

The logo graphic consists of three parallel, chevron-shaped lines pointing to the right, rendered in a halftone dot pattern. It is positioned in the upper left corner of the page.

HUSSMANN®

**NEBDH, NEBSH
NEBSHM
NESDH, NESSH**

Curved Glass
Fresh Meat, Delicatessen and
Non-refrigerated Seafood
Merchandisers

A large, stylized version of the Hussmann logo graphic, consisting of three parallel chevron-shaped lines pointing to the right, rendered in a halftone dot pattern. It is positioned in the lower right quadrant of the page.

**Installation &
Operation Manual**

Vision Series

P/N 345907B.
October, 1992
Section 2

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Revision "B"

Add NEBSHM
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IMPORTANT KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards

This merchandiser conforms to the
Commercial Refrigerator Manufacturers 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

Curved Glass Meat, Deli & Seafood

REPLACEMENT PARTS LIST

Part	Part
Item Number	Item Number
Description	Description
1. 0047000 Fan Motor, Ambient Air 120V, 9W, CW GE #KSM51ECG3799	12. 0135900 SPST Switch
2. 0301263 Fan Motor, Evaporator 120V, 6W, CW EMS #S4BEB6E12	13. 0320717 Electrical Service Receptacle
3. 0323649 Fan Blade, Ambient Air embossing away from motor Morrill #FV700 CW 40P	14. 0329060 Mezzanine Shelf Light 8 & 12ft Receptacle Harness, (RH facing merchandiser front)
4. 0136260 Fan Blade, Evaporator embossing toward motor Morrill #FV700 CW 20S	0329061 Mezzanine Shelf Light 8 & 12ft Receptacle Harness, (Center)
5. 0329173 Ballast, 2 lamp GE #8G1584 W	0329062 Mezzanine Shelf Light 8 & 12ft Receptacle Harness, (LH facing merchandiser front)
6. 0324396 Ballast, 1 lamp GE #8G3742	15. 0352377 Receptacle Ground Fault Circuit Interrupt (Single Curved Glass Only)
7. 0329377 Fluorescent Lamp F42T6	16. 0329195 Harness Conventional,(not shown) Receptacle, 8ft
8. 0113625 Refrigeration Thermostat Penn #A19GD-21	0329196 Harness Conventional,(not shown) Receptacle, 12ft
9. 0326623 Air Compressor	17. BFV-AC Thermostatic Expansion Valve R-22, 8ft, 12ft Sporlan Nomenclature
10. 0121252 Ambient Air Heater 8ft, 120V, 5.3A	BFR-AC Thermostatic Expansion Valve R-502, 8ft, 12ft Sporlan Nomenclature
0121253 Ambient Air Heater 12ft, 120V, 8.0A	
11. 0329370 Anti-sweat Heater 120V, 0.36 A	

Non-Hussmann Replacement Parts

1. Air filter for compressor.

GENERAL INFORMATION

1-1

MODEL DESCRIPTIONS

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

- NEBDH** Refrigerated Double Curved Glass Deli and Meat Merchandiser, humidification, rear doors, mezzanine shelves, hinged glass, with front glass ambient heater and fans
- NEBSH** Refrigerated Single Curved Glass Deli and Meat Merchandiser, humidification, rear doors, mezzanine shelves, hinged glass, with front glass ambient heater and fans
- NEBSHM** Refrigerated Single Curved Glass Deli and Meat Merchandiser, humidification, rear doors, mezzanine shelves, hinged glass
- NESDH** Non-Refrigerated Double Curved Glass Seafood Merchandiser, rear doors, ice pan, hinged glass
- NESSH** Non-refrigerated Single Curved Glass Seafood Merchandiser, rear doors, ice pan, hinged glass

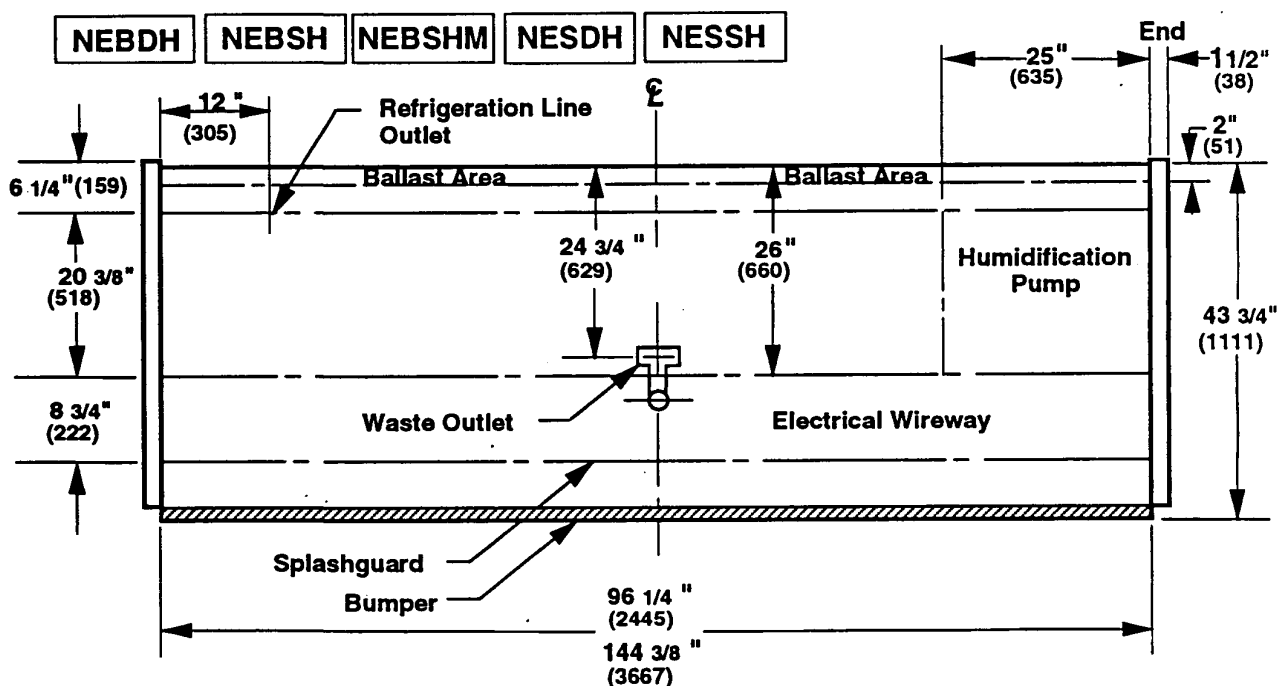
APPLICATION

The refrigerated merchandisers are designed for displaying fresh meat, delicatessen or seafood in air conditioned stores where temperature and humidity are maintained at or below 75°F dry bulb temperature and 55% relative humidity.

Product temperature should always be maintained at a constant and 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.

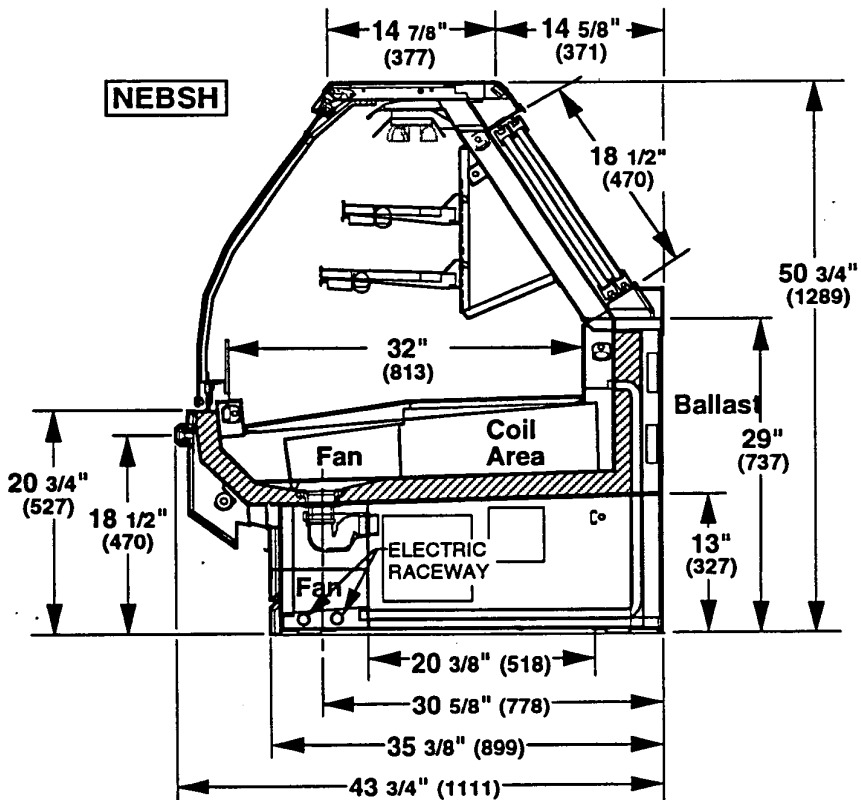
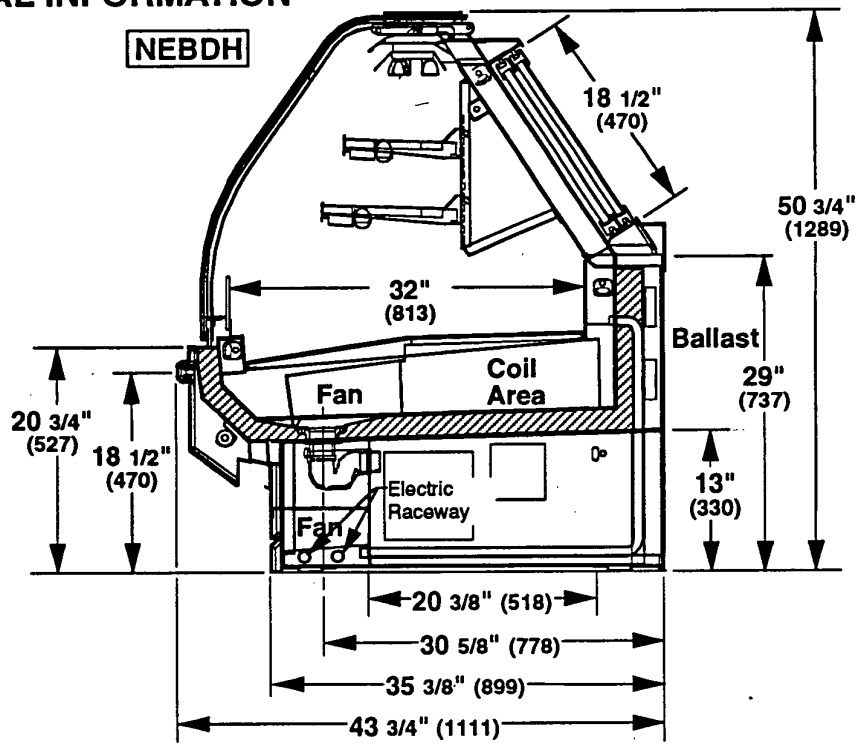
The humidification kit and mezzanine shelves, however, are not available with Seafood merchandisers.

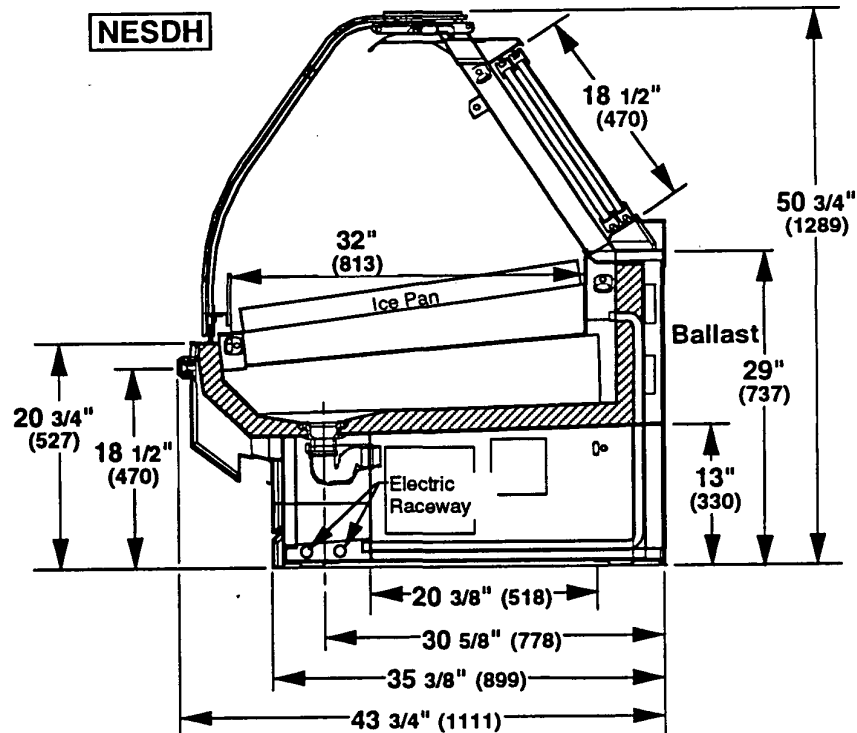
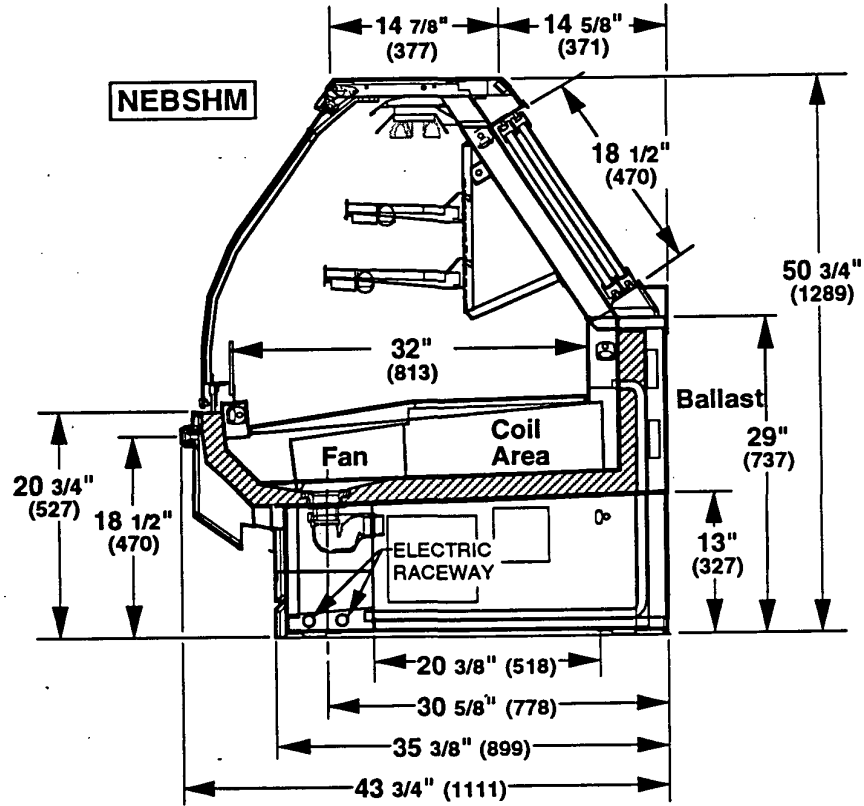
NOTE: Plan view and cross section measurements are given in inches and in millimeters.



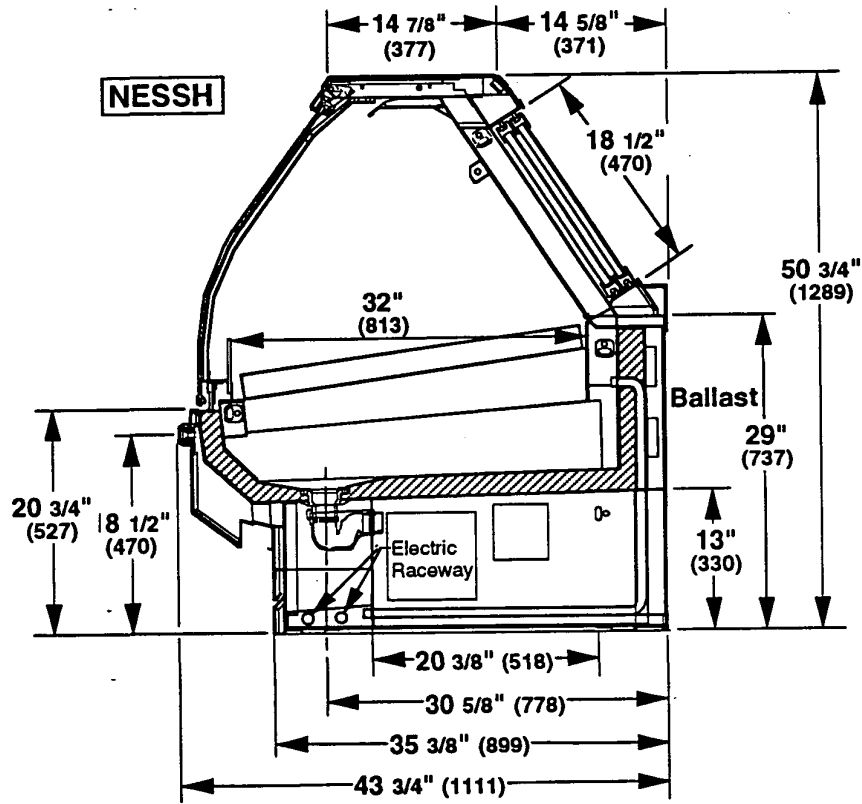
Curved Glass Meat, Deli & Seafood

GENERAL INFORMATION





GENERAL INFORMATION



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 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.

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.

LOCATION

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.

IMPORTANT

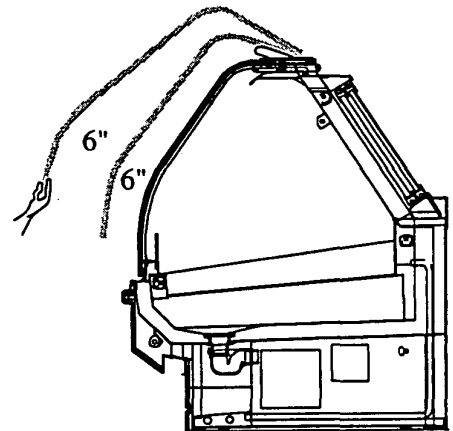
READ BEFORE RAISING FRONT GLASS

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".
2. Increase the height to about 12" 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.



2-2 INSTALLATION

LEVELING

Merchandisers must be installed level to ensure proper operation of the refrigeration system and to ensure proper drainage of defrost water. Leveling shims or wedges are provided with each merchandiser for use if needed. **NOTE:** To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

ANCHORING

Merchandisers do NOT require anchoring.

WASTE OUTLET HOOKUP

The waste outlet is located at the center of each merchandiser allowing drip piping to be run under the fixture lengthwise. A 1 1/2" 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 and plug have been shipped to allow for drain direction need of individual field application.

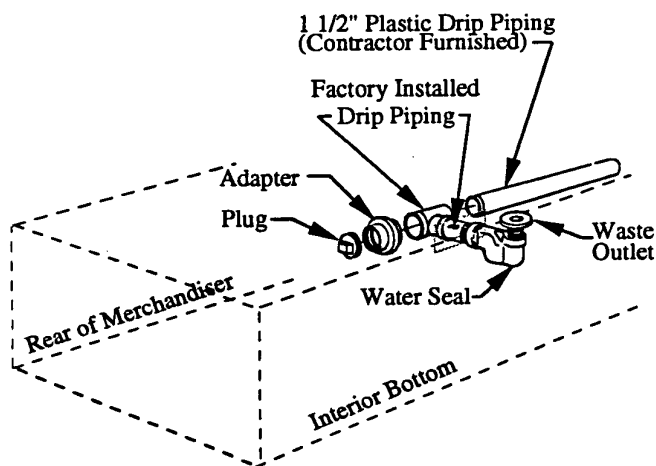
NOTE: PVC-DWV solvent cement is recommended. Follow the manufacturer's instructions.

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" 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.

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



HUMIDIFIER DRAIN

The drain tube for the humidifier is shipped coiled and is securely located under the merchandiser. Run the tube along the drip piping to the floor drain with required air break before drain. Be sure to pitch in the direction of flow and do not create any air traps.

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 splashguards. The leveling brackets have a maximum extension of 3/4" for uneven floors. After adjusting brackets flush with the floor, align slots in splashguard with leveling brackets and drop in place. Then position lower front panel UP BEHIND THE FRONT PANEL FIRST, then down over the brackets. The lower front panel will ride against a 1/2 x 1/2" factory installed foam gasket on the front flange of the airwipe plenum.

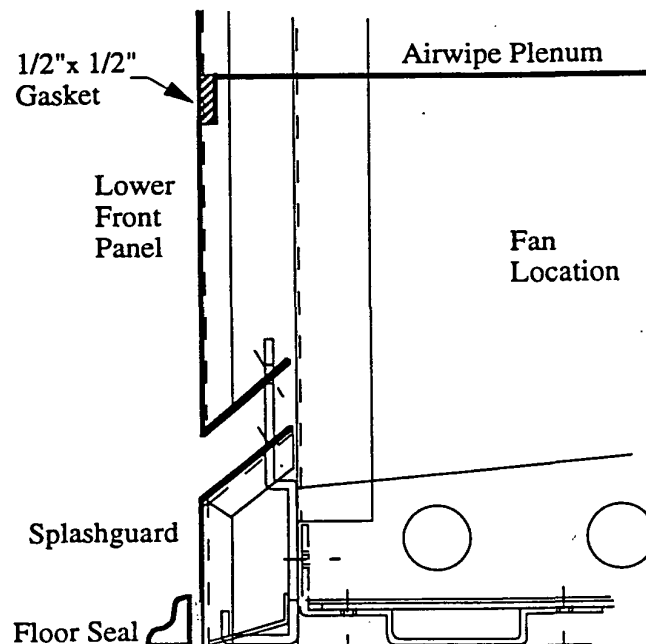
SEALING SPLASHGUARD TO FLOOR

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.

Note: The splashguard must be removable to access components behind it.

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. **Do not seal trim to the floor.**



REFRIGERANT

The correct type of refrigerant will be stamped on each merchandiser's serial plate located at the rear, on the exterior surface of the merchandiser.

REFRIGERANT PIPING

Connection Sizes

Liquid Line	3/8" OD
Suction Line	7/8" OD

Connection Location

The refrigerant line connections are 12" from the left end, as viewed when facing the front of the merchandiser.

Before making connections wrap tubing with a wet rag to protect the factory piping seal.

Line Sizing

Refrigerant lines should be sized as shown on the refrigeration legend that is furnished for the store. If a legend has not been furnished, refer to the *Husmann Custom Conventional Application Manual* or the *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

The suction and liquid lines should be clamped or taped together and insulated for a minimum of 30' from the merchandiser. Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable.

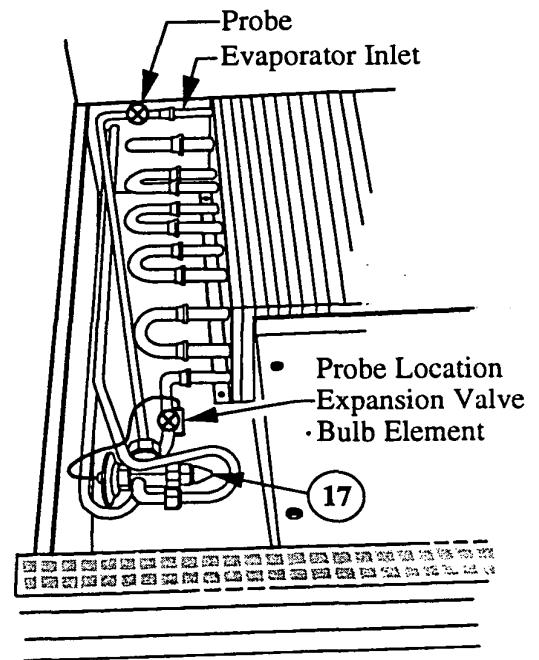
NOTE: OFFTIME is the ONLY recommended type of defrost for these merchandisers.

EXPANSION VALVE ADJUSTMENT

Expansion valves must be adjusted to fully feed the evaporator. During valve adjustment, the evaporator must be clear or only lightly covered with frost. The fixture must be within 10°F of its operating temperature.

Attach 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 evaporator inlet line.

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.



**3-2 REFRIGERATION
CONTROL SETTINGS
NEBDH, NEBSH, NEBSHM**

Conventional Single Compressor

Measure Discharge Temperature at the center of the moire openings found below and in front of the bottom sliding door track.

Refrigeration temperature must be controlled by both an EPR valve (primary control) and a 3-5°F differential thermostat (secondary control) responding to evaporator discharge air temperature. The thermostat will control the compressor motor contactor, or the liquidline solenoid at the merchandiser.

Adjust the refrigeration thermostat to control the discharge air temperature slightly below the discharge air temperature setting to protect product during reduced load periods (off lights, lower ambients).

NOTE: The thermostat may be ordered factory installed. The thermostat body is located behind the rear closure 14" from left-hand end. It is fastened to the exterior foam bottom. The bulb is located in the rear left flue area behind the rear shelf support.

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

Refrigeration Data		
Merchandiser Application	Fresh Meat	Deli
Discharge Air °F	24	26
Evaporator °F	20	22
Thermostat °F	19	23
Defrost Data		
Frequency Hrs	24	24
Electric		
Temp Term °F	NA	NA
Failsafe Min	NA	NA
Gas		
Duration Min	NA	NA
Offtime		
Duration Min	90	90
Offtime w/ Pressure Termination		
PSIG		
R-22	76	76
R-502	89	89
Failsafe Min	90	90
When Thermostat Controls Temperature Low Pres Backup Control (PSIG)		
	Fresh Meat, Seafood	
	Cut-Out	Cut-In
R-22	25	57
R-502	32	68
	Deli	
	Cut-Out	Cut-In
R-22	26	59
R-502	34	70

Parallel Compressor Rack

Measure Discharge Temperature
at the center of the moire openings
found below and in front of
the bottom sliding door track.

Refrigeration temperature must be controlled by both an EPR valve (primary control) and a 3-5°F differential thermostat (secondary control) responding to evaporator discharge air temperature. The thermostat will be wired to a continuous "ON" circuit and will control a liquid line solenoid at the merchandiser.

Adjust the refrigeration thermostat to control the discharge air temperature slightly below the discharge air temperature setting to protect product during reduced load periods (off lights, lower ambients).

NOTE: The thermostat may be ordered factory installed. The thermostat body is located behind the rear closure 14" from left-hand end. It is fastened to the exterior foam bottom. The bulb is located in the rear left flue area behind the rear shelf support.

Defrost is Off Time and is time terminated. To isolate the evaporator during defrost, suction stop valve must be used.

Refrigeration Data		
Merchandiser Application	Fresh Meat	Deli
Discharge Air °F	24	26
Evaporator °F	20	22
Thermostat °F	19	23
Defrost Data		
Frequency Hrs	24	24
<u>Electric</u>		
Temp Term °F	NA	NA
Failsafe Min	NA	NA
<u>Gas</u>		
Duration Min	NA	NA
<u>Offtime</u>		
Duration Min	90	90

CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made in the electrical raceway as shown below.

IDENTIFICATION OF WIRING

Leads for all electrical circuits are identified by colored plastic bands. These bands correspond to the *Wiring Color Code* located inside the merchandiser's raceway.

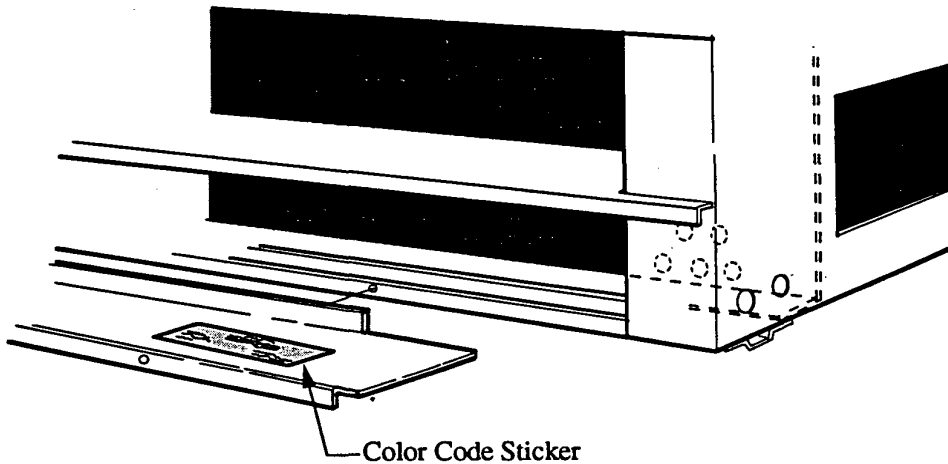
WIRING COLOR CODE

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 | LIGHTS |
| DARK BLUE .. | DEFROST TERM. THERMOSTAT | MAROON ... | RECEPTACLES |
| PURPLE..... | ANTI-SWEAT HEATERS | YELLOW.... | DEFROST HEATERS, 120V |
| BROWN | FAN MOTORS | RED* | DEFROST HEATERS, 208V |
| GREEN* | GROUND | | |

*EITHER COLORED SLEEVE OR COLORED INSULATION

ELECTRICIAN NOTE: CASE MUST BE GROUNDED



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 refrigeration thermostats. Most component amperes are listed below, always check the serial plate.

Serial Plate Amperages

Model	120V 1 PH 60Hz					
	Humidity System Compressor	Fans & Anti-sweat Heaters	Ambient Air Heater	Lights— full complement of lighted shelves		Receptacles
	(1)	(1)	(2)	Standard	Option	(5)
NEBDH NEBSH						
8'	4.0	3.2	5.3	2.0	2.8	15.0
12'	4.0	4.4	8.0	3.0	4.3	15.0
NEBSHM						
8'	4.0	1.1	—	2.0	2.8	15.0
12'	4.0	1.7	—	3.0	4.3	15.0
NESDH NESSH						
8'	—	—	—	0.7	1.5	15.0
12'	—	—	—	1.0	2.3	15.0

(1) Fans, humidity system and anti-sweat heaters should be on a separate circuit from the lights to avoid turning them off with the store lights. **NOTE:** Seafood merchandisers do NOT have humidity systems.

(2) Ambient Air Heater.

Each column applies to light configurations listed below: These values must be used regardless of whether lighted shelves are installed or not.

(3) Standard lighting amperages include:

- Meat and Deli—one row canopy and 2 rows of lighted shelves.
- Seafood—one row canopy, no shelves.

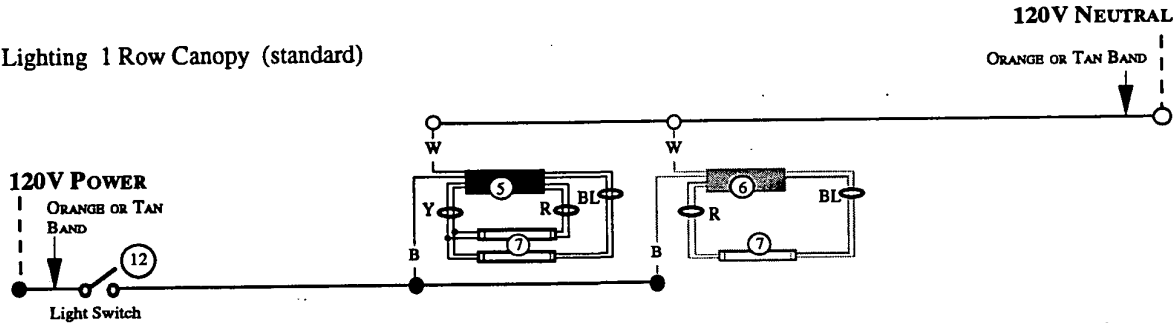
(4) Standard lighting plus exterior overhang light.

(5) The receptacles located on the rear of the merchandiser are intended for small lighted displays and scales, NOT for large motors or other high wattage appliances.

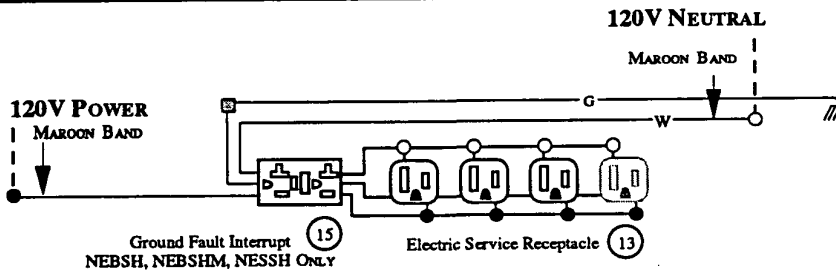
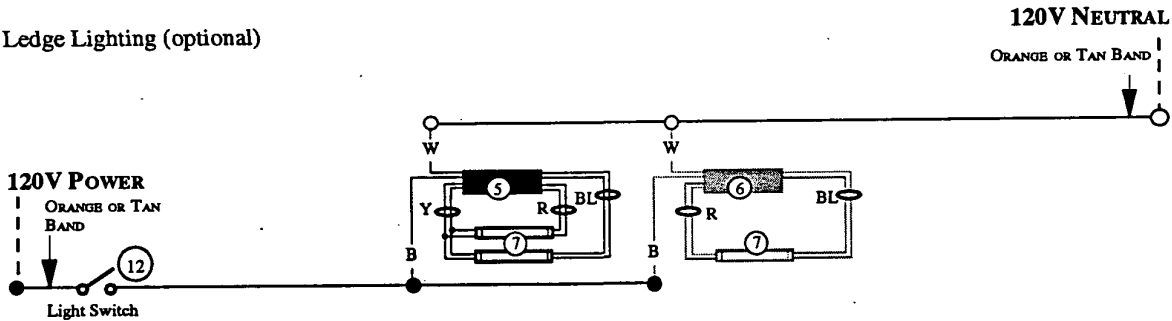
Light Circuits and Receptacles - NEBDH, NEBSH, NEBSHM, NESDH, NESSH

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

Lighting 1 Row Canopy (standard)



Ledge Lighting (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.

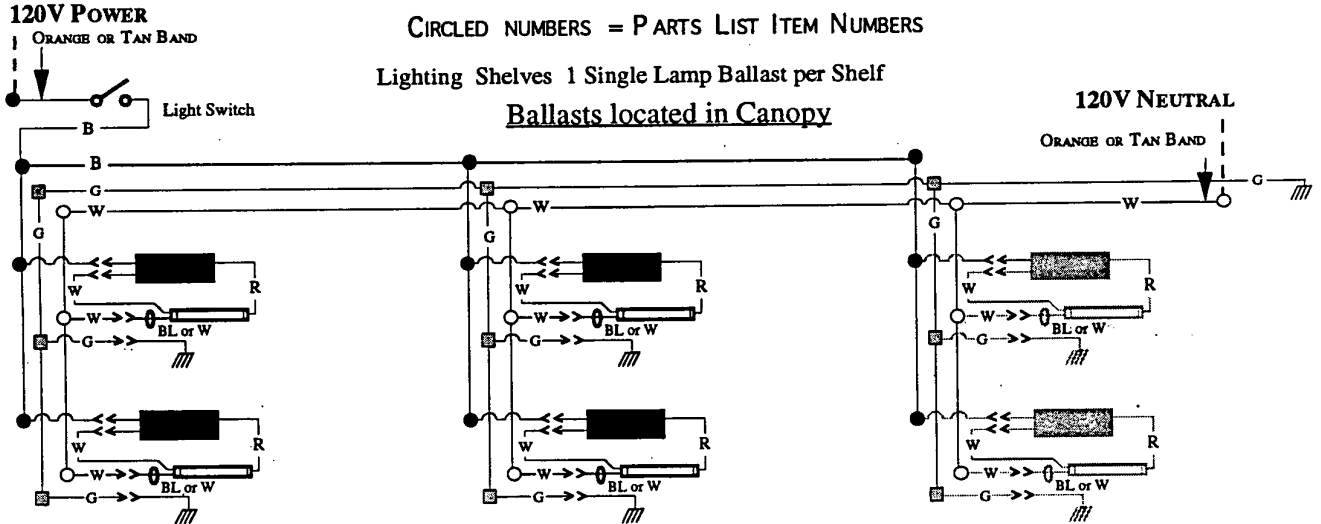
Optional shelf lighting uses one single light ballast per shelf.

Grayed components in 12' models only.

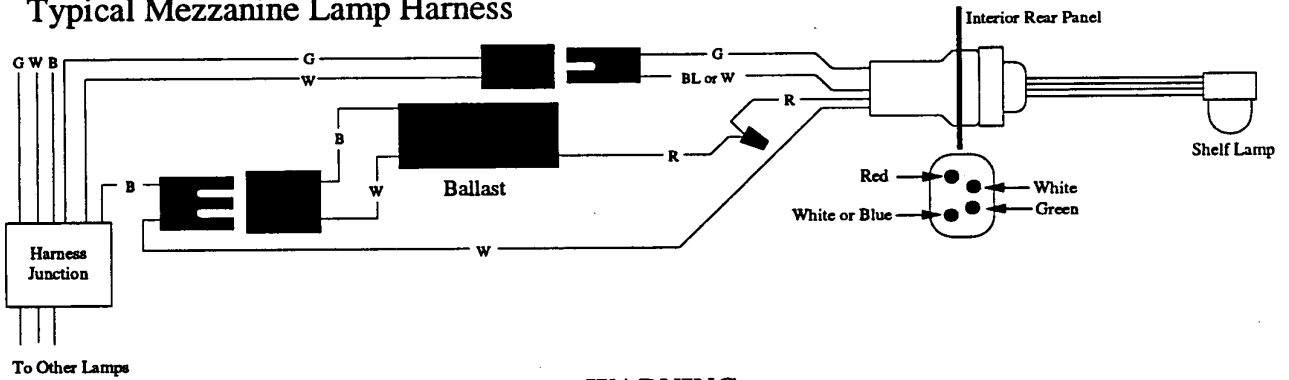
R = Red OR = Orange Y = Yellow BL = Blue B = Black BR = Brown W = White

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

Shelf Light Circuits - NEBDH, NEBSH, NEBSHM (optional)



Typical Mezzanine Lamp Harness



WARNING

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

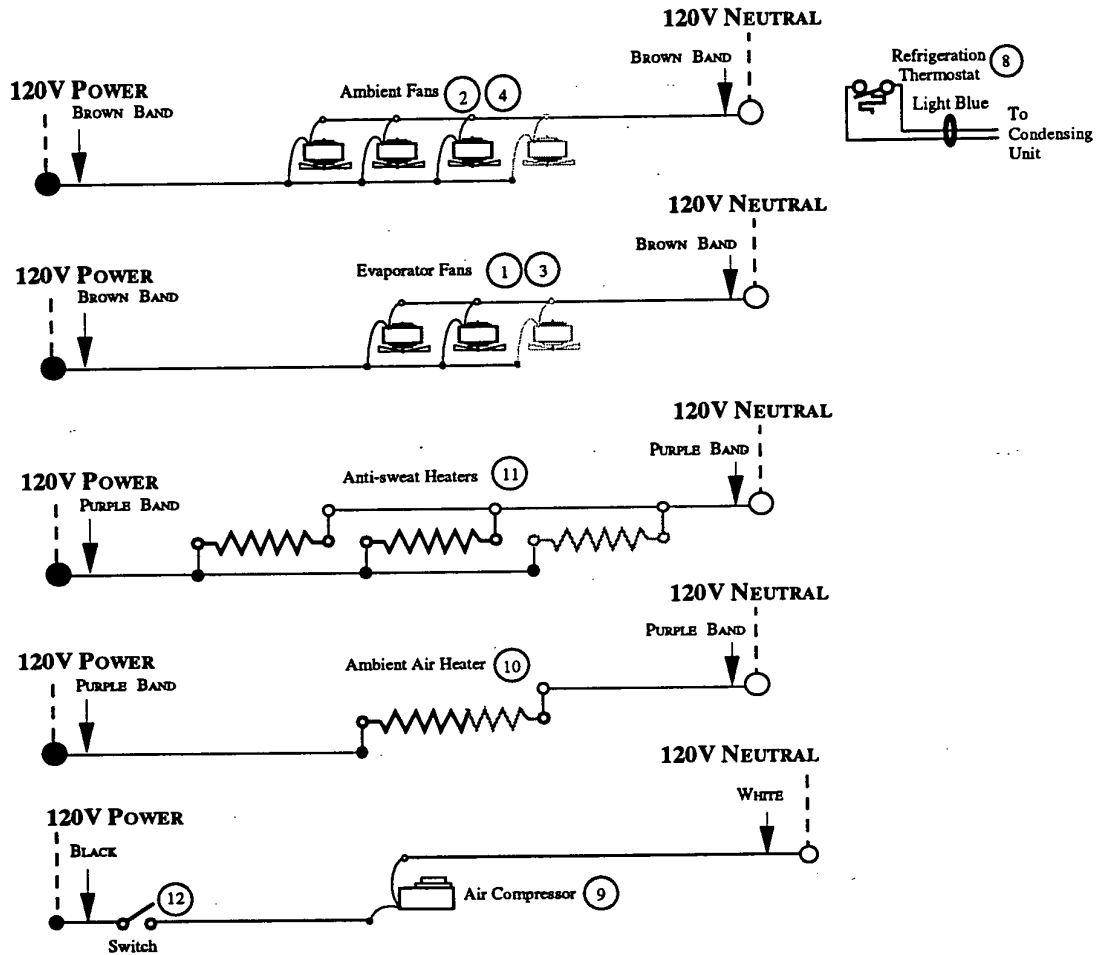
Notes:

- Schematic shows both standard and optional components. Not all components will be on each merchandiser. Check store legend for specifics.
- Optional shelf lighting uses one single light ballast per shelf.
- Grayed components in 12' models only.

R = Red OR = Orange Y = Yellow BL = Blue B = Black BR = Brown W = White

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

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.

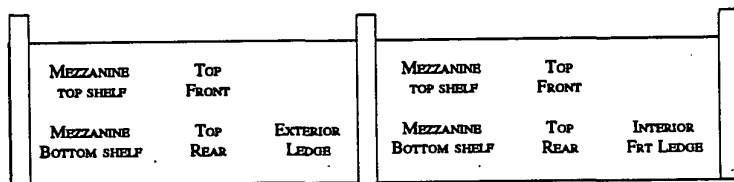
Grayed components in 12' models only. Broken line indicates field wiring.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

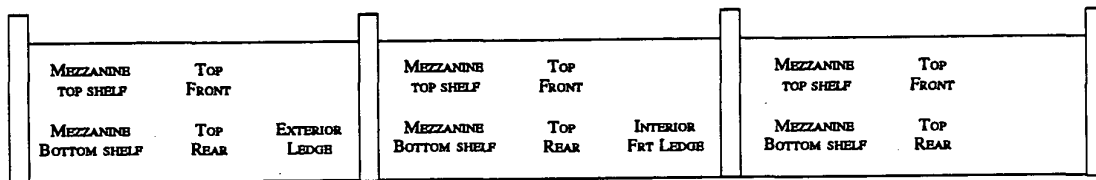
● = 120V POWER ○ = 120V NEUTRAL

Ballast Locations - NEBDH, NEBSH, NEBSHM, NESDH, NESSH

Not all merchandisers will have all the ballasts shown.



Ballast Layout for 8' Merchandiser
(Viewed from rear of case)



Ballast Layout for 12' Merchandiser
(Viewed from rear of case)

USER INFORMATION

5-1

CARE AND CLEANING

**NEVER USE
ABRASIVE CLEANSERS, SCOURING PADS,
OR ABRASIVE WIPE CLOTH.**

The merchandisers feature designs that promote quick and complete cleaning. The front glass is easily raised out of the way.

Front Glass

Soap and water or a non-abrasive glass cleaning agent may be used to clean the front glass.

Exterior Surfaces

The exterior surfaces must be cleaned with mild detergent and warm water to protect their finish.

Interior Surfaces

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions.

CAUTION: SHUT FAN OFF DURING CLEANING PROCESS.

The fan plenum is hinged and can be raised out of the way. Removing the shipping screws in the coil cover bottom pans allows the fan plenum and cover to be slid forward to expose the coil area. (The screws may be left off.)

Do NOT:

- Spray water directly on evaporator fans.
- Use mineral oil based solutions. these will dissolve the butyl sealants in the merchandisers.
- Use steam or high water pressure hoses to wash the interior. These will destroy the merchandiser's seals.
- Flood. Never introduce water faster than the waste outlet can remove it.

DO:

- Remove the product and all loose debris to avoid clogging the waste outlet.
- Thoroughly clean all surfaces with soap and hot water. Rinse with hot water.
- Apply the sanitizing solution according to the manufacturer's directions.
- 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.

WARNING

Do NOT use HOT water on COLD glass surfaces. This can cause the glass to shatter and could result in personal injury. Allow glass fronts, ends and service doors to warm before applying hot water.

5-2 USER INFORMATION

REPLACING SHELF LAMPS

1. Turn light switch to OFF prior to replacing or installing any lighting components.
2. Disconnect the proper light fixture by removing the fixture power cord from the socket in the rear interior of the merchandiser.
3. Carefully lift the shelf out of the merchandiser from the front.
4. Place the shelf on a flat surface to remove the clear plastic protective shield from the fixture. Carefully insert one finger between the fixture socket and the protective shield. Use the opposite hand to "pinch" the lens cover (and simultaneously hold the fixture in place) while lifting with the inserted finger.
5. When the shield has been separated from the fixture at one end, remove it by slowly pulling the remainder of the shield away from the fixture.
6. Remove the lamp by depressing the spring loaded socket at one end of the fixture and swinging the opposite end of the lamp from its formerly fixed position.
7. Insert the new lamp in the spring loaded socket, depressing the socket, until the opposite end of the lamp will properly enter the stationary light socket.
8. Return the lamp shield to its original position by lightly pinching it in from each side and inserting the shield flanges into the fixture channel. Continue this procedure along the total length of the lamp shield until it is in place. The shield should be in the proper position if this is done correctly.

SHELVES

Mezzanine Shelves

Display shelves can be installed at two different positions as desired.

Bottom Wire Shelves

These shelves are adjustable up and down to change display angle.

NOTE: When changing shelf positions, it is helpful to open the front curved glass and do the work from the front.

STOCKING

Product should not be placed in merchandisers until all refrigeration controls have been adjusted and merchandisers are at proper operating temperature. **Air discharge and return air flue must be unobstructed at all times to provide proper refrigeration.**

There is also a row of vents located at the exterior base of the front glass. **Do NOT place any signs or other restrictive objects on the front of the refrigerator that will block these vents.**

ELECTRICAL SERVICE RECEPTACLES

The receptacles located on the exterior back of the merchandisers are intended for scales and lighted displays. They are NOT intended or suitable for large motors that are found in meat and delicatessen departments.

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.

EVAPORATOR FANS

The evaporator fans are located at the center front of these merchandisers, directly beneath the display pans. Should the fans or blades ever need servicing, always replace the fan blades with the raised embossed side of the blade toward the motor.

AMBIENT FANS

The ambient fans are located at the front of the merchandiser behind the lower front panel. Should these fans or blades ever need servicing, always replace the fan blades with the raised embossed side of the blade installed away from the motor.

For access to the fans:

1. Remove the lower front panel. Lift panel up and out of the retaining trough then slide the bottom of panel away from trough.
2. Remove screws holding fan plenum to lower front.
3. Disconnect fan harness and carefully pull fan plenum forward.

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
(616) 243-2531

X-Ergon
1570 E. Northgate
P.O. Box 2102
Irving, TX 75062
(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.

6-2 SERVICE

WARNING

Once the cylinder is released, the front glass will have no support to maintain it in a raised position. Support the front glass at all times until cylinder is replaced or the glass is lowered.

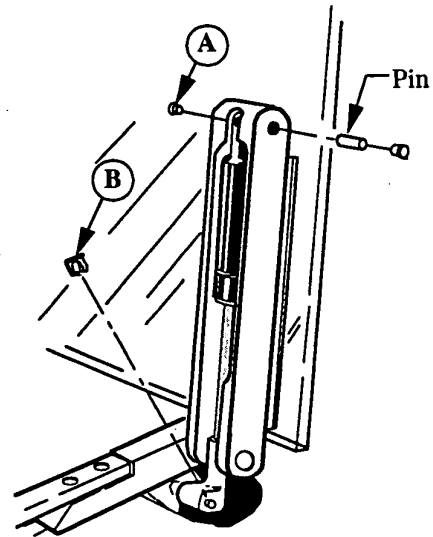
DOUBLE CURVED GLASS (NEBDH & NESDH)

Front Glass Cylinders

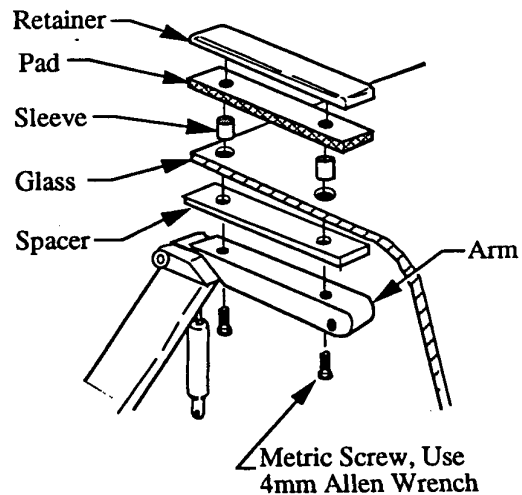
1. Raise the front glass to open completely.
2. Loosen the set screw "A" on the shoulder of the cylinder.
3. Remove pin to free the cylinder at the front using a pointed object.
4. Remove rear snap ring "B" and remove cylinder.

Front Glass

1. Remove cylinders at each end of glass, see above.
2. Lower the front glass and remove glass from upright arm.



Front Glass Cylinders



Front Glass

SINGLE CURVED GLASS (NEBSH & NESSH)

Front Glass Cylinders

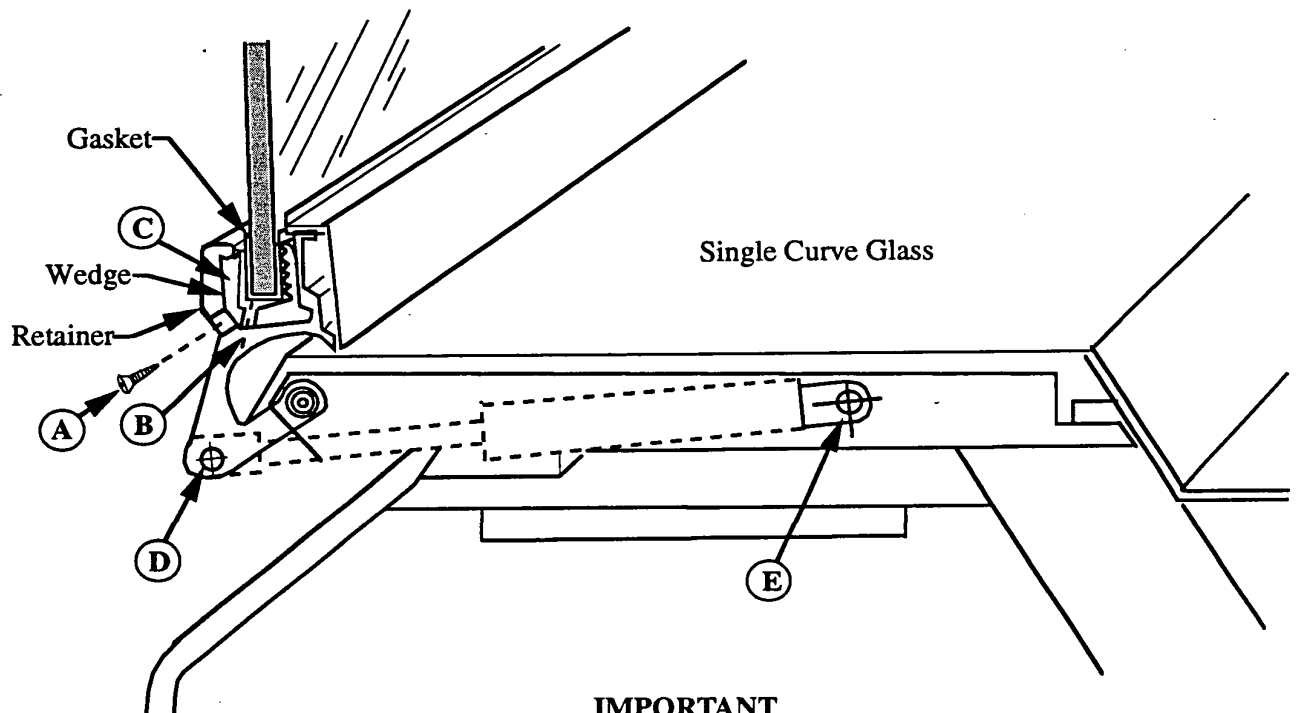
1. It is not necessary to remove the glass to change a cylinder. If both cylinders are to be removed, however, the glass **MUST** be supported.
2. Remove retainer clip from pin at "D" and "E".
3. Slide cylinder off pins.

Front Glass

1. Raise the front glass to open completely.
2. Loosen Allen Set Screws "A" on EACH hinge assembly and slide glass out of hinge assembly.
3. Now remove glass from Extrusion "C" by loosening Set Screw "B" and sliding glass out.

WARNING

Once the cylinder is released, the front glass will have no support to maintain it in a raised position. Support the front glass at all times until cylinder is replaced or the glass is lowered.



IMPORTANT

When reinstalling glass be certain that:
 Gasket is on glass evenly
 Glass is fully bottomed in retainer
 Wedge is in retainer and when set screws are tightened, glass is firmly held in place by the wedge

6-4 SERVICE

SINGLE CURVED GLASS (NEBSHM)

Front Glass Cylinders

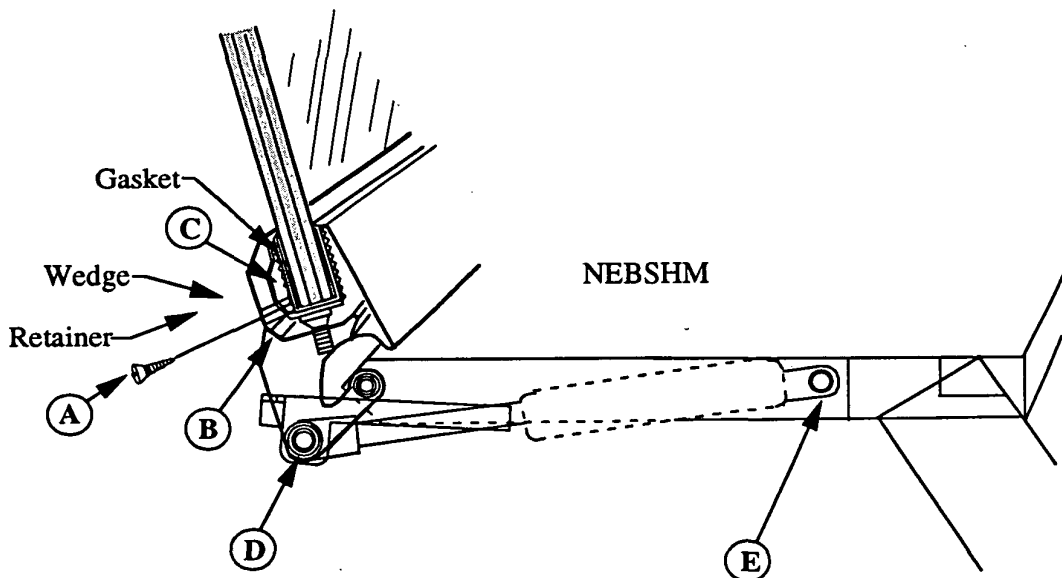
1. It is not necessary to remove the glass to change a cylinder. If both cylinders are to be removed, however, the glass **MUST** be supported.
2. Remove retainer clip from pin at "D" and "E".
3. Slide cylinder off pins.

Front Glass

1. Raise the front glass to open completely.
2. Loosen Allen Set Screws "A" on EACH hinge assembly and slide glass out of hinge assembly.
3. Now remove glass from Extrusion "C" by loosening Set Screw "B" and sliding glass out.

WARNING

Once the cylinder is released, the front glass will have no support to maintain it in a raised position. Support the front glass at all times until cylinder is replaced or the glass is lowered.



IMPORTANT

When reinstalling glass be certain that:
Gasket is on glass evenly
Glass is fully bottomed in retainer
Wedge is in retainer and when set screws are tightened, glass is firmly held in place by the wedge

HUMIDIFICATION SYSTEM

7-1

DESCRIPTION

One contributor to spoilage of fresh meat products that are displayed in refrigerated service type merchandisers is dehydration. The Humidification System is designed to maintain a **high** relative humidity inside Hussmann's merchandisers, retarding dehydration.

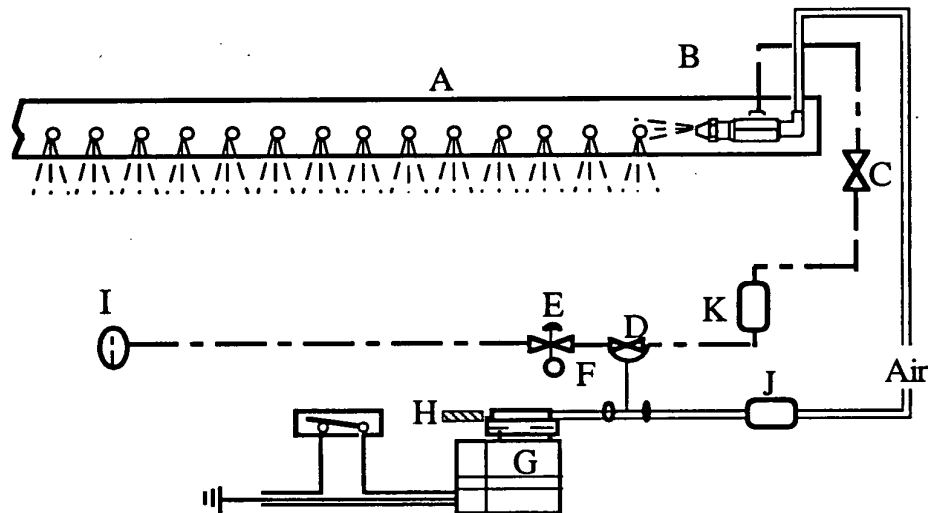
Concealed inside the rear rail under the door track of the merchandiser is a discharge manifold which runs the full length of the merchandiser. The manifold contains an atomizing nozzle connected to an air compressor and water supply. A fine mist will be discharged through the ports in the manifold and increase the humidity ratio of the refrigerated air, minimizing the dehydration caused by refrigeration.

The Humidification System is NOT applicable to the seafood merchandisers.

HUMIDIFICATION SYSTEM PARTS LIST

- A. Humidifier Discharge Manifold
- B. Atomizing Nozzle*
- C. Needle Valve*
- D. Solenoid Valve, Air Operated*
- E. Pressure Regulator*
- F. Pressure Gauge*
- G. Air Compressor; Gast DOA-P101-AA; P/N: P016-0326623
- H. Air Filter; Gast B343B; P/N: P004-0326625
- I. Water Filter to be supplied by other; Activated Carbon Filter with 5 Micron Suspended Particle Removal; or order 50MQ water filter kit.
- J. Secondary Air Filter
- K. Secondary Water Filter

*Reference Hussmann P/N P307-0326624



7-2 HUMIDIFICATION SYSTEM

INSTALLATION

The system will require the following field connections:

- To a city water supply (cold water)
- To the floor drain via the drain tube (see Section 2)
- To 120V 60 Hz electrical supply

Accessing Humidification System

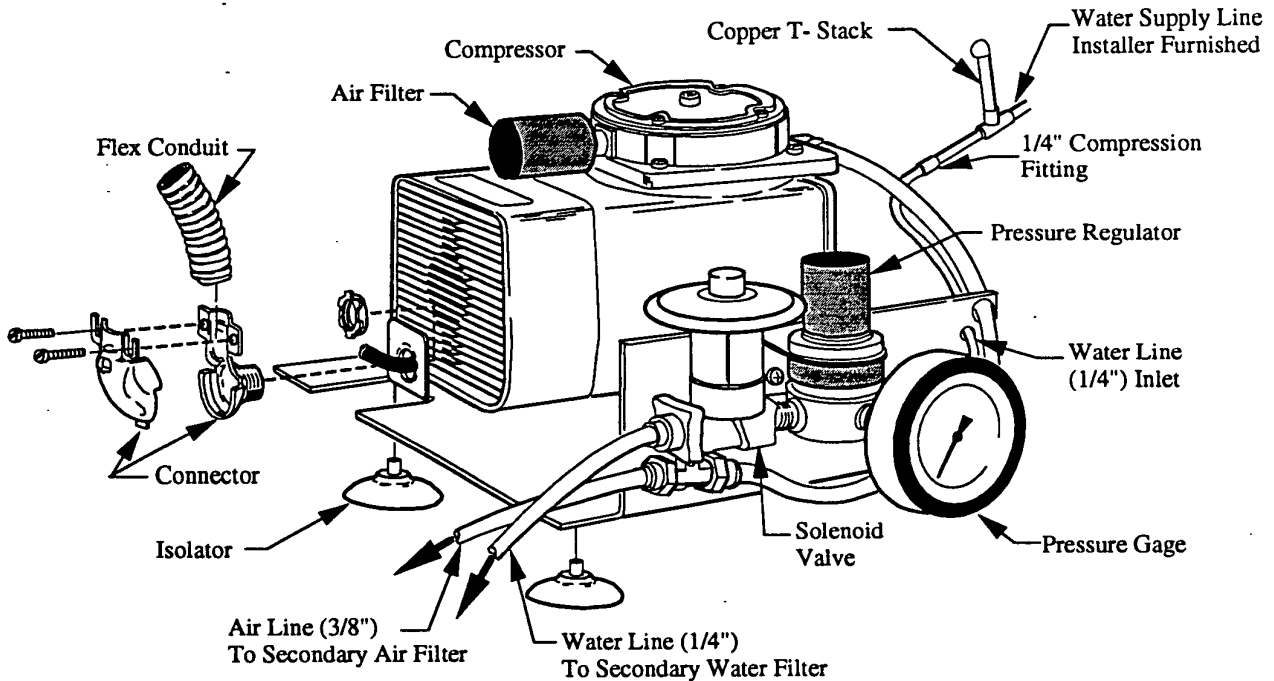
To make connections and later adjustments, remove the vented lower panel on the left, as viewed from the rear of the merchandiser.

Remove the compressor/base assembly from the rear skid of the merchandiser and install the four suction style isolators to the base. Then place this assembly beneath the merchandiser, clear of all other case components.

Water Supply Connections

The water supply connection may be made at the rear of the merchandiser after removing the compressor. A five (5) foot length of 1/4" polyethylene tubing is connected to the inlet side of the pressure regulating valve along with a 1/4" compression fitting for the water supply connection. Water supply requires 1/4" OD copper tubing.

NOTE: If the city water pressure exceeds 133 psig, a second pressure regulator must be installed upstream of the standard pressure regulator. This second pressure regulator should be set to maintain a down stream pressure at or below 133 psig.



The isolators, 1/4" compression fitting and copper T- stack are enclosed in a plastic bag taped to the top of the compressor.

•Water supply line must have a filter installed, one filter for each lineup of merchandisers. Use an activated carbon filter with 5 micron, suspended particle removal capability such as Aqua Guard AGT-250.

•We also recommend that a hand shut-off valve be installed just ahead of the filter.

To prevent the possibility of "water hammer" in the water line supplying the humidification system a T-shaped, copper stack has been supplied. The stack should be installed in the contractor supplied water line, ahead of the inlet to the water pressure regulator.

Electrical Supply Connections

The electrical wiring for the compressor is routed into the merchandiser raceway. These wires will be tagged with identification. All wiring must be installed according to all applicable NEC and local codes.

ELECTRICAL DATA (120V, 60 Hz)

Air Compressor—4.0 Amps

ADJUSTMENTS

Air Compressor

The diaphragm air compressor has been properly sized for this application. No adjustment is necessary.

Secondary Water Filter

This filter is mounted vertically near the compressor. On the top of the filter there is a small ribbed knob that allows you to release any

air that may have been trapped inside the filter. The filter is shipped with the knob in the closed position. **Water will NOT flow through the system until the air is released.** Turn the knob counter-clockwise to release the air. When water flows free, close knob.

Needle Valve

The needle valve is located behind the small vertical access plate on the upper rear left-hand panel of the merchandiser. The humidification on/off switch is also behind this access plate. The needle valve allows you to adjust the water pressure of the Atomizing Nozzle. The water pressure should be set at 5 psig. **NOTE:** The water will not flow unless the secondary water filter has been properly adjusted.

To adjust the pressure, open the needle valve completely and turn on the compressor. Allow the air to bleed out of the system then close the needle valve completely. **Do NOT overtorque the needle valve when closing.** This valve has a 3° stem taper for precise metering of flow rates. **It is NOT to be used as a shut-off valve.**

Open the valve 1/2–2 turns. The water flow rate will be about .35 gph (with the pressure at 5 psig). If excess moisture appears inside the refrigerator, slowly close the valve in 1/4 turn increments. For more humidity, open the valve in 1/4 turn increments.

Line Check

Check all air and water line connections for leaks.

7-4 HUMIDIFICATION SYSTEM

SERVICE AND MAINTENANCE

Long life and satisfactory performance of any equipment is dependent on the care and maintenance that it is given. This humidification system will normally require a minimum of service.

It is easy to note if the humidification system is operating correctly. When correctly operating,

fine mist can be seen emerging from the rear ports by sighting from the end of the merchandiser. If the mist is not present or excess moisture is evident, check the troubleshooting chart below.

Troubleshooting and Checkout Procedure

Problem

Check

A. Minimal or No Mist

Main water supply is on and water is reaching the merchandiser.

Water filters are clean.

Air has been released from secondary water filter. (Adjust ribbed knob on top of filter.)

Pressure regulator is set at 5 psig. Low pressure will not feed system; high pressure can create excess water.

Needle valve is clear and not clogged. Open valve completely flush any lodged particle. Re-set valve when finished.

Nozzle is not clogged.

Air flow is reaching nozzle at left end of discharge manifold. If no air flow is present:

- A. Check power supply to compressor
- B. Check for leaks in air supply lines
- C. Check to be sure air filters are clean.
- D. Check compressor motor diaphragm.

Solenoid valve is operating. A minimum exertion of 3 psig is required before the valve will open. Turn the air compressor on and off, if a clicking can be heard the valve is opening and closing and operating.

B. Excess Moisture

Needle valve is adjusted properly. See adjustment section.

Atomizing nozzle is positioned in the mounting clips and pointed directly down the center of the discharge manifold.

Filters

All filters, primary and secondary air and water, must be changed every six months.

Primary (Compressor) Air Filter

For proper operation of the air compressor, the air filter needs to be brushed off occasionally. The frequency of this maintenance can be determined visually and will depend upon the operating environment.

Cleaning of Trough

The trough can be reached through the access plates on the rear of the merchandiser just below the doors. To remove the access covers, turn the screws until they unlock (click) and lift the plates off.

To clean the trough, use a mixture of 5% acetic acid (vinegar) and water for cleaning the trough when the water is basic. If the water supply in your area is acidic, a mixture of 5% or more of sodium bicarbonate (baking soda) and water should be used. The trough should be cleaned at least once a month.

Atomizing Nozzle

The nozzle will require periodic cleaning in order to maintain proper operation. Remove the nozzle from the nozzle body. Disassemble nozzle. Soak the nozzle parts in 50/50 vinegar and water mixture. A toothbrush or toothpick may aid in cleaning. Do NOT use metal tools to clean the nozzle.

After cleaning, reassemble the nozzle and install into nozzle body as shown below.

