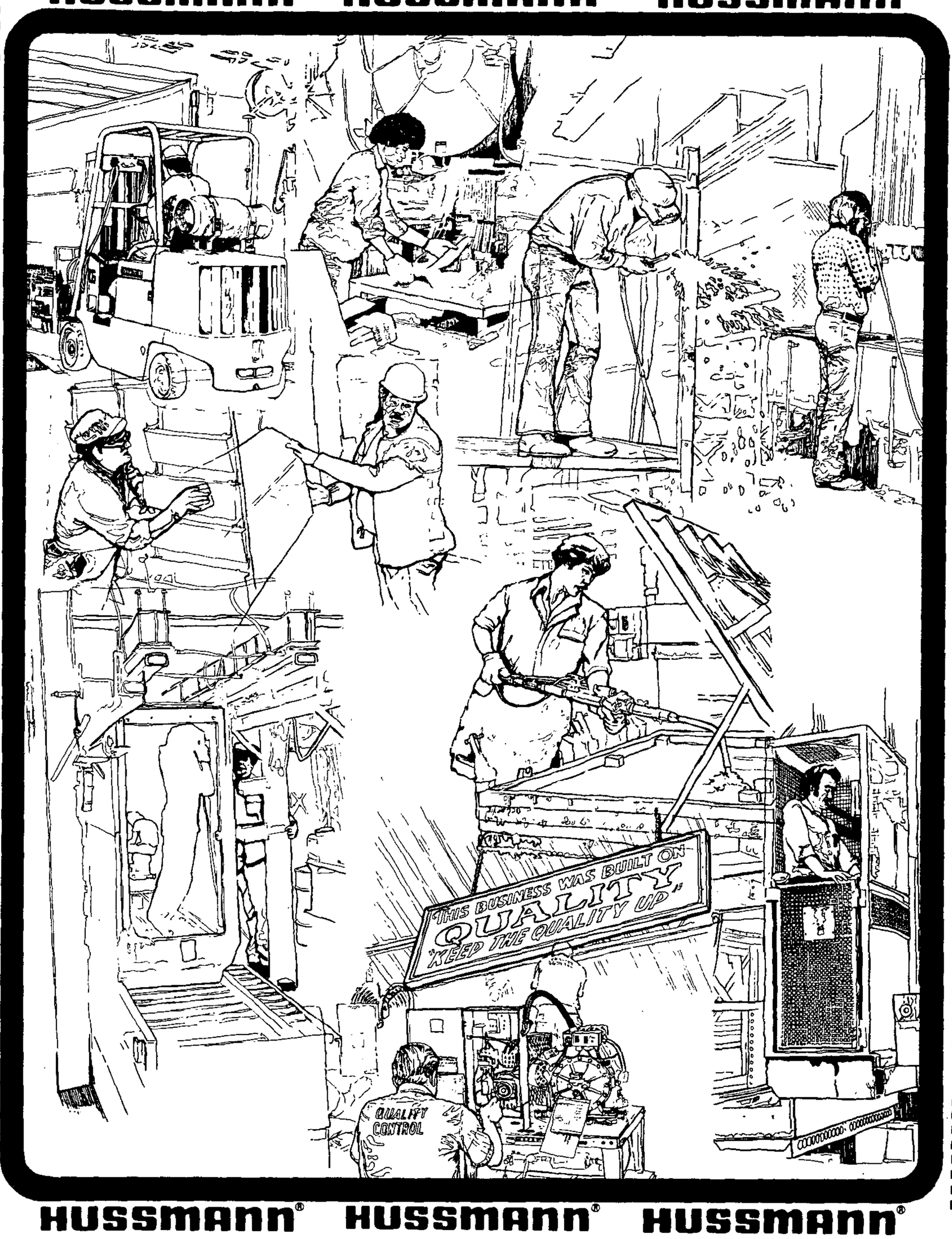
HUSSMANN®

CORPORATION



RDM

DAIRY PRODUCT

REACH-IN REFRIGERATED MERCHANDISERS

INSTALLATION / SERVICE INSTRUCTIONS

ENG.NO.252349D
January, 1990
Supersedes #252349C
Dated June, 1989
Section 6

TABLE OF CONTENTS

TABLE OF CONTENTS

IMPORTANT

KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards.

THIS MERCHANDISE CONFORMS TO THE

COMMERCIAL REFRIGERATOR MANUFACTURER'S ASSOCIATION

HEALTH AND SANITATION STANDARD

CRS-S1-86

HUSSMANN® 12999 St. Charles Rock Rd. • Bridgeton, MO 63044 USA • (314) 291-2000 • FAX (314) 291-3925

SECTION 1

GENERAL INFORMATION

MODEL DESCRIPTION

The RDM models are refrigerated reach-in merchandisers designed for dairy products. They are available as front loading or rear loading models, each with three different front rail heights.

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

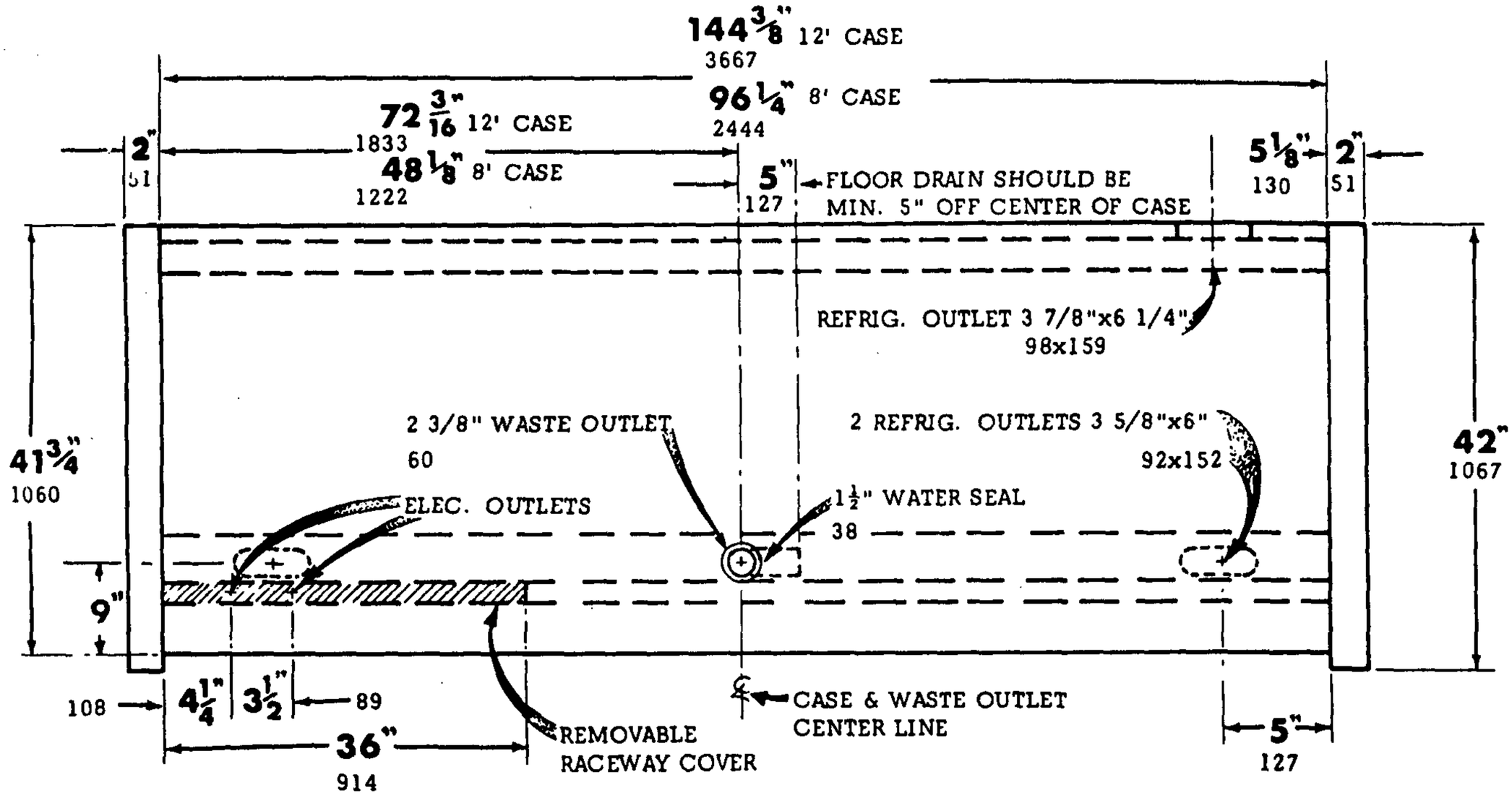
The following table lists the models available and a brief description of each.

MODEL	DESCRIPTION		
	TYPE	FRONT RAIL HEIGHT	PRODUCT APPLICATION
RDM-(*)Z RDM-(*)ZA RDM-(*)ZH	Front Loading	18" 22½" 27"	Dairy
RDM-(*)X RDM-(*)XA RDM-(*)XH	Rear Loading	18" 22½" 27"	Dairy

(*) Indicates length: 8ft. - 4 Doors
12ft. - 6 Doors

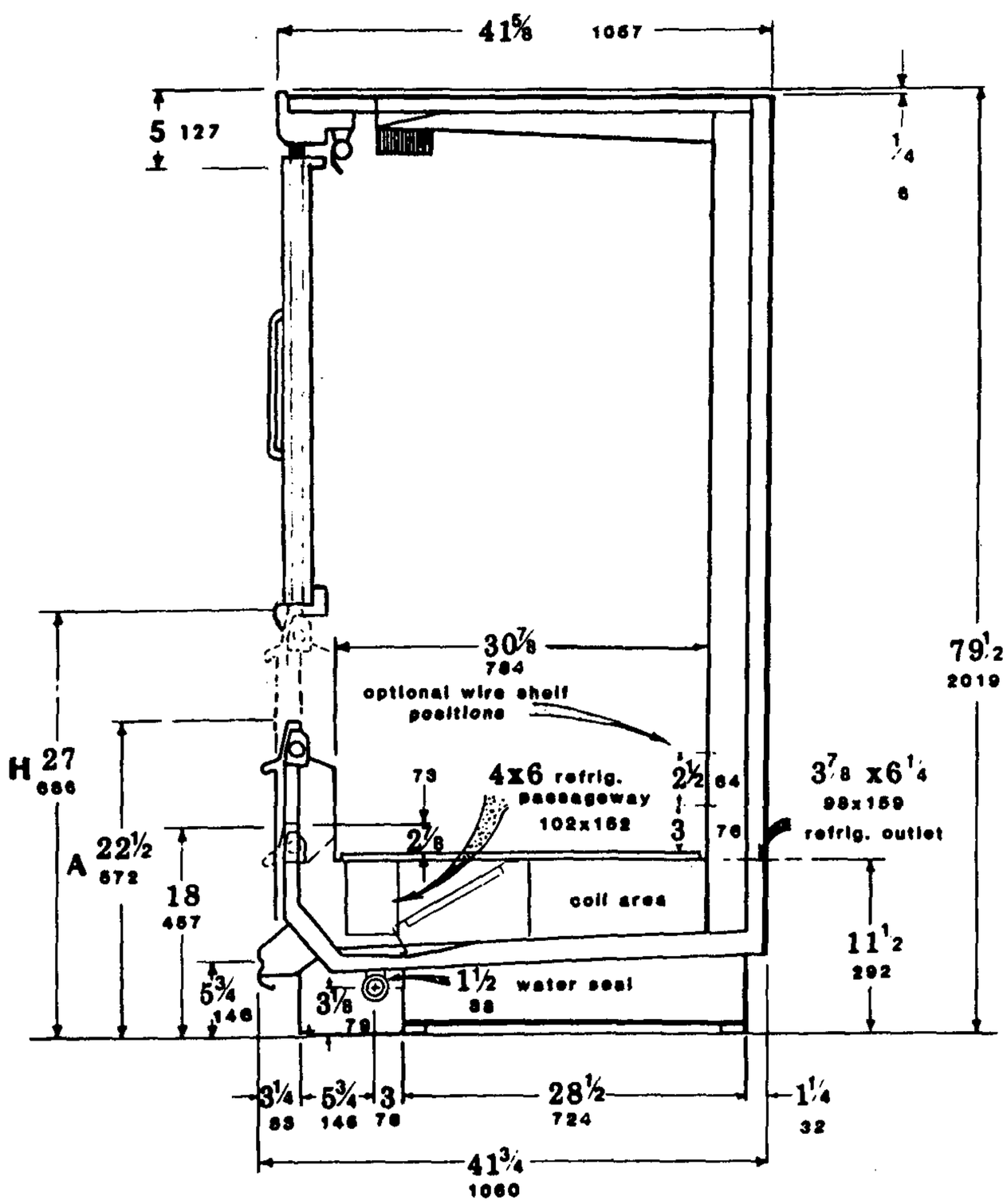
APPLICATION

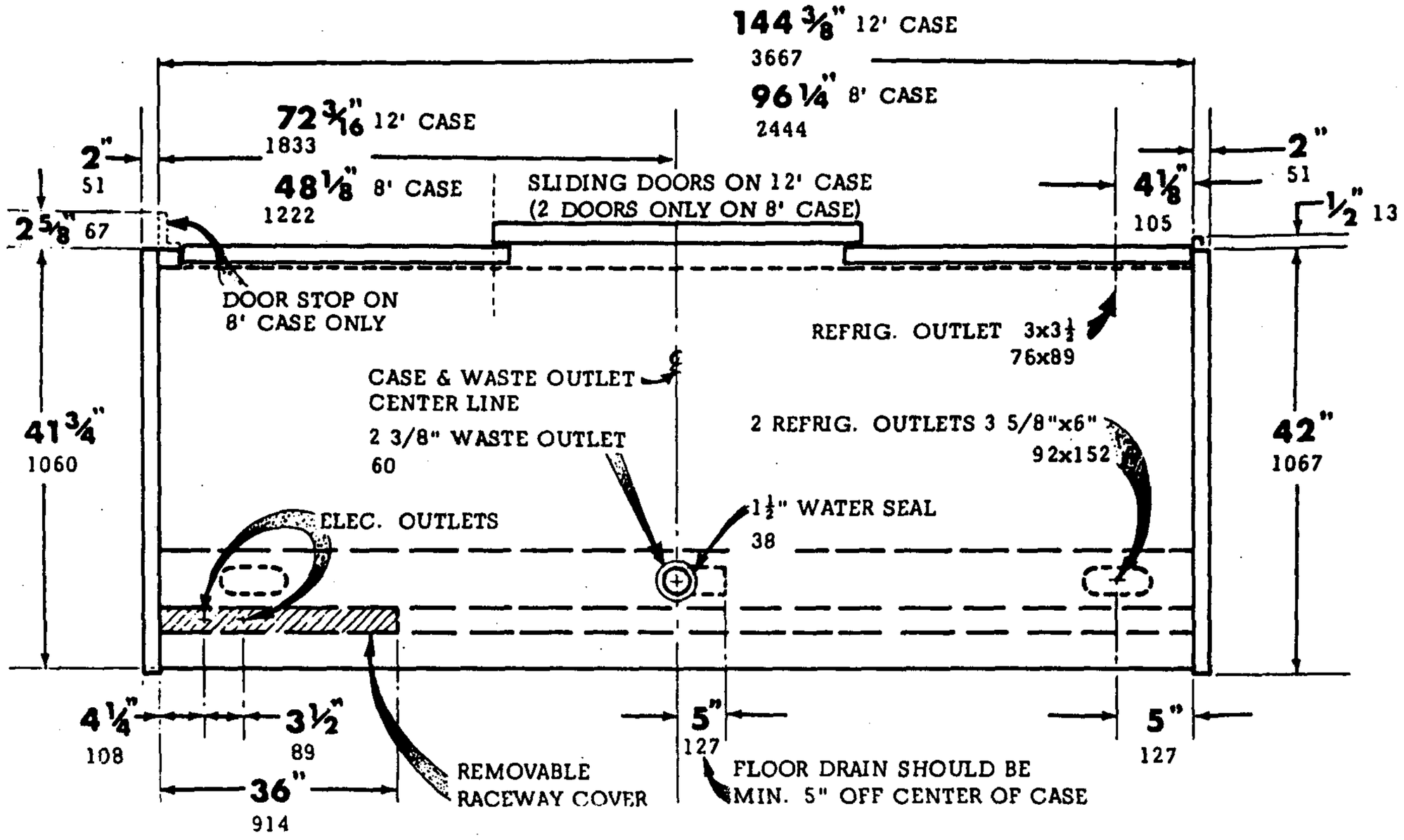
These refrigerated merchandisers have been designed for use only in air conditioned stores where temperature and humidity are maintained at or below 75°F and 55% relative humidity.



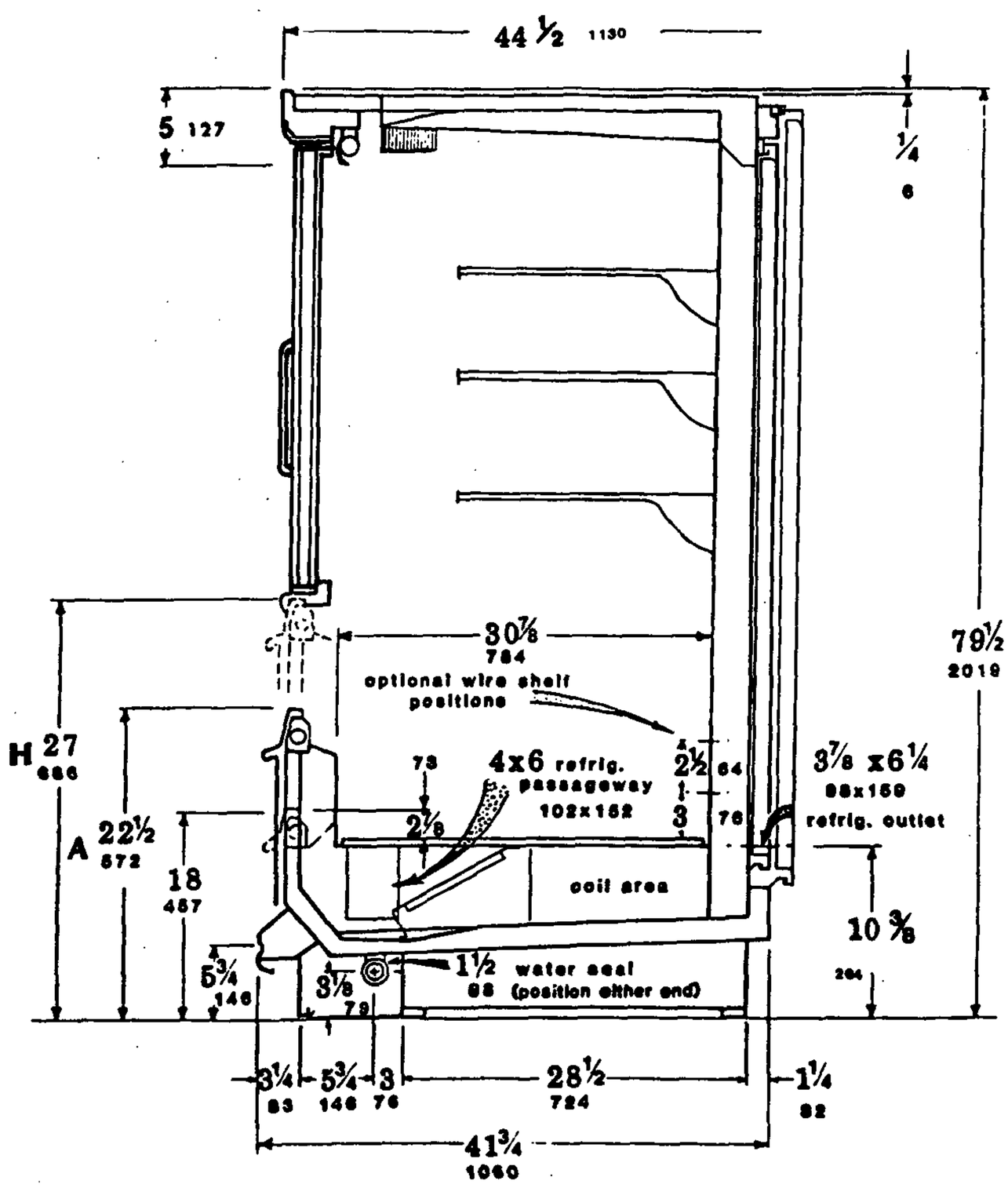
DIMENSIONS SHOWN IN SMALLER TYPE FACE ARE MILLIMETERS

RDM-Z




144 3/8" 12' CASE
3667
96 1/4" 8' CASE
2444
72 3/16" 12' CASE
1833
48 1/8" 8' CASE
1222
2"
51
2 5/8" 67
SLIDING DOORS ON 12' CASE
(2 DOORS ONLY ON 8' CASE)
4 1/8"
105
2"
51
1/2" 13
DOOR STOP ON
8' CASE ONLY
REFRIG. OUTLET 3x3 1/2
76x89
CASE & WASTE OUTLET
CENTER LINE
2 3/8" WASTE OUTLET
60
2 REFRIG. OUTLETS 3 5/8"x6"
92x152
41 3/4"
1060
42"
1067
ELEC. OUTLETS
1 1/2" WATER SEAL
38
4 1/4"
108
3 1/2"
89
36"
914
REMOVABLE
RACEWAY COVER
5"
127
FLOOR DRAIN SHOULD BE
MIN. 5" OFF CENTER OF CASE
5"
127

RDM-X


44 1/2 1130
5 127
1/4
6
30 7/8
784
optional wire shelf
positions
79 1/2
2019
H 27
686
A 22 1/2
572
18
457
73
4x6 refrig.
passageway
102x152
2 1/2 64
3 76
3 7/8 x6 1/4
98x159
refrig. outlet
10 3/8
264
2 1/8
coil area
5 3/4
146
3/8
79
1 1/2 water seal
38 (position either end)
3 1/4
83
5 3/4
146
3
76
28 1/2
724
1 1/4
32
41 3/4
1060

SECTION 2
INSTALLATION

SHIPPING DAMAGE

All equipment should be thoroughly examined for shipping damage before and when 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 frieght bill or express receipt and signed by the carrier's agent, otherwise, carrier may refuse claim. The carrier will supply necessary claim forms.

CONCEALED LOSS OR DAMAGE

When loss or damage is not apparent until after equipment is uncrated, a claim for concealed damage is made. Upcn 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

Move the fixture as close as possible to its permanent location and then remove all packaging and shipping braces. Remove all separetely packed accessories such as kits, shelves, etc.

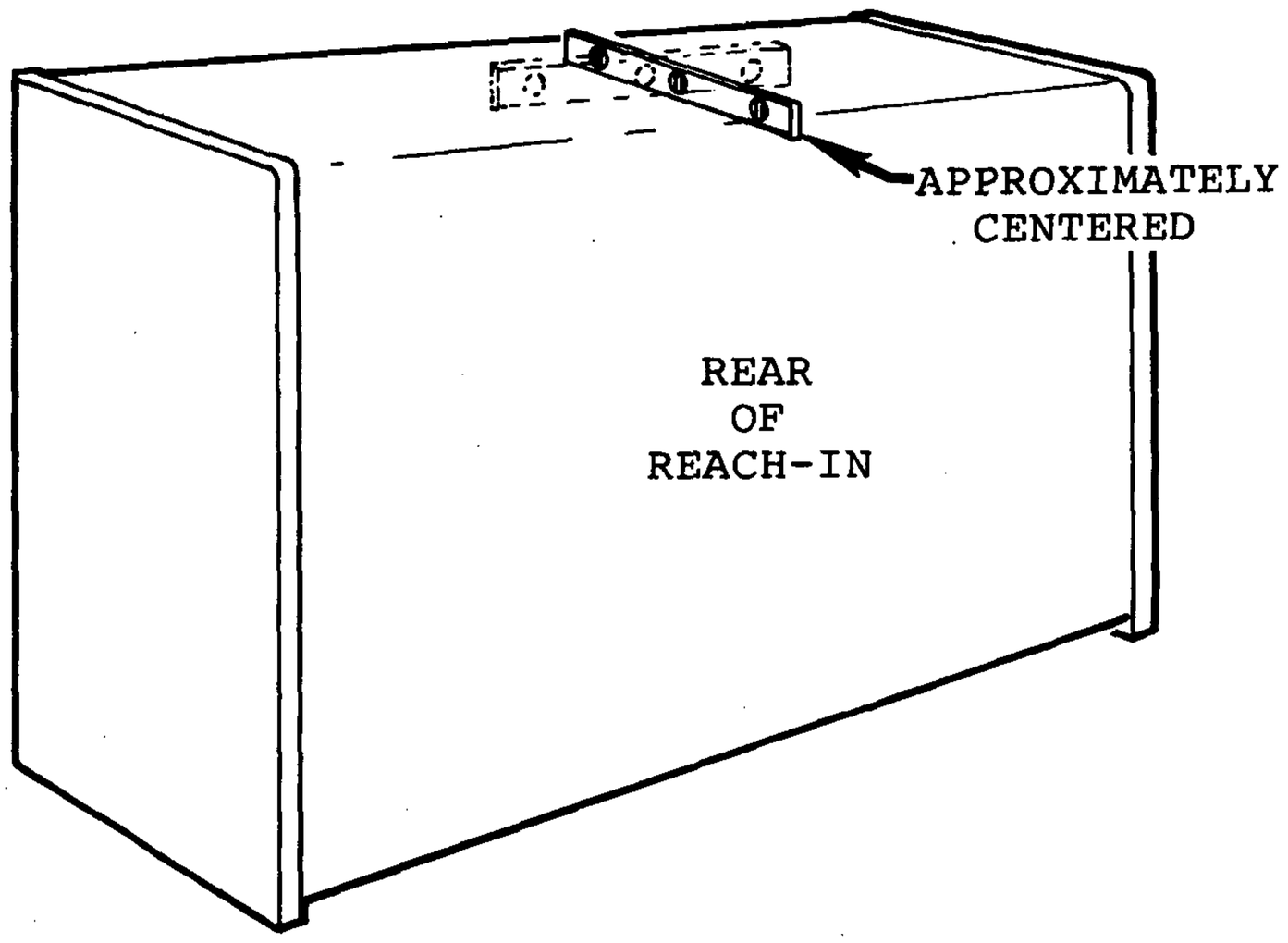
LOCATIONS

This refrigerator like all other type refrigerators, is sensitive to air disturbances. Air currents passing around this refrigerator will seriously impair its performance. Do not allow air currents, electric fans, open windows, doors, etc. to create air currents around this refrigerator.

To prevent sweating on the exterior surfaces of this refrigerator there must be a minimum clearance of 4" between the back and/or ends of this refrigerator and any adjacent wall, shelving, coolers or another fixture.

LEVELING

These refrigerators must be installed level to insure proper operation of the refrigeration system and to insure correct draining of defrost water. Use a carpenters level as shown in the following illustration when leveling. Leveling shims have been provided with each refrigerator if needed.



EXTERIOR LOADING

CAUTION: THE TOPS OF THESE REFRIGERATORS ARE NOT DESIGNED TO SUPPORT EXCESSIVE EXTERNAL LOADING SUCH AS THE WEIGHT OF A PERSON. DO NOT WALK ON THESE REFRIGERATORS OR DAMAGE AND SERIOUS PERSONAL INJURY COULD OCCUR.

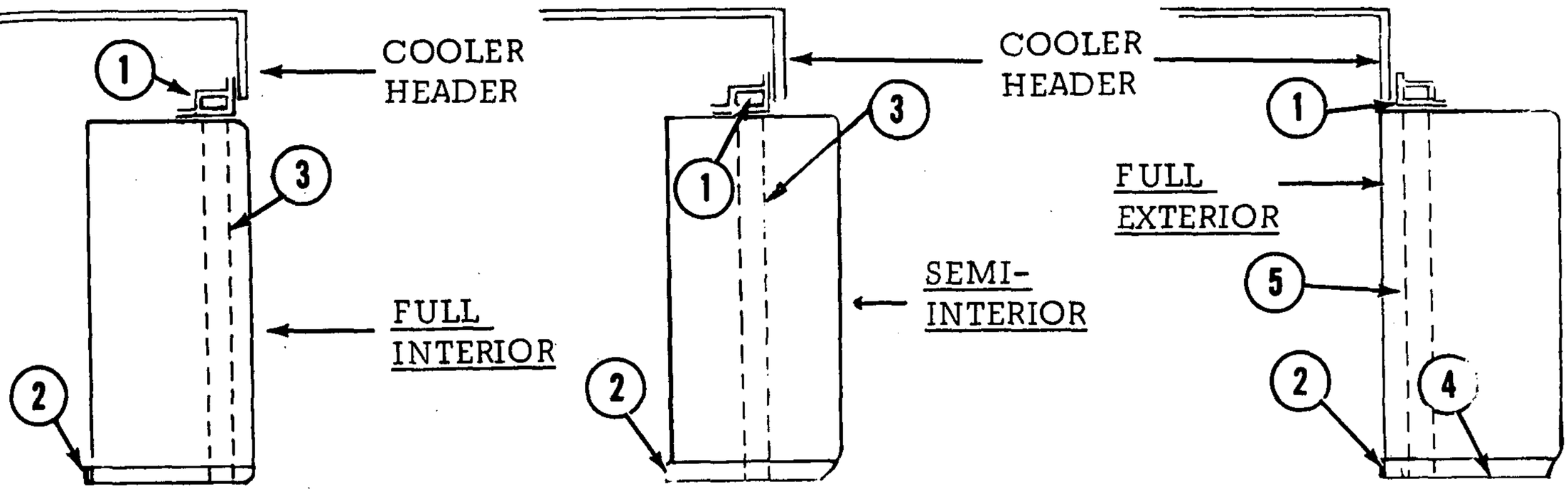
JOINING

These refrigerators are of sectional construction; two or more may be joined in line to give one long continuous display with one pair of end assemblies. To join like fixtures, a joint kit is required. To join unlike fixture models or fixtures of different temperature applications, a 2" partition kit is required. To join fixtures of like temperature application, but on different defrost cycles, a plexiglass partition kit is required. Instructions are provided in each kit.

ALL JOINTS MUST BE AIR-TIGHT TO PREVENT FORMATION OF ICE OR CONDENSATION

REAR LOADING MODELS

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



1 & 2: Cooler to case close-off kit. To install, see kit instruction.

2 & 3: End close-off-case inserted. To install, see kit instruction.

4 & 5: End close-off-case outside. To install, see kit instruction

WASTE OUTLET

The waste outlet is located at the center of the refrigerator (See Illustration).

INSTALLING DRIP PIPING

Poorly or improperly installed drip piping can seriously affect the operation of this refrigerator and result in costly maintenance and product losses. Please follow the following recommendations when installing drip piping to insure proper installation.

A. Never use pipe for drip piping that is smaller than the diameter of the pipe or waste outlet supplied with the refrigerator.

B. Never use two water seals in series in any one run of drip piping. This will lead to problems of locking water flow and prevent draining.

C. Provide as much downhill slope (fall) as possible; 1/8" per foot is preferred. However, the water seal must be level for it to function properly. Plastic piping must be supported to maintain the slope and prevent sag.

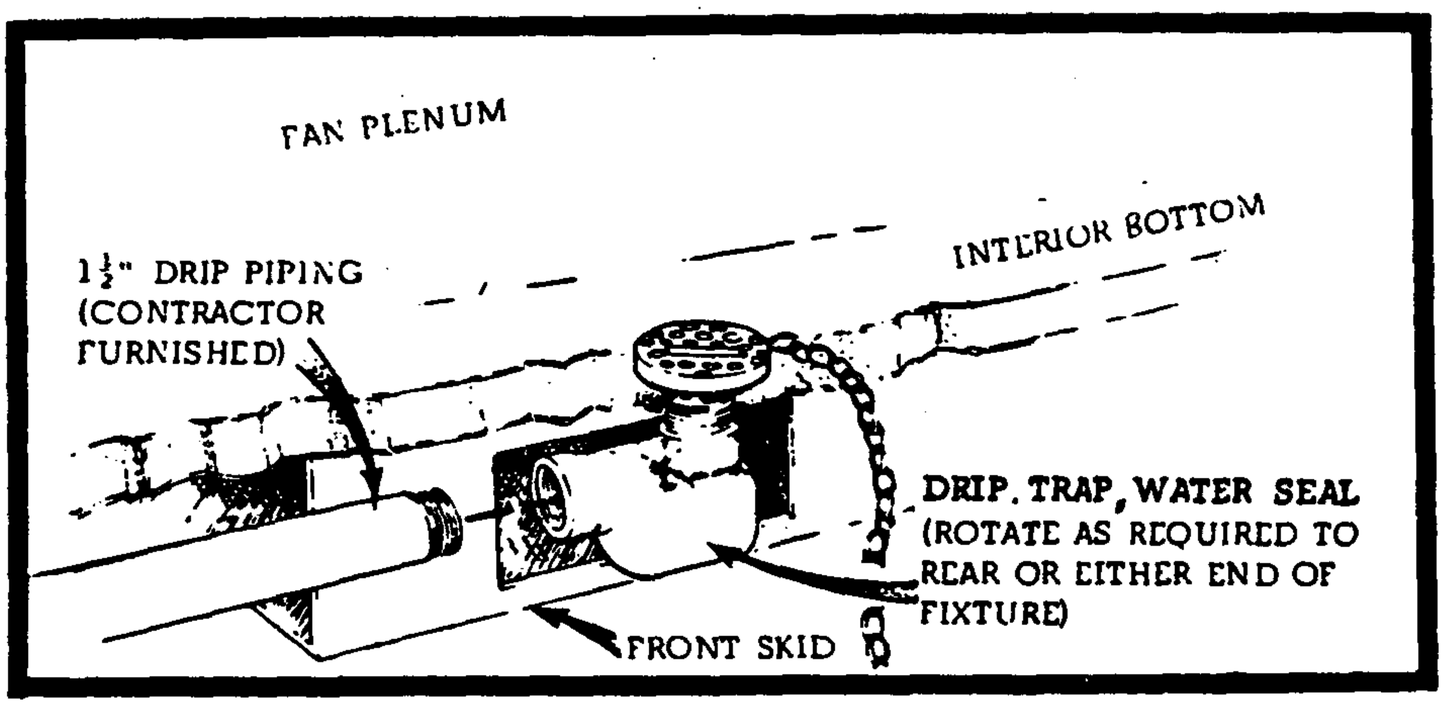
D. Avoid long runs of drip piping. Long runs make it impossible to provide the necessary slope.

E. Provide a suitable air break between the flood rim of the floor drain and the outlet of the drip pipe.

F. Prevent drip pipes from freezing:

1. Do not install drip pipes in contact with uninsulated suction lines. Suction lines should be well insulated.

2. If drip pipes are located in a cold dead air space, between refrigerators or walls and refrigerators, provide some means to prevent freezing.



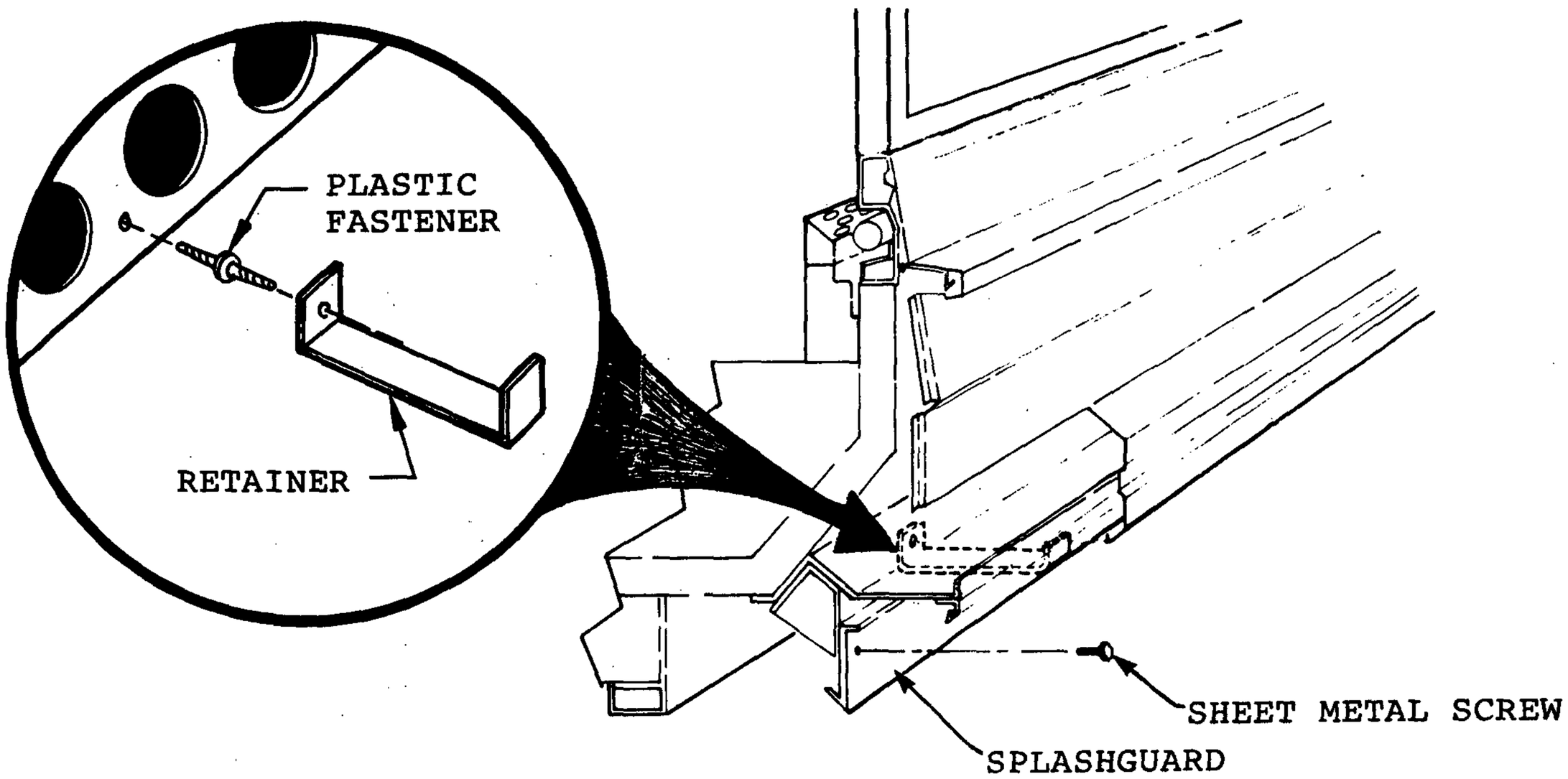
SPLASHGUARDS

Each refrigerator has been supplied with a splashguard with which to finish the installation of the refrigerator to the floor for an attractive appearance. After all other installation work has been finished, install the splashguard as follows:

1. Press the plastic fasteners into the retainers and then into the prelocated holes in the base rail.

2. Lift the splashguard under the raceway and onto the retainers.

3. Fasten the splashguard to the factory installed brackets using #8x½" Truss Head Sheet Metal Screws.



SEALING SPLASHGUARDS

If required by local sanitary codes or if otherwise desired, the splashguards may be sealed to the floor using any cove based trim that the installer desires. The size will depend on how much the floor is out of level. When installing the cove base trim:

A. To insure a good and secure installation, remove all dirt, grease, wax or other contaminates from the area of the splashguard where the trim will be bonded.

B. Apply a good contact cement to the cove base trim and the splashguard if necessary, following the manufacturers directions.

C. Press the cove base trim to the splashguard so that it is flush with the stores floor.

SECTION 3

REFRIGERATION

REFRIGERANT

These refrigerators will be equipped for operation on R-502 refrigerant unless otherwise specified on the factory order. The correct type of refrigerant will be stamped on the refrigerators serial plate located at the left hand end on the interior top liner.

REFRIGERANT PIPING

LINE SIZES: Liquid Line..... 3/8" O.D.
Suction Line.....1 1/8" O.D.

OUTLET LOCATION

The refrigerant line outlet is located at both ends of the refrigerator beneath the display pans. There is also an outlet through the rear. See page 11.
After connections have been made, seal this outlet thoroughly both on the inside and the outside. We recommend using an aerosol dispensed urethane type of insulation.

MULTIPLEXING

Piping of refrigerators operating on the same refrigeration system may be run from refrigerator to refrigerator through the end frame saddles provided for this purpose. DO NOT RUN REFRIGERANT LINES THROUGH REFRIGERATORS THAT ARE NOT ON THE SAME REFRIGERATION SYSTEM or poor refrigeration control and compressor failure can occur.

LINE SIZING

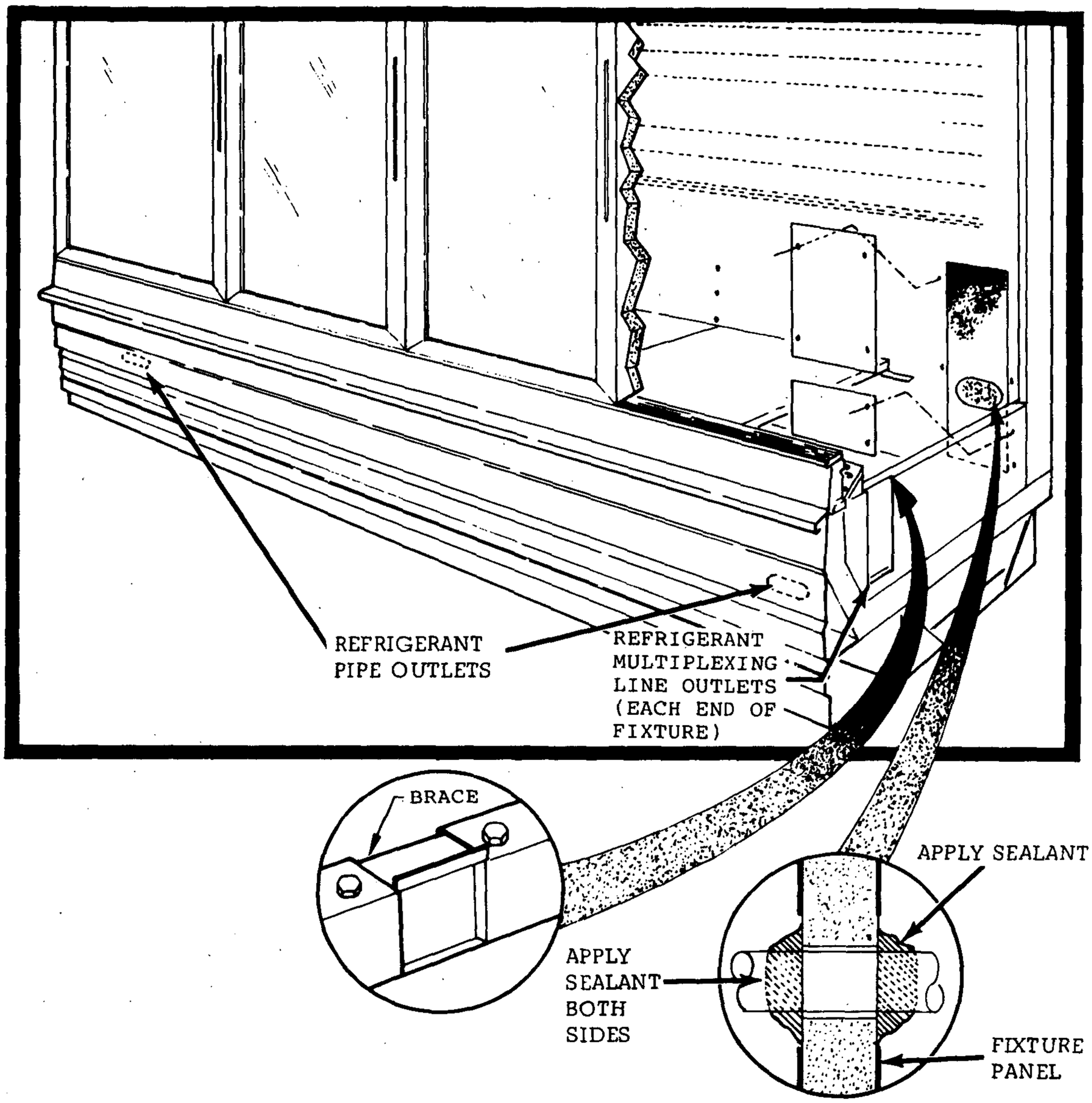
Refrigerant lines should be sized as shown on the refrigeration legend that is furnished for the store (not furnished by Hussmann). If a legend has not been furnished, refer to the Hussmann Application Engineering Manual for guidance.

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.



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

MULTIPLEXING SADDLE BRACES

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

INSULATION

For refrigerators with other than KOOLGAS defrost: the suction and liquid lines should be clamped or taped together and insulated for a minimum of 30' from the refrigerator; for refrigerators with KOOLGAS defrost, the suction and liquid lines should not contact each other and should be insulated separately for a minimum of 30' from the refrigerator. Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable.

REFRIGERANT PARTS LIST (Sporlan Nomenclature)

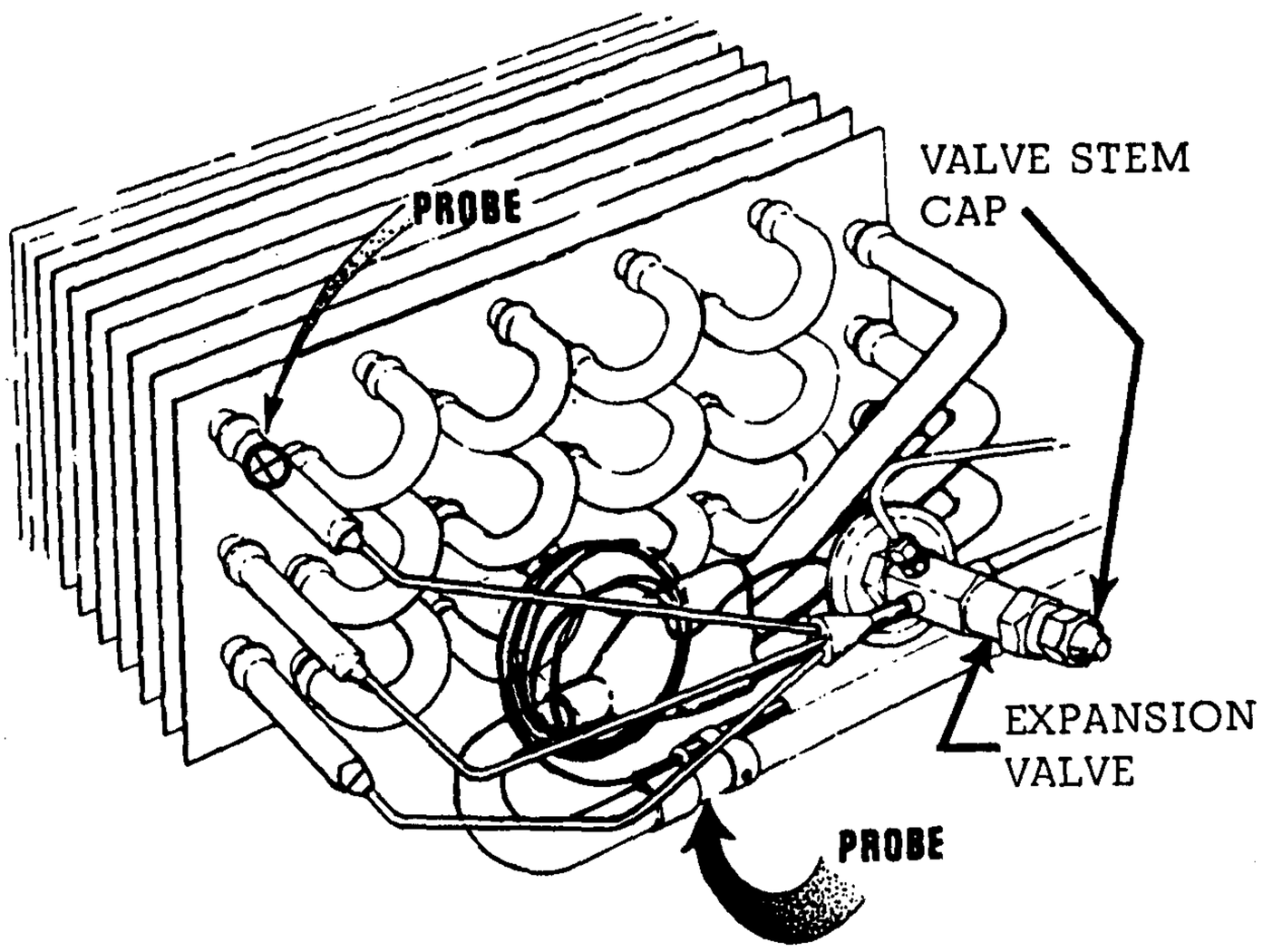
MODEL	TYPE OF DEFROST	REFRIGERANT	EXPANSION VALVE	DISTRIBUTOR
ALL		R-502	BFRE A C	D-115-3-¼-1
8'	OFFTIME	R-22	BFVE A C	D-115-3-¼-1
MODELS		R-12	BFFE A C	D-115-3-¼-1
ALL		R-502	BFRE A C	D-115-3-¼-1½
12'	OFFTIME	R-22	BFVE A C	D-115-3-¼-1
		R-12	BFFE A C	D-115-3-¼-1½

* These refrigerant distributors are provided with a special 3/8" side outlet port which allows the liquid condensed in the coil during defrost to bypass the expansion valve and flow into the liquid line.

EXPANSION VALVE ADJUSTMENT

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

Attach two 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 (as illustrated below). Some hunting of the expansion valve is normal. The valve should be adjusted so that during the hunting the greatest difference between the probes will be less than 3° (at times as low as 0°). Make adjustments of no more than one-half turn of the valve stem at a time and wait for at least fifteen minutes before rechecking the probe temperature and making further adjustments.



CONTROLS AND ADJUSTMENTS-CONVENTIONAL MULTIPLEXING

Refrigeration temperature may be controlled by either the condensing units low pressure control or by a refrigeration thermostat (one per condensing unit). When the optional refrigeration thermostat is factory installed, it will be located in the electrical raceway at the righthand end of the case with its sensing bulb fastened behind a removable access panel as shown on page 16.

Defrosts are controlled by a timer in the condensing units control panel. The recommended type of defrost timer is time initiated and pressure terminated.

REFRIGERATION CONTROLS							DEFROST CONTROLS		
APPLICATION	DISCHARGE AIR TEMPERATURE (1)	REFRIGERANT	LOW PRESSURE CONTROL				Defrost Frequency	Pressure Termination	(4) Defrost Length
			When (2) Pressure Control controls temperature		When (3) Thermostat controls temperature				
			Cut-Out	Cut-In	Cut-Out	Cut-In			
DAIRY	32° F	R-502	47 psig	63 psig	30 psig	60 psig	One at 10 PM	83 psig	60 Min.

(1) Discharge air temperature is to be measured by attaching a service thermometer to the discharge honeycomb at the center of the case.

(2) When the low pressure control is used to control the refrigeration temperature, set the cut-out of the control to stop the compressor at the discharge air temperature shown.

(3) When a refrigeration thermostat is used to control the refrigeration temperature, set the low pressure control as shown then adjust the thermostat to stop the compressor at the discharge air temperature shown. Outdoor condensing units: refrigeration temperature must be controlled by a refrigeration thermostat.

(4) The defrost timer on outdoor condensing units must be a time terminated type and must control a liquid line solenoid from pump-down prior to defrost only. The failsafe then becomes the defrost length and must be increased to 64 minutes to compensate for the pump-down period.

CONTROLS AND ADJUSTMENTS-MIXED MULTIPLEXING

Refrigeration temperature may be controlled by either a refrigeration thermostat of a CDA valve (Close on Drop in Air temperature). The CDA valve, if used, will be installed at the condensing unit with its sensor mounted in the refrigerator in the same location as the refrigeration thermostats sensor. For complete wiring and adjustment information refer to the instruction Manual furnished with the condensing unit.

Defrosts will be off-time as standard of Koolgas if ordered as an option. Both will be time initiated and time terminated.

REFRIGERATION CONTROL		DEFROST CONTROL		
APPLICATION	DISCHARGE AIR TEMPERATURE	DEFROST FREQUENCY	DEFROST LENGTH KOOLGAS	DEFROST LENGTH OFF-TIME
DAIRY	32° F	One At 10 PM	12 min.	60 Min.

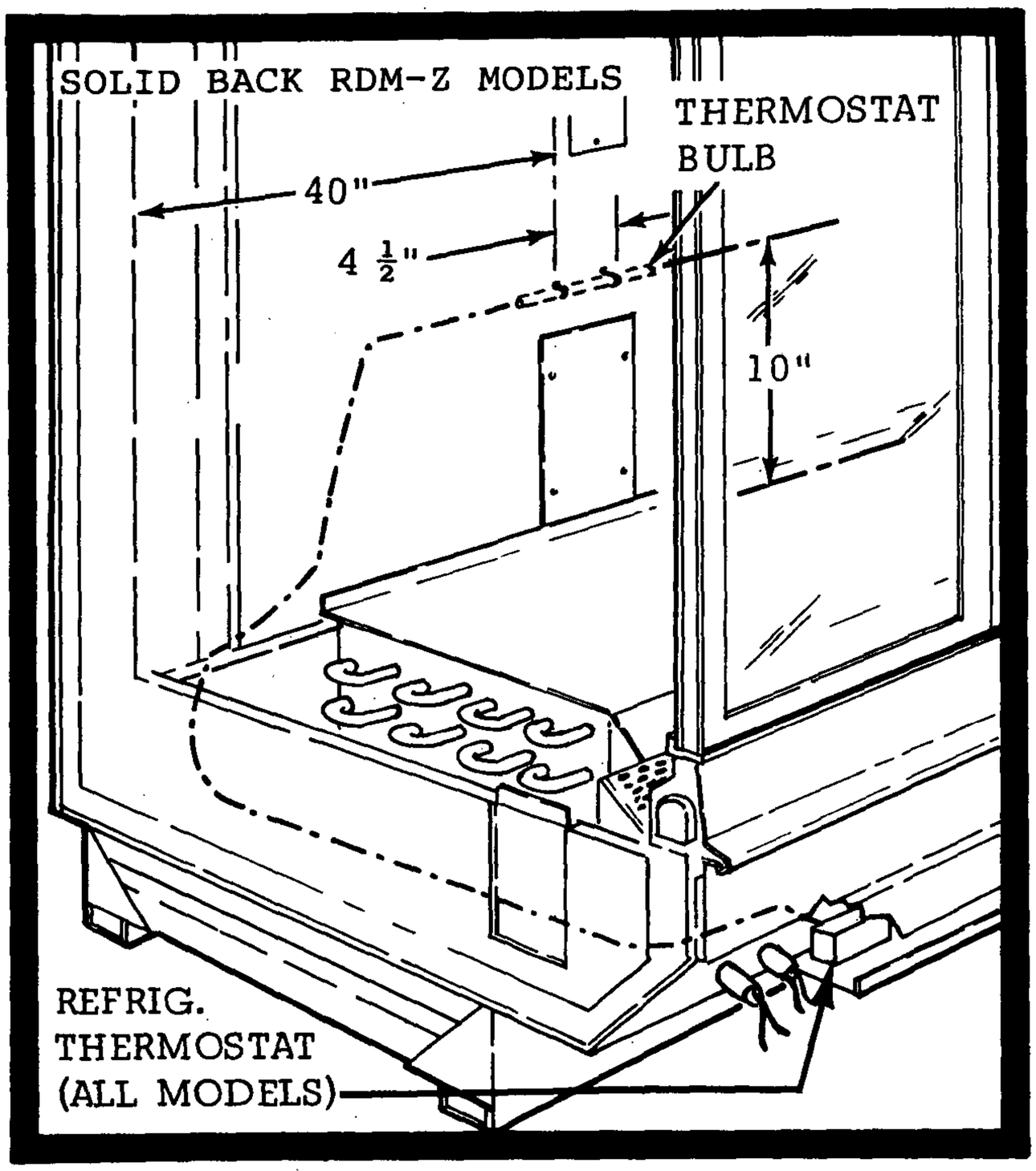
(1) Discharge air temperature is to be measured by attaching a service thermometer to the discharge honeycomb at the center of the case. Adjust the refrigeration control (CDA valve or refrigeration thermostat) to maintain the discharge air temperature shown.

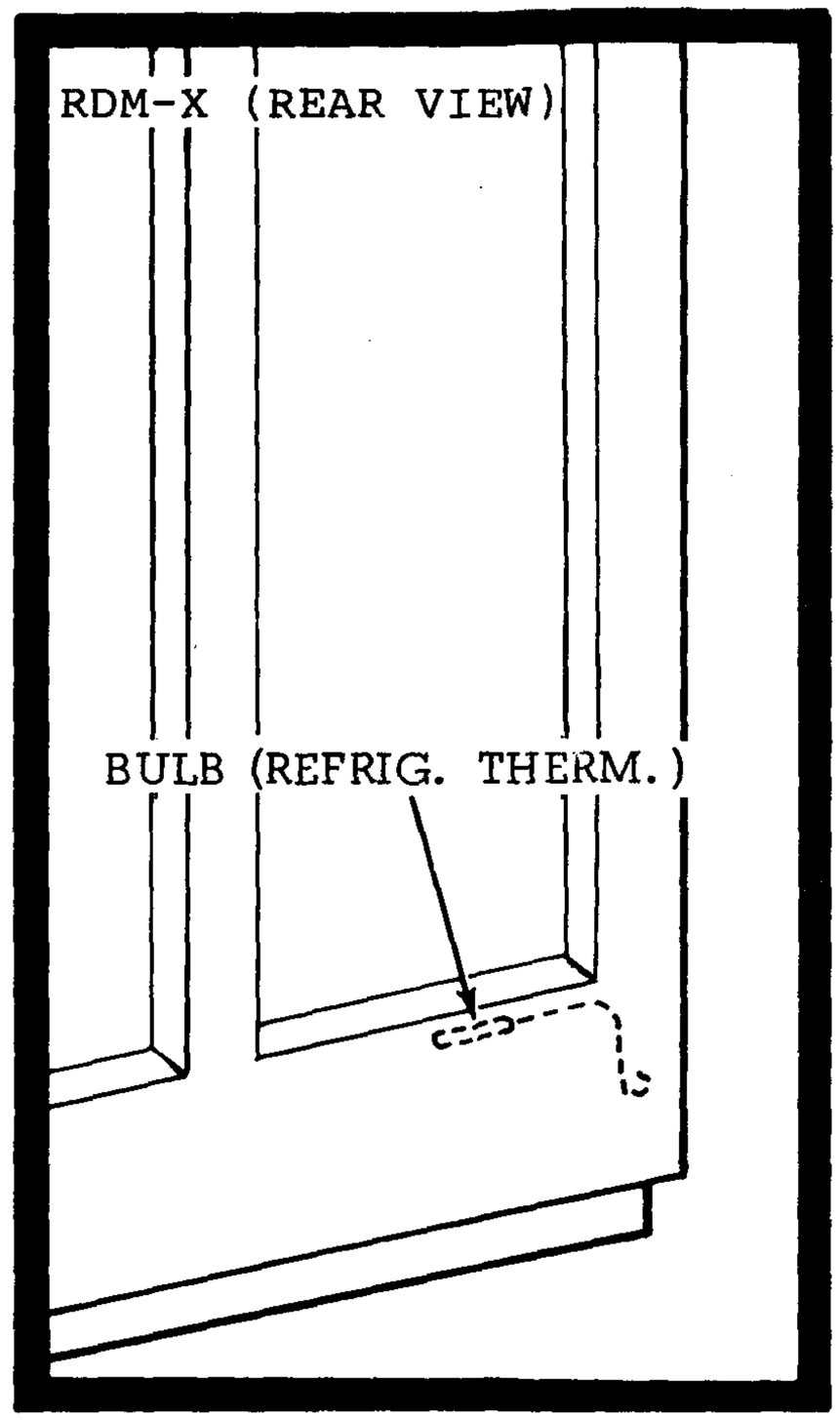
(2) KOOLGAS defrost is time initiated and time terminated. The defrost lengths listed above are based upon laboratory testing but operation under actual store conditions may require that they be lengthened to accomplish a thorough defrost. Some of the store conditions that can contribute to a longer defrost are: low head pressue, long runs of refrigerant lines, store ambient, fixtue temperature operating lower than that recommended, seasonal ambient changes, etc.

Each system shown on the store legend must have staggered defrosts to maintain stable compressor loading and sufficient supply of defrost gas. When practical, defrost should be during store hours when store is closed.

REFRIGERATION THERMOSTAT (OPTIONAL)

A Refrigeration Thermostat is optional on fixtures operating on Indoor Condensing Units, but is required with Outdoor Condensing Units. The location of the thermostat when either factory or field installed is shown below.





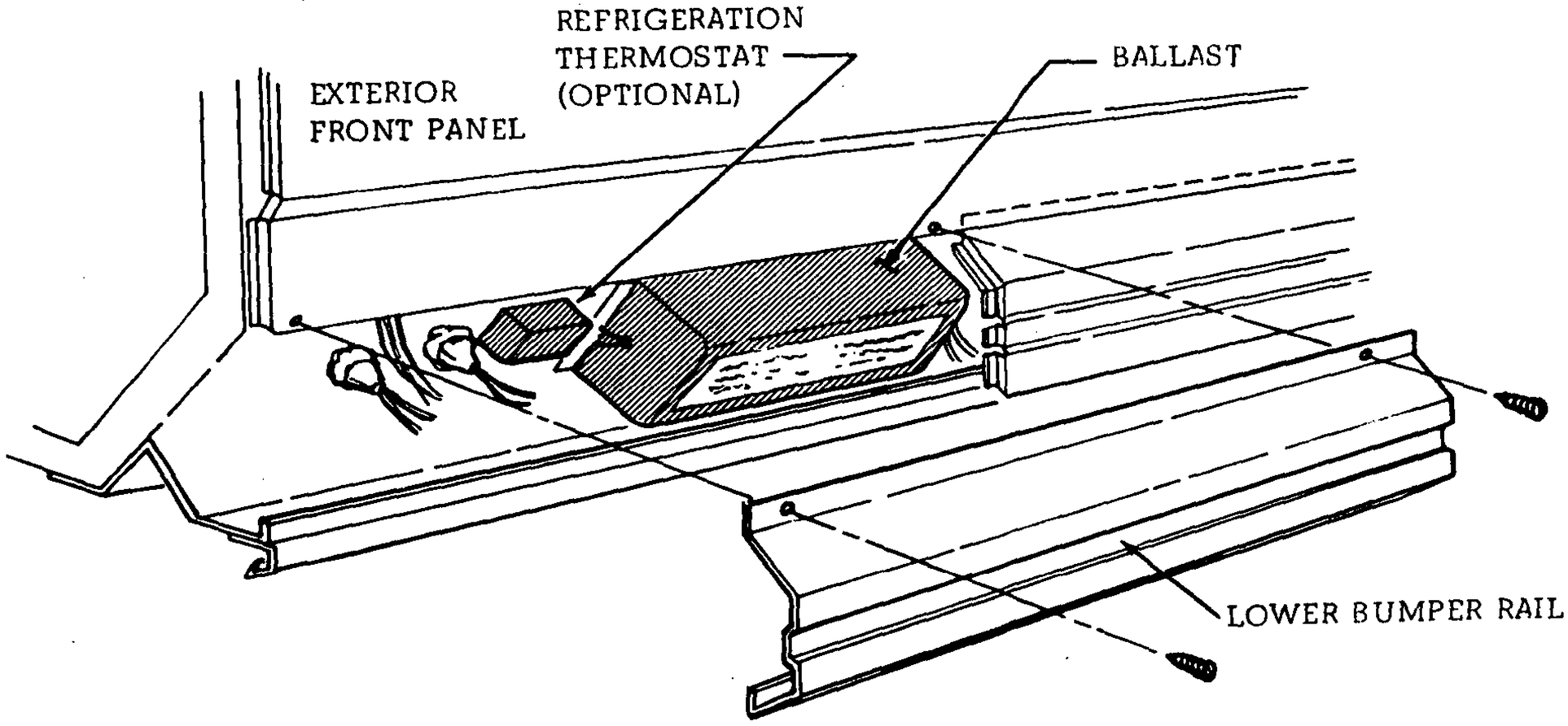
NOTE: WHEN A REFRIGERATION THERMOSTAT IS INSTALLED, A PAIR OF WIRES IS REQUIRED FROM THE REFRIGERATOR TO THE CONDENSING UNIT.

SECTION 4

ELECTRICAL

CONNECTIONS

All electrical connections are to be made in the electrical wire-way behind the kickrail at the left-hand end (facing front). For entrance to the wireway, knockouts have been provided at the left-hand end of the raceway on the underside. (See illustration below).



IDENTIFICATION OF WIRING

Leads for all electrical circuits are identified by colored plastic bands which correspond to the "color code sticker" located inside of the case wire-way. This sticker is shown below.

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

* EITHER COLORED SLEEVE OR COLORED INSULATION

ELECTRICIAN NOTE: CASE MUST BE GROUNDED

The neutral wire for each circuit has either white insulation or a white plastic sleeve.

SERIAL PLATE AMPERAGES

Serial Plate amperes are the amperage figures that are stamped on the fixtures Serial Plate. All field wiring must be sized to the Serial Plate amperage however, the actual amps may be less than that specified.

AMPERAGES

MODEL	120 VOLT, 60 HERTZ CIRCUITS	
	FAN and ANTI-SWEAT HEATERS (1)	LIGHTS
RDM-8X RDM-8Z	3.1	8.0
RDM-8XA RDM-8ZA	3.0	8.0
RDM-8XA RDM-8ZH	2.9	8.0
RDM-12X RDM-12Z	4.8	11.9
RDM-12XA RDM-12ZA	4.6	11.9
RDM-12XH RDM-12ZH	4.5	11.9

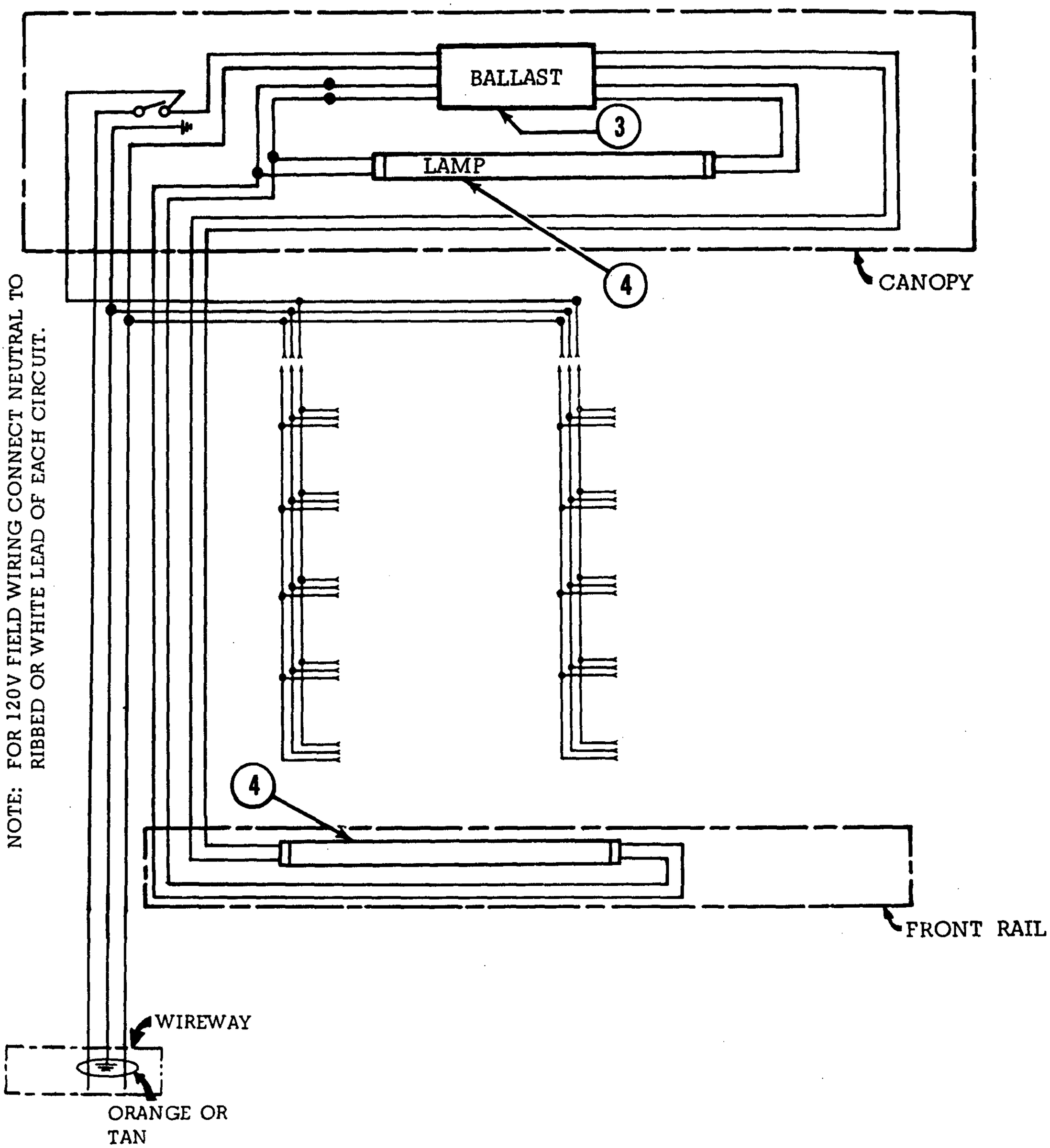
NOTES:

(1) The fans and anti-sweat heater circuit should be wired on a separate circuit than that for the lights. This is to avoid accidentally turning the fans and anti-sweat heaters off when store lighting is turned off.

(2) In addition to the circuits described above, the following will also require control wiring from the refrigerator to the condensing unit. See wiring diagrams in this section.

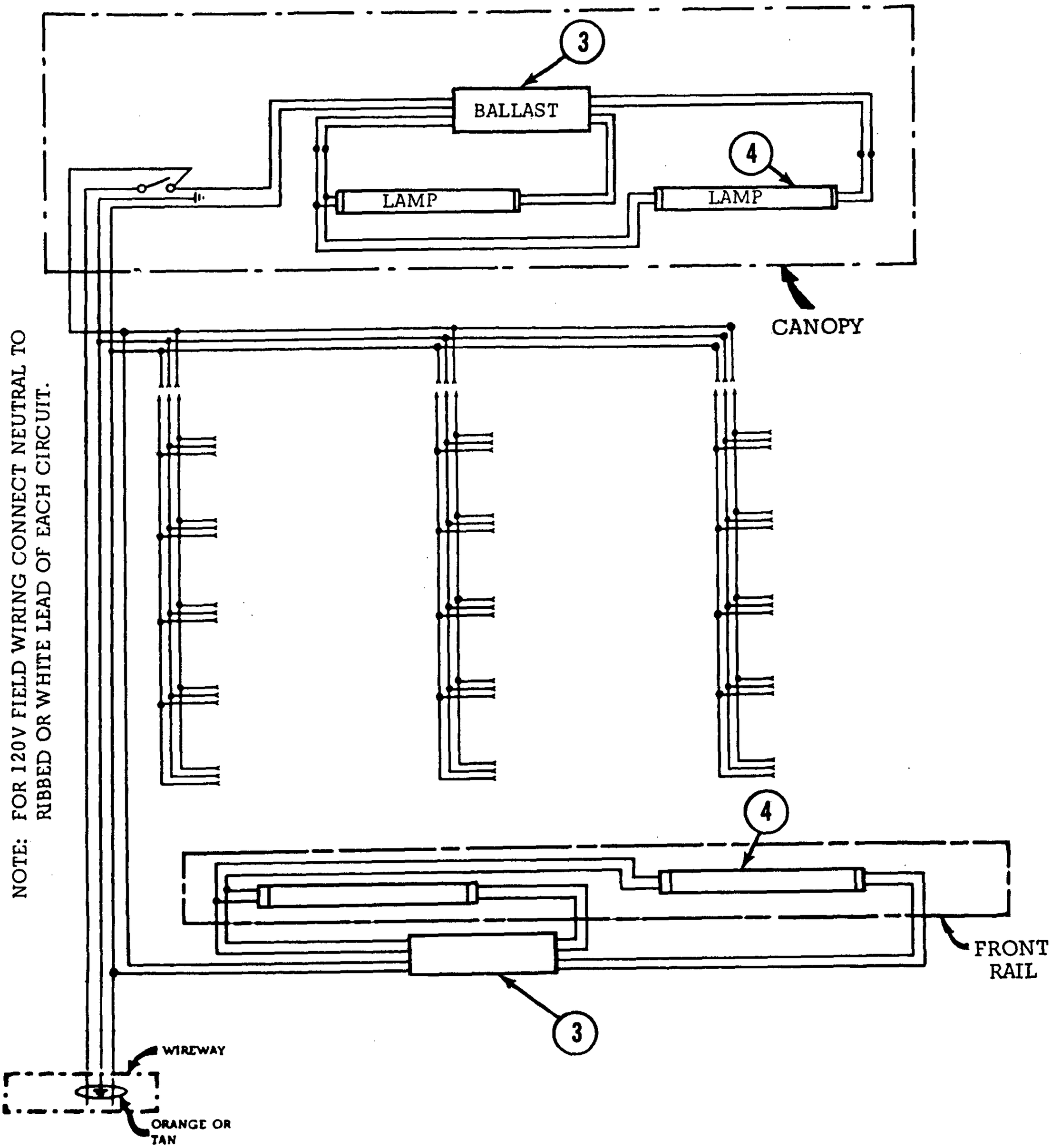
REFRIGERATION THERMOSTAT or CDA SENSOR: Both of these are optional refrigeration controls that need to be wired to the condensing unit control panel when they are installed in the refrigerator.

WIRING DIAGRAM
RDM-8
LIGHT CIRCUIT



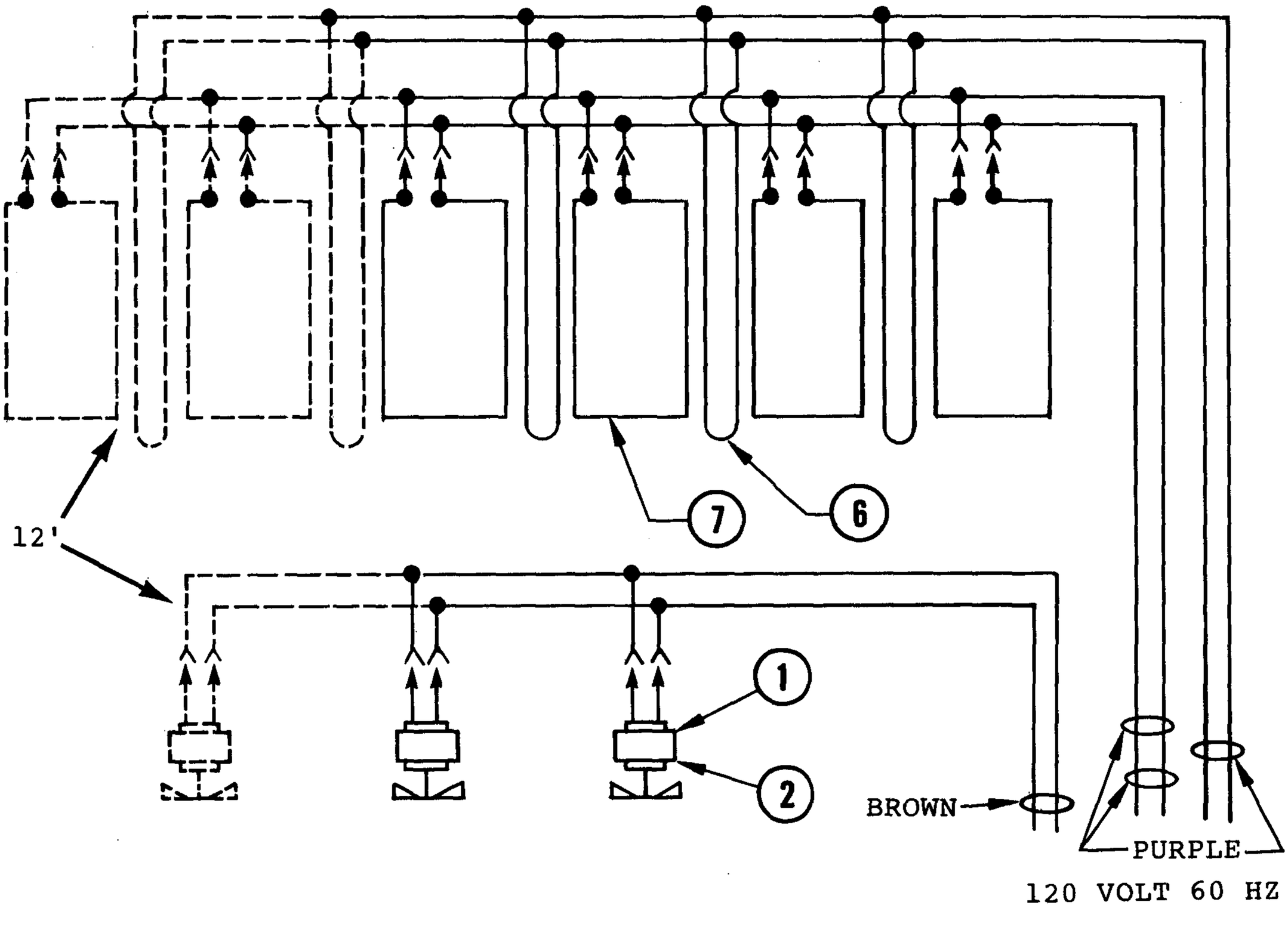
WARNING
REFRIGERATOR MUST BE GROUNDED

WIRING DIAGRAM
RDM-12
LIGHT CIRCUIT



WARNING
REFRIGERATOR MUST BE GROUNDED

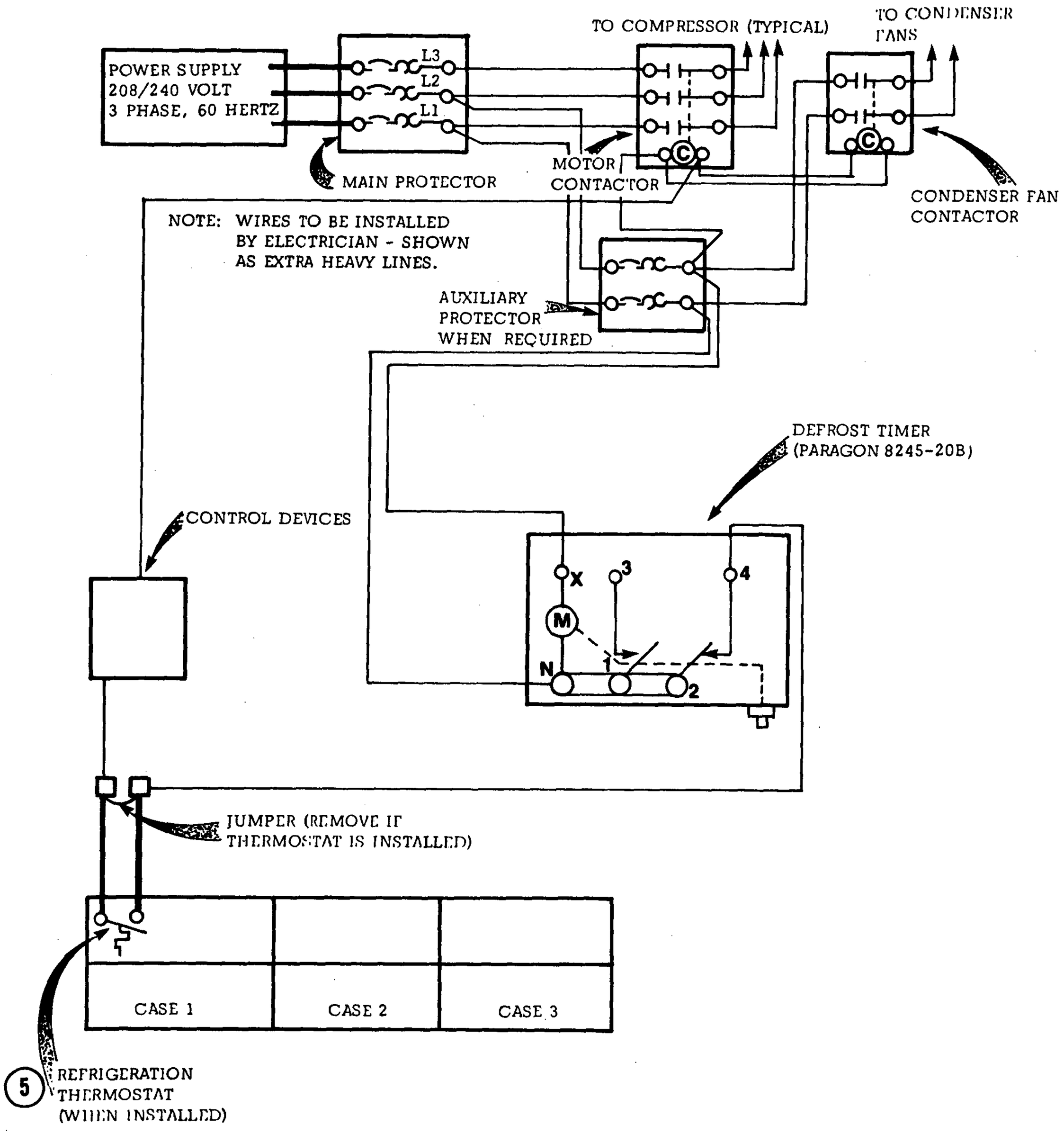
WIRING DIAGRAM
RDM
FAN & ANTI-SWEAT HEATER CIRCUIT
(Anthony Doors and Frame)



120 VOLT 60 HZ

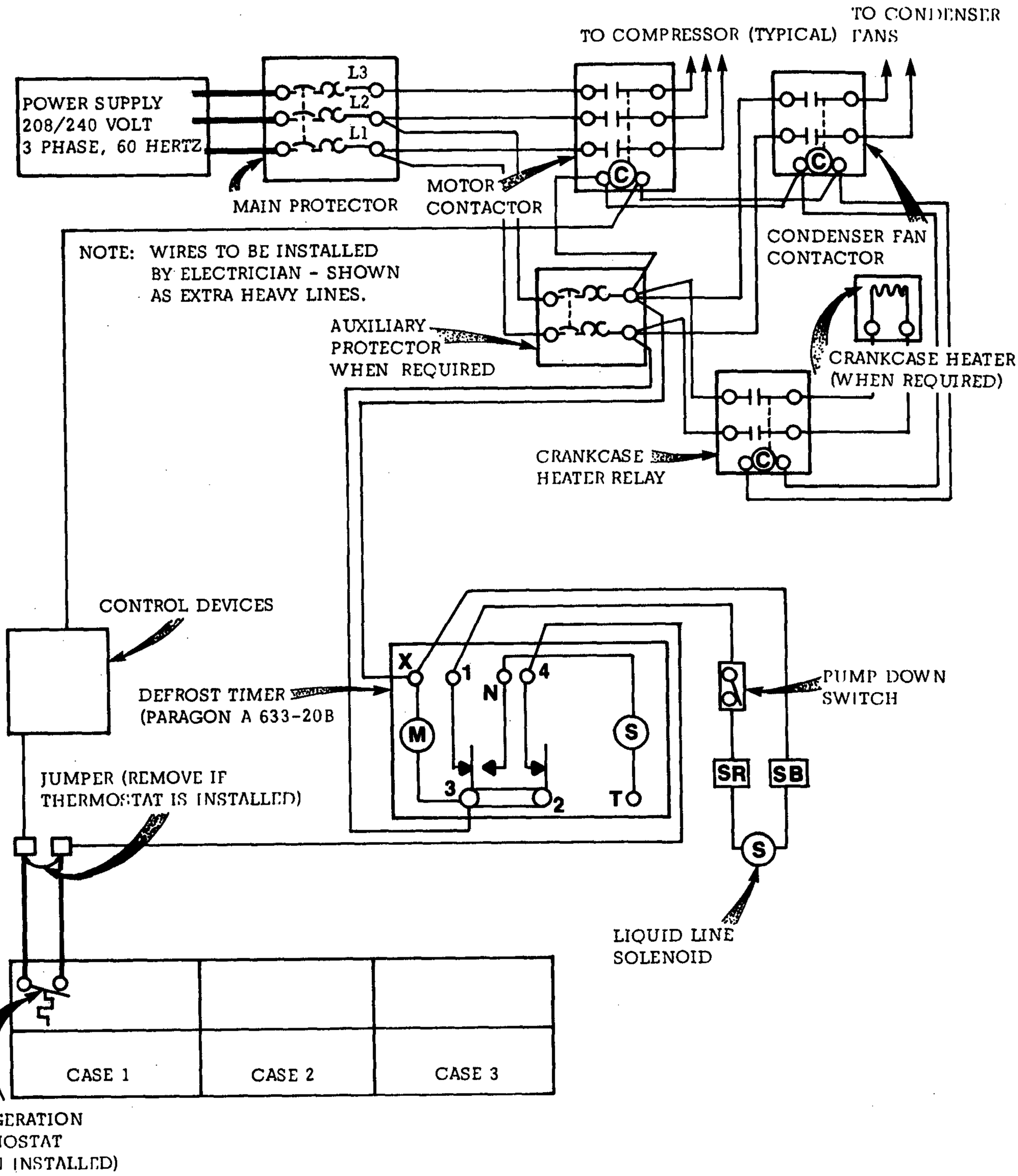
CAUTION
REFRIGERATOR MUST BE GROUNDED

CONVENTIONAL MULTIPLEXING - INDOOR TYPE UNIT
CONDENSING UNIT & CONTROL PANEL WIRING DIAGRAM



WARNING
REFRIGERATOR MUST BE GROUNDED

CONVENTIONAL MULTIPLEXING - OUTDOOR TYPE UNIT
CONDENSING UNIT & CONTROL PANEL WIRING DIAGRAM



WARNING
REFRIGERATOR MUST BE GROUNDED

ELECTRICAL REPLACEMENT PARTS

ITEM NO.	PART NUMBER	DESCRIPTION
1.	047000	Fan Motor - GE#5KSM51ECG-3799 CW 115V
2.	124150	Fan Blade - Morill FV800CW30S 8", 30° CW - Embossed side motor
3.	137843	Ballast - GE#8G1141WT
4.	137846	Fluorescent Lamp - F96T12 CW HO (8ft.)
	137847	Fluorescent Lamp- F72T12 CW HO (12ft.)
5.	137880	Refrigeration Thermostat - W.R. #1609-103 (optional)
6.	See Note A	Frame Mullion Anti-Sweat Heater (One around each door opening)
7.	See Note A	Door Frame Anti-Sweat Heater (One around perimeter of each door)

NOTE: For replacement part, see the Door Service Manual furnished with each refrigerator.

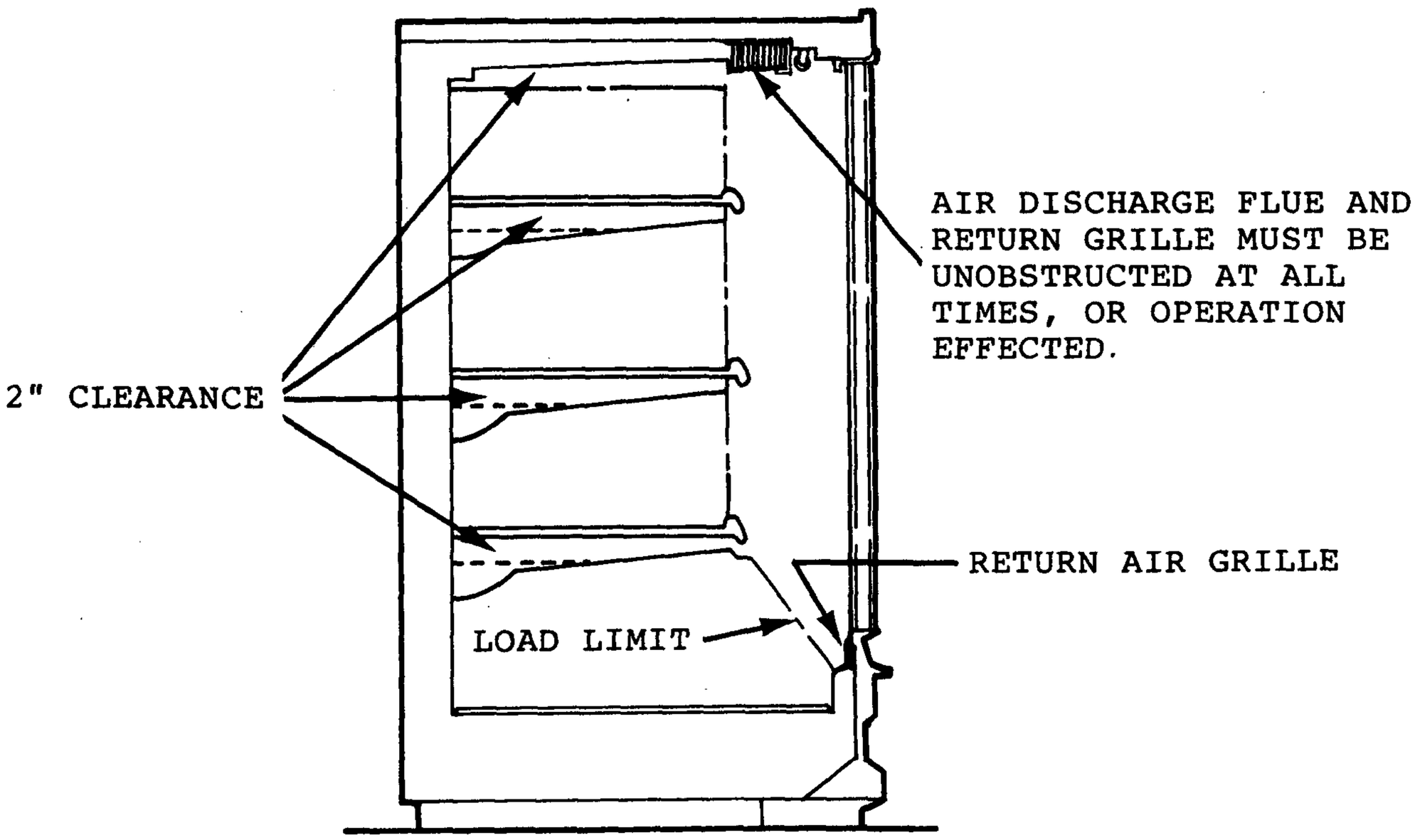
SECTION 5

USER INFORMATION

STOCKING AND STOCK ROTATION

Merchandise should not be placed in these refrigerators for at least six hours after being put into operation. All shelves and lower deck of these models are intended to display the product. Maintain a minimum 2" space above the product for proper air circulation and for proper refrigeration. If the flow of refrigerated air through the perforated back panel and ceiling over the product is restricted or blocked, the case temperature will rise causing the merchandise to warm up. At no time, should stock in the refrigerator extend beyond the front of the shelves or the load limit as indicated on the ends of the refrigerator and as shown in the illustration below. Signs, price tag mouldings (other than standard, etc., should not be affixed to the front edge of the shelves.

When stocking, the doors should not be kept open longer than necessary or temperature, frost and high energy consumption will occur.



IMPORTANT:

KEEP FOOD PACKAGES AND REFUSE OFF OF RETURN AIR GRILLE. AIR DISCHARGE FLUES AND RETURN GRILLES, MUST BE UNOBSTRUCTED AT ALL TIMES OR OPERATION WILL BE SERIOUSLY EFFECTED.

THE MAXIMUM DISTRIBUTED LOAD ON ANY ONE 4' SHELF IS 200 LBS.

CARE AND CLEANING

To insure good sanitation, long life and minimum maintenance these models should be thoroughly cleaned and washed at least every three months. Remove debris caused by broken packages, torn wrappers, etc. before washing since foreign matter can clog the drip pipe.

To preserve the finish, use warm water and a mild detergent to wash the interior surfaces. DO NOT USE ABRASIVE CLEANERS OR STEEL WOOL SCOURING PADS AS THESE WILL MAR THE FINISH.

When cleaning, do not use a hose with high water pressure and never introduce water into the refrigerator faster than the drip pipe can carry it away.

SECTION 6

SERVICE TIPS

WARNING

ALWAYS DISCONNECT THE ELECTRICAL POWER AT THE MAIN DISCONNECT WHEN SERVICING OR REPLACING ANY ELECTRICAL COMPONENT OF THIS REFRIGERATOR. THIS INCLUDES, BUT IS NOT LIMITED TO SUCH ITEMS AS FANS, HEATERS, THERMOSTATS AND FLUORESCENT LAMPS.

FAN BLADE REPLACEMENT

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

REMOVING AND CLEANING HONEYCOMB

Honeycomb should be cleaned every six months to prevent poor refrigeration performance due to accumulation of dirt on the tops of the honeycomb. To clean honeycomb, use of a vacuum cleaner is the quickest, but soap and water cleaning is permissible so long as all water is removed from the cells before replacing honeycomb. To remove honeycombs from refrigerator, follow the instructions and be very careful not to damage honeycomb cells.

A. Remove the rear retainer.

B. Remove honeycomb.

C. Clean:

1. Mix a powdered detergent, such as "Ajax or "Comet," in warm water. (6 to 7 tablespoons per gallon of water)

2. Immerse and/or spot clean the honeycomb. The plastic honeycomb is rigidly constructed but can be damaged if abused.

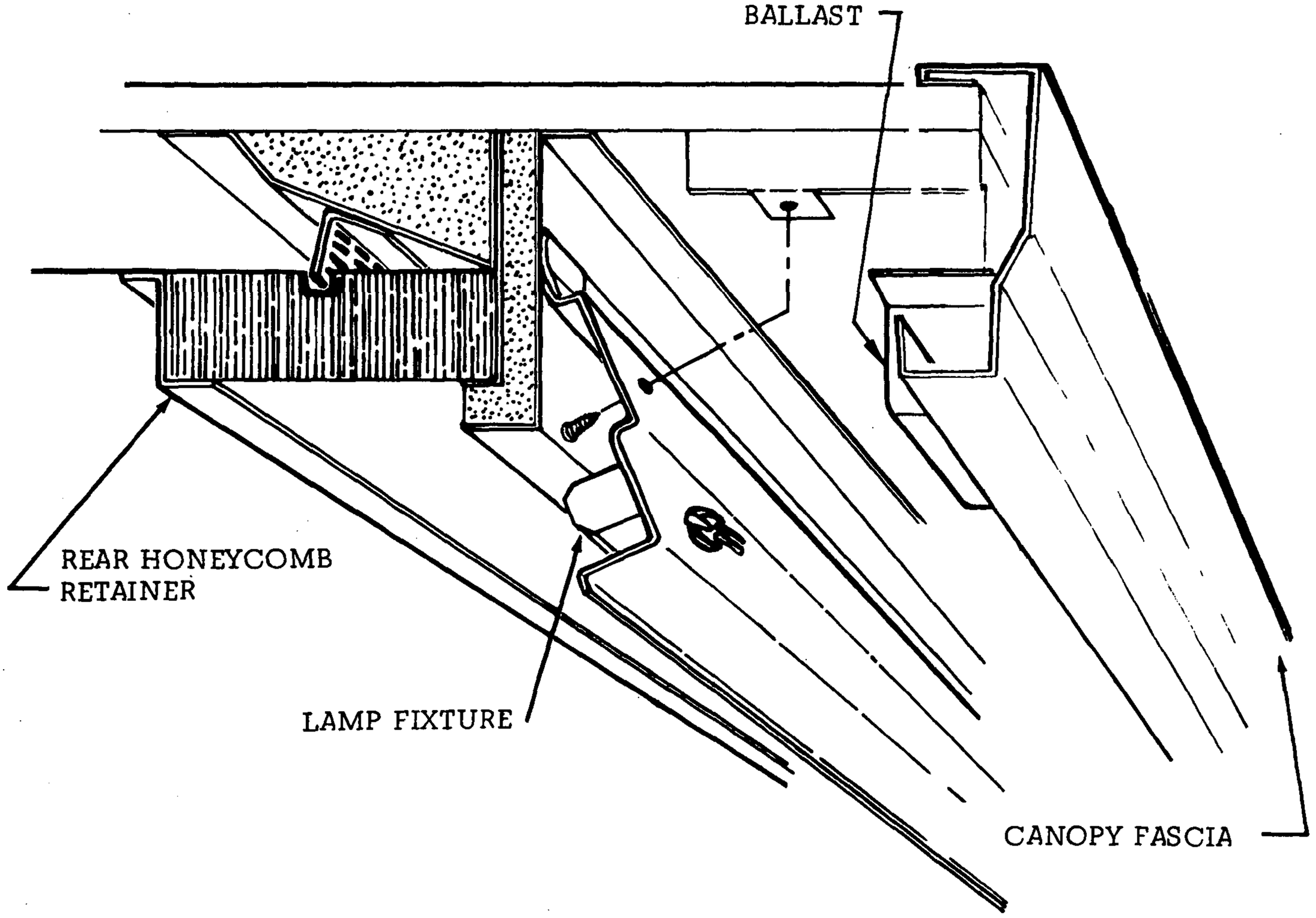
3. Rinse thoroughly in clean water. Shake excess water from the honeycomb and dry. (If heat is used, do not exceed 140°F, dry heat).

D. Replace the honeycomb in reverse order of removal.

CANOPY BALLAST REPLACEMENT

The lamp ballast are located on top of the light fixture beneath the top cover panels. For access to the ballast:

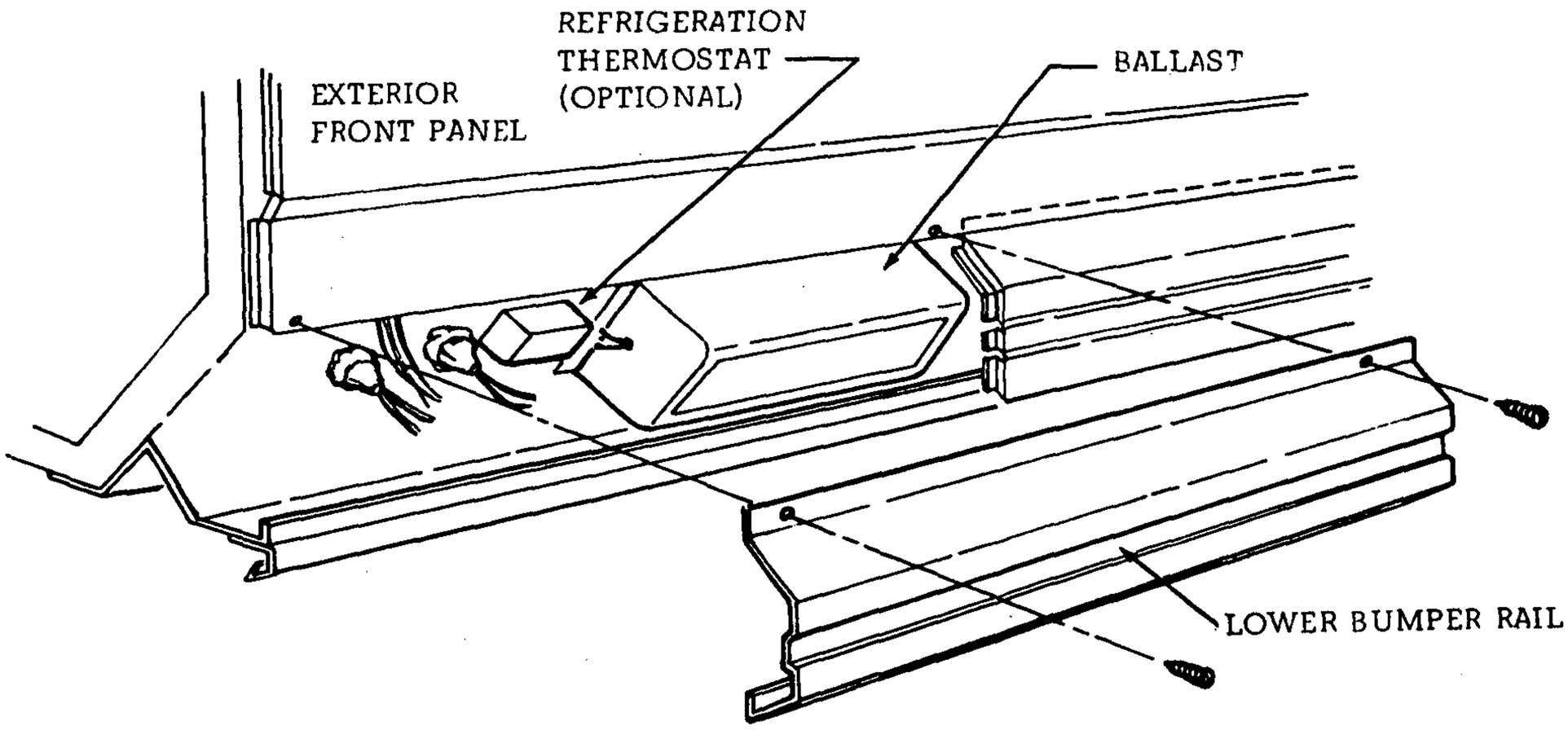
A. Disconnect the electrical power to the light fixture.
B. Remove fluorescent lamps.
C. Remove screws, see below.
D. Pull lower edge of Canopy Fascia out.
E. Rotate light fixtue down to expose ballast.



FRONT RAIL BALLAST REPLACEMENT

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

A. Disconnect the electrical power to the light fixture.
B. Remove the lower bumper rail.



REPAIRING ALUMINUM COIL

The aluminum coils used in Hussmann refrigerated cases may be easily repaired in the field. Materials for repair are found at refrigeration wholesalers.

Hussmann recommends the following solders and techniques:

1. Zinc based 720°F solder. This solder makes a strong durable repair and is also cathodic protection, preventing corrosion of the tubing near the repair. This does not need a coating over the solder area. It may be 95% to 98% zinc with the remainder aluminum. Solders in this group are made by:

   Platt Brothers
   Box 1030
   Waterbury, CT
   (203) 753-4194

   New Products, Inc.
   269 Freeman Street
   Brooklyn, NY 11222

   Mathiessen and Hegler Zinc Company
   Lasalle, IL

   Three major differences between soldering aluminum and copper must be followed for best results. a. The heat must be applied on the opposite side of the tube from the solder. b. While keeping the solder molten, wire brush under the solder pool. c. Move the flame back and forth along the tube to prevent melting the tube.

2. Solders with lower melting point (600°F or less). Solders that contain metals other than the zinc and aluminum combination above will require a protective coating. This coating must be flexible to withstand defrosts. Windshield sealant by 3M, sold in auto parts stores, is one good material.

3. Solder/flux the same technique may be used with all these solder/flux systems. Heat from the back side of the tube, keep rubbing the solder on the fluxed repair area until it melts. Continue heating carefully until the solder flows, wetting the tube. Wash flux off with very hot water, dry, coat with windshield sealant. Use two coats and extend coat at least 1" each way from the solder to be sure of good coverage.

Some solder manufacturers are:

#505 Solder and #505 Flux:	Allweld Alloys 2027 Laura Avenue Huntington Park, Ca (213) 583-9004
Alu-Sol 45D Multicore Solder:	Multicore Solders Westbury, CT 11590 (516) 334-7450
Strongset #509 (5) and 509 Flux:	All-State Welding Alloys Co. Toronto, Canada
Eutector-Alutin 51-S Solder and Alutin 51 Flux:	Eutectic Corporation 40-45 172 nd Street Flushing, NY