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CORPORATION

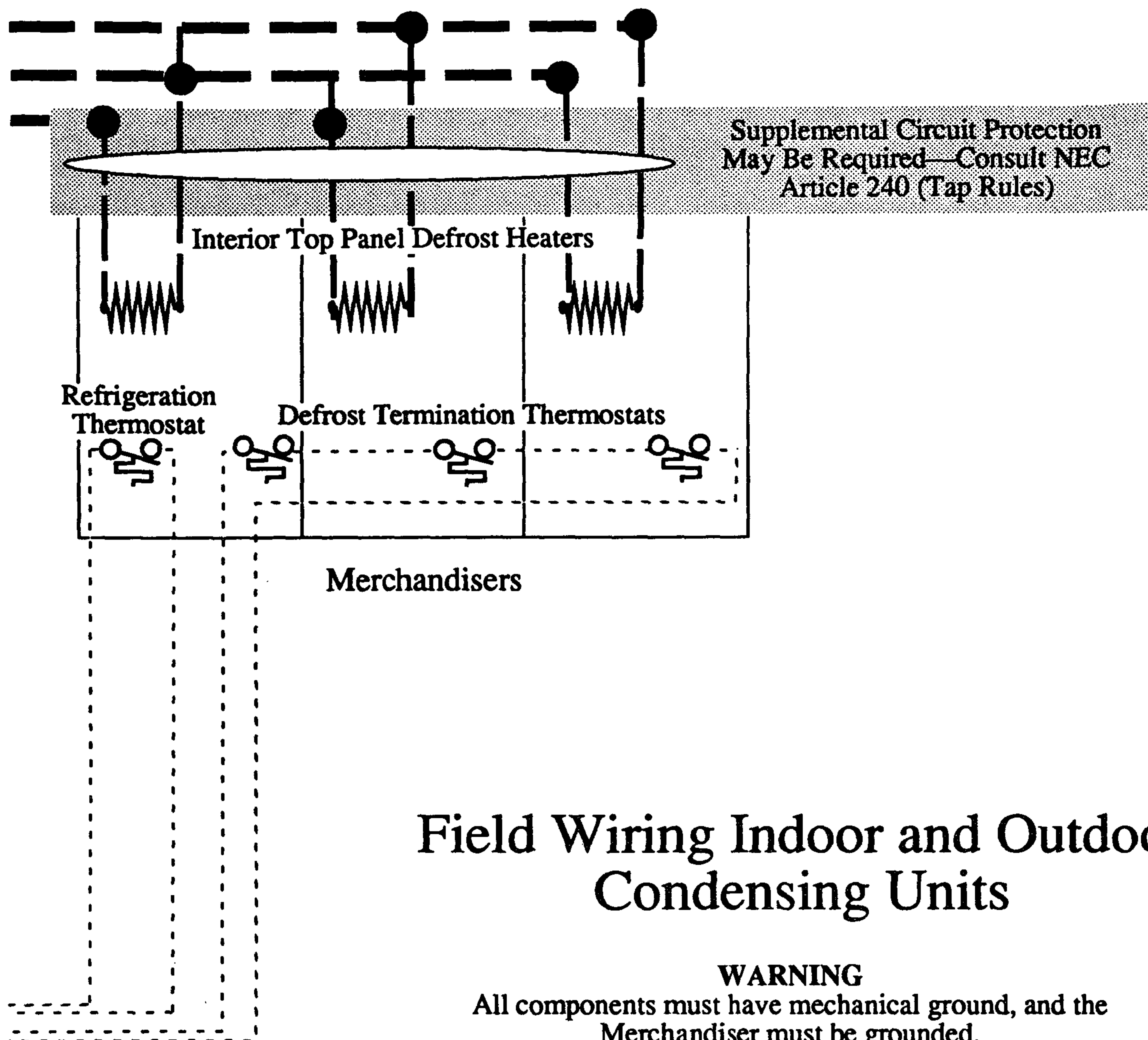
FMR, FMRG, FMRGC

**REFRIGERATED MERCHANDISERS
FOR FRESH MEAT & DELICATESSEN-
CHEESE & SAUSAGE PRODUCTS**

INSTALLATION / SERVICE INSTRUCTIONS

ENG.NO.334409A

August, 1989
Supersedes #334409
Dated August, 1987
Section 1



Field Wiring Indoor and Outdoor Condensing Units

WARNING

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

Notes:

- Broken lines indicate field wiring
- All field wiring is supplied and installed by the electrical contractor in accordance with NEC and local codes.
- Remove appropriate Jumper when Refrigeration Thermostat is used

Update/Correction Sheet
Supplemental Circuit Protection
 November, 1990

GENERAL INFORMATION

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WARRANTY

Revision "A" Changes

1. Sealing vented multiglass, page 2-3.
2. R502 made standard, page 3-1.
3. Revised control settings, page 3-4.

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

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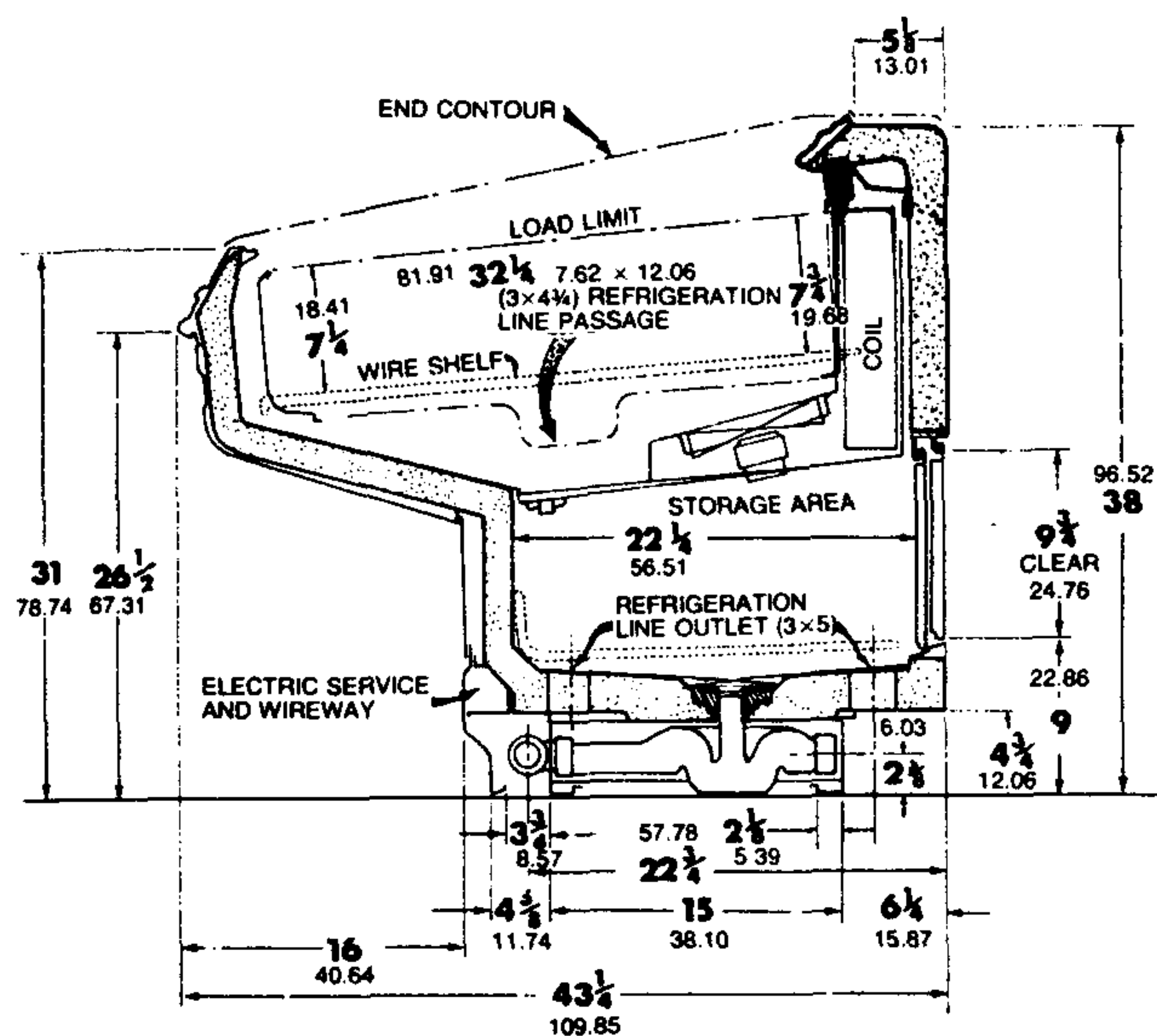
SECTION 1GENERAL INFORMATIONMODEL DESCRIPTION

These are refrigerated merchandisers designed to display and protect the products listed in the following table. All the models listed are available in either 8' or 12' lengths.

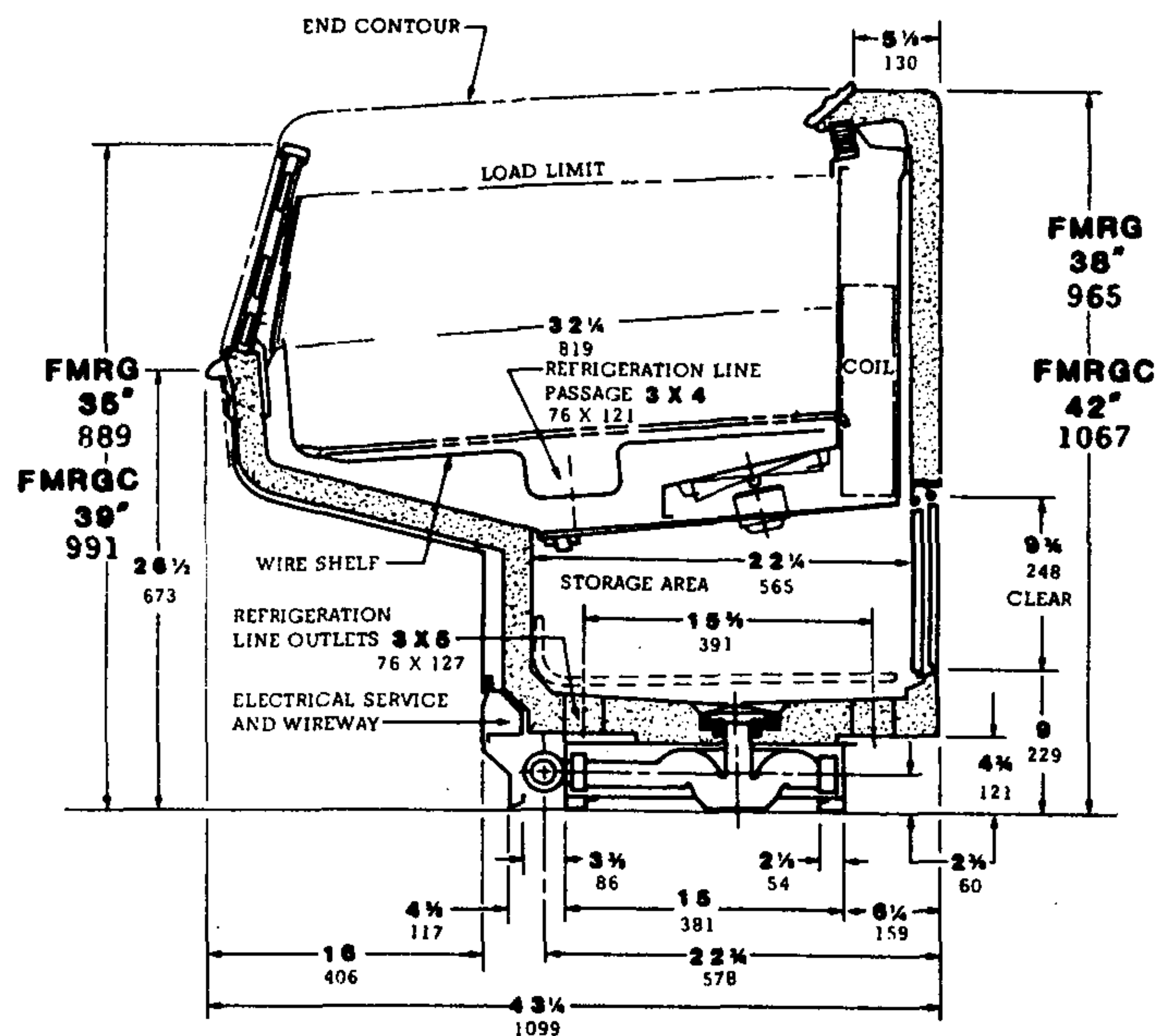
MODEL	DESCRIPTION	PRODUCT
FMR	Single Deck, with Storage	Fresh Meat & Delicatessen
FMRG	Single Deck, with Front Glass, with Storage	
FMRGC	Single Deck, with Front Glass, with Storage	Cheese & Sausage

APPLICATION

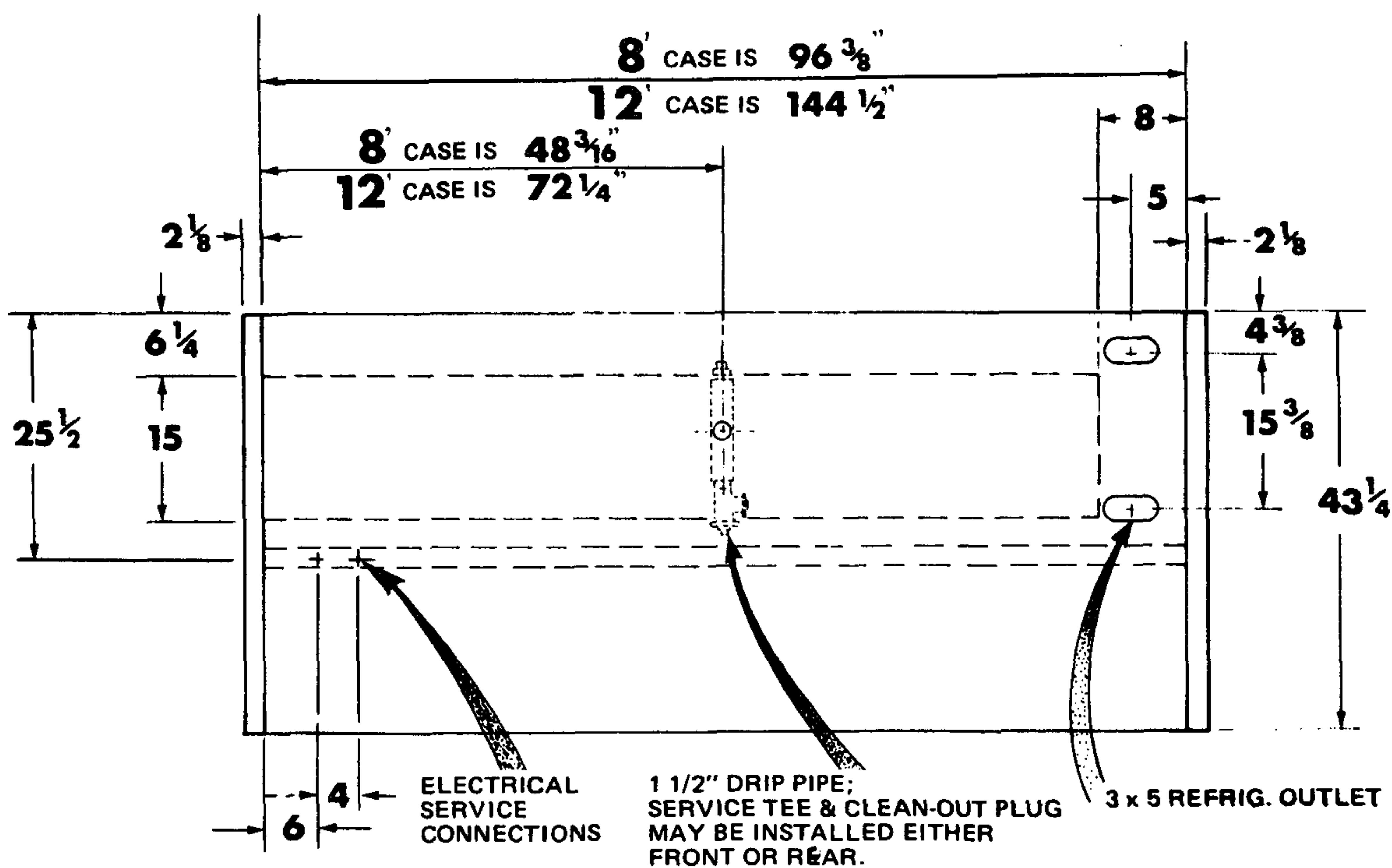
These medium temperature merchandisers are designed to display the products listed above in air conditioned stores where temperature and humidity are maintained at or below 75°F dry bulb temperature and 55% relative humidity.



FMR



**FMRG
FMRGC**



Plan View for FMR - FMRG - FMRGC

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.

SHIPPING BRACES

Move the fixture as close as possible to its permanent location and then remove all packaging and shipping braces. Remove all separately packed accessories such as kits, shelves, etc. Remove and discard the shipping screws at each end of the fan plenum. The plenum is hinged for easy access to the area beneath the evaporator.

WARNING: DO NOT REMOVE SHIPPING BRACES AT EACH END OF CASE UNTIL THE CASE IS PROPERLY LAGGED TO THE FLOOR. THE CASE IS TOP HEAVY AND COULD TIP OVER CAUSING SERIOUS INJURY.

EXTERIOR LOADING

The superstructures for these cases are not structurally designed to support excessive external loading such as the weight of a person, therefore, do not walk on top of these refrigerators or damage to refrigerator and serious personal injury could occur.

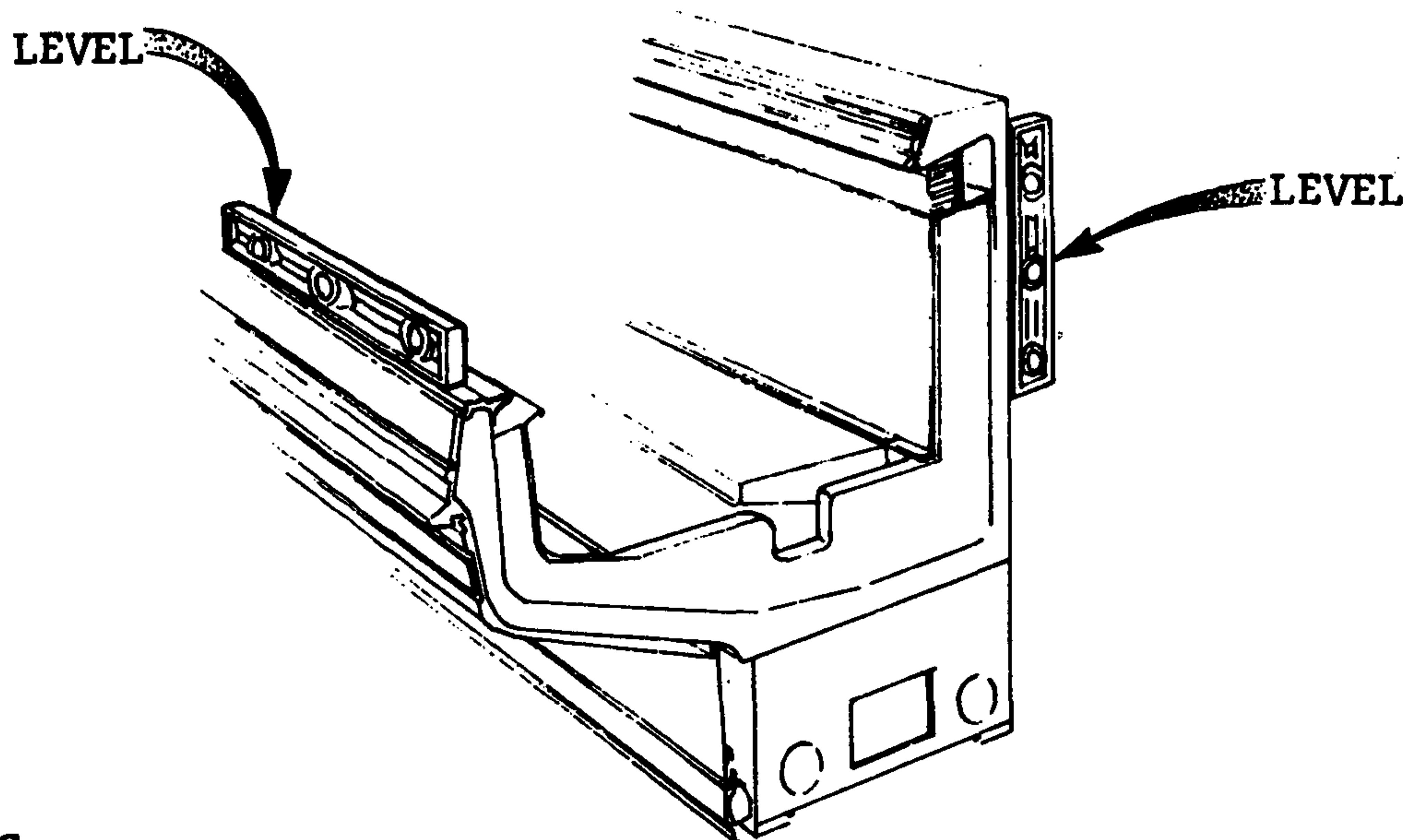
LOCATION

This refrigerator, like other open refrigerators, is sensitive to air disturbance. Air currents passing around this refrigerator will seriously impair its operation. Do not allow air conditioning, electric fans, open doors or windows, etc. to create air currents around this case.

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 fixture and adjacent walls, cases, shelving or coolers.

LEVELING

Refrigerators must be installed level to insure proper operation of the refrigeration system and to insure proper drainage of defrost water. Use a carpenter's level as shown below when leveling cases. Leveling wedges or shims are provided with each case for use if needed.

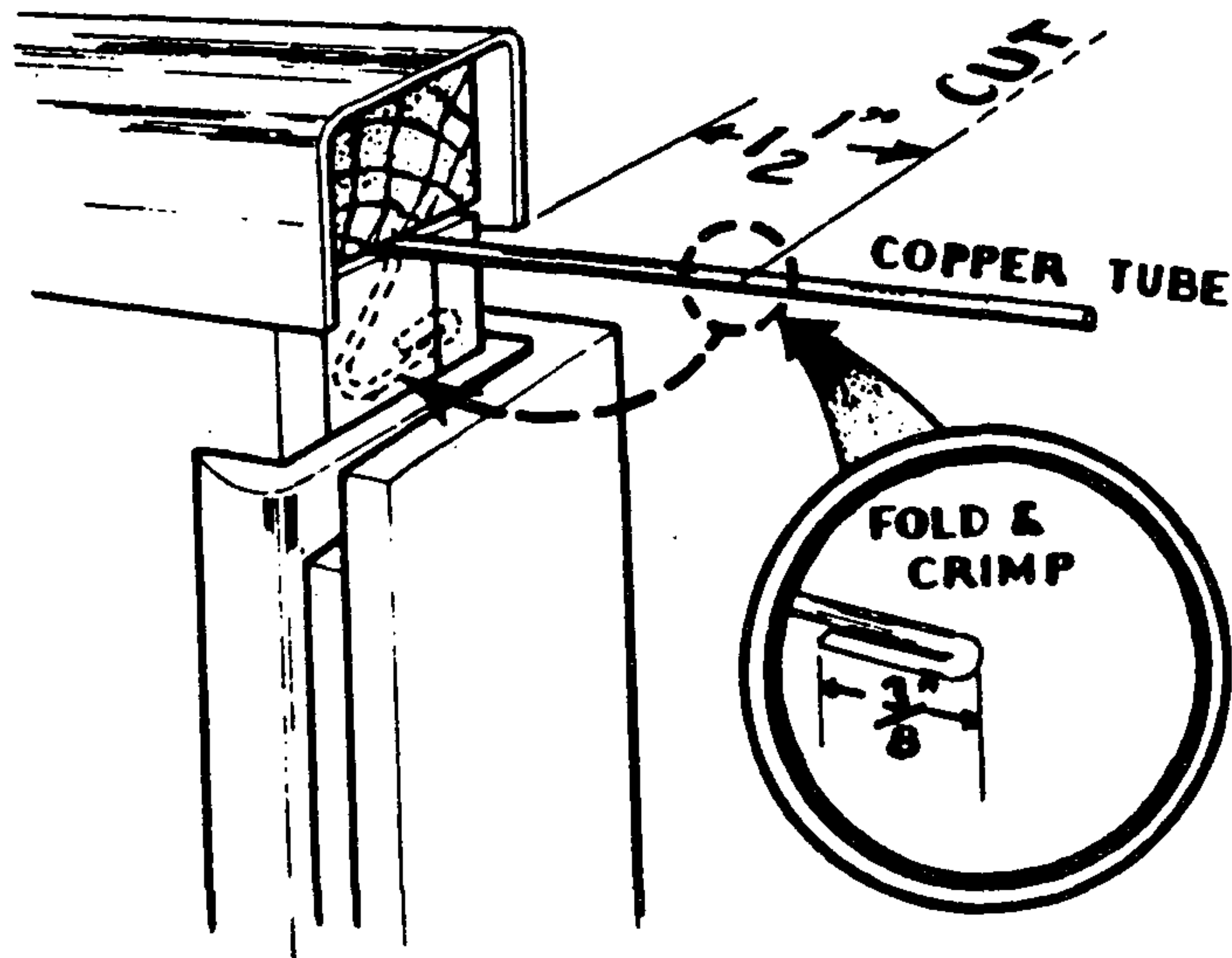
**JOINING**

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.

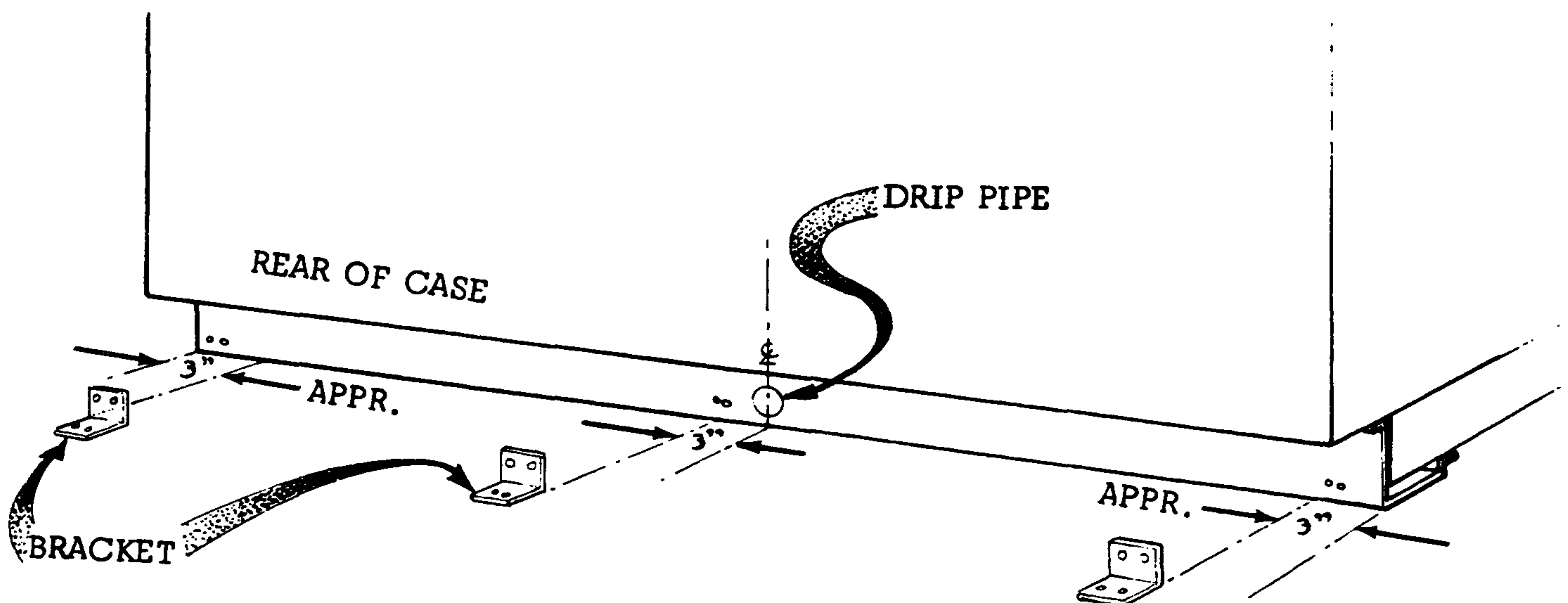
SEALING THE MULTIGLASS

Vented multiglass assemblies on these models must be sealed when case is installed. When case reaches destination seal vent as follows:

1. CUT TUBE
2. FOLD AND CRIMP
3. BEND FLUSH

ANCHORING OF FMR, FMRG, AND FMRG C CASES

The forward projection of the refrigerator makes anchoring a necessity to prevent the case from tipping forward. Brackets are to be utilized to secure the rear of the case to the floor. Refer to the following illustration:



DRIP PIPING (FMR, FMRG, FMRGC CASES)

Drip pipe connections are made either at the front or the rear of the fixture. The fixture 1 1/2-inch steel drip pipe is connected to a water seal located within the base of the fixture.

If necessary, remove and use the steel tee and pipe cap fittings as required by the store drainage system.

CAUTION: BE SURE THAT THE UNUSED DRIP PIPE IS CAPPED.

INSTALLING DRIP PIPING

Poorly or improperly installed drip pipes can seriously interfere with the operation of this refrigerator, and result in costly maintenance and product losses. Please follow the recommendations listed below when installing drip pipes to insure a proper installation:

- STEP 1. Never use pipe for drip piping smaller than the nominal diameter of the pipe or water seal supplied with the case.
- STEP 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 14" off center of case 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 a lock and prevent draining.
- STEP 3. Always provide as much down hill slope ("fall") as possible; 1/8" per foot is the preferred minimum.
- STEP 4. Avoid long runs of drip piping. Long runs make it impossible to provide the "fall" necessary for good drainage.
- STEP 5. Provide a suitable air break between flood rim of the floor drain and outlet of drip pipe.
- STEP 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 non-absorbent insulation material such as Armstrong's Armaflex.
 - b. Where drip pipes are located in dead air spaces such as between refrigerators or between a refrigerator and a store wall, provide means to prevent freezing.

INSTALLING SPLASHGUARD

The splashguard is shipped separately inside of each refrigerator. After cases have been leveled and joined and all drip piping, electrical and refrigeration work has been completed, install the splashguard. The leveling brackets have a maximum extension of one (1) inch for uneven floors. After adjusting brackets flush with the floor, position splashguard UP BEHIND THE FRONT PANEL FIRST, then position the lower portion over the previously adjusted brackets.

SEALING SPLASHGUARDS TO FLOOR

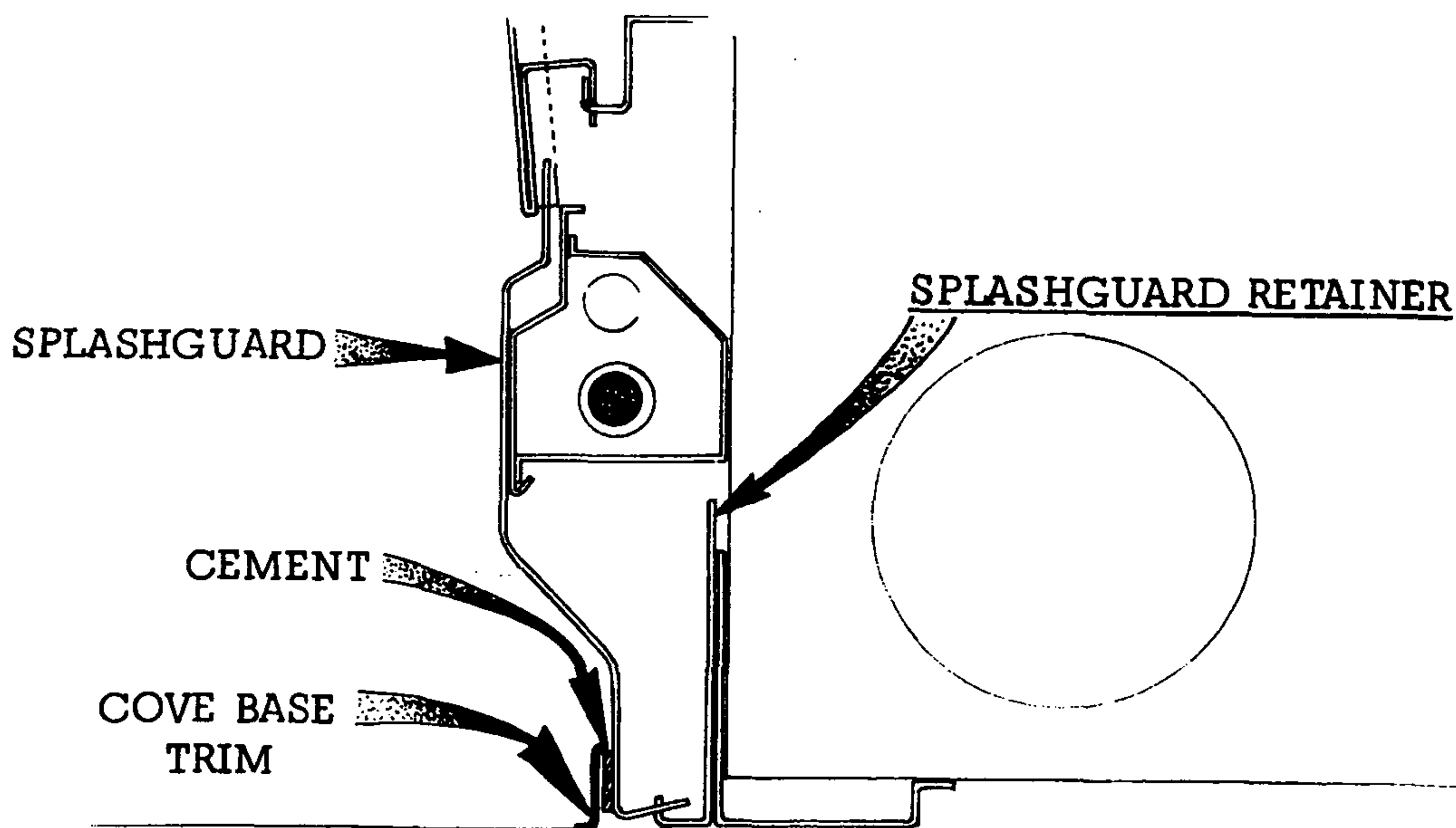
If required by local sanitary codes or if customer so desires, splashguards may be sealed to the floor using a Vinyl Cove Base Trim such as produced by Armstrong, Kentile, Johnson, etc. from a local floor covering supplier, (see Illustration below). The size needed will depend on how much the floor is out of level.

When installing the cover base trim to the splashguard:

- STEP 1. Remove all dirt, wax and grease from surface area of splashguard where adhesion will be necessary. This will insure a good, secure installation.
- STEP 2. Apply a good adhesive to the cove base trim and allow the proper drying time according to directions supplied with the product.
- STEP 3. Install cove base trim so that it is lying flush with store floor.

SLIDING DOORS

The sliding doors on the FMR, FMRG, and FMRGC cases have been factory adjusted, however, if the doors seem difficult to slide, see the adjustment instruction in the Servicing Tips' section.



SECTION 3

REFRIGERATION

REFRIGERANT

These merchandisers 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 merchandisers serial plate located at the left hand end on the interior back liner.

REFRIGERANT PIPING

CONNECTION 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.

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

For refrigerators 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)

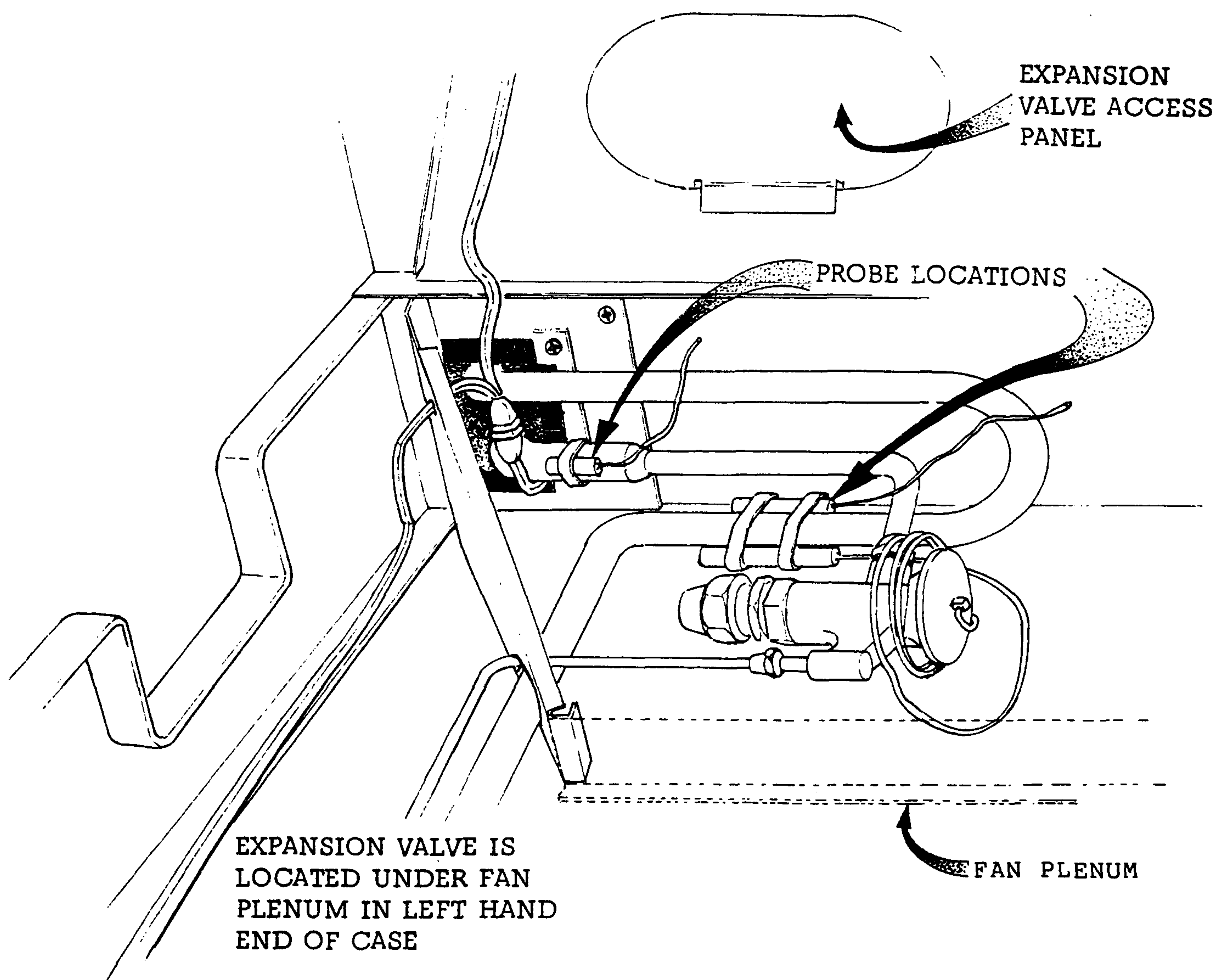
MODEL	TYPE OF DEFROST	REFRIGERANT	BALANCED PORT EXPANSION VALVE
ALL 8FT	Off Time	R-502 R-22 R-12	BFR A C BFF A C BFF A C
	Koolgas *	R-502 R-22 R-12	Y920 BGR A C Y920 BGV A C Y920 BGF A C
All 8FT	Off Time	R-502 R-22 R-12	BFR A C BFY A C BFF A C
	Koolgas *	R-502 R-22 R-12	Y920 BGR A C Y920 BGV A C Y920 BGF A C

*These expansion valves 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 port and return 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 be restricted by heavy frost formation on the evaporator. Adjust valves as follows:

Attach two sensing probes (either thermocouple or thermistor types) to the evaporator, one under the clamp holding the expansion valve bulb and the other securely taped to the coil inlet line as close to the back panel as practical (see Illustration below). 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°F. Make adjustment of no more than one-half (1/2) turn at a time of the valve stem and wait for at least fifteen minutes before rechecking the probe temperatures 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). Thermostatic control is preferred since it will provide a more constant year round control of temperature. When the optional refrigeration thermostat is factory installed, it will be located in the electrical raceway at the left hand end of the case and with its sensing bulb fastened above the evaporator.

Defrosts are time initiated and pressure terminated, (temperature termination is optional) The optional defrost termination thermostat will be factory installed on the evaporator outlet. It is a non-adjustable, single pole, single throw type thermostat.

APPLICATION	REFRIGERATION CONTROL						DEFROST CONTROLS		
	DISCHARGE AIR TEMPERATURE ①	REFRIGERANT	LOW PRESSURE CONTROL				Defrost Frequency	Pressure Termination ④	Failsafe ⑤
			When ② Pressure Control controls temperature		When ③ Thermostat controls temperature				
			Cut-Out	Cut-In	Cut-Out	Cut-IN			
FMR, FMRG	22° F	R-502	42 psig	60 psig	21 psig	9 psig	Every 12 Hours	89-94 psig	70 min.
FMRGC	30° F	R-502	47 psig	65 psig	24 psig	42 psig			

1.

Discharge air temperature is to be measured at the center of 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 above.

3.

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

4.

When the optional defrost termination thermostat is installed, defrost will occur at approximately 48°F discharge air temperature. If more than one refrigerator is connected to the same condensing unit, the defrost termination thermostat of each refrigerator must be wired in series to the condensing unit defrost timer.

5.

Defrost must be terminated by either pressure termination or by the defrost termination thermostat. The defrost timer of outdoor condensing units must control a liquid line solenoid for pump-down prior to defrost only. The failsafe setting for outdoor units must be increased 4 minutes to compensate for the pump-down period.

CONTROLS AND ADJUSTMENTS - MIXED MULTIPLEXING

Refrigeration temperature may be controlled by either a refrigeration thermostat or a CDA valve (Close on Drop in Air Temperature). Both of these controls are optional items and may be ordered factory installed.

The optional refrigeration thermostat is the same as that for conventional multiplexing. The optional CDA valve will have its sensor installed in the same location as the refrigeration thermostat bulb. The valve itself will be installed at the condensing unit. Further information on the CDA valve concerning wiring, adjusting and servicing can be found in the Instruction manual furnished with the condensing unit.

Standard defrost is off-time defrost, the same as that for conventional multiplexing, and is time initiated and time terminated, with temperature termination provided as an option.

KOOLGAS defrost is optional and will be time initiated and time terminated.

APPLICATION	REFIGERATION CONTROL	DEFROST CONTROL			
	Discharge Air Temperature ¹	DEFROST FREQUENCY	DEFROST ²		KOOLGAS DEFROST
			Temperature Termination ³	Length or (Failsafe)	Length of Defrost ⁴
FMR, FMRG	22° F	Every 12 Hours	48° F	70 Min.	14 min.
FMRGC	30° F				

¹

Discharge air temperature is to be measured at the center of the discharge honeycomb at the center of the case. Adjust the refrigeration control (refrigeration thermostat or CDA valve) to maintain the temperature shown above.

^{2.}
^{3.}

Standard defrost is time initiated and timer terminated. Defrost termination temperature when the optional defrost termination thermostat is installed. All like refrigerators connected to the same condensing unit must have their defrost termination thermostat wired in series.

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, refrigerator temperature operating lower than that recommended, seasonal ambient changes, etc.

Each system shown on the store legend must have staggered defrost to maintain stable compressor loading and sufficient supply of defrost gas.

REFRIGERATION THERMOSTAT (OPTIONAL)

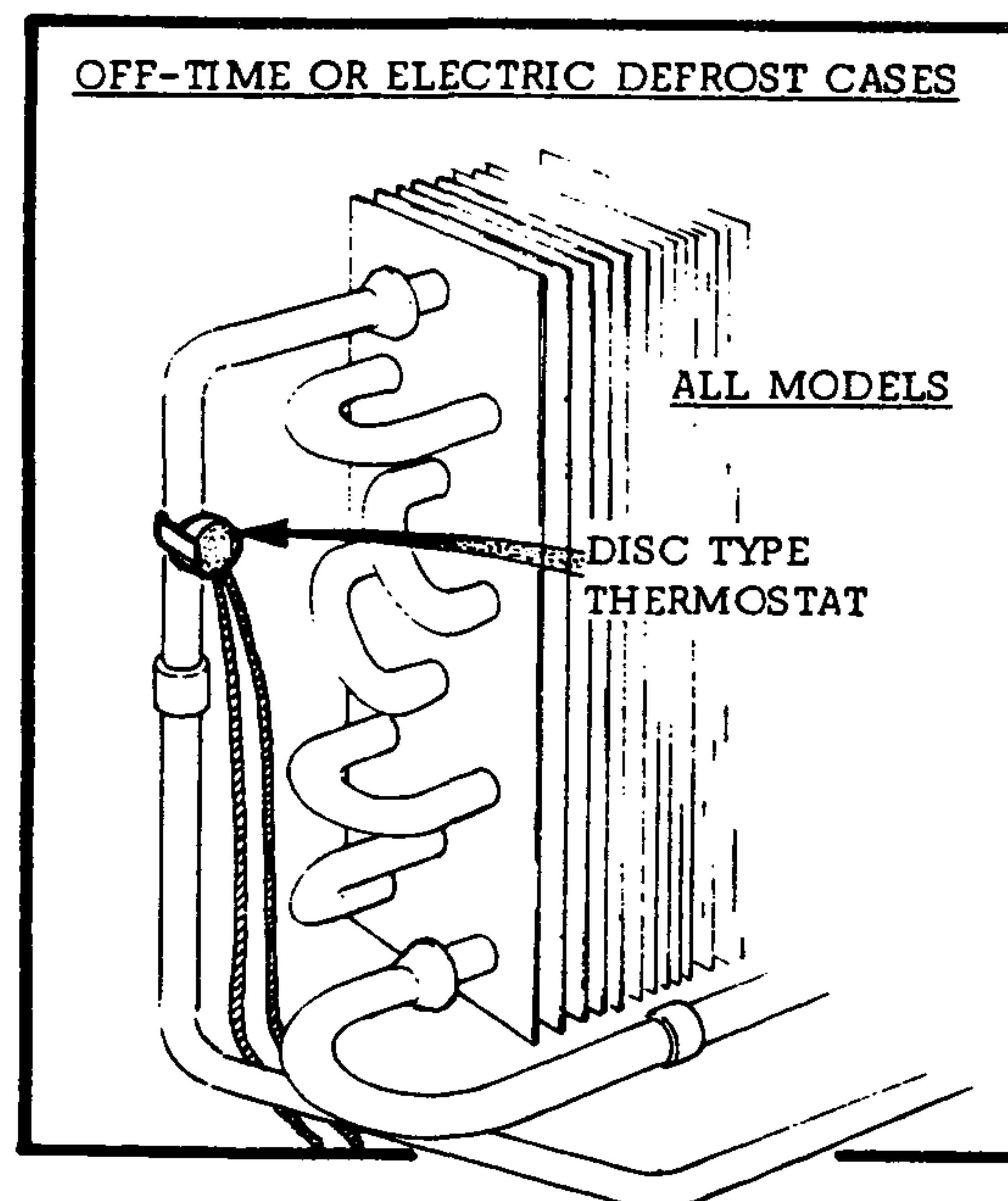
For field installation of the optional thermostat, refer to the THERMOSTAT INSTALLATION KIT INSTRUCTIONS, HUSSMANN ENGINEERING #122683. The thermostat body is located behind the kickrail at the left hand end of the case. The bulb is located above the coil approximately 24" from left hand end of case.

DEFROST HEATER (OPTIONAL)

For field installation of the optional defrost heater, refer to the DEFROST HEATER INSTALLATION KIT INSTRUCTIONS, HUSSMANN ENGINEERING #135294. Heater is located on coil baffle beneath plenum assembly.

DEFROST TERMINATION THERMOSTAT (OPTIONAL)

The DEFROST TERMINATION THERMOSTAT KIT is an optional, factory installed kit. This is a non-adjustable Disc type thermostat. See illustration below for location.



SECTION 4

ELECTRICAL

CONNECTIONS

All electrical connections are to be made in the electrical wireway behind the splashguard at the left hand end of the case (shown 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 wireway (shown below).

WIRING COLOR CODE

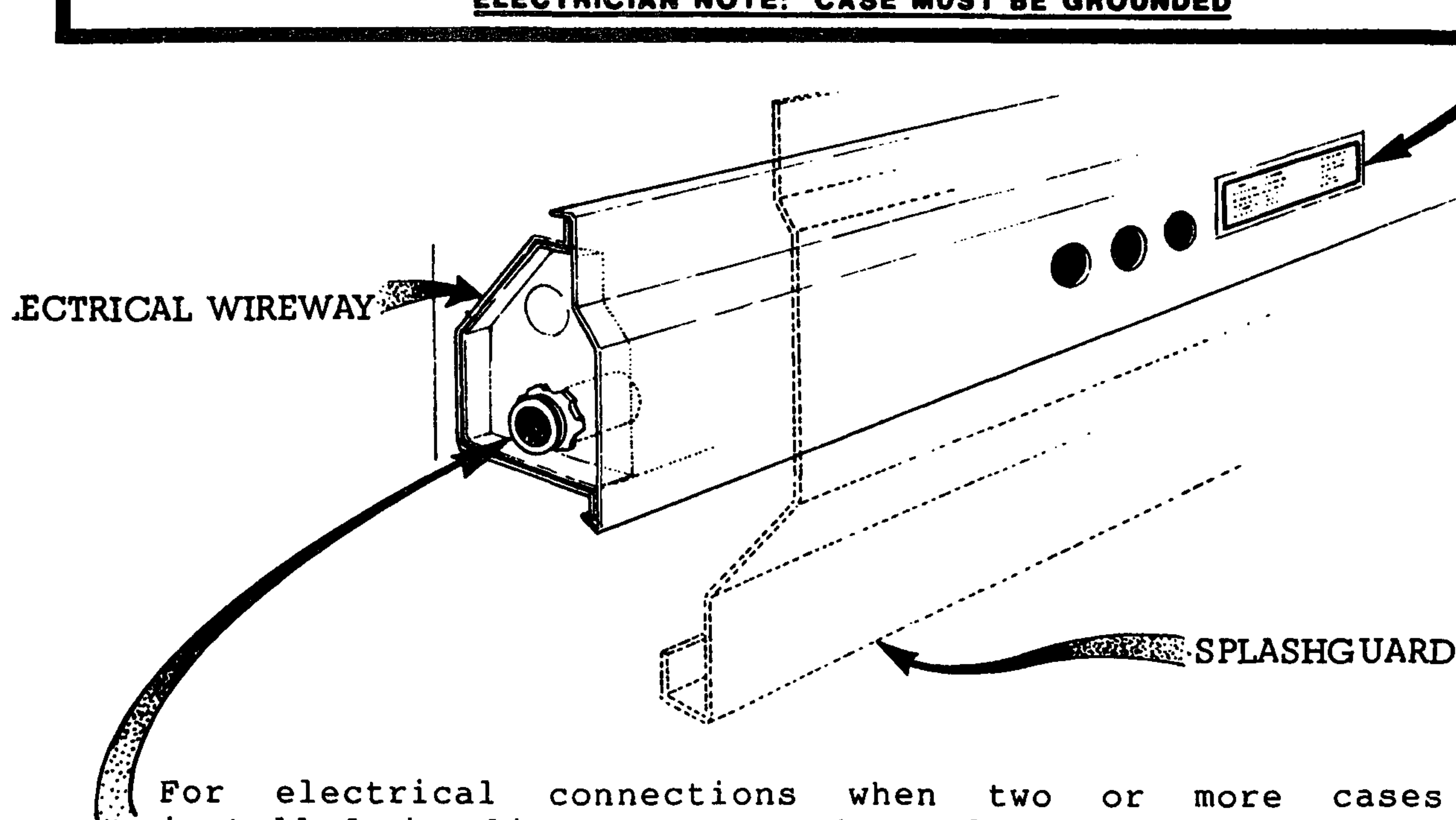
LEADS FOR ALL ELECTRICAL CIRCUITS ARE IDENTIFIED BY A COLORED PLASTIC BAND: NEUTRAL WIRE FOR EACH CIRCUIT HAS EITHER WHITE INSULATION OR A WHITE PLASTIC SLEEVE IN ADDITION TO THE COLOR BAND.

PINKREFRIG. 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



For electrical connections when two or more cases are installed in line, remove the splashguards, end caps and raceway cover. Install the nipple and nuts (which are provided with each case) between the two cases being connected. This provides a passageway for electrical wires from one case to the other.

SERIAL PLATE AMEPERAGES

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

CASE MODELS	120 Volt, 60 Hz CIRCUITS		208 V, 60 Hz CIRCUIT
	FANS 	CYCLABLE ANTI-SWEAT HEATERS 	OPTIONAL DEFROST HEATER (Single Phase)
FMR-8	0.6	1.5	5.2
FMR-12	1.2	2.1	7.8
FMRGC-8 FMRGC-8	0.6	1.5	5.2
FMRG-12	1.2	2.1	7.8

NOTES:

The fans must operate continuously.



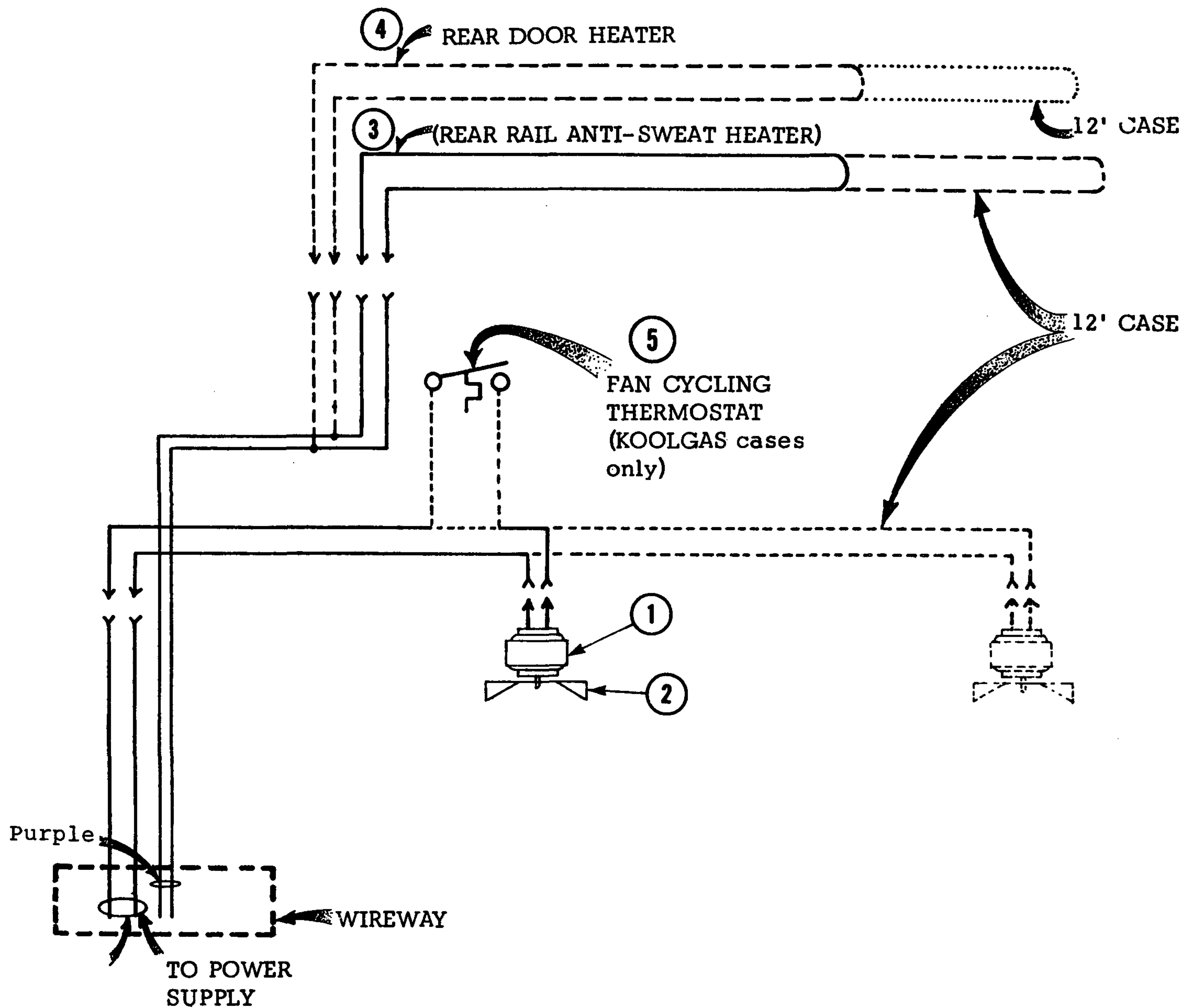
All the anti-sweat heaters can be cycled off by connecting them to an energy saving controller or they may be wired to the fan circuit for continuous duty. The wires for these heaters will be tagged in the wireway, identifying them as cyclical anti-sweat heaters.

3. 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.

DEFROST TERMINATION THERMOSTAT: This thermostat is optional in all refrigerators. It must be wired in series with those in all like refrigerators that are on the same system and wired to a temperature termination type defrost timer.

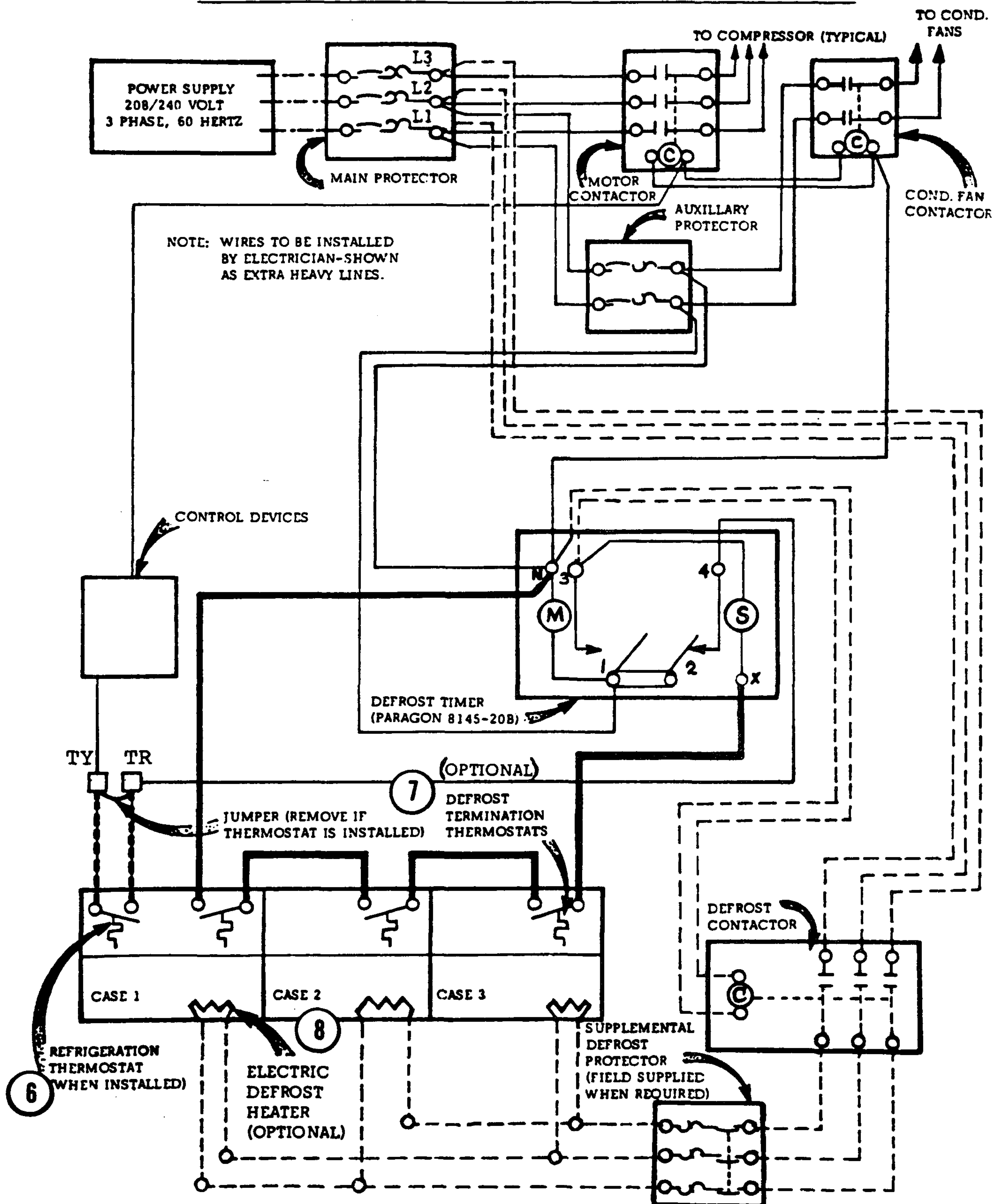
REFRIGERATION THERMOSTAT or CDA SENSOR: Both of these are optional refrigeration controls that need to be wired to the condensing unit control panel when they are installed in the refrigerator.

WIRING DIAGRAM
TYPICAL 120 VOLT CIRCUIT DIAGRAM

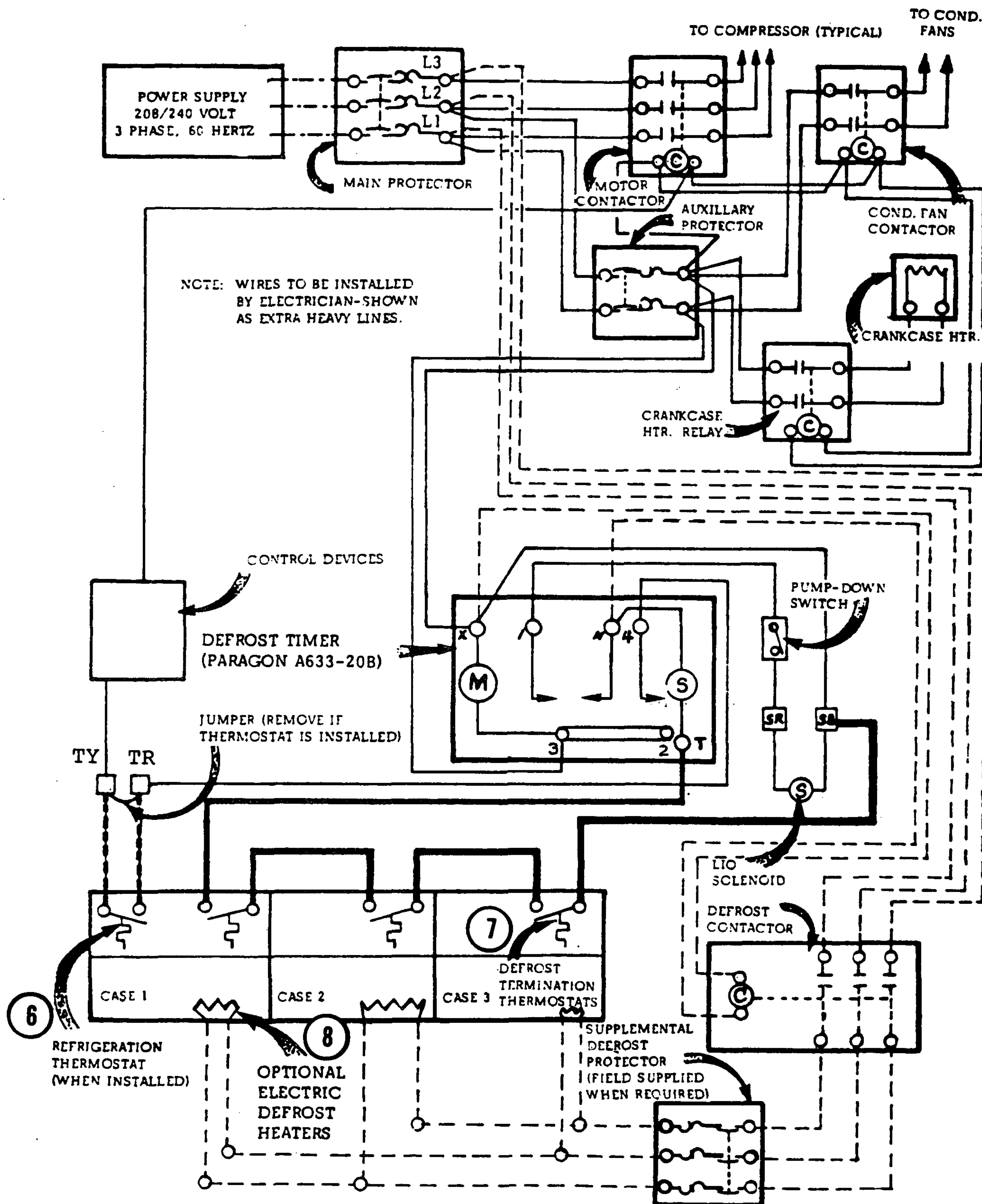


WARNING
REFRIGERATOR MUST BE GROUNDED

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



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



WARNING
REFRIGERATOR MUST BE GROUNDED

ELECTRICAL REPLACEMENT PARTS

<u>ITEM NO.</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1.	058698	Fan Motor - GE#5KSP51CL-227H 6W CW 120V
2.	141070	Fan Blade - Morrill FV800 CW 20S - Embossing toward motor - FMR, RMFG, FMRGC-8 & -12
3.	109417	Rear Rail Anti-Sweat Heater - .75 amp, 160 ohms-8'
	109418	Rear Rail Anti-Sweat Heater - 1.0 amp, 120 ohms - 12'
4.	125574	Rear Door Anti-Sweat Heater - .73 amp, 163 ohms
	125575	Rear Door Anti-Sweat Heater - 1.1 amp, 114 ohms
5.	100939	Fan Cycling Thermostat (KOOLGAS only) T.I. #20425L32-765-34
6.	113625	Refrigeration Thermostat Penn #A19AGD-21 (optional)
7.	119422	Defrost Termination Thermostat - T.I. #20425F32-443-914 (optional)
8.	131434	Defrost Heater - 5.2 amp, 40 ohms, 208V - 8' (optional)
	131435	Defrost Heater - 5.2 amp, 40 ohms, 208V - 8' (optional)

SECTION 5

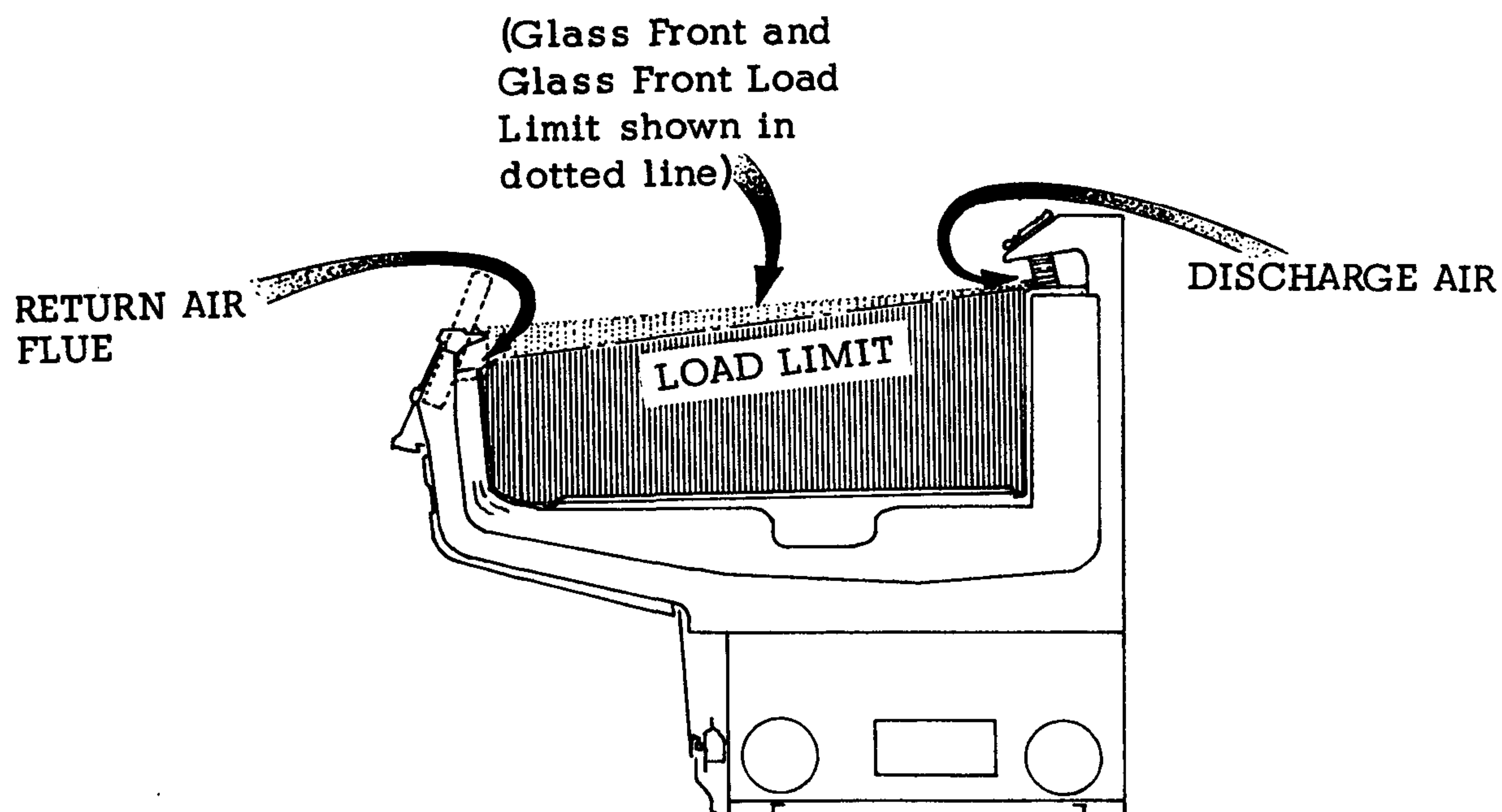
USERS INFORMATION

STOCKING

Merchandise should not be placed in these refrigerators until they are at the designed operating temperatures, approximately 2-3 hours.

When stocking, never allow product to extend beyond the load limit decals affixed to the interior of the refrigerator. AIR DISCHARGE AND RETURN AIR FLUES MUST BE UNOBSTRUCTED AT ALL TIMES TO PROVIDE PROPER REFRIGERATION AND AIR CURTAIN PERFORMANCE.

Since all food items are perishable, packages should be periodically rotated to maintain freshness.



AIR DISCHARGE AND RETURN FLUES MUST BE UNOBSTRUCTED AT ALL TIMES OR OPERATION WILL BE SERIOUSLY AFFECTED.

SHELVES

Since display shelves can be adjusted to several positions permitting shallow displays or after removal, volume display (for bulky items such as hams or chickens).

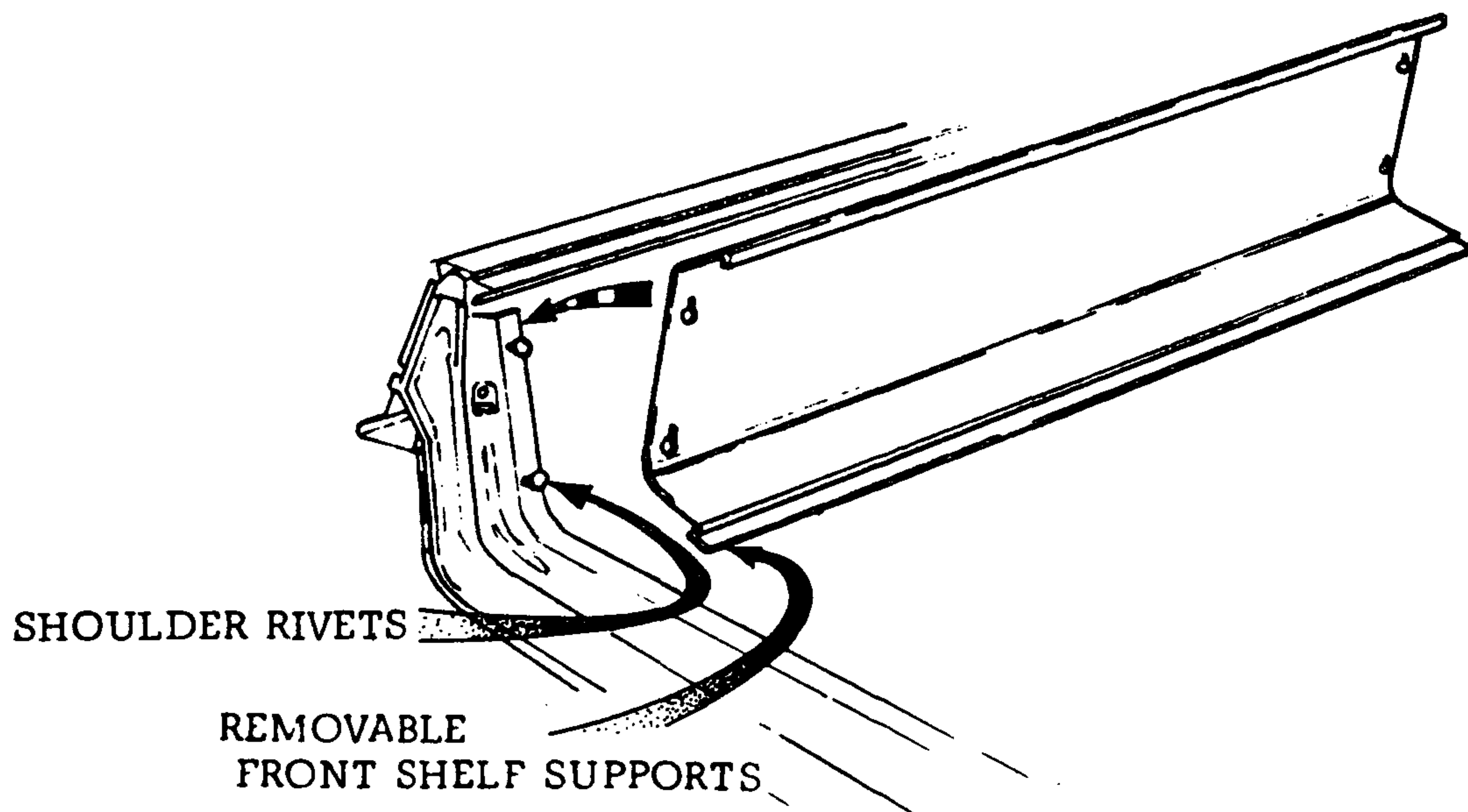
DISPLAY LIGHTING

Both the temperature and the rate of discoloration of fresh red, cured, smoked and table ready meats increases with higher light intensity and is affected differently by the various types of lighting presently in use. The total light intensity from all light sources should be limited to a maximum of 100 foot candles at the product level including no more than 30 foot candles from incandescent lamps if a shelf life of more than 2 to 3 days is expected.

CARE AND CLEANING

Long life satisfactory performance of any equipment is dependent upon the care given to it. To insure long life, proper sanitation and minimum maintenance costs, the fixture should be thoroughly cleaned, debris removed and the interior washed down monthly.

To facilitate quick and complete cleaning, this refrigerator has been designed with removals front and lower shelf supports. These supports are removable in four foot sections without the need for tools by simply lifting each section up and off of the shoulder rivets located at both ends of each section (see illustration below).



The fan plenum is hinged for easy access to the area beneath the evaporator for cleaning. The plenum is fastened down for shipping purposes with a screw at each end. If these have not been removed, do so and discard.

CAUTION

BE SURE PLENUM IS PROPERLY LOWERED INTO POSITION AFTER CLEANING OR PRODUCT LOSS WILL RESULT DUE TO IMPROPER REFRIGERATION.

The interior bottom of this case is any easy to clean, corrosion resistant material designed for maximum sanitation. All domestic detergents, even ammonia base cleaners are recommended. Sanitizing solutions will not harm the case interior bottom, however, these sanitizers should be used according to the manufacturer's directions.

CAUTION: DO NOT USE STEAM OR EXTREMELY HOT WATER TO WASH THE INTERIOR BOTTOM OF THESE CASES. WHEN CLEANED, DO NOT USE A HOSE WITH HIGH WATER PRESSURE AND NEVER INTRODUCE WATER INTO THE FIXTURE FASTER THAN THE WASTE OUTLET CAN CARRY IT AWAY.

To preserve the exterior finish of the fixture, use warm water and mild detergent.

DO NOT USE ABRASIVE CLEANERS OR STEEL WOOL SCOURING PADS AS THESE WILL MAR THE FINISH.

SERVICE TIPSWARNING

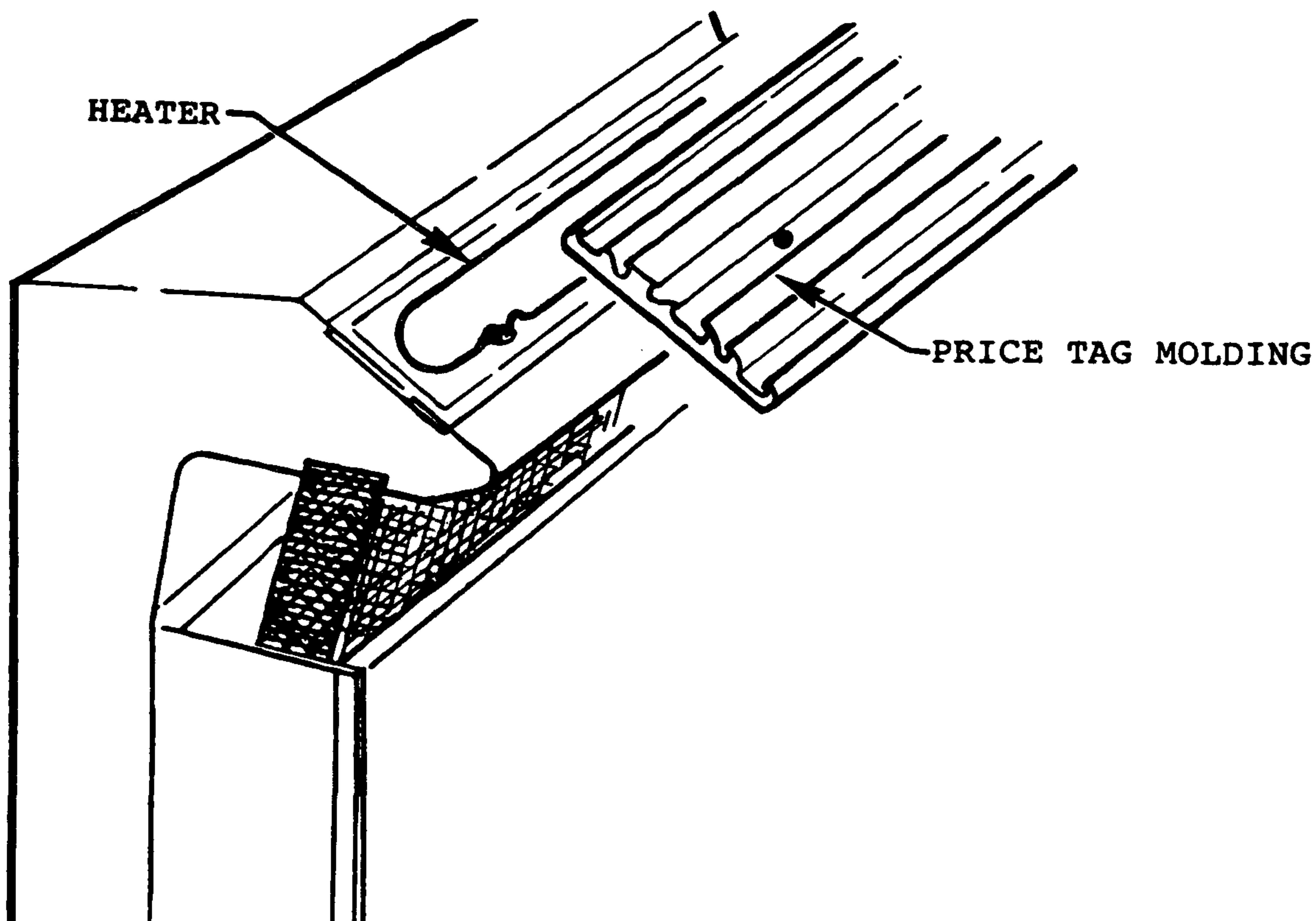
ALWAYS DISCONNECT THE ELECTRICAL POWER AT THE MAIN DISCONNECT WHEN SERVICING OR REPLACING ANY ELECTRICAL COMPONENT OF THIS REFRIGERATOR. THIS INCLUDES, BUT IS NOT LIMITED TO SUCH ITEMS AS FANS, HEATERS, THERMOSTATS, AND FLUORESCENT LAMPS THAT MAY BE INSTALLED IN THE OPTIONAL SUPERSTRUCTURE FOR THESE CASES.

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.

ANTI-SWEAT HEATER LOCATION AND REPLACEMENT

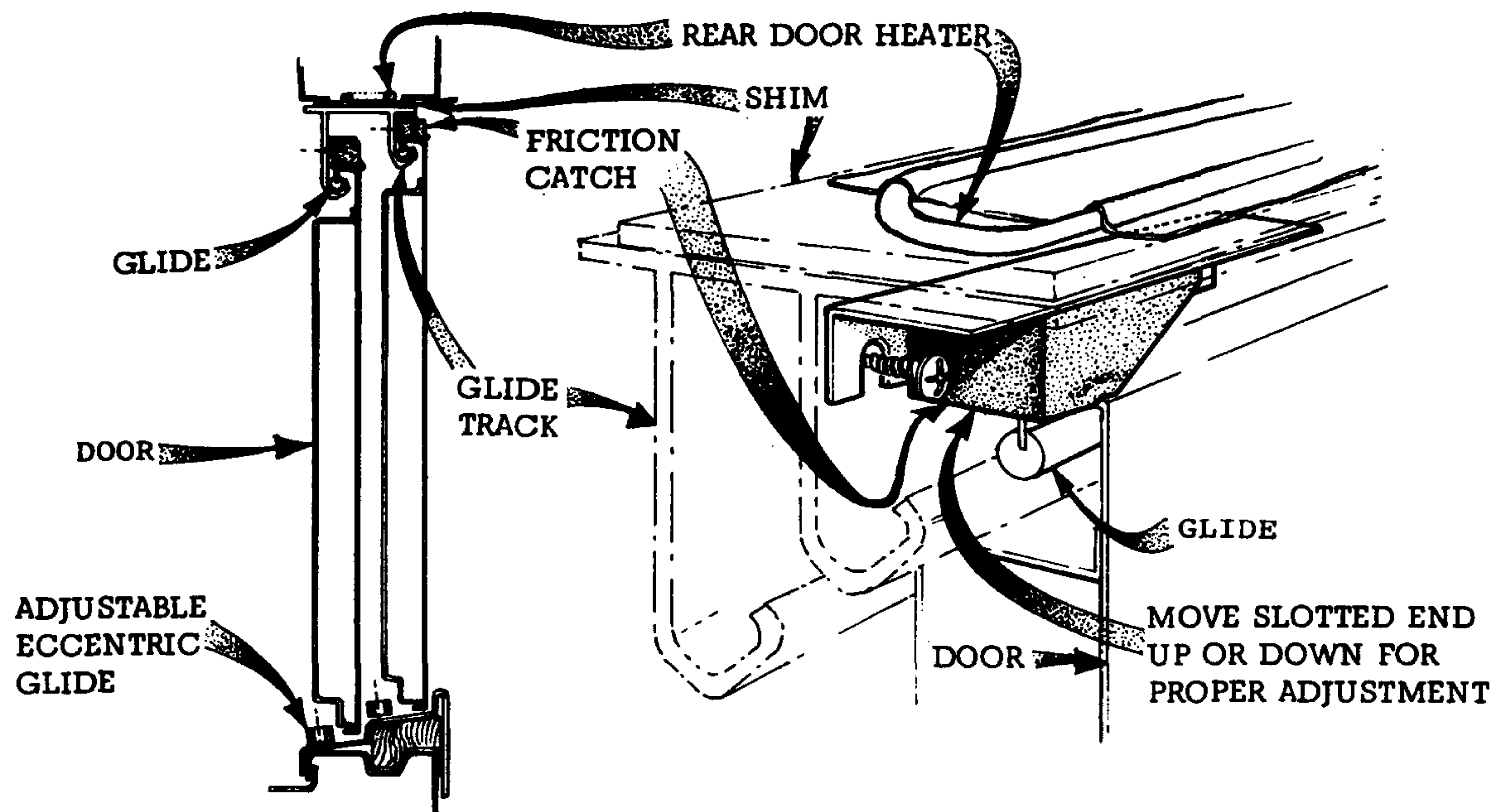
- A. Price Tag Moulding Anti-Sweat Heater (Rear Rail)
This heater is located immediately below the price tag molding that is fastened to the back of the case. To remove:
1. Remove screws holding price tag molding and lift molding from case.
 2. Disconnect the faulty heater at its supply harness and replace the heater. See parts list for replacement heater.
 3. Re-install all parts in reverse order of removal.



REAR DOOR ANTI-SWEAT HEATER

This heater is located above the rear sliding doors.

1. Remove the rear doors. Align the arrow on the door with the arrow on the back panel above the door and lift door out.
2. Remove the top glide and glide track.
3. Disconnect the faulty heater at its supply harness and replace the heater. See parts list for replacement heater.
4. Re-install all parts in reverse order or removal. See below for door adjustment.

REAR SLIDING DOOR REMOVAL AND ADJUSTMENT

THE ARROW MARKINGS ON THE DOOR AND THE BACK OF THE CASE MUST ALIGN BEFORE REMOVING OR INSTALLING THE REAR DOORS

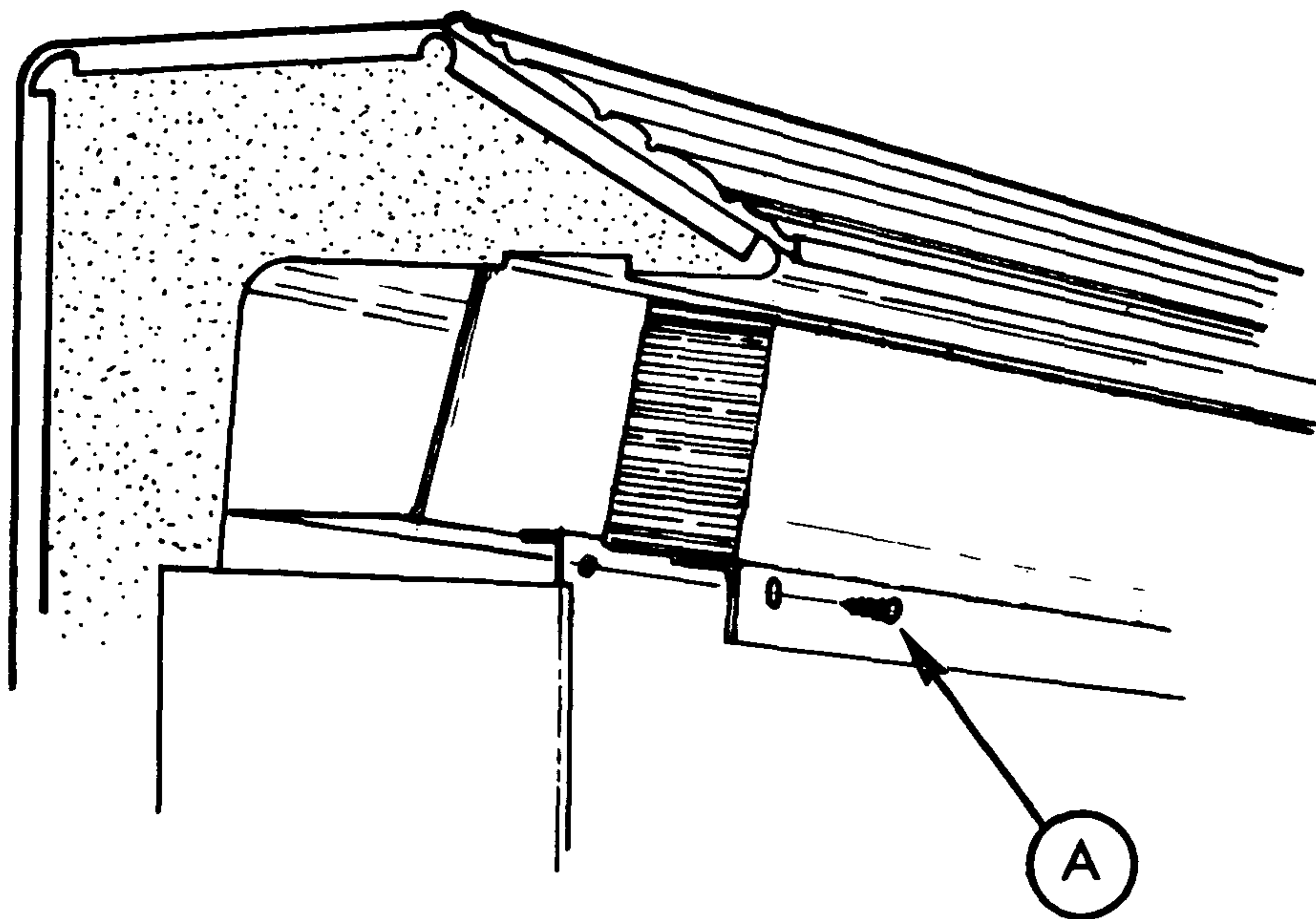
Adjustments on sliding doors:

1. Glides must glide on upper track. Shims inserted under top door track can regulate the up and down clearance of the door.
2. The eccentric nylon glide on the bottom sill should be adjusted to prevent excessive fore and aft movement.
3. Friction catch on end of top track should be adjusted to give moderate resistance, but still allow the door to slide under the friction catch without using force. Adjustment is made on friction catch by moving slotted end up or down.

HONEYCOMB REMOVAL & CLEANING

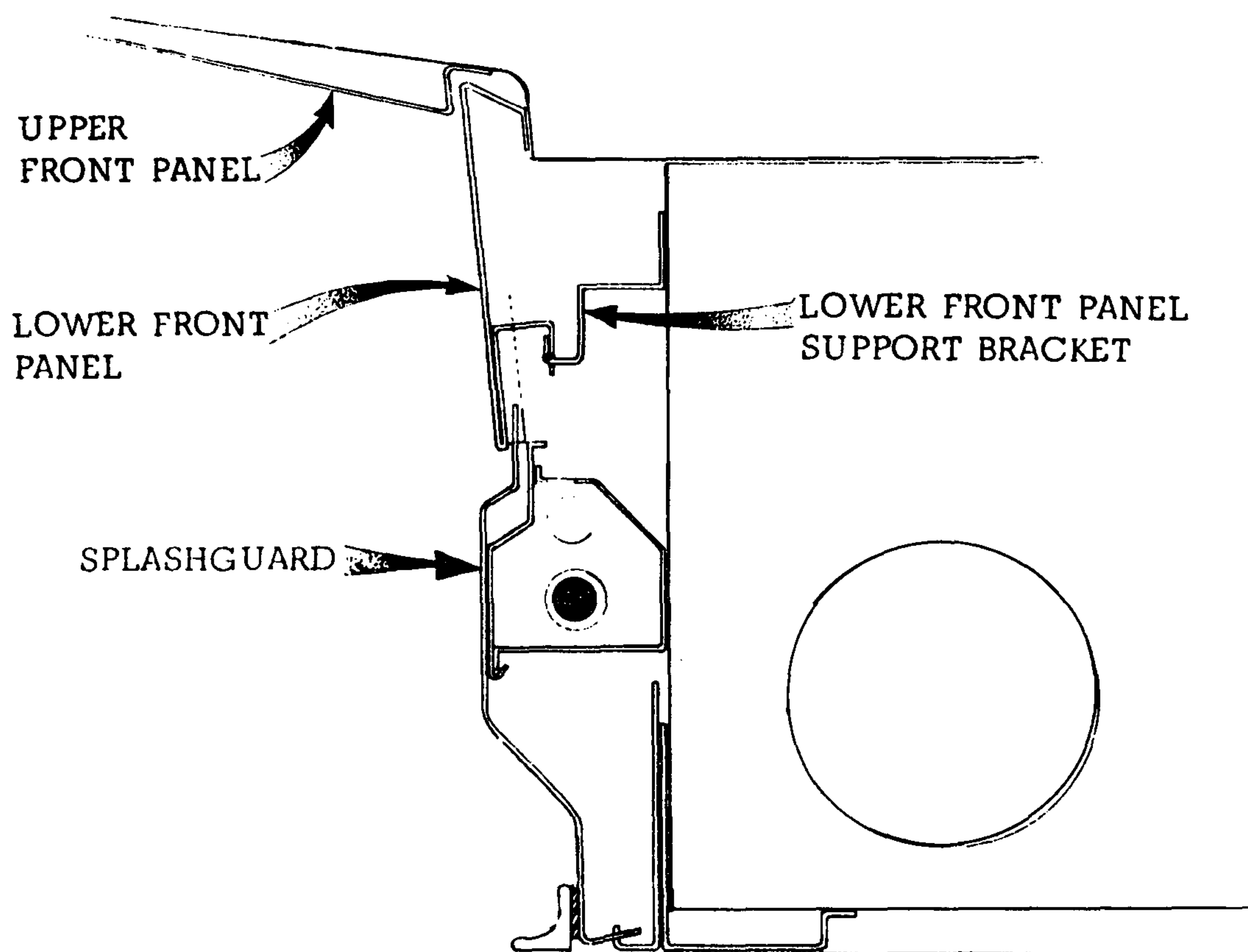
CAUTION: DO NOT TEAR THE HONEYCOMB

1. Remove the honeycomb assembly as follows:
 - a. Remove screws (Item A) along the bottom of the honeycomb assembly.
 - b. Remove the honeycomb assembly.
2. To clean honeycomb:
 - a. Mix a powdered detergent, such as "Ajax" or "Comet", in warm water. (6 to 7 tablespoons per gallon)
 - b. Immerse or spot clean the honeycomb. Use care not to damage the cell structure of the honeycomb.
 - c. Rinse thoroughly in clean water. Shake excess water from honeycomb and dry. (If heat is used, do not exceed 140°F dry heat).
3. Install the honeycomb by reversing the above procedure.



REMOVAL OF LOWER FRONT PANEL

1. Remove lower front panel by lifting up, pulling out and away from support brackets then lowering from behind the upper front panel. See illustration below.
2. Reverse the above procedure to install.



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