HUSSMANN®

Draft Copy

NP1, NP2 & NP4

Produce Merchandisers

Vision Series

P/N 345902B
Februray, 1993
Section 4

Installation & Operation Manual

CONTENTS

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® 12999 St. Charles Rock Road • Bridgeton, MO 63044 USA • (314) 291-2000 •FAX (314) 298-4767

NP1 and NP2—REPLACEMENT PARTS LIST

Item	Part Number	Description
1.	0058698	Fan Motor, Evaporator, NP1 Only 120V, 6W, CW GE #KSM51ECG3264
	0047000	Fan Motor, Evaporator, NP2 Only 120V, 9W, CW GE #5KSM51ECG3799
2.	0136261	Fan Blade embossing toward motor, Morrill FV 700 CW 25S
3.	0147080	Ballast, 2 lamps Valmont #8G1024
4.	0147082	Ballast, 1 lamp Valmont #8G1074
5.	0349512	Ballast, 1 lamp Valmont #8G4074 (for optional lighted shelves)
6.	0020725	Fluorescent Lamp F40T12 CWX
7.	0137880	Refrigeration Thermostat WR #1609-103

NP4—REPLACEMENT PARTS LIST

Item	Part Number	Description
1.	0047000	Fan Motor, Evaporator 120V, 9W, CW GE #KSM51ECG3799
2.	0315470	Fan Blade, Evaporator embossing toward motor Thorgren #8 CW 34
3.	0147089	Ballast, 2 lamps Valmont #8G3905 WT
4.	0349512	Ballast, 1 lamp Valmont 8G4074 (for optional lighted shelves)
5.	0020725	Fluorescent Lamp F40T12 CWX
6.	0137880	Refrigeration Thermostat WR #1609-103
7.	0143749	Defrost Termination Thermostat TI #20425F12-433-913
8.	0131434	Defrost Heater, 8 foot 208V, 5.2A, 40Ω
	0131435	Defrost Heater, 12 foot 208V, 7.8A, 27Ω

MODEL DESCRIPTIONS

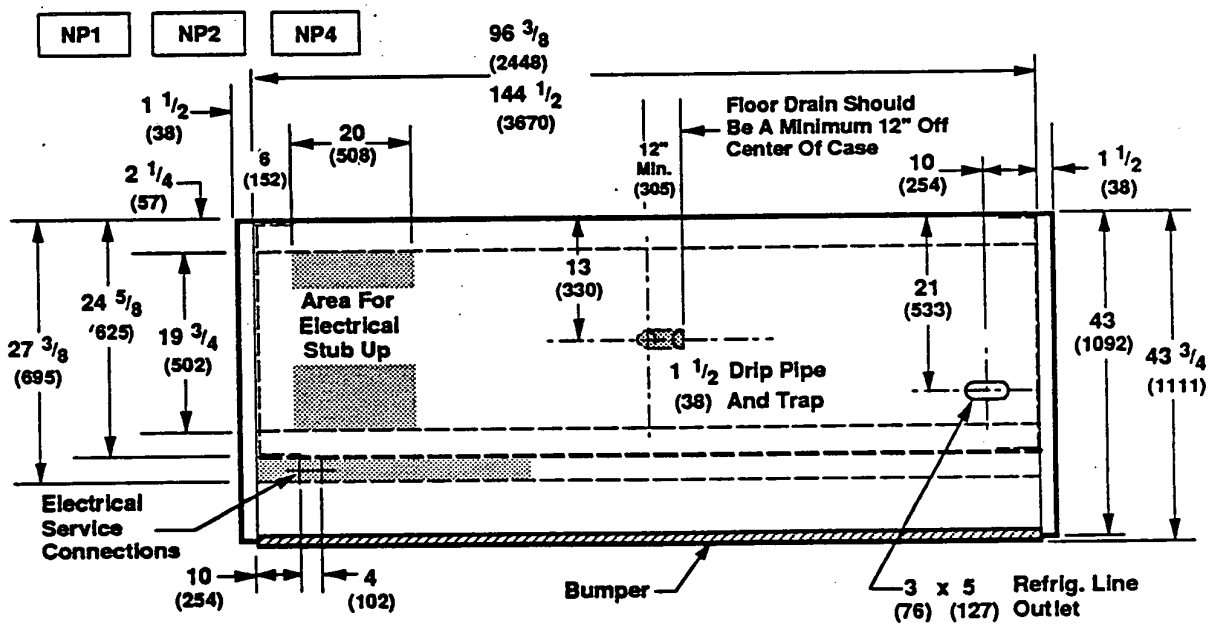
This instruction covers the merchandisers listed below. All models are available in either 8 or 12 foot lengths. Basic design features are listed to the right of each merchandiser.

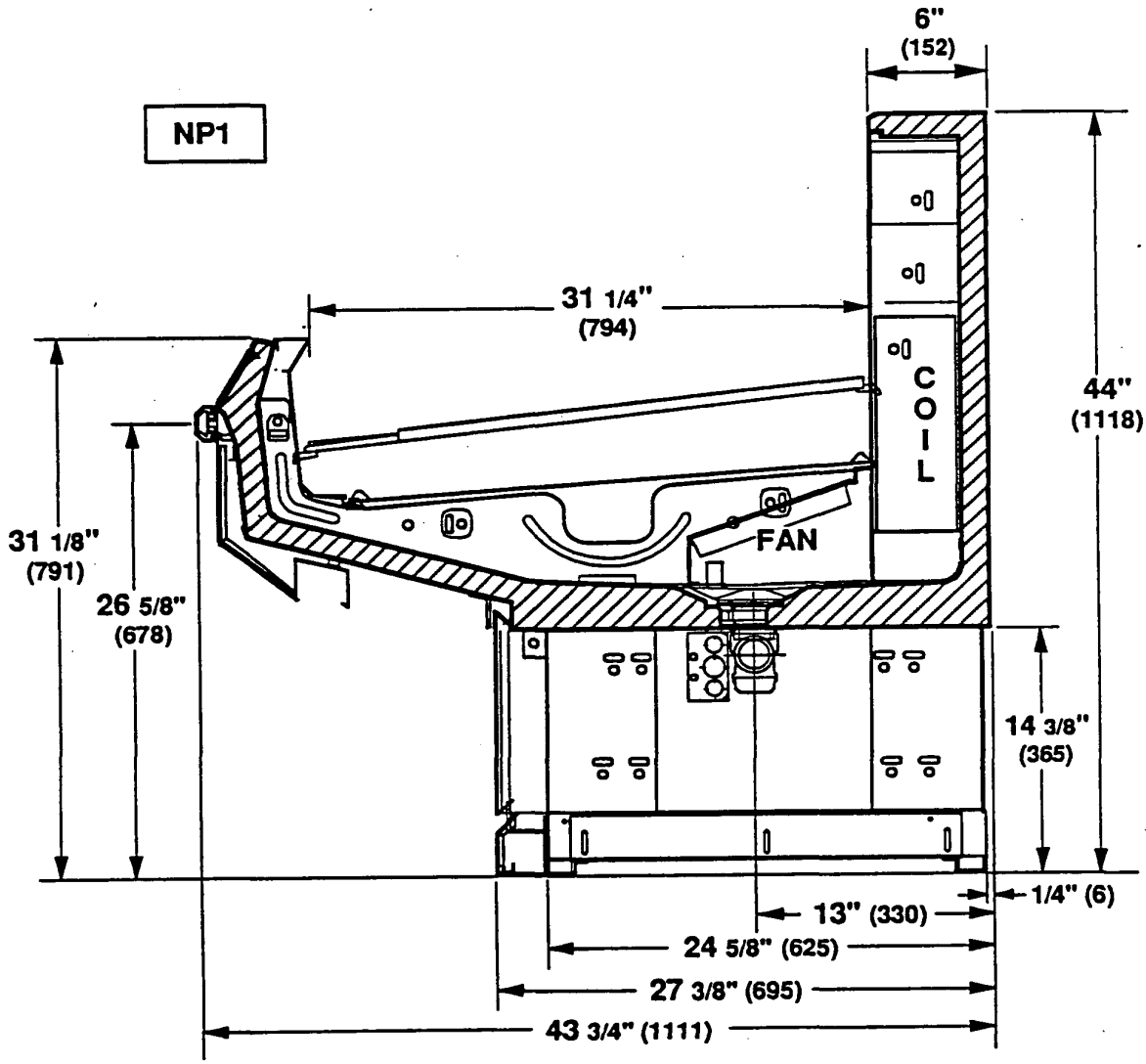
NP1	Single Deck Produce, Refrigerated
NP2	Multideck Produce, 2 Levels (one shelf), Refrigerated
NP4	Multideck Produce, 4 Levels (three shelves) Refrigerated

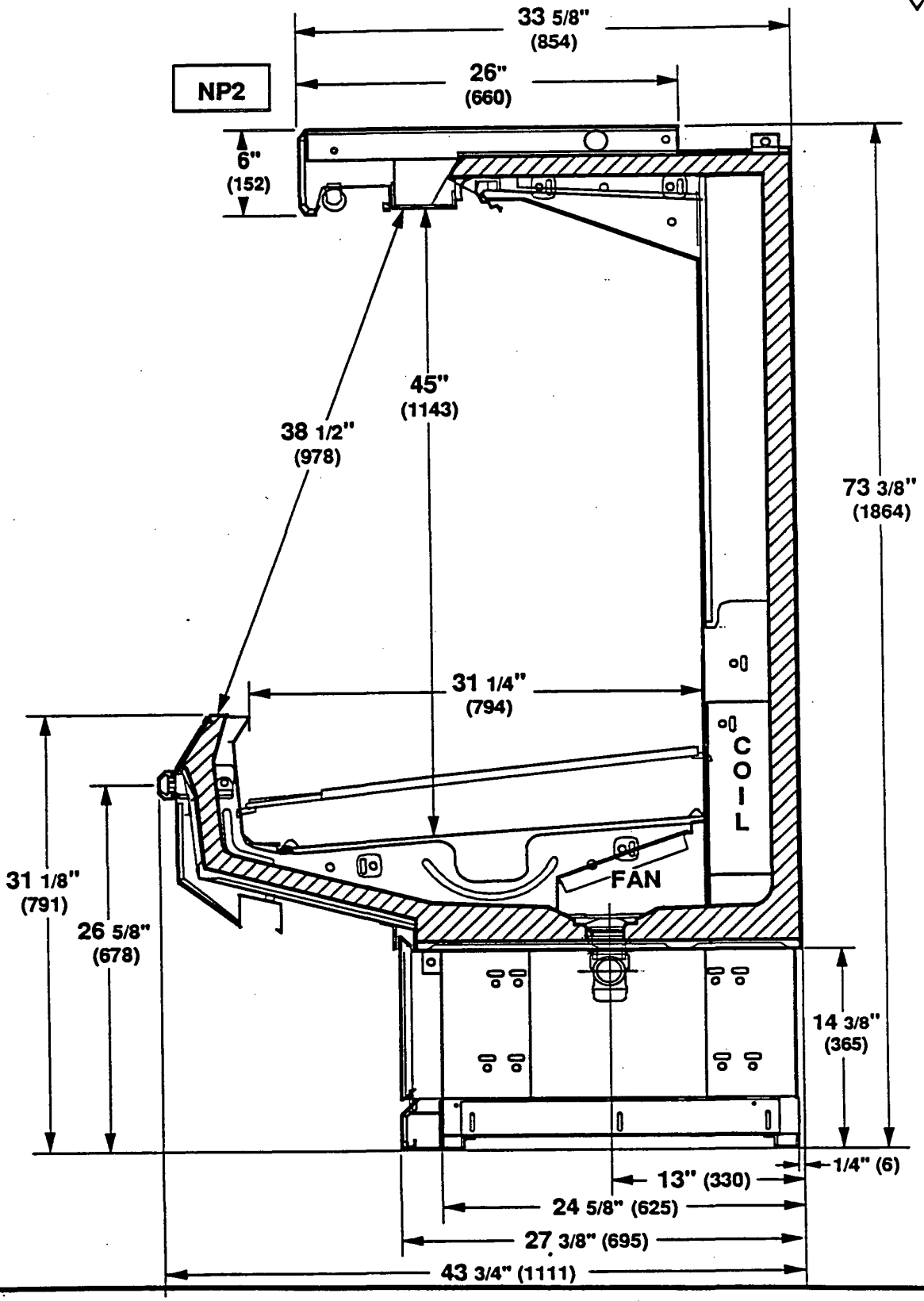
APPLICATION

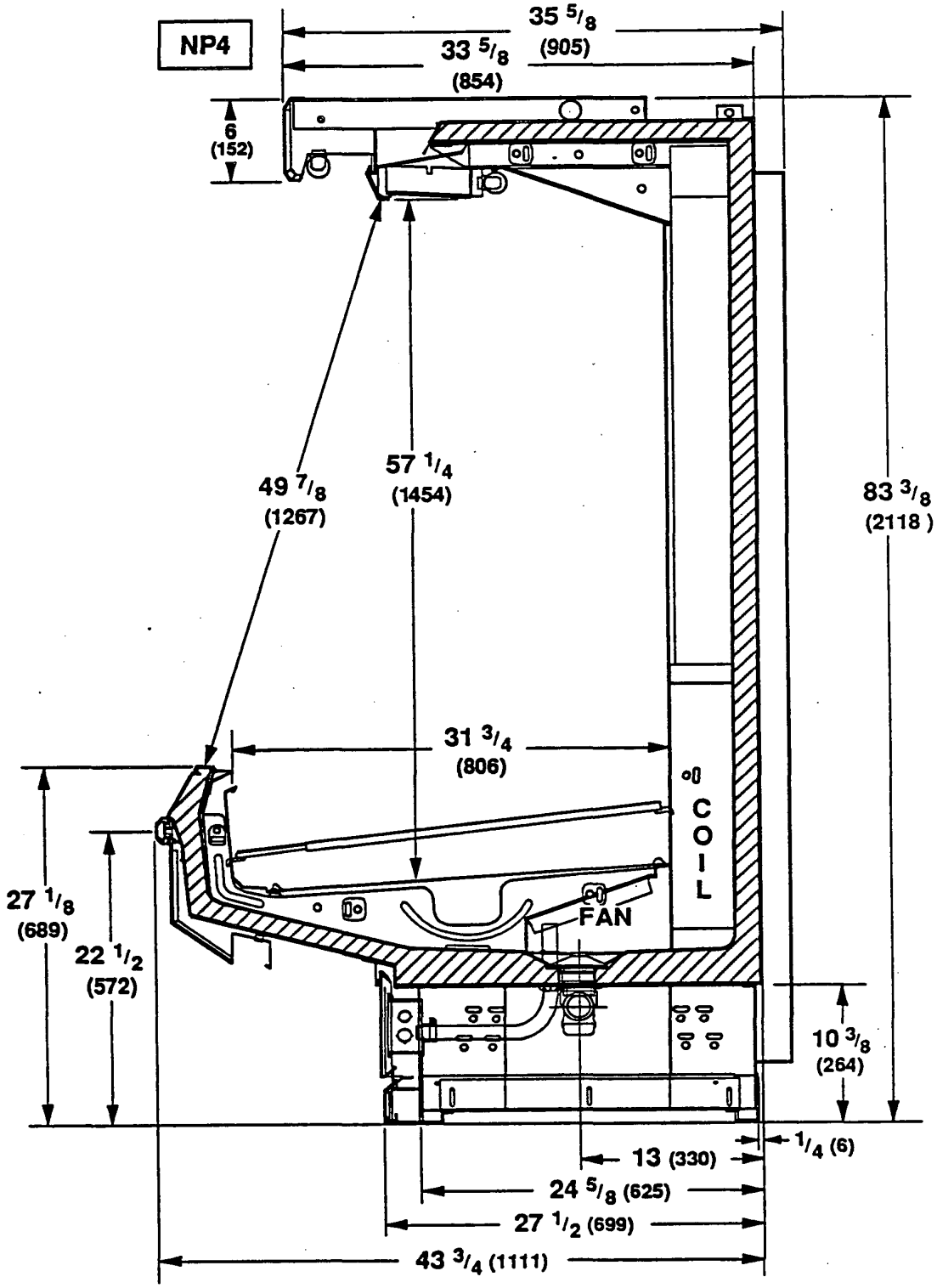
These medium temperature merchandisers are designed for displaying fresh produce in air conditioned stores where temperature and humidity are maintained at or below 75°F dry bulb temperature and 55% relative humidity.

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




NP1
6"
(152)
31 1/4"
(794)
COIL
FAN
44"
(1118)
31 1/8"
(791)
26 5/8"
(678)
14 3/8"
(365)
1/4" (6)
13" (330)
24 5/8" (625)
27 3/8" (695)
43 3/4" (1111)


NP2
33 5/8"
(854)
26"
(660)
6"
(152)
45"
(1143)
38 1/2"
(978)
73 3/8"
(1864)
31 1/4"
(794)
COIL
FAN
31 1/8"
(791)
26 5/8"
(678)
14 3/8"
(365)
1/4" (6)
13" (330)
24 5/8" (625)
27 3/8" (695)
43 3/4" (1111)


NP4
35 5/8 (905)
33 5/8 (854)
6 (152)
49 7/8 (1267)
57 1/4 (1454)
83 3/8 (2118)
31 3/4 (806)
COIL
FAN
27 1/8 (689)
22 1/2 (572)
10 3/8 (264)
1/4 (6)
13 (330)
24 5/8 (625)
27 1/2 (699)
43 3/4 (1111)

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. These merchandisers are top heavy and could tip over causing serious injury.

Merchandisers must be braced before removing the lag bolts.

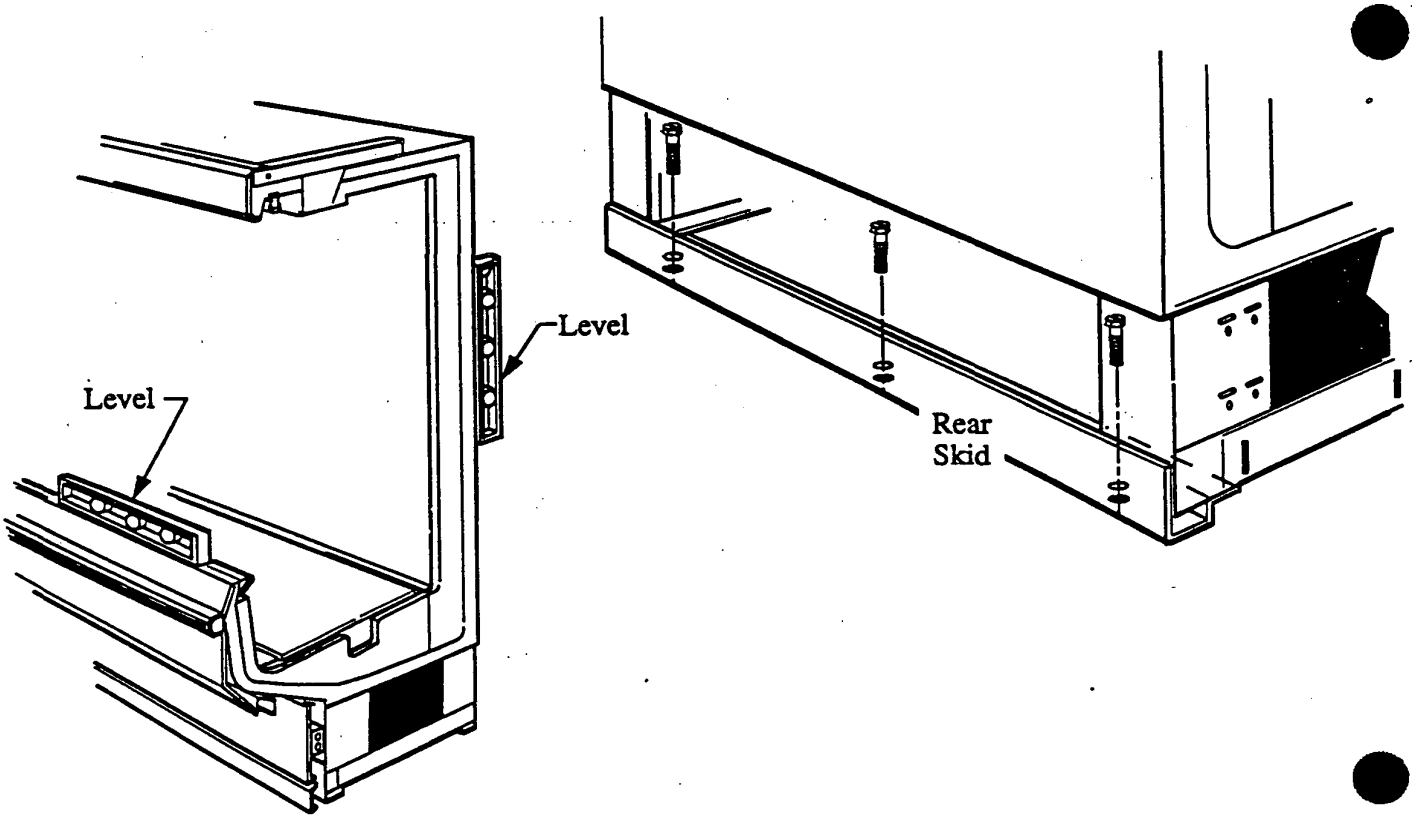
EXTERIOR LOADING

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 merchandisers and other fixtures or walls.



LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. Use a carpenter's level as shown when leveling merchandisers. 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.

ANCHORING

Because of the merchandisers' forward projection, they must be anchored to the floor to prevent them from tipping forward. Each merchandiser should be lagged to the floor through its rear skid. Anchors should be placed approximately eight (8) to twelve (12) inches from each end and in the center of the rear skid. Some merchandisers have $^1/_2$ inch holes in the rear skid for this purpose.

Once the merchandisers are properly anchored, remove shipping braces.

SPRAY HOSE

If an optional spray hose is ordered a water pressure regulating valve should be installed if the water pressure exceeds 45 psi. The regulating valve should be set for 30–35 psi outlet pressure.

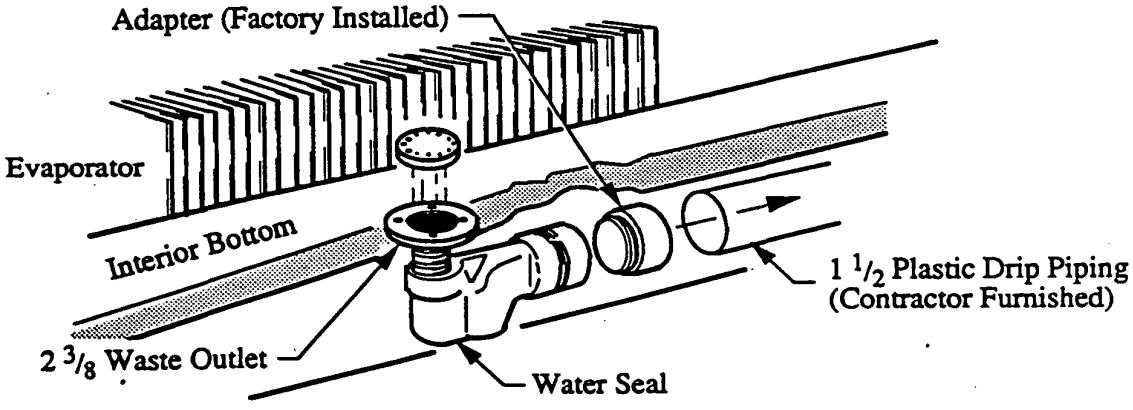
WASTE OUTLET AND WATER SEAL

The waste outlet is located at the center of each merchandiser allowing drip piping to be run under the fixture lengthwise, to the front or to the rear. A 1 $^1/_2$ inch water seal is factory installed on each merchandiser.

INSTALLING DRIP PIPING

Poorly or improperly installed drip pipes can seriously interfere with the merchandiser's operation and result in costly maintenance and product losses. Please follow the recommendations listed below when installing drip 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. Store plumbing system floor drains should be at least 12 inches off center of merchandiser to allow use of the "water seal" pipe section. 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 $^1/_8$ 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.



INSTALLING SPLASHGUARDS

The splashguard and lower front panel are shipped inside each merchandiser. AFTER merchandisers have been leveled and joined, and all drip piping, electrical and refrigeration work has been completed, install the splashguards. The leveling brackets have a maximum extension of $^3/_4$ inch for uneven floors. After adjusting brackets flush with the floor, align slots in splashguard with leveling brackets and drop in place. Position lower front panel UP BEHIND THE FRONT PANEL FIRST, then down over the brackets.

SEALING SPLASHGUARDS TO FLOOR

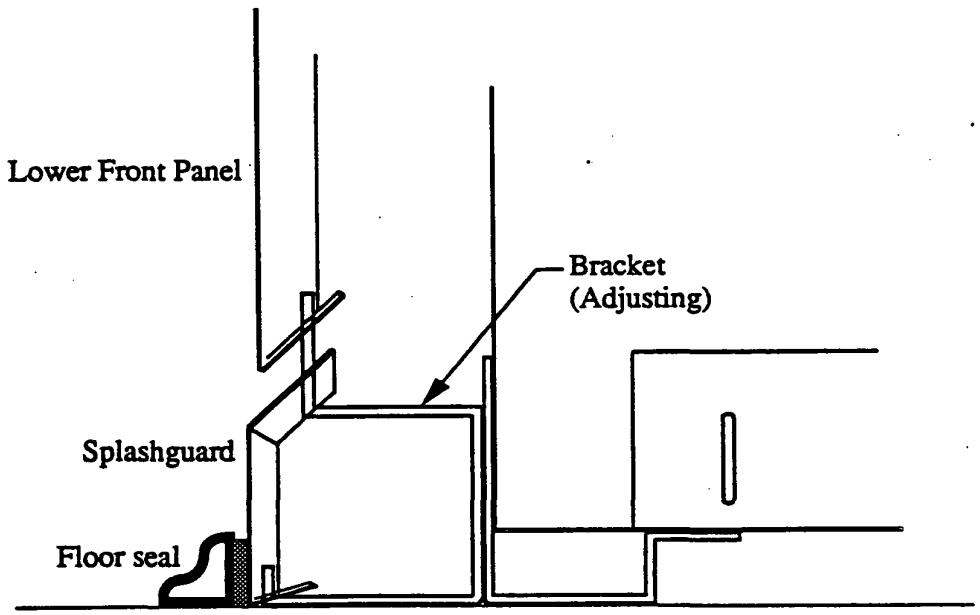
IF REQUIRED by local sanitation codes or if desired by the customer, the splashguards may be sealed to the floor using a vinyl cove base trim. The size of trim needed will depend on how much the floor is out of level.

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.



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 back panel.

REFRIGERANT PIPING

Connection Sizes

Liquid Line	$^3/_8$ inches OD
Suction Line	
NP1 and NP2	$^3/_4$ inches OD
NP4	1 $^1/_8$ 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

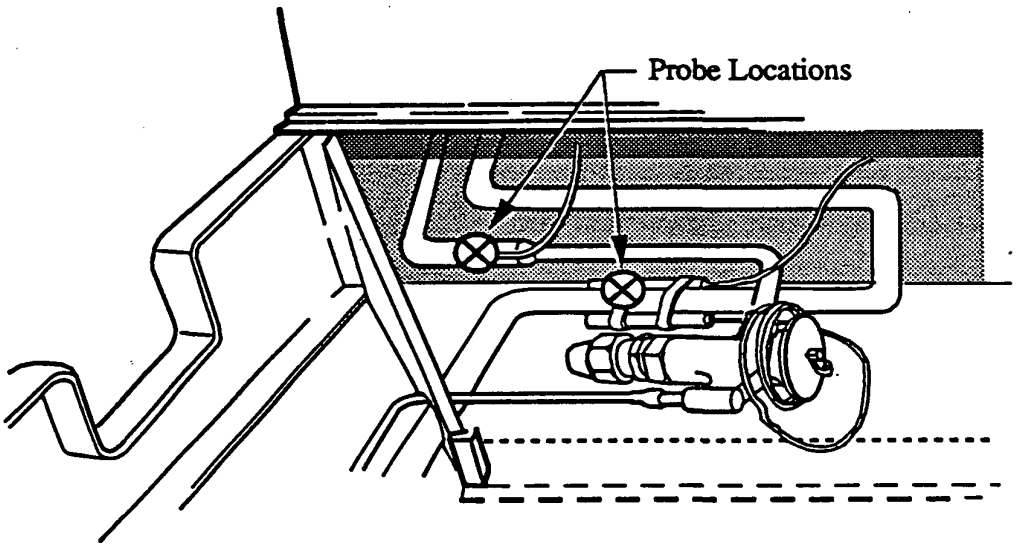
Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable or the lines are exposed to ambient conditions.

EXPANSION VALVE ADJUSTMENT

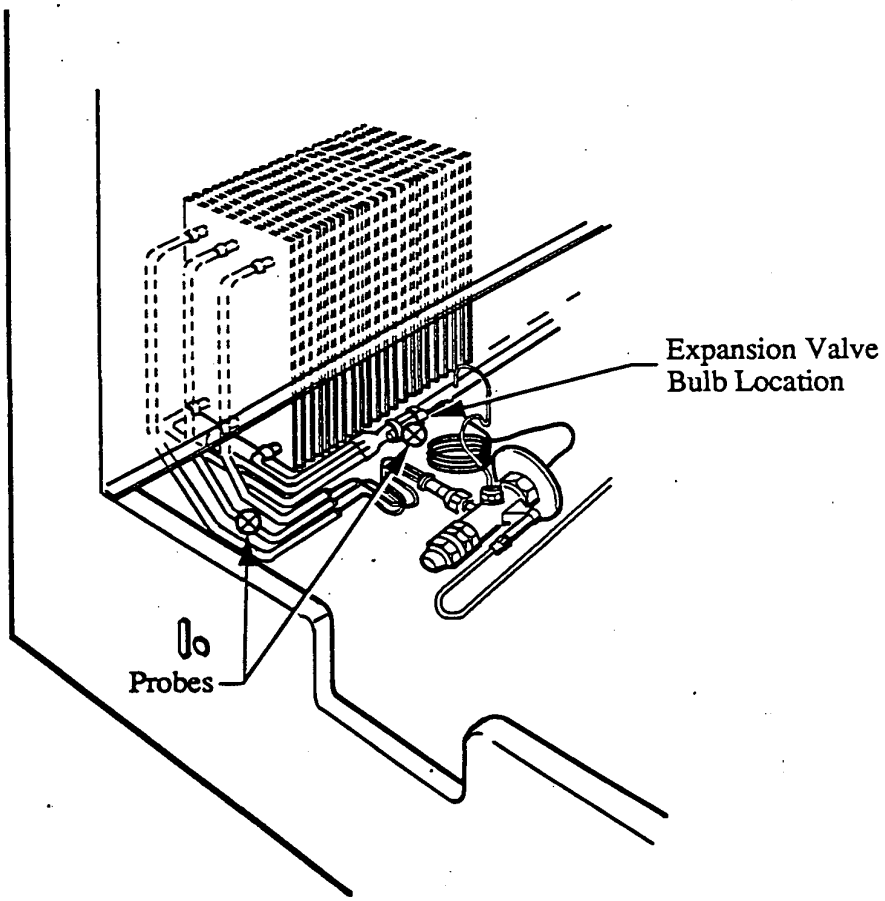
Expansion valves must be adjusted to fully feed the evaporator. Before attempting to adjust valves, make sure the evaporator is either clear or only lightly covered with frost, and that the merchandiser is within 10°F of its expected operating temperature. Adjust valves as follows.

Attach two (2) sensing probes (either thermocouple or thermistor) to the evaporator. One under the clamp holding the expansion valve bulb and the other securely taped 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.



Expansion Valve is located under Fan Plenum in left-hand end of case
NP1/NP2 Probe Locations



NP4 Merchandiser Probe Locations

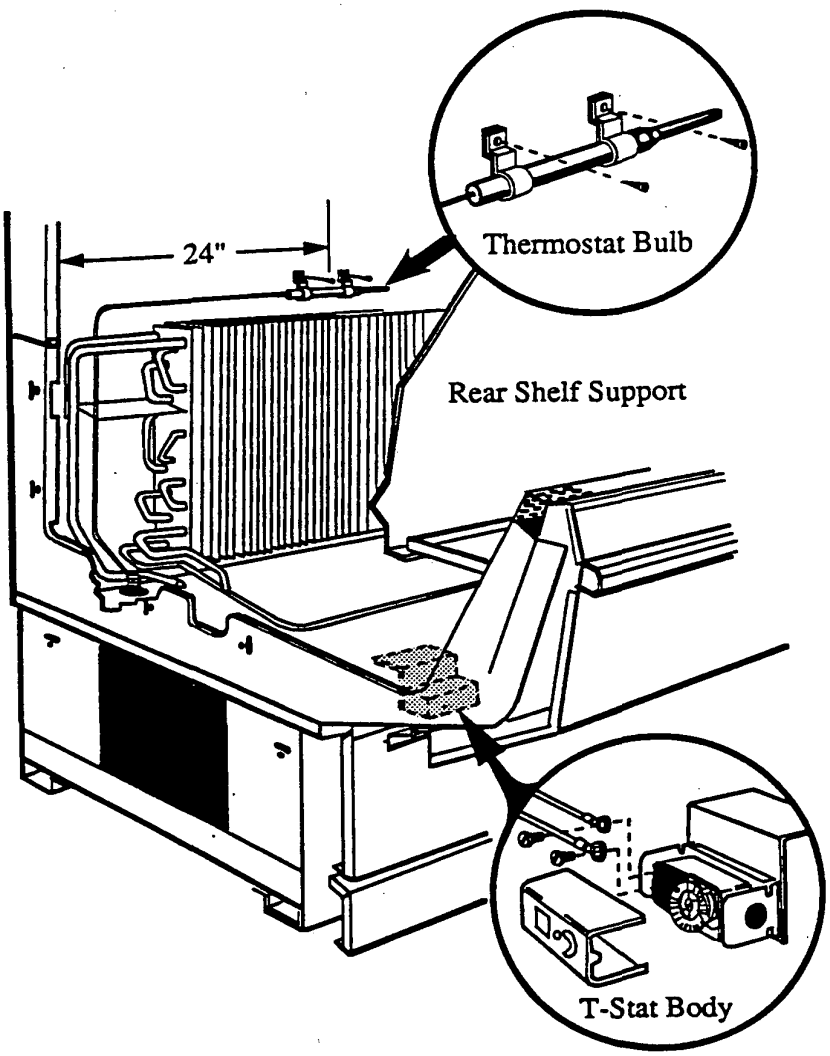
TEV AND DISTRIBUTOR - Sporlan Nomenclature

R-22 Feet	TEV	Distributors Gas	All Other
NP1 and NP2			
8	EGVE 1/2 C	N/A	N/A
12	EGVE 3/4 C	N/A	N/A
NP4			
8	BFVE AC	N/A	D115-3-1/4 -1
12	BFVE AC	N/A	D115-3-1/4 -1 1/2

R-502 Feet	TEV	Distributors Gas	All Other
NP1			
8	EGRE 1/2 C	—	—
12	EGRE 1/2 C	N/A	N/A
NP2			
8	EGRE 1/2 C	N/A	N/A
12	EGRE 1 C	N/A	N/A
NP4			
8	BFRE AC	N/A	D115-3-1/4 -1
12	BFRE CC	N/A	D115-3-1/4 -1 1/2

REFRIGERATION THERMOSTAT

Factory installation of optional thermostat is shown below. The thermostat body is located behind the lower front panel of the merchandiser at the left end. The bulb is located above the coil approximately 24 inches from the left end of the merchandiser.



CONTROL SETTINGS

Conventional Single Compressor

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

Merchandiser temperature must be controlled by a thermostat with a 3–6°F differential. It will be wired to control the compressor motor contactor.

Standard Off Time defrost is time terminated. Optional Electric defrost is temperature terminated at 48°F. The defrost termination thermostats for all the merchandisers on one compressor are wired in series. On outdoor units the defrost timer will control a liquid line solenoid beginning a defrost pumpdown 4 minutes before defrost.

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

	NP1	NP2	NP4
Discharge Air °F	39	39	28
Evaporator °F	24	21	18
Fan Cycling CI/CO Gas Defrost ONLY °F	N/A	N/A	N/A

Defrost Data

Frequency Hrs	6	6	6
Electric			
Temp Term °F	N/A	N/A	48
Failsafe Min	N/A	N/A	40
Gas			
Duration Min	N/A	N/A	N/A
Offtime			
Duration Min	40	40	40

When Thermostat Controls Temperature
Low Pres Backup Control (PSIG)

	CI/CO	CI/CO	CI/CO
R-22	40/30	37/27	34/24
R-502	49/39	46/36	42/32

Parallel Compressor Rack

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

Merchandiser temperature must be controlled by a thermostat.

Standard Off Time defrost is 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
- Merchandiser temperature lower than recommended

When practical, defrost when store is closed.

Refrigeration Data	NP1	NP2	NP4
Discharge Air °F	39	39	28
Evaporator °F	24	21	18
Fan Cycling CI/CO Gas Defrost ONLY °F	N/A	N/A	N/A
Defrost Data			
Frequency Hrs	6	6	6
Electric			
Temp Term °F	N/A	N/A	48
Failsafe Min	N/A	N/A	40
Gas			
Duration Min	N/A	N/A	N/A
Offtime			
Duration Min	40	40	40

ELECTRICAL

CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections for NP1 and NP2 models are to be made in the electrical entrance box located at the left-hand end of the merchandiser, behind the lower front panel. NP4 merchandiser connections are made in the electrical raceway behind the lower front panel; see note below.

IDENTIFICATION OF WIRING

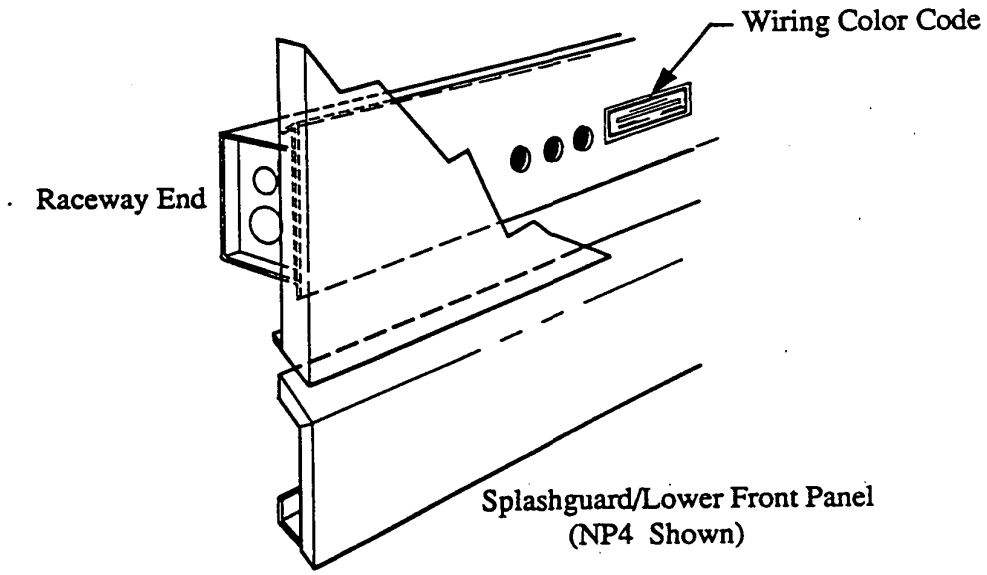
Leads for all electrical circuits are identified by colored plastic bands. These bands correspond to the "color code sticker" (shown below) located inside the merchandiser raceway.

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

ELECTRICIAN NOTE: CASE MUST BE GROUNDED



NP4 Only. When two or more merchandisers with full length raceways are installed in line, remove the lower front panels, end caps and raceway covers, and install the nipple and nuts (supplied) providing electrical passage from one merchandiser to the next. Partial length raceways require additional material (not supplied). In both applications, following NEC and local codes is the responsibility of the electrical contractor.

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. When multiple merchandisers are on the same defrost circuit the defrost termination thermostats are wired in series. Most component amperes are listed below; ALWAYS CHECK THE SERIAL PLATE.

Serial Plate Amperages

Model	120V 1PH 60Hz				208V 1PH 60Hz
	Fans	Lights—Includes a full complement of lighted shelves.			Optional
		Standard	Option	Option	Defrost Heater
Produce	(1)	(2)	(3)	(4)	
NP1					
8 foot	0.6	—	—	—	—
12 foot	1.2	—	—	—	—
NP2					
8 foot	0.7	2.1	2.9	3.7	—
12 foot	1.4	3.3	4.4	5.5	—
NP4					
8 foot	2.1	5.4	—	—	5.2
12 foot	2.8	8.1	—	—	7.8

(1) FAN MOTORS MUST OPERATE CONTINUOUSLY. Fans should be on a separate circuit from the lights to avoid turning them off with the store lights.

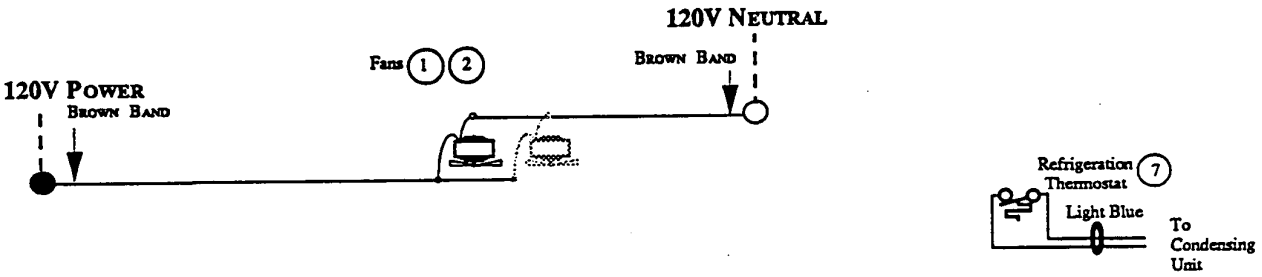
Each column applies to light configurations listed below with full complement of lighted shelves:

(2) NP2—One row of canopy fluorescent lamps. NP4—One row of canopy fluorescent lamps in front of honeycomb and one row behind honeycomb.

(3) One row of canopy fluorescent lamps and one row fluorescent exterior front ledge lamps

(4) Two rows of canopy fluorescent lamps and one row fluorescent exterior front ledge lamps

NP1 & NP2 - Fan and Heater Circuits - Offtime Defrost (standard)



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.

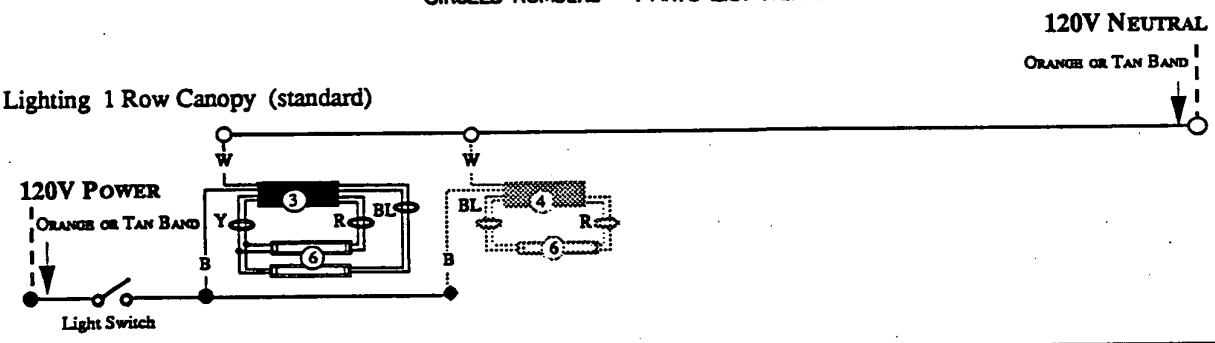
CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

● = 120V POWER ○ = 120V NEUTRAL

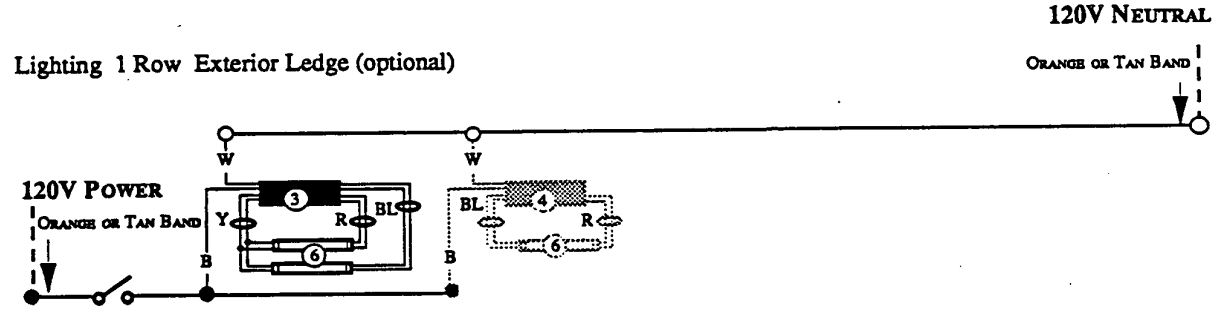
NP2 - Light Circuits

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

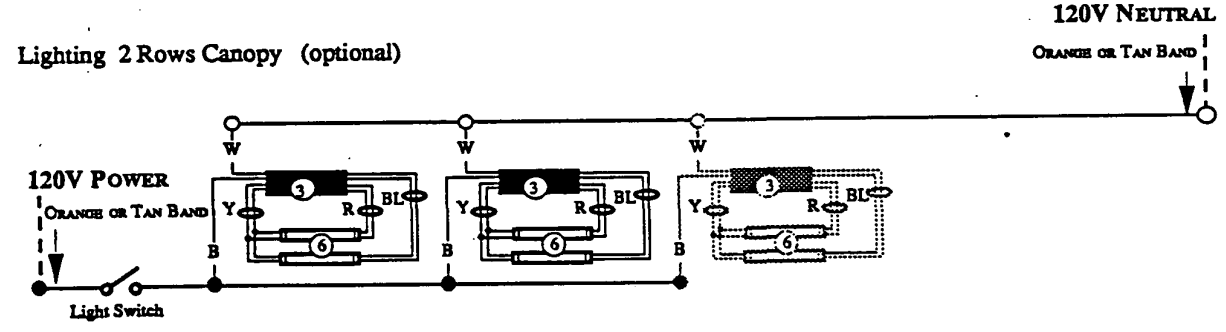
Lighting 1 Row Canopy (standard)



Lighting 1 Row Exterior Ledge (optional)



Lighting 2 Rows Canopy (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.
Grayed components in 12 foot models only.

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

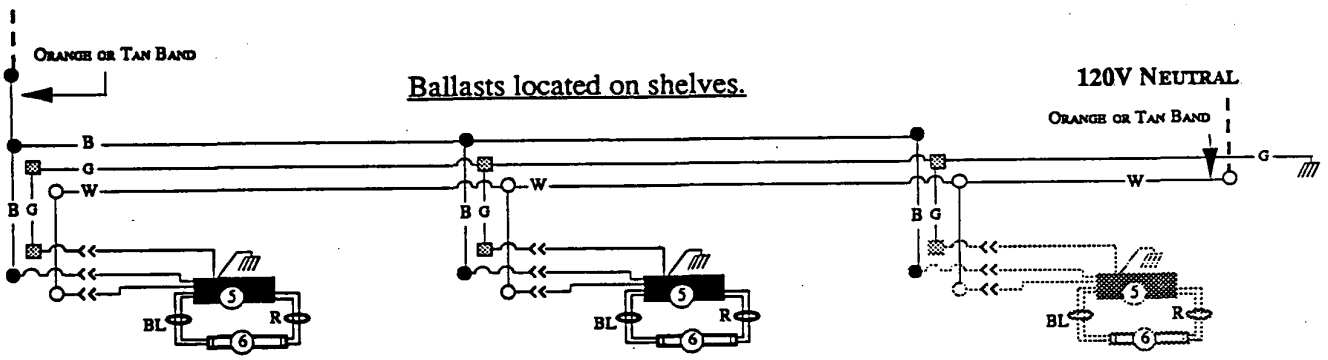
● = 120V POWER ○ = 120V NEUTRAL

NP2 - Shelf Light Circuits (optional)

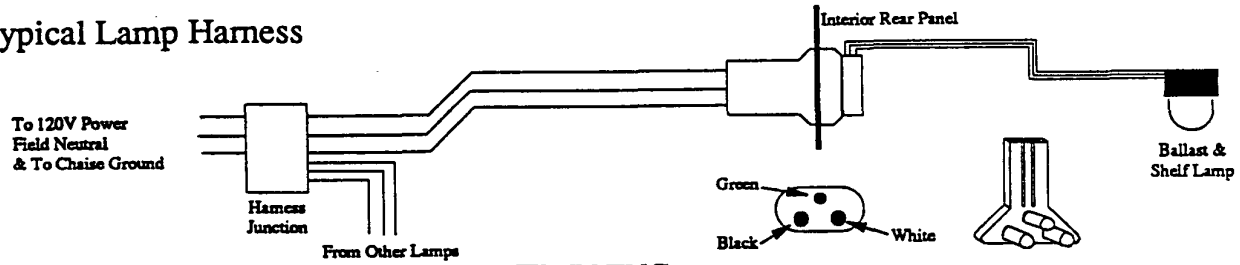
CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

Lighting Shelves 1 Single Lamp Ballast per Shelf

120V POWER



Typical Lamp Harness



WARNING

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NOTES:

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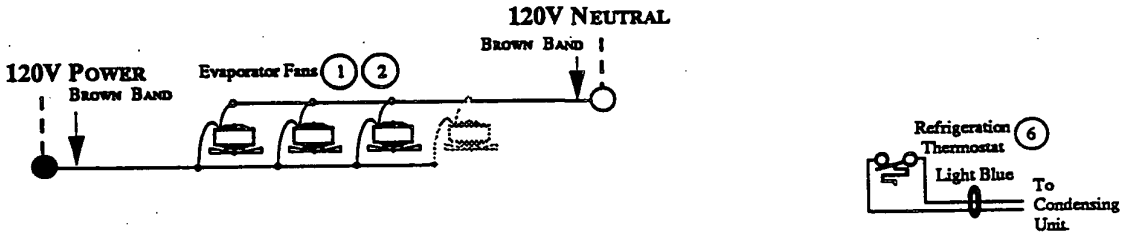
Optional shelf lighting uses one single light ballast per shelf.
Canopy lighting uses both one and two light ballasts.
Grayed components in 12 foot models only.

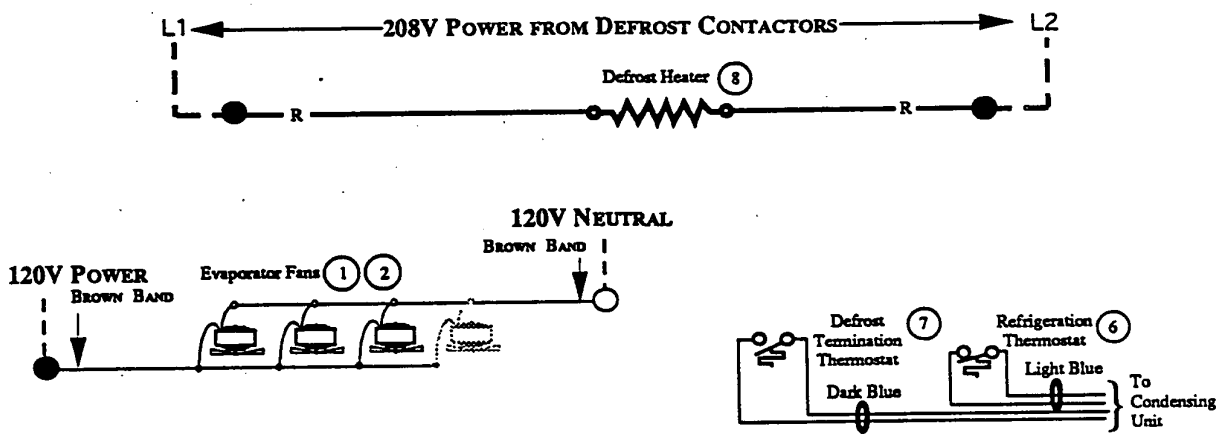
R = Red Y = Yellow BL = Blue B = Black G = Green W = White

● = 120V POWER O = 120V NEUTRAL ▨ = GROUND

NP4 - Fan and Heater Circuits - Offtime Defrost (standard)



NP4 - Fan and Heater Circuits - Electric Defrost (optional)



WARNING

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

NOTES:

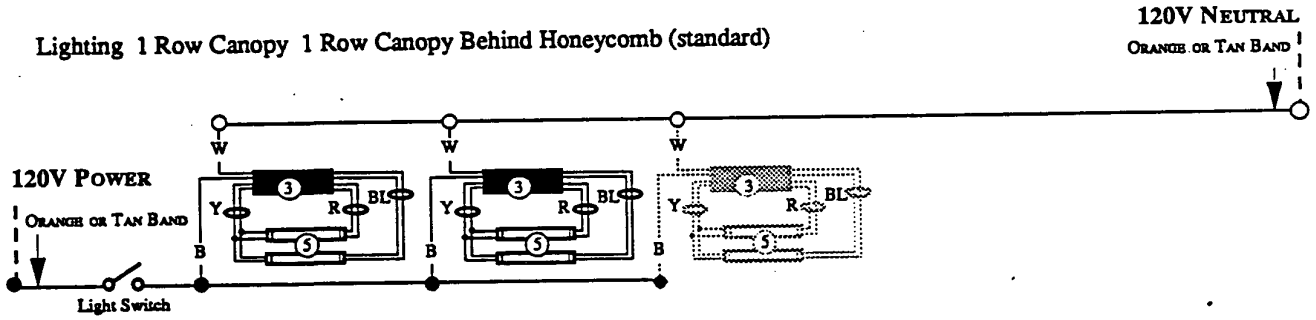
Schematic shows both standard and optional components. Not all components will be on each merchandiser.
Check store legend for specifics. Broken line indicates field wiring.
Grayed components in 12 foot models only.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS
R = Red
● = 120V POWER ○ = 120V NEUTRAL

NP4 - Light Circuits

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

Lighting 1 Row Canopy 1 Row Canopy Behind Honeycomb (standard)



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 W = White

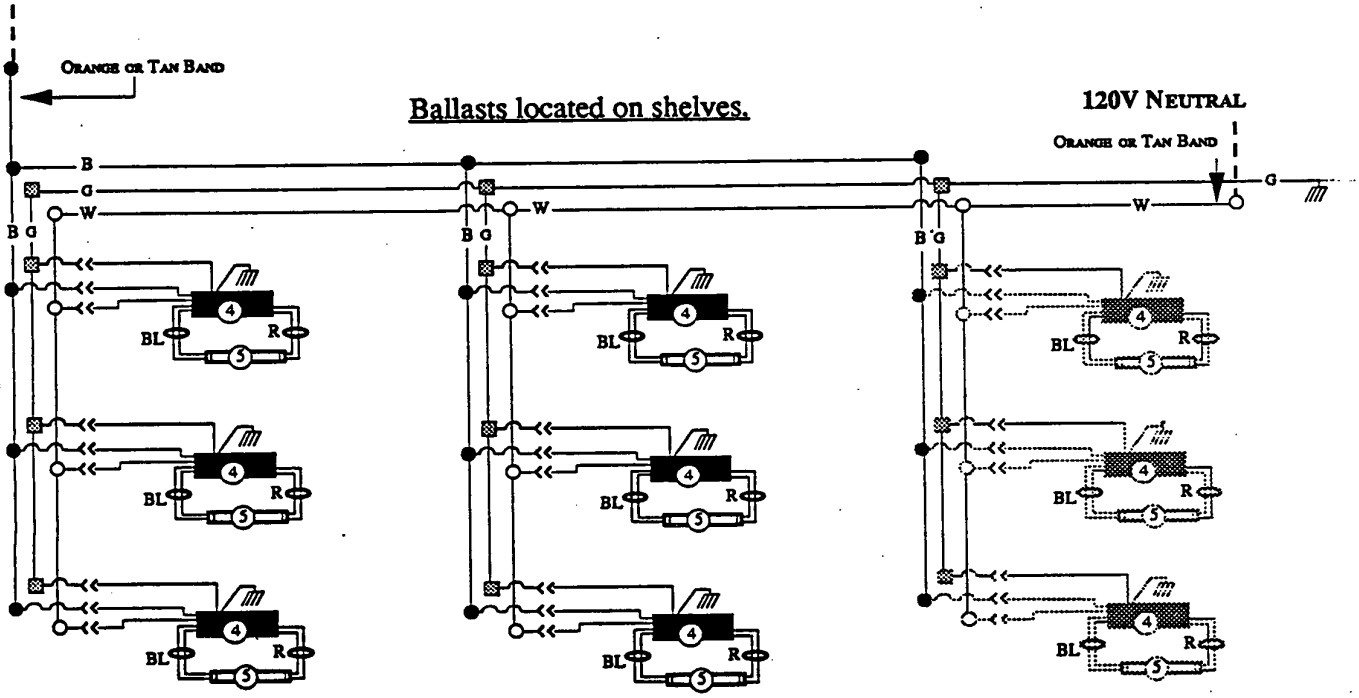
● = 120V POWER O = 120V NEUTRAL

NP4 - Shelf Light Circuits (optional)

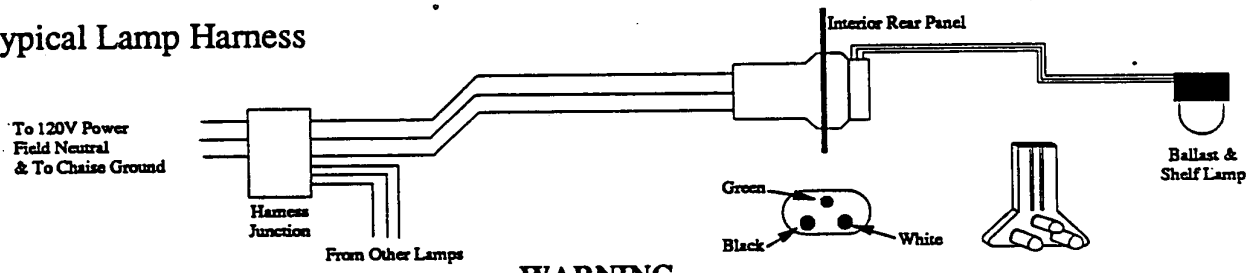
CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

Lighting Shelves 1 Single Lamp Ballast per Shelf

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

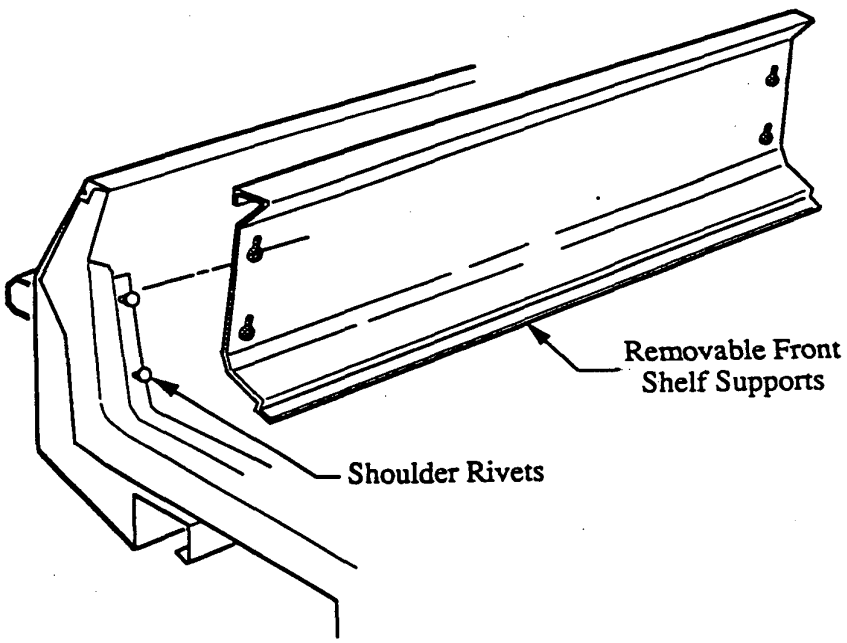
To facilitate quick and complete cleaning, these merchandisers have been designed with a removable front shelf support. The entire support is removable, in four foot sections, without the need for tools. Simply lift each section up and off the shoulder rivets located at both ends of each section (see illustration below).

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 constructing the merchandisers.

•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 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.**

NOTE: Be sure plenum is properly lowered into position after cleaning or product loss will result due to improper refrigeration.

CLEANING MIRRORS
(Not All Merchandisers)

Mirrors are sheets of clear glass that have very thin reflective and protective coatings applied to one side. These coatings are susceptible to deterioration if certain cleaning solutions and even water are allowed to come in contact with them. Every precaution should be taken to keep all liquids away from the coated side of the mirrors. IF LIQUIDS ARE ALLOWED TO FLOW ALONG THE FACE SIDE OF THE MIRROR TO ITS EDGE, THE LIQUID CAN "WICK" UP TO THE COATING AND IN TIME CAUSE SERIOUS DAMAGE.

To Help Prolong the Life of the Mirrors:
•Use only mild cleaning solutions (Windex, Solox or a weak solution of vinegar and water).

•Do NOT spray liquids on the mirrors. Dampen the cleaning cloth then use the cloth to wipe the mirror.

•Wipe water from the mirrors immediately to prevent difficult to remove water spots and also to prevent the water from reaching the mirror's edge.

•Never use dirty cloths, scrapers or any other abrasive materials for cleaning.

SHELVES

Shelves available on NP4, and NP2 models are the 14, 16, 18 or 20 inches (20 inch not available on NP4) lighted or unlighted 4-foot long shelves. All upper shelves are individually mounted in 1 inch increments and have two-position brackets permitting shelves to be placed in a flat or down-tilt position. Front product stops are especially recommended when shelves are placed in the down-tilt position. Wire display shelves can be adjusted to several positions permitting shallow or volume displays.

Shelf Configuration

The 14 and 16 inch shelves may be placed in any position provided by the double-slotted uprights in the rear wall of the merchandiser. Shelves 18 inches and larger may be positioned in any of the nine lower upright slots and still be behind the front refrigerated air curtain and in the safe refrigerated zone. The larger shelves should not be placed above the line on the load limit stickers.

SHELF ALIGNMENT (Not All Merchandisers)

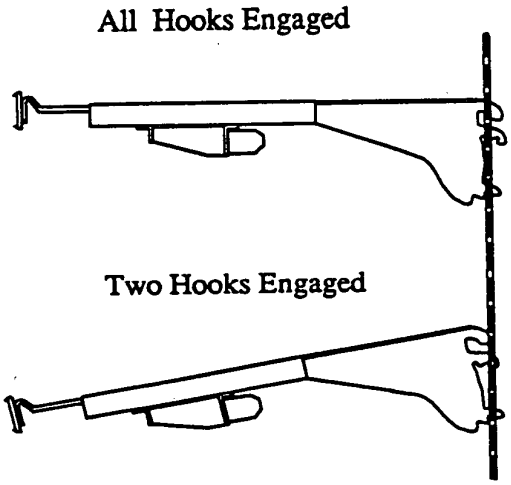
Taped to one of the shelves of each merchandiser is a small plastic bag containing shelf alignment strips. These strips are designed to enhance the appearance of the shelves by aligning the front edge of each shelf with that of an adjacent shelf. See illustration.

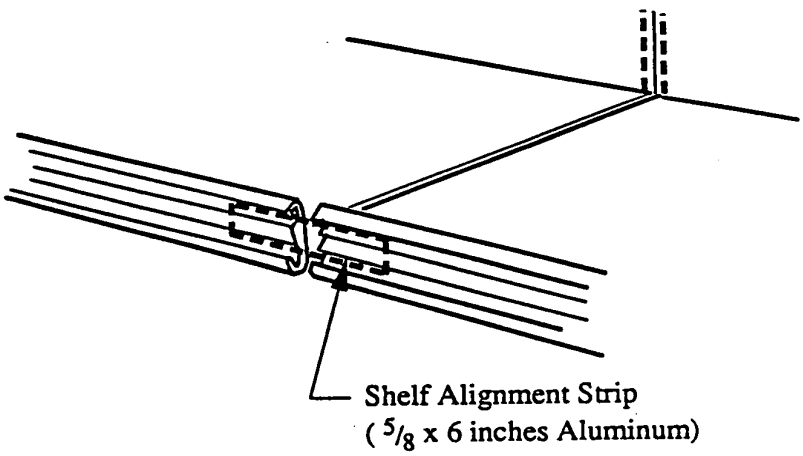
When installing the shelves on the merchandisers:

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.



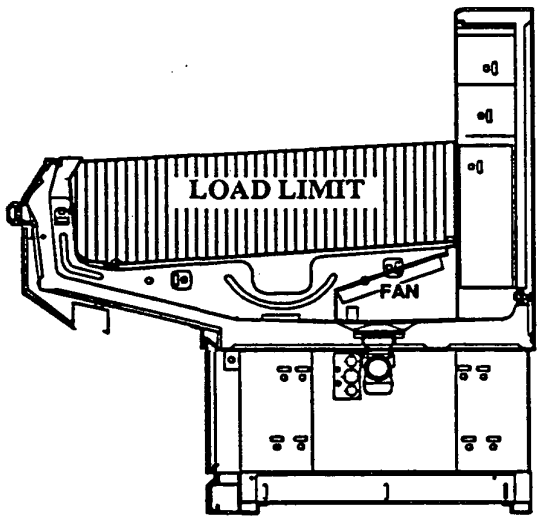


STOCKING

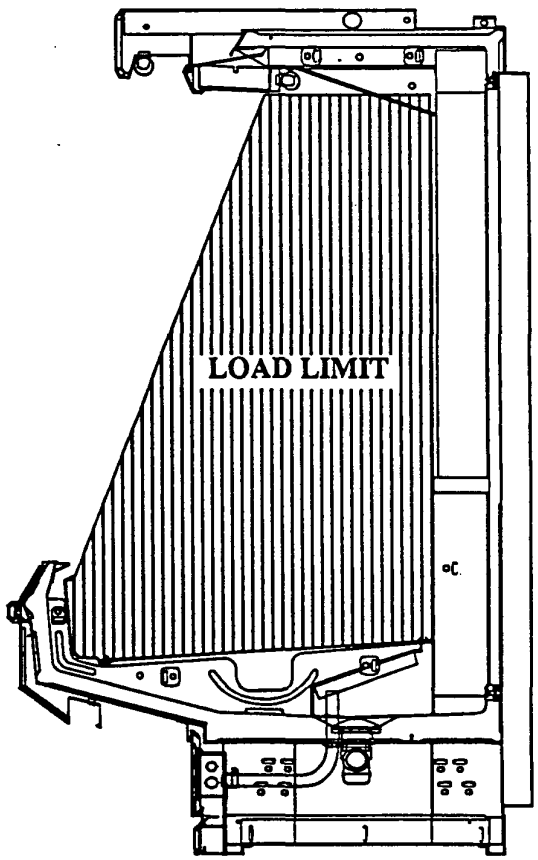
Product should not be placed in merchandisers until all refrigeration controls have been adjusted and merchandisers are at proper operating temperature.

At no time should the merchandisers be stocked beyond the load limits indicated on the ends of the merchandiser as shown in the illustration below. Shelf life of perishables will be short if load limit is violated.

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



NP1 Merchandiser Shown



NP4 Merchandiser Shown

FAN LOCATION

The evaporator fans are located toward the rear of the merchandiser directly beneath the display pan. ALWAYS REPLACE THE FAN BLADES WITH THE RAISED EMBOSSING TOWARD THE MOTOR.

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 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.

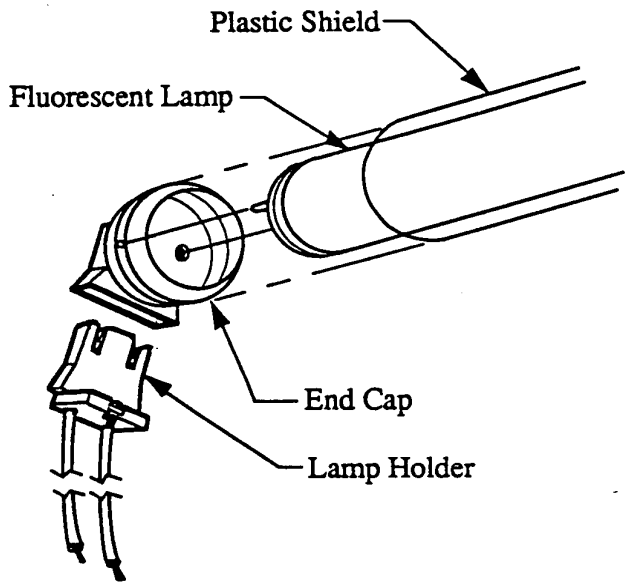
NOTE: Do NOT twist the lamp.

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.

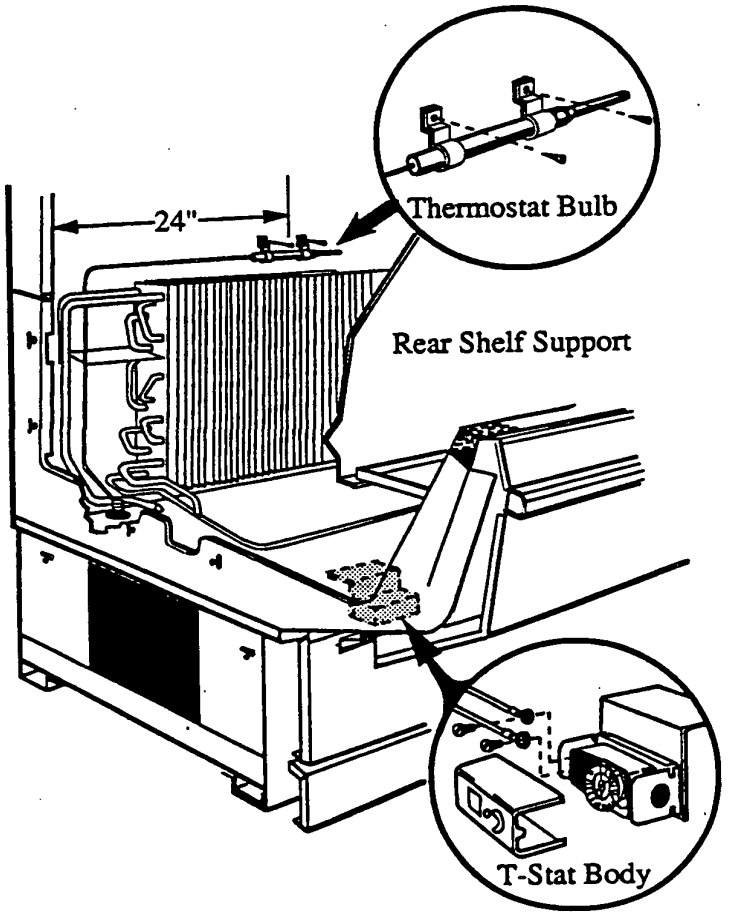


REPLACING REFRIGERATION THERMOSTAT

The thermostat will be located as shown below; the body below the merchandiser and the sensing bulb behind the rear shelf support.

To Replace the Thermostat

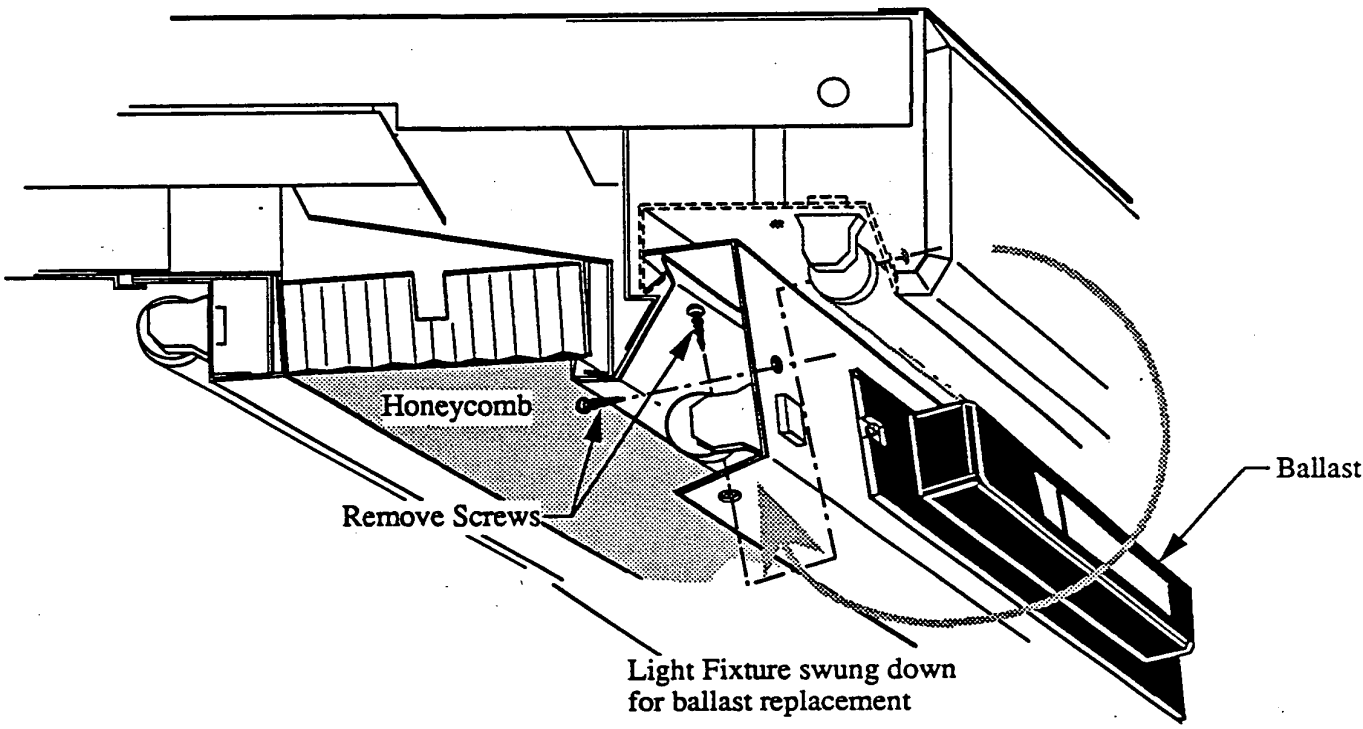
1. Remove the lower front panel from the merchandiser.
2. Loosen the rear shelf support for access to the thermostat bulb.
3. Disconnect electrical service to the thermostat at condensing unit.
4. Remove the thermostat, pulling the bulb down from behind the rear shelf support or cutting the capillary tube.
5. Install new thermostat in the same location as the original thermostat. Re-install all items that were removed and make certain that the plastic thru-way nipple is sealed.



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, starting at the end and working toward the middle of the merchandiser.
4. Light will swing down, resting on its retainer.
5. Replace ballast and reassemble parts in reverse order.

NP4 merchandiser shown in illustration below.



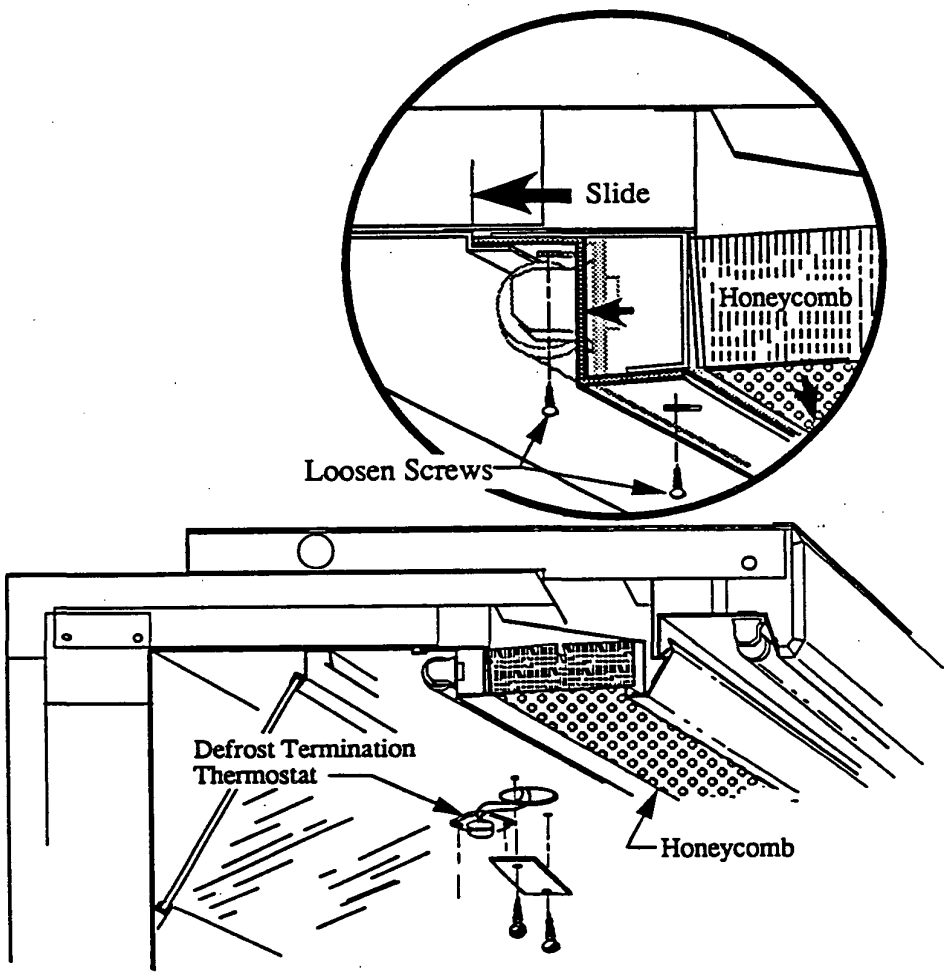
CLEANING HONEYCOMB ASSEMBLY (NP4 Only)

Honeycomb should be cleaned every six months. Dirty honeycombs will cause merchandisers to perform poorly. The honeycomb 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 honeycomb.

1. Remove the sheet metal screws located in the light channel which holds the forward edge of the honeycomb in place. A piece of styrofoam sits between honeycomb and light channel.
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.

DEFROST TERMINATION THERMOSTAT (NP4 Only)

The defrost termination thermostat is mounted to the merchandisers' interior top under the access plate. See illustration below.



REPAIRING ALUMINUM COIL

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

Hussmann recommends the following solders and technique:

Solders

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

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

NOTE:

Hussmann aluminum melts at .....1125° F
Aladdin 3-in-1 rod at .....732° F
X-Ergon Acid core at .....455° F
Factory Solder at aluminum
to copper transitions .....855° 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.