



HUSSmann®

ND5 & NDD5

Multideck Dairy and
Delicatessen Merchandisers



**Installation &
Operation Manual**

Vision Series

P/N 345901C ..
January, 1994
Section 5

Update to Instructions

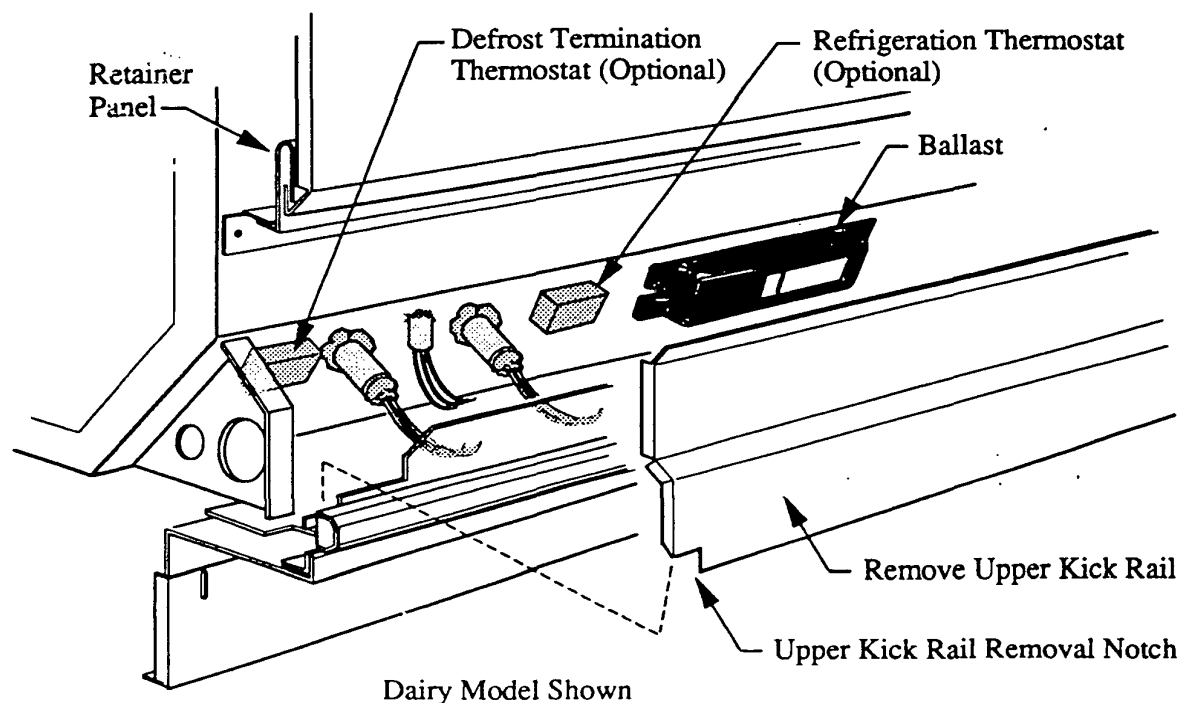
Instruction P/N: 345901, 348045, 352946, 345913, 345911 and 358027

The design of the upper kick rail has been changed. Please follow the instructions below.

REMOVING UPPER KICK RAIL

Remove the upper kick rail by pushing in and up to free it from the bumper area. If kick rail is difficult to remove, carefully slide a small slotted screw driver between the bumper and the kick rail. Insert screw driver in the removal notch (located at each end) and lift the kick rail up. Once the bottom is free, lower the upper kick rail out from behind the front panel.

To install, slide the upper kick rail into retainer behind front panel. Position the lower edge of the kick rail behind the bumper and in front of the adjustable bracket.



CONTENTS

GENERAL INFORMATION

Model Descriptions.....	1-1
Application	1-1
Plan Views and Cross Sections.....	1-2

INSTALLATION

Shipping Damage	2-1
Shipping Braces (Not All Merchandisers).....	2-1
Exterior Loading	2-1
Location	2-1
Leveling	2-3
Joining	2-3
Installing Drip Piping	2-4
Sealing Refrigerant Port	2-5
Multiplexing Saddle Braces.....	2-5
Installing Splashguard	2-6
Sealing Splashguard to Floor.....	2-6

REFRIGERATION

Refrigerant	3-1
Refrigerant Piping.....	3-1
Insulation	3-1
Control Settings	3-2
Expansion Valve Adjustment.....	3-4
Refrigeration Thermostat.....	3-5
Defrost Termination Thermostat	3-5

ELECTRICAL

Connections	4-1
Identification of Wiring	4-1
Field Wiring	4-2
Electrical Schematics.....	4-3

USER INFORMATION

Care and Cleaning	5-1
Shelf Alignment.....	5-2
Stocking	5-2
Merchandising Accessories	5-3

SERVICE

Replacing Fan Blades	6-1
Replacing Fluorescent Lamps	6-1
Replacing Canopy Ballast	6-2
Cleaning Honeycomb Assemblies.....	6-2
Removing Upper Kick Rail	6-3
Replacing Front Rail Ballast.....	6-3
Repairing Aluminum Coil	6-4

WARRANTY

Revisions ("C")

1. Parts List, Page ii.
2. Revised Cross Sections, Page 1-3.
3. Revised Control Settings, Page 3-2.
4. Removed TEV and Distributor Chart.
5. Field Wiring, Page 4-2.
6. Fan and Heater Circuits, Page 4-3.

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

This merchandiser conforms to the
Commercial Refrigeration Manufacturer's Association
Health and Sanitation Standard
CRS-S1-86

HUSSmann®

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Multideck Dairy & Deli

REPLACEMENT PARTS LIST

Part		
Item	Number	Description
1.	0047000	Fan Motor, Dairy Only 120V, 9W, CW GE #KSM51ECG3799
	0045781	Fan Motor, Deli Only 120V, 30W, CW GE #5KSP51GL-295HS
2.	0124150	Fan Blade, Dairy Only embossing toward motor Morrill #FV800 CW 30S
	0135659	Fan Blade, Deli Only embossing toward motor Torrington JU-850-G CW Air Drive AD8CW50VB-6
3.	0147091	Ballast 1 lamp GE #8G3900
4.	0137843	Ballast 2 lamps GE #8G1141 WT
5.	0143354	Ballast 1 lamp, Shelf GE #6G1075
6.	0137846	Fluorescent Lamp, 8 Foot F96T12/CW/HO
7.	0137847	Fluorescent Lamp, 12 Foot F72T12/CW/HO
8.	0020725	Fluorescent Lamp, Shelf F40T12 CWX
9.	0137880	Refrigeration Thermostat WR #1609-103
10.	0113625	Defrost Termination Thermostat Penn #A19GD-21
11.	0131434	Defrost Heater, 8 Foot Only 208V, 5.2 A, 40Ω
	0131435	Defrost Heater, 12 Foot Only 208V, 7.8A, 27Ω

MODEL DESCRIPTIONS

The ND5 and NDD5 models are multideck refrigerated merchandisers designed for Dairy and Delicatessen products. Both models are available in three different lower front heights: regular, 22 1/2 inch; low, 18 inch (L); and high, 27 inch (H). Each may be ordered with either front (Z) stocking or rear (X) stocking capabilities.

The rear stocking models are designed to be installed against an opening in the cooler wall. These models have rear sliding doors through which the product can be stocked directly from the cooler.

This instruction covers the merchandisers listed below. Basic design features are listed to the right of each case. ALL MODELS ARE AVAILABLE IN EITHER 8 OR 12 FOOT LENGTHS AND ALL HAVE 5 LEVELS (4 SHELVES).

- ND5LZ Multideck Dairy, 18 inch front,
front loading
- ND5Z Multideck Dairy 22 1/2 inch front,
front loading
- ND5HZ Multideck Dairy 27 inch front,
front loading

- NDD5LZ Multideck Deli, 18 inch front,
front loading
- NDD5Z Multideck Deli, 22 1/2 inch front,
front loading
- NDD5HZ Multideck Deli, 27 inch front,
front loading

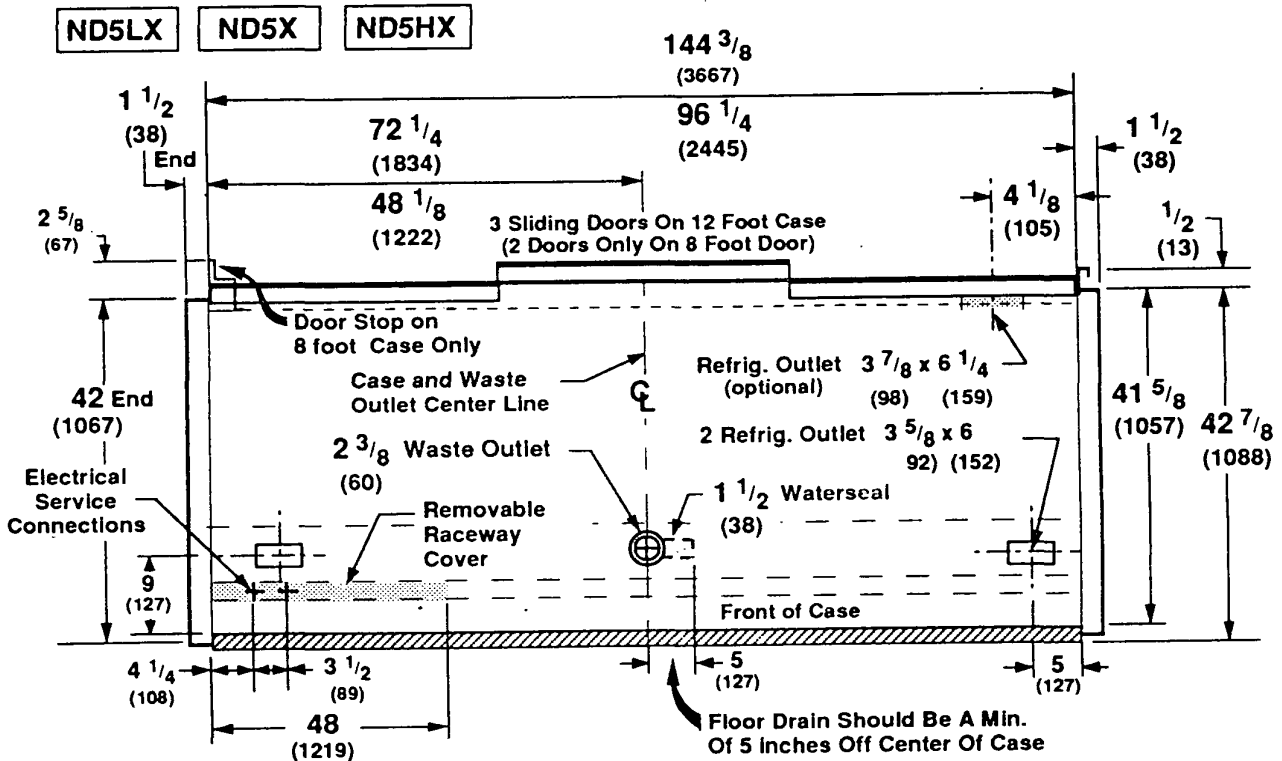
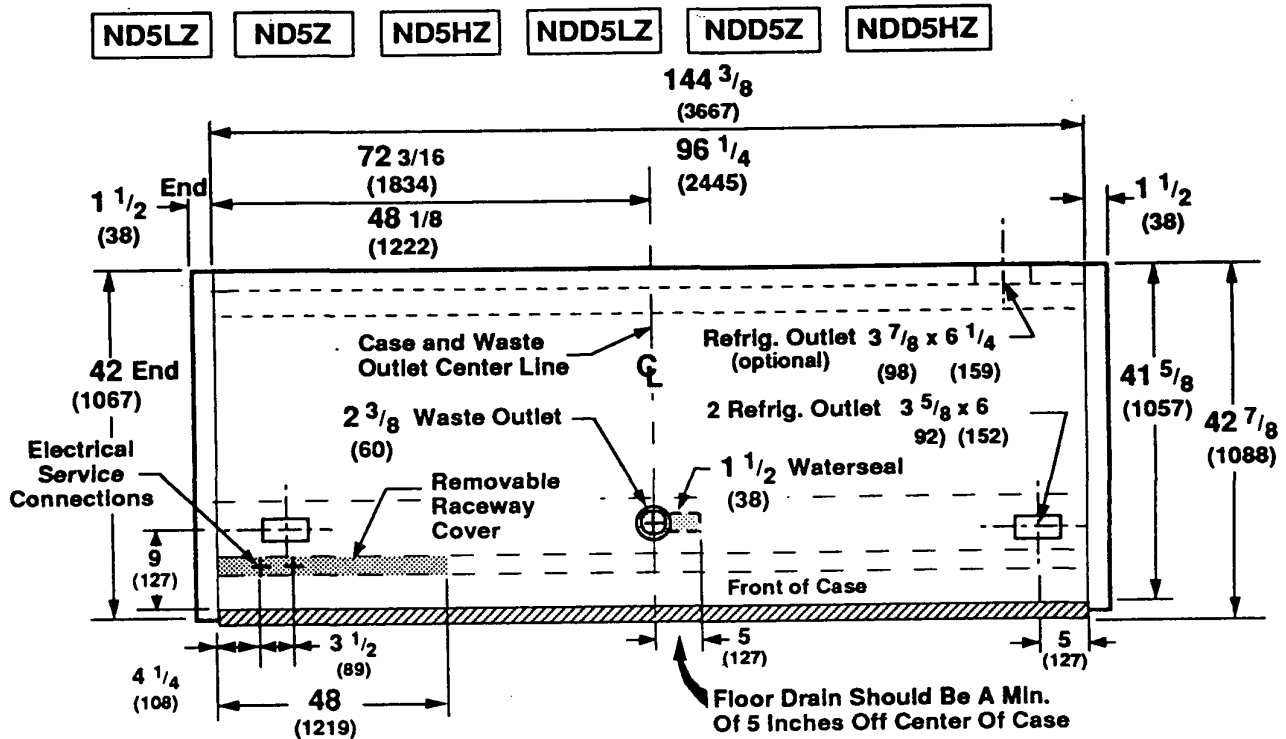
- ND5LX Multideck Dairy, 18 inch front,
rear loading
- ND5X Multideck Dairy, 22 1/2 inch front,
rear loading
- ND5HX Multideck Dairy, 27 inch front,
rear loading

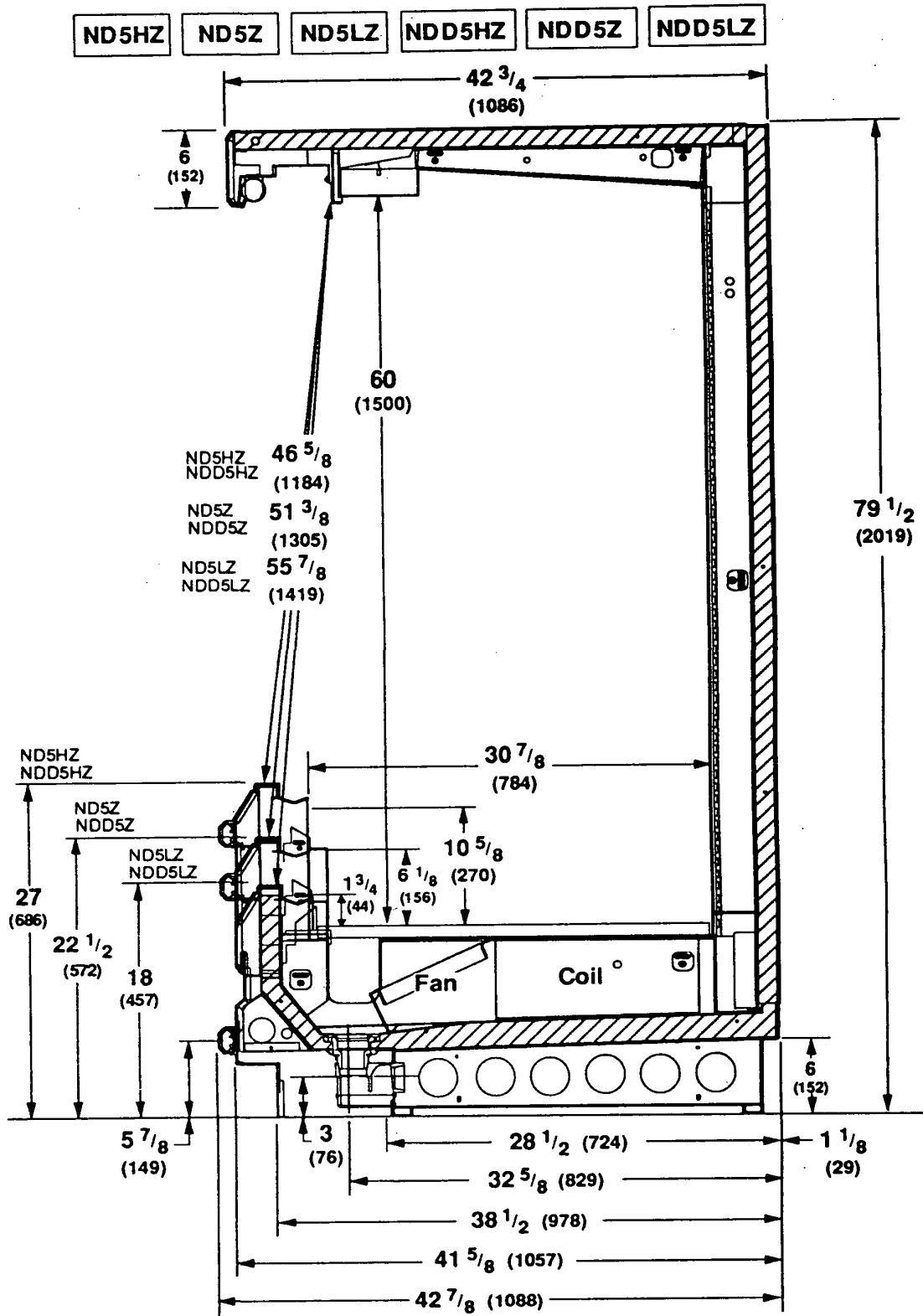
APPLICATION

These medium temperature merchandisers are designed for displaying dairy or delicatessen products in air conditioned stores where temperature and humidity are maintained at or below 75°F dry bulb temperature and 55% relative humidity.

NOTE: Plan view and cross section measurements are given in inches and in millimeters.

1-2 GENERAL INFORMATION



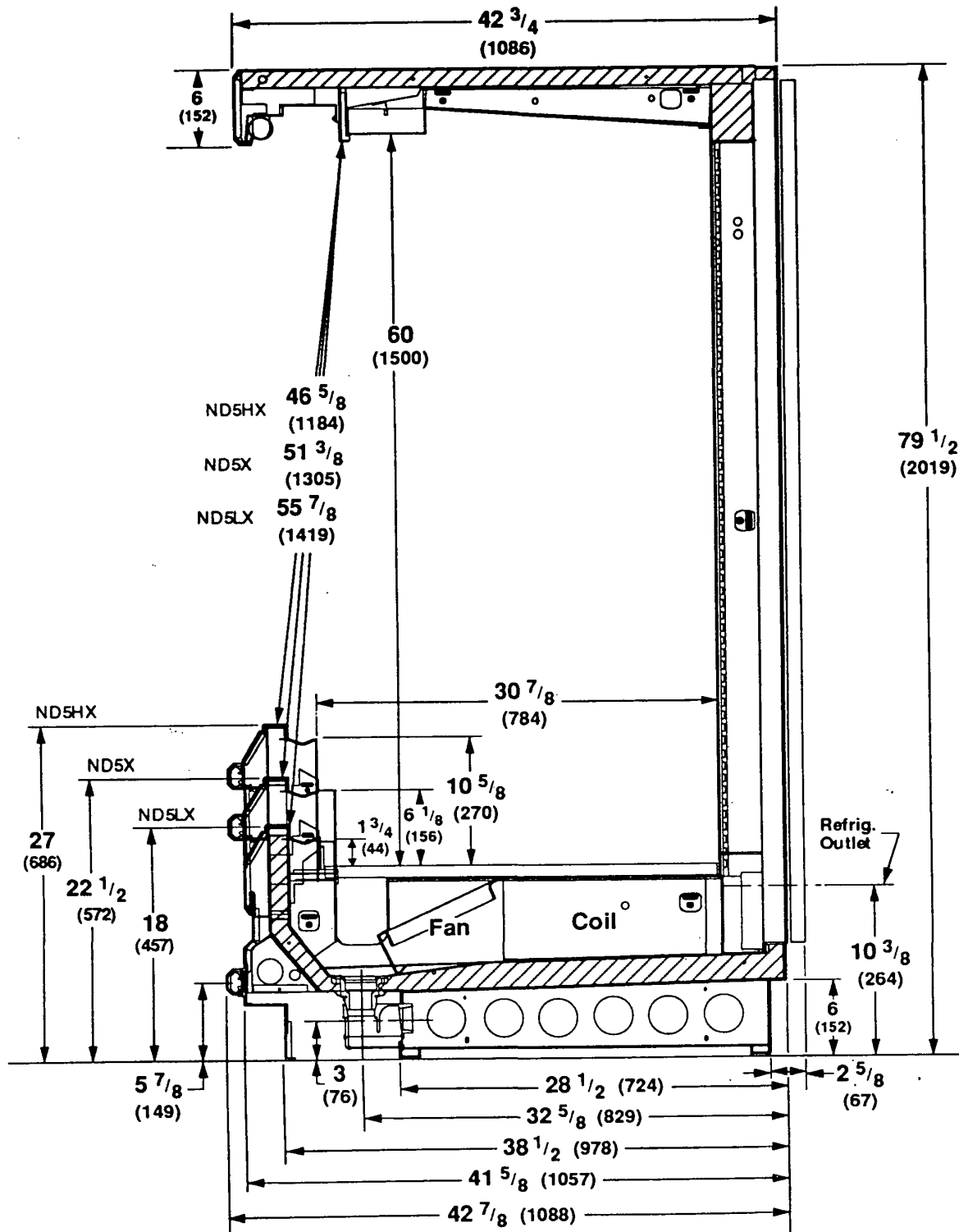


1-4 GENERAL INFORMATION

ND5HX

ND5X

ND5LX



SHIPPING DAMAGE

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

This equipment has been carefully inspected at our factory and the carrier has assumed responsibility for safe arrival. If damaged, either apparent or concealed, claim must be made to the carrier.

Apparent Loss Or Damage

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

Concealed Loss Or Damage

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

SHIPPING BRACES (Not All Merchandisers)

Move the merchandiser as close as possible to its permanent location and then remove all packaging. Check for damage before discarding packaging. Remove all separately packed accessories such as kits and shelves. REMOVE AND DISCARD THE SHIPPING SCREWS AT EACH END OF THE FAN PLENUM. The plenum is hinged for easy access to the area beneath the evaporator.

WARNING

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

Merchandisers must be braced before removing the lag bolts.

EXTERIOR LOADING

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

LOCATION

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

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

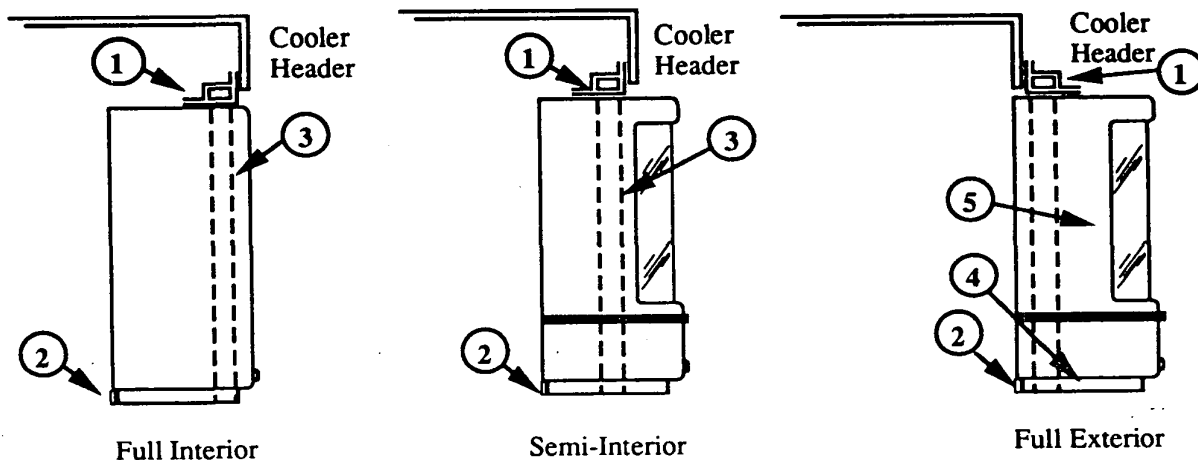
2-2 INSTALLATION

Rear Loading Fixtures—ND5X Only

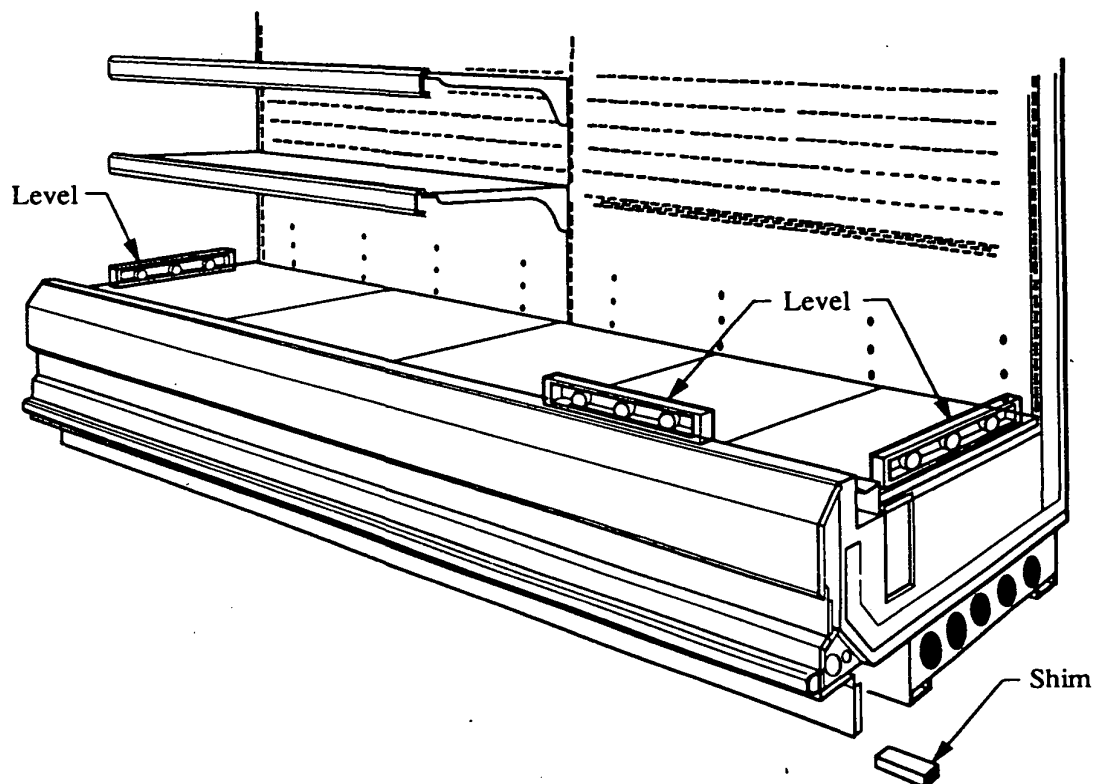
The rear loading models should be located in the cooler wall opening in the positions shown in the illustration below. The space between the cooler wall and the merchandiser, and along the base of the merchandiser that protrudes inside the cooler must be closed off with insulated panels, such as those provided in the Hussmann Closure Kits.

Spillage of milk, juices, etc. will occur in the cooler and if this spillage is allowed to flow beneath the merchandiser foul odors will permeate the cooler and the sales area since it is extremely difficult to clean beneath these merchandisers.

To maintain proper sanitation conditions, we suggest that the base rail of these fixtures be thoroughly sealed to the cooler floor wherever spillage might leak under the merchandiser.



Item	Description
1 and 2	Cooler to merchandiser close-off kit. To install, see kit instructions.
3 and 4	End close-off—merchandiser inserted. To install, see kit instructions.
5	End close-off—merchandiser outside. To install, see kit instructions.



LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. When leveling merchandisers, use a carpenter's level as shown. Leveling shims or wedges are provided with each merchandiser for use if needed.

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

JOINING

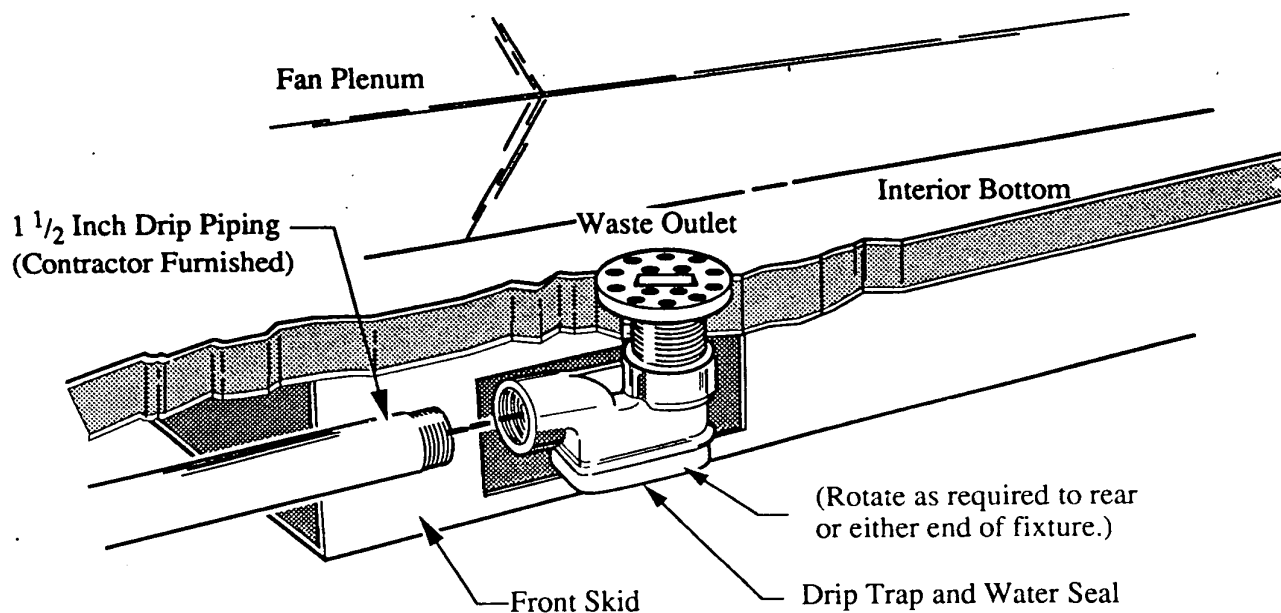
Sectional construction means that two or more merchandisers may be joined in line yielding one long continuous display requiring only one pair of ends. Joint kits and instructions are shipped with each merchandiser.

2-4 INSTALLATION

INSTALLING DRIP PIPING

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

1. Never use drip piping smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
2. When connecting drip piping, the "water seal" must be used as part of the drip piping to prevent air leakage or insect entrance. Never use two water seals in series in any one drip pipe. **DOUBLE WATER SEALS IN SERIES WILL CAUSE AN AIR LOCK AND PREVENT DRAINING.**
3. Pitch the drip piping in the direction of flow. There should be a minimum pitch of $\frac{1}{8}$ inch per foot.
4. Avoid long runs of drip piping. Long runs make it impossible to provide the pitch necessary for good drainage.
5. Provide a suitable air break between flood rim of the floor drain and outlet of drip pipe.
6. Prevent drip pipes from freezing:
 - A. Do NOT install drip pipes in contact with uninsulated suction lines. Suction lines should be insulated with a nonabsorbent insulation material.
 - B. Where drip pipes are located in dead air spaces, such as between merchandisers or between a merchandiser and a store wall, provide means to prevent freezing.

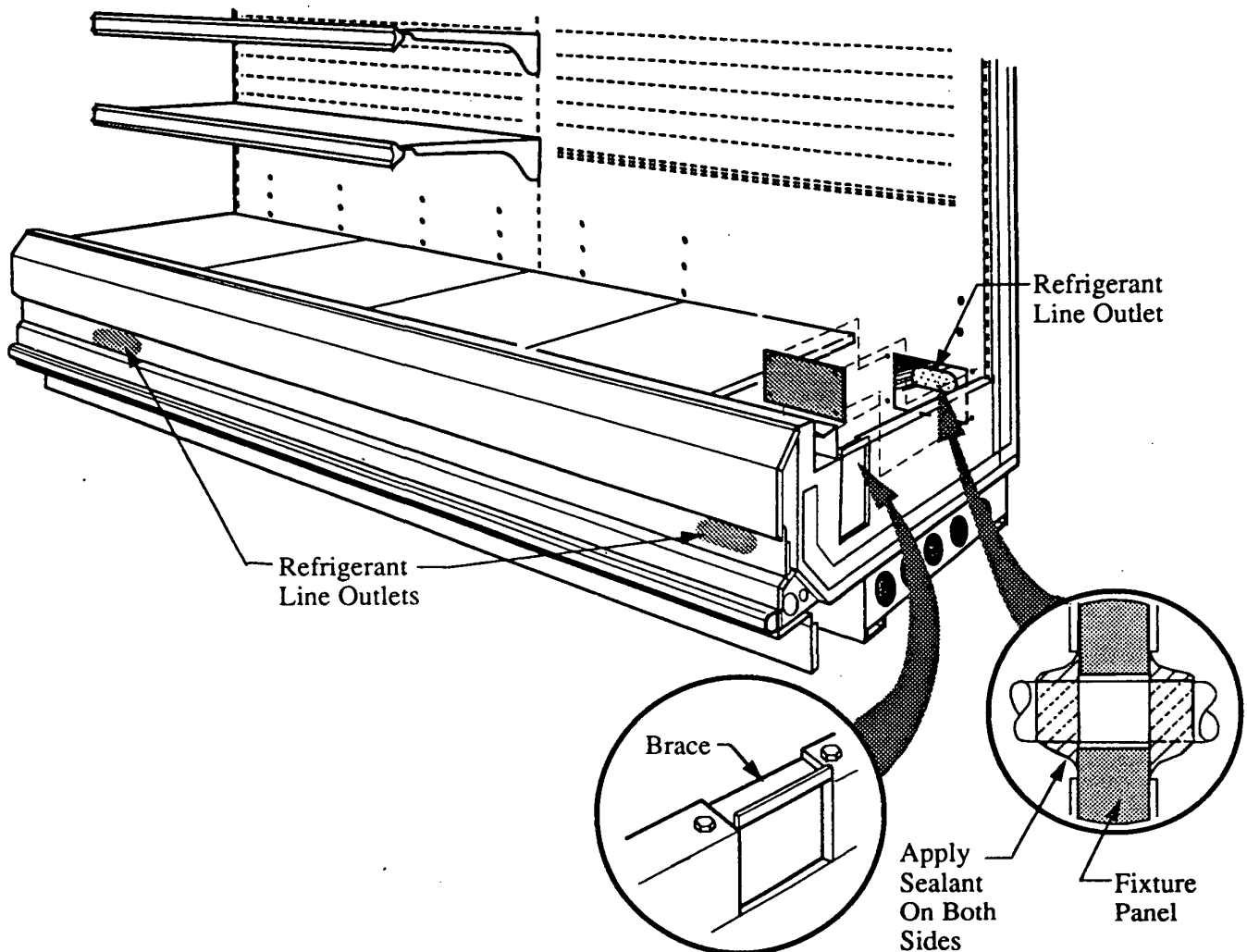


SEALING REFRIGERANT PORT

For a rapid and thorough seal, we recommend that the refrigeration outlets be sealed using an aerosol dispensed urethane insulation. After the urethane has been applied and has set, it should be sealed over on the inside of the merchandiser with a butyl caulking to prevent absorption of moisture during cleaning or when merchandiser is defrosting. See illustration below.

MULTIPLEXING SADDLE BRACES

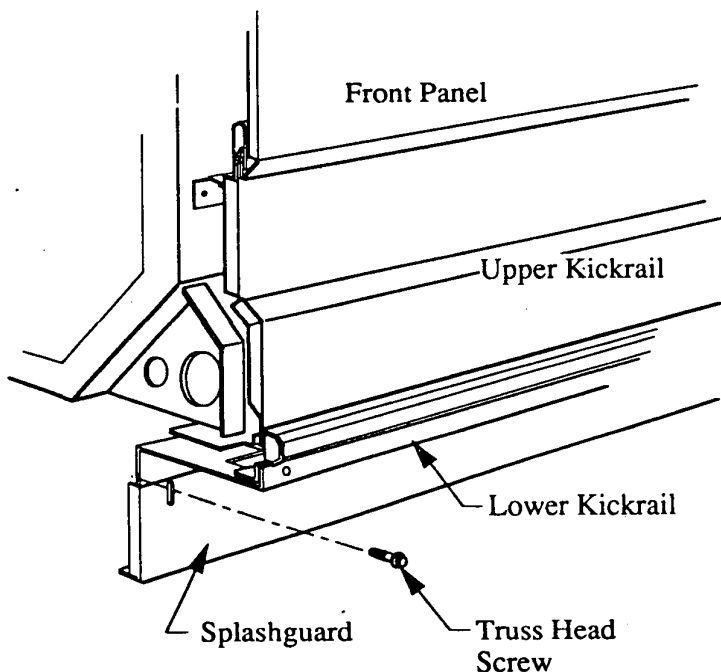
Replace the multiplexing saddle braces after refrigerant lines have been installed. These braces provide a stop for the display pans and if not replaced the display pans can shift creating gaps and poor refrigeration performance.



2-6 INSTALLATION

INSTALLING SPLASHGUARD

The splashguard is shipped inside each merchandiser. **AFTER** merchandisers have been leveled and joined, and all drip piping, electrical and refrigeration work has been completed, install the splashguard. To install, align the slots in the splashguard with the holes in the lower kick rail and insert #8 x $\frac{3}{4}$ inch Truss Head Sheet Metal Screws supplied with splashguard.

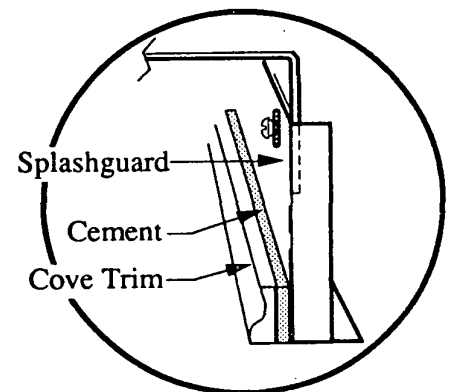


SEALING SPLASHGUARDS TO FLOOR

IF REQUIRED by local sanitation codes or if desired by the customer, the splashguards may be sealed to the floor using a vinyl cove base trim. The size of trim needed will depend on how much the floor is out of level.

To install the trim to the splashguard:

1. Remove all dirt, wax and grease from the area of the splashguard where adhesion will be necessary. This is to ensure a good and secure installation.
2. Apply a good contact cement to the trim and allow proper drying time according to the directions supplied with the cement.
3. Install the trim to the splashguard so that it is lying flush with the floor.



Sealing Splashguard to Floor

REFRIGERANT

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

REFRIGERANT PIPING

Connection Sizes

Liquid Line	$\frac{3}{8}$ inches OD
Suction Line	1 $\frac{1}{8}$ inches OD

Connection Location

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

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

Multiplexing

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

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

Line Sizing

Refrigerant lines should be sized as shown on the refrigeration legend that is furnished for the store (not furnished by Hussmann). If a legend has not been furnished, refer to either the Hussmann Conventional or Systems Application Manual for guidance.

Oil Traps

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

Pressure Drop

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

INSULATION

With GAS Defrost

The suction and liquid lines should **NOT** contact each other and should be insulated separately for a minimum of 30 feet from the merchandiser.

With OTHER Than Gas Defrost

The suction and liquid lines should be clamped or taped together and insulated for a minimum of 30 feet from the merchandiser.

With EITHER of Above

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

3-2 REFRIGERATION

CONTROL SETTINGS

Conventional Single Compressor

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

Merchandiser temperature may be controlled by the condensing unit's low pressure control or by a thermostat with a 3–5°F differential. It will be wired to control the compressor motor contactor.

Defrost is Off Time. Indoor condensing units may use pressure or time termination. Outdoor condensing units use time termination. On outdoor units the defrost timer will control a liquid line solenoid beginning a defrost pumpdown 4 minutes before defrost.

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

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

When practical, defrost when store is closed.

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

Refrigeration Data		
	Dairy	Deli
Discharge Air °F	32	32
Evaporator °F	21	18
Fan Cycling CI/CO		
Gas Defrost ONLY °F	N/A	N/A
Defrost Data		
Frequency Hrs	8	6
<u>Electric</u>		
Temp Term °F	48	48
Failsafe Min	26	26
<u>Gas</u>		
Duration Min	14	14
<u>Offtime</u>		
Duration Min	40	40
When Thermostat Controls Temperature		
Low Pres Backup Control (PSIG)		
	CI/CO	CI/CO
R-22	37/27	34/24
R-502	45/35	42/32
Indoor Condenser Pres Defrost Term(PSIG)		
R-22	82	82
R-502	96	96

Parallel Compressor Rack

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

Merchandise temperature must be controlled by a thermostat or a CDA. The CDA sensor will be mounted in the same location as a thermostat sensing bulb. The CDA valve and control board will be mounted on the rack.

Standard Off Time and optional Gas defrost are time terminated. The defrost frequency and lengths listed may require adjustment for specific store conditions. Factors include:

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

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

Refrigeration Data

	Dairy	Deli
Discharge Air °F	32	32
Evaporator °F	21	18
Fan Cycling CI/CO		
Gas Defrost ONLY °F	N/A	N/A

Defrost Data

Frequency Hrs	8	6
<u>Electric</u>		
Temp Term °F	48	48
Failsafe Min	26	26
<u>Gas</u>		
Duration Min	14	14
<u>Offtime</u>		
Duration Min	40	40

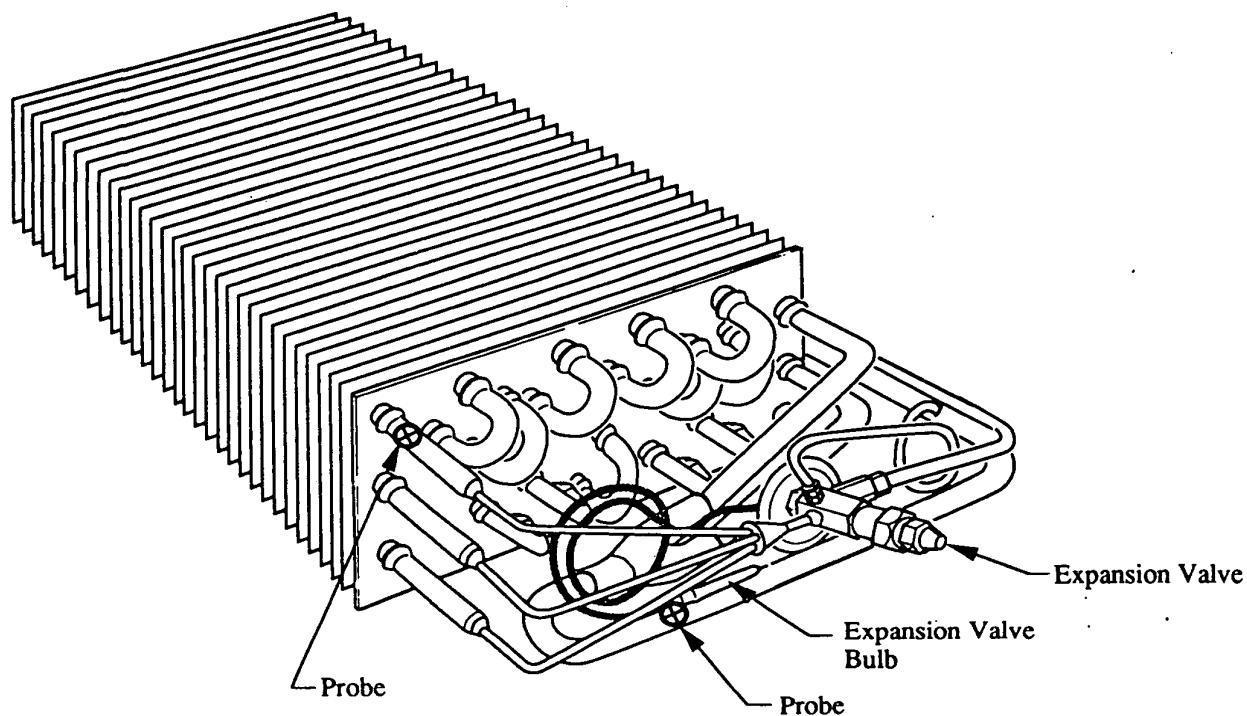
3-4 REFRIGERATION

EXPANSION VALVE ADJUSTMENT

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

Attach two (2) sensing probes (either thermocouple or thermistor) to the evaporator. Position one under the clamp holding the expansion valve bulb; securely tape the other to the coil inlet line (see illustration).

Some "hunting" of the expansion valve is normal. The valve should be adjusted so that during the hunting **THE GREATEST DIFFERENCE BETWEEN THE TWO PROBES IS 3–5°F**. With this adjustment, during a portion of the hunting the temperature difference between the probes will be less than 3°F (at times as low as 0°F). Make adjustments of no more than 1/4 turn for Balanced Port TEV and 1/2 turn for "G" Body TEV at a time. Wait for at least 15 minutes before rechecking the probe temperature and making further adjustments.



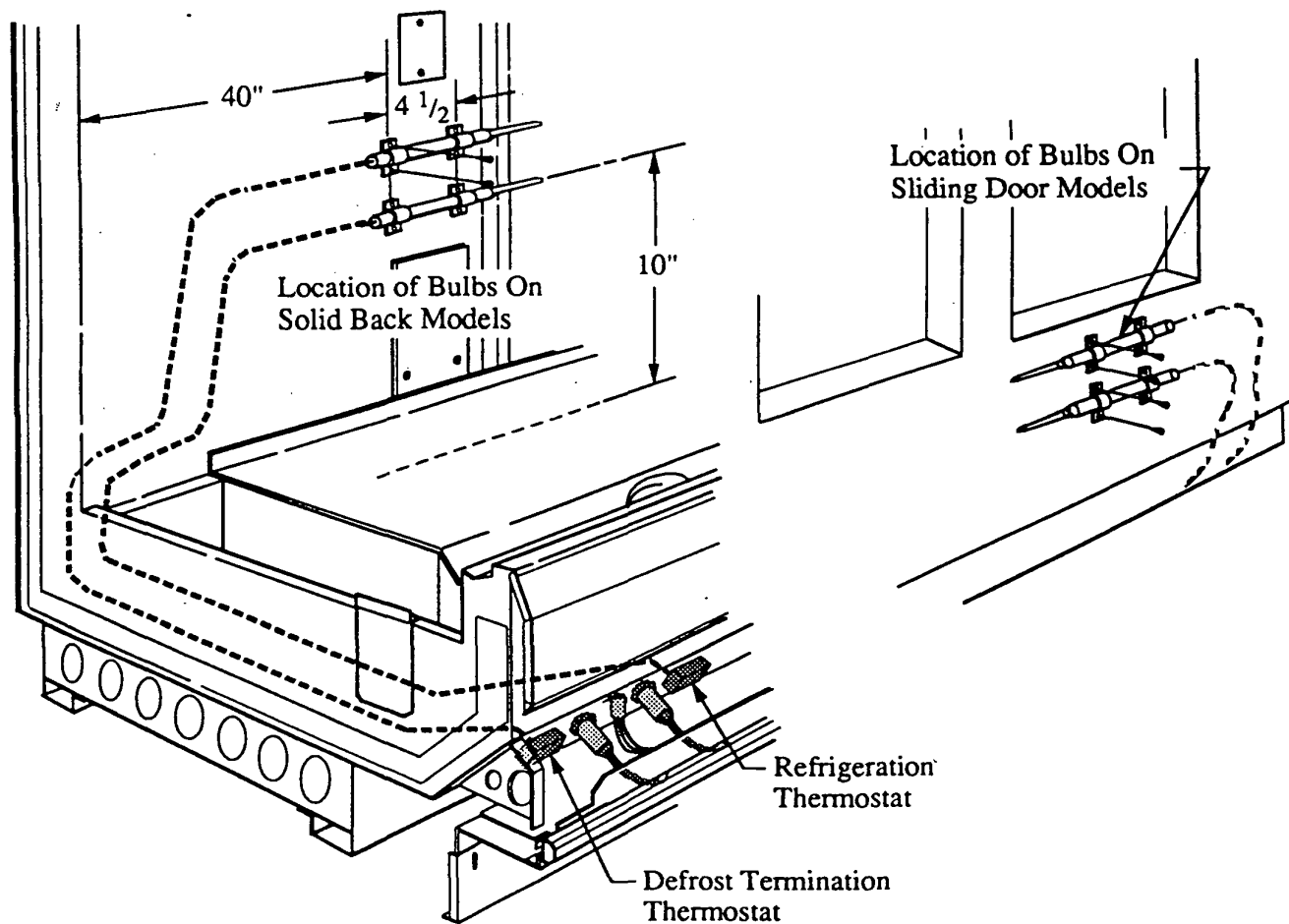
REFRIGERATION THERMOSTAT

Factory installation of optional thermostat is shown below. The thermostat body is located under the overhang at the left end of the merchandiser. The bulb is located above the coil approximately 40 inches from the merchandiser's left-hand end. See illustration below.

NOTE: When a Refrigeration Thermostat is installed, a pair of wires is required from the refrigerator to the Condensing Unit.

DEFROST TERMINATION THERMOSTAT

Factory installation of optional Defrost Termination Thermostat is shown below. This thermostat is an adjustable type with the thermostat body and bulb located as shown in the illustration below.



CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made in the electrical raceway behind the lower bumper rail at the left-hand end of the merchandiser. See page 6-3 for instructions on removing upper kick rail.

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

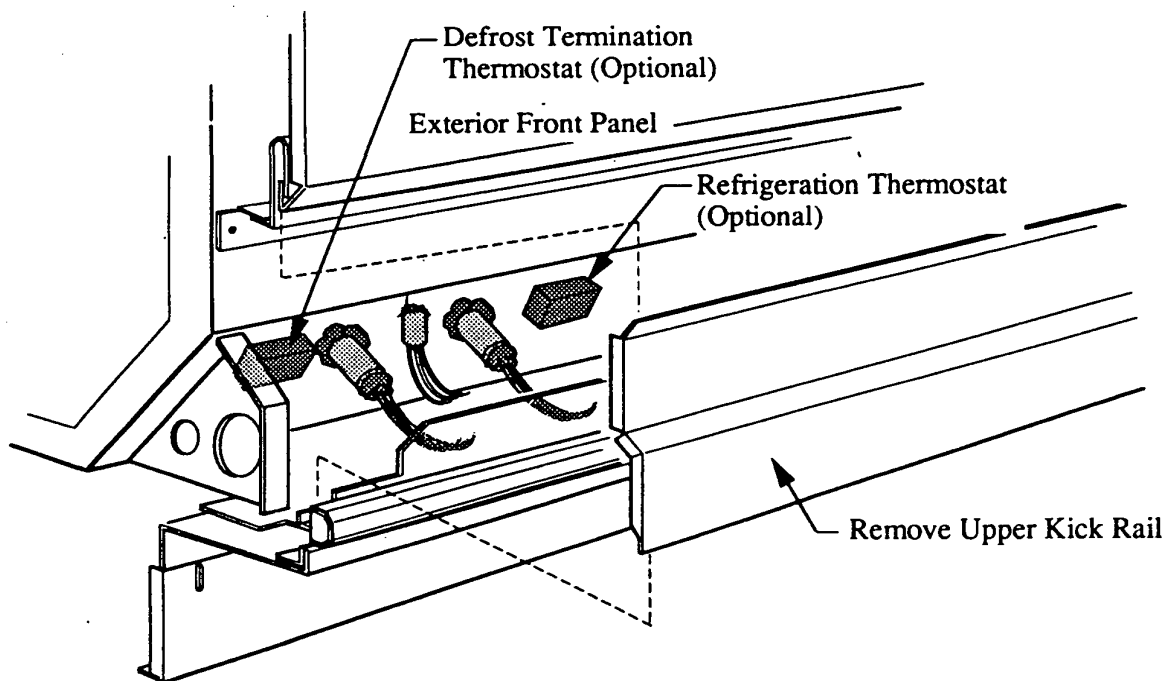
Leads for all electrical circuits are identified by a colored plastic band: neutral wire for each circuit has either White insulation or a White plastic sleeve in addition to the color band.

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

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

*EITHER COLORED SLEEVE OR COLORED INSULATION

ELECTRICIAN NOTE: CASE MUST BE GROUNDED



NOTE: After wiring is connected make certain that the merchandiser's wiring access holes are sealed in place so that the refrigerated air does not leak out.

4-2 ELECTRICAL

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 optional defrost termination thermostats and for optional refrigeration

thermostats or CDA sensors. When multiple merchandisers are on the same defrost circuit the defrost termination thermostats are wired in series. The component amperes listed below are taken from the Hussmann Merchandiser Data Book; ALWAYS CHECK THE SERIAL PLATE.

Electrical Data

Model	120V 1PH 60Hz				208V 1PH 60Hz Optional Defrost Heater
	Fans	Lights Standard	Option	Option	
	(1)	(2)	(3)	(4)	
Dairy 8 foot 12 foot	1.40 2.10	6.50 9.70	7.35 11.60	8.65 13.50	5.2 7.8
Deli 8 foot 12 foot	3.20 4.80	6.50 9.70	7.35 11.60	8.65 13.50	5.2 7.8

(1) Fans must operate continuously. Fans and anti-sweat heaters should be on a separate circuit from the lights to avoid turning them off with the store lights.

Each column applies to light configurations listed below:

NOTE: Amperages listed include a FULL COMPLEMENT OF LIGHTED SHELVES. If the merchandiser is ordered WITHOUT A SHELF LIGHTING HARNESS (this does NOT apply to unlighted shelves) deduct 5.2 amps from values listed for 8 foot merchandisers and 7.8 amps from values listed for 12 foot merchandisers.

(2) One row of canopy fluorescent lamps.

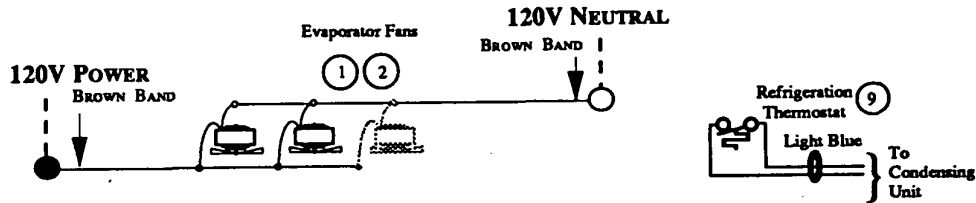
(3) Two rows of fluorescent lamps in canopy, or one in canopy plus one optional front rail light.

(4) Two rows of fluorescent lamps in canopy, and optional front rail lighting.

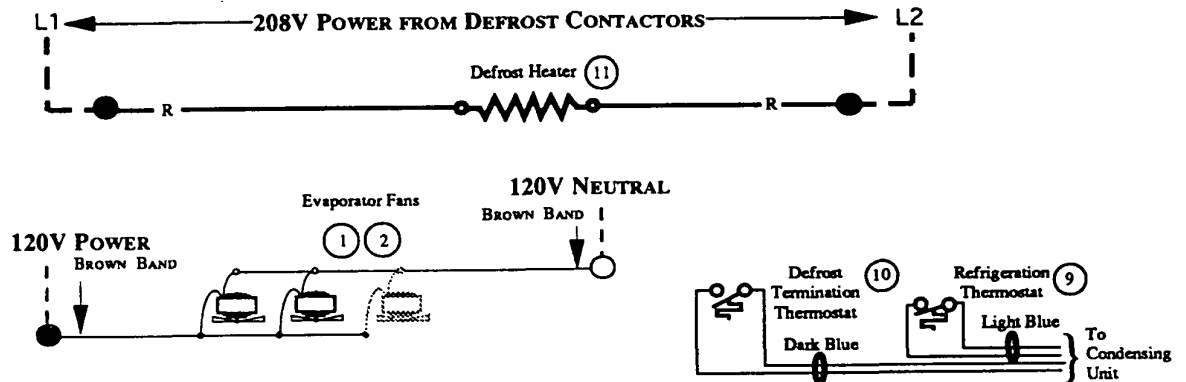
CAUTION: When multiplexing merchandisers equipped with defrost heaters, if branch circuit overcurrent protection is larger than the individual merchandiser's defrost circuit load, then additional supplemental overcurrent protection may be required per NEC Articles 210 and 240.

ND5 & NDD5 Fan and Heater Circuits

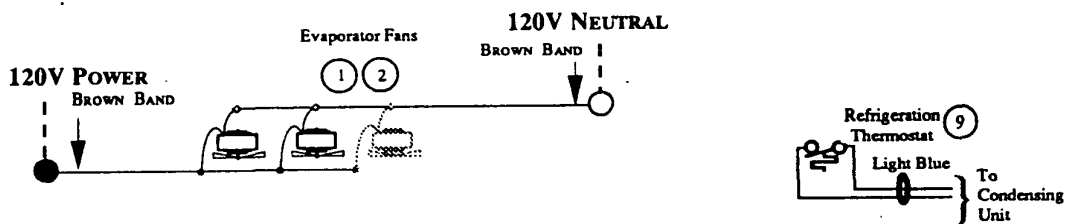
Offtime Defrost (standard)



Electric Defrost (optional)



Gas Defrost (optional)



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

NOTES:

Schematic shows both standard and optional components. Not all components will be on each merchandiser. Check store legend for specifics. Broken line indicates field wiring.

Grayed components in 12 foot models only.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red

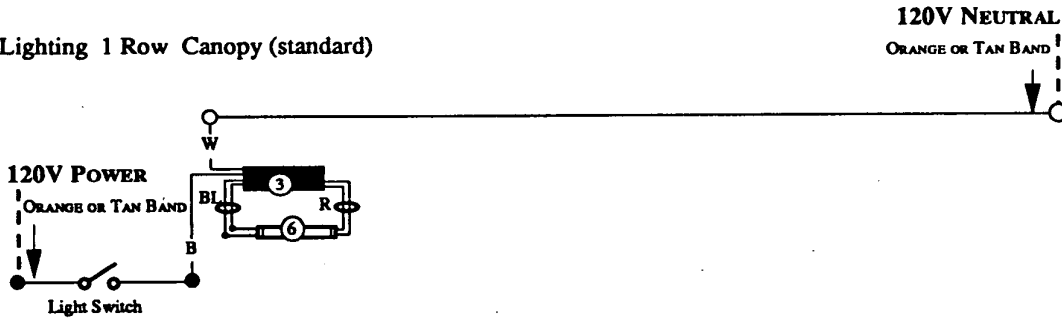
● = 120V POWER ○ = 120V NEUTRAL

4-4 ELECTRICAL

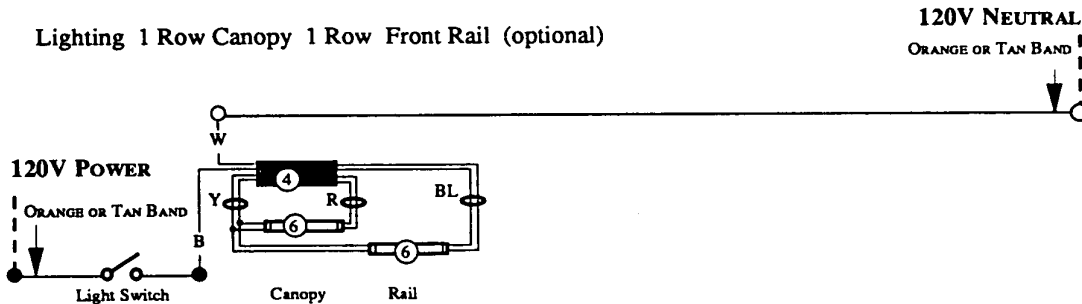
8 Foot ND5 & NDD5 - Light Circuits

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

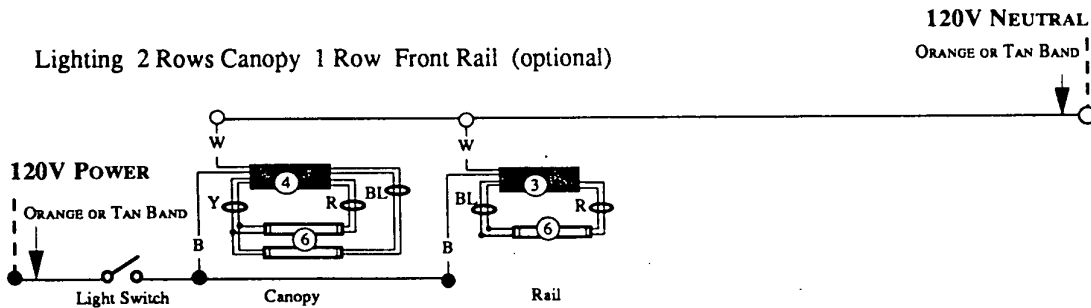
Lighting 1 Row Canopy (standard)



Lighting 1 Row Canopy 1 Row Front Rail (optional)



Lighting 2 Rows Canopy 1 Row Front Rail (optional)



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

NOTES:

Schematic shows both standard and optional components. Not all components will be on each merchandiser.

Check store legend for specifics. Broken line indicates field wiring.

Optional shelf lighting uses one single light ballast per shelf.

Canopy lighting uses both one and two light ballasts.

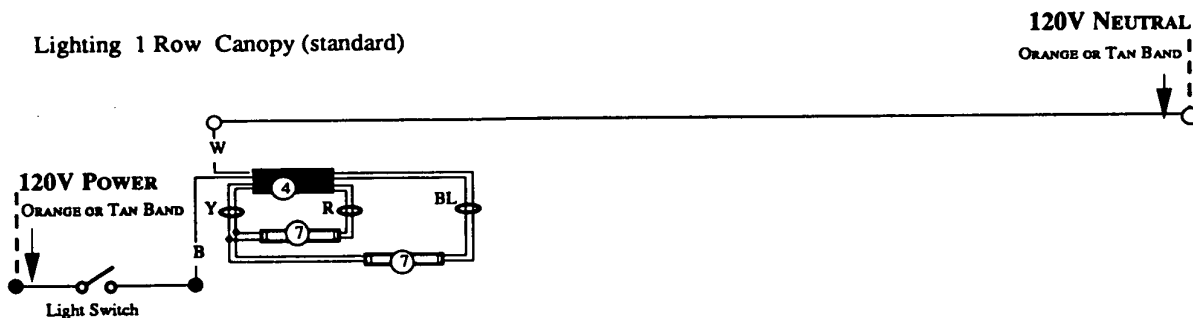
R = Red Y = Yellow BL = Blue B = Black W = White

● = 120V POWER ○ = 120V NEUTRAL

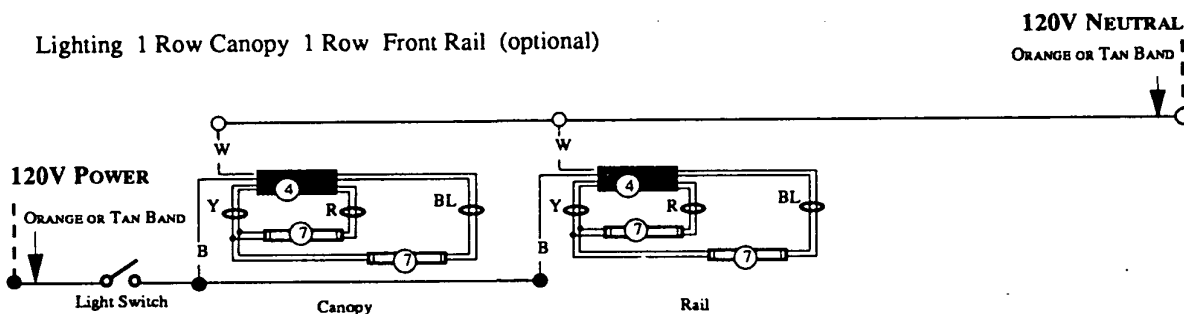
12 Foot ND5 & NDD5 - Light Circuits

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

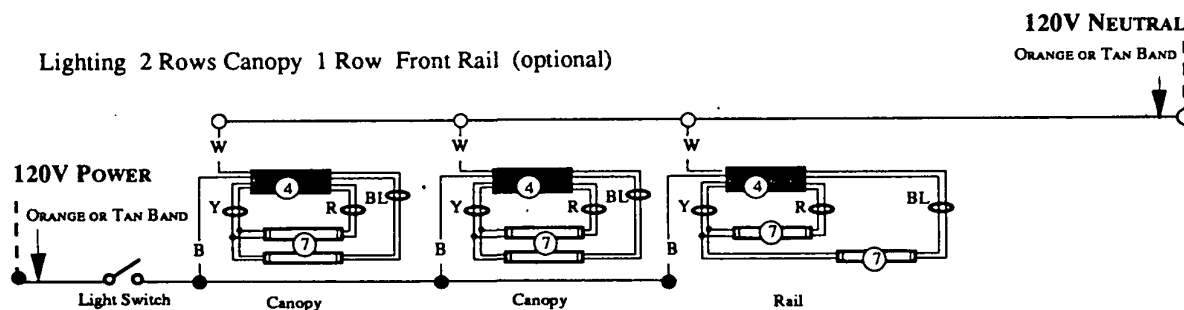
Lighting 1 Row Canopy (standard)



Lighting 1 Row Canopy 1 Row Front Rail (optional)



Lighting 2 Rows Canopy 1 Row Front Rail (optional)



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

NOTES:

- Schematic shows both standard and optional components. Not all components will be on each merchandiser. Check store legend for specifics. Broken line indicates field wiring.
- Optional shelf lighting uses one single light ballast per shelf.
- Canopy lighting uses both one and two light ballasts.

R = Red Y = Yellow BL = Blue B = Black W = White

● = 120V POWER ○ = 120V NEUTRAL

4-6 ELECTRICAL

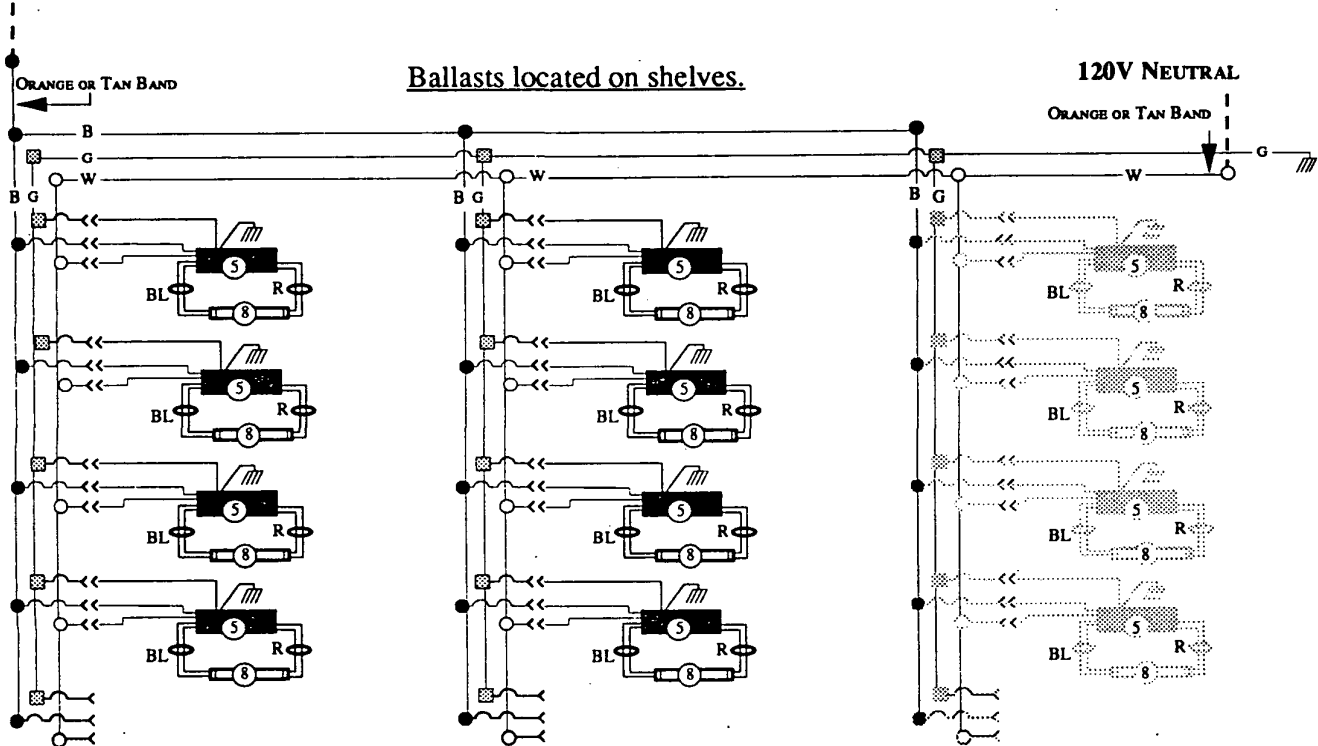
ND5 & NDD5 Shelf Light Circuits (optional)

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

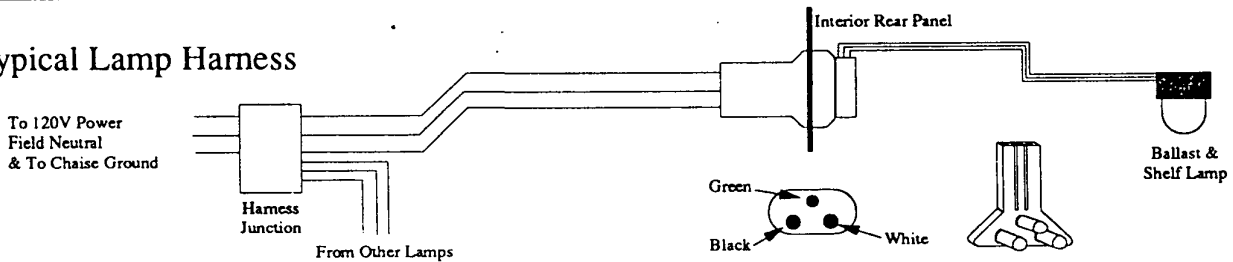
Lighting Shelves 1 Single Lamp Ballast per Shelf

NOTE: ND5 and NDD5 merchandisers use a five shelf wiring harness, but we only recommend four shelves.

120V POWER



Typical Lamp Harness



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

NOTES:

Schematic shows both standard and optional components. Not all components will be on each merchandiser.

Check store legend for specifics. Broken line indicates field wiring.

Optional shelf lighting uses one single light ballast per shelf.

Canopy lighting uses both one and two light ballasts.

Grayed components in 12 foot models only.

R = Red Y = Yellow BL = Blue B = Black G = Green W = White

● = 120V POWER ○ = 120V NEUTRAL ■ = GROUND

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, merchandisers should be thoroughly cleaned, all debris removed and the interiors washed down, weekly.

To facilitate cleaning, the fan plenum is hinged for easy access to the area beneath the evaporator. THE PLENUM IS FASTENED DOWN FOR SHIPPING PURPOSES WITH A SCREW AT EACH END. IF THESE HAVE NOT BEEN REMOVED, DO SO AND DISCARD. After cleaning be sure the plenum is properly lowered into position.

CAUTION: SHUT FAN OFF DURING CLEANING PROCESS.

Exterior Surfaces

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

Interior Surfaces

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

Do NOT Use:

- Mineral oil based solutions, as these will dissolve the butyl sealants used in the merchandisers' construction.
- Abrasive cleansers and scouring pads, as these will mar the finish.

DO:

- Remove the product and all loose debris to avoid clogging the waste outlet.
- Thoroughly clean all surfaces with soap and hot water. **DO NOT USE STEAM OR HIGH WATER PRESSURE HOSES TO WASH THE INTERIOR. THESE WILL DESTROY THE MERCHANDISERS' SEALING CAUSING LEAKS AND POOR PERFORMANCE.**
- Rinse with hot water, but do NOT flood. **NEVER INTRODUCE WATER FASTER THAN THE WASTE OUTLET CAN REMOVE IT.**
- Allow the merchandisers to dry before resuming operation.
- When cleaning lighted shelves, wipe down with a damp sponge or cloth so that water does not enter the light channel. **DO NOT USE A HOSE OR SUBMERGE SHELVES IN WATER.**

5-2 USER INFORMATION

SHELF ALIGNMENT

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

When installing the shelves on the merchandisers:

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

NOTE: Some PTM styles are pop riveted to the shelf. In these instances, the alignment strips must be cut in half before inserting them into the shelf.

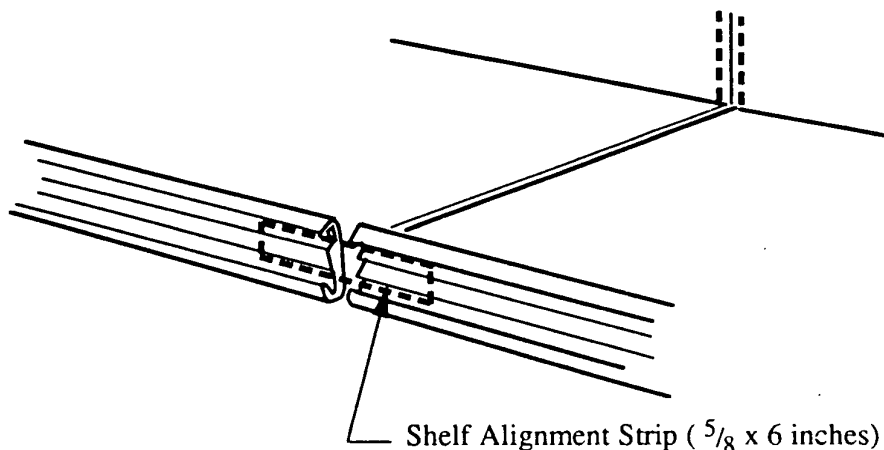
STOCKING

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

At no time should merchandisers be stocked beyond the load limits indicated on the inside of each merchandiser. Shelf life of perishables will be short if load limit (marked on ends) is violated.

The shelves for the multideck models have a designed load limit of 200 pounds per shelf.

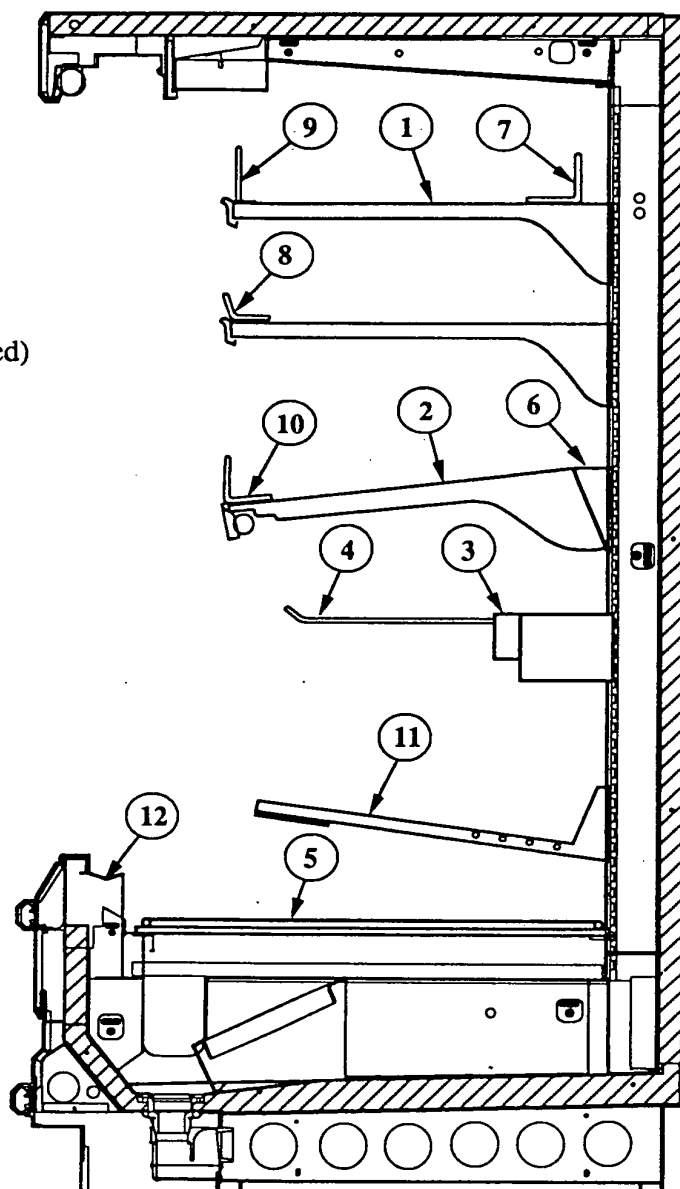
When stocking, keep packages and signs off the lower return grill. Air discharge and return air grills MUST BE UNOBSTRUCTED AT ALL TIMES to provide proper refrigeration and air circulation performance.



MERCHANDISING ACCESSORIES

These models feature complete flexibility in the merchandising of dairy and deli products. Available options are shown below.

- | Item | Description |
|------|---------------------------------------|
| 1. | Display Shelf (non-lighted) |
| 2. | Display Shelf (lighted) |
| 3. | Stub Shelf |
| 4. | Peg Bar |
| 5. | Wire Display Rack |
| 6. | Shelf Adapter, 15° slant |
| 7. | Rear Product Stop |
| 8. | Front Product Stop |
| 9. | Front Wire Product Stop |
| 10. | Slanted Shelf Front Wire Product Stop |
| 11. | Egg Insert Shelves |
| 12. | Front Rail Lighting |



WARNING

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

REPLACING FAN BLADE

The evaporator fans are located at the center front, directly beneath the display pan. Should the fans or blades ever need servicing, ALWAYS REPLACE THE FAN BLADES WITH THE RAISED EMBOSSING SIDE OF THE BLADE INSTALLED TOWARD THE MOTOR.

REPLACING FLUORESCENT LAMPS

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

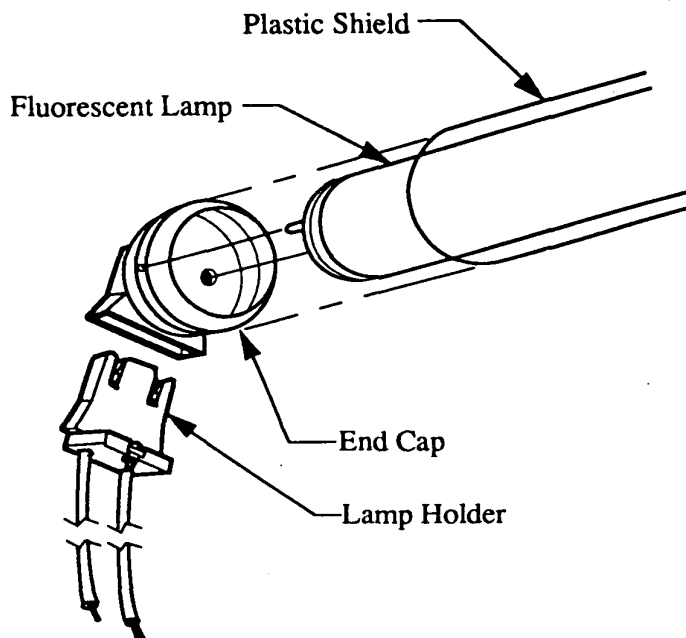
NOTE: Do NOT twist the lamp.

Remove Lamp

To remove a lamp, simply push the lamp away from the lamp holder.

Install Lamp

To install a lamp, align the end caps over the lamp holders and press gently. A slight snap will be felt as the lamp is seated.



6-2 SERVICE

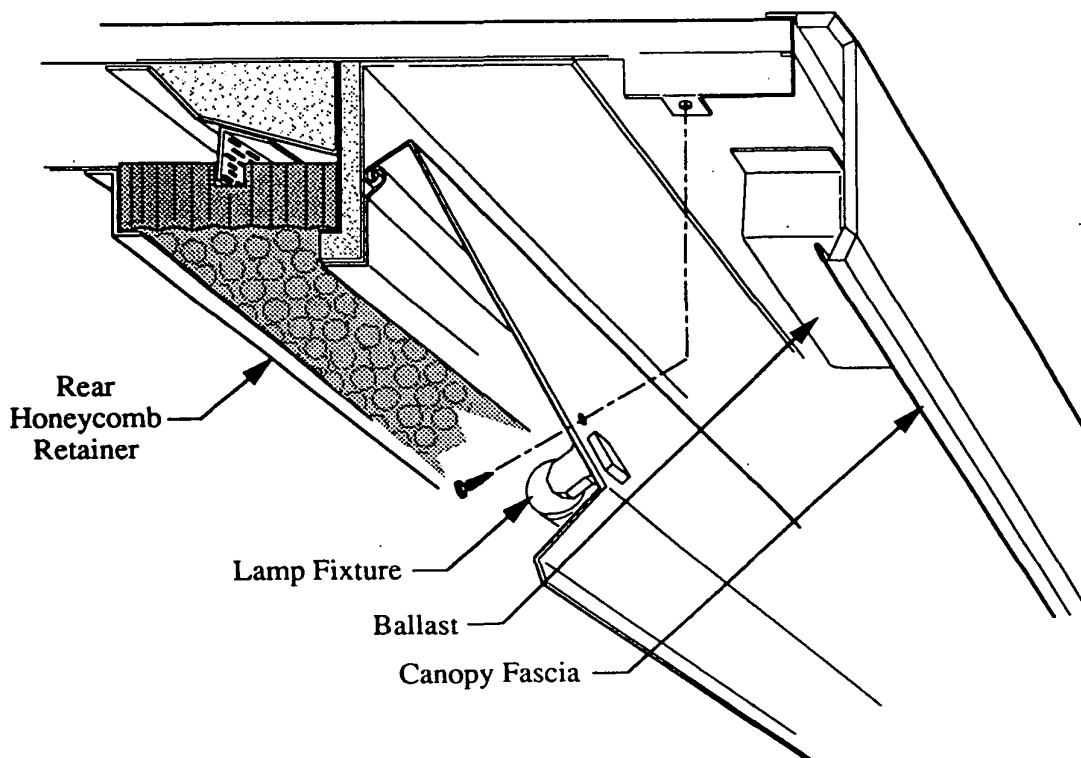
REPLACING CANOPY BALLAST

1. Disconnect power to the merchandiser.
2. Remove all fluorescent lamps from the canopy.
3. Remove sheet metal screws along the underside of the light fixture.
4. Grasping the light panel at the area where the top of the panel and the top of the merchandiser meet, pull back and down until the panel is free of support brackets and swings freely.
5. Replace ballast and replace parts in reverse order.

CLEANING HONEYCOMB ASSEMBLIES

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

1. Remove the rear retainer.
2. Holding the honeycomb sections in place, back off the retainer from the honeycomb.
3. Clean and dry the honeycomb.
4. After cleaning replace in reverse order of removal.



REMOVING UPPER KICK RAIL

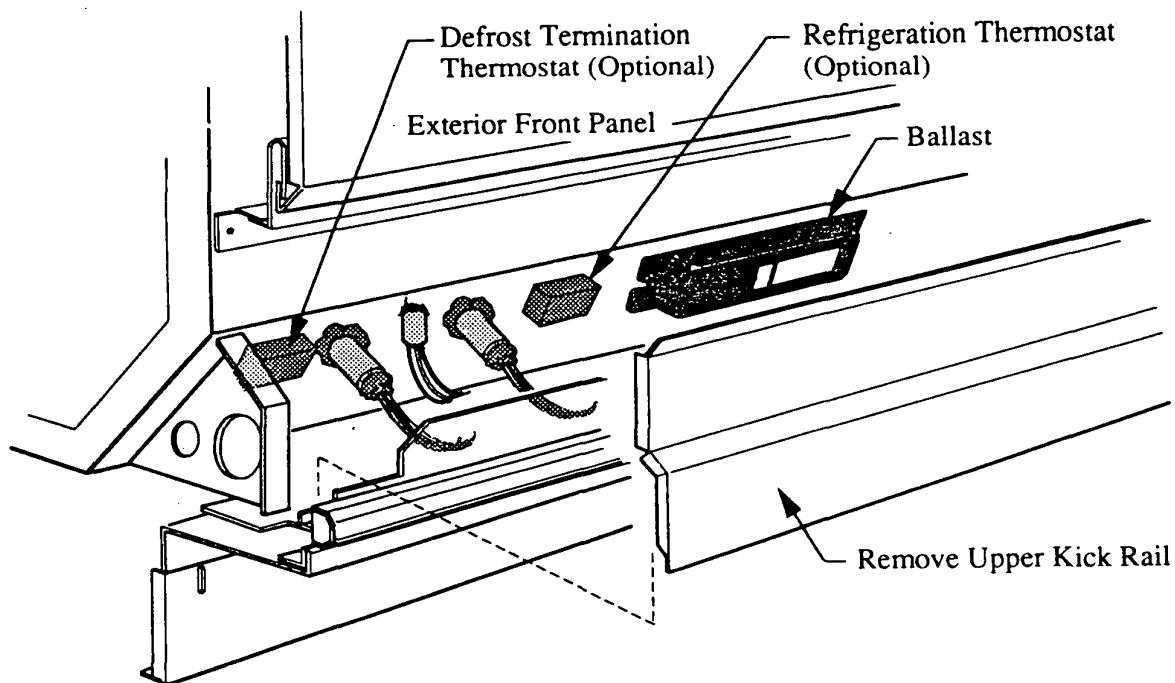
Remove the upper kick rail by pushing in and up to free it from the bumper area. Once the bottom is free, lower the upper kick rail out from behind the front panel.

To install, slide the upper kick rail into retainer behind front panel. Position the lower edge of the kick rail behind the bumper and in front of the adjustable bracket.

REPLACING FRONT RAIL BALLAST

This ballast is located behind the lower bumper rail at the left-hand end of the merchandiser. For access to the ballast:

1. Disconnect the electrical power to the light fixture.
2. Remove the lower bumper rail.



6-4 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
Aladdin 3-in-1 rod at732° F
X-Ergon Acid core at455° F
Factory Solder at aluminum
to copper transitions855° F

Technique

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