bottom of the glass clamp.

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

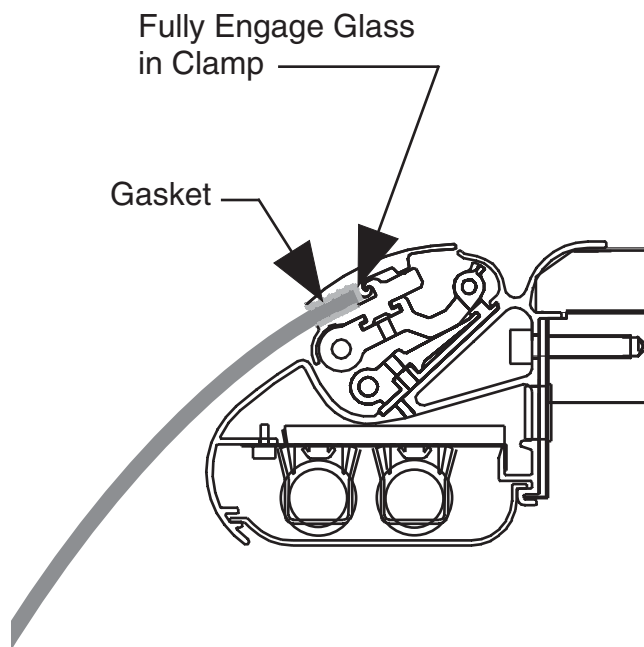
IMPORTANT

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.

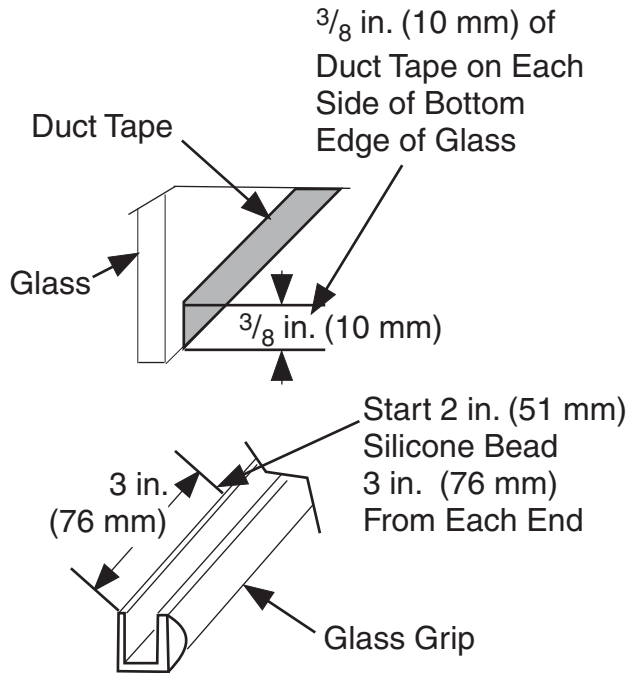


Set Screw Locations



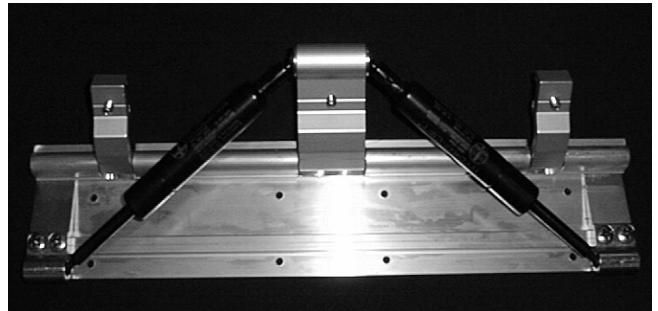
REPLACING GLASS HAND GRIP

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.



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

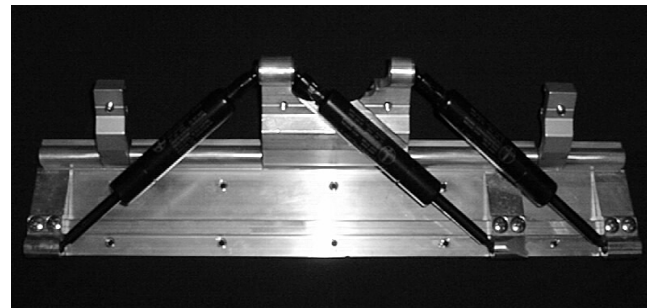
Used on: 30° outside wedge.



Type: Three cylinders and four fastening points.
P/N 0412538

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

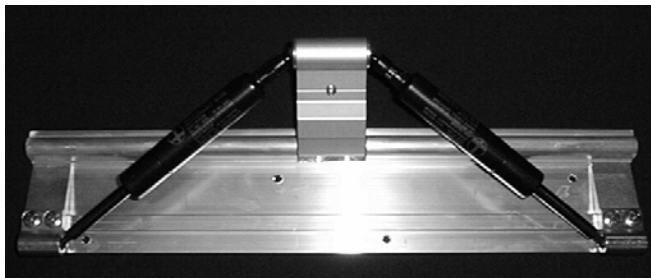
Note: This hinge assembly, when used on the 90° and 45° inside wedge, uses only two cylinders.



HINGE HARDWARE

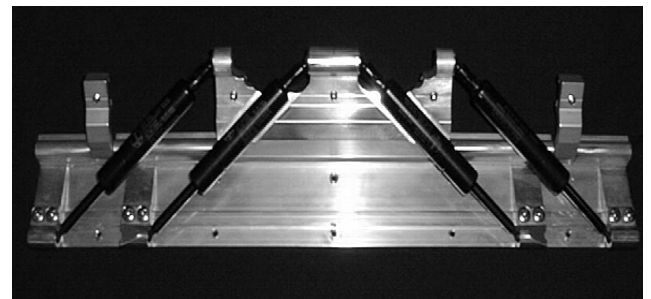
Type: Two cylinders and one fastening point.
P/N 0401884

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



Type: Four cylinders and five fastening points.
P/N 0413170

Used On: 90° outside wedge.



REPAIRING ALUMINUM COIL

The aluminum coils used in Hussmann merchandisers may be easily repaired in the field. Materials are available from local refrigeration wholesalers.

Hussmann recommends the following solders and technique:

Solders

Aladdin Welding Products Inc.
P.O. Box 7188
1300 Burton St.
Grand Rapids, MI 49507
Phone: 1-800-645-3413
Fax: 1-800-645-3414

X-Ergon
1570 E. Northgate
P.O. Box 2102
Irving, TX 75062
Phone: 1-800-527-9916

NOTE:

Hussmann Aluminum melts at	1125°F (607°C)
Aladdin 3-in-1 rod at	732°F (389°C)
X-Ergon Acid core at	455°F (235°C)

Technique:

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

WARNING

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 case bottom.

A decorative border with a repeating geometric pattern of interlocking squares and lines, rendered in a light blue color, framing the entire page.

HUSSMANN[®]

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

