HUSSMANN®

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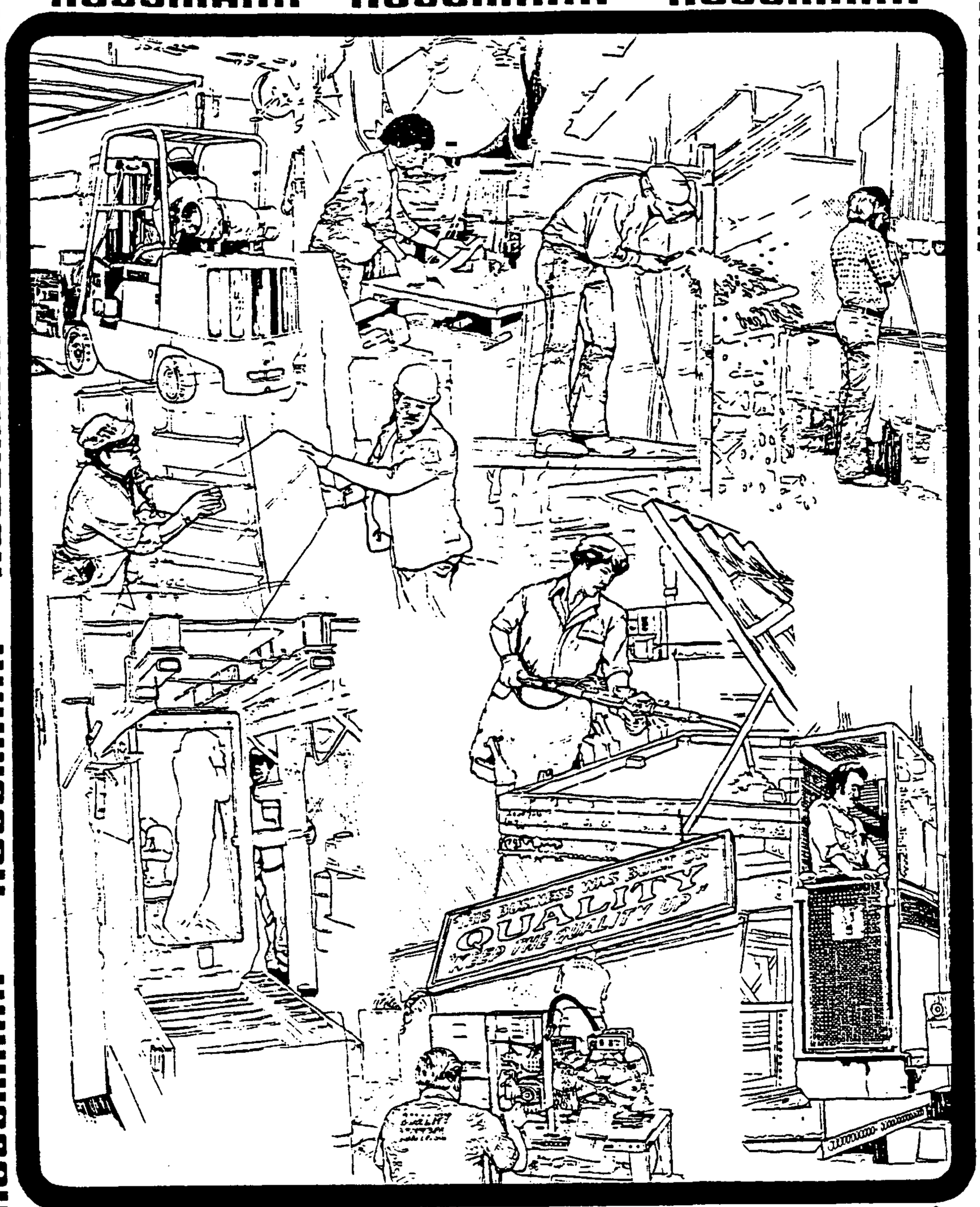


CGFMG & CSFMG

REFRIGERATED MERCHCHANDISERS FOR
FRESH FISH

INSTALLATION / SERVICE INSTRUCTIONS

P/N 330332A
August, 1993
Section 2

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

REPLACEMENT PARTS LIST

Item	Part Number	Description
1.	0147080	Ballast 2 lamp GE #6G1022G49
2.	0143354	Ballast 1 lamp GE #6G1075
3.	0340512	Ballast 2 lamp GE #8G3971W
4.	0147082	Ballast 1 lamp Advance #HM140
6.	0104043	Fluorescent Lamp F30T12
7.	0020725	Fluorescent Lamp F40T12
10.	0353949	Refrigeration Thermostat Penn #A19AAD–24
11.	0320717	Electrical Service Receptacle
12.	0135900	SPST Switch
15.	0047000	Fan Motor, Ambient Air 120V, 9W, CW GE KSM51ECG3799
16.	0323649	Fan Blade, Ambient Air Embossing Away from Motor Morrill #FV700CW40P

GENERAL INFORMATION

MODEL DESCRIPTIONS

This instruction covers the merchandisers listed below. Each merchandiser is available in either 8 or 12 foot lengths. Rear doors and a gravity coil in the top are standard. Basic design features are listed in the table below.

APPLICATION

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

These are service-type merchandisers designed seafood display. Rear doors and a gravity coil in the top are standard.

Merchandisers may have optional serpentine coil kit.

Merchandiser	Glass	Bottom Coil*	Optional Shelves	Application
CSFMG	Single Curved Hinge (lift up from bottom)	None	None	Seafood Only (requires use of ice pan)
CGFMG	Double Curved Hinge (lift up from bottom)	None	None	Seafood Only (requires use of ice pan)

*Both models have a gravity coil at the top.

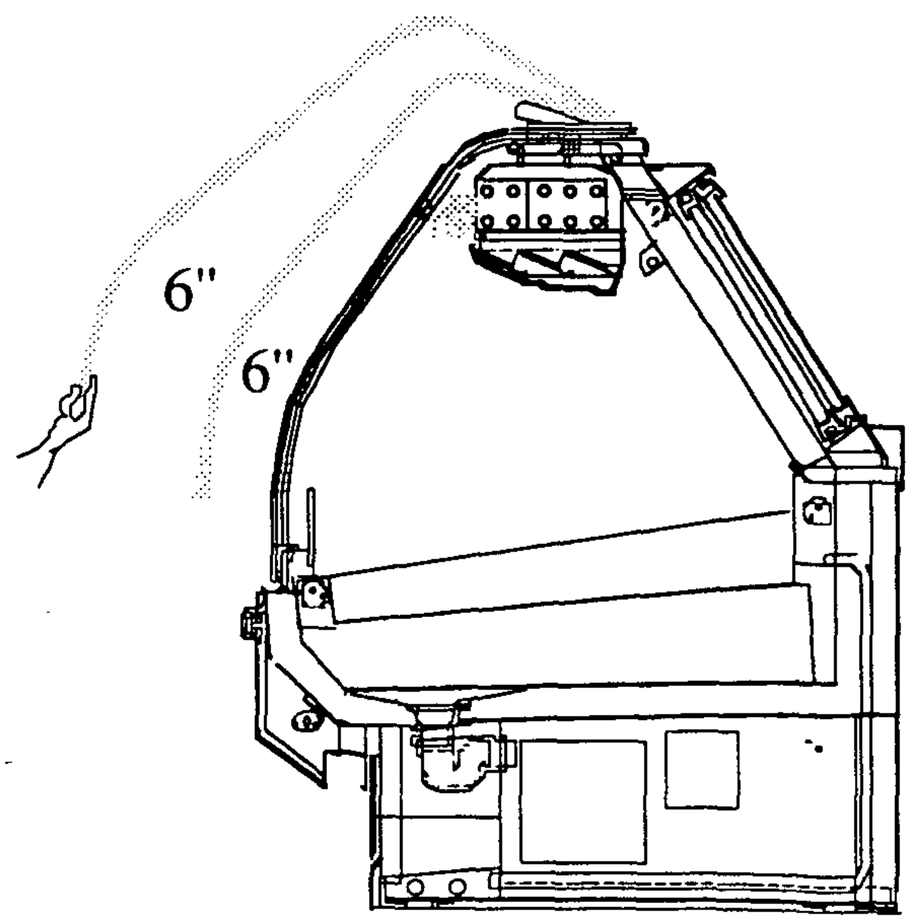
IMPORTANT

READ BEFORE RAISING FRONT GLASS

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

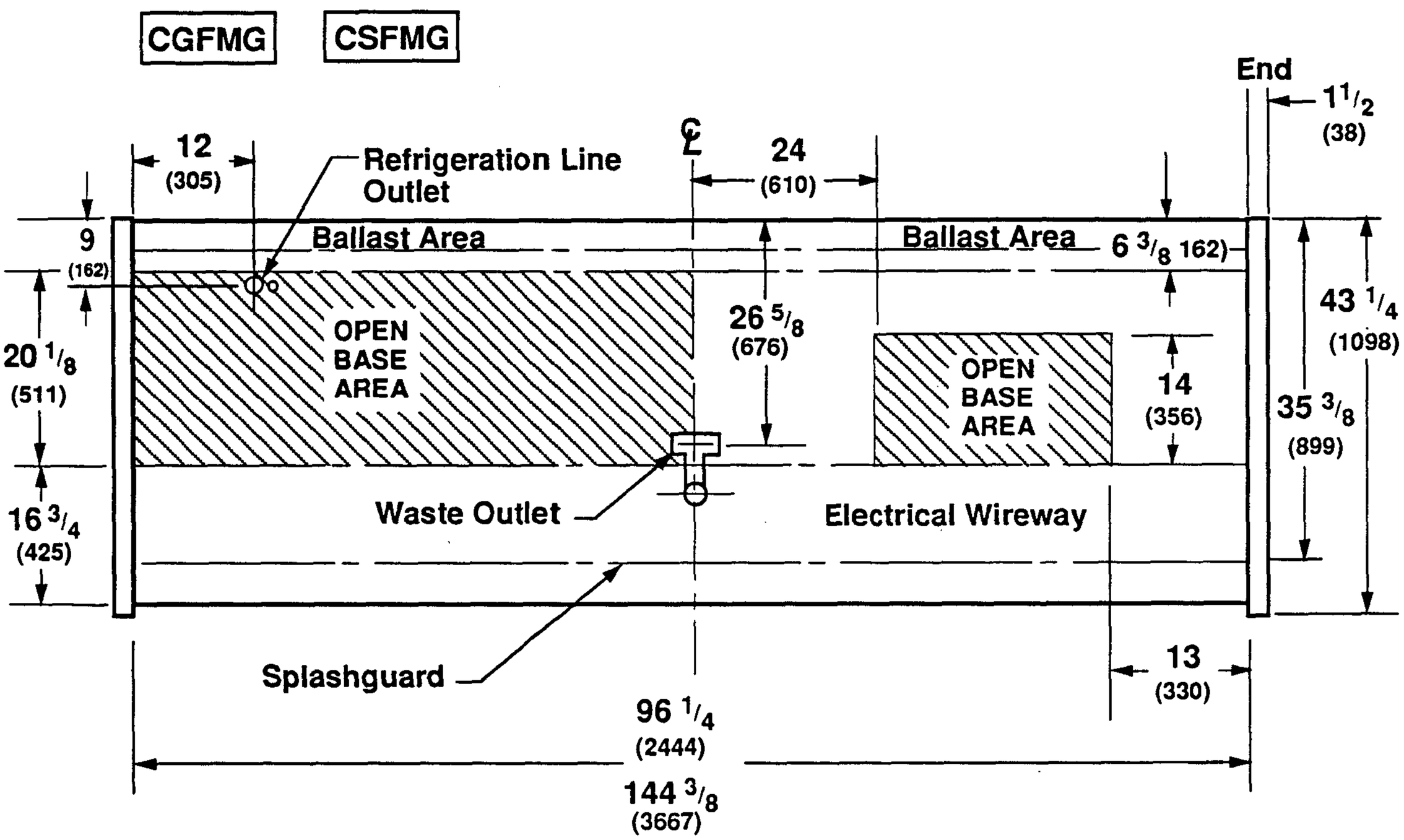
1. Slowly raise and lower each glass section 6 times to a height of 6 inches.
2. Increase the height to about 12 inches and raise and lower the glass 6 times.
3. Then raise the glass to the full extension and lower.

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

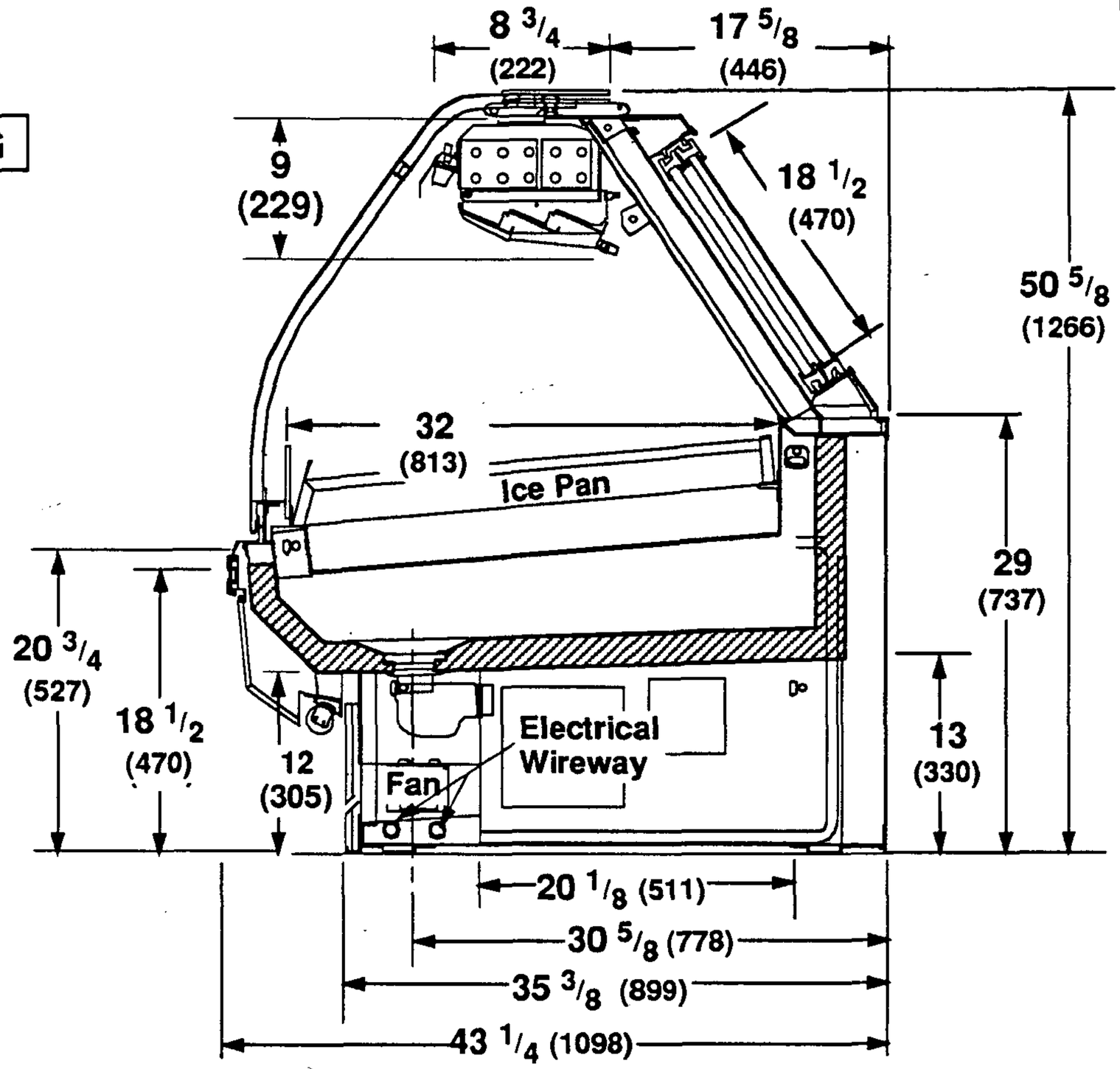


NOTE: Plan view and cross section measurements are given in inches and in millimeters.

CGFMG CSFMG



CGFMG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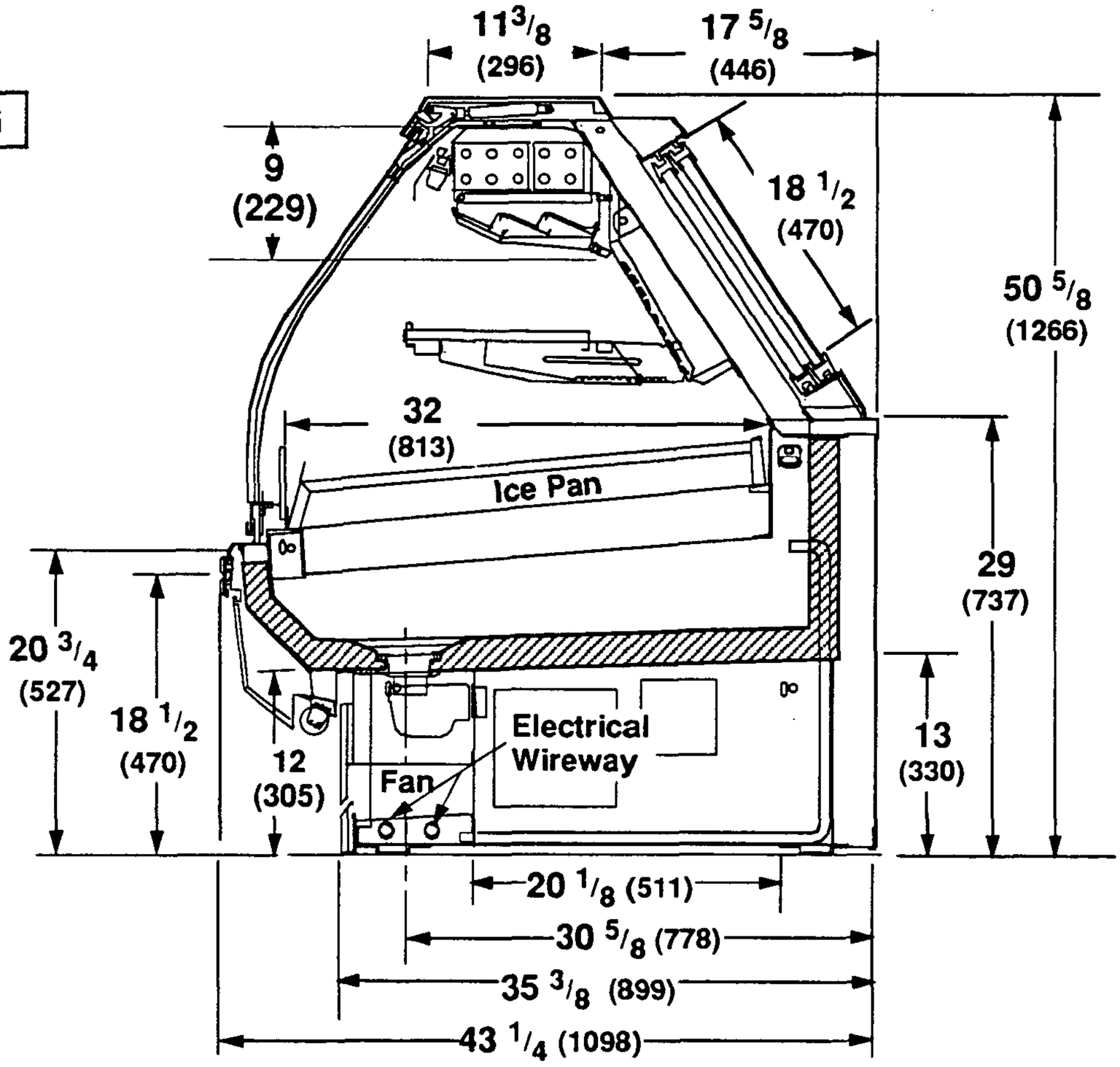
17 5/8 (446)
9 (229)
18 1/2 (470)
50 5/8 (1266)
32 (813)
Ice Pan
29 (737)
20 3/4 (527)
18 1/2 (470)
12 (305)
Electrical Wireway
Fan
13 (330)
20 1/8 (511)
30 5/8 (778)
35 3/8 (899)
43 1/4 (1098)

CSFMG


11 3/8 (296)
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12 (305)
Electrical Wireway
Fan
13 (330)
20 1/8 (511)
30 5/8 (778)
35 3/8 (899)
43 1/4 (1098)

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.

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 when leveling merchandisers. Leveling shims must be placed under the merchandiser every four feet to protect against skid rail deflection. **NOTE:** To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

JOINING

Merchandisers are of sectional construction which means that two or more may be joined in line yielding one long continuous display requiring only one pair of ends. The material to join these merchandisers and the method of joining them is supplied in a separate joint instruction.

ANCHORING

Merchandisers do NOT require anchoring.

WASTE OUTLET AND WATER SEAL

The waste outlet is located at the center of each merchandiser. It requires $1\frac{1}{2}$ inch drip piping, to be installer supplied. A plastic "T" and plug are shipped with each merchandiser to be field installed and oriented in the desired direction. Note that the "T" is threaded on one side only.

To avoid condensation problems, the water seal should be insulated.

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 merchandiser's operation and result in costly maintenance and product losses. To ensure proper installation, please follow the recommendations listed below.

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 $1\frac{1}{2}$ inch 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 $\frac{1}{8}$ 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.

INSTALLING SPLASHGUARD

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 $\frac{3}{4}$ 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, then down over the brackets.

SEALING SPLASHGUARD TO FLOOR

IF REQUIRED by local sanitation codes or if desired by the customer, the splashguard 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 for access to the electrical raceway 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.**

REFRIGERATION

REFRIGERANT

Check the merchandiser's serial plate to determine the type of refrigerant used. The serial plate is located at the rear, on the exterior surface of the merchandiser.

REFRIGERANT PIPING

Connection Sizes

Liquid Line	$^3/_8$ inch OD
Suction Line	$^7/_8$ inch OD

Connection Location

The refrigerant line connections are located approximately 12 inches in 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.

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

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 *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 feet from the merchandiser. Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable.

Conventional Single Compressor

Measure Discharge Air Temperature at the middle of the gravity coil and $^1/_2$ inch below it.

Merchandiser temperature must be controlled by a combination of EPR Valve and a thermostat with a 3–5°F differential. The thermostat will be wired to control the compressor motor contactor. Adjust the thermostat to control the temperature slightly below the EPR setting to protect product during reduced load periods—lights off, lower ambient.

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

Discharge Temp °F	26
Evaporator °F	24

Defrost Data

Frequency Hrs	24
ELECTRIC	
Temp Term °F	NA
Failsafe Min	NA
REVERSE AIR	
Temp Term °F	NA
Failsafe Min	NA
GAS	
Duration Min	NA
OFFTIME	
Duration Min	90

Conventional Controls

Low Pressure Backup Control CI/CO (PSIG)

CGFMG, CSFMG
R-22 40/30 **R-502** 49/39

Indoor Condenser only, Pressure Defrost Termination (PSIG)
R-22 76 **R-502** 89

Parallel Compressor Rack

Measure Discharge Air Temperature at the middle of the gravity coil and $^1/_2$ inch below it.

Merchandiser temperature must be controlled by a combination of EPR Valve and a thermostat with a 3–5°F differential. The thermostat will be wired to control a liquid line solenoid at the merchandiser. Adjust the thermostat to control the temperature slightly below the EPR setting to protect product during reduced load periods—lights off, lower ambient.

Defrost is Off Time. For evaporator isolation during defrost, suction stop valves must be used.

Refrigeration Data

Discharge Temp °F	26
Evaporator °F	24

Defrost Data

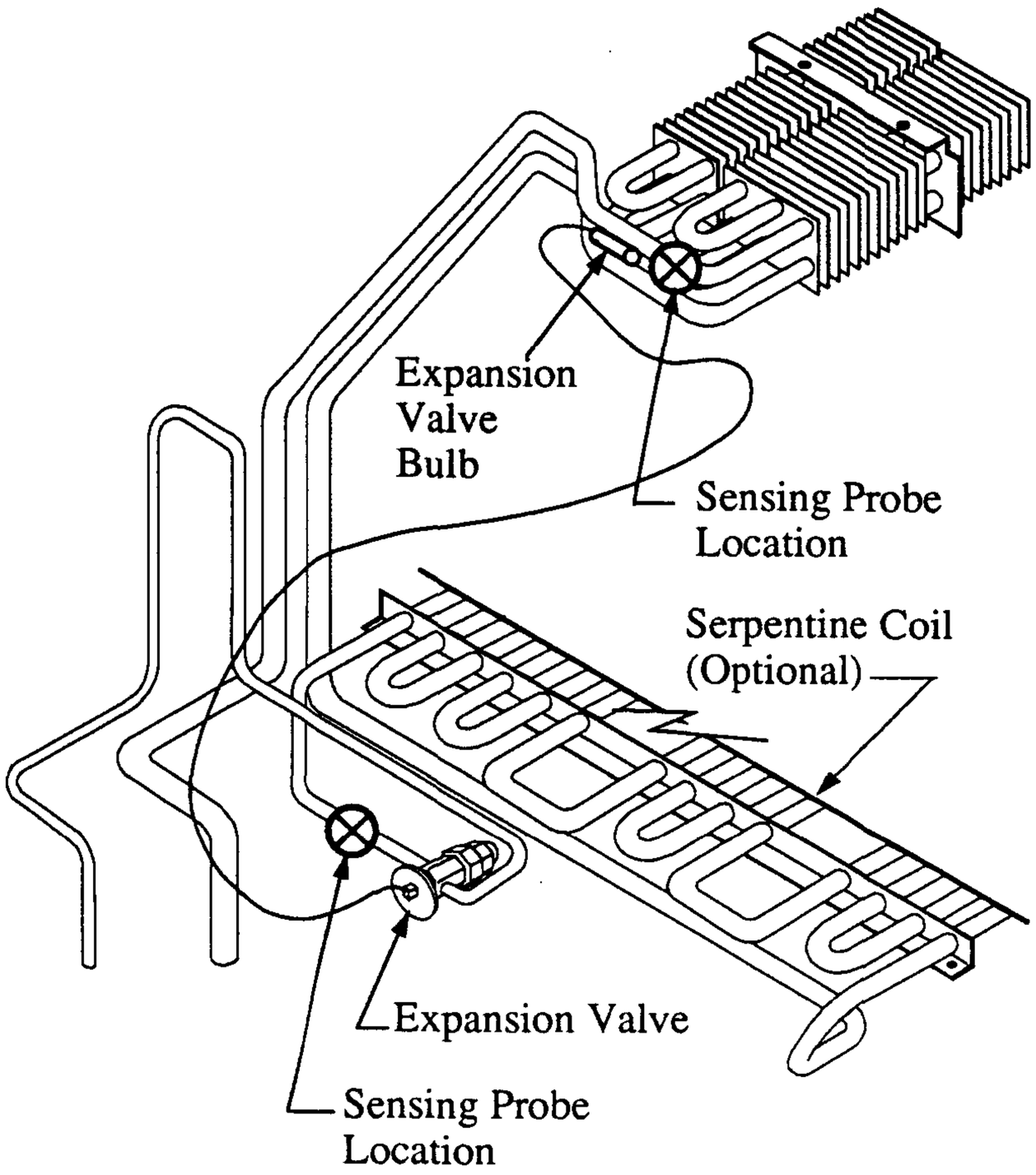
Frequency Hrs	24
ELECTRIC	
Temp Term °F	NA
Failsafe Min	NA
REVERSE AIR	
Temp Term °F	NA
Failsafe Min	NA
GAS	
Duration Min	NA
OFFTIME	
Duration Min	90

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 fixture 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 at 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 one-fourth ($^1/_4$) turn for Balanced Port TEV and one-half ($^1/_2$) turn for "G" Body valves' stem at a time. Wait for at least 15 minutes before rechecking the probe temperature and making further adjustments.



ELECTRICAL

CONNECTIONS

All wiring must be in compliance with NEC and local codes. All electrical connections are to be made in the raceway located 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" (shown below) located inside the merchandiser's raceway.

WIRING COLOR CODE

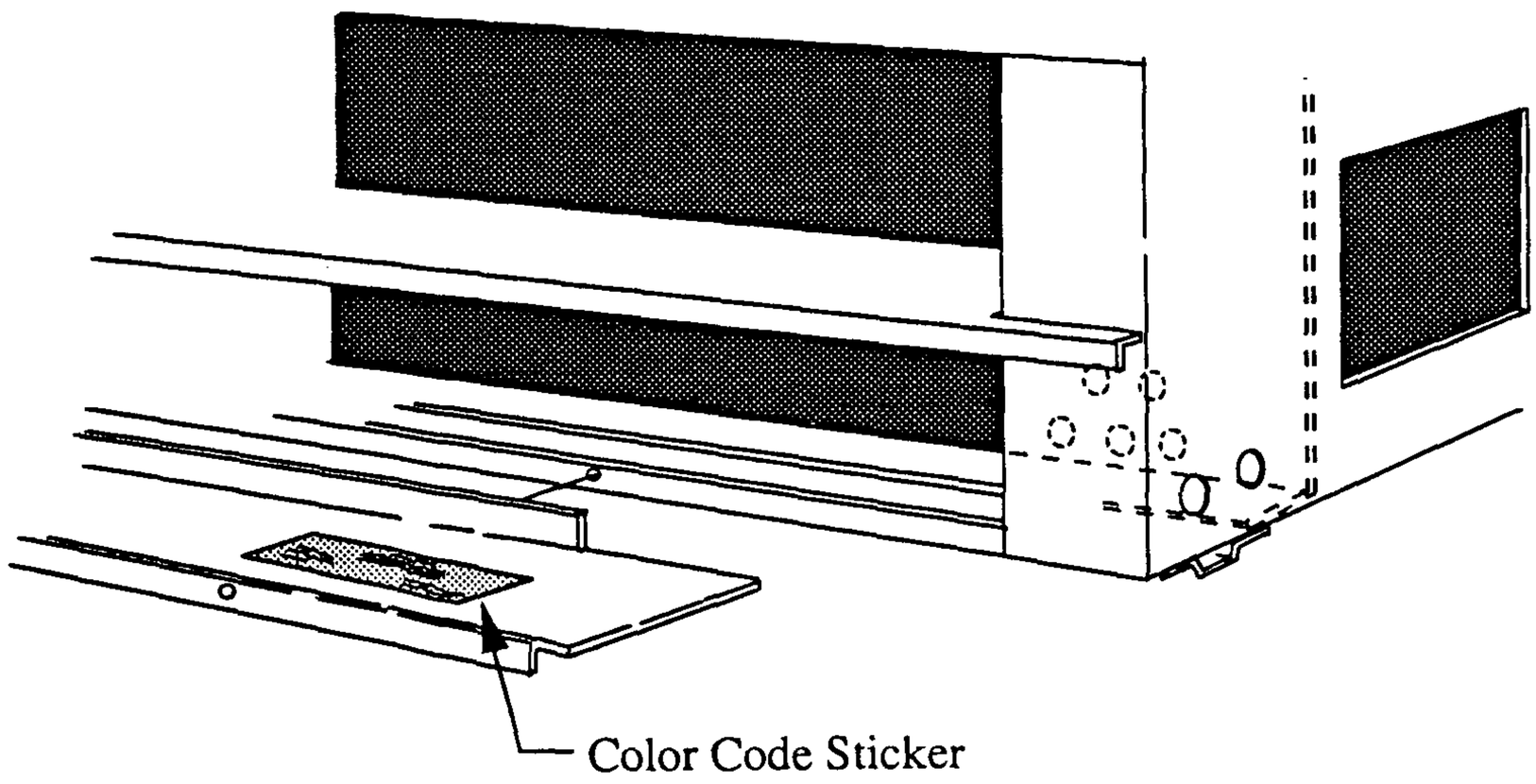
Leads for all electrical circuits are identified by a colored plastic band: neutral wire for each circuit has either White insulation or a White plastic sleeve in addition to the color band.

PINK .....REFRIG. THERMOSTAT LOW TEMP.
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



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

120V 1PH 60Hz					
Models	Anti-sweat Heaters	Fans	Lights–Includes full complement of lighted shelves. Standard	Option	Receptacles
			(1)	(2)	(3)
CSFMG CGFMG					
8'	—	2.1	2.8	3.5	15
12'	—	2.8	4.2	5.4	15

NOTE: These values must be used regardless of whether lighted shelves are installed or not.

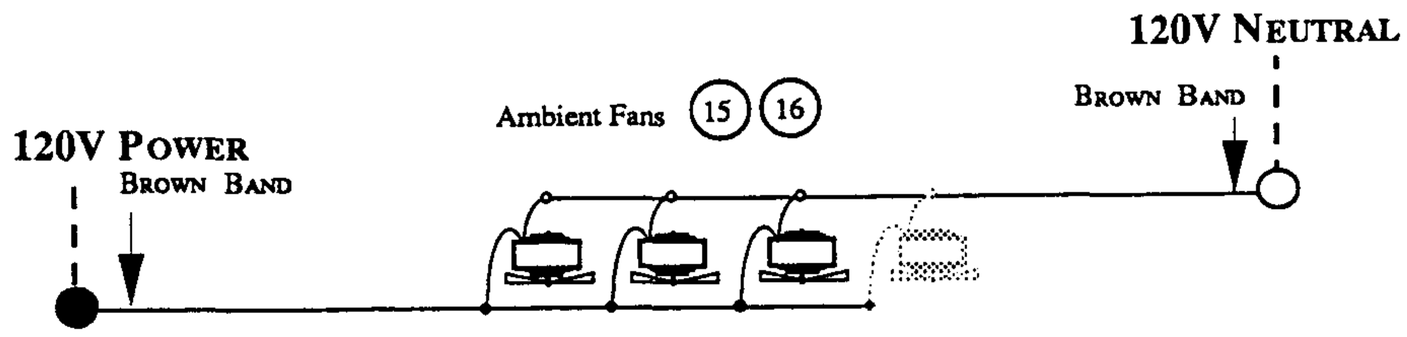
(1) Standard lighting amperages include front and rear fluorescent canopy lamps in the top of the merchandise.

(2) Amperage applies when the merchandiser has optional exterior ledge lighting.

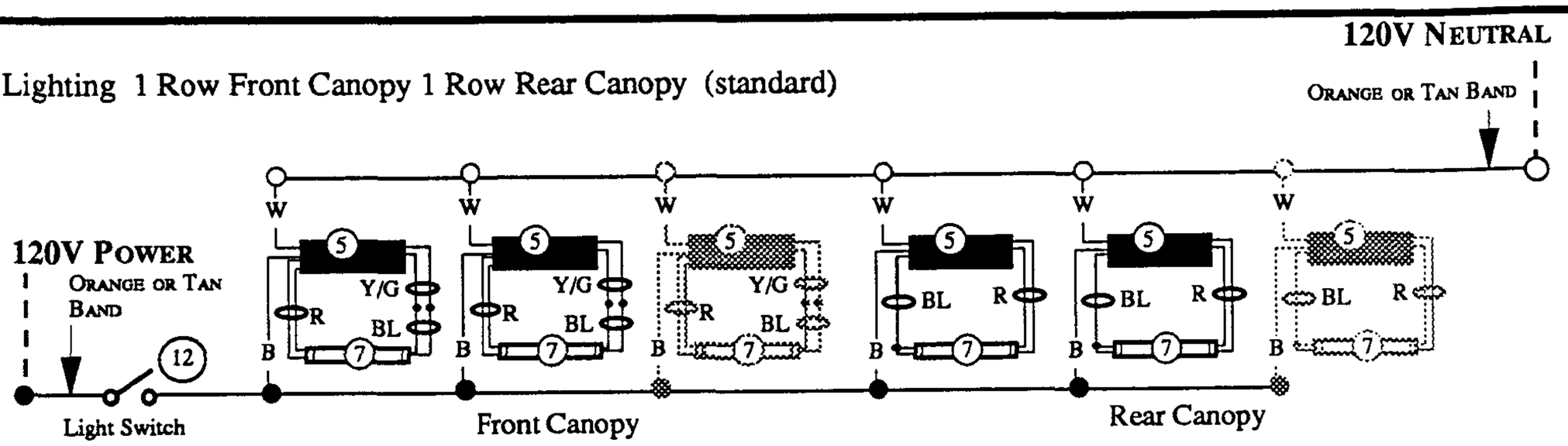
(3) The receptacles located on the rear of merchandisers are intended for small lighted displays and scales, not for large motors or other high wattage appliances.

Fans, Light Circuits and Receptacles - CGFMG, CSFMG

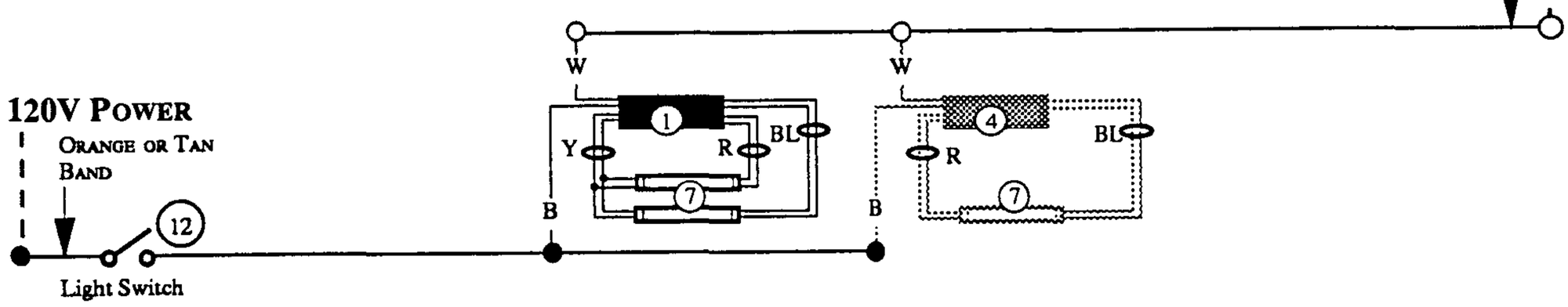
CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

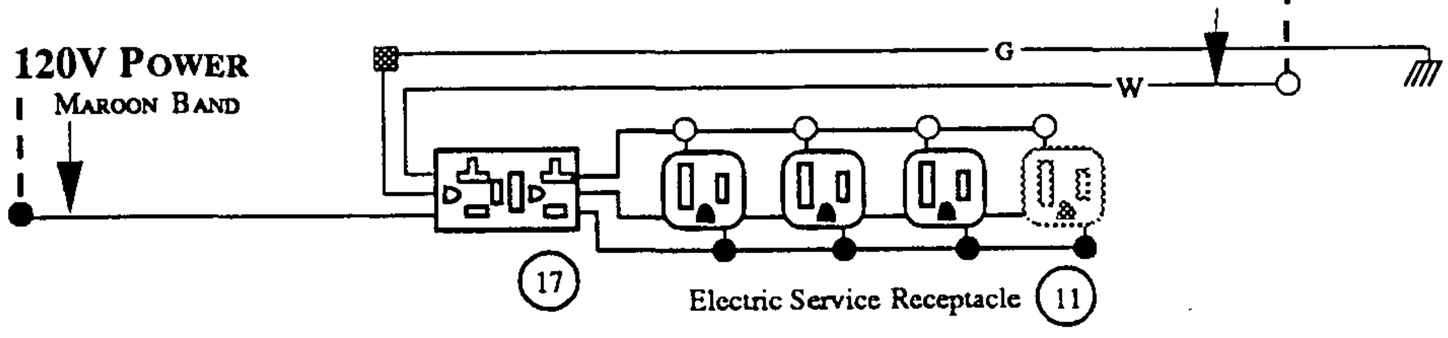


Lighting 1 Row Front Canopy 1 Row Rear Canopy (standard)



Exterior Ledge Lighting (optional)





WARNING

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

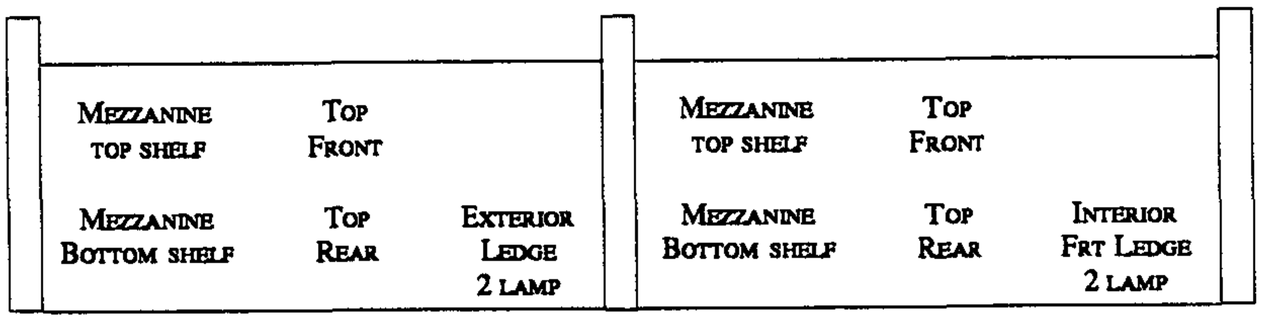
Notes:
Schematic shows both standard and optional components. Not all components will be on each merchandiser. Check store legend for specifics. Optional shelf lighting uses one single light ballast per shelf. Grayed components in 12 foot models only.

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

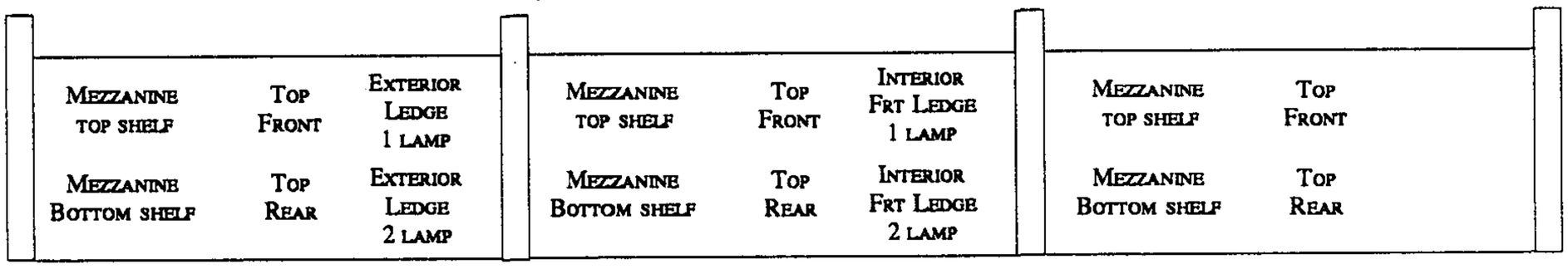
● = 120V POWER ○ = 120V NEUTRAL ▩ = GROUND

Ballast Locations

Not all merchandisers will have all the ballasts shown.



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



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

CARE AND CLEANING

Essential for any deli department is an established and regulated cleaning procedure. The discoloration that causes deli items to lose their eye appeal and drastically shorten their shelf life is caused by bacteria. Soap and hot water are not enough to kill this bacteria. **A sanitizing solution must be included with each cleaning process to eliminate this bacteria.**

Every surface in the deli department must be cleaned and sanitized regularly. Items that are in non-refrigerated areas and come in contact with the product must be cleaned daily. This includes items such as knives, scales, tables, trays and preparation room floors. Coolers, walls and the display merchandiser require a weekly cleaning.

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 front hinges on the drip trough may be lowered for easy cleaning. Clean out the drip tubing so defrost water can drain. 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 construction of the merchandisers.

•Abrasive cleansers and scouring pads, as these will mar the finish.

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.

Do:

•Disconnect all power to the merchandiser.

•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.**

•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.**

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 right rear interior corner 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.

STOCKING

Product should not be placed in merchandisers until all refrigeration controls have been adjusted and merchandisers are at proper operating temperature. When stocking, never allow the product to extend beyond the load limit.

NOTE: Merchandisers have 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 merchandiser that will block these vents.

SHELVES

Mezzanine Shelves

Lighted or unlighted display shelves can be installed at various positions as desired.

Bottom Wire Shelves

Three positions on the rear support allow changes in the display angle.

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.

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 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.

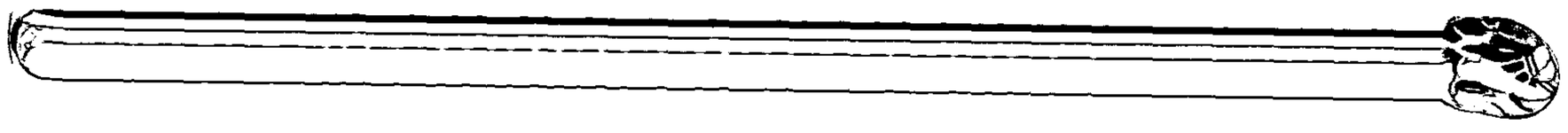
WARNING

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.

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.



CYLINDER & FRONT GLASS REPLACEMENT

Front Glass Cylinder Replacement

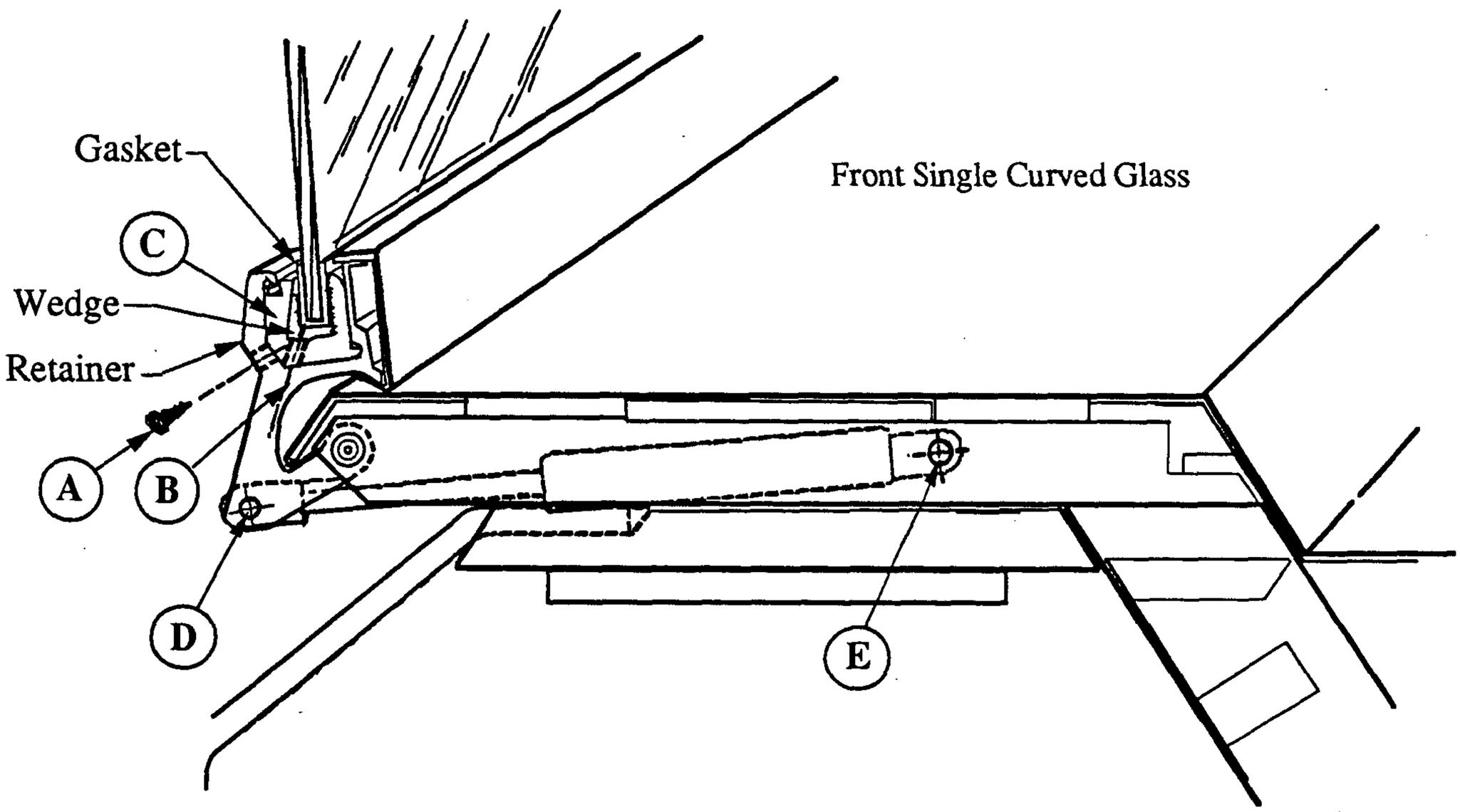
1. It is not necessary to remove the glass to change a cylinder. If both cylinders are to be removed, however, the glass MUST be supported.
2. Remove retainer clip from pin at "D" and "E".
3. Slide cylinder off pins.

Front Glass Replacement

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