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G5 & G6

MULTIDECK FROZEN FOOD &
ICE CREAM MERCHANDISERS

INSTALLATION / SERVICE INSTRUCTIONS

ENG.NO.128430R
August, 1989
Supersedes #128430Q
Dated, Aug., 1987
Section 3

9/91 UPDATE

REFRIGERANT PARTS LIST (Sporlan Nomenclature)

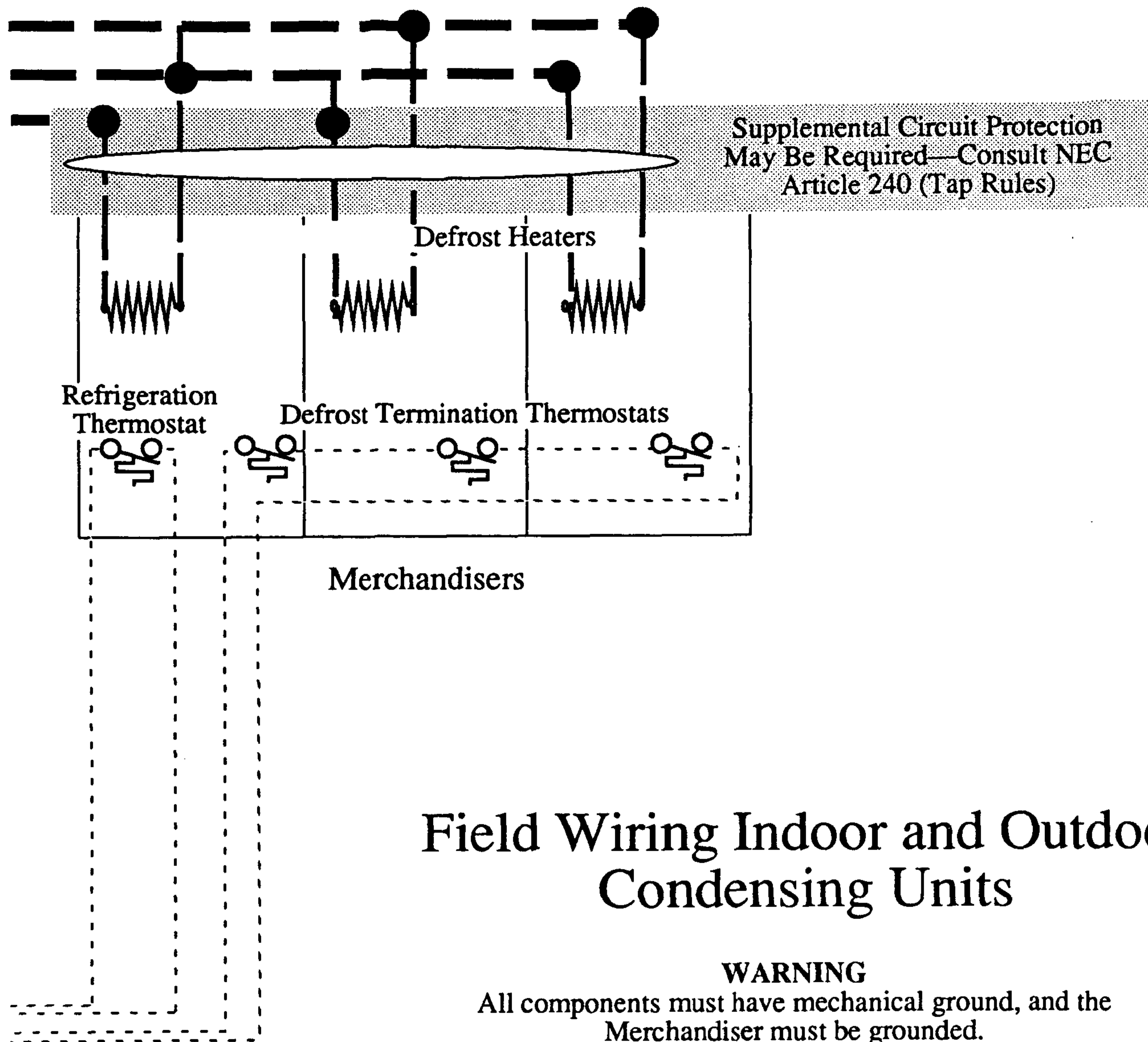
Replaces Table on Page 3-2

P/N 128430

Refrigerant R22					
G5F & G6F	Electric Defrost Expansion Valve	Distributor	Koolgas Defrost Expansion Valve	*Distributor	
	4ft	BFVE AAZ	D115—3—1/4—11/2	BFVE AAZ	D116—3—1/4—11/2
	6ft	BFVE AZ	D115—3—1/4—11/2	BFVE AZ	D116—3—1/4—11/2
	8ft	BFVE CZ	D115—3—1/4—11/2	BFVE AZ	D116—3—1/4—11/2
	12ft	BFVE BZ	D115—3—1/4—2	BFVE BZ	D116—3—1/4—2
G5C & G6C	Electric Defrost Expansion Valve	Distributor	Koolgas Defrost Expansion Valve	*Distributor	
	8ft	BFVE BZ	D115—3—1/4—11/2	BFVE BZ	D116—3—1/4—11/2
	12ft	BFVE CZ	D115—3—1/4—2	BFVE CZ	D116—3—1/4—2

Refrigerant R502					
G5F & G6F	Electric Defrost Expansion Valve	Distributor	Koolgas Defrost Expansion Valve	*Distributor	
	4ft	BFRE AZ	D115—3—1/4—11/2	BFRE AZ	D116—3—1/4—11/2
	6ft	BFRE AZ	D115—3—1/4—11/2	BFRE AZ	D116—3—1/4—11/2
	8ft	BFRE CZ	D115—3—1/4—11/2	BFRE AZ	D116—3—1/4—11/2
	12ft	BFRE CZ	D115—3—1/4—2	BFRE AZ	D116—3—1/4—2
G5C & G6C	Electric Defrost Expansion Valve	Distributor	Koolgas Defrost Expansion Valve	*Distributor	
	8ft	BFRE CZ	D115—3—1/4—11/2	BFRE CZ	D116—3—1/4—11/2
	12ft	BFRE CZ	D115—3—1/4—2	BFRE CZ	D116—3—1/4—2

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



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

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WARRANTY

REVISION CHANGES ("R")

1. New Vendor Part Number (fan motor), page 4-12.

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 Road • Bridgeton, MO 63044 USA • (314) 291-2000 • FAX (314) 298-4767

SECTION IGENERAL DESCRIPTIONMODEL DESCRIPTION

The G5 and G6 model series are multi-deck refrigerated merchandisers designed for low temperature operation. They are available in two temperature ranges (frozen food or ice cream) and three lower front heights. The following table lists all the available model numbers and their corresponding description. The G5 models are available in 8' or 12' lengths. The G6 models are available in 4', 6', 8' or 12' lengths.

MODEL NUMBER	DESCRIPTION
G5-F G6-F	Frozen Food with 26" Front
G5-FL G6-FL	Frozen Food with 22" Front
G5-FH G6-FH	Frozen Food with 30-5/8" Front
G5-C G6-C	Ice Cream with 26" Front
G5-CH G6-CH	Ice Cream with 30-5/8" Front

The basic difference between a G5 model and a G6 model is the amount of shelving they can accomodate. . .

the G5 models. . . 4 full rows

the G6 models. . . 5 full rows

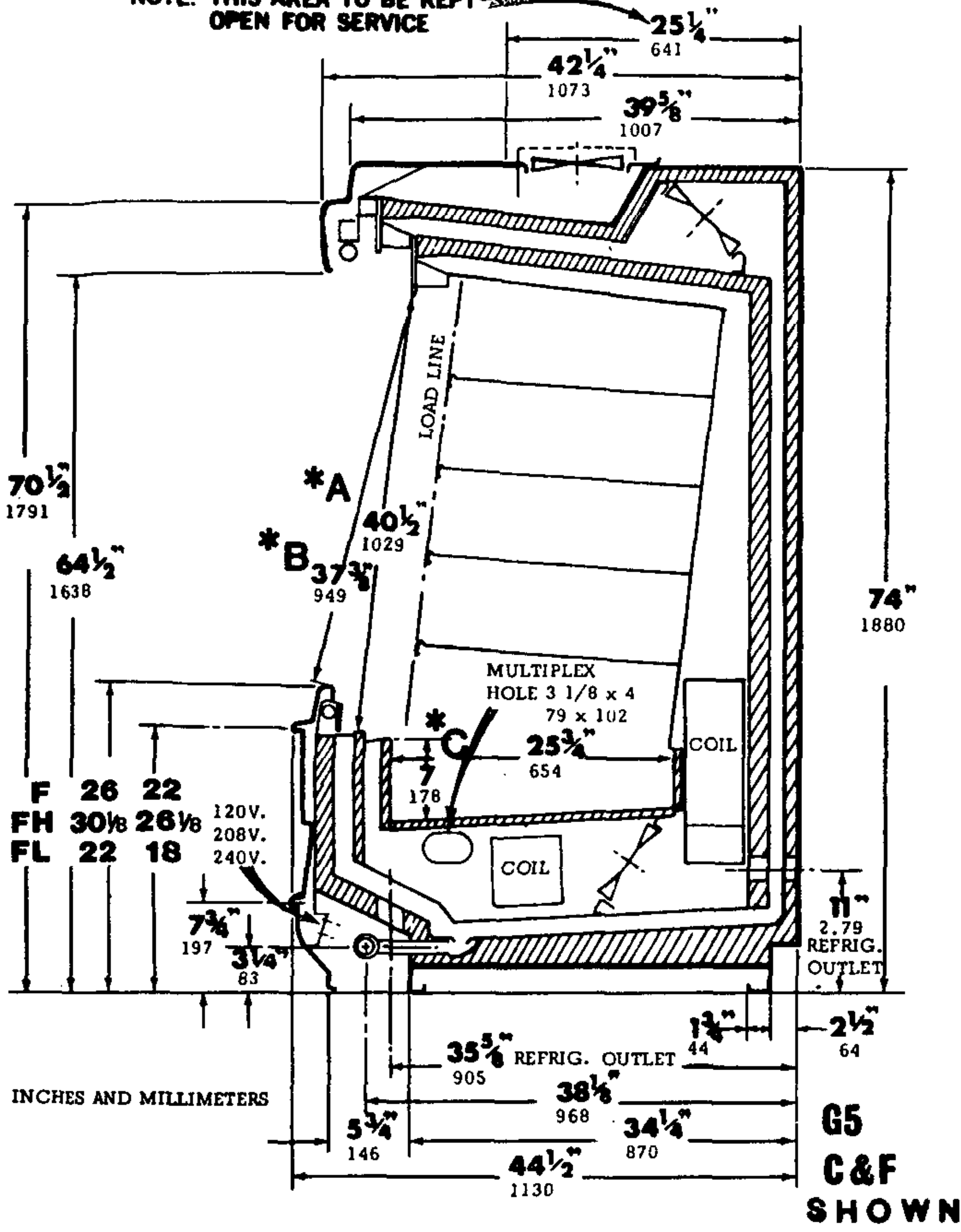
Refer to section V of this instruction for shelving recommendations.

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.

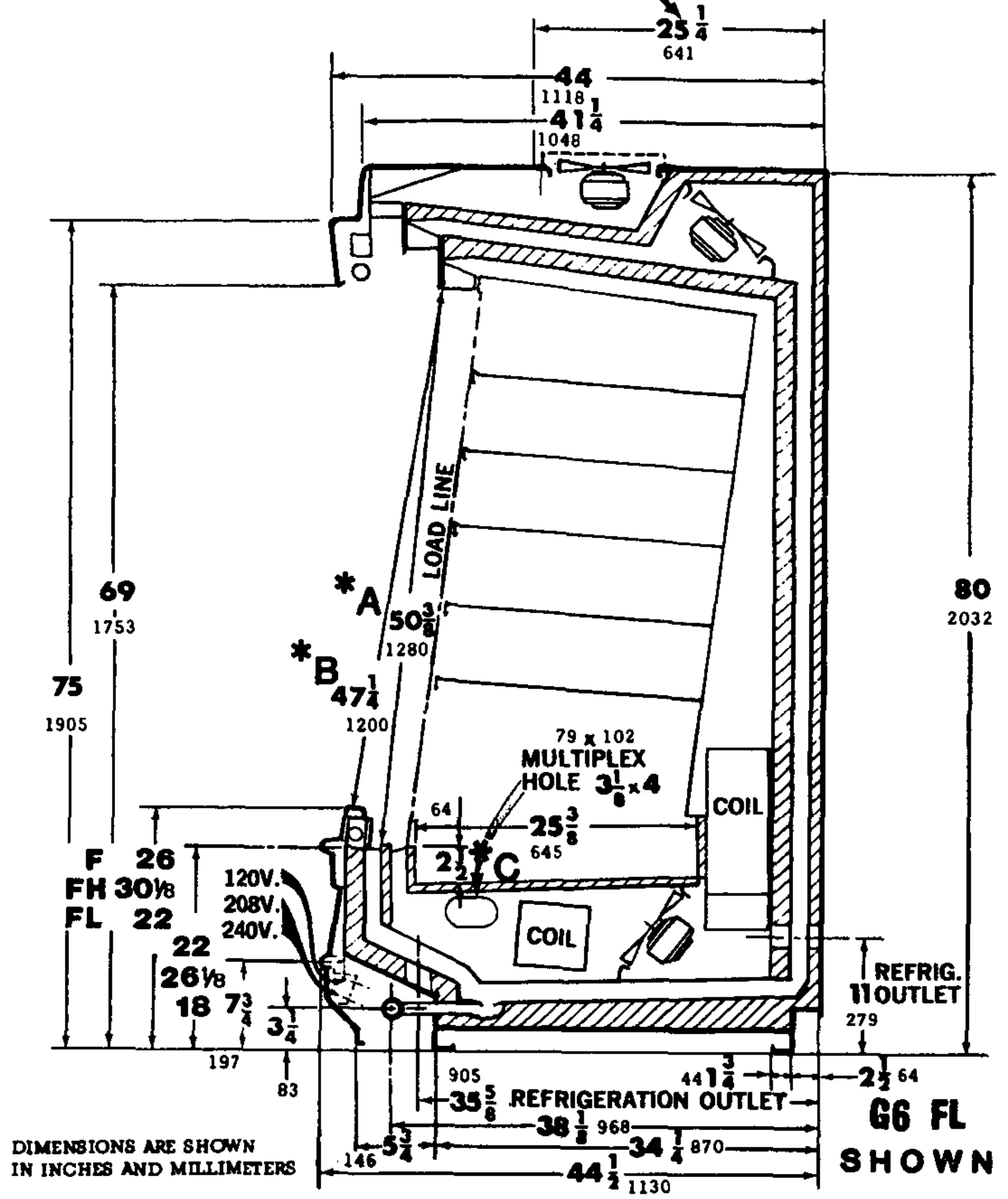
G5-F, C, FL, FH, CH

NOTE: THIS AREA TO BE KEPT OPEN FOR SERVICE



G6-F, C, FL, FH, CH

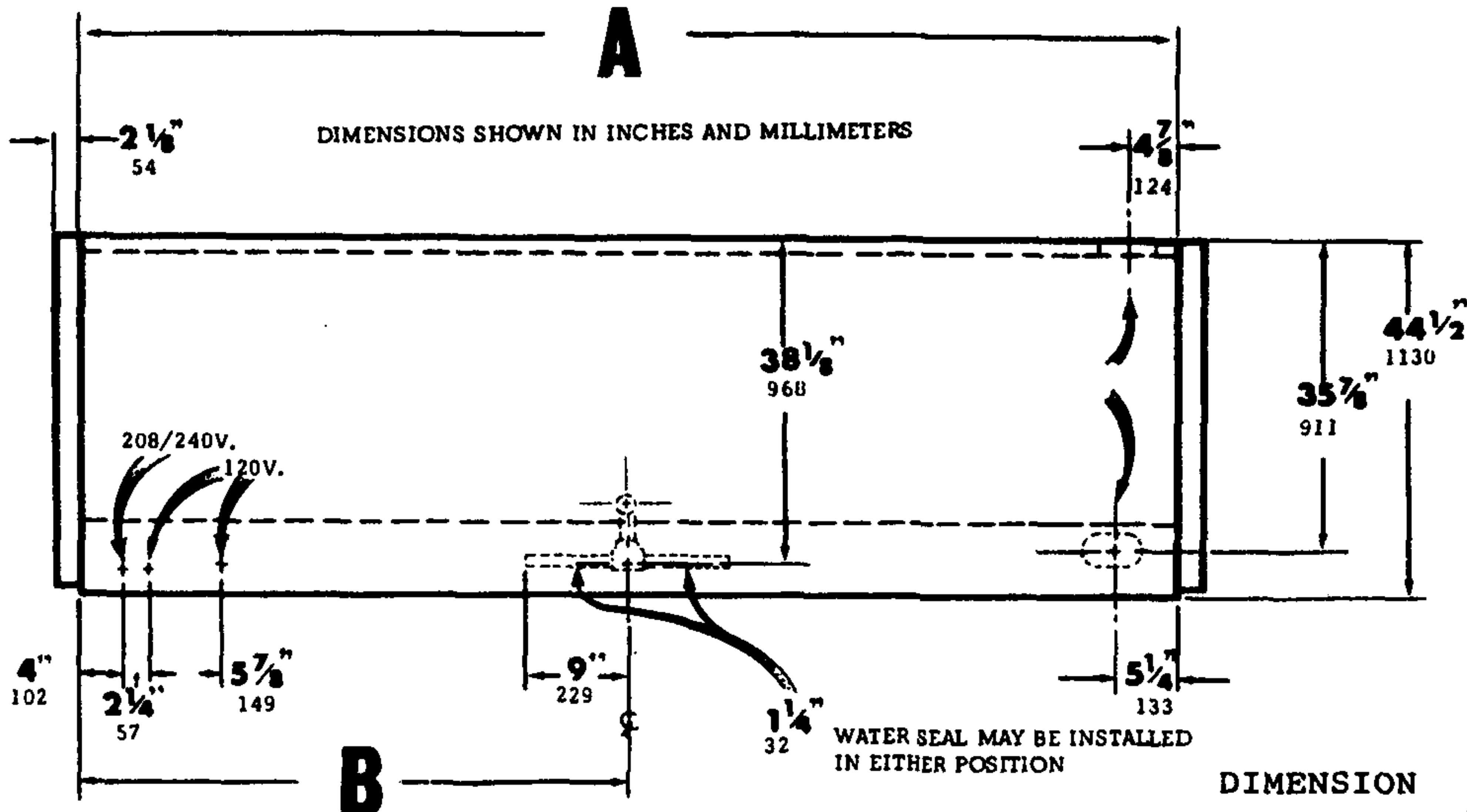
NOTE: THIS AREA TO BE KEPT OPEN FOR SERVICE



*NOTE:

DIMENSIONS; G5; A=(44¹/₂" for FL, 40¹/₂" for C&F, 35 7/8" for FH&CH)
 G6; A=(50 3/8" for FL, 46 3/8" for C&F, 38 3/4" for FH&CH)
 G5; B=(41 3/8" for FL, 37 3/8" for C&F, 32 7/8" for FH&CH)
 G6; B=(47 1/4" for FL, 43 1/4" for C&F, 38 3/4" for FH&CH)
 G5&G6; C=(2 1/2" for FL, 7" for C&F, 11 5/8" for FH&CH)

G5-G6 PLAN VIEW



DIMENSION	A	B
4' CASE	48 1/4	24 1/8
6' CASE	72 3/8	36 5/16
8' CASE	96 3/8	48 3/16
12' case	144 1/2	72 1/4

SECTION II
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.

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.

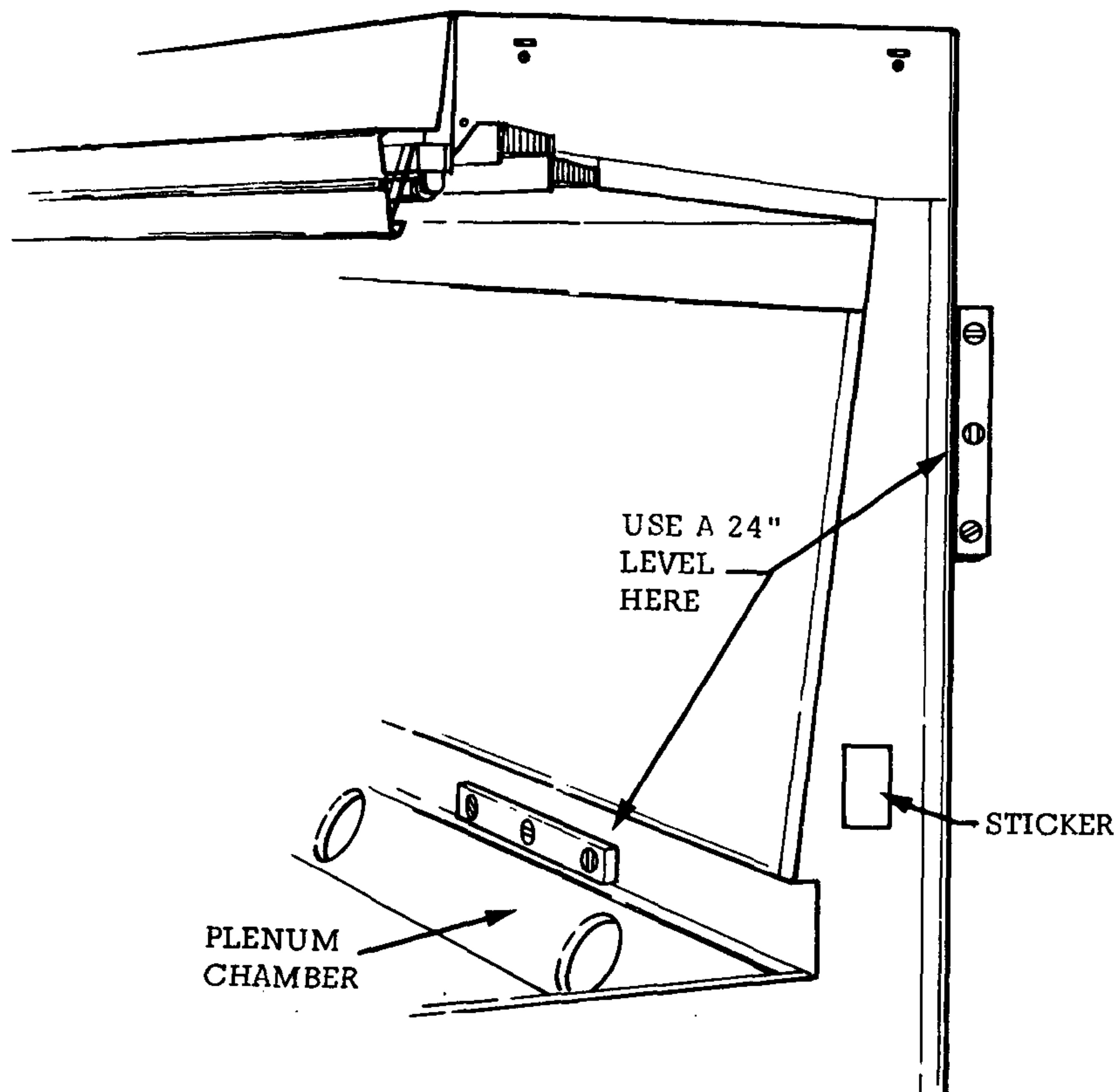
To prevent sweating on the exterior surfaces of this refrigerator there must be a minimum clearance of 4" between the back and/or ends of this refrigerator and any adjacent wall, shelving, coolers or another fixture.

Removable panels are provided on the top of the case for access to the air curtain fans. For this reason, it is necessary to see that no canopy or permanent display be erected or located that will interfere with the removal of these panels.

The Ambient Air Filters, located on top of the fixture, should be checked for possible clogging accumulated during shipment and construction.

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.

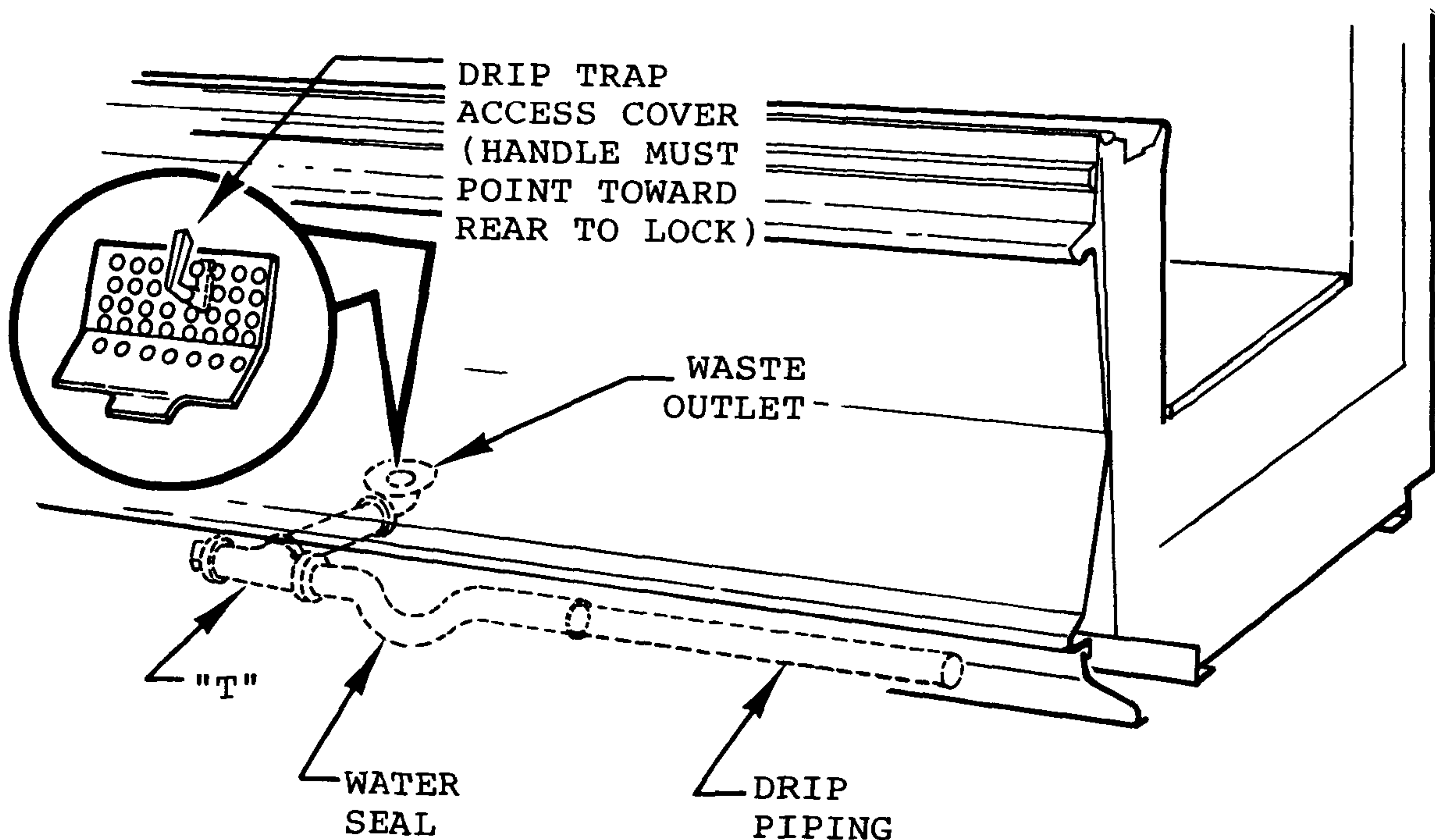
ALL JOINTS MUST BE AIR-TIGHT TO PREVENT FORMATION OF ICE OR CONDENSATION

IMPORTANT:

When installing gaskets for joint, end or connecting partition kit, pay very close attention to the gasketing "sticker" located on the case end frame (see below). The instructions on this sticker must be followed precisely, or frost, ice and condensation can occur in and on the refrigerator.

WASTE OUTLET AND WATER SEAL

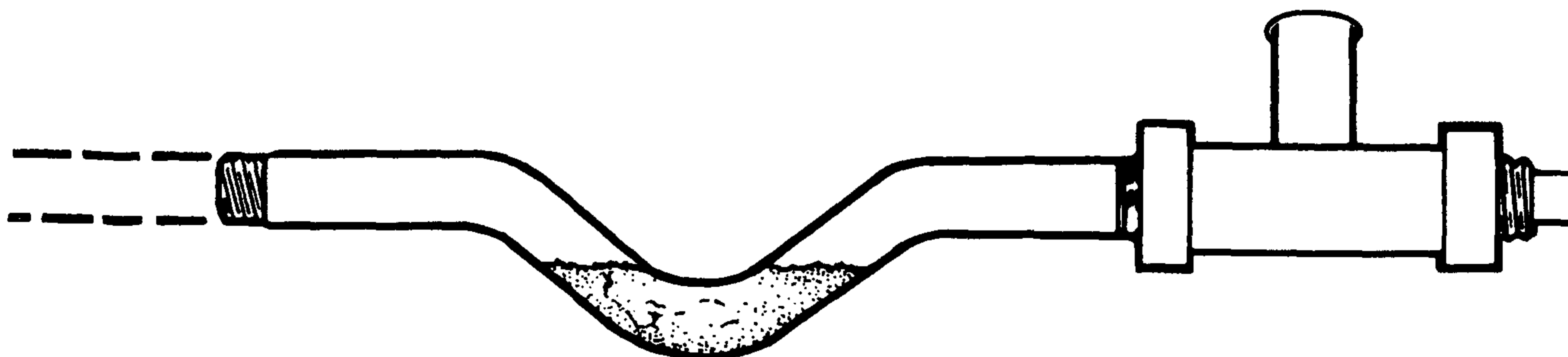
The waste outlet is located at the right hand end of the refrigerator. A 1-1/4 inch water seal, "T" and plug are factory installed on each refrigerator as shown below, however, the plug and water seal may be reversed if desired. The water seal MUST be used as part of the drip piping to prevent AIR LEAKAGE into the refrigerator and affecting performance. All other parts required to install drip pipes, other than those shown are to be supplied by the installer.



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.



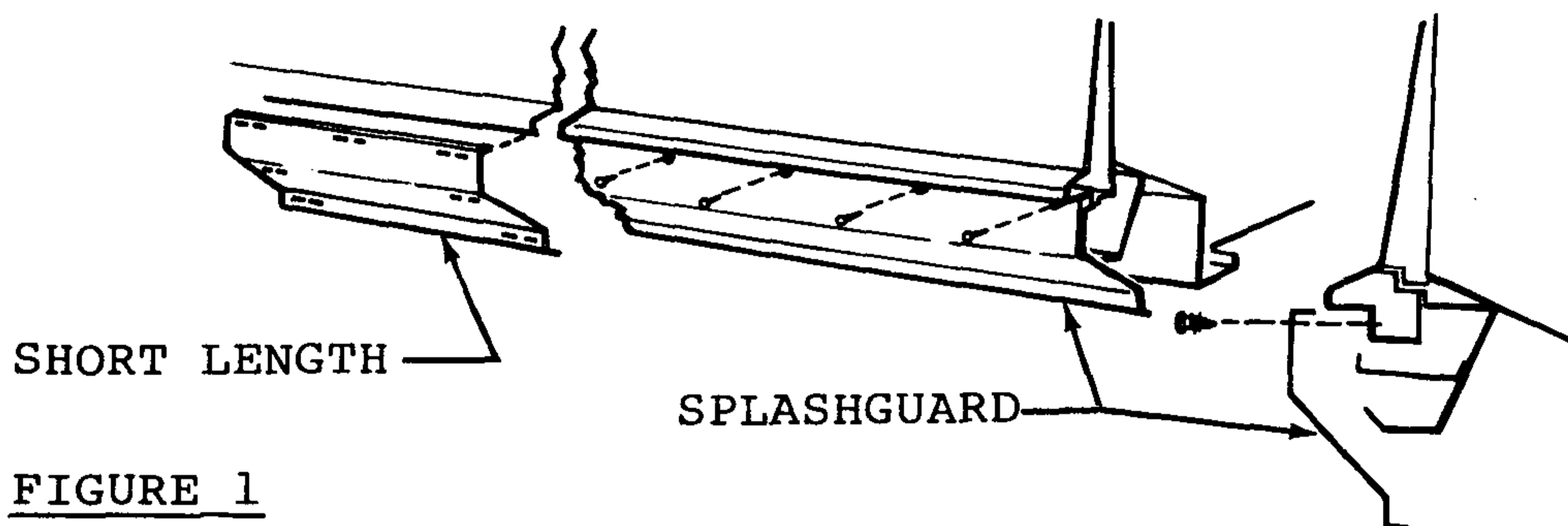
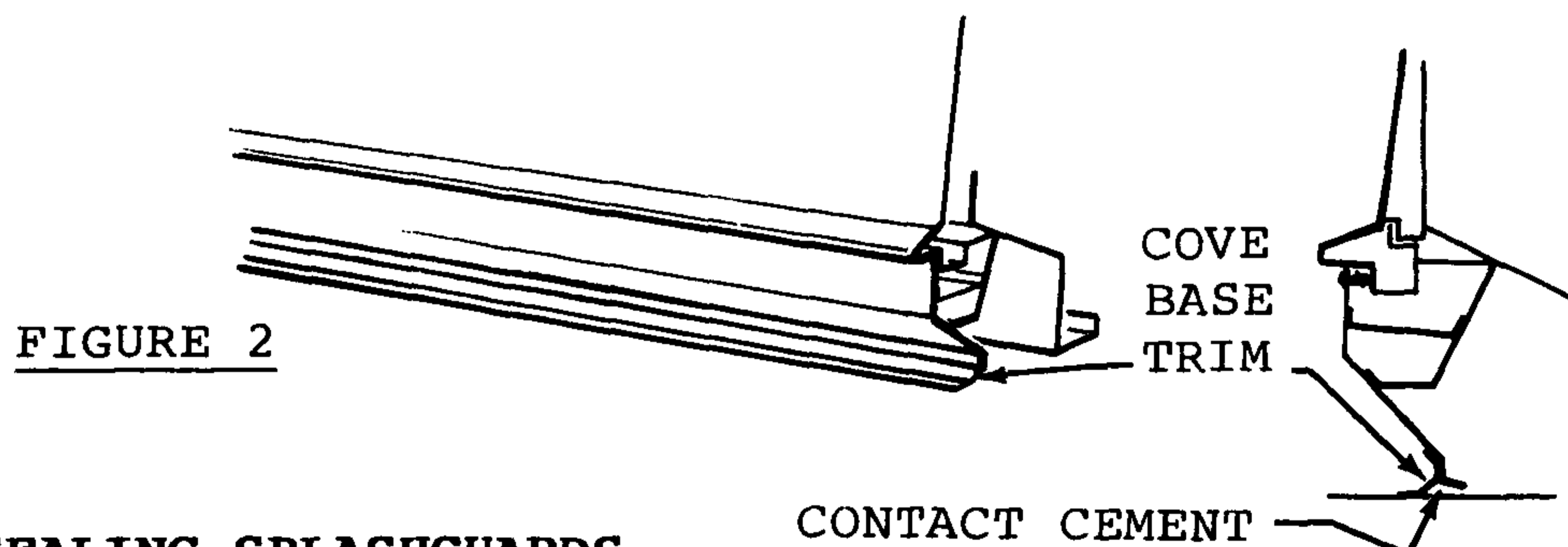
THE WATER SEAL MUST BE LEVEL TO BE EFFECTIVE

The residual defrost water in the water seal is a barrier that will prevent air movement through the drip piping. An improperly installed water seal will not form this barrier thus allowing air to enter into the refrigerator which creates condensation and frost.

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:

Fasten splashguards along top edge with sheet metal screws as shown in Figure 1 below. The short length (installed to left hand end of splashguard) is designed to eliminate the joint cover in case line-ups and also permit easy access to the thermostat. It has a series of six slots on the top edge and is used at a case joint, end, or partition installation by use of the proper slots.

**FIGURE 1****FIGURE 2****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 contaminants 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 IIIREFRIGERATIONREFRIGERANT

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.

<u>REFRIGERANT PIPING</u> LINE SIZES:	G5 & G6F MODELS	Liquid Line	3/8"	OD
		Suction Line	1-1/8"	
	G5C & G6C MODELS	Liquid Line	3/8"	OD
		Suction Line	1-5/8"	

OUTLET LOCATION

The refrigerant line outlet is located at the left 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 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 line 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)

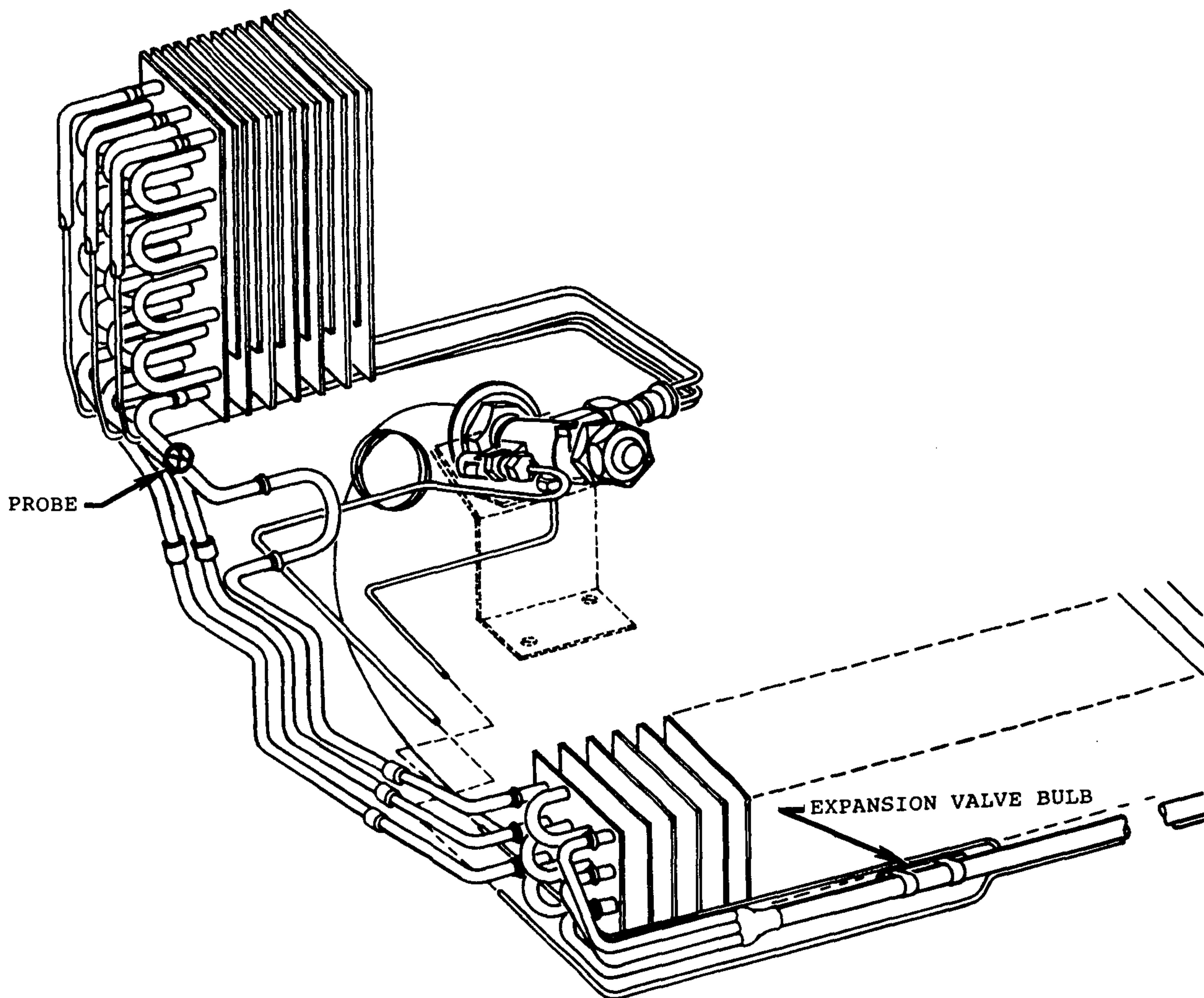
MODEL	TYPE OF DEFROST	REFRIGERANT	EXPANSION VALVE	DISTRIBUTOR
ALL 4'	Electric	R-12 R-22 R-502	BFPE AZ BFVE AZ BFRE AZ	D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
	Koolgas	R-12 R-22 R-502	BFRE AZ	*D116-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
ALL 6'	Electric	R-12 R-22 R-502	BFRE AZ BFPE AZ BFVE AZ	D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
	Koolgas	R-12 R-22 R-502	BFRE AZ 2	*D116-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
ALL 8'	Electric	R-12 R-22 R-502	BFPE CZ BFVE AZ BFRE CZ	D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ D115-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
	Koolgas	R-12 R-22 R-502	BFVE AZ BFRE CZ	*D116-3- $\frac{1}{4}$ -1 $\frac{1}{2}$ *D116-3- $\frac{1}{4}$ -1 $\frac{1}{2}$
ALL 12'	Electric	R-12 R-22 R-502	BFPE CZ BFVE CZ BFRE CZ	D115-3- $\frac{1}{4}$ -2 D115-3- $\frac{1}{4}$ -2 D115-3- $\frac{1}{4}$ -2
	Koolgas	R-12 R-22 R-502	BFVE CZ BFRE CZ	*D116-3- $\frac{1}{4}$ -2 *D116-3- $\frac{1}{4}$ -2

* 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 valve must be adjusted to fully feed the evaporator. Before attempting to adjust the valve, 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 the expansion valve as follows:

Attach two sensing probes (either thermocouple or thermistor types) to the evaporator, one under the clamp holding the expansion valve sensing bulb and the other securely taped to the coil inlet (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° to 5°F . Remove valve stem cover and turn valve stem counter-clockwise to decrease temperature difference between the probes. To increase temperature difference of probes, turn valve stem clockwise. With this adjustment, during a portion of the hunting the temperature differences between the two probes may be less than 3°F , or at times as low as 0°F . 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 probe temperature and making further adjustment. Replace and tighten cover over valve stem.



REFRIGERATION TEMPERATURE AND DEFROST CONTROLS

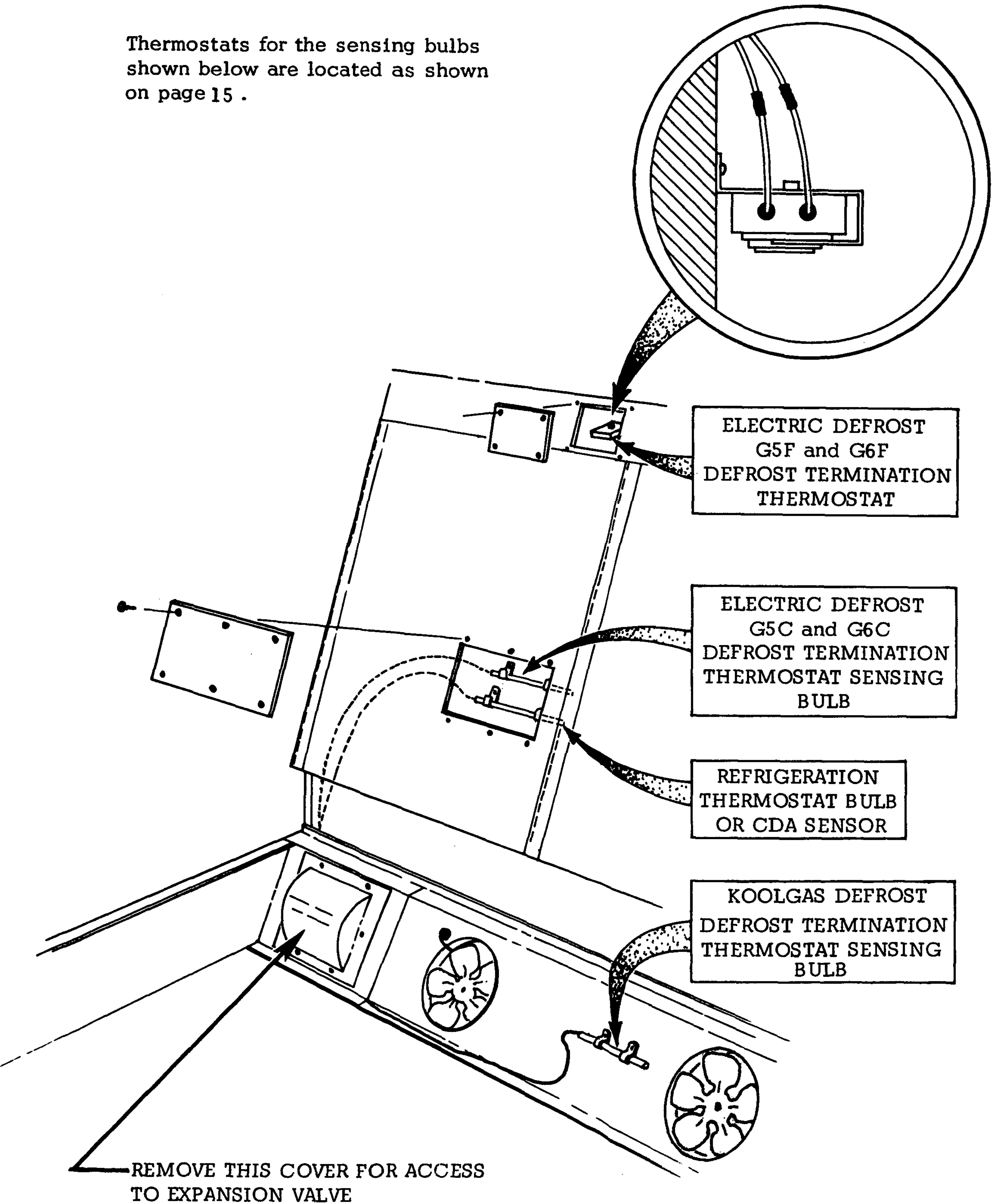
The following table lists the control requirements for various types of refrigeration units to which these refrigerators may be connected.

CONTROL		CONVENTIONAL MULTIPLEXING		MIXED MULTIPLEXING	
		INDOOR COMPRESSOR	OUTDOOR COMPRESSOR	ELECTRIC DEFROST	KOOLGAS DEFROST
REFRIGERATION TEMPERATURE CONTROL	THERMOSTAT ① ②	REQUIRED	REQUIRED	REQUIRED WHEN CDA VALVE IS NOT USED	REQUIRED WHEN CDA VALVE IS NOT USED
	CDA SENSOR ①	NONE	NONE	OPTIONAL	OPTIONAL
LIQUID LINE SOLENOID VALVE		NONE	③ REQUIRED	NONE	NONE
DEFROST TERMINATION THERMOSTAT ④		REQUIRED	REQUIRED	REQUIRED	OPTIONAL NOT RECOMMENDED
DEFROST TERMINATION		TEMPERATURE	⑤ TEMPERATURE	TEMPERATURE	TIME

- ① Factory installed in refrigerator when ordered.
- ② The thermostat should be wired into the compressors motor contactor control circuit. One refrigeration thermostat per refrigeration system is required. Thermostat should have a differential of 3° to 6°. (A refrigeration thermostat with a 1° to 3° differential may be used for mixed multiplexing.)
- ③ The liquid line solenoid should be controlled only by the defrost timer (solenoid closes only during defrost).
- ④ Factory installed in refrigerators with electric defrost only. not recommended for Koolgas defrost.
- ⑤ The defrost timer must be a Paragon Model 633, which closes the liquid line solenoid valve for a 4 minute pump-down at the start of defrost before it energizes the defrost heaters.

REFRIGERATION AND DEFROST CONTROL LOCATIONS

Thermostats for the sensing bulbs shown below are located as shown on page 15 .



CONTROL ADJUSTMENTS (Convention Multiplexing)

REFRIGERATOR MODEL	REFRIGERATION CONTROLS					DEFROST CONTROLS		
	EXPANSION VALVES	THERMOSTAT ②	LOW PRESSURE CONTROL			DEFROST FREQUENCY	FAILSAFE ⑤	DEFROST TERMINATION THERMOSTAT
			REFRIG.	CUT-OUT	CUT-IN			
G5F & G6F (frozen food)	①	-5°F ③	R-502	10 psig	20 psig	Every 12 hours	36 minutes	52° to 56°F ⑥
G5C & G6C (ice cream)	①	-15°F to -20°F ④	R-502	2 psig	12 psig	Every 6 hours	36 minutes	52° to 56°F ⑥

- ① Adjust the expansion valves to fully feed the evaporator as previously stated.
- ② Set the thermostat to open (stop the compressor) at this discharge air temperature. Measure the discharge air temperature at the center of the main system honeycomb (rear honeycomb). One thermostat for each refrigeration system is required and must be wired to the compressor motor contactor control circuit.
- ③ If local code requires a 0°F return air temperature, discharge air temperature shall be -8°F to -10°F.
- ④ Discharge air temperature of -20°F is preferred.
- ⑤ For outdoor units, the defrost timer must control a liquid line solenoid valve for pump-down during defrost only. The failsafe will need to be increased to 40 minutes to compensate for this pump-down period.
- ⑥ G5C and G6C models are equipped with an adjustable thermostat; G5F and G6F models are equipped with a fixed setting thermostat. After the refrigerator has been in operation for at least 3 hours and the evaporators have a normal frost load, trip the defrost timer to defrost and check the discharge air temperature in each refrigerator at the main honeycomb to determine if wiring and thermostats are functioning properly. The defrost period should terminate when all thermostats have closed contacts and within the temperature range shown above.

CONTROL ADJUSTMENTS (Mixed Multiplexing)

REFRIGERATOR MODEL	REFRIGERATION CONTROL		DEFROST CONTROL 5			
	Expansion Valves	CDA Valve 2	Defrost Frequency	Length of Defrost 7		Defrost Termination Thermostat
				Electric Defrost 8	Koolgas Defrost 9	
G5F & G6F (frozen food)	1	-5°F 3	Every 12 hours 6	36 minutes	22 minutes	52° to 56° F
G5C & G6C (ice cream)	1	-15°F to -20°F 4	Every 6 hours	36 minutes	22 minutes	52° to 56°

- 1 Adjust the expansion valves to fully feed the evaporator as previously stated.
- 2 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.
- 3 If local code requires a 0°F return air temperature, discharge air temperature shall be -8°F to -10°F.
- 4 Discharge air temperature of -20°F is preferred.
- 5 No other refrigeration system connected to the same compressor(s) should be on defrost at the same time as the refrigerators.
- 6 Under severe conditions, where humidity exceeds 55%, defrost frequency may need to be increased to every 8 hours.
- 7 Defrost lengths may vary slightly depending on store conditions. Some of the store conditions that can contribute to a longer defrost are: low head pressure, long runs of refrigerant lines, store ambient, fixture temperature operating lower than that recommended, seasonal ambient changes, etc.
- 8 Electric defrost are time-initiated and temperature-terminated. See paragraph 6 on the preceding page.
- 9 Koolgas defrost are time initiated and time terminated. Temperature termination is not recommended. Koolgas defrost refrigerators are equipped with thermostatically controlled supplemental defrost heaters which are turned on when defrost gas enters the evaporator and turned off when refrigeration resumes. See page 26.

SECTION IV

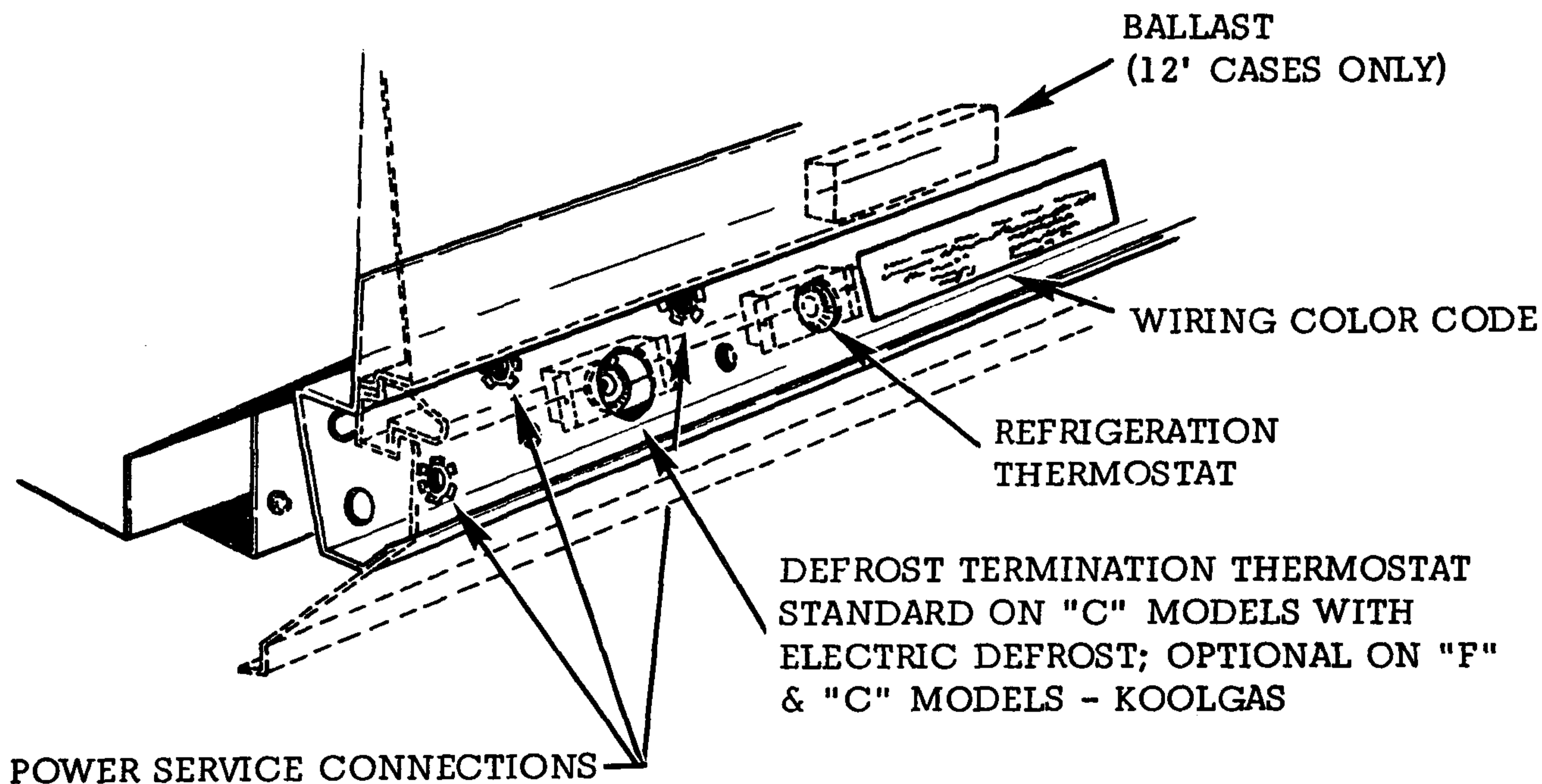
ELECTRICAL

ELECTRICAL CONNECTIONS

All electrical connections, both 120 and 208 volt, are made in the electrical raceway behind the splashguard at the left end of the case (see Illustration).

NOTE: ALL FIELD INSTALLED WIRING MUST COMPLY WITH N.E.C. AND LOCAL CODES.

WARNING: REFRIGERATOR MUST BE GROUNDED



IDENTIFICATION OF WIRING

Leads for all electrical circuits are identified by a colored plastic band; neutral wires for each circuit have either white insulation or a white plastic sleeve.

COLOR CODE

PINK	-Refrigeration thermostat, low temp.	ORANGE or	
LIGHT BLUE	-Refrigeration thermostat, norm. temp.	TAN	-Lights
DARK BLUE	-Defrost termination thermostat	MAROON	-Receptacles
PURPLE	-Anti-sweat heaters	YELLOW	-Defrost heaters, 120V.
BROWN	-Fan Motors	RED*	-Defrost heaters, 208V.
GREEN*	-Ground		

* Either colored band or colored insulation.

ELECTRICAL INTERFACE OF REFRIGERATION CONTROLS
TO THE CONDENSING UNIT

CONTROL	CONVENTIONAL MULTIPLEXING		MIXED MULTIPLEXING	
	INDOOR CONDENSING UNIT	OUTDOOR CONDENSING UNIT	ELECTRIC DEFROST	KOOLGAS DEFROST
Refrigeration Thermostat ①	Required	Required	REQUIRED WHEN CDA VALVE IS NOT USED	
Liquid Line Solenoid Valve	None	Required ②	None	None
Defrost Termination Thermostat ③	Required	Required	Required	Not Recommended
CDA Sensor ④	None	None	REQUIRED WHEN CDA VALVE IS NOT USED	

- ① The thermostat should be wired into the compressor motor contactors control circuit.
- ② The liquid line solenoid should be controlled by the defrost timer only during defrost.
- ③ Defrost termination thermostats are to be wired in series with those of other refrigerators all connected to the same condensing unit.
- ④ Connect the CDA sensor wires to the condensing units panelboard using 14 guage, 600 volt insulation wire according to the installation instructions sent with the condensing units.

SERIAL PLATE AMPERAGES

Serial Plate amperes are the amperage figures that are stamped on the fixtures Serial Plate. Although all field installed wiring must be sized to the serial plate amperages, the actual current or amps may be less than that specified.

	Type Defrost	Case Length (ft.)	120 VOLT CIRCUIT				208 volt Defrost Heaters (Amperes) (4)
			Fans & Anti-sweat Heaters (Amperes) (1)		Defrost Heaters (3)	Lights (Amperes)	
			Heaters Cycled (2)	Fans & Constant on Heaters			
G5C	Electric	8	2.3	10.6	—	2.2	24.8
		12	3.6	15.3	—	4.4	37.3
	KOOLGAS	8	2.3	10.6	7.2	2.2	—
		12	3.6	15.3	10.9	4.4	—
G5F	Electric	8	0.8	5.8	—	2.2	15.9
		12	1.3	8.3	—	4.4	23.9
	KOOLGAS	8	0.8	5.8	4.4	2.2	—
		12	1.3	8.3	6.6	4.4	—
G6C	Electric	8	2.3	12.5	—	2.2	24.8
		12	3.6	17.7	—	4.4	37.3
	KOOLGAS	8	2.3	12.5	7.2	2.2	—
		12	3.6	17.7	10.9	4.4	—
G6F	Electric	4	0.4	3.5	—	1.0	8.0
		6	0.6	6.5	—	1.2	12.0
	KOOLGAS	4	0.4	3.5	2.2	1.0	—
		6	0.6	6.5	3.4	1.2	—
G6F	Electric	8	0.8	7.7	—	2.2	15.9
		12	1.3	10.7	—	4.4	23.9
	KOOLGAS	8	0.8	7.7	4.4	2.2	—
		12	1.3	10.7	6.6	4.4	—
G5F	Electric	6	0.6	5.3	—		11.0
	KOOLGAS	6	0.6	5.3	3.4		—

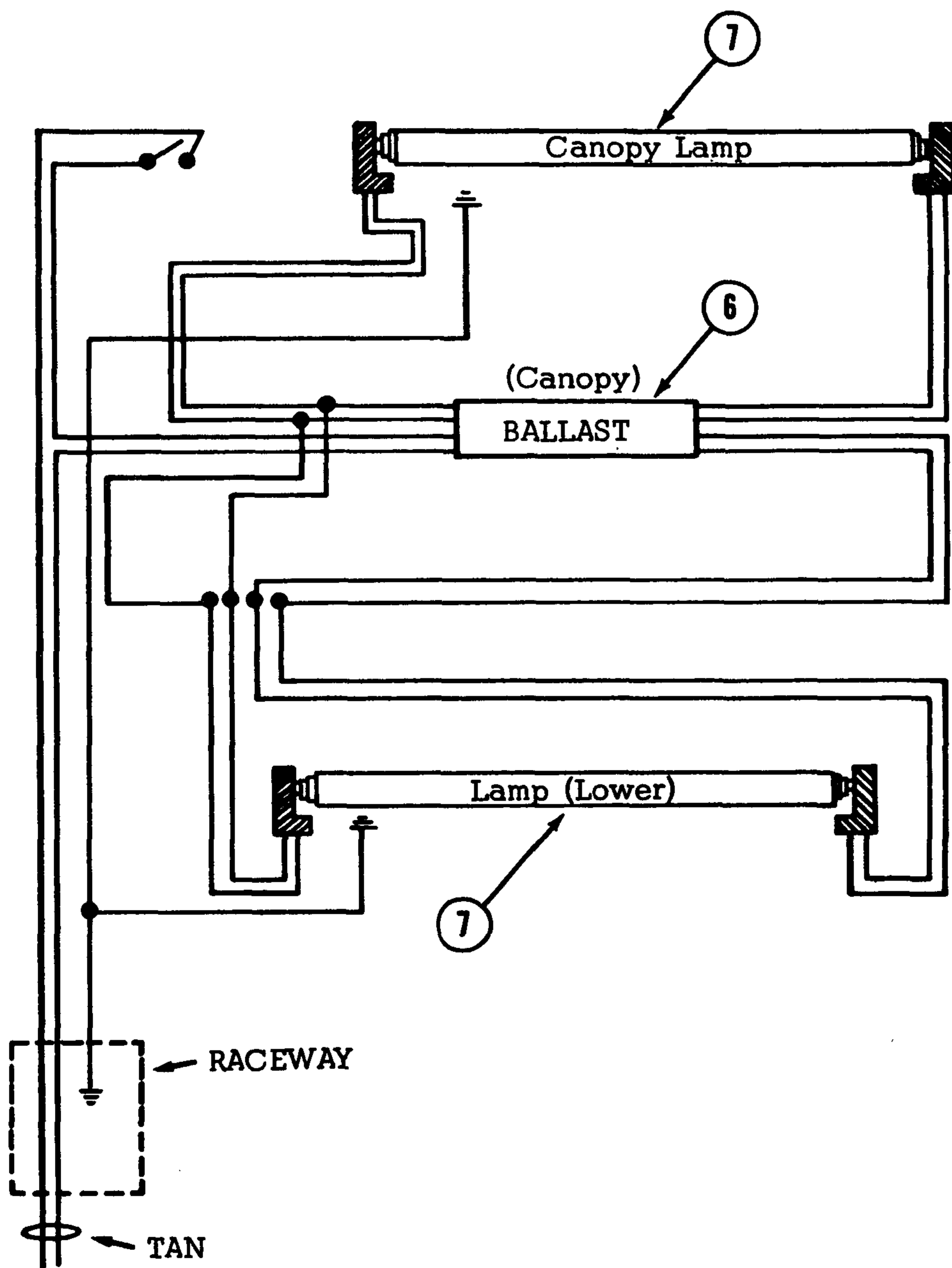
- (1) Do not connect the fans and anti-sweat heaters to the same circuit as the lights. This is to prevent accidentally turning the fans and heaters off when lights are turned off.

FANS AND ANTI-SWEAT HEATERS MUST OPERATE CONTINUOUSLY.

- (2) Some anti-sweat heaters are tagged in the raceway as being "cyclable". Those heaters may be connected to an Energy Saving Controller or in parallel with the fans and other anti-sweat heaters that must remain on continuously.
- (3) Koolgas heaters may be connected to the fan circuit when electrical code allows.
- (4) Electric defrost heaters require 208 volt 3 phase power. The figure shown is for the line with the highest amperage.

LIGHTING CIRCUIT
(120 volt, 60 hz)
4', 6', 8' Models

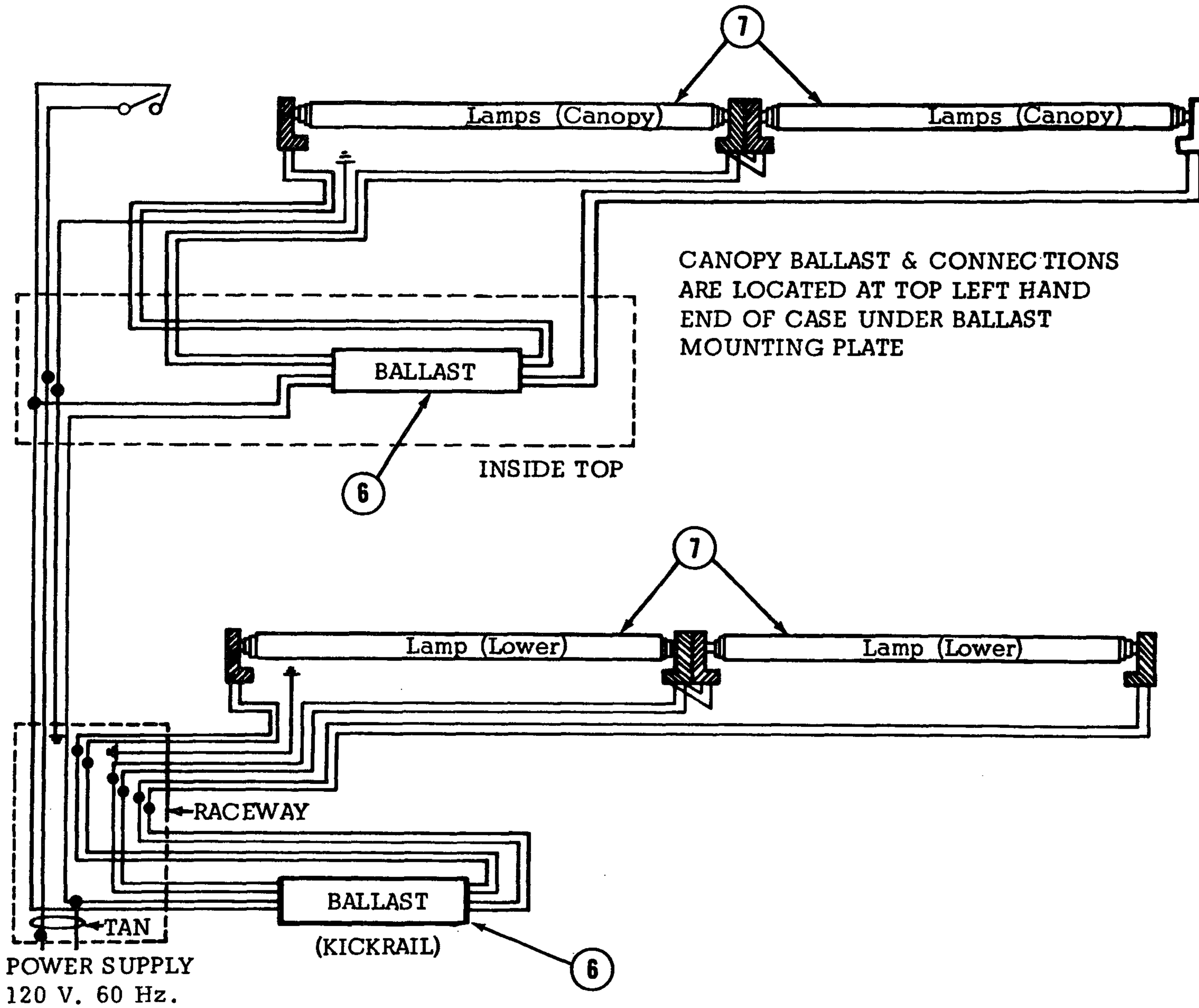
CANOPY BALLAST &
CONNECTIONS ARE
LOCATED AT TOP LEFT
HAND END OF CASE
UNDER BALLAST
MOUNTING PLATE.



POWER SUPPLY
120 V. , 60 Hz.

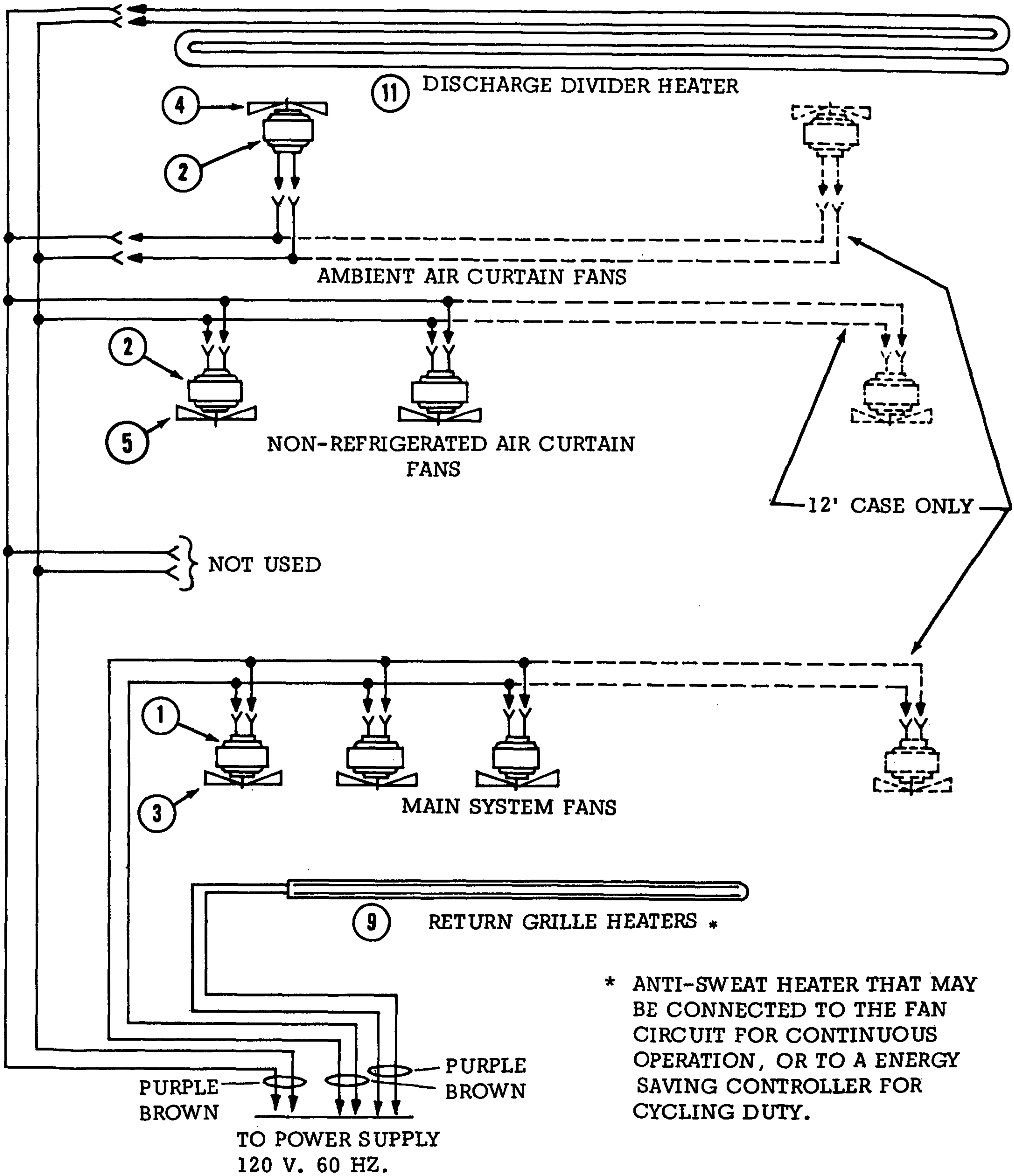
WARNING
REFRIGERATORS MUST BE GROUNDED

LIGHTING CIRCUIT
(120 volt, 60 hz)
12' Models



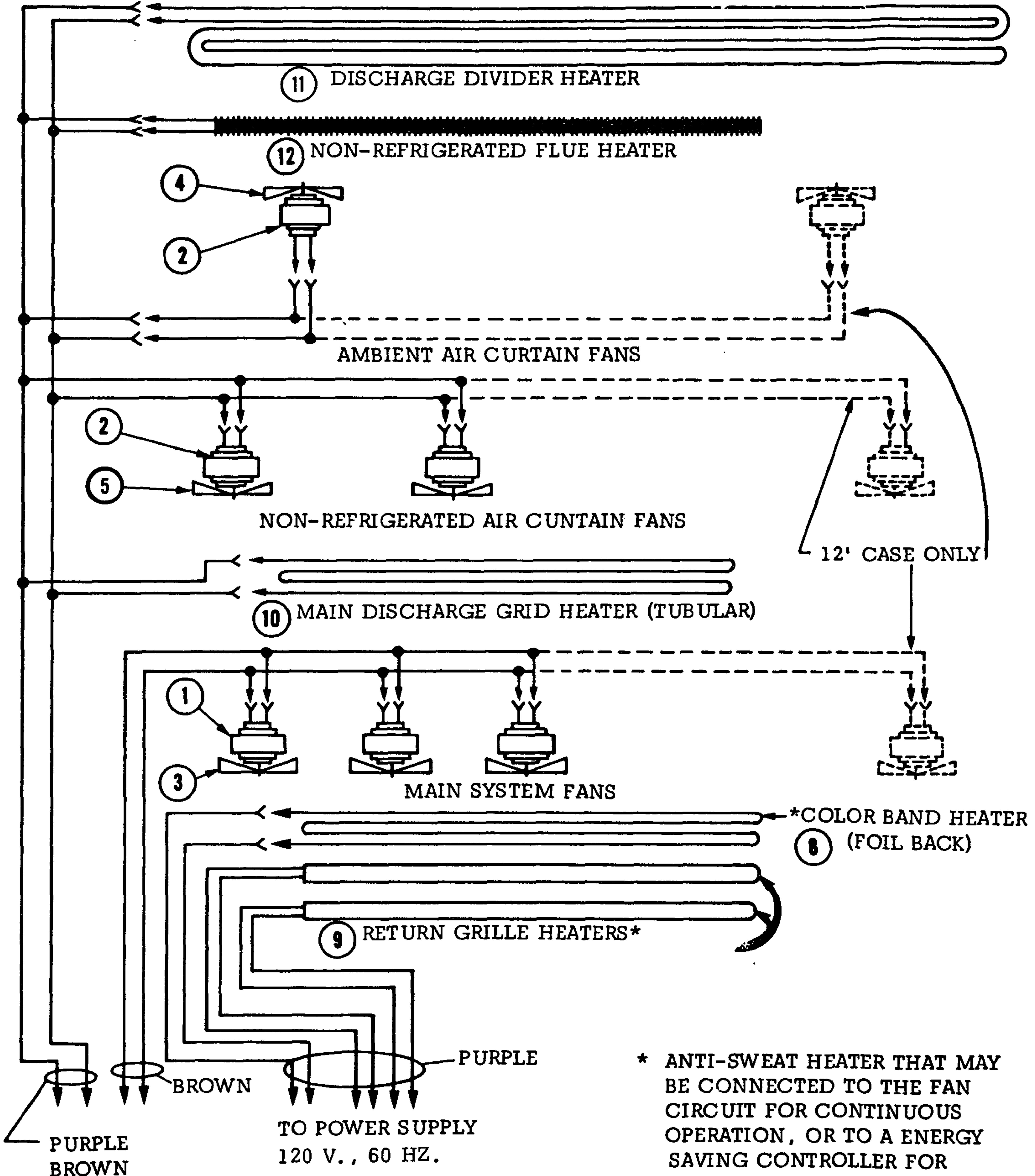
WARNING
REFRIGERATOR MUST BE GROUNDED

G5F - 8' & 12
(FROZEN FOOD)
FAN & ANTI-SWEAT HEATER
WIRING DIAGRAM



WARNING
REFRIGERATOR MUST BE GROUNDED

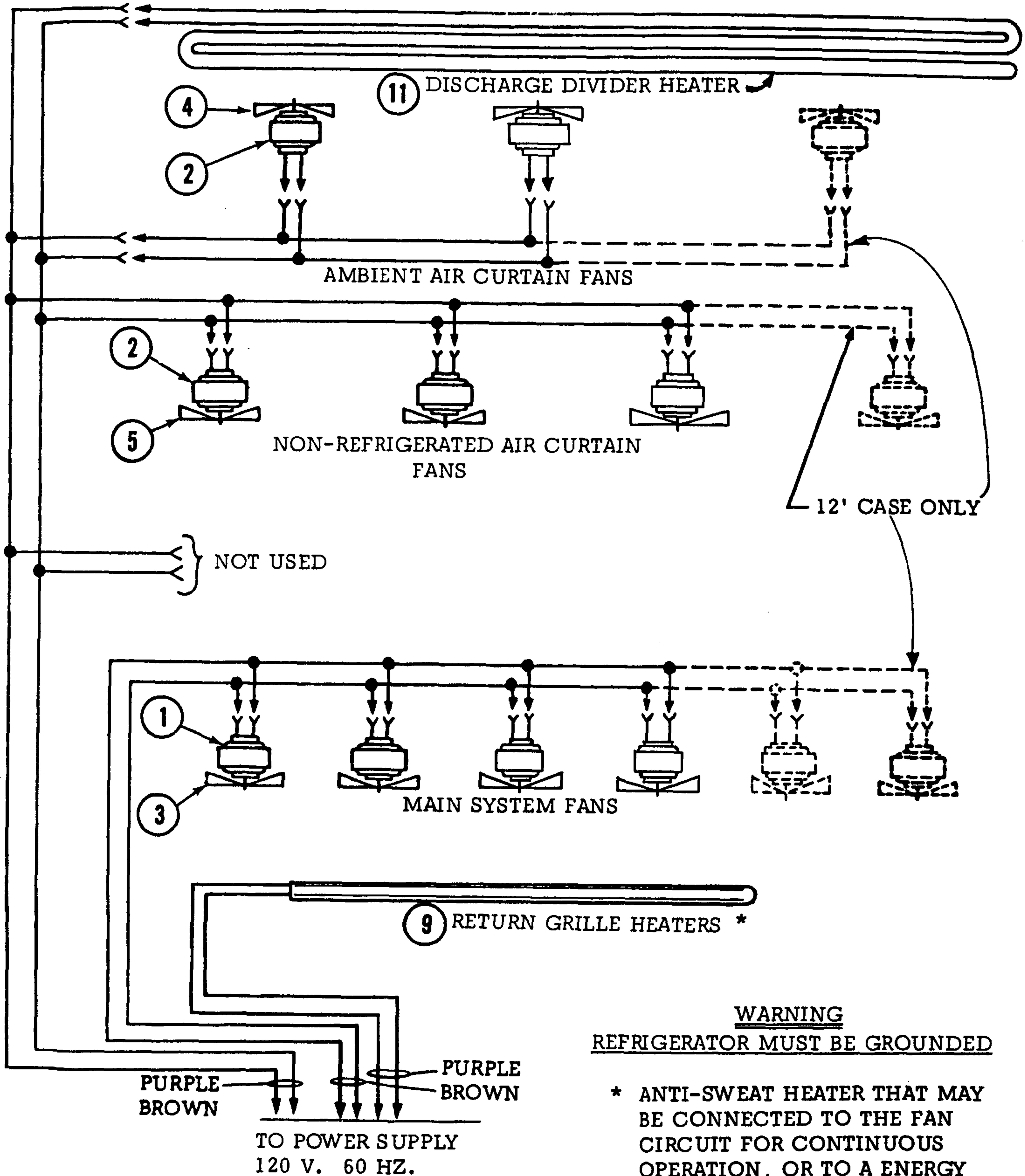
G5C - 8' & 12'
(Ice Cream)
FAN & ANTI-SWEAT HEATER
WIRING DIAGRAM



* ANTI-SWEAT HEATER THAT MAY BE CONNECTED TO THE FAN CIRCUIT FOR CONTINUOUS OPERATION, OR TO A ENERGY SAVING CONTROLLER FOR CYCLING DUTY.

WARNING
REFRIGERATOR MUST BE GROUNDED

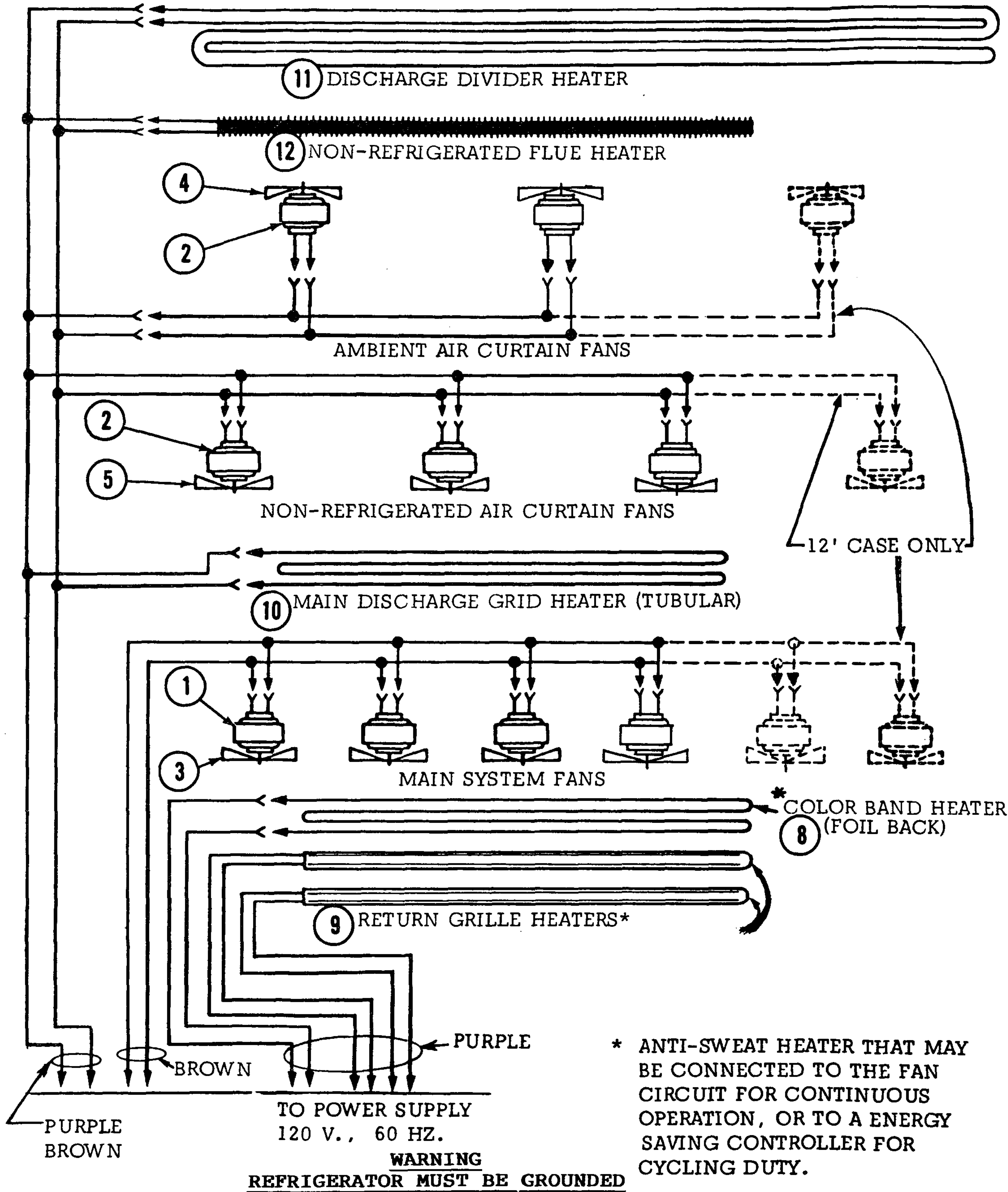
G6F - 8' & 12'
(Frozen Food)
FAN & ANTI-SWEAT HEATER
WIRING DIAGRAM



WARNING
REFRIGERATOR MUST BE GROUNDED

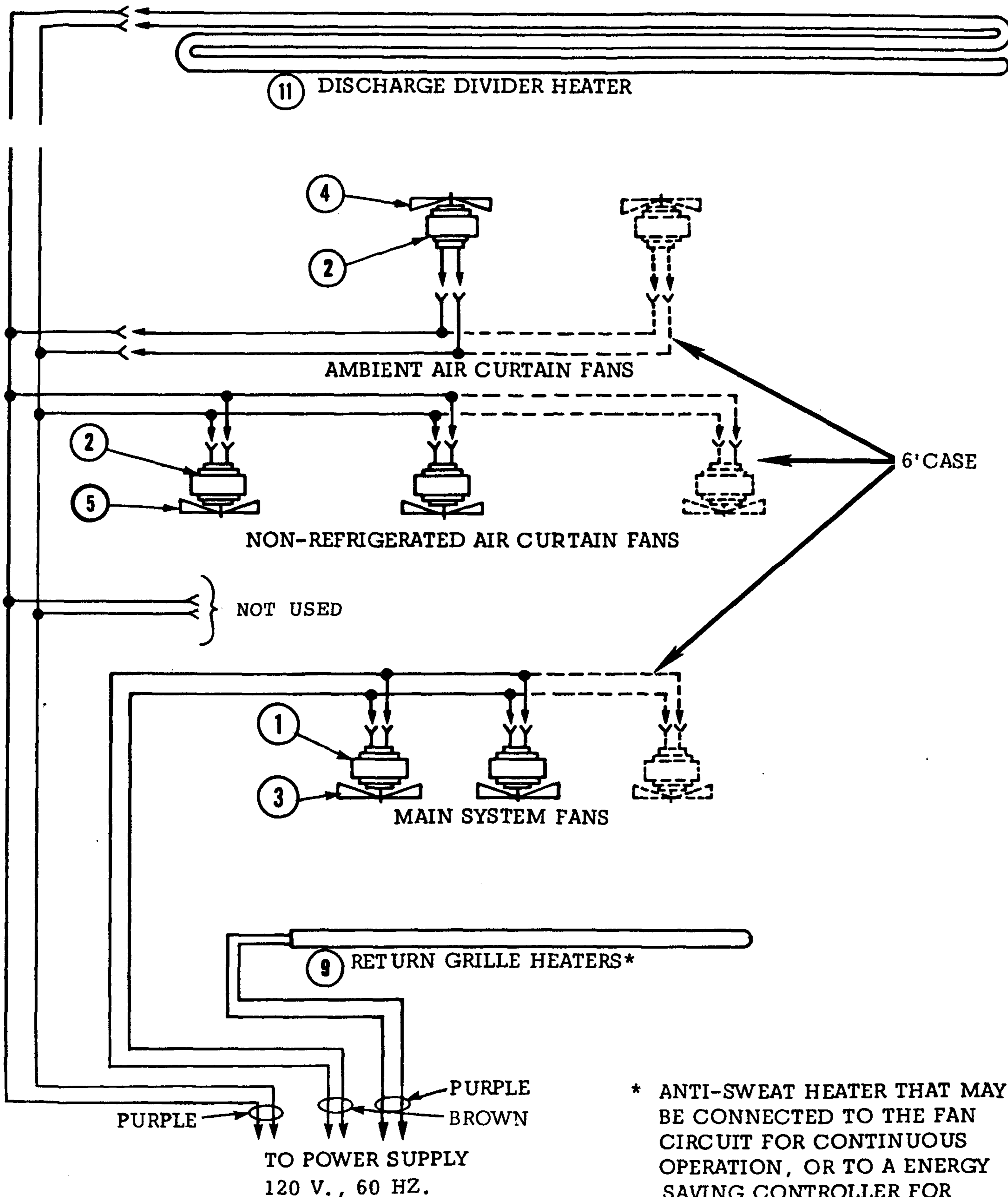
* ANTI-SWEAT HEATER THAT MAY BE CONNECTED TO THE FAN CIRCUIT FOR CONTINUOUS OPERATION, OR TO A ENERGY SAVING CONTROLLER FOR CYCLING DUTY.

G6C - 8' & 12'
(Ice Cream)
FAN & ANTI-SWEAT HEATER
WIRING DIAGRAM



* ANTI-SWEAT HEATER THAT MAY BE CONNECTED TO THE FAN CIRCUIT FOR CONTINUOUS OPERATION, OR TO A ENERGY SAVING CONTROLLER FOR CYCLING DUTY.

G5F-6'
(Frozen Food)
FAN & ANTI-SWEAT HEATER
WIRING DIAGRAM

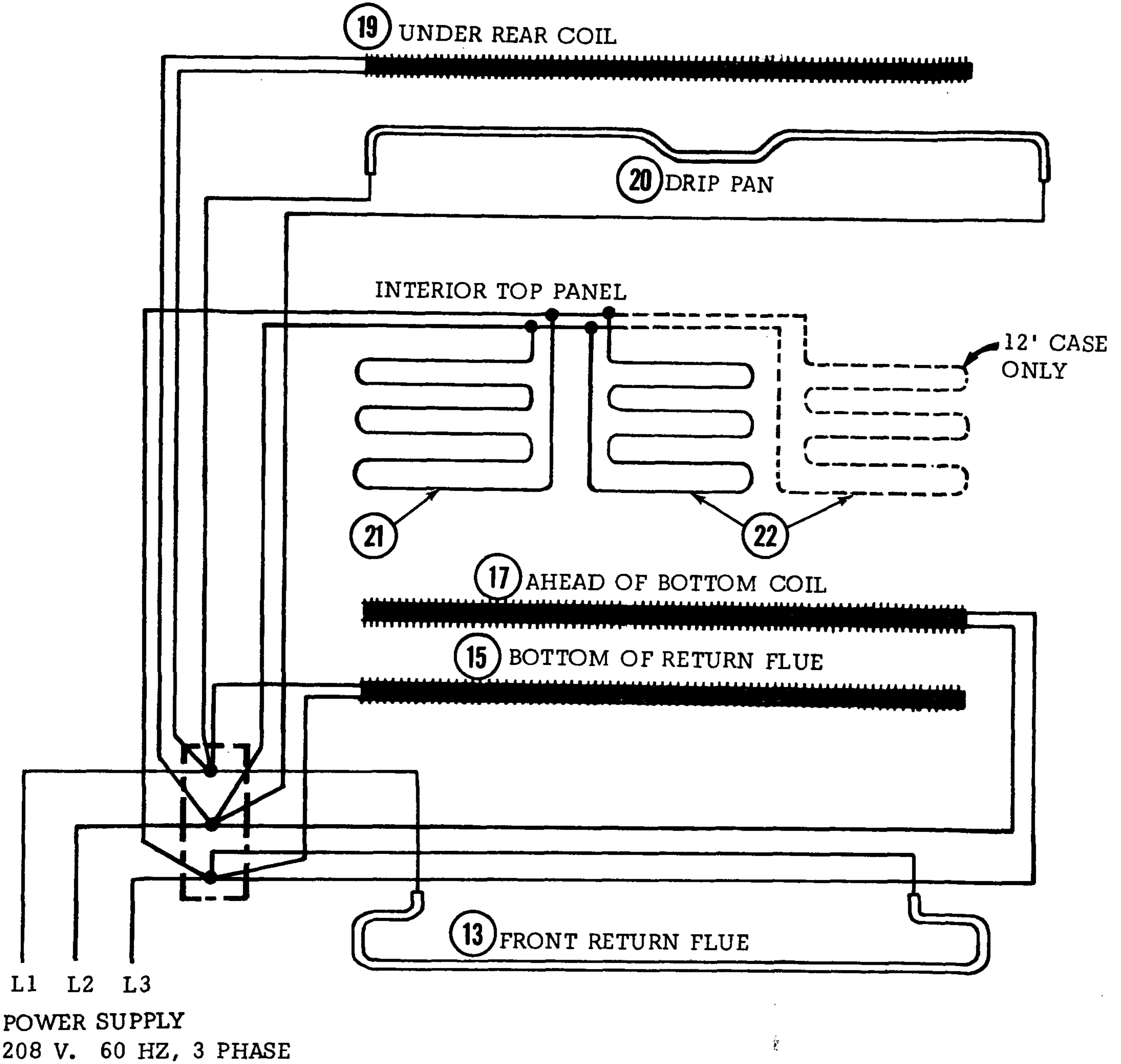


* ANTI-SWEAT HEATER THAT MAY BE CONNECTED TO THE FAN CIRCUIT FOR CONTINUOUS OPERATION, OR TO A ENERGY SAVING CONTROLLER FOR CYCLING DUTY.

WARNING
REFRIGERATOR MUST BE GROUNDED

G5C/G6C - 8' & 12'

ELECTRIC DEFROST HEATERS
(ICE CREAM)



CAUTION: REFRIGERATOR MUST BE GROUNDED

G5F/G6F - 8' & 12'
ELECTRIC DEFROST HEATERS
(FROZEN FOOD)

⑱ UNDER REAR COIL

INTERIOR TOP PANEL

12' CASE ONLY

⑳

㉑

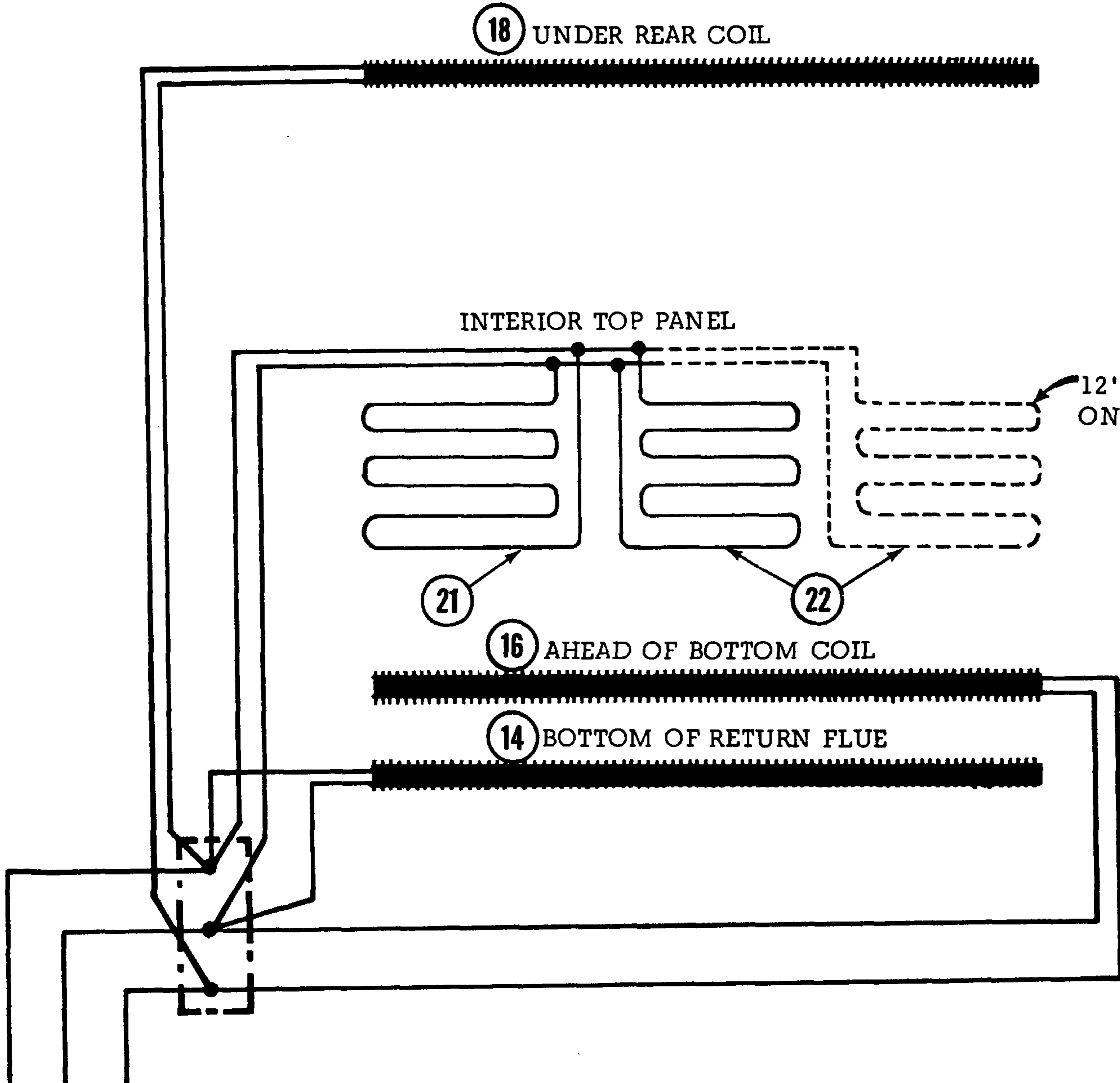
⑲ AHEAD OF BOTTOM COIL

⑲ BOTTOM OF RETURN FLUE

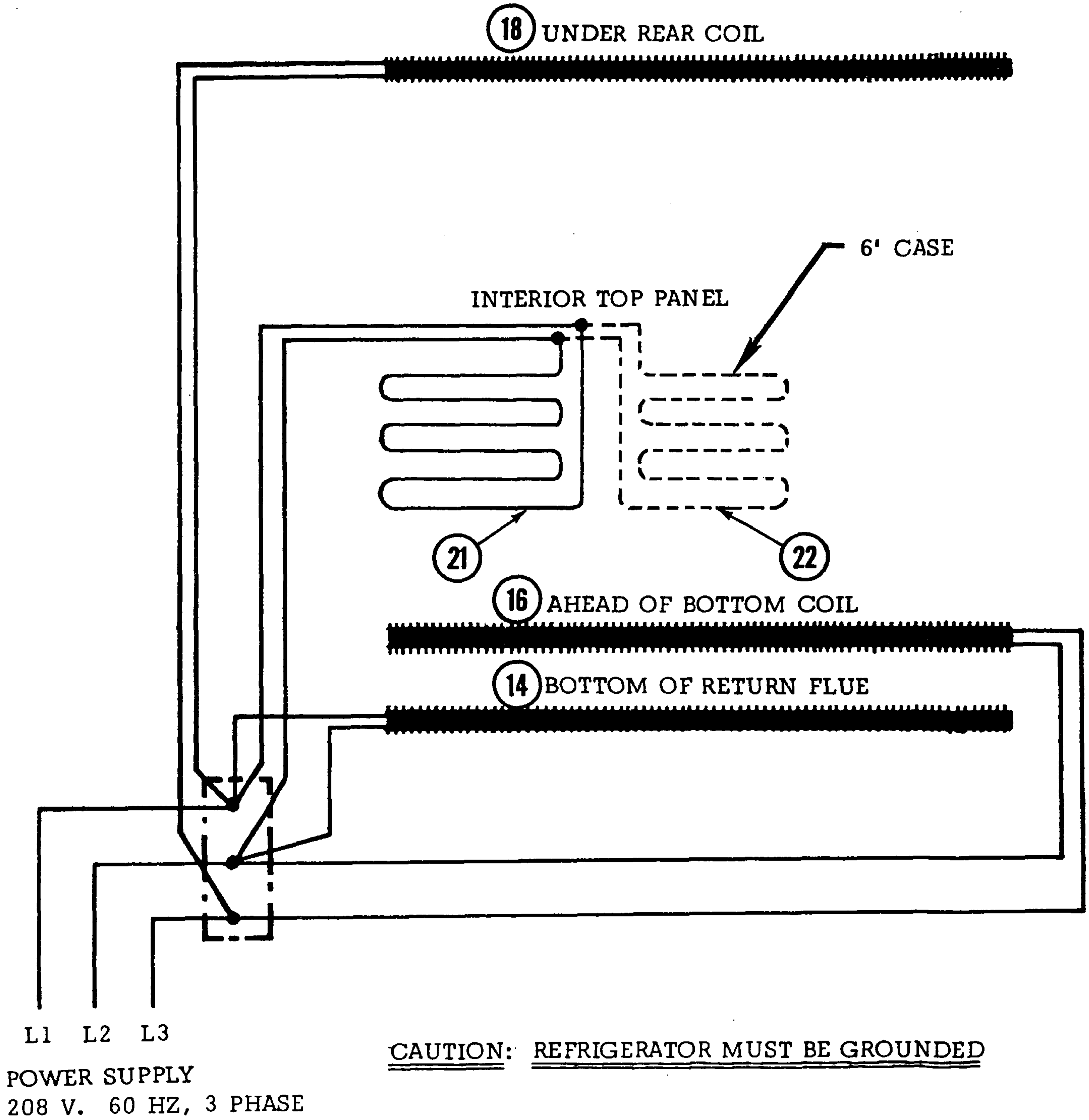
L1 L2 L3

POWER SUPPLY
208 V. 60 HZ, 3 PHASE

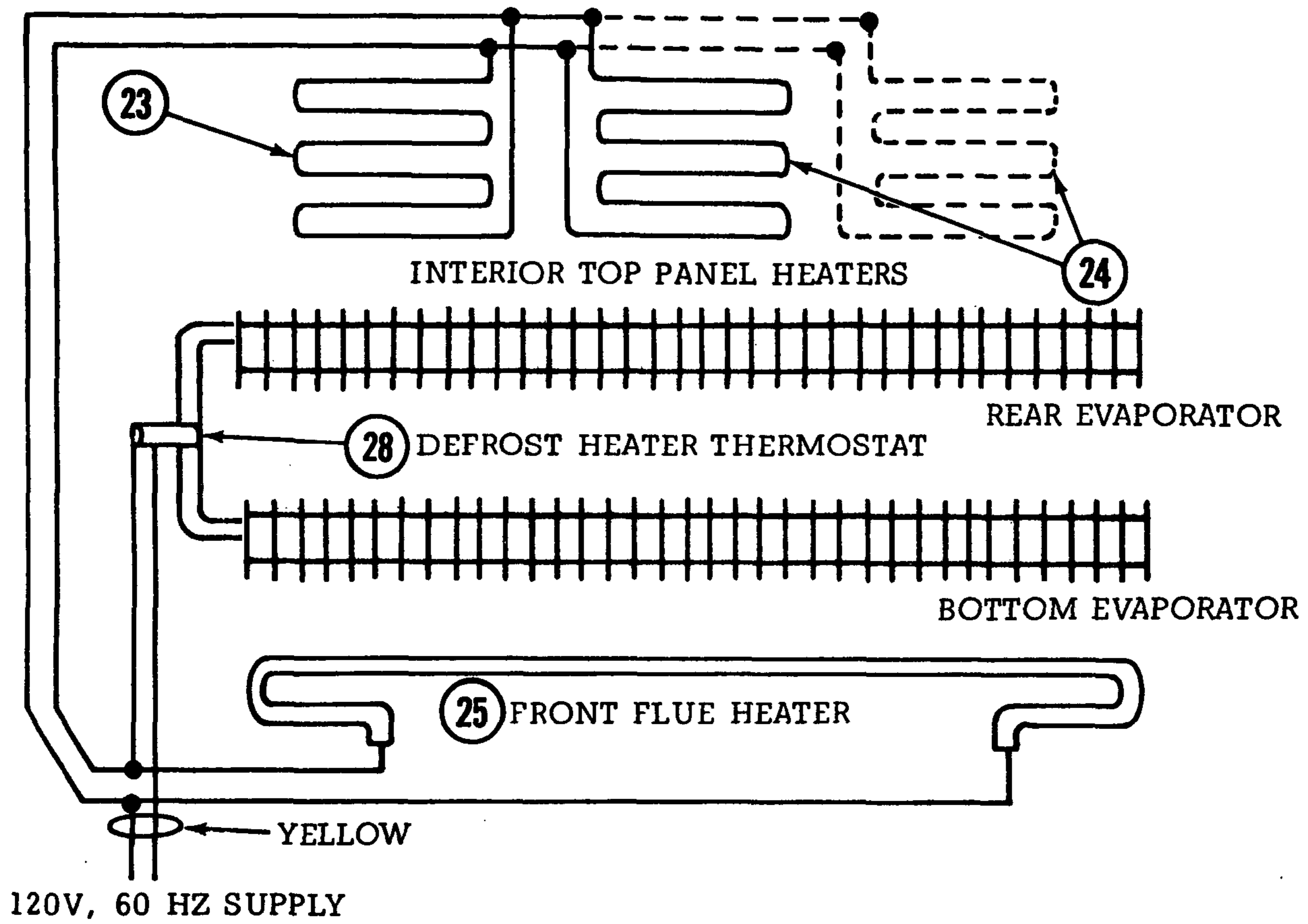
CAUTION: REFRIGERATOR MUST BE GROUNDED



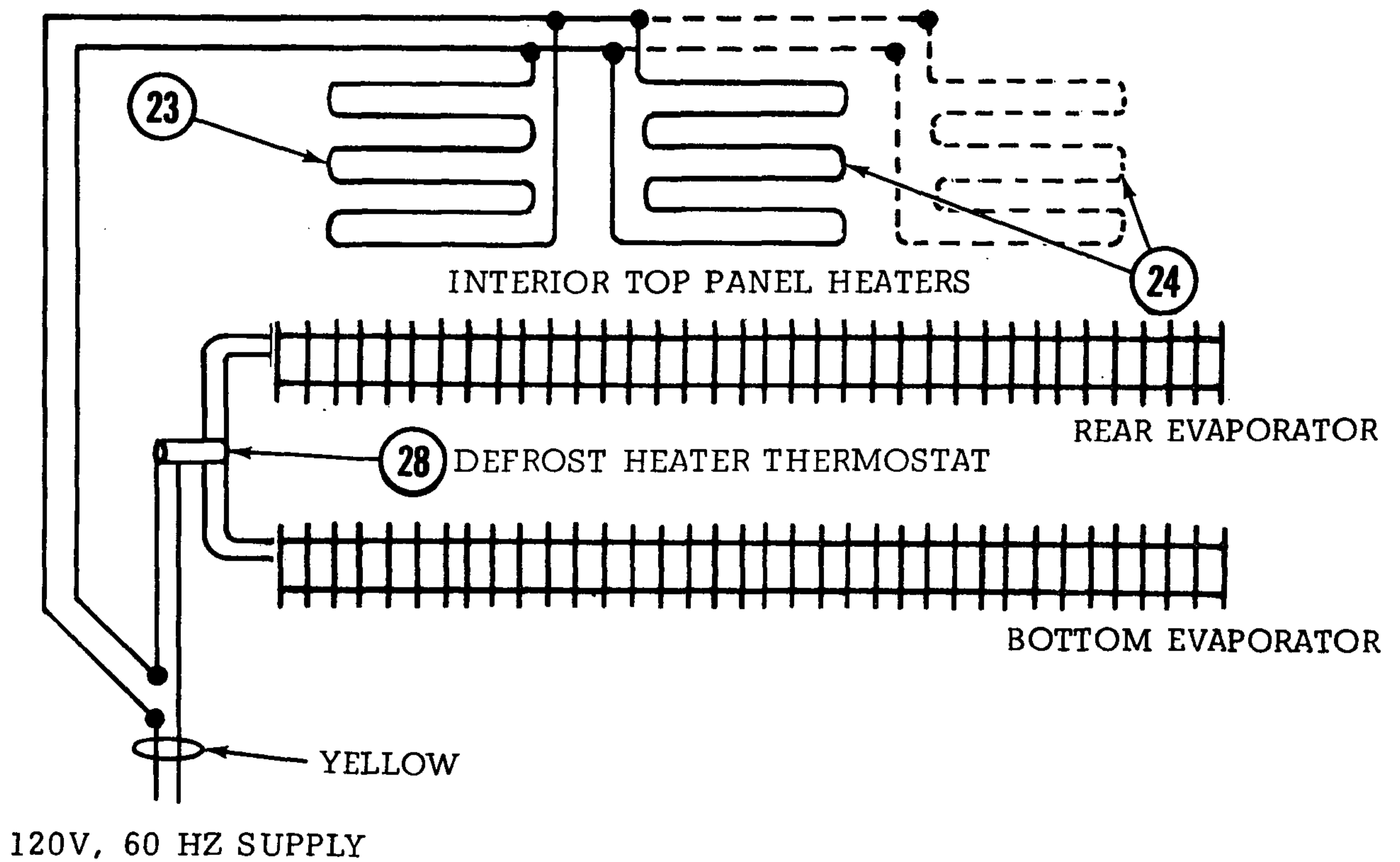
G5F-6'
G6F - 4' & 6'
ELECTRIC DEFROST HEATERS
(FROZEN FOOD)



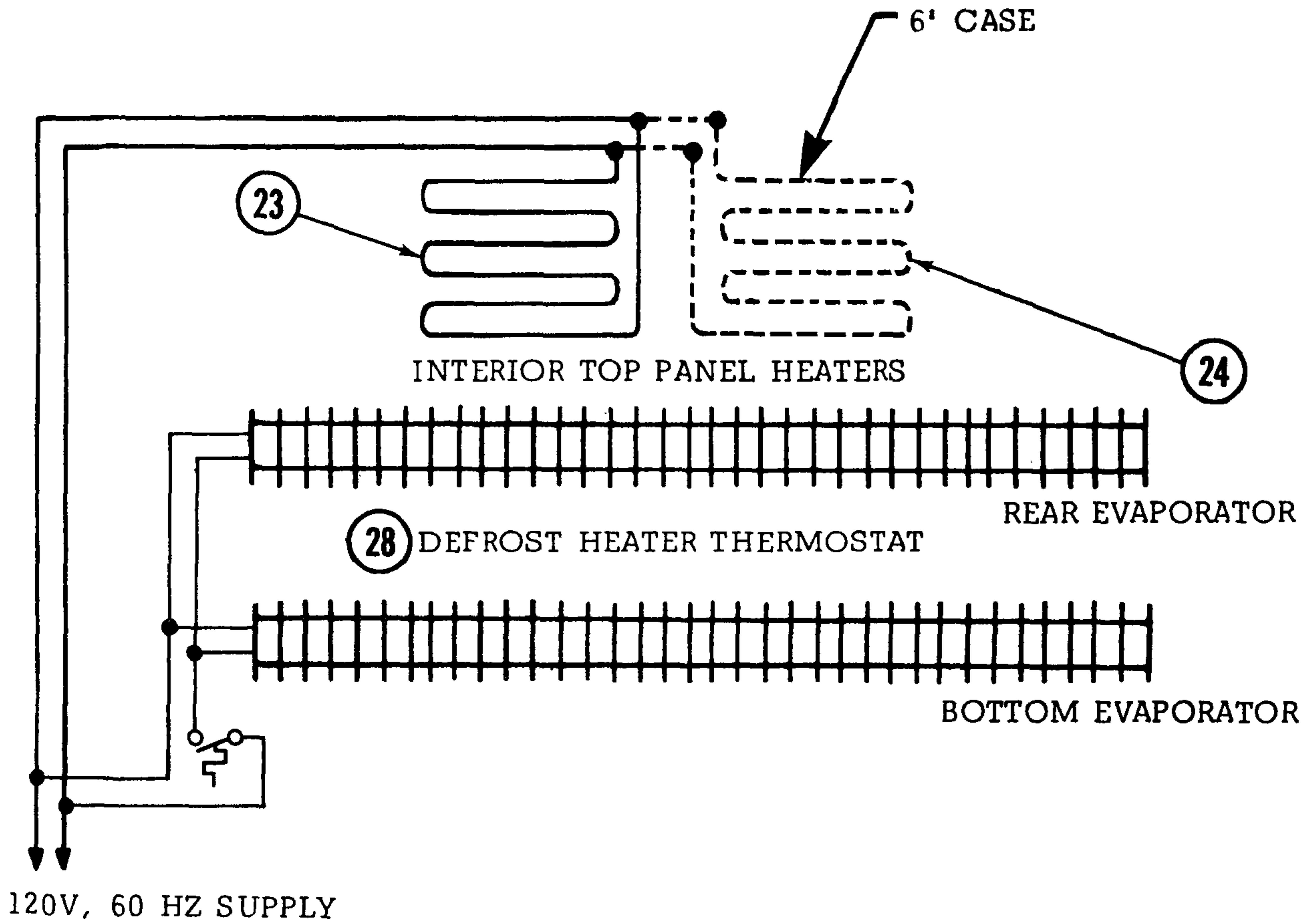
G5C/G6C - 8' & 12'
KOOLGAS DEFROST HEATER



G5F/G6F - 8' & 12'
KOOLGAS DEFROST HEATERS



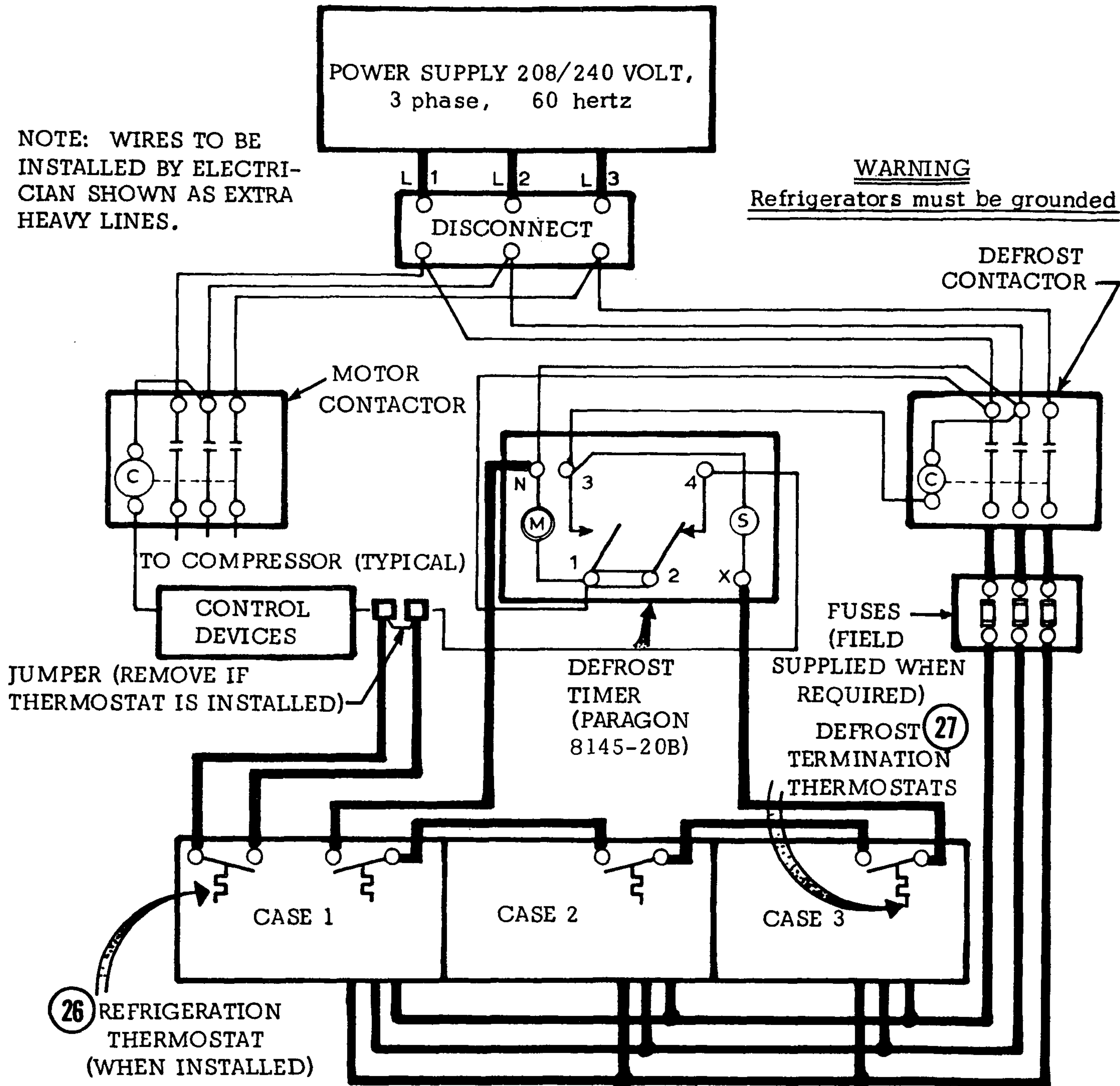
KOOLGAS DEFROST HEATERS



CONVENTIONAL MULTIPLEXING - INDOOR TYPE UNIT
CONDENSING UNIT AND CONTROL PANEL TYPICAL WIRING DIAGRAM

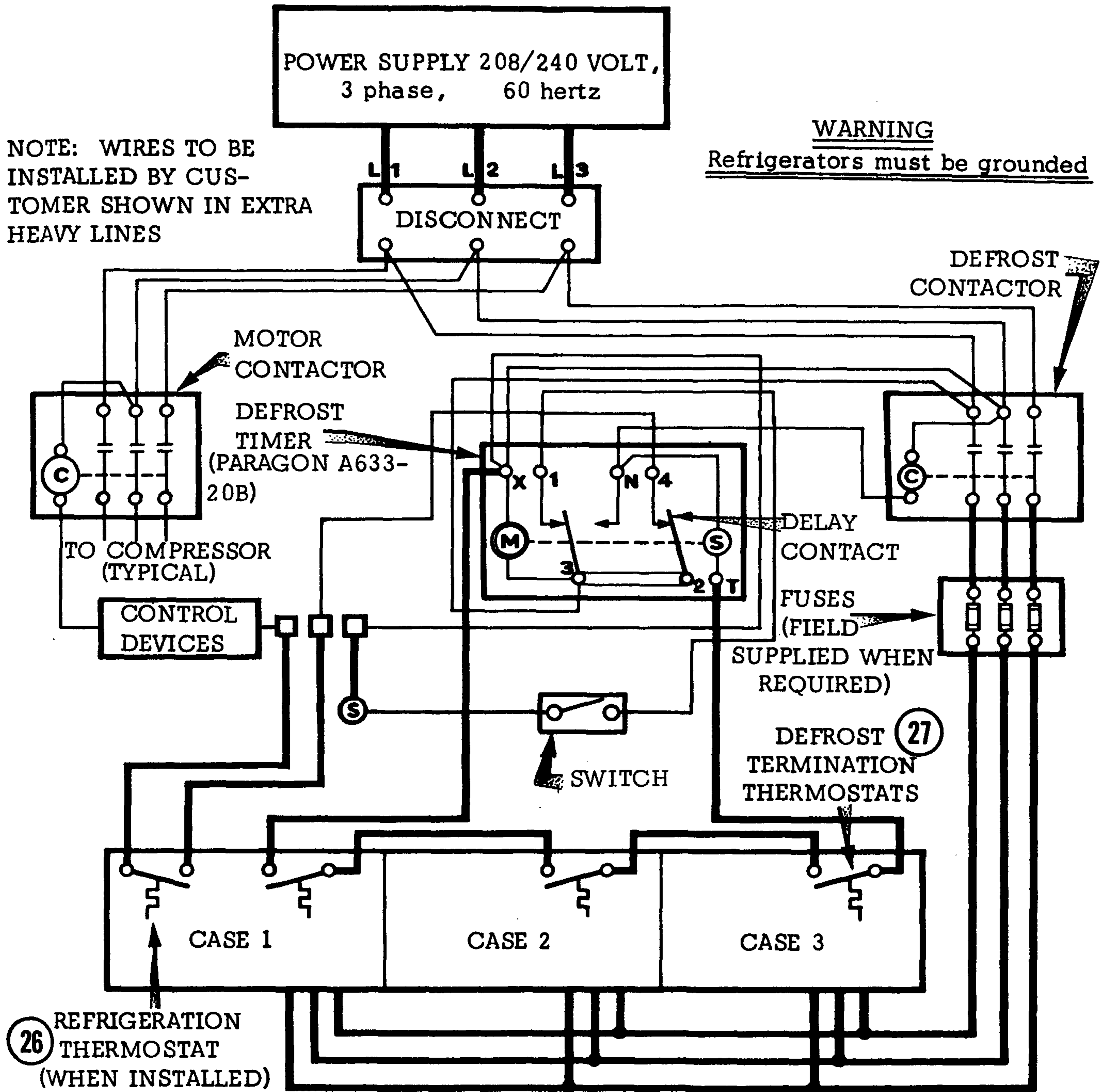
NOTE: WIRES TO BE
INSTALLED BY ELECTRI-
CIAN SHOWN AS EXTRA
HEAVY LINES.

WARNING
Refrigerators must be grounded



NOTE: Defrost Termination Thermostat:
When multiple cases are on one
Condensing Unit, wire thermo-
stats in series.

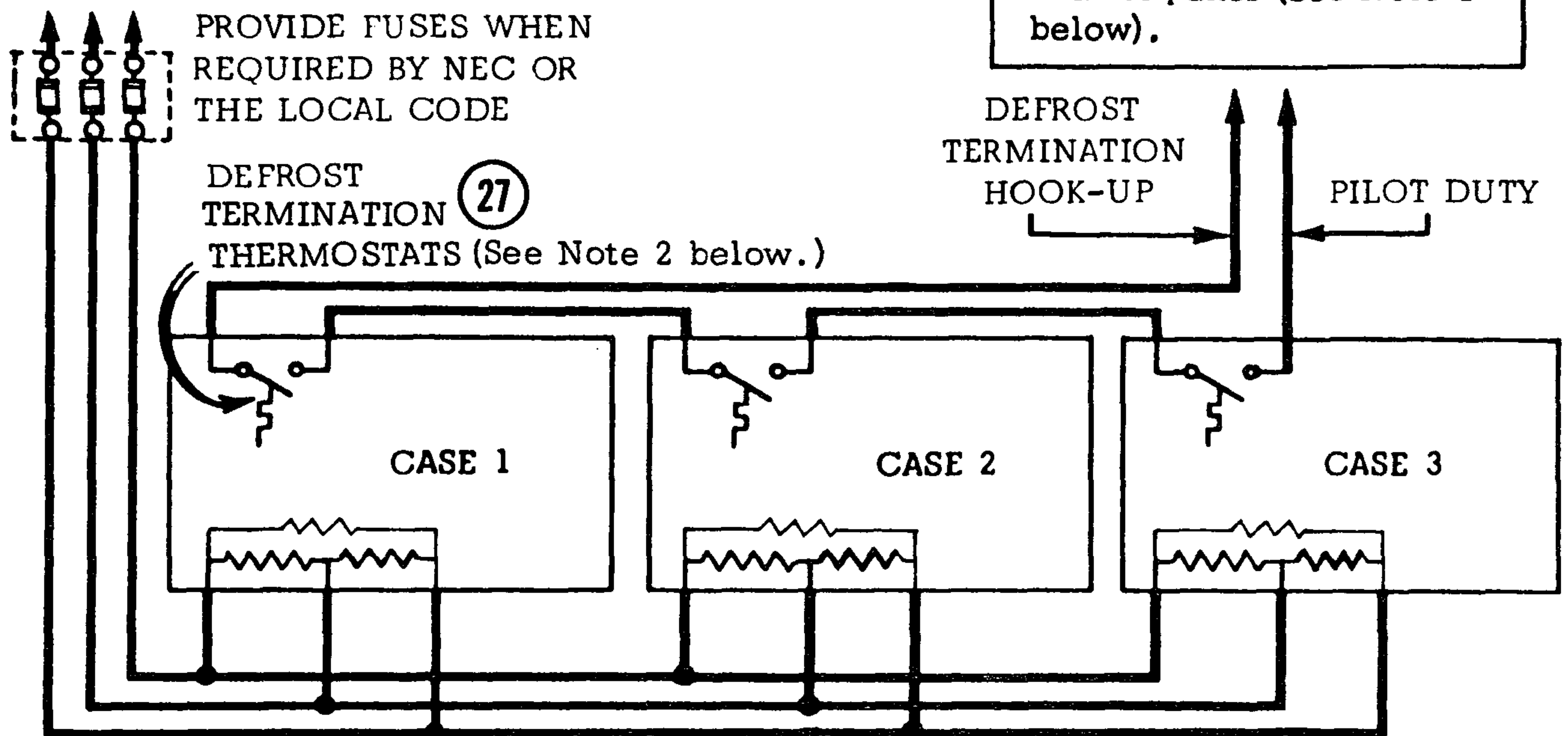
CONVENTIONAL MULTIPLEXING - OUTDOOR TYPE UNIT
CONDENSING UNIT & CONTROL PANEL WIRING DIAGRAM



NOTE: Defrost Termination Thermostat:
When multiple cases are on one
System, wire defrost thermostats
in series.

SYSTEM IV OR MIXED MULTIPLEXING
FOR FIXTURES WITH ELECTRIC DEFROST

TO DEFROST CONTACTOR
IN CONTROL PANEL FOR
THIS SYSTEM.

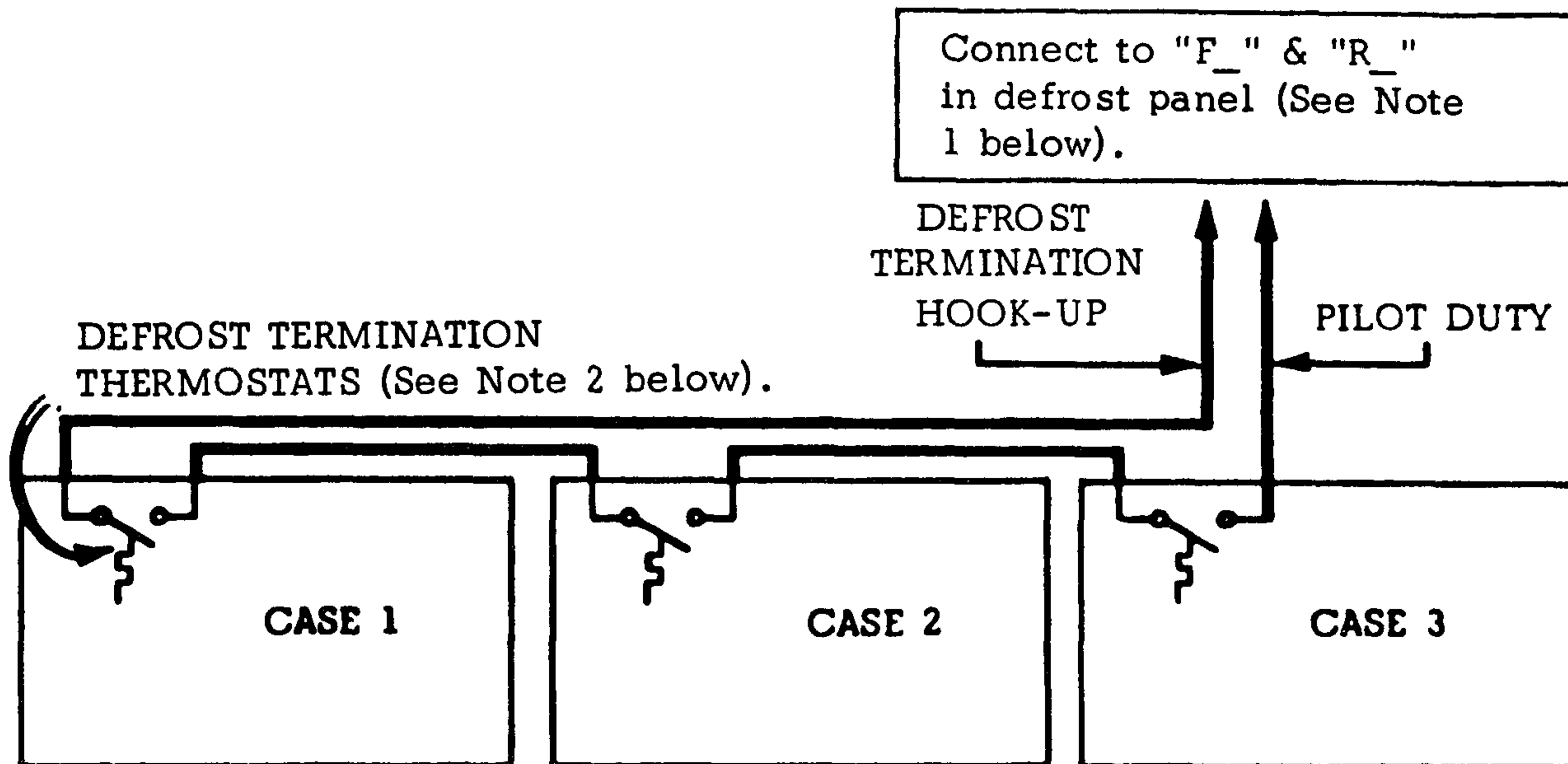


NOTE 1. The "F" & "R" terminal will have a suffix that corresponds to System No. on Store Legend.

EXAMPLE: System No. 3 has the G6 Case. Connect defrost terminating thermostat to "F3" and "R3". Some Mixed Multiplexing Systems require a connection to the "X" and "N" terminals at the 8145 timer.

NOTE 2. Defrost Termination thermostat must be wired in series for multiple case hook-up.

SYSTEM IV OR MIXED MULTIPLEXING
FOR FIXTURES WITH KOOLGAS DEFROST
AND EQUIPPED WITH OPTIONAL DEFROST
TERMINATION THERMOSTAT



NOTE 1. The "F" & "R" terminal will have a suffix that corresponds to System No. on Store Legend.

EXAMPLE: System No. 3 has the G6 Case. Connect defrost terminating thermostat to "F3" and "R3". Some Mixed Multiplexing Systems require a connection to the "X" and "N" terminals at the 8145 timer.

NOTE 2. Defrost termination thermostat must be wired in series for multiple case hook-up. This is not a recommended option.

REPLACEMENT PARTS LIST.

<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1.	047000	Fan Motor, Main System (All G5/G6 Models) GE #5KSM51ECG3799 9W CW 115 V
2.	058698	Fan Motor, Ambient & Non-Refrigerated System (All G5/G6 Models) GE #5KSP51CL-227H 6W CW 115 V
3.	321937	Fan Blade, Main System (All G6-4' Models) Morrill #FV800 CW 15S
	142780	Fan Blade, Main System (All G5/G6-6', 8', 12' Models) Morrill #FV800 CW 25S
4.	141070	Fan Blade, Ambient System (All G6 Models) Morrill #FV800 CW 20S
	000235	Fan Blade, Ambient System (All G5 Models) Hussmann 25° 7-3/4"
5.	321937	Fan Blade, Non-Refrigerated System (All G6-4' Models) Morrill #FV800 CW 15S
	000235	Fan Blade, Non-Refrigerated System (All G5-8', 12'; G6-6', 8' & 12' Models) Hussmann 25° 7-3/4" G5-6'
6.	147091	Ballast, (All G6-4' & 6' Models) G5-6' GE #8G3900W
	137843	Ballast, (All G5/G6-8' & 12' Models) GE #8G1141W
7.	096900	Fluorescent Lamp -F48T12 CW HO (All G6-4' Models)
	137846	Fluorescent Lamp - F96T12 CW HO (All G5/G6-6'-8' Models)
	137847	Fluorescent Lamp - F72T12 CW HO (All G5/G6-6' & 12' Models)
8.	143286	Anti-Sweat Heater, Color Band (All G5/G6-8' Ice Cream Models) 170 ohm, 0.68 amp, 120 volt
	143287	Anti-Sweat Heater, Color Band (All G5/G6-12' Ice Cream Models) 120 ohm, 1.0 amp, 120 volt

9. 324949 Anti-Sweat Heater, Return Grill
(All G6-4' Models)
286 ohm, 0.4 amp, 120 volt
- 324950 Anti-Sweat Heater, Return Grill
(All G6-6' Models) G5F-6'
192 ohm, 0.6 amp, 120 volt
- 143294 Anti-Sweat Heater, Return Grill
(All G5/G6-8' Models)
150 ohm, 0.8 amp, 120 volt
- 143295 Anti-Sweat Heater, Return Grill
(all G5/G6-12' Models)
92 ohm, 1.3 amp, 120 volt
10. 136158 Anti-Sweat Heater, Main Discharge Grid
(All G5/G6-8' Ice Cream Models)
45 ohm, 2.66 amp, 120 volt
- 136159 Anti-Sweat Heater, Main Discharge Grid
(All G5/G6-12' Ice Cream Models)
30 ohm, 4.0 amp, 120 volt
11. 324951 Anti-Sweat Heater, Discharge Divider
(All G6-4' Models)
132 ohm, 0.9 amp, 120 volt
- 324952 Anti-Sweat Heater, Discharge Divider
(All G6-6' Models) G5-6'
87 ohm, 1.4 amp, 120 volt
- 128315 Anti-Sweat Heater, Discharge Divider
(All G5/G6-8' Models)
69 ohm, 1.8 amp, 120 volt
- 128316 Anti-Sweat Heater, Discharge Divider
(All G5/G6-12' Models)
49 ohm, 2.4 amp, 120 volt
12. 130012 Anti-Sweat Heater, Non-Refrigerated Flue
(All G5/G6-8' Ice Cream Models)
55 ohm, 2.2 amp, 120 volt
- 130013 Anti-Sweat Heater, Non-Refrigerated Flue
(All G5/G6-12' Models)
40 ohm, 3.0 amp, 120 volt
13. 113811 Defrost Heater, Front Return Flue
(All G5/G6-8' Ice Cream Models w/electric
defrost)
43 ohm, 4.8 amp, 208 volt
- 113812 Defrost Heater, Front Return Flue
(All G5/G6-12' Ice Cream Models w/ electric
defrost)
28 ohm, 7.2 amp, 120 volt

14. 325004 Defrost heater, Bottom of Return Flue
(All G6-4' Frozen Food Models w/electric
defrost)
109 ohm, 1.9 amp, 208 volt
- 252031 Defrost Heater, Bottom of Return Flue
(All G6-6' Frozen Food Models w/electric
defrost) G5-6'
55 ohm, 3.8 amp, 208 volt
- 113827 Defrost Heater, Bottom of Return Flue
(All G5/G6-8' Frozen Food Models w/electric
defrost)
55 ohm, 3.8 amp 208 volt
- 113828 Defrost Heater, Bottom of Return Flue
(All G5/G6-12' Frozen Food Models w/
electric defrost)
40 ohm, 5.2 amp, 208 volt
15. 059783 Defrost Heater, Bottom of Return Flue
(All G5/G6-8' Ice Cream Models w/electric
defrost)
22 ohm, 9.6 amp, 208 volt
- 059784 Defrost Heater, Bottom of Return Flue
(All G5/G6-12' Ice Cream Models w/electric
defrost)
14 ohm, 14.4 amp 208 volt
16. 309624 Defrost Heater, Bottom Coil
(All G5/G6-4' Frozen Food Models w/electric
defrost)
45 ohm, 4.6 amp, 208 volt
- 309626 Defrost Heater, Bottom Coil
(All G6-6' Frozen Food Models w/electric
defrost) G5-6'
30 ohm, 6.9 amp, 208 volt
- 121252 Defrost Heater, Bottom Coil
(All G6-8' Frozen Food Models w/electric
defrost)
23 ohm, 9.2 amp, 208 volt
- 121253 Defrost Heater, Bottom Coil
(All G5/G6-12' Frozen Food Models w/electric
defrost)
15 ohm, 13.8 amp, 208 volt
17. 113823 Defrost Heater, Bottom Coil
(All G5/G6-8' Ice Cream Models w/electric
defrost)
18 ohm, 11.6 amp, 208 volt
- 113824 Defrost Heater, Bottom Coil
(All G5/G6-12' Ice Cream Models w/electric
defrost)
12 ohm, 17.6 amp, 208 volt

18. 327200 Defrost Heater, Rear Coil
(All G6-4' Frozen Food Models w/electric defrost)
45 ohm, 4.6 amp, 208 volt
- 327201 Defrost Heater, Rear Coil
(All G6-6' Frozen Food Models w/electric defrost G5-6'
30 ohm, 609 amp, 208 volt
- 119749 Defrost Heater, Rear Coil
(All G5/G6-8' Frozen Food Models w/electric defrost)
23 ohm, 9.2 amp, 208 volt
- 119750 Defrost Heater, Read Coil
(All G5/G6-12' Frozen Food Models w/electric defrost)
15 ohm, 13.8 amp, 208 volt
19. 113821 Defrost Heater, Rear Coil
(All G5/G6-8' Ice Cream Models w/electric defrost)
18 ohm, 11.6 amp, 208 volt
- 113822 Defrost Heater, Rear Coil
(All G5/G6-12' Ice Cream Models w/electric defrost)
12 ohm, 17.6 amp, 208 volt
20. 113829 Defrost Heater, Drip Pan
(All G5/G6-8' Ice Cream Models w/electric defrost)
160 ohm, 1.3 amp, 208 volt
- 113830 Defrost Heater, Drip Pan
(All G5/G6-12' Ice Cream Models w/electric defrost)
109 ohm, 1.9 amp, 208 volt
21. 120136 Defrost Heater, Top Panel
(All G5/G6-4', 8', 12' Models w/electric defrost)
165 ohm, 1.3 amp, 208 volt
- 325005 Defrost Heater, Top Panel
(All G6-6' Models w/electric defrost) G5-6'
213 ohm, 1.0 amp, 208 volt
22. 120137 Defrost Heater, Top Panel
(All G5/G6-8', 12' Models w/ electric defrost)
165 ohm, 1.3 amp, 208 volt
- 325006 Defrost Heater, Top Panel
(All G6-6' Models w/electric defrost) G5-6'
213 ohm, 1.0 amp, 208 volt

23. 120138 Defrost Heater, Top Panel
 (All G5/G6-4', 8', 12' Models w/KOOLGAS
 defrost)
 54 ohm, 2.2 amp, 120 volt
- 325007 Defrost Heater, Top Panel
 (All G6-6' Models w/KOOLGAS defrost) G5-6'
 71 ohm, 1.7 amp, 120 volt
24. 120139 Defrost Heater, Top Panel
 (All G5/G6-8', 12' Models w/KOOLGAS defrost)
 54 ohm, 2.2 amp, 120 volt
- 325008 Defrost Heater, Top Panel
 (All G6-6' Models w/KOOLGAS defrost G5-6'
 71 ohm, 1.7 amp, 120 volt
25. 113811 Defrost Heater, Front Return Flue
 (All G5/G6-8' Ice Cream Models w/KOOLGAS
 defrost)
 43 ohm, 2.8 amp, 120 volt
- 113812 Defrost Heater, Front Return Flue
 (All G5/G6-12' Ice Cream Models w/KOOLGAS
 defrost)
 28 ohm, 4.3 amp, 120 volt
26. 176457 Refrigeration Thermostat, Optional
 (All G5/G6 Models)
 White Rodgers #1701-117
27. 121271 Defrost Termination Thermostat
 (All G5/G6 Frozen Food Models w/electric
 defrost)
 T.I. #20640F6-80-585
- 176457 Defrost Termination Thermostat
 (All G5/G6 Ice Cream Models w/electric
 defrost)
 White Rodgers #1701-117
28. 122940 Defrost Heater Thermostat
 (All G5/G6 Models w/KOOLGAS defrost)
 T.I. #20420F28-442-343

SECTION VUSER'S INFORMATIONSTOCKING AND STOCK ROTATION:

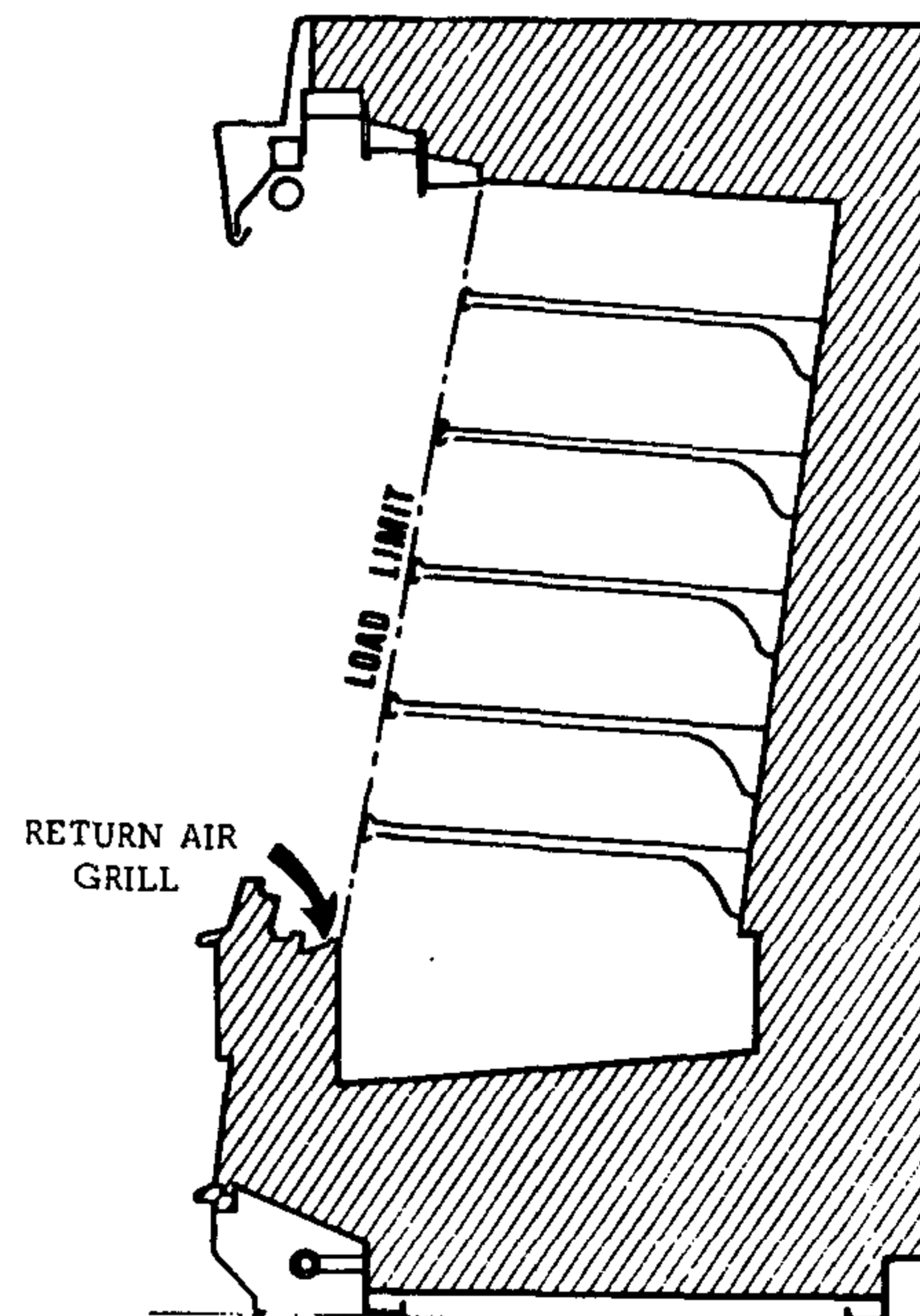
All shelves and the lower deck of these cases are designed to display the case products.

Shelves are designed for a maximum load of 200 pounds per 48" shelf, are adjustable in one inch increments and may be staggered in elevation (before making shelf adjustments).

Merchandise should not be placed in this refrigerator for at least six hours after being put into operation and all control adjustments completed. At no time should stock in the refrigerator extend beyond the front of the 23" shelves or the load limits as indicated on the ends of the refrigerator and as shown in the illustration below. Signs, etc., should not be affixed to the front edge of the 23" shelves.

IMPORTANT: KEEP FOOD PACKAGES AND REFUSE OFF OF RETURN AIR GRILL. AIR DISCHARGE AND RETURN FLUES MUST BE UNOBSTRUCTED AT ALL TIMES OR OPERATION WILL BE SERIOUSLY EFFECTED.

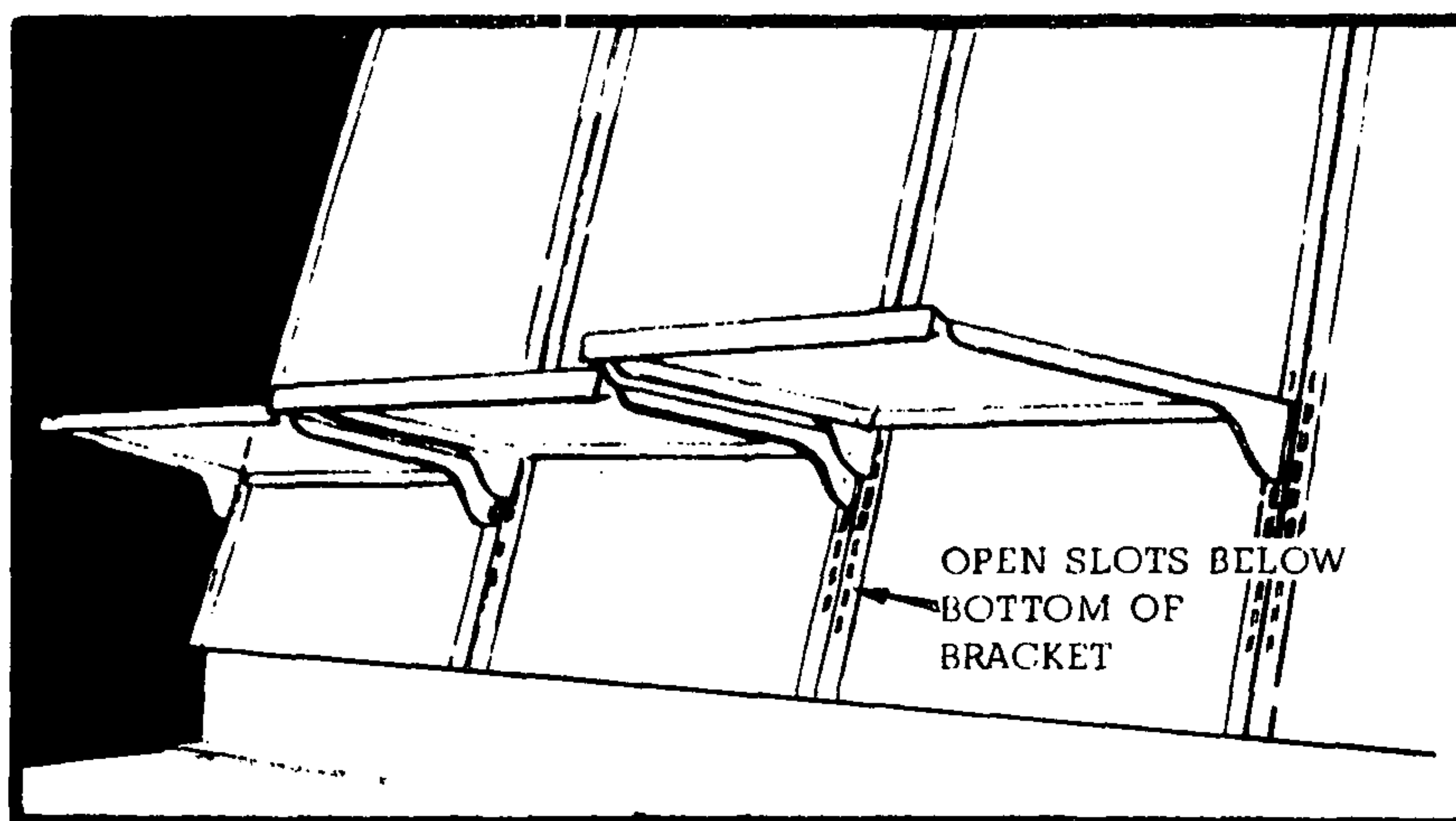
Since ice cream and frozen foods are perishable and should not stay long on display shelves, packages on display for a week should be rotated. Product rotation will also prevent excessive frost accumulation and sticking of packages.



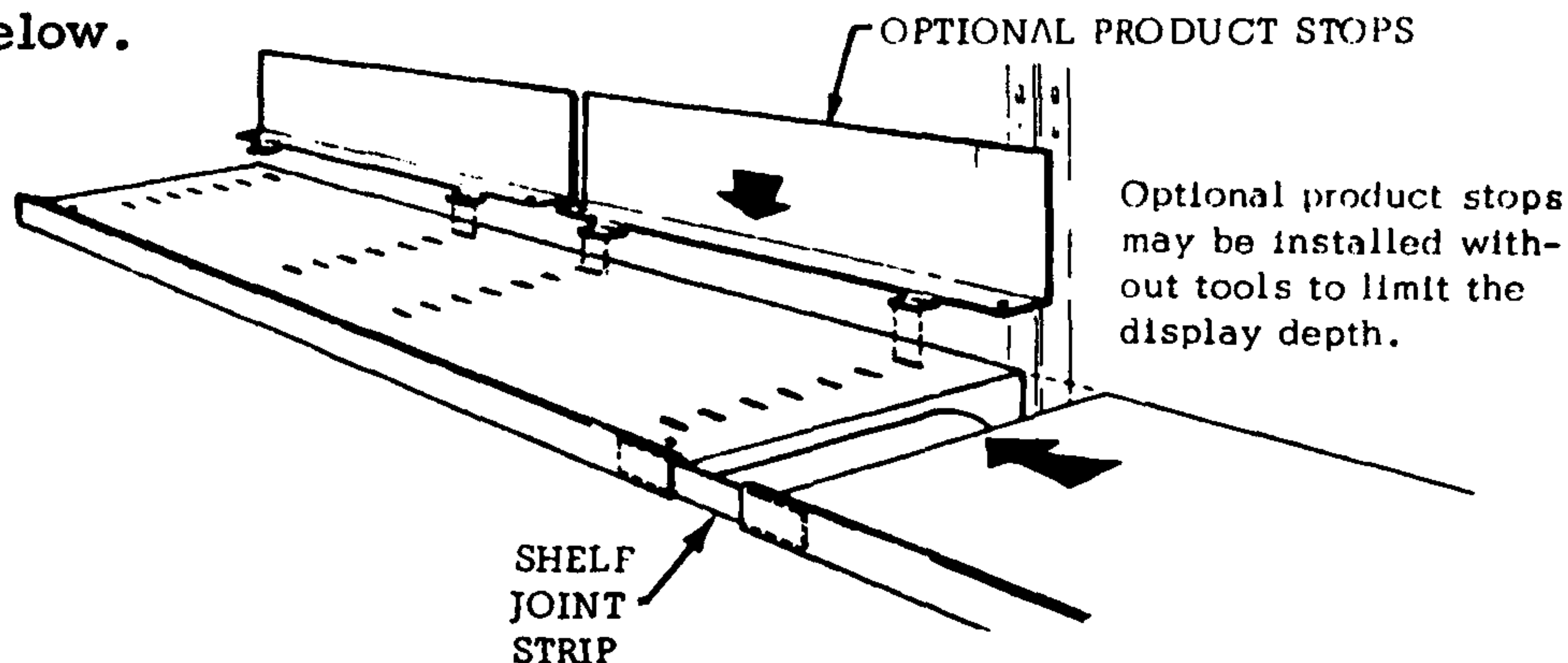
SHELVING

The G5 and G6 models may have their shelves installed in a straight row or they may be staggered, to accommodate various package sizes. However they are installed, the following recommendations concerning the size, quantity and positioning of the shelves should be followed for satisfactory refrigeration performance.

- A. All models should have at least three (3) full rows of 23" shelves installed. The G6FL model should have four (4) rows.
- B. The lowest row of the 23" shelves should be positioned with no more than the following amount of open slots below the bottom of the shelf bracket.
- | | | |
|------|-----------|---------------|
| G5F | & G6F.... | 13 open slots |
| G5C | & G6C... | 11 open slots |
| G5FH | & G6FH.. | 17 open slots |
| G5CH | & G6CH.. | 15 open slots |
| G5FL | & G6FL... | 9 open slots |
- C. When 18" shelves are used, they must be installed below the lowest of 23" shelves, in any of the remaining open slots.

SHELF JOINT STRIP

The shelves are shipped with a "shelf joint strip" located behind the front flange of each shelf. This joint strip is designed to align the front edge of all adjoining shelves for an attractive appearance. Once the shelves are installed in the case simply slide a joint strip across each shelf joint as shown below.



CARE AND CLEANING OF FIXTURE:

To insure long life and minimum maintenance, the fixture should be thoroughly cleaned, debris removed and the interior washed down at least every three (3) months.

To preserve the finishes, use warm water and a mild detergent to wash the interior and exterior 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 fixture faster than the drip pipe can carry it away.

To maintain good refrigeration performance, a refrigeration service man should be called periodically (approximately every 6 months) to clean the fragile material located in the discharge area (material known as honeycomb), and filters on top of case. The procedure for removal of honeycomb assemblies and filters are outlined in Section VI (Servicing Tips) of this manual. To clean the honeycombs, the use of a vacuum is recommended. Cleaning with soap and water is permissible, provided all water is removed from the honeycomb.

The top of the case is not designed to support heavy displays or the weight of a person. NO ONE SHOULD PLACE HIS WEIGHT ON THE TOP OF THIS CASE or damage to refrigerator and serious personal injury could occur.

NOTE: Space or clearance over the top of cases is required for proper air flow to air curtain fans and access to fan motor area for servicing. Do not erect any permanent display or drop ceiling that will interfere with this clearance.

SECTION VISERVICING TIPSW A R N I N G

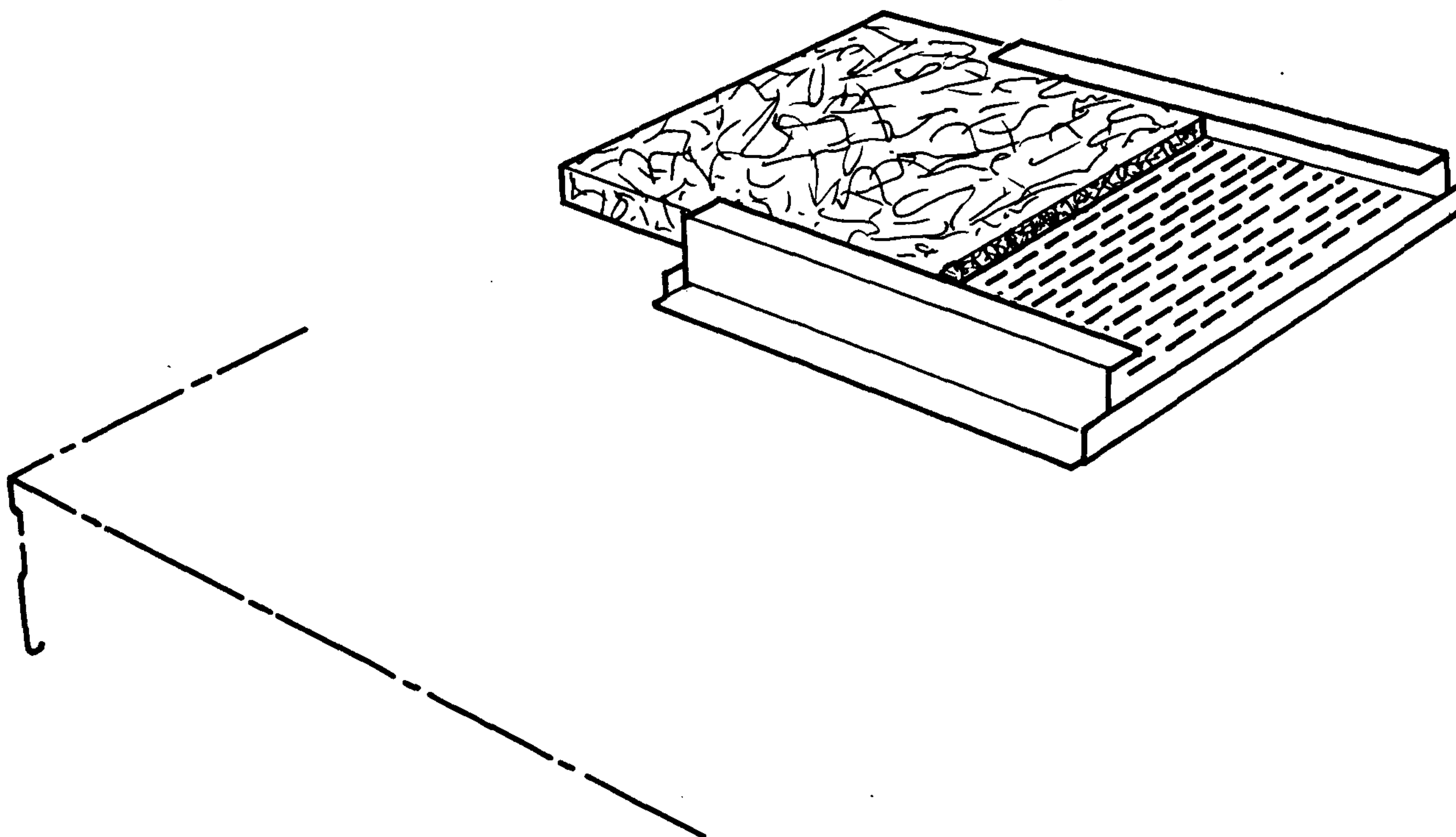
ALWAYS DISCONNECT THE ELECTRICAL POWER AT THE MAIN DISCONNECT WHEN SERVICING OR REPLACING ANY ELECTRICAL COMPONENT OF THIS REFRIGERATOR. THIS INCLUDES, BUT IS NOT LIMITED TO SUCH ITEMS AS FANS, HEATERS, THERMOSTATS AND FLUORESCENT LAMPS.

AMBIENT AIR FILTERS

Periodic cleaning or replacing of these filters (at least every six months) is necessary for proper refrigeration performance. The filters are located on top of the case and measure 10"x10"x1/2".

To remove for cleaning or replacement, simply slide the filters from the retainers as shown. Be certain to replace filters and that they are positioned squarely over the grilled fan opening and taped to hold.

Replacement filters should be U.L. classified Class II type filters.

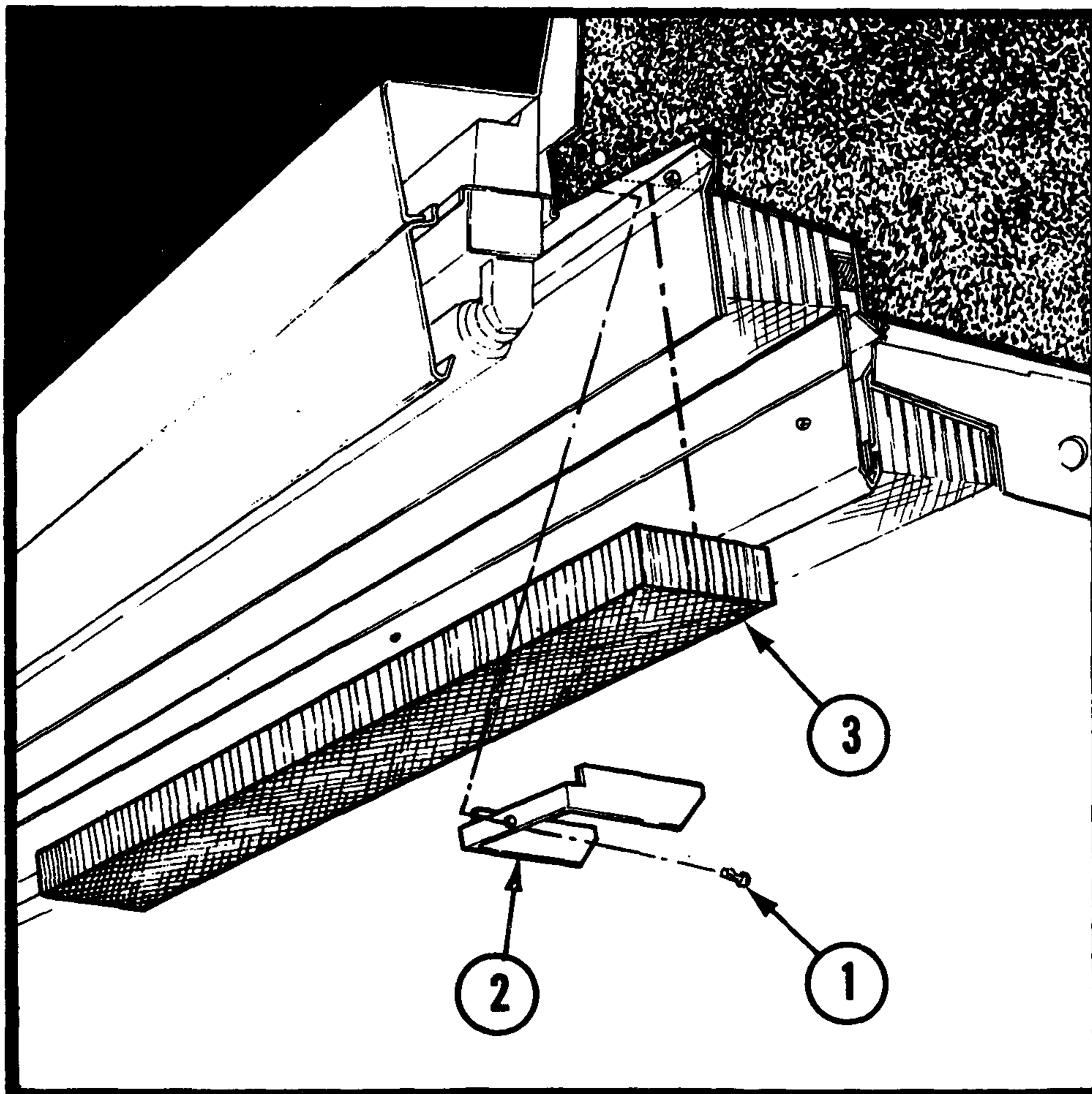


HONEYCOMB ASSEMBLIES

EXTREME CARE MUST BE EXERCISED WHEN HANDLING TO AVOID DAMAGE TO THE HONEYCOMB. A DAMAGED HONEYCOMB (TORN OR PINCHED CELLS) WILL RESULT IN POOR REFRIGERATION PERFORMANCE AND REQUIRE REPLACEMENT OF THE HONEYCOMB.

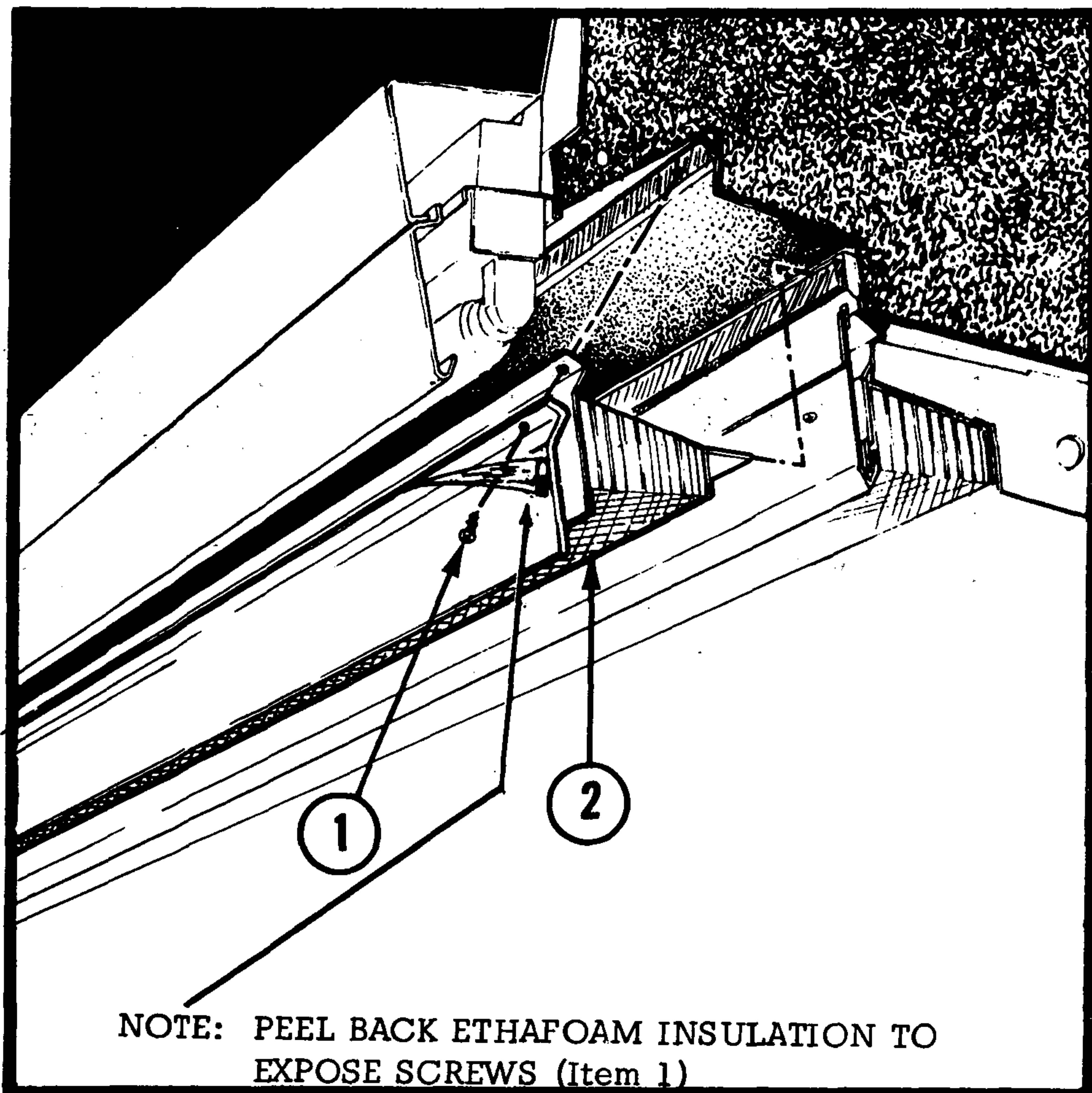
REMOVAL AND INSTALLATION OF AMBIENT AIR HONEYCOMB :

- STEP 1. Remove PLASTIC RIVETS (Item 1) which hold RETAINERS (Item 2) in position by placing screwdriver blade behind the Retainer.
- STEP 2. Remove RETAINERS (Item 2) by pulling down on the front as the top rear of the retainer is embedded in foam.
- STEP 3. Remove sections of HONEYCOMBS (Item 3) (2 - 4 foot sections installed on 8 foot cases; 3-4 foot sections installed on 12 foot cases).
- STEP 4. After cleaning honeycomb sections, install honeycomb assembly in reverse order of removal. Be sure that honeycomb is fully seated.



REMOVAL AND INSTALLATION OF NON-REFRIGERATED AIR HONEYCOMB:

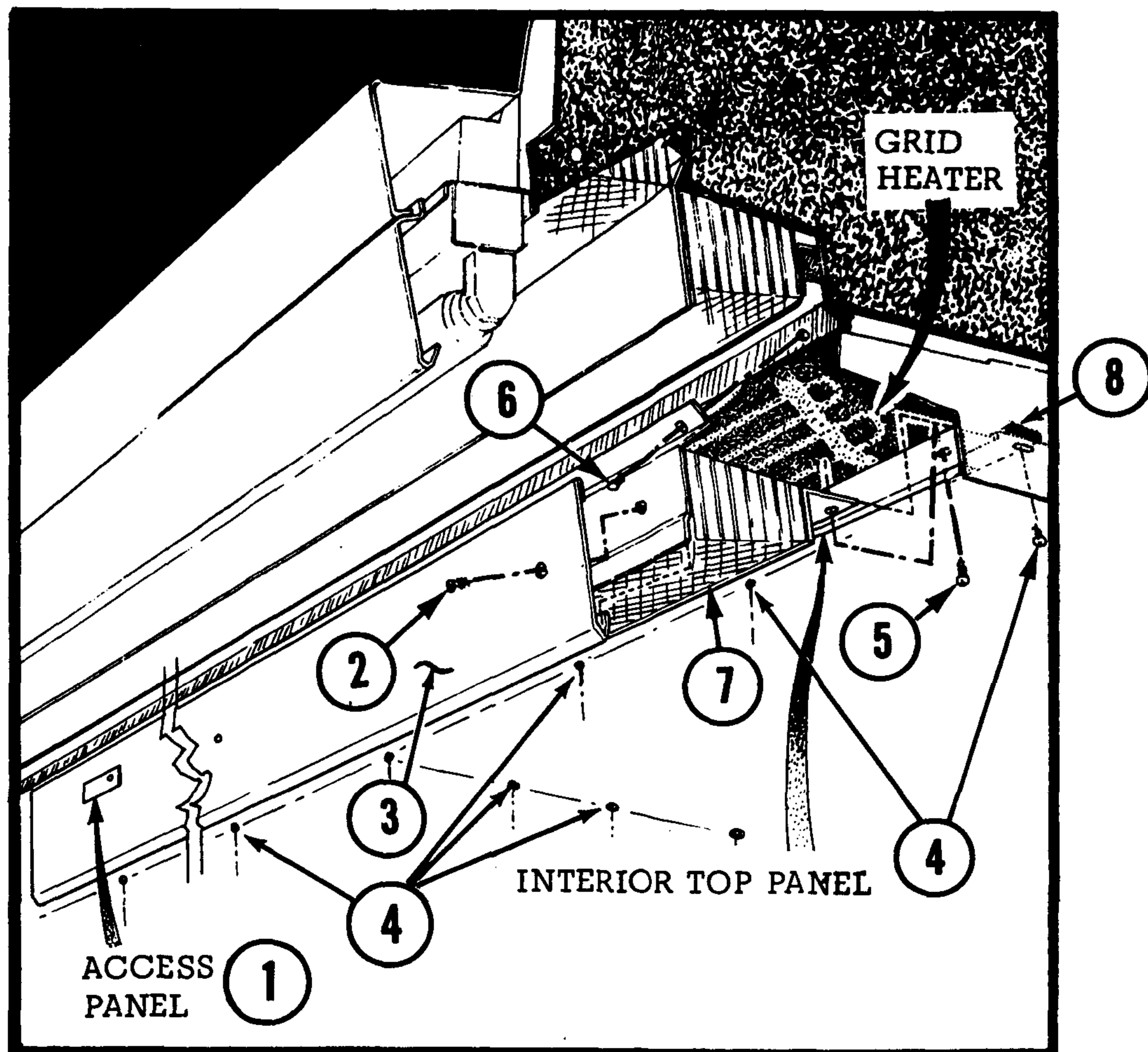
- STEP 1. Remove the ambient (front) honeycomb. Refer to instructions in this Section.
- STEP 2. Holding honeycomb assembly in position, remove SHEET METAL SCREWS (Item 1).
- STEP 3. Remove HONEYCOMB (Item 2) by pulling bottom of honeycomb forward, so top rear of honeycomb will clear divider heater panel, then lower honeycomb.
- STEP 4. After cleaning honeycomb, reinstall assembly in reverse order of removal. Be sure the front honeycomb is fully seated.



REMOVAL AND INSTALLATION OF MAIN AIR HONEYCOMB:

CAUTION: ON G5C, G6C CASES, TAKE CARE NOT TO DISTURB THE GRID HEATER OR GASKET (Item 8) WHEN REPLACING HONEYCOMB.

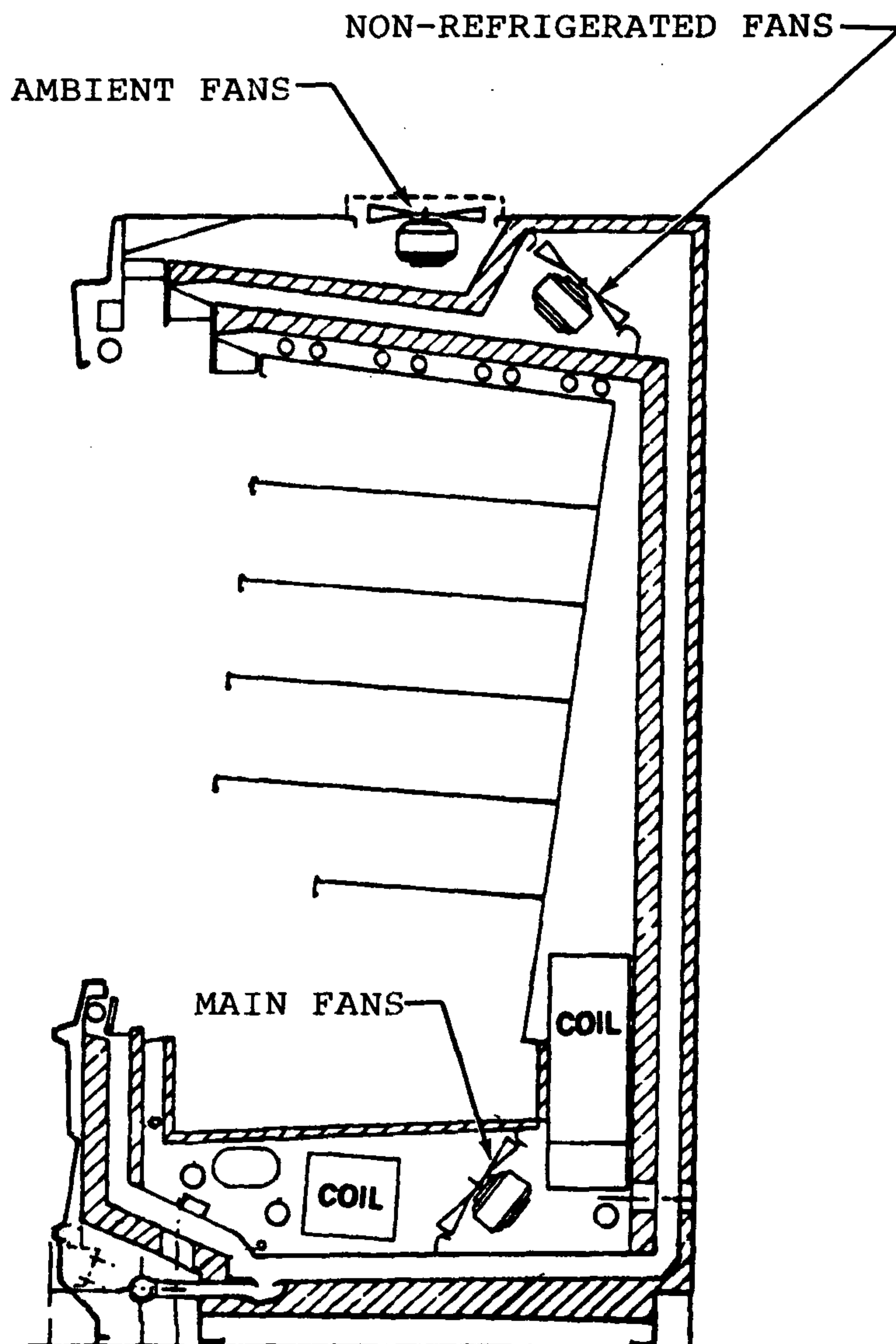
- STEP 1. If installed, remove thermometer at center of rear honeycomb.
- STEP 2. Remove ACCESS PANEL (Item 1, which has an off-set tab) to expose divider heater wire harness receptacle. Disconnect heater plug from receptacle. See Illustration.
- STEP 3. Remove SHEET METAL SCREWS (Item 2). Lower divider heater panel and HEATER (Item 3) until clear of honeycomb bracket then pull forward to clear the center honeycomb assembly.
- STEP 4. Remove front row and loosen middle row of SHEET METAL SCREWS (Item 4) of interior top panel. See Illustration.
- STEP 5. Remove SHEET METAL SCREWS (Item 5) which holds rear of honeycomb assembly in position.
- STEP 6. Remove SHEET METAL SCREWS (Item 6) which holds front of honeycomb assembly in position.
- STEP 7. To remove HONEYCOMB ASSEMBLY (Item 7) pull straight out to clear honeycomb assembly flange of GASKET (Item 8).
- STEP 8. After cleaning, reinstall honeycomb assembly and components in reverse order of removal.



FAN BLADE REPLACEMENT

SHOULD THE FANS EVER NEED SERVICING, ALWAYS REPLACE THE FAN BLADES WITH THE RAISED EMBOSSED SIDE OF THE BLADE POSITIONED AS FOLLOWS:

MODEL			
	MAIN	AMBIENT	NON-REFRIGERATED
G5-8	TOWARD MOTOR	TOWARD MOTOR	AWAY FROM MOTOR
G5-12	"	"	"
G6-4	"	"	"
G6-6	"	"	"
G6-8	"	"	"
G6-12	"	"	"



REPLACEMENT OF NON-REFRIGERATED AIR CURTAIN FAN MOTORS AND BLADES

CAUTION

THE TOP OF THE CASE IS NOT DESIGNED TO SUPPORT THE WEIGHT OF A PERSON. DAMAGE AND PERSONAL INJURY COULD OCCUR.

WHEN REPLACING FAN BLADES, BE CERTAIN EMBOSSING SIDE OF THE BLADE IS INSTALLED FACING AWAY FROM THE MOTOR TO INSURE PROPER AIR FLOW DIRECTION.

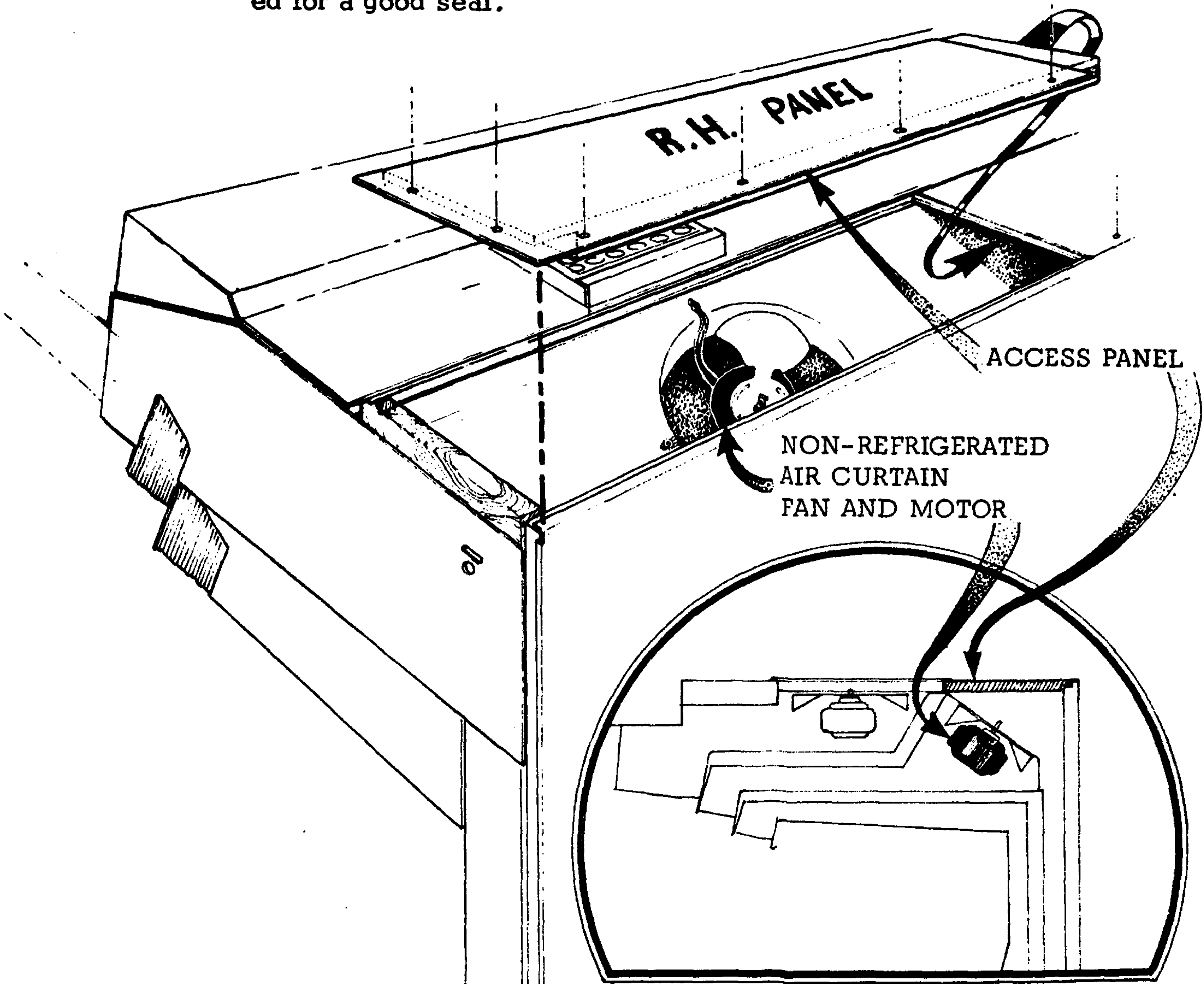
TO REMOVE FANS

STEP 1. Turn off power to fan circuit.

STEP 2. Remove the insulated top panels as required for access to the fans. The left hand panel (facing the front of the case) must be removed first.

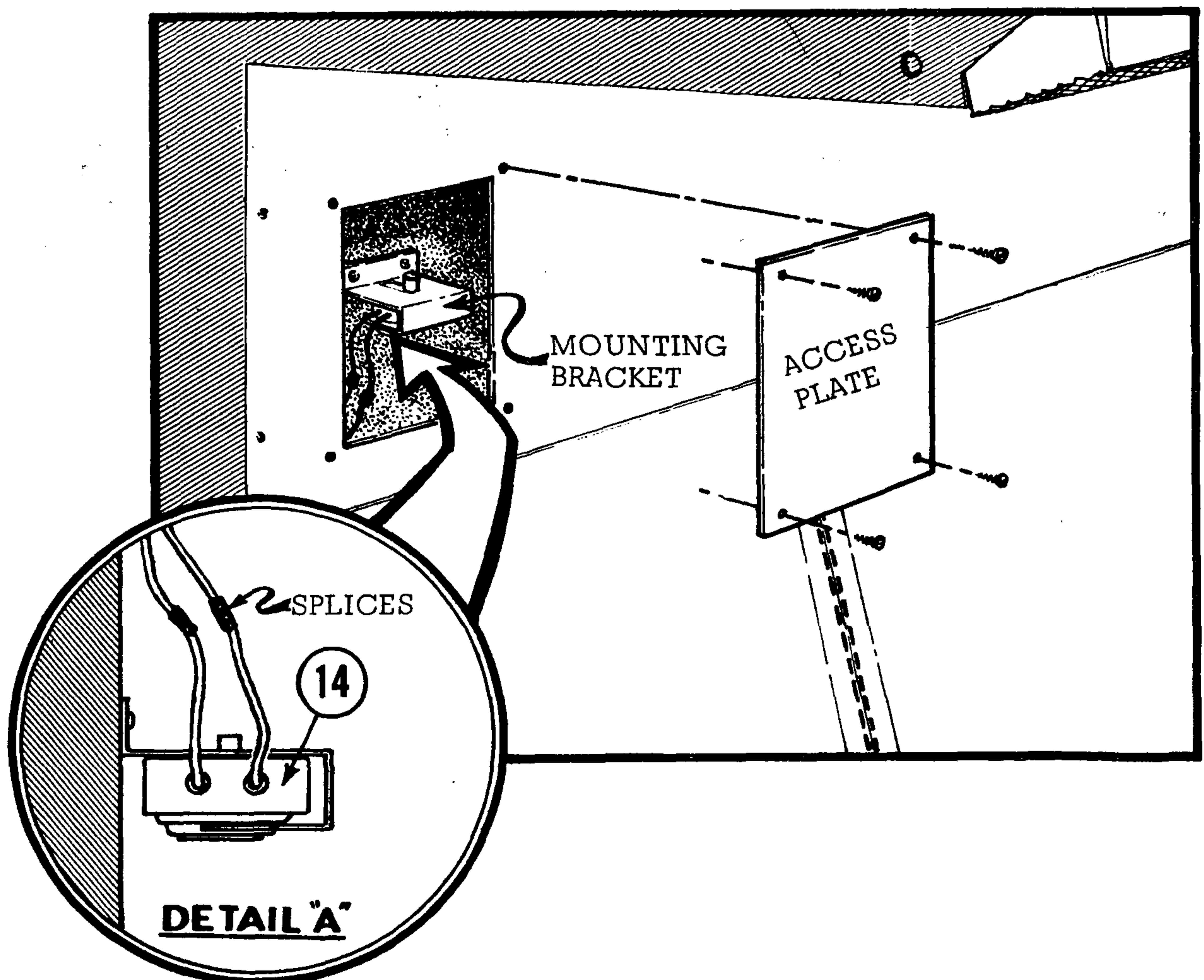
STEP 3. Remove fan blade and / or motor for service.

STEP 4. After service reinstall as removed. Be certain that the gasket on top panels has not been disturbed and that it is correctly positioned for a good seal.



REPLACING DISC TYPE DEFROST TERMINATION THERMOSTAT (G5F, G6F, ONLY):

- STEP 1. TURN OFF ALL ELECTRICAL POWER TO THE REFRIGERATOR AND CONDENSING UNIT.
- STEP 2. Remove the access plate located on the vertical portion of the upper air flue approximately 45" from the left hand end of the case (see drawing below).
- STEP 3. Remove the existing thermostat from its mounting bracket and cut its wires close to the thermostat.
- STEP 4. Cut the leads on the new thermostat leaving approximately 12" for splicing. Splice the new thermostat leads to the leads which remain from the old thermostat.
- STEP 5. Put the new thermostat into the mounting bracket making certain that the new thermostat is fully seated and in its proper position as in detail "A".
- STEP 6. Replace access panel removed in STEP 2 and return electrical power to refrigerator.

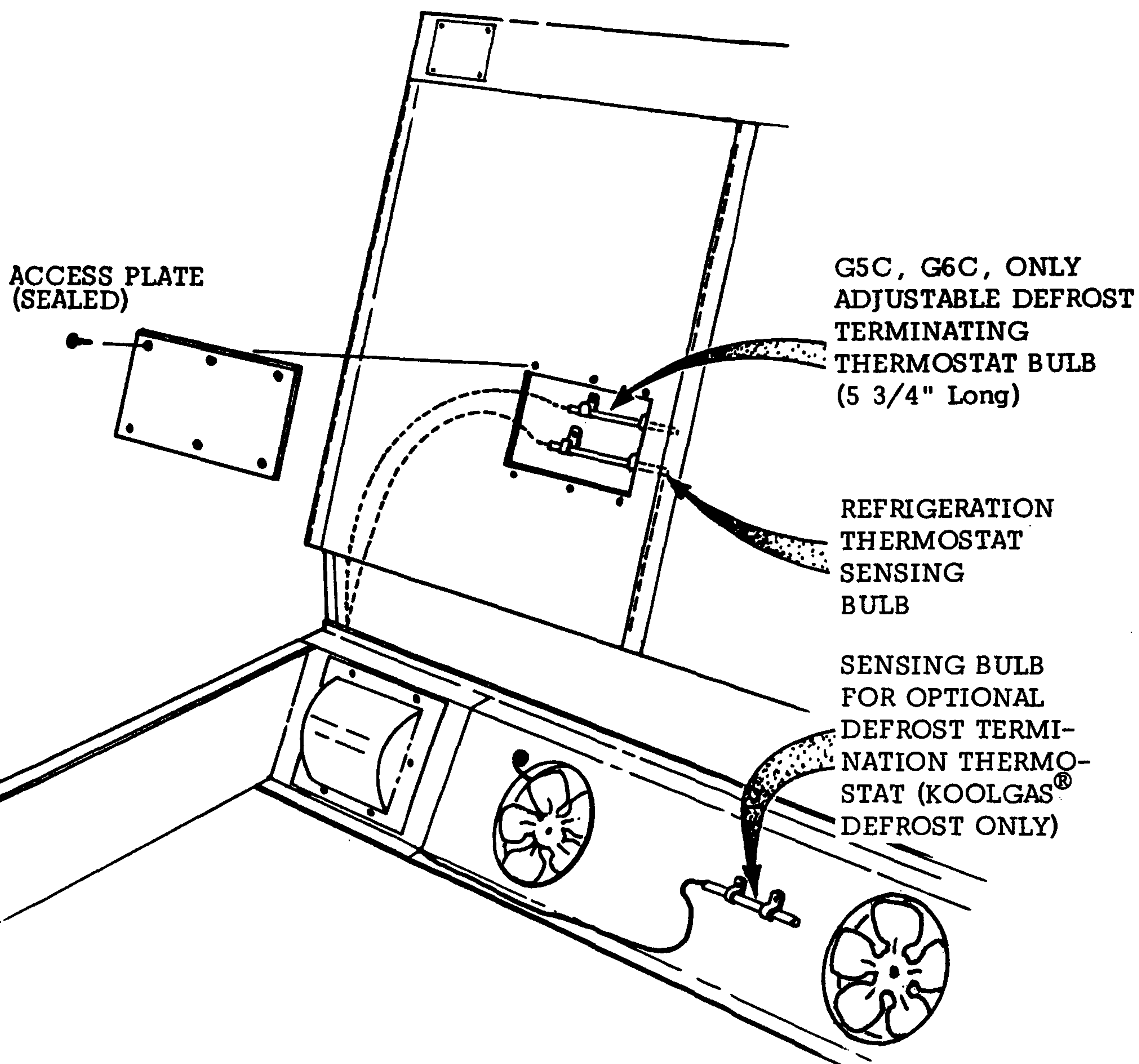


REPLACING ADJUSTABLE REFRIGERATION
AND DEFROST TERMINATION THERMOSTATS

These thermostats are located in the raceway at the left hand end of the case with there sensing bulb located as shown below.

- STEP 1. TURN OFF ALL ELECTRICAL POWER TO THE REFRIGERATOR AND CONDENSING UNIT.
- STEP 2. Remove case items that block access to thermostat (shelves , display pans , etc.).
- STEP 3. Install new thermostat into same position that the original thermostat was located. Use the capillary tube of the original thermostat to assist in routing the new sensing bulb around the coil into the position shown.
- STEP 4. Reinstall the case items that were removed.

NOTE: THE ACCESS PLATE MUST BE RESEALED IN PLACE.

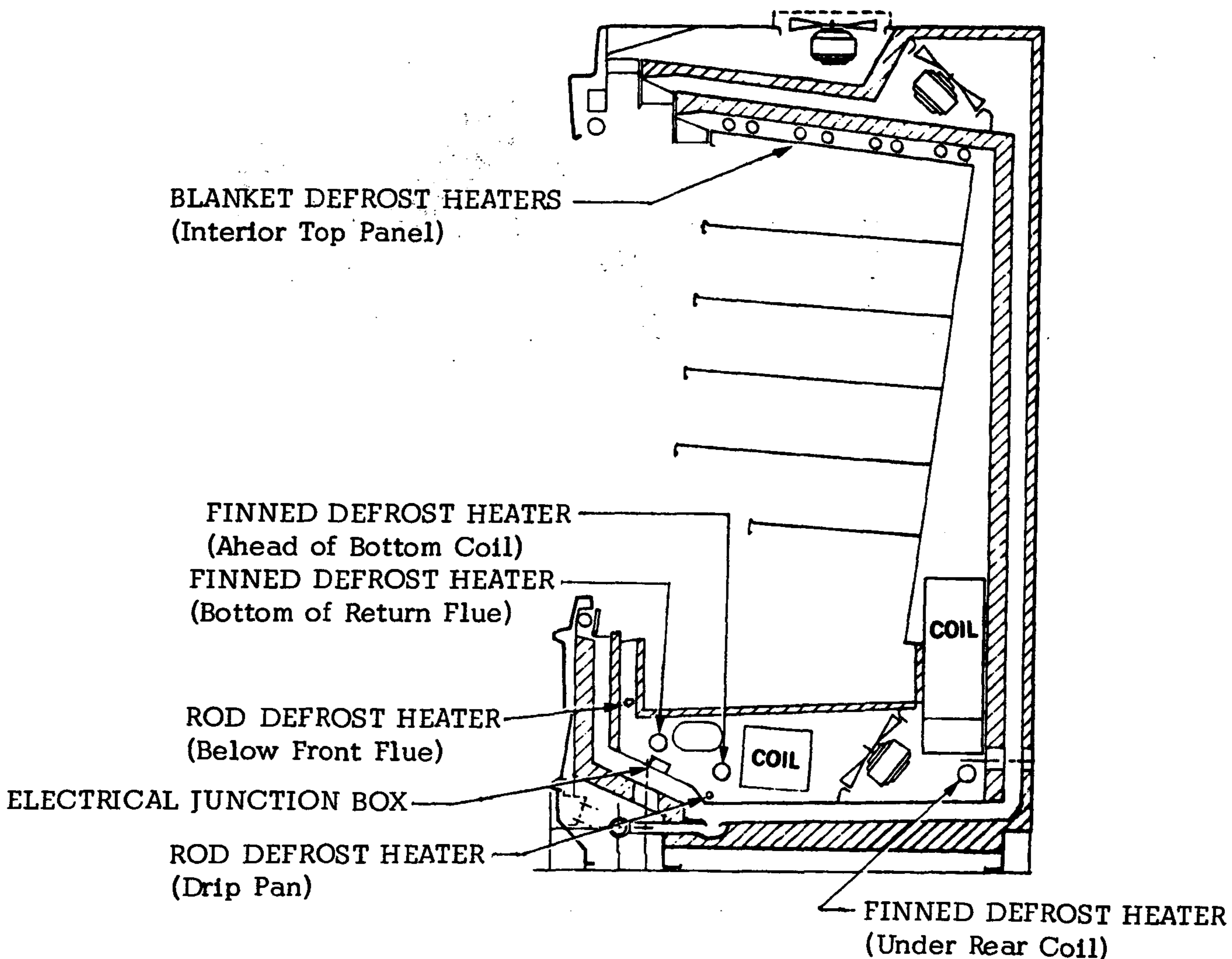


REPLACING DEFROST HEATERS

The following cross section shows the defrost heater location in a typical ice-cream model (G5C and G6C). Although frozen food models will not have all the heaters shown, the ones they will have are located as shown. Refer to the wiring diagrams in Section IV of this instruction for the type of heater in each model.

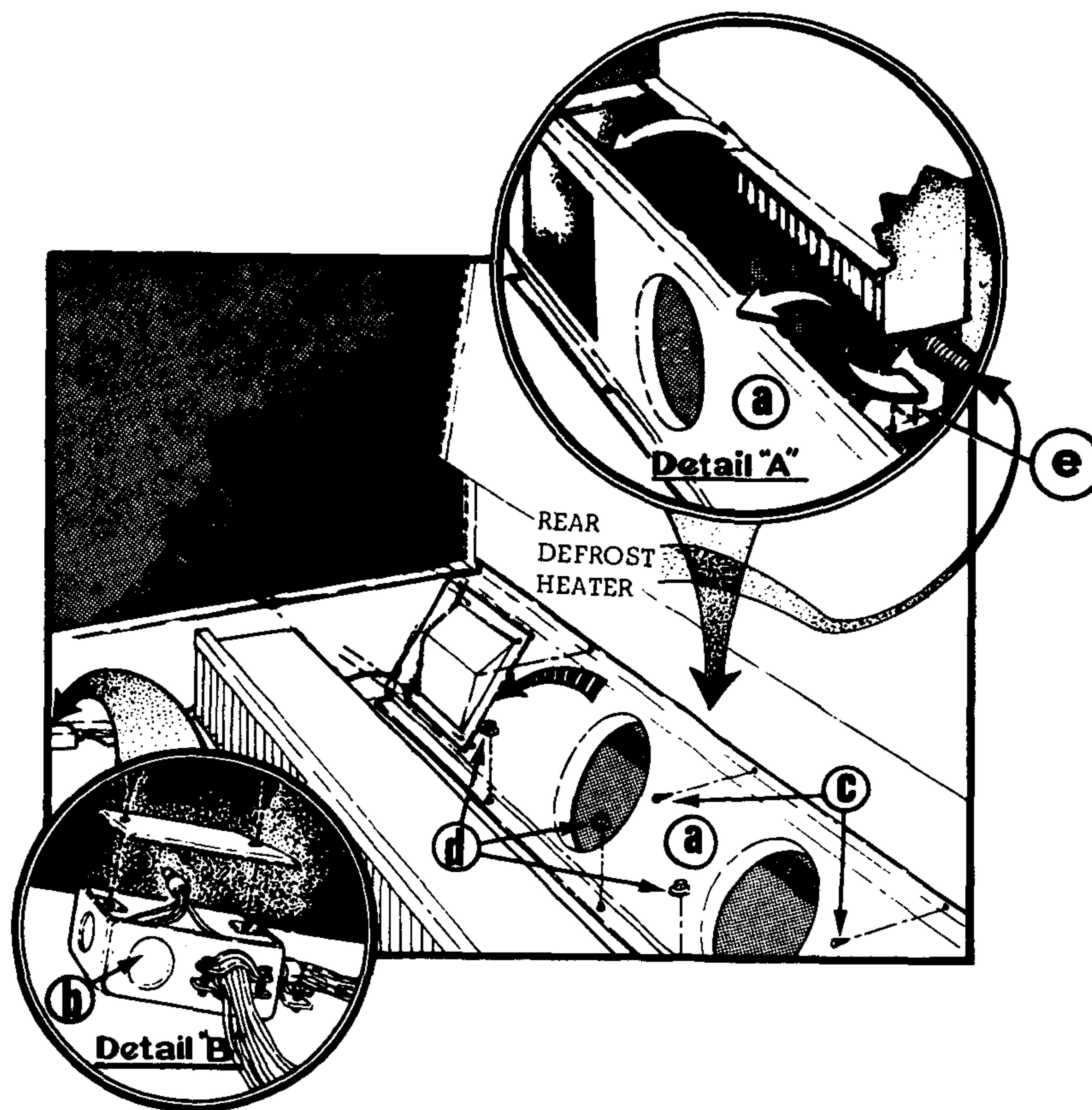
The defrost heater wires are all wired into the junction box where they are spliced into three phased wiring and then routed into the raceway. When replacing any defrost heater, be certain to connect the new heater as the original, to maintain the electrical balance of the three phased circuit.

NOTE: The Koolgas defrost heaters are not 208 volt, three phased. These heaters are connected to a 120 volt power source, see page 26.



REPLACING REAR DEFROST HEATER (UNDER REAR COIL)

- STEP 1.** TURN OFF ELECTRIC POWER.
- STEP 2.** Remove the display pans and lower shelves.
- STEP 3.** Remove the sheet metal screws (c), along top flange of fan plenum, and sheet metal screws (d), along bottom flange of fan plenum. Move the fan plenum forward for access to this heater. See Detail A.
- STEP 4.** Remove the screws (e) then slide the heater and its retaining bracket from beneath the coil.
- STEP 5.** Disconnect the heater from the wiring in the junction box, See Detail B. Install new heater in reverse order.



REPLACING OTHER DEFROST HEATERS IN THE COIL AREA

(Drip Pan, Front Return Flue and finned heaters located in front of the coil and below the return flue)

STEP 1. TURN OFF ELECTRIC POWER.

STEP 2. Remove the display pans and if necessary the lower shelves.

STEP 3. Remove the defective heater from its retaining brackets. Disconnect the heater leads in the junction box and install the new heater as the original.

NOTE: For proper defrost these heaters must be installed exactly as they were originally, especially the finned heaters. The finned heaters are to be directly in front of the coil; not shifted to either side.

REPLACING INTERIOR TOP PANEL DEFROST HEATERS

STEP 1. TURN OFF ELECTRIC POWER

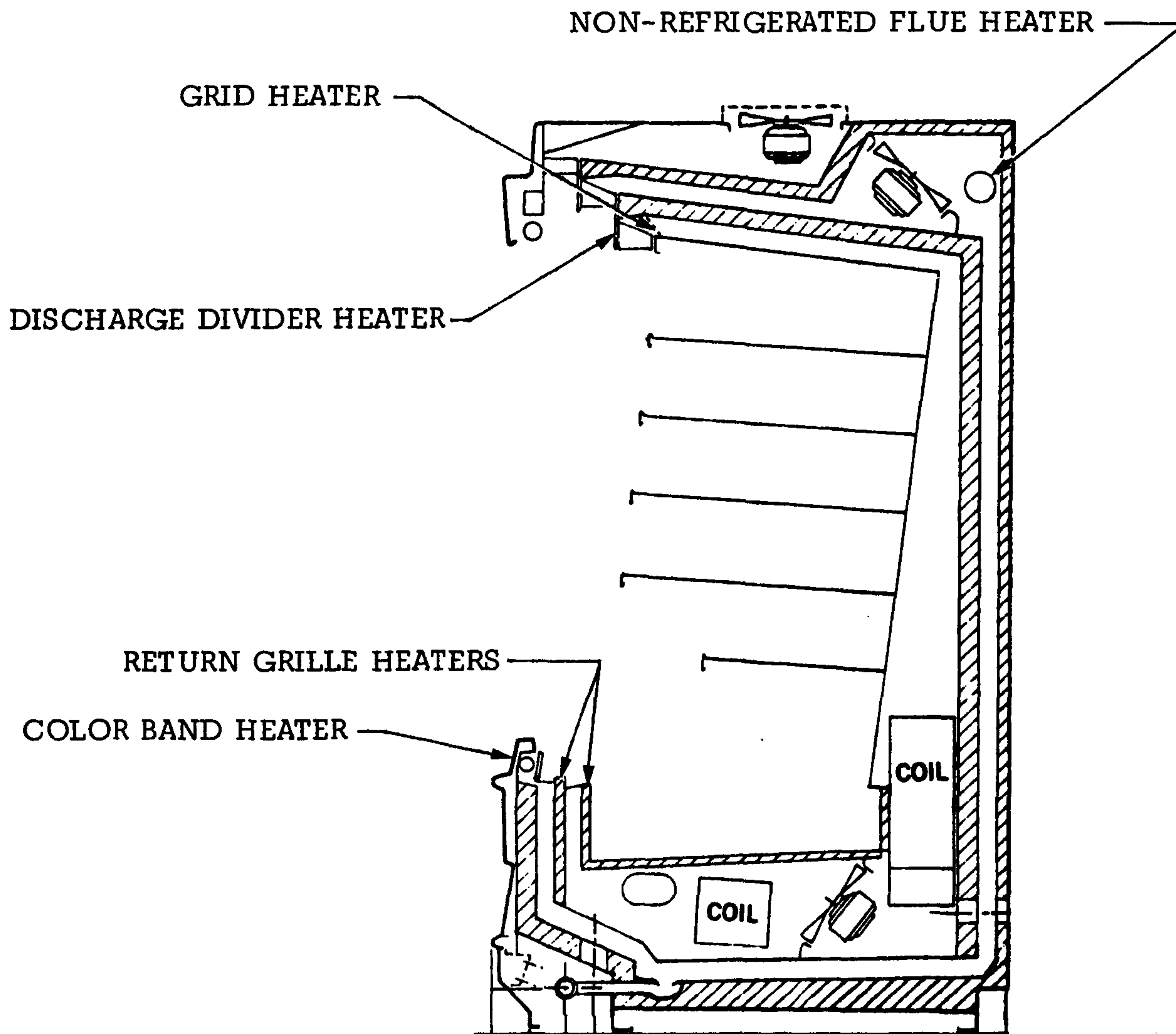
STEP 2. Remove the interior top panel. The heaters are bonded to the back side of the panel, one heater for every 4' section. Each heater has a disconnect behind the top panel.

NOTE: Due to the size of the interior top panel, it is full length, replacing one of these heaters is very difficult for one person

STEP 3. Remove heater from the panel and install the new heater. Connect the heaters to the harness receptacle and replace the interior top panel.

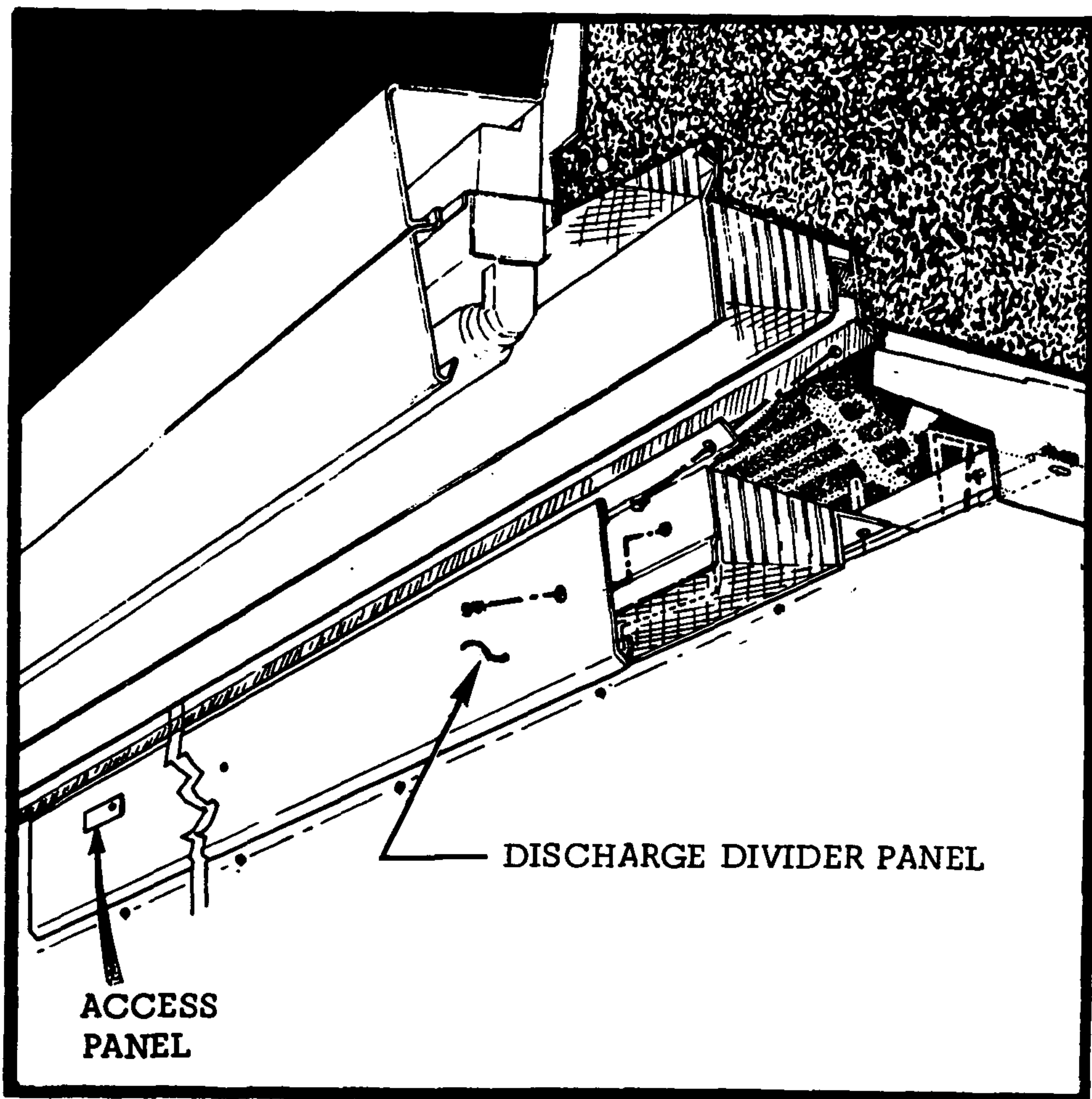
REPLACING ANTI-SWEAT HEATERS

The following cross section shows the anti-sweat heater location in a typical ice-cream model (G5C and G6C). Although frozen food models will not have all the heaters shown, the ones they will have are located as shown. Refer to the wiring diagrams in Section IV of this instruction for the types of heaters in each model.



REPLACING DISCHARGE DIVIDER HEATER

- STEP 1. TURN OFF ELECTRIC POWER
- STEP 2. Remove the small access panel shown below and disconnect the heater from its power harness.
- STEP 3. Remove the sheet metal screws which fasten the discharge divider panel and lower the panel. The heater is foil bonded to the back side of the panel.
- STEP 4. Install new heater and install items in reverse order of removal.



REPLACING GRID HEATER

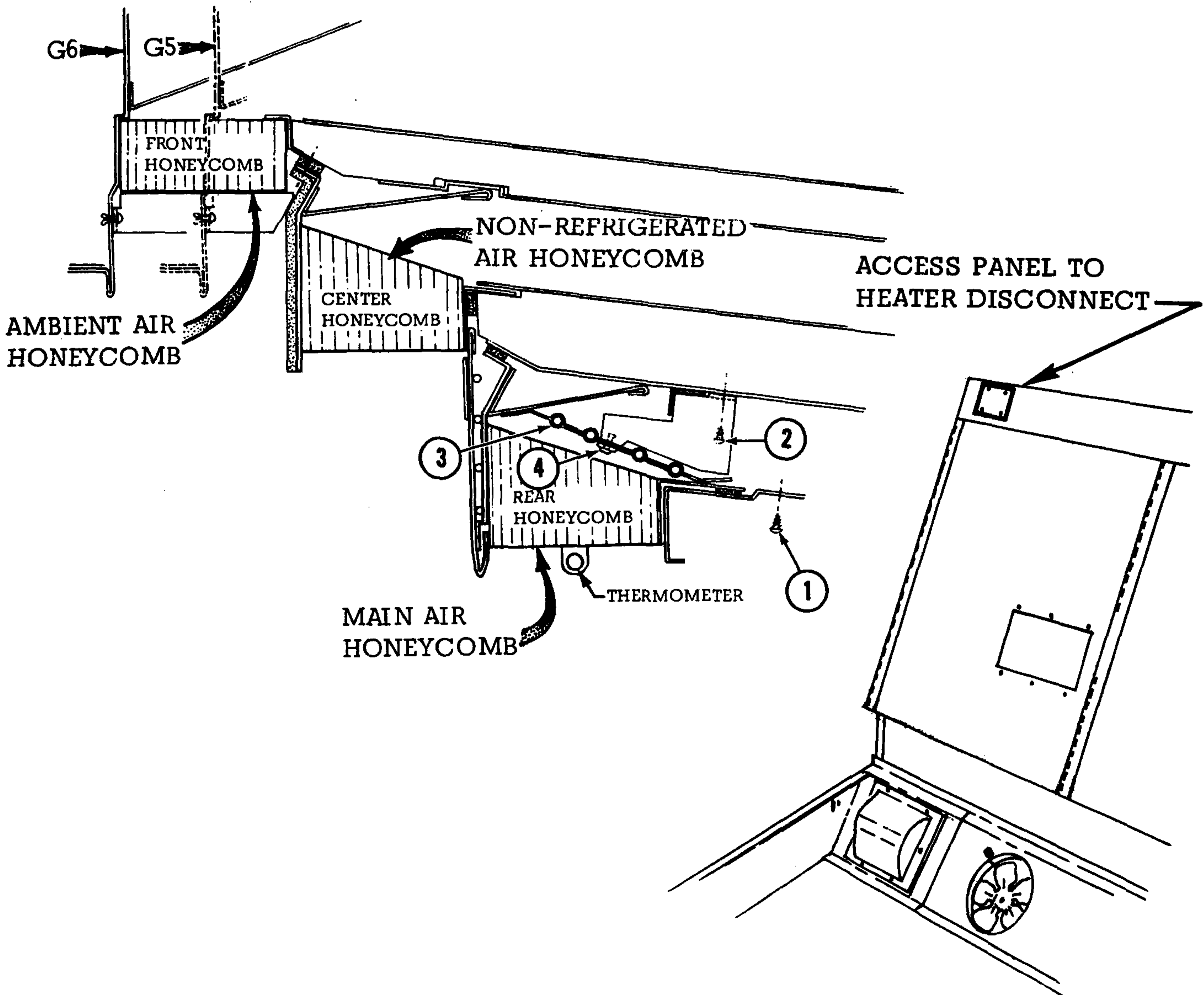
STEP 1. TURN OFF ELECTRIC POWER

STEP 2. Disconnect the grid heater from its harness behind the access panel located on the interior back panel at the left end of the case as shown below.

STEP 3. Remove the Discharge Divider (see previous page) and the Main Air Honeycomb (see page 40). Loosen the front screws of the interior top panel (Item 1 below).

STEP 4. Remove screws (Item 2) and remove grid heater assembly.

STEP 5. Drill pop rivets (Item 4) and remove heater. Install new heater to bracket with pop rivets and install all items as they were removed.



REPLACING NON-REFRIGERATED FLUE HEATER

STEP 1. TURN OFF ELECTRIC POWER

STEP 2. Remove the insulated top panels from the exterior top of the case, see page 41. This heater is located immediately below these panels.

STEP 3. Disconnect the heater from the harness receptacle and remove heater from its retaining brackets. Install new heater as was the original heater and replace insulated top panels. Be certain that the gasket on the panels is in position for a good seal.

REPLACING COLOR BAND HEATER

STEP 1. TURN OFF ELECTRIC POWER

STEP 2. Remove the case hand rail and any joint or end trim fastened to it

STEP 3. Remove the color band and disconnect the heater. Heater is foil bonded to the back side of the color band.

STEP 4. Install new heater and replace all items as they were removed. Be certain to reconnect the ground wire, as it was originally, located at the center of the color band.

REPLACING RETURN GRILLE HEATERS

STEP 1. TURN OFF ELECTRIC POWER

STEP 2. Remove the return grilles. These are epoxy encapsulated heaters located in the offset of the return grille at the top of the return flues. Their lead wires are routed down and into the raceway at the left end of the flue.

STEP 3. Replace the defective heater and install all items as they were removed.

REPAIRING ALUMINUM COIL

The aluminum coils used in Hussmann merchandisers may be easily repaired in the field. Materials are available from local refrigeration wholesalers.

Hussmann recommends the following solders and technique:

Solders

Aladdin Welding Products Inc.

P.O. Box 7188

1300 Burton St.

Grand Rapids, MI 49507

(616) 243-2531

X-Ergon

1570 E. Northgate

P.O. Box 2102

Irving, TX 75062

(800) 527-9916

NOTE:

Hussmann Aluminum melts at1125° F

Aladdin 3-in-1 rod at732° F

X-Ergon Acid core at455° F

Factory Solder at aluminum

to copper transitions855° F

Technique

1. Locate Leak.
2. Remove all pressure.
3. Brush area UNDER HEAT.
4. Use Prestolite torch only. Number 6 tip.
5. Maintain separate set of stainless steel brushes and use only on aluminum.
6. Tin surface around area.
7. Brush tinned surface UNDER HEAT, thoroughly filling the open pores around leak.
8. Repair leak. Let Aluminum melt solder, NOT the torch.
9. Don't repair for looks. Go for thickness.
10. Perform a leak check.
11. Wash with water.
12. Cover with a good flexible sealant.