HUSSMANN®

CORPORATION

P-PN-PH-PHN-PHSM-PHSMN

REFRIGERATED & NON-REFRIGERATED
PRODUCE MERCHANDISERS

ENG. NO. 140539 M
January, 1989
Supersedes #140539L
Dated March, 1988
Section 4

INSTALLATION / SERVICE INSTRUCTIONS

Eng. #140539

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IMPORTANT
KEEP IN STORE FOR FUTURE REFERENCE

Quality that sets industry standards.

THIS REFRIGERATOR CONFORMS TO THE
COMMERICAL REFRIGERATOR MANUFACTURER'S ASSOCIATION
HEALTH AND SANITATION STANDARD
CRS-S1-78

HUSSMANN CORPORATION • 12999 St. Charles Rock Rd. • Bridgeton, Mo. 63044 • (314) 291-2000

SECTION 1

GENERAL INFORMATION

MODEL DESCRIPTION

These produce merchandisers are designed to display all types of produce products. The following table lists each of the models covered by this instruction and a brief description of each.

MODEL NOMENCLATURE	DESCRIPTION
P	Single-Deck Merchandiser, Refrigerated
PN	Single-Deck Merchandiser, Non-Refrigerated
PH	Multi-Deck Merchandiser, Refrigerated
PHN	Multi-Deck Merchandiser, Non-Refrigerated
PHSM *	Multi-Deck Merchandiser, Refrigerated
PHSMN *	Multi-Deck Merchandiser, Non-Refrigerated

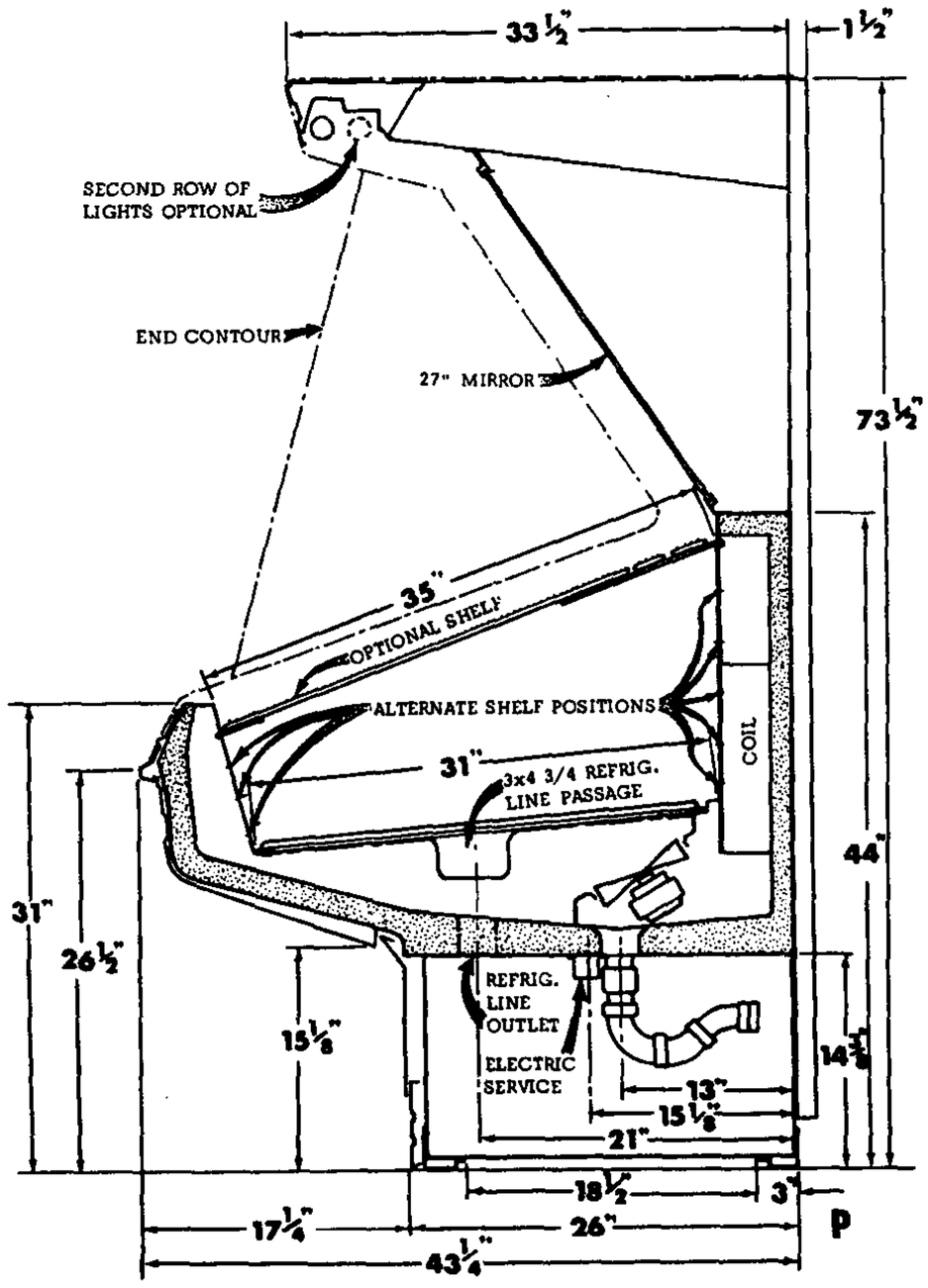
All models are available in either 8' or 12' lengths.

* These models have mirrors with slanted shelf supports as standard equipment.

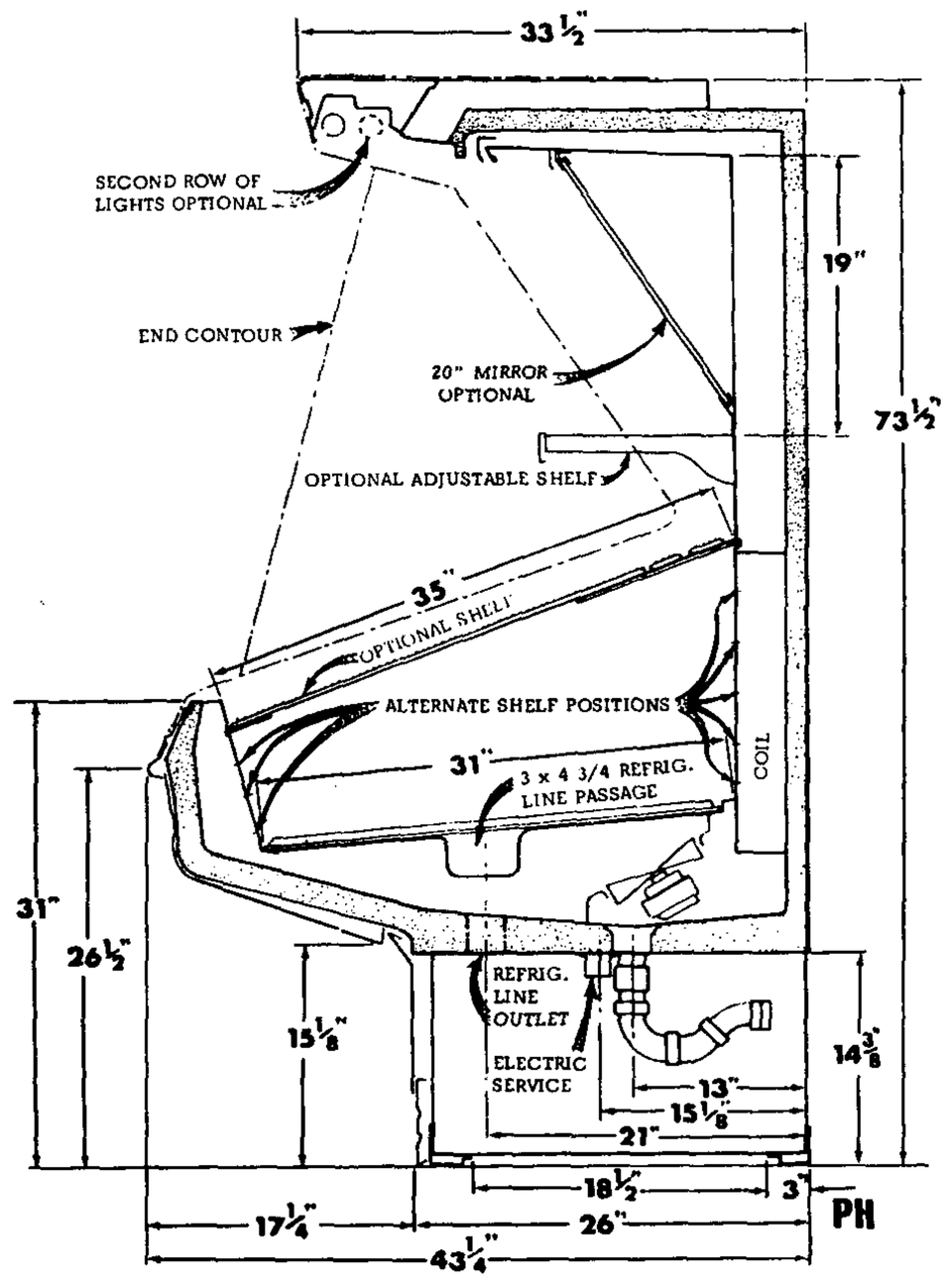
APPLICATION

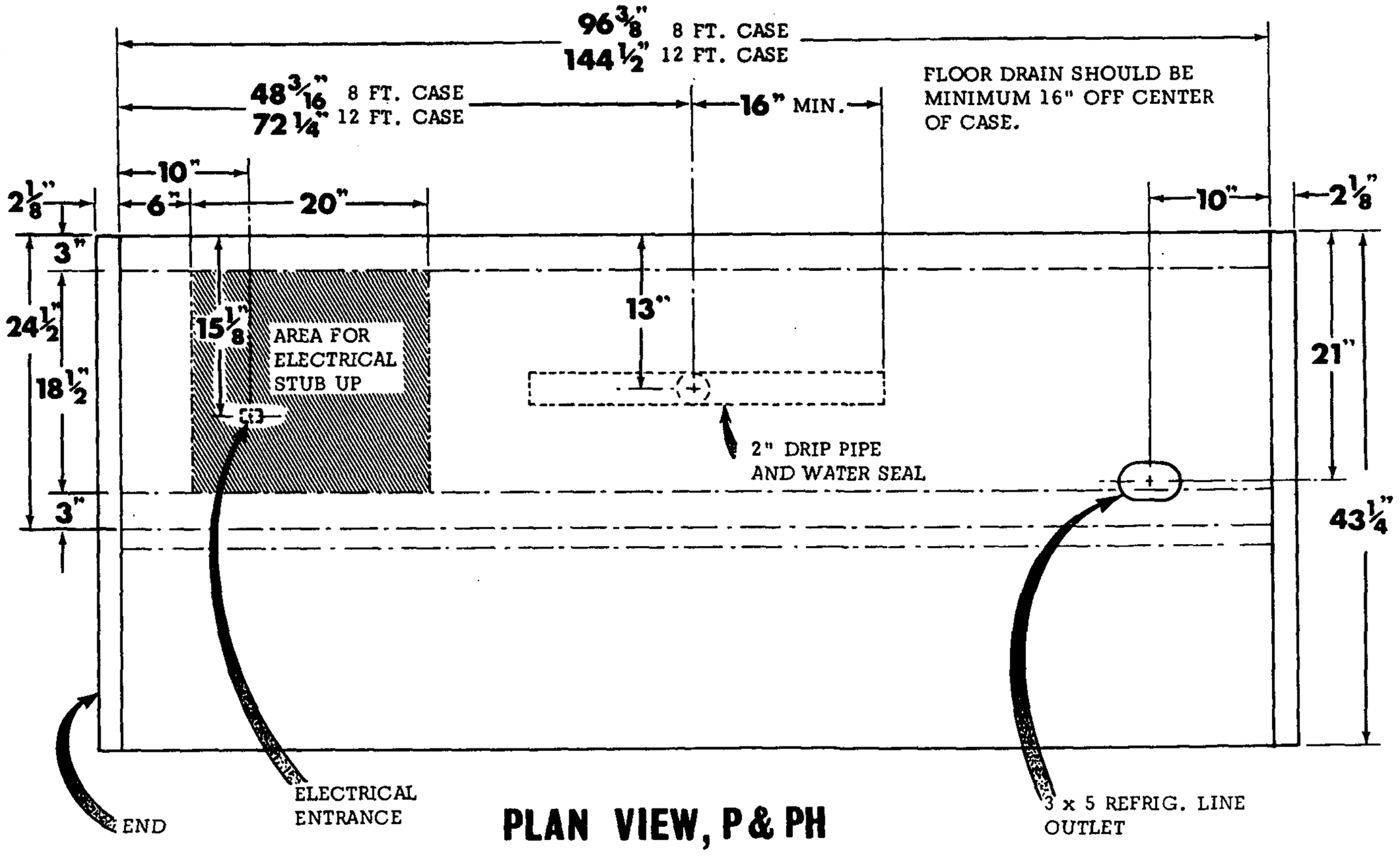
These refrigerated merchandisers have been designed for use only in air conditioned stores where temperature and humidity are maintained at or below 75° and 55% relative humidity.

P & PN (WITH OPTIONAL SUPERSTRUCTURE)



PH-PHN-PHSM-PHSMN





PLAN VIEW, P & PH

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 freight 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. 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.

LOCATION

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.

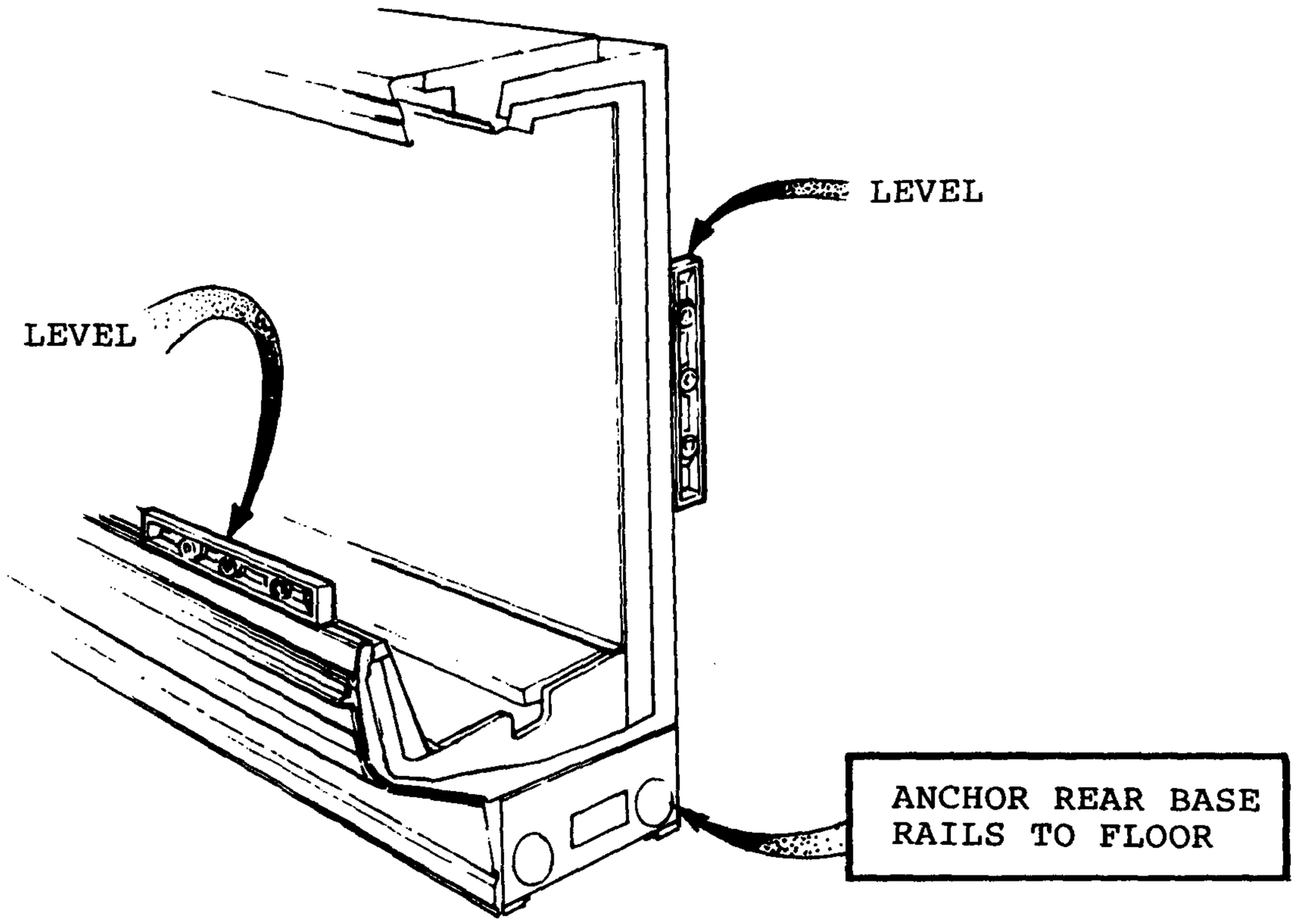
LEVELING

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.

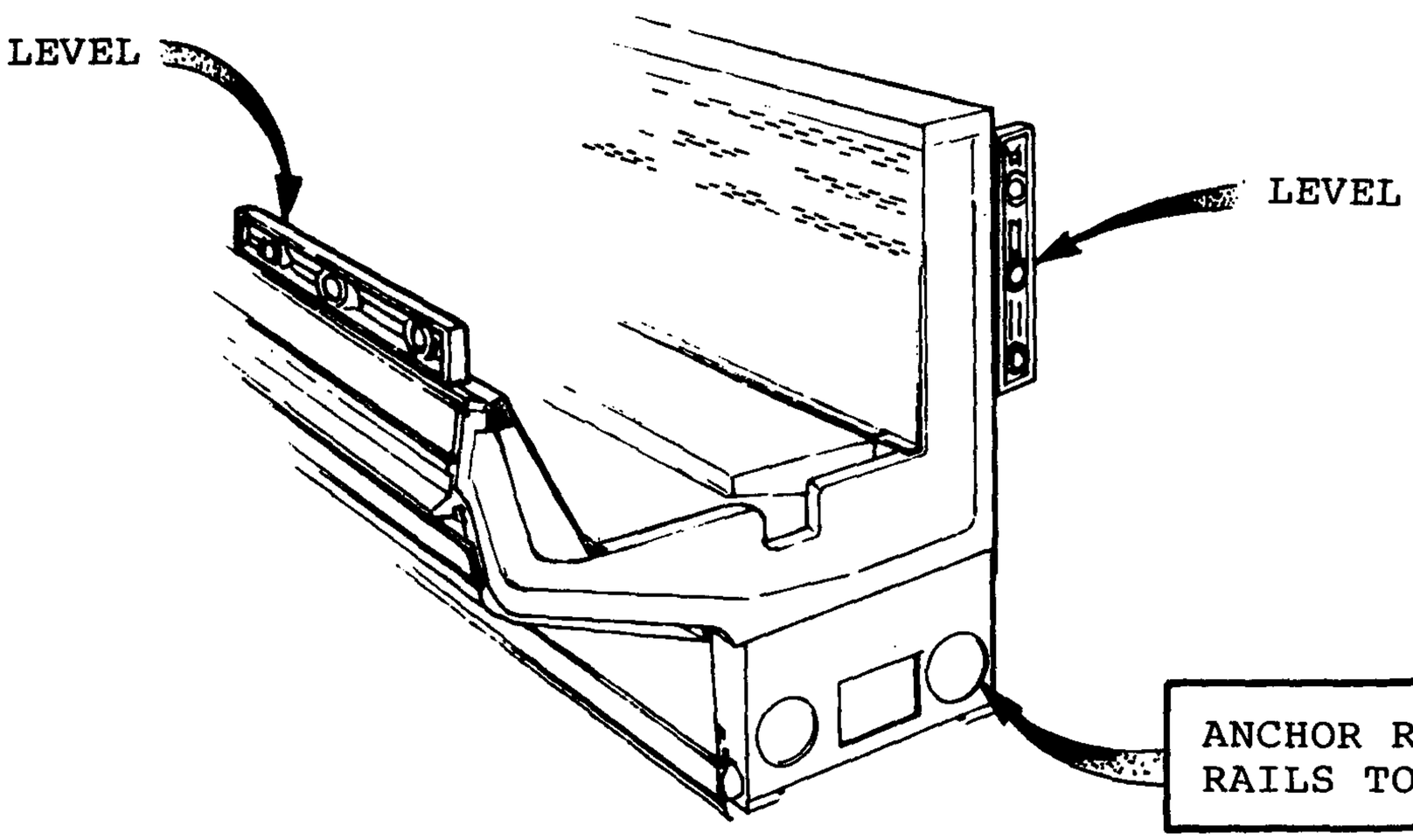
ANCHORING

The forward projection of the refrigerator makes anchoring a necessity to prevent the case from tipping forward. Anchor the case to the floor through the rear skid, eight (8) to twelve (12) inches from each end and in the center. Refer to the following illustration.

MODELS PH, PHN, PHSM & PHSMN



MODELS P & PN



JOINING

These refrigerators are of sectional construction which means that two or more may be joined in line yielding one long continuous display that requires only one pair of end assemblies. The material to join these refrigerators and the method of joining them is supplied in a separate joint kit.

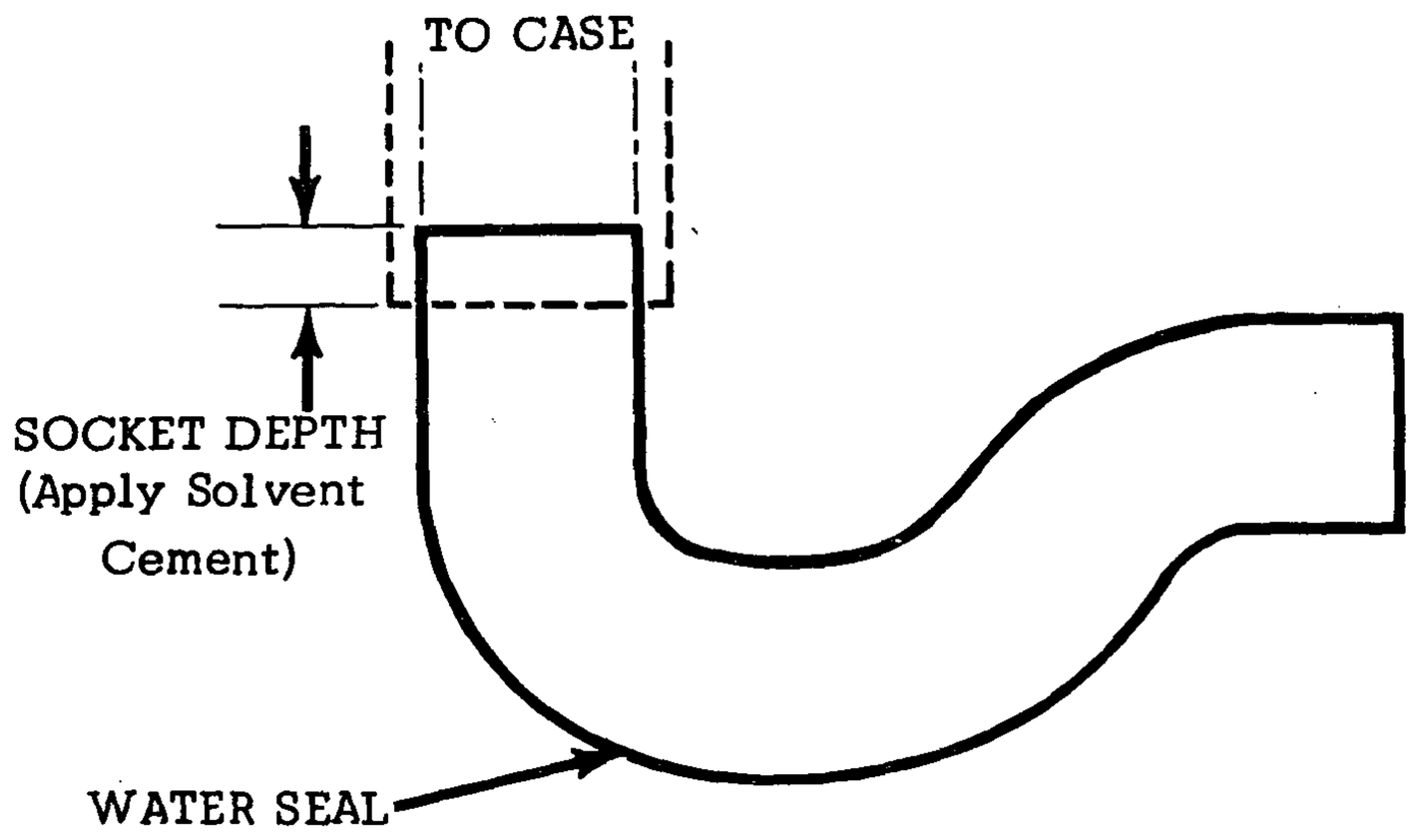
SPRAY HOSE

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

WASTE OUTLET AND WATER SEAL

The waste outlet is located at the center of the refrigerator, behind the lower front panel. See Service Tips section for removal of the front panel. The drip piping can be run under the refrigerator in either direction.

A 2 inch water seal is supplied with each refrigerator. The water seal must be installed to prevent air leaking into the refrigerator and affecting performance. We recommend that they be installed using PVC-DWV solvent cement. Follow the cement manufacturers instructions.



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. 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:

A. Adjust the leveling brackets that are located on the lower base supports to the floor level.

B. Slip the top of the splashguard up behind the lower front panel of the refrigerator and onto the brackets.

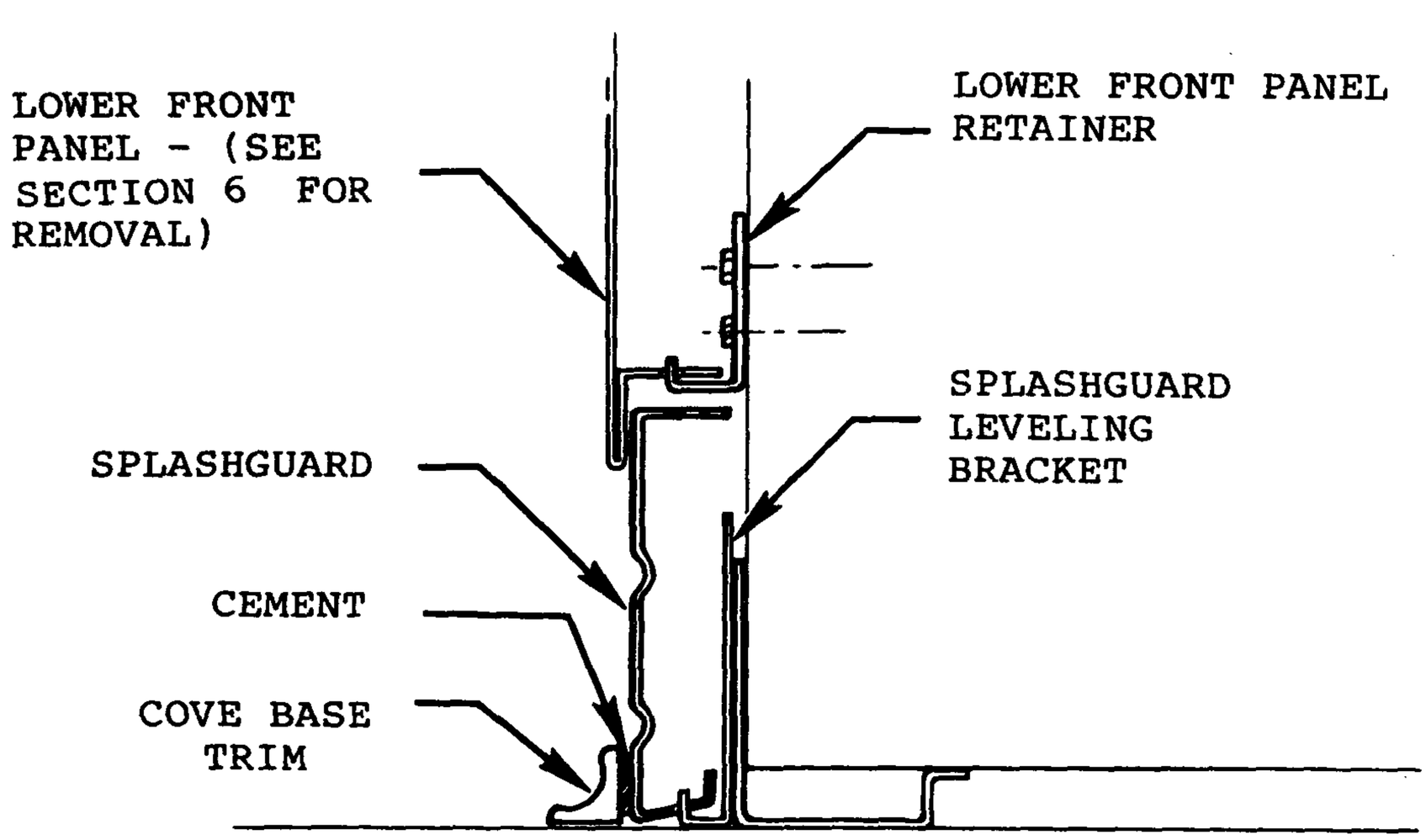
SEALING SPLASHGUARDS

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 manufacturer's directions.

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



SECTION 3

REFRIGERATION

THIS SECTION WILL APPLY FOR THE REFRIGERATED MODELS ONLY. (P, PH, PHSM)

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 back liner.

REFRIGERANT PIPING

LINE SIZES: Liquid Line..... 3/8" OD
Suction Line..... 7/8" OD

OUTLET LOCATION
The refrigerant line outlet is located at the right hand end of the refrigerator as viewed from the front beneath the display pans.

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.

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.

REFRIGERATION PARTS LIST (Sporlan Nomenclature)

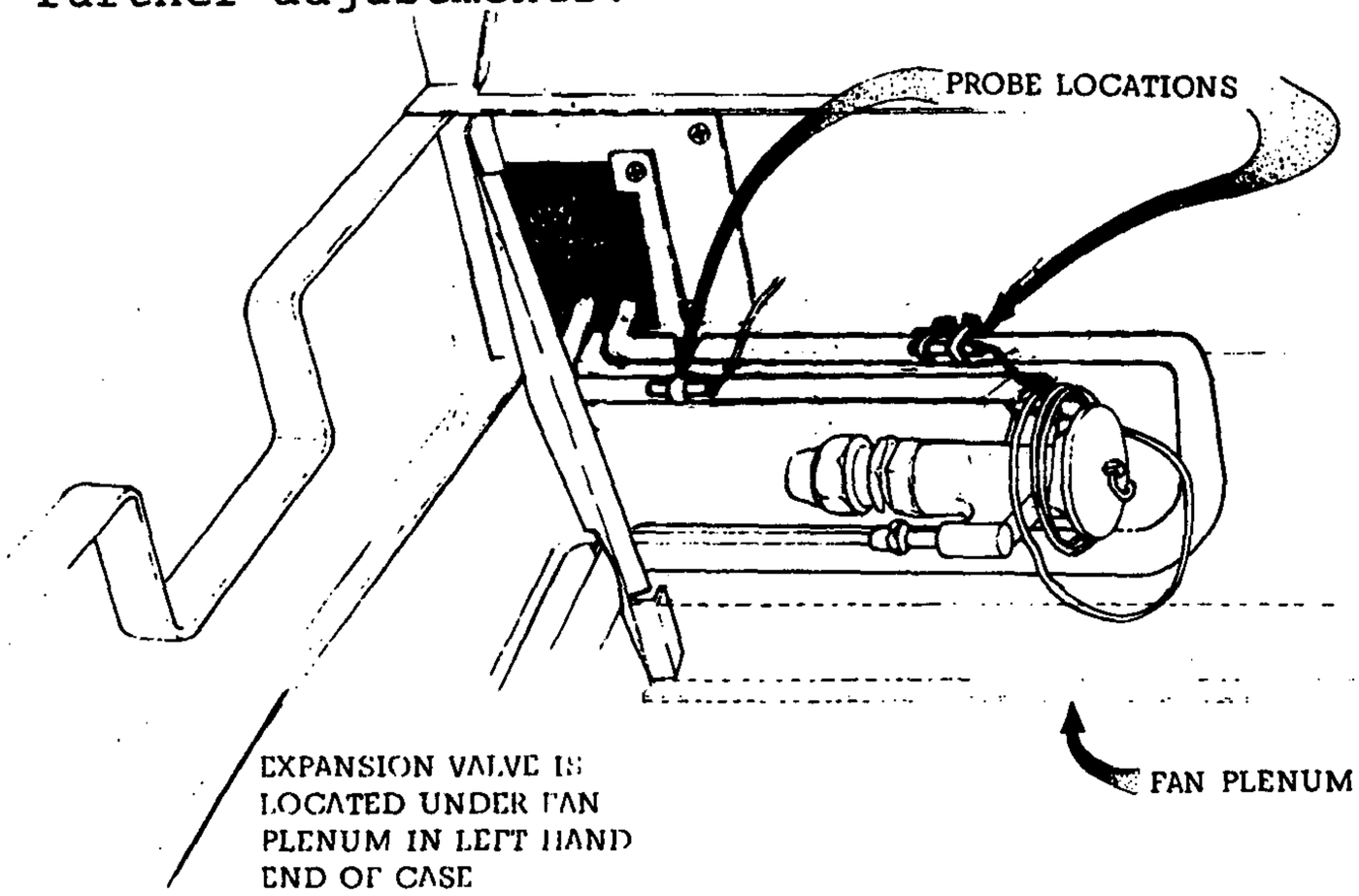
MODEL	TYPE OF DEFROST	REFRIGERANT	BALANCED PORT EXPANSION VALVE	DISTRIBUTOR
P-8	Off Time	R-502	BFR-A-C	---------
		R-22	BFV-A-C	---------
		R-12	BFF-A-C	---------
	Koolgas	R-502	Y920-BGR-A-C	---------
		R-22	Y920-BGV-A-C	---------
		R-12	Y920-BGF-A-C	
P-12	Off Time	R-502	BFR-A-C	---------
		R-22	BFV-A-C	---------
		R-12	BFF-A-C	---------
	Koolgas	R-502	Y920-BGR-A-C	---------
		R-22	Y920-BGV-A-C	---------
		R-12	Y920-BGF-A-C	
PH-8 PHSM-8 & PH-12 PHSM-12	Off Time	R-502	BFRE-A-C	D115-2-¼-1
		R-22	BFVE-A-C	D115-2-¼-1
		R-12	BFFE-A-C	D115-2-¼-1
	Koolgas	R-502	BFRE-A-C	D116-2-¼-1*
		R-22	BFVE-A-C	D116-2-¼-1*
		R-12	BFFE-A-C	D116-2-¼-1*

* 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.

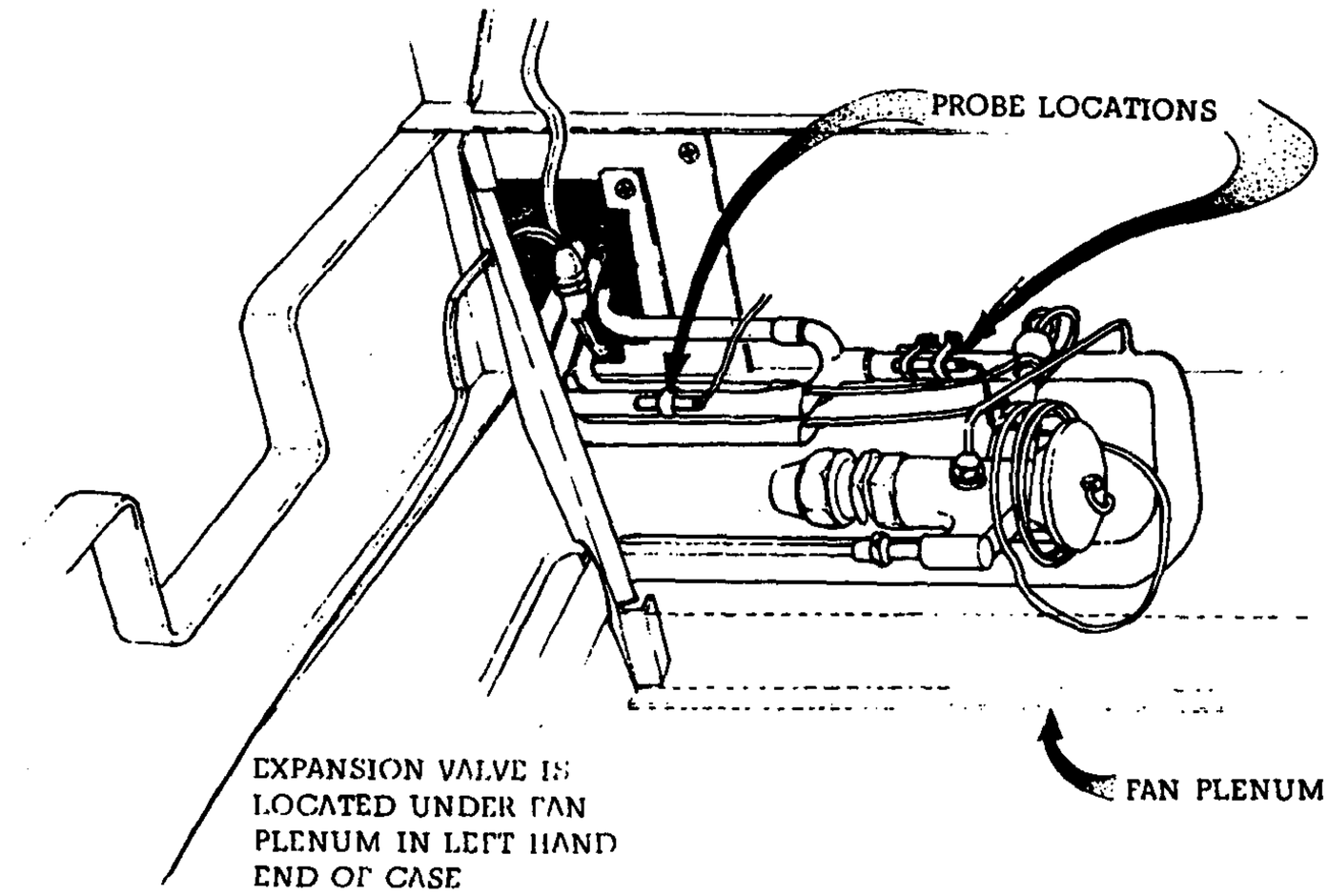
EXPANSION VALVE ADJUSTMENT

Expansion valves must be adjusted to a setting which will fully feed the evaporator. To achieve the proper setting the refrigerator must first have been in operation long enough to have reached the approximate intended operating temperature and air flow should not be restricted by heavy frost formation on the evaporator. Adjust valves as follows:

Attach two sensing probes (either thermocouple or thermister types) to the evaporator, one under the clamp holding the expansion valve bulb and the other securely taped to the evaporator inlet line (see the following illustrations). 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°F to 5°F. With this adjustment, during a portion of the hunting, the temperature difference between the probes may be less than 3°F, at times as low as 0°. Make adjustment of no more than one-half (½) turn at a time of the valve stem and wait for at least fifteen minutes before rechecking the probe temperatures and making further adjustments.



P
PROBE LOCATIONS



PH & PHSM
PROBE LOCATIONS

CONVENTIONAL MULTIPLEXING

REFRIGERATION CONTROLS						DEFROST CONTROLS ③		
DISCHARGE AIR TEMPERATURE	REFRIGERANT	LOW PRESSURE CONTROL				Defrost Frequency	Pressure Termination	Failsafe
		Without Defrost Timer At Condensing Unit ①		With Defrost Timer At Condensing Unit ②				
		Cut-Out	Cut-In	Cut-Out	Cut-In			
+32°F	R-502	46 to 55 psig	82.1 psig	46 to 55 psig	59 to 63 psig	Every 6 Hours	82 psig	40 Min.

① When the condensing unit does not have a defrost timer the low pressure control will control both the refrigeration and defrost. Each time the low pressure control cuts-out, the time elapsed until cut-in will defrost the refrigerator. (Off cycle defrost).

Care and good judgement must be used in deciding the exact cut-out setting since the condensing unit MUST cycle at least once every 6 hours, even during the warmest weather. If the cut-out is set too low, the evaporator will become blocked with frost which will increase the refrigerators temperature and eventually cause compressor damage due to refrigerant floodback. Final adjustments must be made when the refrigerator is fully stocked.

② The low pressure control on the condensing unit is normally used to control the refrigeration temperature. Adjust the low pressure control to the settings shown above.

When a refrigeration thermostat is used to control refrigeration temperature, adjust the thermostat to stop the compressor at the discharge air temperature given and adjust the low pressure control cut-out at 38 psig so it will not control refrigeration temperature. The thermostat must have a differential of 3° to 5° and have its sensing bulb installed on the discharge side of the evaporator. A refrigeration thermostat must be used whenever outdoor condensing units are used.

Discharge air temperature should be measured at the center of the top row of moire grille openings on the back liner of the refrigerator, (that feeds the refrigerated air into the main bottom display area of the refrigerator).

③ DEFROST: Indoor condensing units.
Defrosts are time initiated and pressure terminated with a timed failsafe backup.

DEFROST: Outdoor condensing units.
Defrost are time initiated and time terminated. The defrost timer must control a liquid line solenoid for pump-down during defrost only. The timer has a 4 minute pump-down at the beginning of the defrost cycle, therefore the failsafe setting shown above must also be increased by 4 minutes. Set the low pressure control according to the outdoor condensing units installation instruction.

Eng. #140539

MIXED MULTIPLEXING

REFRIGERATION AND DEFROST CONTROLS

REFRIGERATION CONTROL (1)	DEFROST CONTROL (3)		
DISCHARGE AIR TEMPERATURE (2)	DEFROST FREQUENCY	DEFROST LENGTH OFF-TIME	KOOLGAS (4)
+32°F	Every 6 Hours	40 Min.	12 Min.

(1) Refrigeration temperature may be controlled by either a refrigeration thermostat or 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 thermostat bulb. For complete wiring and adjustment information refer to the instruction manual furnished with the condensing unit.

(2) Discharge air temperature is to be measured by attaching a service thermometer at the center of the top row of moire grille openings on the back liner of the refrigerator, (that feeds the refrigerated air into the main or bottom display area of the refrigerator). Adjust the refrigeration control (CDA valve or refrigeration thermostat) to maintain the discharge air temperature shown.

(3) Defrosts will be off-time as standard or Koolgas when ordered as an option. Both will be time initiated and time terminated.

(4) 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 pressure, long runs of refrigerant lines, store ambient, fixture temperatures 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.

SECTION 4

ELECTRICAL

CONNECTIONS

All electrical connections are made in the electrical entrance box located at the left hand end of the refrigerator, behind the lower front panel. See the Service Tips section for removal of the lower front panel.

WIRING IDENTIFICATION

Leads for all electrical circuits are identified by colored plastic bands which correspond to the "color code sticker" located near the electrical entrance box.

"COLOR CODE STICKER"

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

CAUTION

THE REFRIGERATOR MUST BE ELECTRICALLY GROUNDED. ALL WIRING AND CONNECTIONS MUST COMPLY WITH NEC AND ANY LOCAL CODES.

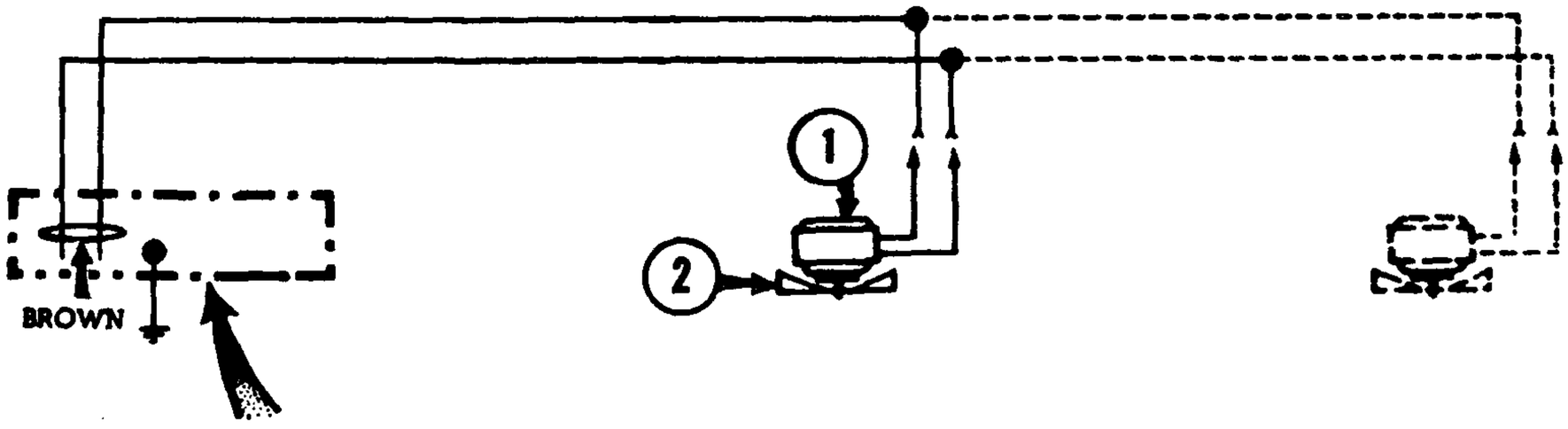
SERIAL PLATE AMPERAGES

Serial Plate Amperages are the amperage figures that are stamped on the refrigerator's Serial Plate. All field installed wiring must be sized to the Serial Plate Amperage, however, the actual amps may be less than that specified.

MODEL	120 VOLT, 60 HERTZ ELECTRICAL CIRCUITS		
	Fans	Lights ⚠1	
		Standard 1 Row Canopy	Optional 2 Row Canopy
P-8	0.6 amps	- - - -	- - - -
P-12	1.2 amps	- - - -	- - - -
PN-8	- - - -	- - - -	- - - -
PN-12	- - - -	- - - -	- - - -
PH-8	0.7 amps	2.1 amps	2.9 amps
PH-12	1.4 amps	3.3 amps	4.4 amps
PHN-8	- - - -	2.1 amps	2.9 amps
PHN-12	- - - -	3.3 amps	4.4 amps
PHSM-8	0.7 amps	2.1 amps	2.9 amps
PHSM-12	1.4 amps	3.3 amps	4.4 amps
PHSMN-8	- - - -	2.1 amps	2.9 amps
PHSMN-12	- - - -	3.3 amps	4.4 amps

⚠1 The lighting circuit should be separate from the one for the fan motors to prevent the fans from being turned off be mistake when store lighting is turned off. FAN MOTORS MUST OPERATE CONTINUOUSLY.

WIRING DIAGRAM
P MODELS
(120 Volt, 60 Hertz)

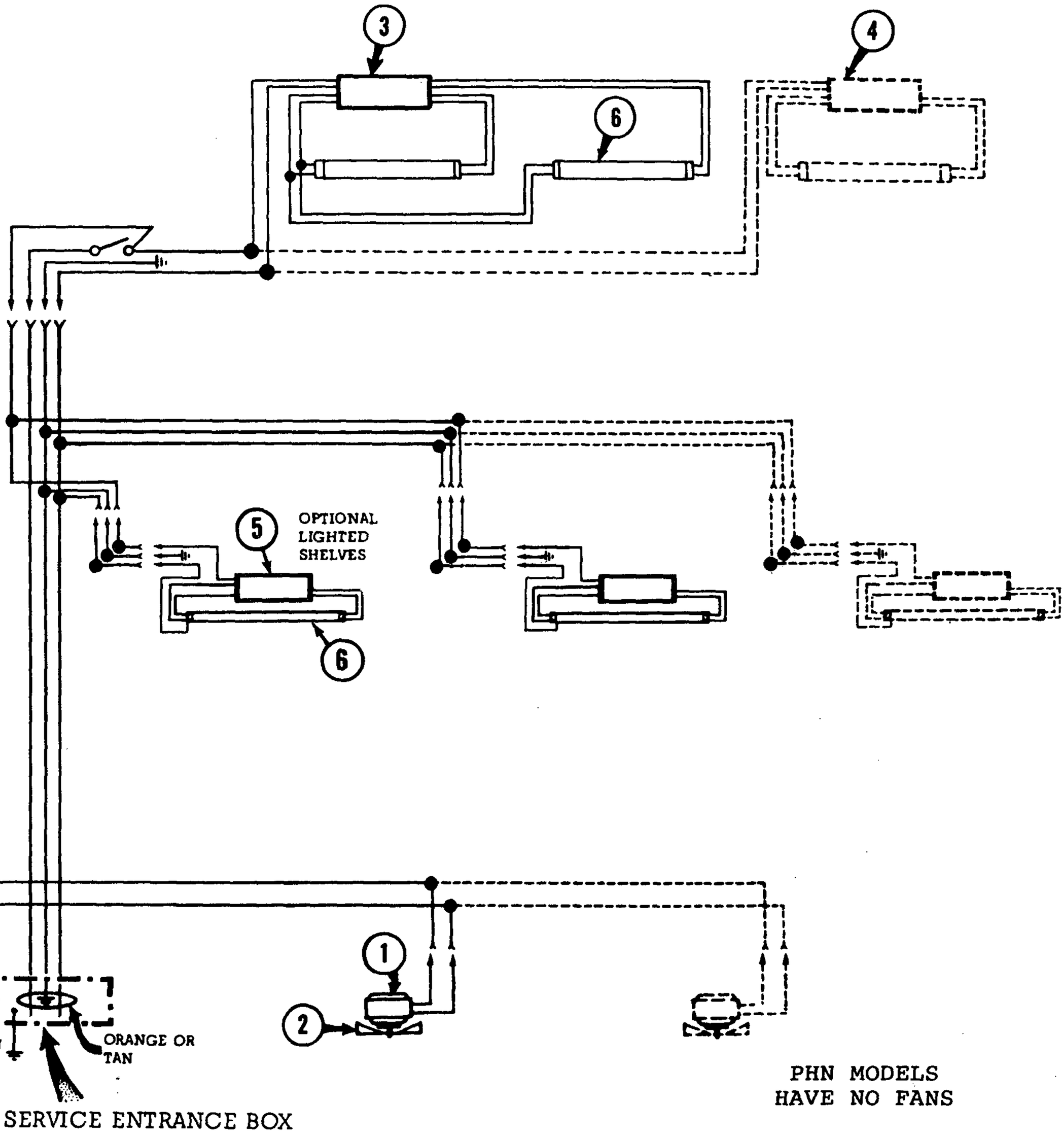


SERVICE ENTRANCE BOX

CAUTION

REFRIGERATOR MUST BE GROUNDED

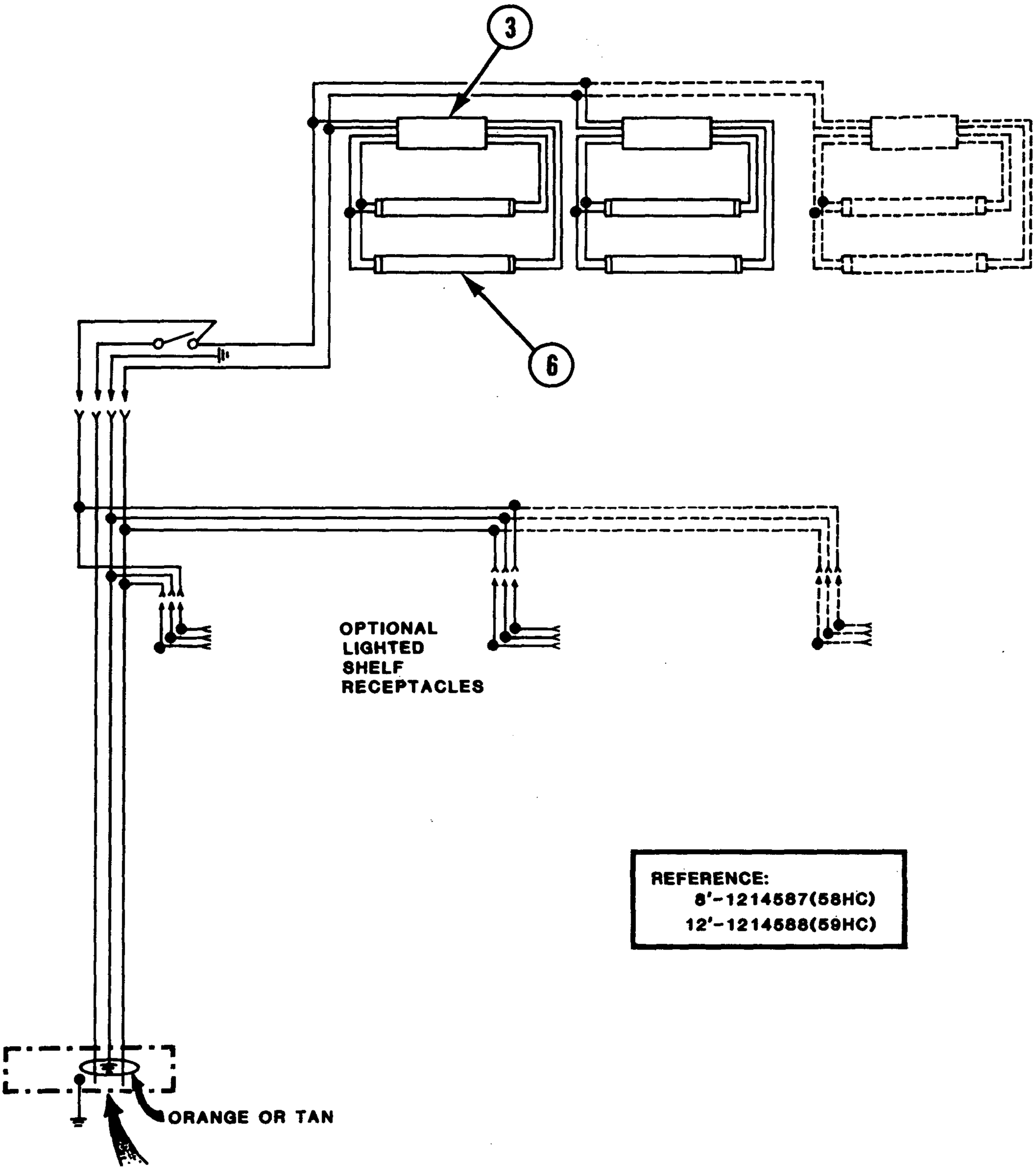
STANDARD
WIRING DIAGRAM
PH, PHN, PHSM MODELS
(120 Volt, 60 Hertz)



CAUTION

REFRIGERATOR MUST BE GROUNDED

OPTIONAL CANOPY LIGHTING WIRING DIAGRAM PH, PHN, PHSM MODELS (120 Volt, 60 Hertz)



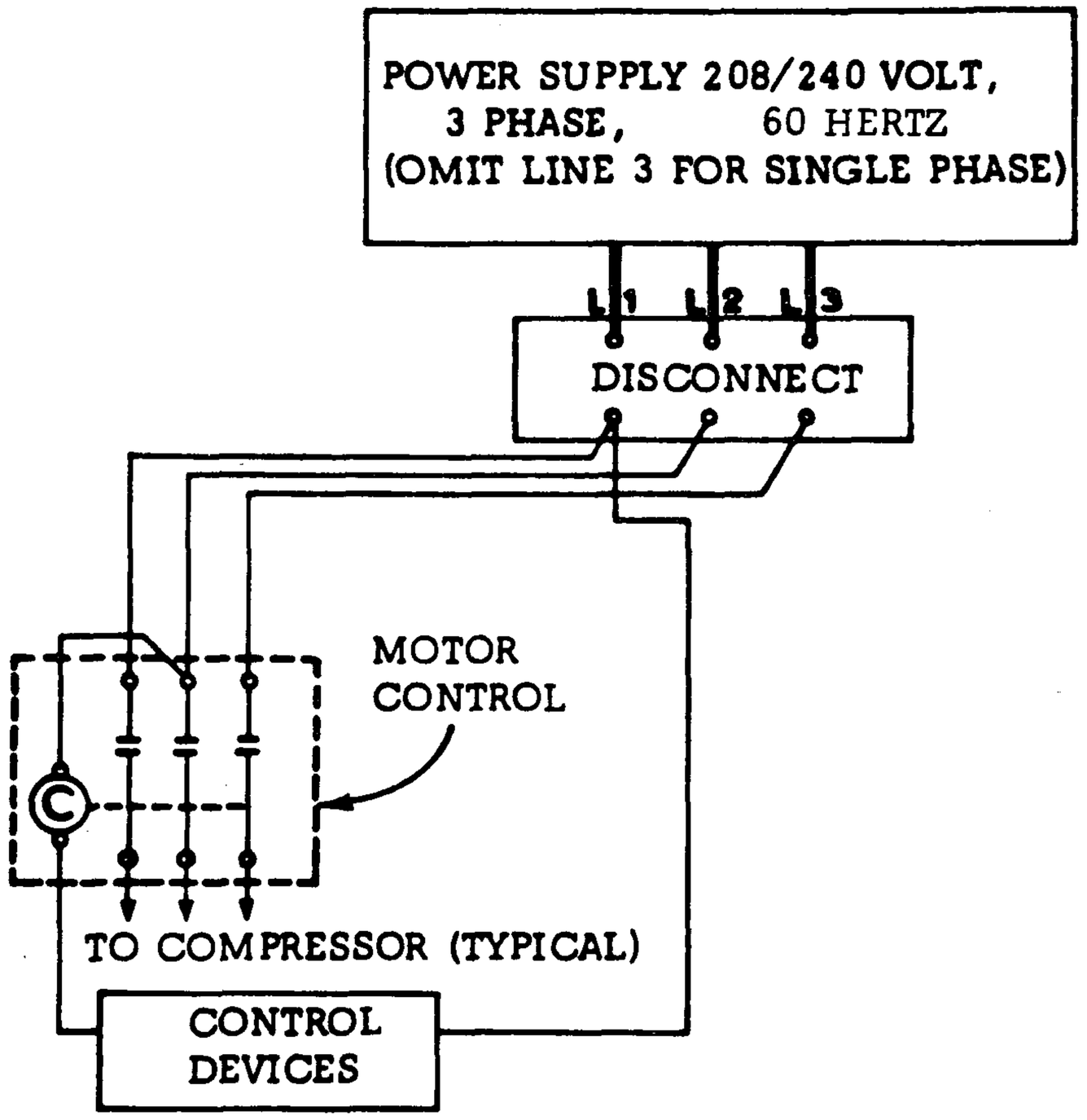
REFERENCE:
8'-1214587(58HC)
12'-1214588(59HC)

CAUTION
REFRIGERATOR MUST BE GROUNDED

ELECTRICAL REPLACEMENT PARTS

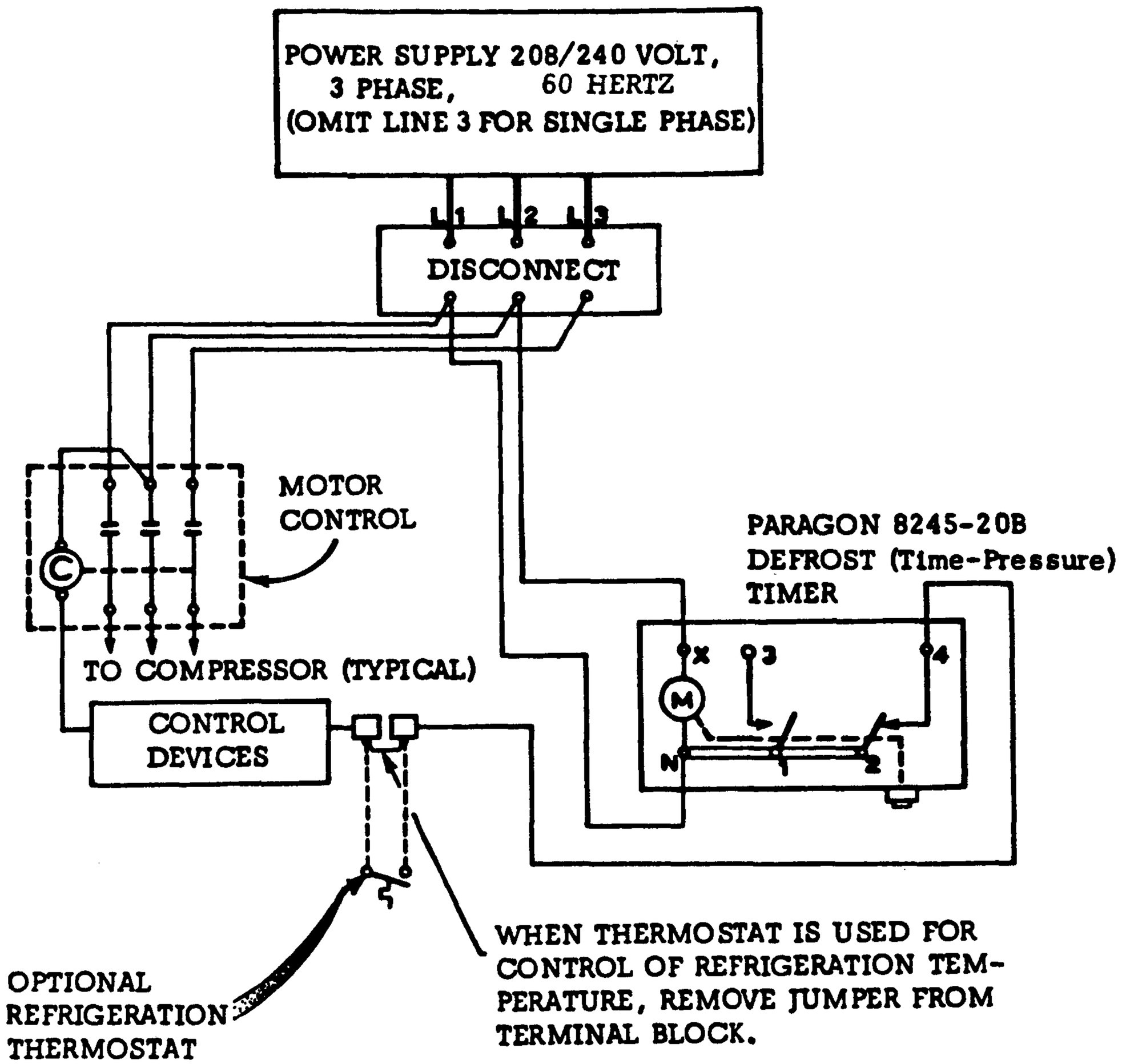
ITEM NO.	PART NUMBER	DESCRIPTION
1	047000	Fan Motor - GE #KSM51ECG3734 120 V, 9W, CW PH, PHSM Models
	058698	Fan Motor - GE #KSM51ECG3264 120V, 6W, CW P Models
2	000235	Fan Blade - Hussmann 25°, CW, 7-3/4" Raised embossed side away from motor P-8'
	141070	Fan Blade - Morrill #FV800CW20S Raised embossed side toward motor P-12'
	141071	Fan Blade - Morrill #FV800CW40S Raised embossed side toward motor PH, PHSM-8'
	124150	Fan Blade - Morrill #FV800CW30S Raised embossed side toward motor PH, PHSM-12'
3	147080	Ballast - GE# 6G1022 G49
4	147082	Ballast - GE# 6G1063
5	140013	Ballast - Robertson #R32A R3 (For optional lighted shelves)
6	020725	Fluorescent Lamp - F40T12 CWX
7	137880	Refrigeration Thermostat W.R. #1609-103 (Optional)

TYPICAL CONDENSING UNIT WIRING DIAGRAM
Conventional Multiplexing With Off-Cycle Defrost



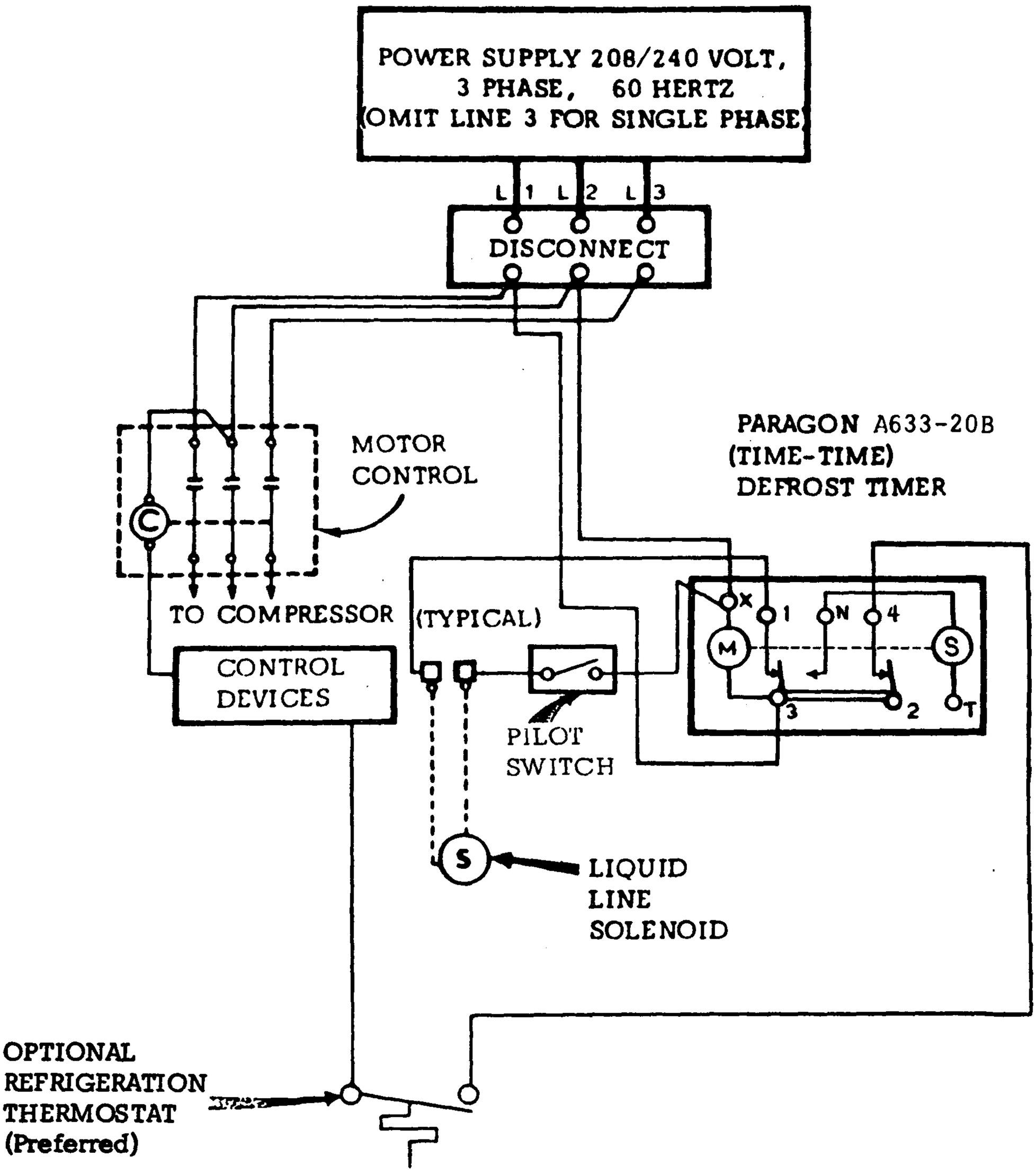
REFRIGERATORS MUST BE GROUNDED

TYPICAL INDOOR CONDENSING UNIT DIAGRAM
Conventional Multiplexing With Time-Pressure Defrost



REFRIGERATORS MUST BE GROUNDED

TYPICAL OUTDOOR CONDENSING UNIT DIAGRAM
Conventional Multiplexing With Time-Time Defrost



REFRIGERATORS MUST BE GROUNDED

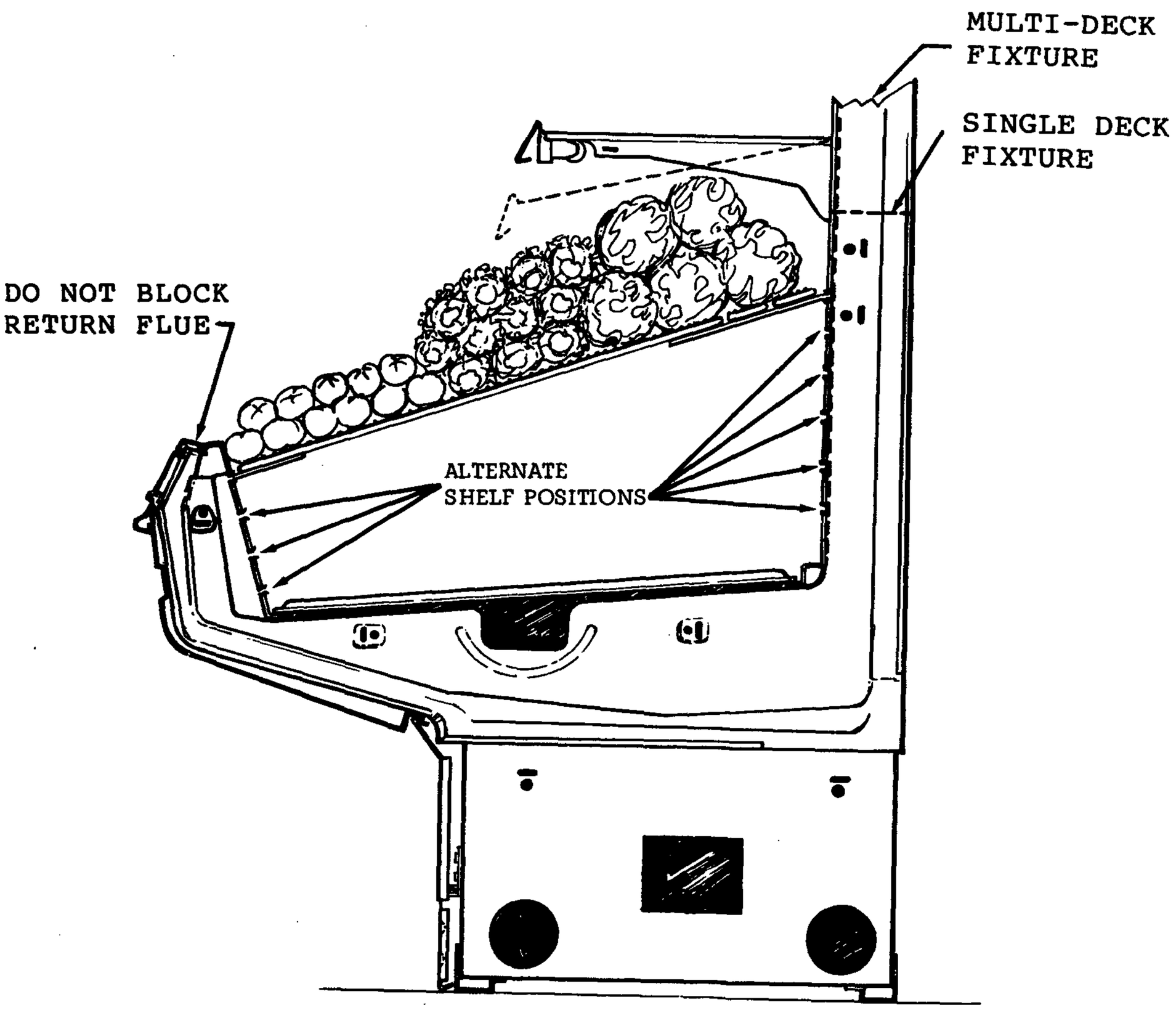
SECTION 5

USER'S INFORMATION

STOCKING

Do not place produce into these merchandisers until all refrigeration controls have been adjusted and they are operating correctly and they are at the proper temperature. Do not overstock beyond the recommended load limits that are clearly marked on the inside of the refrigerator.

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



CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependant upon the care it receives. To insure long life, proper sanitation and minimum maintenance the refrigerator should have all debris removed and thoroughly cleaned at least once every month.

To facilitate quick and complete cleaning these refrigerators are designed with removable front shelf supports and hinged fan plenums. The supports are removed in four foot sections without any need for tools, simply by lifting each section up and off the shoulder rivets located at both ends of a section. The fan plenums are hinged for easy access to the area beneath the evaporator for cleaning. SHUT THE FANS OFF PRIOR TO CLEANING AND BE CERTAIN TO LOWER THE PLENUM BACK INTO THE PROPER LOCATION AFTER CLEANING.

The EXTERIOR surfaces must be cleaned with a mild detergent and warm water to protect and maintain their attractive finish. Never use abrasive cleaners or scouring pads.

The INTERIOR surfaces may be cleaned with most domestic detergents, ammonia base cleaners and sanitizing solutions with no harm to the surface. However, mineral oil based solutions should be avoided as they will disolve the butyl sealants used in the construction of these refrigerators.

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 CAN AND WILL DESTROY THE SEALING OF THESE REFRIGERATORS CAUSING LEAKS AND POOR PERFORMANCE.

Rinse with hot water, but do not flood. Never introduce water faster that the waste outlet can remove.

Allow the refrigerator to dry before resuming operation.

WHEN CLEANING THE LIGHTED SHELVES WIPE DOWN WITH A DAMP CLOTH OR SPONGE. DO NOT ALLOW WATER TO ENTER THE LIGHT CHANNEL. DO NOT USE A HOSE OR SUBMERGE THE SHELVES IN WATER.

CLEANING MIRRORS

Mirrors are sheets of clear glass that have very thin reflective and protective coatings applied to one side. These coatings are susceptable to deterioration if certain cleaning solutions and even water are allowed to come in contact with the coatings. Every precaution should be taken to keep all liquids away from the coated side of the mirrors. Even if liquids are allowed to flow along the face side of the mirror to their edge, the liquid can 'wick' up onto the coating and in time cause serious damage. To help prolong the life of the mirrors:

Use only mild cleaning solutions (Windex, Solox or weak dilutions of water and vinegar).

Use only clean, soft cloths or paper towels to wipe the mirrors.

Do not spray liquids onto the mirrors. Dampen the cleaning cloth then use the cloth to wipe the mirror.

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

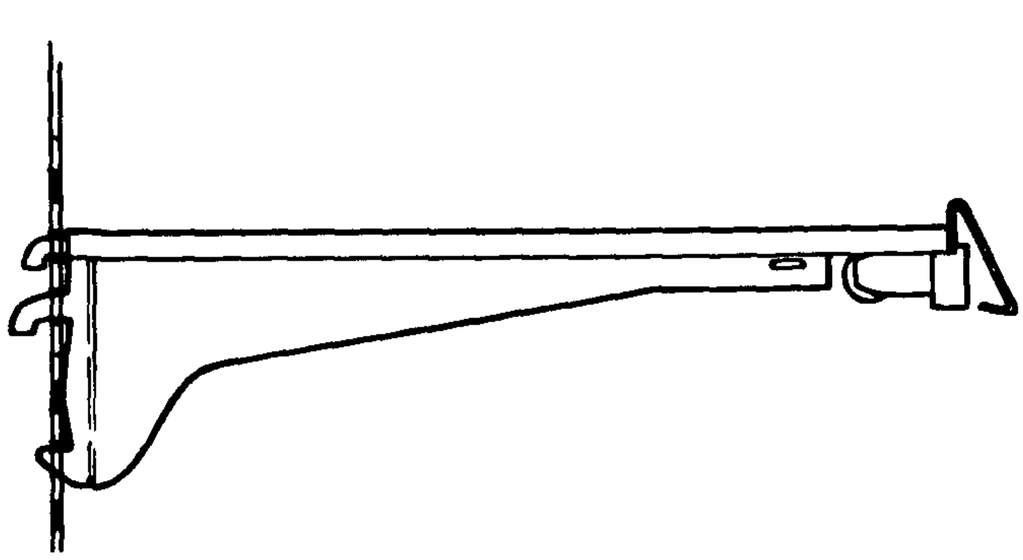
Never use dirty cloths, scrapers or any other abrasive materials for cleaning.

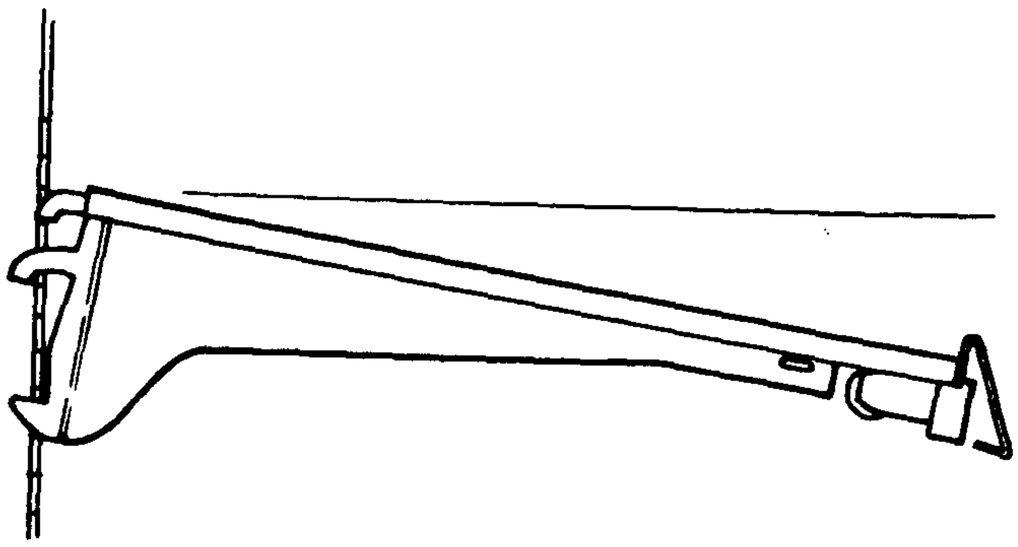
INSTALLING SHELVES

Shelves that are available on Models PH and PHN fixtures are the 14-inch, 16-inch, 18-inch or 20-inch lighted or unlighted 4-foot long shelves.

The shelves may be positioned as shown according to the engagement of the shelf fingers in the row of notches.

NOTE: FOR BEST REFRIGERATION PERFORMANCE. NO MORE THAN TWO ROWS OF SHELVES ARE RECOMMENDED.





SECTION 6

SERVICING TIPS

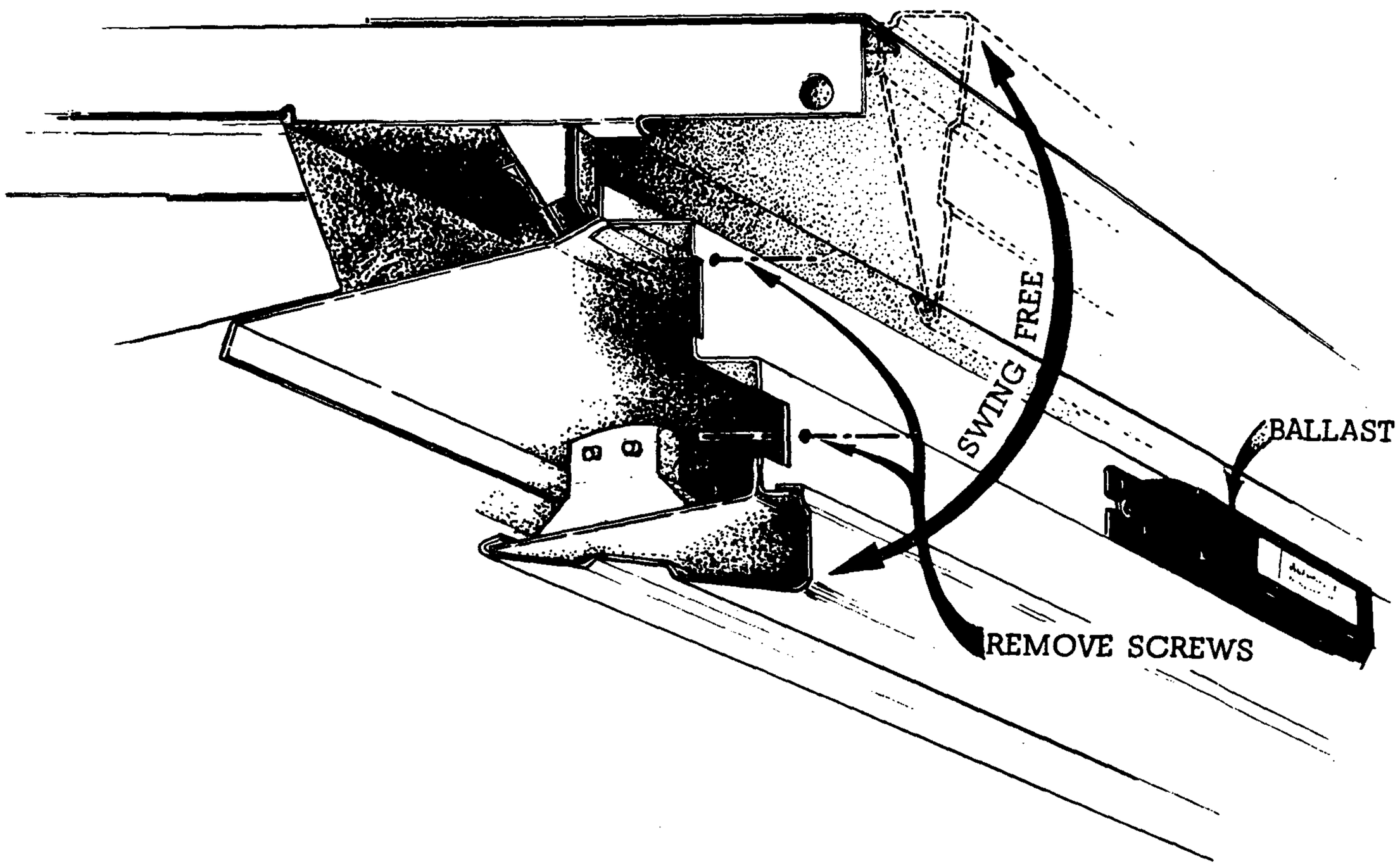
WARNING

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, THERMOSTATS AND FLUORESCENT LAMPS.

BALLAST REPLACEMENT

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

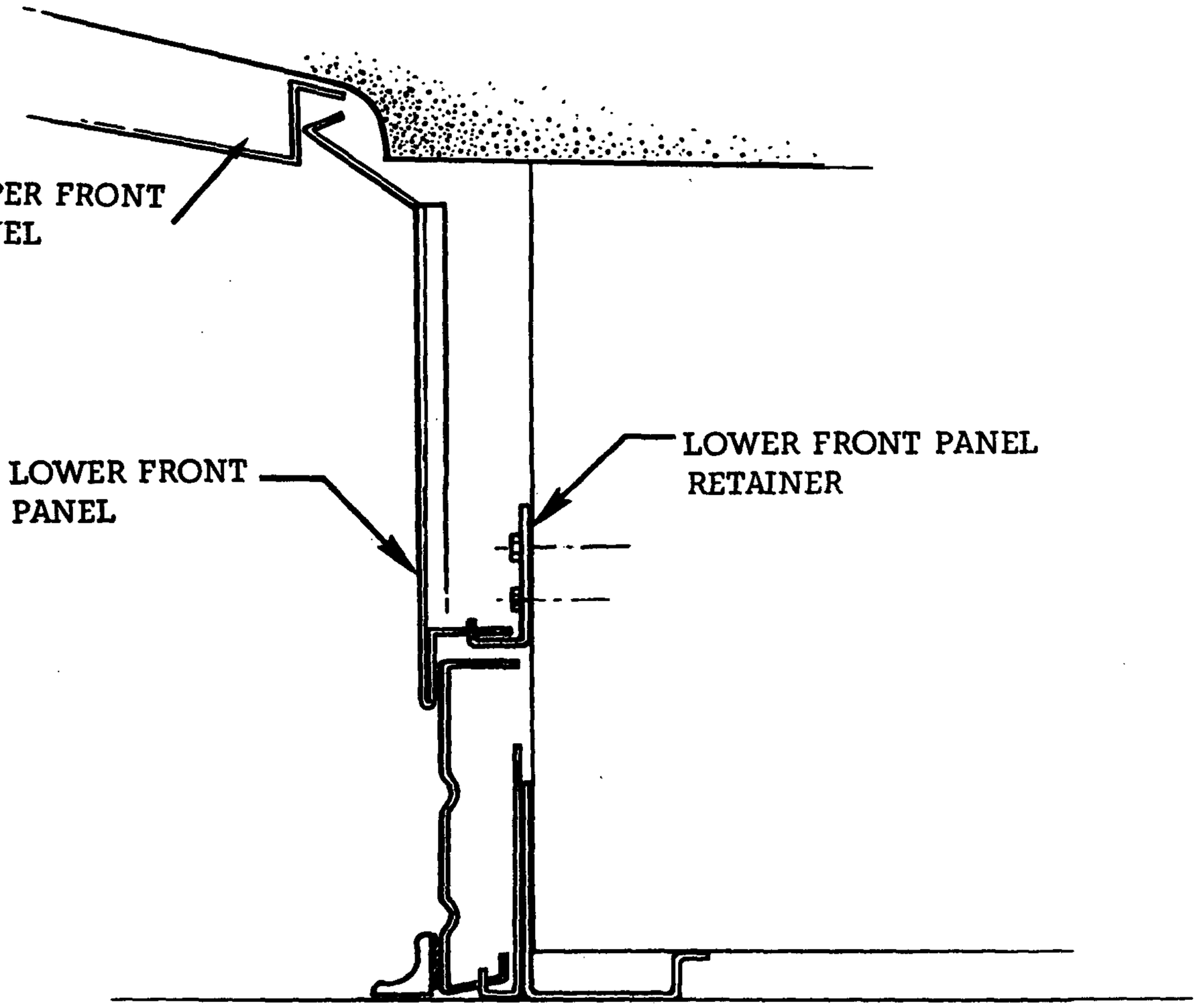
A. Disconnect the electrical power to the light fixture.
B. Remove fluorescent lamps.
C. Remove screws, see below.
D. Rotate light fixture down to expose ballast.



REMOVAL OF LOWER FRONT PANEL

(For access to electrical, refrigeration and waste outlets)

A. Lift the lower front panel up and off the retainer.
B. Pivot lower end of panel out and away from the retainer.
C. Slide the panel from behind the upper front panel.



FAN MOTORS AND FAN BLADES

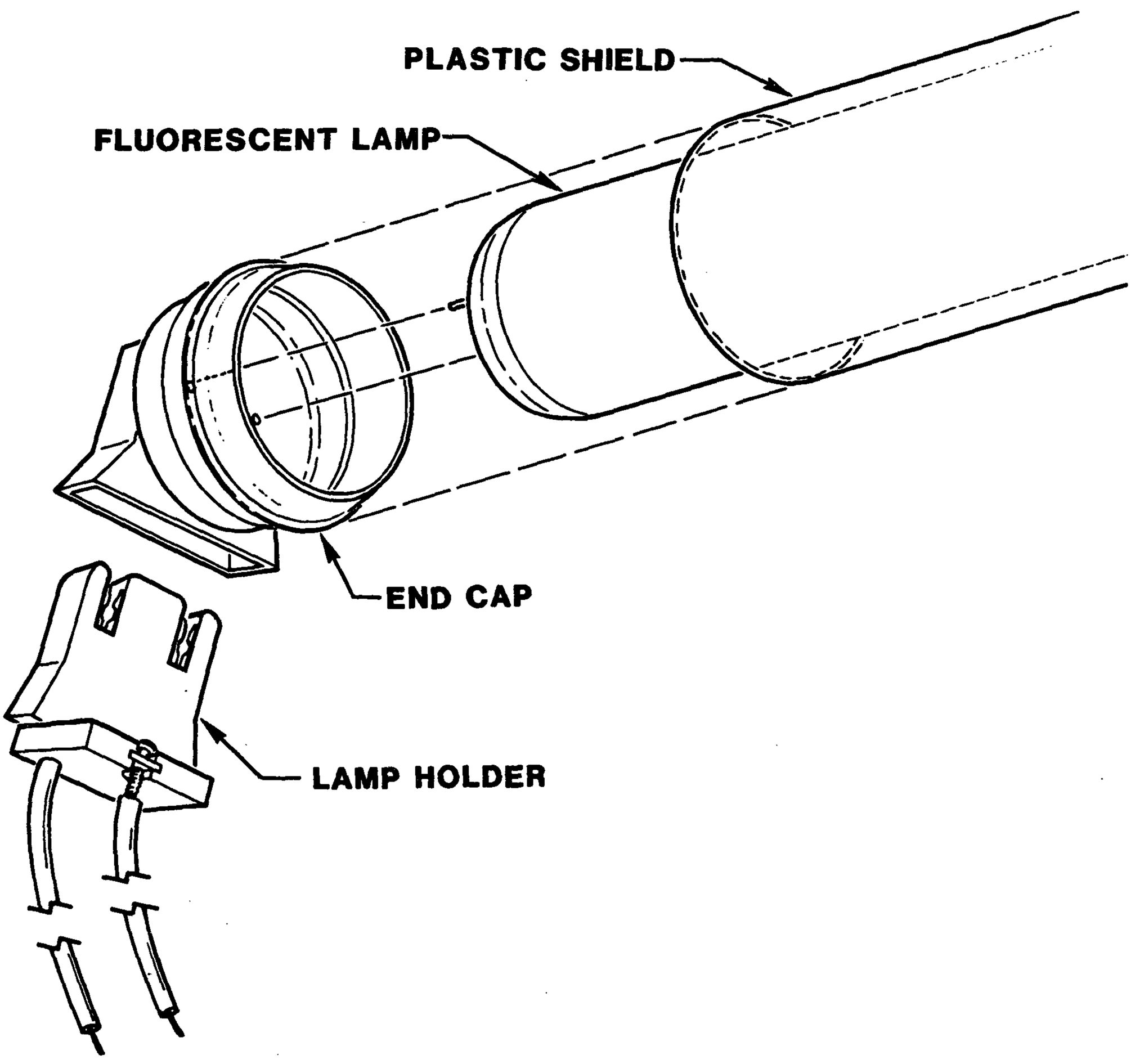
Should it ever be necessary to service or replace the fan motors or fan blades be certain that the fan blades are re-installed correctly. The raised embossing side of the blade must be installed as follows:

P-8'	raised	embossed	side	of blade away from motor
P-12'	raised	embossed	side	of blade toward motor
PH & PHSM-8'	raised	embossed	side	of blade toward motor
PH & PHSM-12'	raised	embossed	side	of blade toward motor

REPLACING FLUORESCENT LAMPS

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

THE TRADITIONAL METHOD OF TWISTING THE LAMP TO REMOVE IT AND AFTER IT IS INSTALLED IS NO LONGER NECESSARY. TO REMOVE A LAMP SIMPLY PUSH THE LAMP AWAY FROM THE LAMP HOLDER. TO INSTALL: ALIGN THE END CAPS OVER THE LAMP HOLDERS AND GENTLY PRESS ON, A SLIGHT SNAP WILL BE FELT AS THE LAMP IS SEATED.



REFRIGERATION THERMOSTAT LOCATION AND REPLACEMENT (P, PH & PHSM Models Only)

The thermostat will be located as shown below: the body below the refrigerator; the sensing bulb behind the rear shelf support. To replace the thermostat:

A. Remove the lower front panel from the refrigerator. See preceeding page for removal of lower front panel.

B. Loosen the rear shelf support for access to the thermostat bulb.

C. Disconnect electrical service to the thermostat (at condensing unit).

D. Remove the thermostat, pulling the bulb down from behind the rear shelf support or cutting the capillary tube.

E. Install new thermostat in the same location as the original thermostat. Re-install all items that were removed and make certain that the plastic thru-way nipple is sealed.