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VGS, VGL, VGK
VGSR-VGLR,
VFS, VFL, VFK, VFT

REFRIGERATED
FRESH MEAT, DELICATESSEN or FISH
MERCHANDISERS

INSTALLATION / SERVICE INSTRUCTIONS

ENG. NO. 250991 H

August, 1989
Supersedes #250991G
Dated December, 1988
Section 2

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REVISION ("H")

New page for breather tubes, page 10

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

SECTION 1GENERAL INFORMATIONMODEL DESCRIPTION

These merchandisers, with their full length "VU-MOR" glass enclosed fronts, are designed for fresh meat and delicatessen service departments. The following table provides a brief description of each available model and its designed application. All models are available in either 8' or 12' lengths.

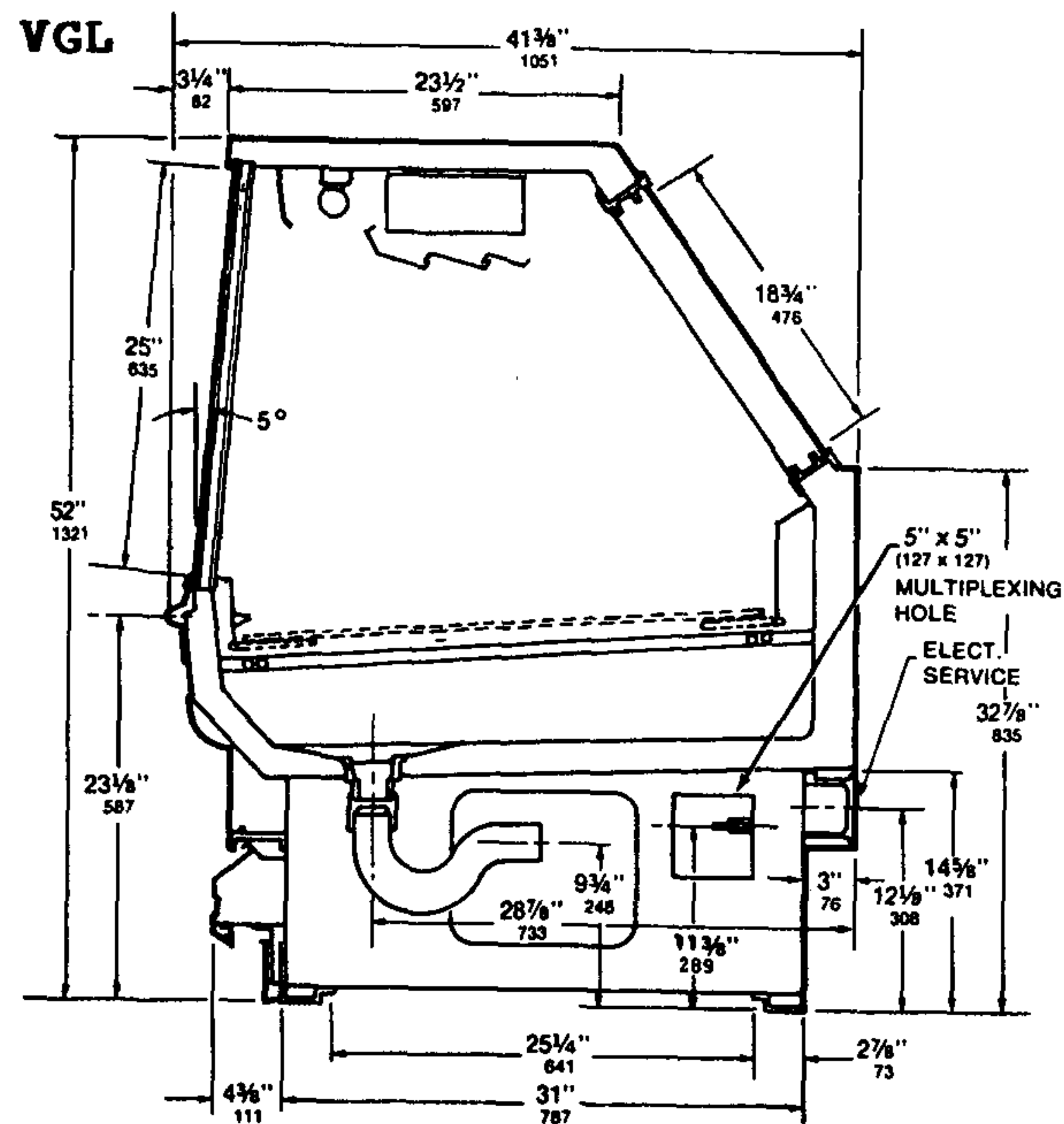
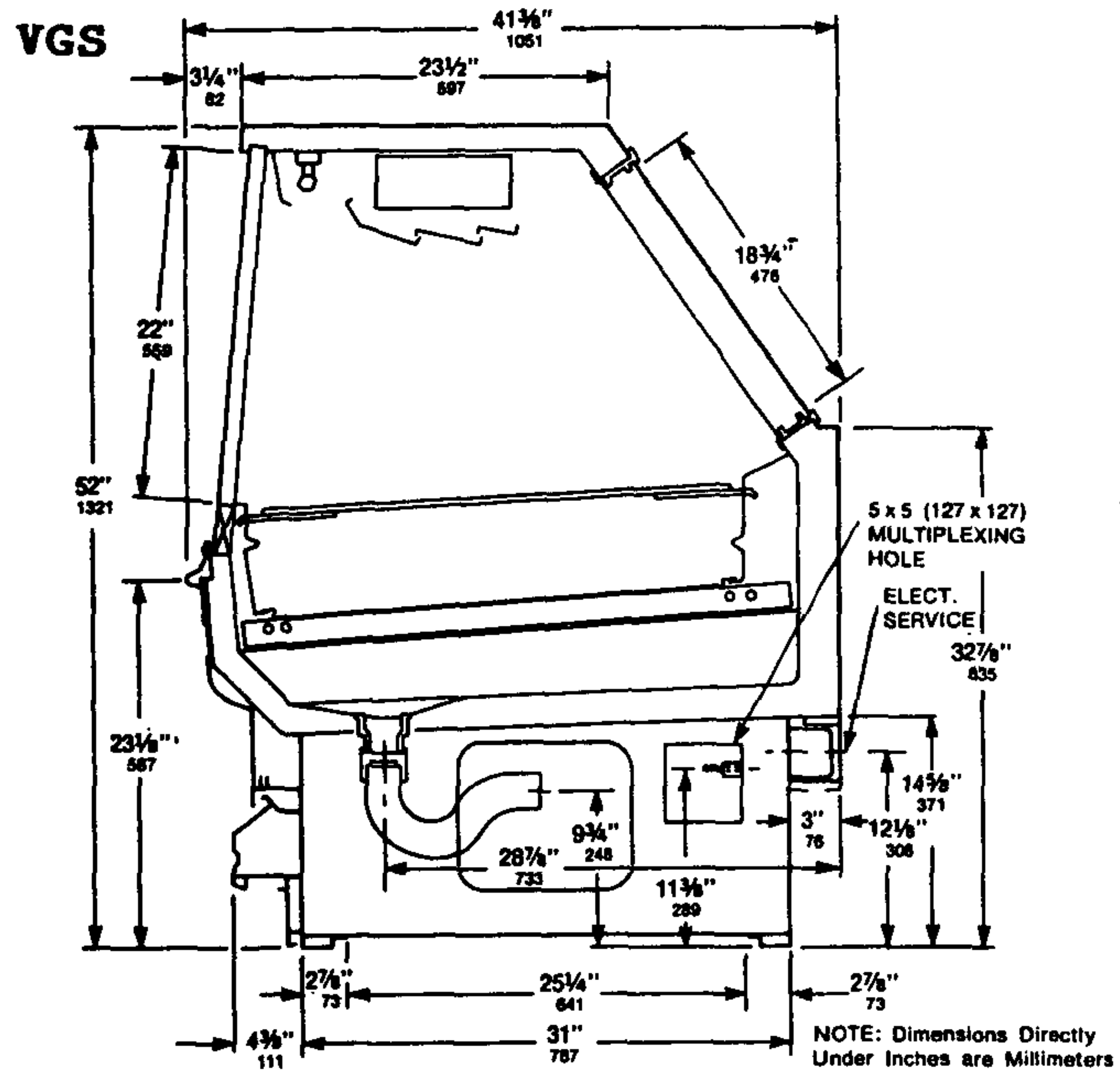
| MODEL | DESCRIPTION | APPLICATION |
|-----------------------------------|--|--------------------------------|
| VGS VGL VGK VGSR VGLR | HAS 22" WIDE FRONT GLASS HAS 25" WIDE FRONT GLASS HAS 29" WIDE FRONT GLASS HAS 22" WIDE FRONT GLASS, REFRIGERATED LOWER STORAGE HAS 25" WIDE FRONT GLASS, REFRIGERATED LOWER STORAGE | FRESH MEAT, DELICATESSEN |
| VFS VFL VFK VFT | HAS 22" WIDE FRONT GLASS HAS 25" WIDE FRONT GLASS HAS 29" WIDE FRONT GLASS HAS 25" WIDE FRONT GLASS AND GLASS TOP | NON-REFRIGERATED FRESH FISH |

APPLICATION

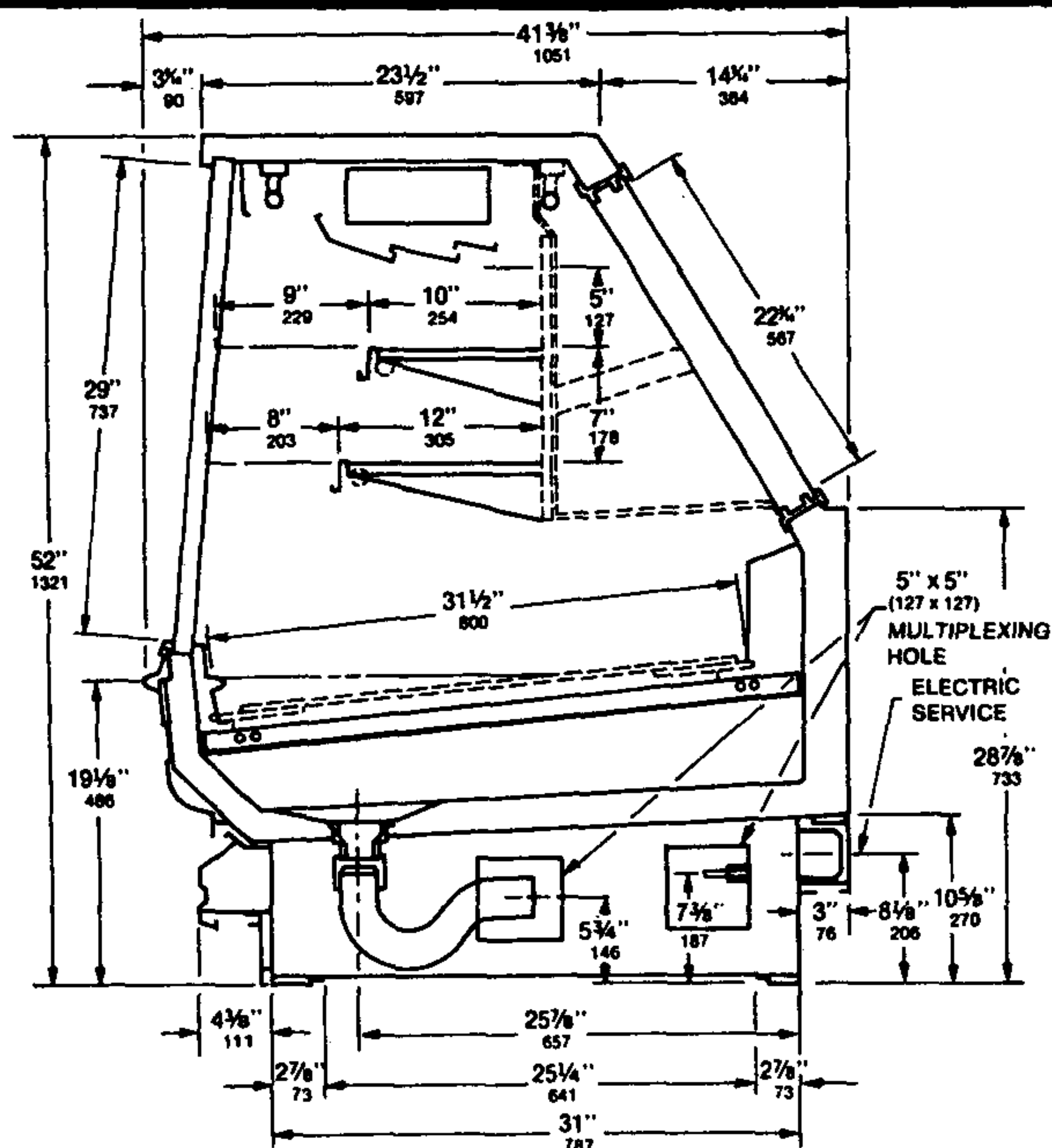
The VFS, VFL, VFK and VFT models are non-refrigerated, designed to display fresh fish products on shaved or crushed ice.

All other models are refrigerated models that are designed for use in air conditioned stores where temperature and humidity are maintained at or below 75°F and 55% relative humidity.

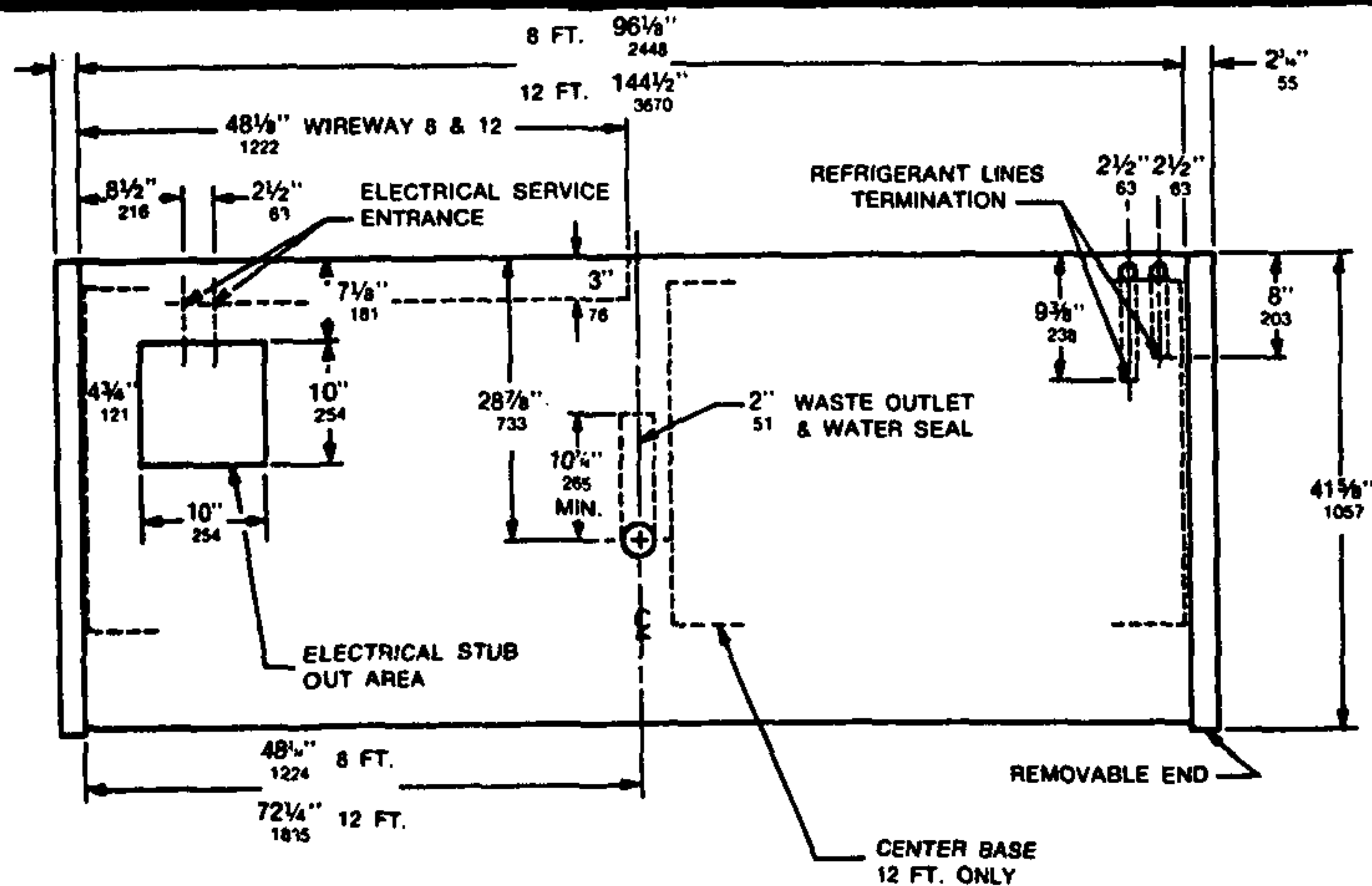
REFRIGERATED FRESH MEAT or DELICATESSEN MODELS



VGK



PLAN VIEW

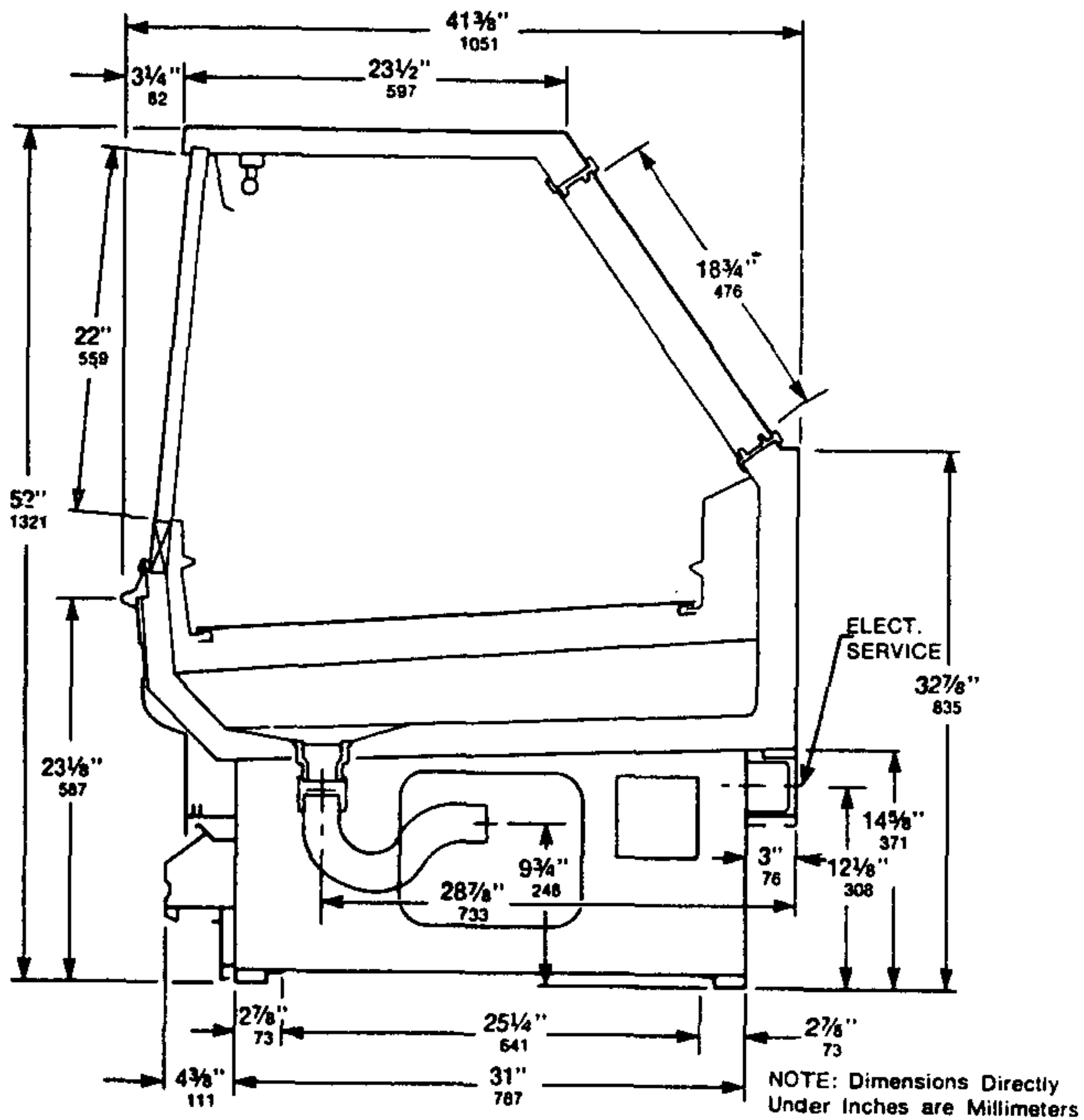


VGSR

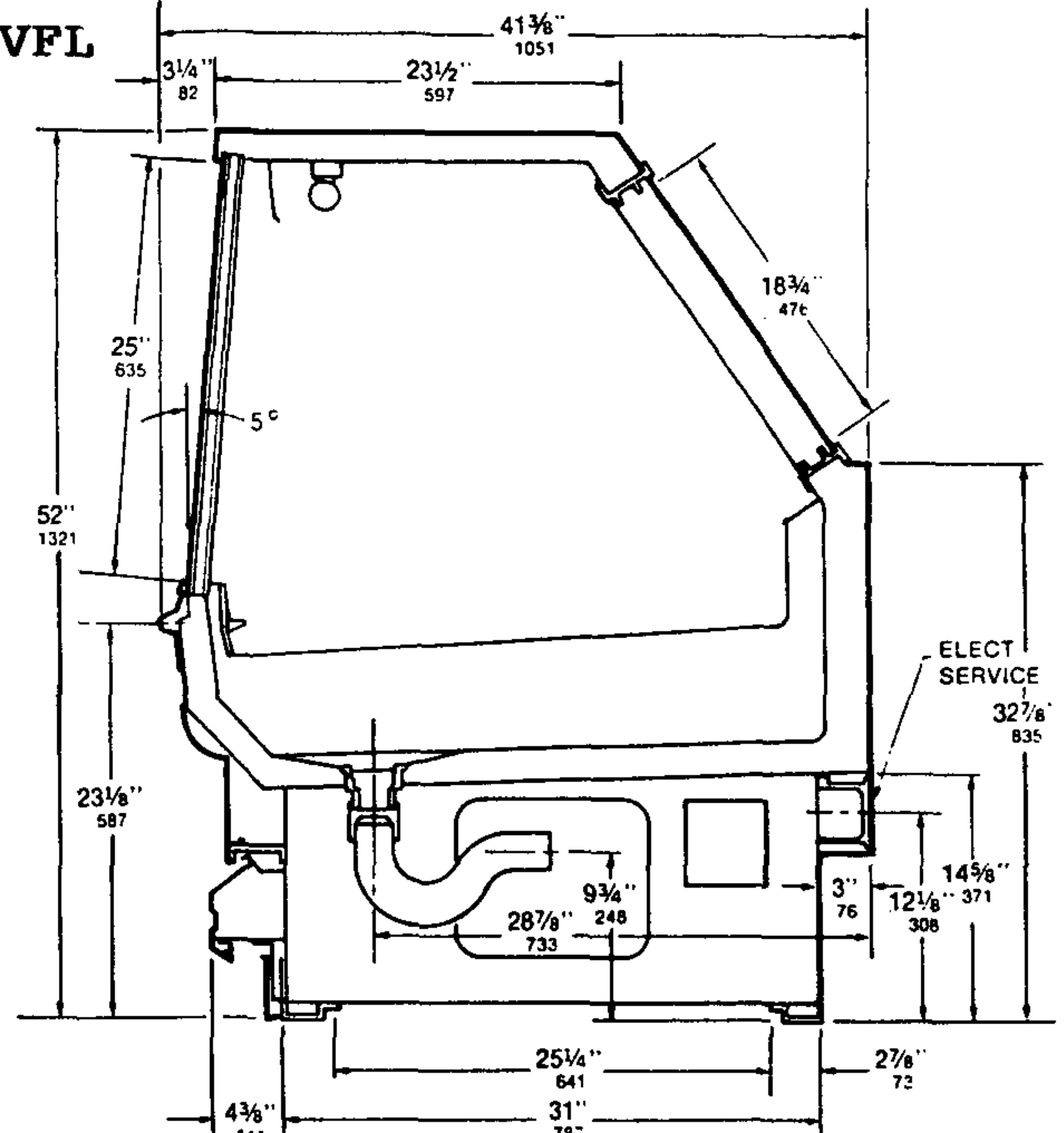
NOTE:
DIMENSION DIRECTLY UNDER
INCHES IS MILLIMETERS.

NON-REFRIGERATED MODELS

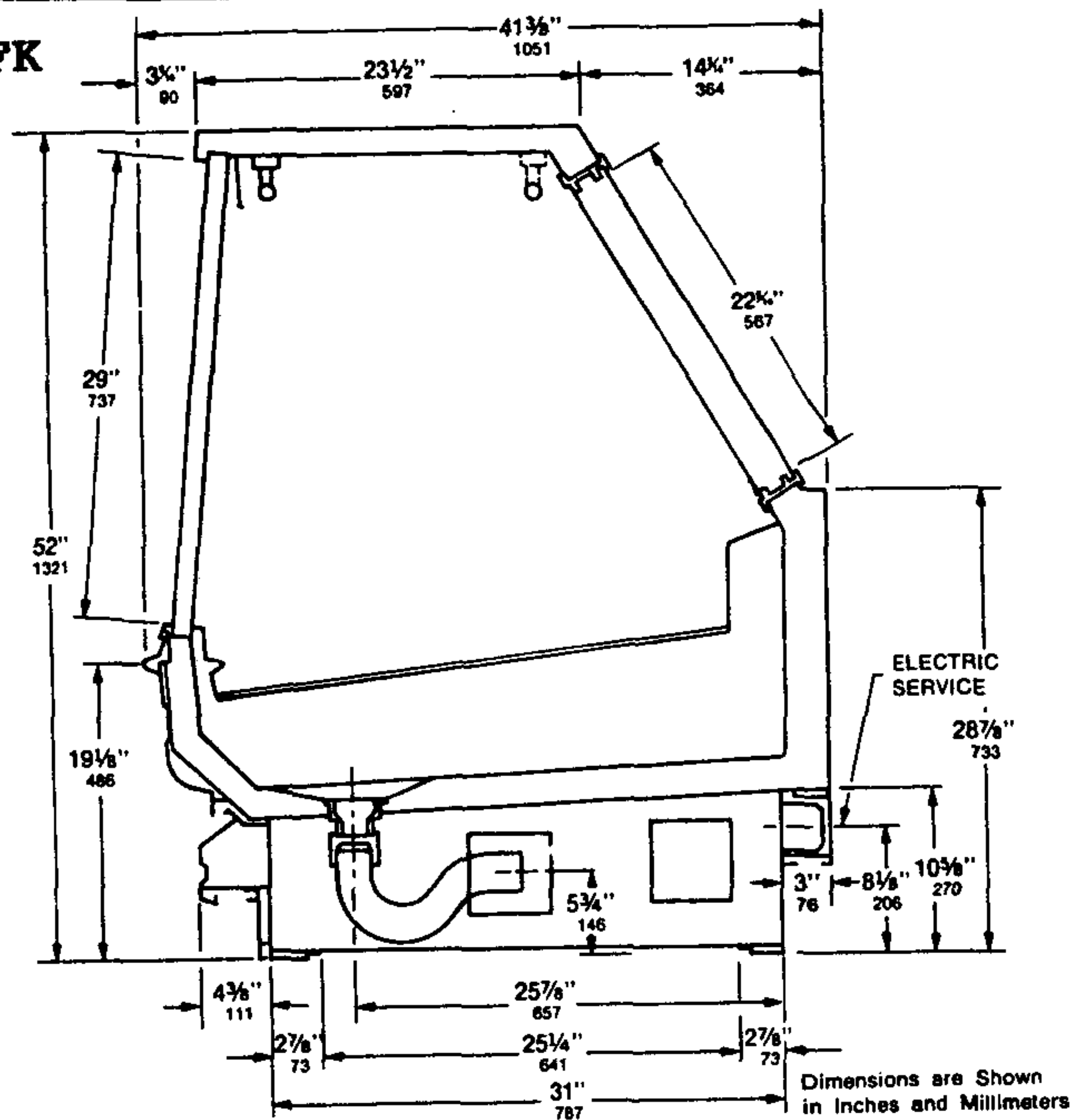
VFS



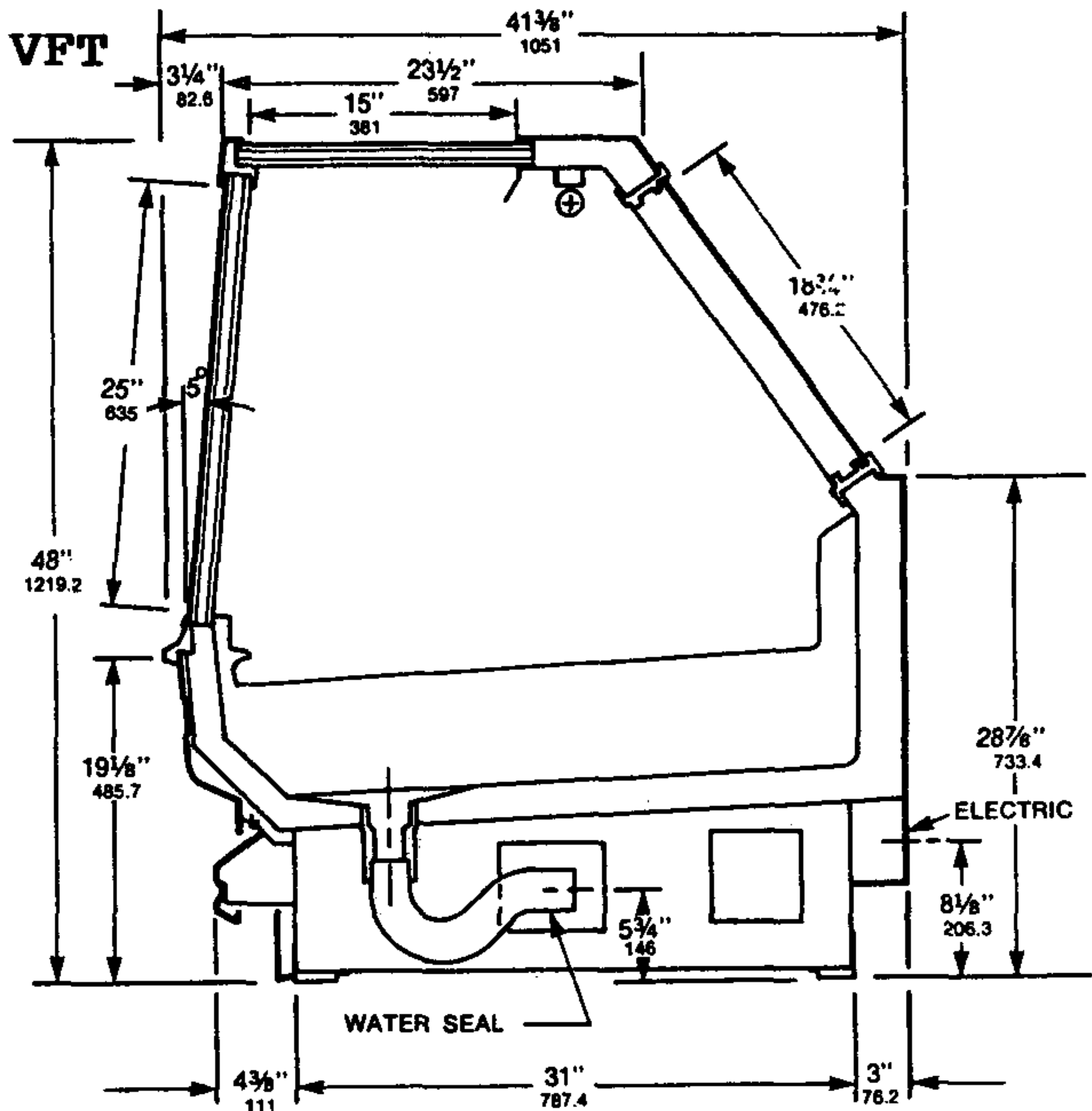
VFL



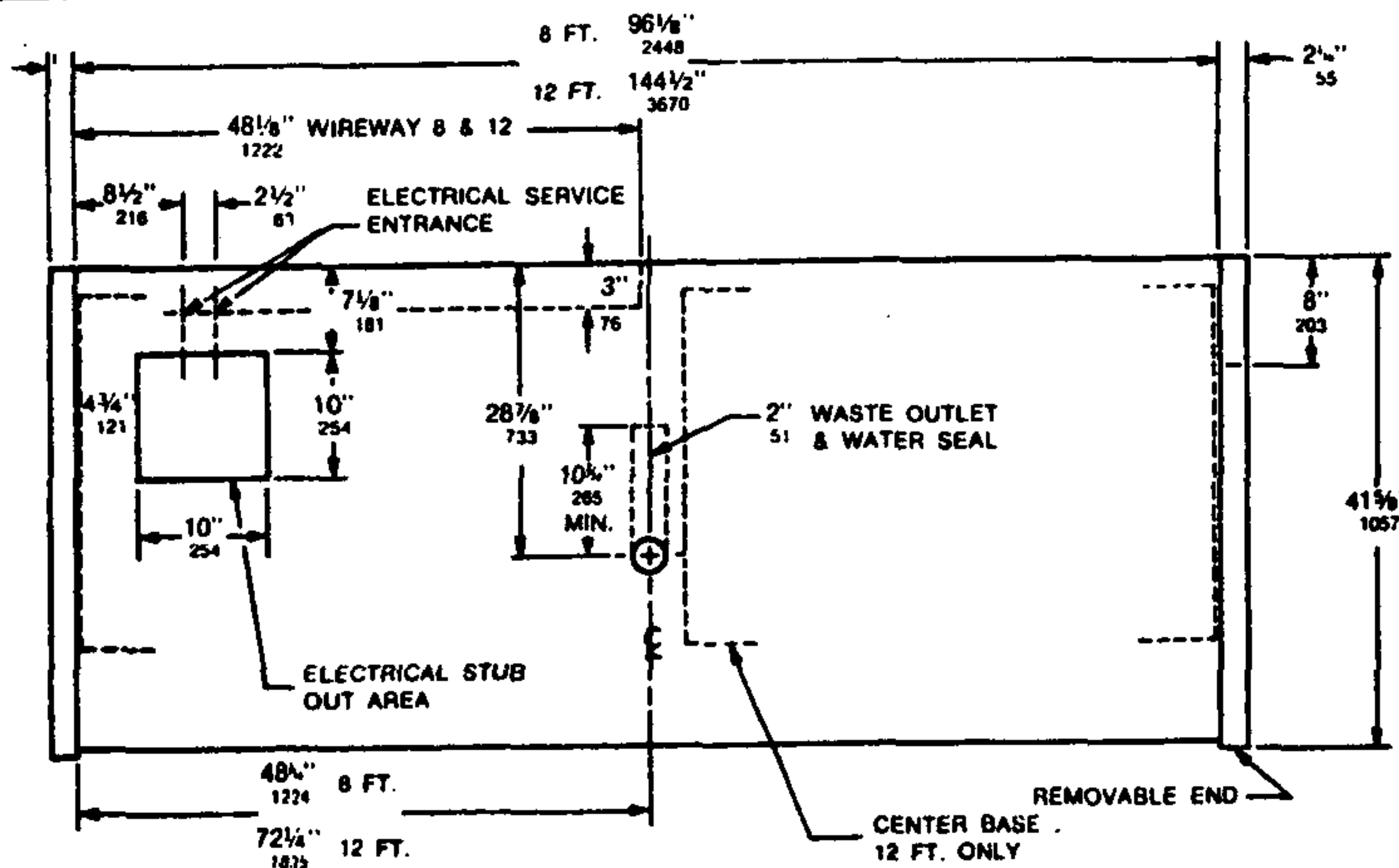
VFK



VFT



PLAN VIEW



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.

LOCATION

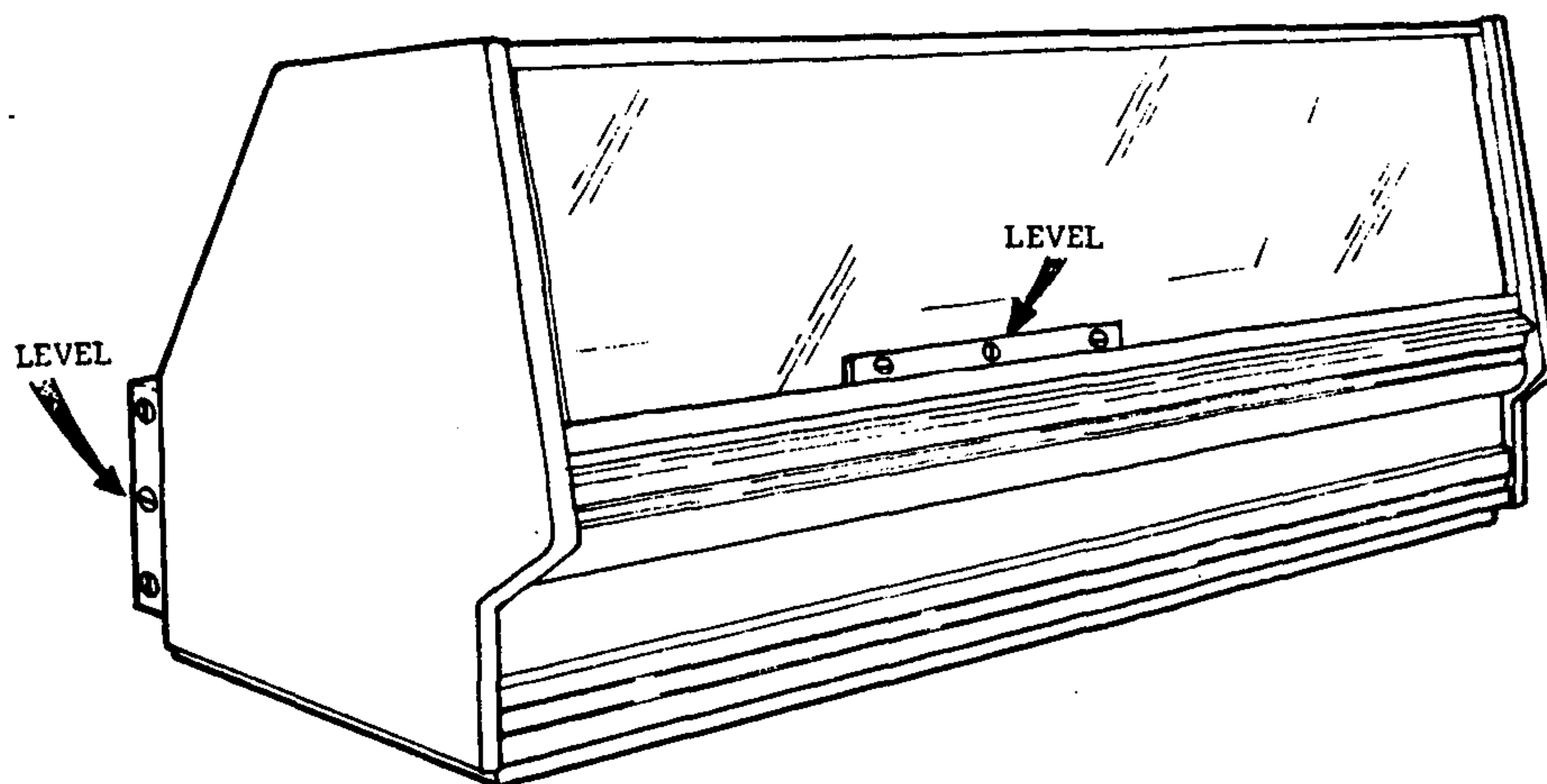
This refrigerator, like all other refrigerators, is sensitive to air disturbances. Air currents passing around the refrigerator will seriously impair its performance. Do not allow air conditioning, electric fans, open doors or windows, etc. to create air currents around this refrigerator.

LEVELING

This refrigerator must be installed level to insure proper operation of the refrigeration system and drainage of defrost water. Use a carpenter's level as shown in the following illustration when leveling. Leveling shims have been provided, if needed.

ANCHORING

These refrigerators do not require anchoring.



JOINING

This refrigerator is of sectional construction, which means that two or more of these refrigerators may be joined in line yielding one long continuous display that requires only one pair of end assemblies.

WASTE OUTLET AND WATER SEAL

The waste outlet is located at the center of the refrigerator for all models.

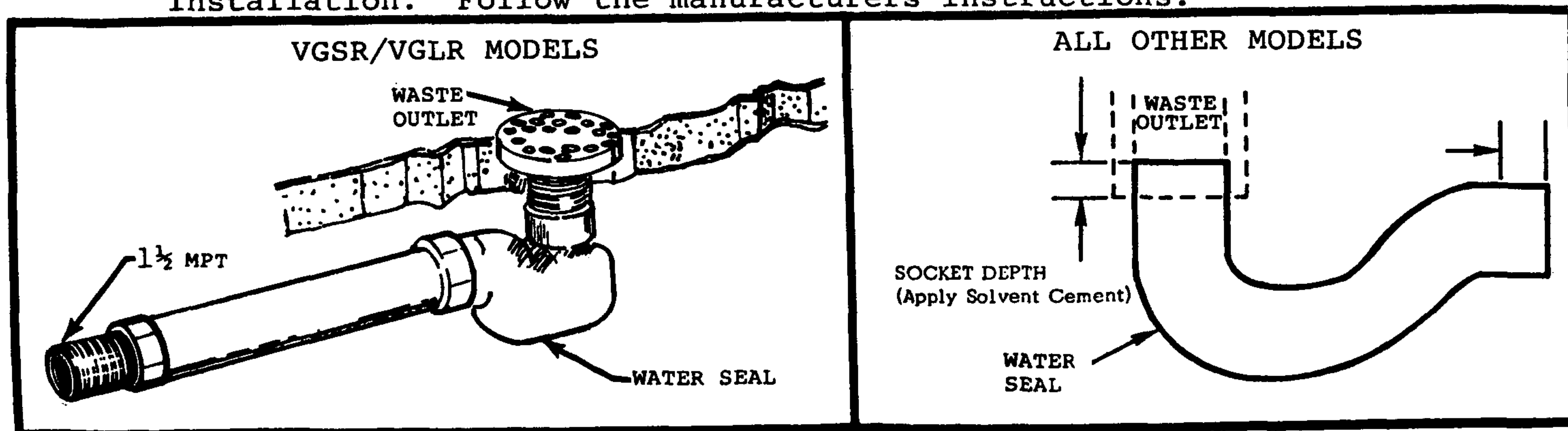
-VGSR & VGLR MODELS-

These refrigerators have an internal water seal and a plastic $1\frac{1}{2}$ " MPT threaded drip pipe fitting located at the rear of the refrigerator to which field supplied and installed drip piping is to be installed.

-ALL OTHER MODELS-

A 2" ID plastic water seal has been shipped with each of the other refrigerator models to which field supplied drip piping is to be installed. The water seal is to be field installed and oriented in the desired direction.

PVC/DWV solvent cement is recommended for all drip pipe installation. Follow the manufacturer's instructions.



INSTALLING DRIP PIPING

Poorly or improperly installed drip piping 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 piping to insure a 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. Double water seals will act as an air lock and prevent draining.
- C. Provide as much downhill slope (fall) as possible, 1/8" per foot is preferred. Plastic piping must be supported to maintain the slope and prevent sag.
- D. Avoid long runs of drip piping. Long runs make it impossible to provide the necessary slope.
- E. Provide a suitable air break between the flood rim of the floor drain and the outlet of the drip piping.
- 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.

INSTALLING SPLASHGUARD

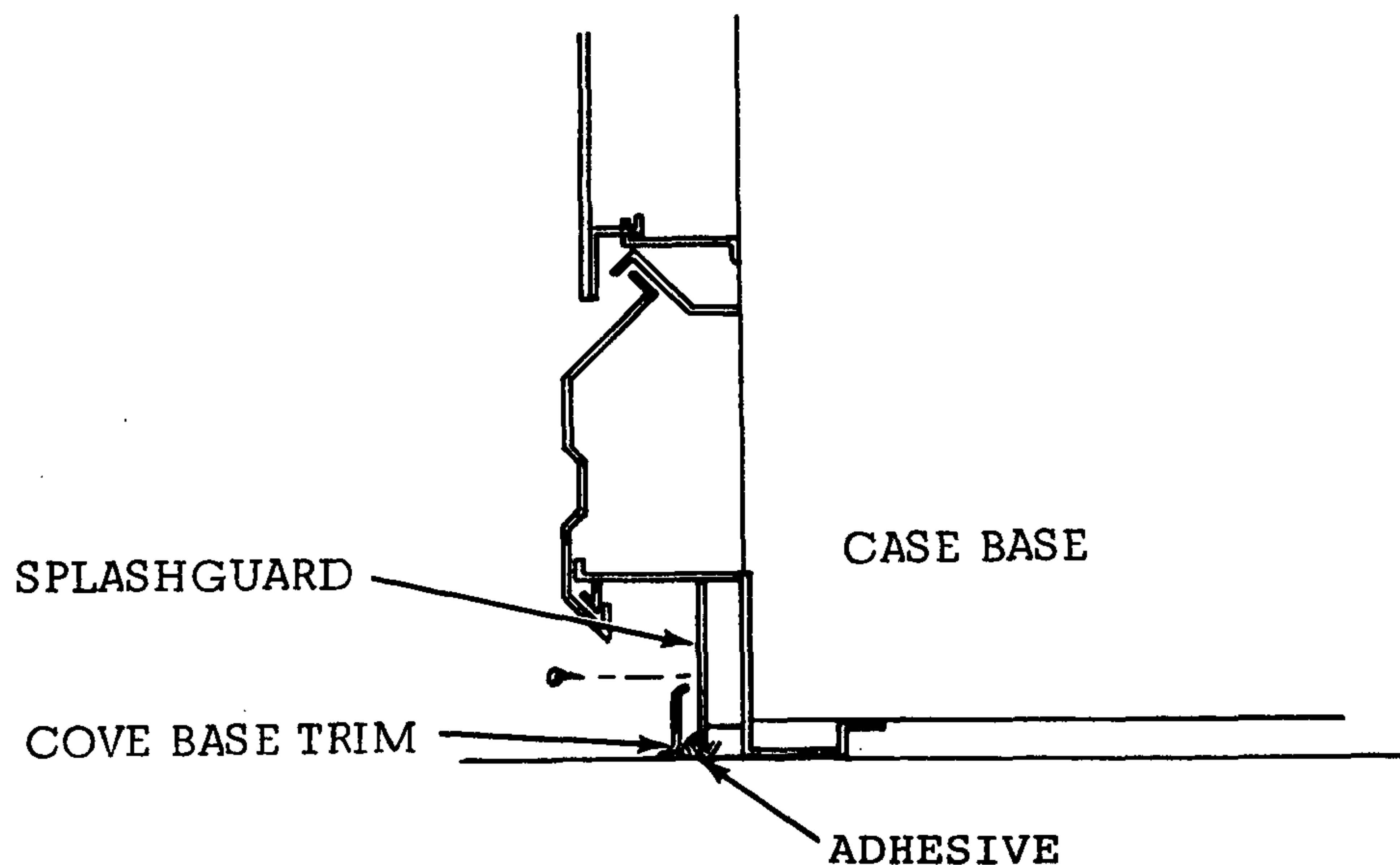
After cases have been leveled and joined and refrigeration and waste piping work completed, install the splashguards (shipped inside of refrigerators). Fasten along the top edge with #8X1/2 sheet metal screws as shown below.

SEALING SPLASHGUARDS TO FLOOR

If required by local sanitation codes or if the customer desires, the splashguards may be sealed to the floor using a vinyl cove base trim. The size of the trim needed will depend on how much the floor is out of level.

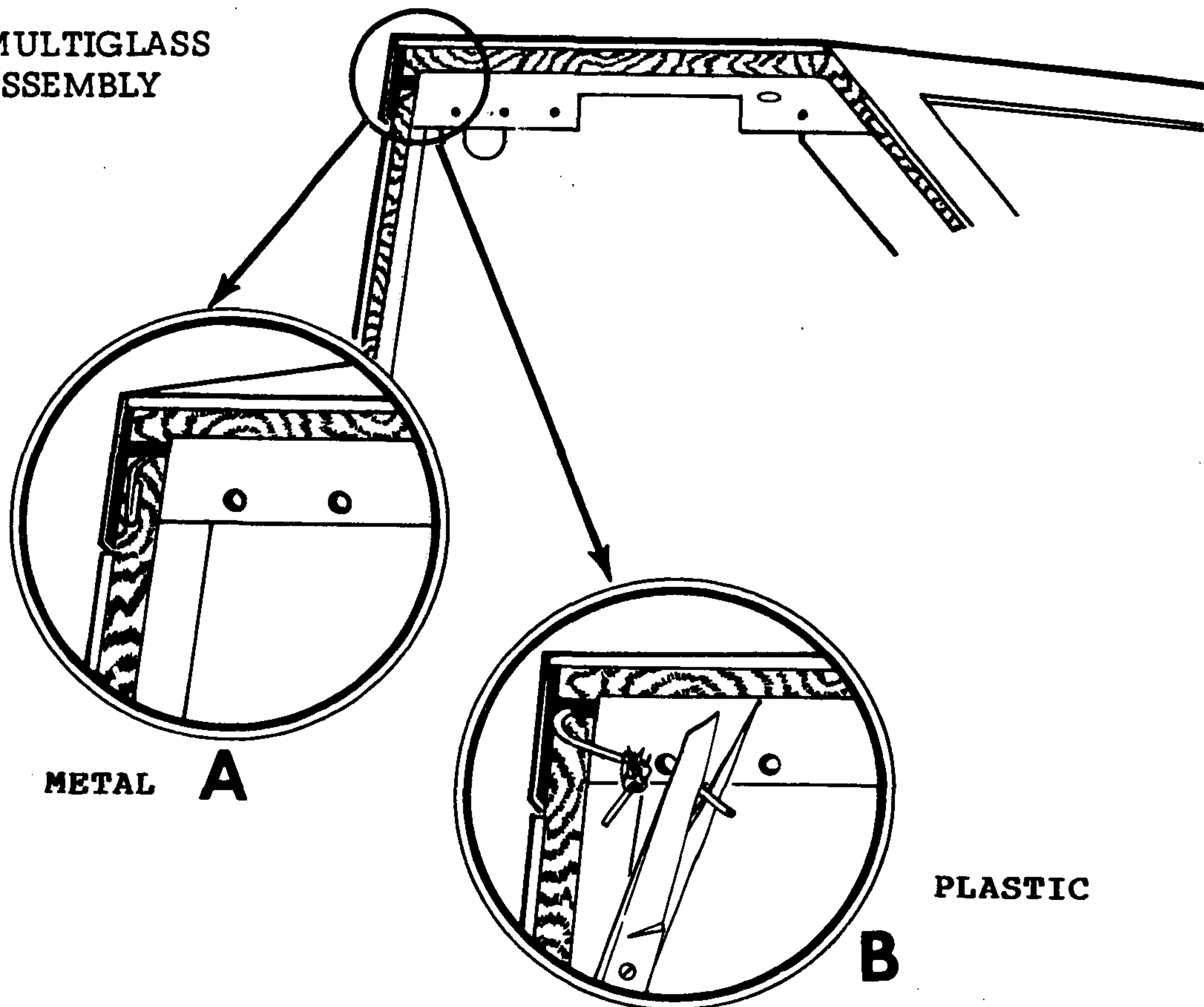
To install the trim to the splashguard:

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



MULTIGLASS ASSEMBLIES

The front multiglass assembly and top service doors are equipped with "IN TRANSIT" breather tubes. Breather tubes **MUST** be sealed at time of installation, before joining or installing ends.

**MULTIGLASS
ASSEMBLY**

Type A - Cut off metal tubing 1-1/2" from wood frame, crimp end, fold over as shown to assure complete closure and bend flush with wood.

Type B - Cut off surplus plastic tube with scissor or knife. Use heat to permanently seal end.

SECTION 3**REFRIGERATION****REFRIGERANT**

The refrigerated models 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 refrigerator's serial plate located at the left hand end on the exterior back.

REFRIGERANT PIPING

CONNECTION SIZES: Liquid Line 3/8" OD
 Suction Line 5/8" OD

OUTLET LOCATION

The refrigerant line outlet is located beneath the refrigerator, at the right hand end, as viewed from the front.

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 Off-Time defrost, the suction and liquid lines should be clamped or taped together and insulated for a minimum of 30 ft. from the refrigerator. Additional insulation for the balance of the lines is recommended wherever condensation drippage is objectionable.

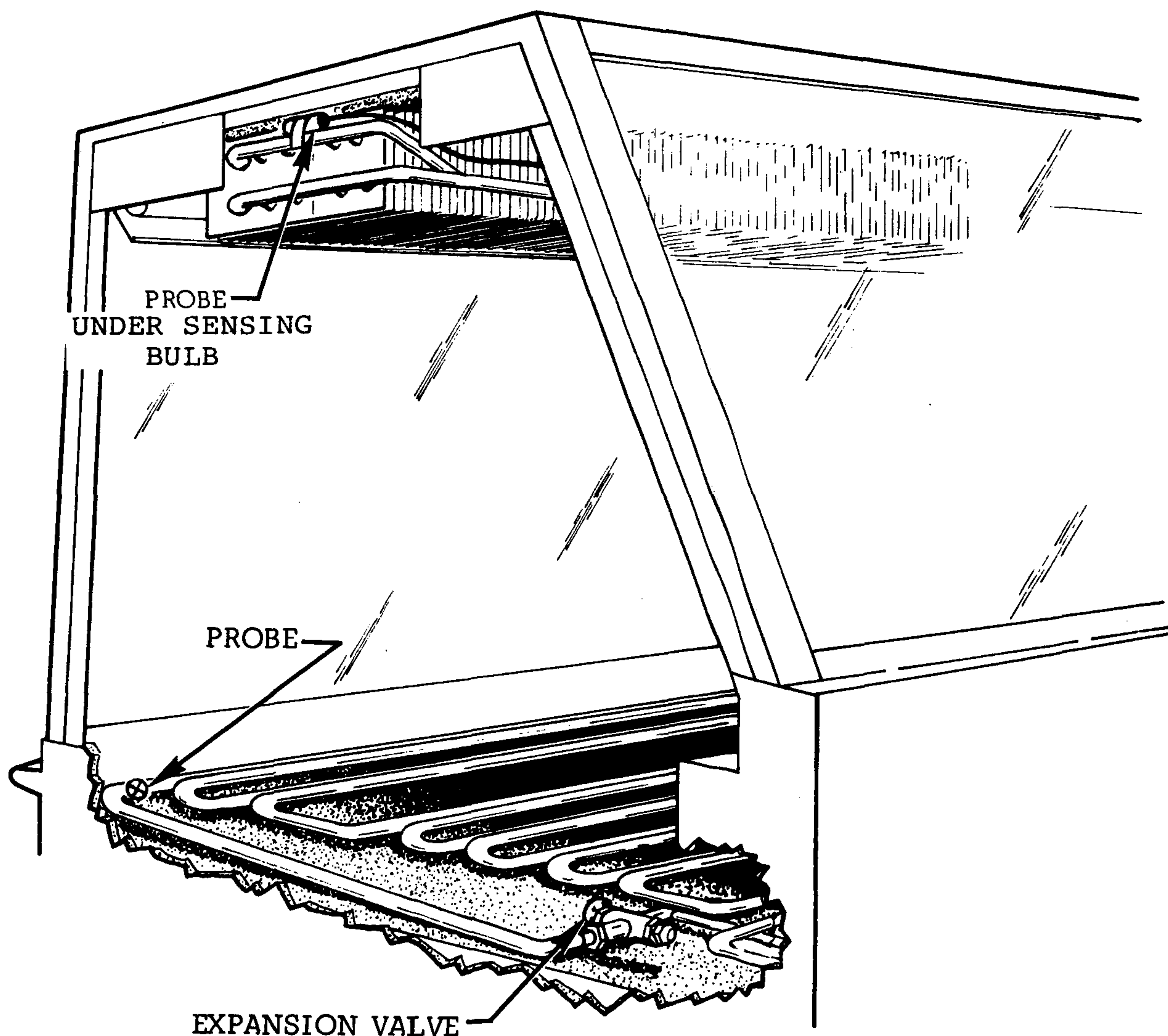
REFRIGERATION PARTS LIST (Sporlan Nomenclature)

| MODEL | TYPE OF DEFROST | REFRIGERANT | BALANCED PORT EXPANSION VALVE |
|---------------------------|-----------------|-----------------------|-------------------------------|
| ALL 8' & 12' MODELS | Off Time | R-502 R-22 R-12 | BFR AC BFV AC BFF AC |

EXPANSION VALVE ADJUSTMENT

The expansion valve must be adjusted to fully feed the evaporator. Before attempting to adjust the valve, make sure the evaporator is either clear or only lightly covered with frost, and that the fixture is within 10°F of its expected operating temperature. Adjust 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 line (see illustration). Some "hunting" of the expansion valve is normal. The valve should be adjusted 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 adjustments. Replace and tighten cover over valve stem.







CONTROLS AND ADJUSTMENTS


The objective of the controls and settings shown in this section is to maximize the shelf life of the deli products. Failure to follow these instructions will increase the rate of spoilage and cause discoloration and drying of the product.

Product temperature should be maintained at a constant proper temperature from the time it is received, through storage, preparation and display. Therefore, proper temperature in the storage cooler and minimum time in the preparation area is essential to maximize the shelf life of these perishables.

CONVENTIONAL MULTIPLEXING

| REFRIGERATION CONTROL  | | | | | | DEFROST CONTROL | | |
|---|------------------------------|-------------|----------------------|---------|-------------------------------|--|--|----------------------|
| PRODUCT TEMPERATURE | THERMOSTAT CUT-OUT (At Bulb) | REFRIGERANT | LOW PRESSURE CONTROL | | EVAPORATOR PRESSURE REGULATOR | FREQUENCY | FAILSAFE (Length) | PRESSURE TERMINATION |
| | | | CUT OUT | CUT IN | | | | |
| 36°F | 22°F | R-502 | 32 psig | 63 psig | 58 psig | One Every 24 Hours  | 110 min.  | 89 psig |

-  Refrigeration temperature must be controlled by a combination of an evaporator pressure regulator valve and a thermostat. The thermostat must control the compressor motor contactor, have a differential of 3 to 5°F and have its sensing bulb installed in the discharge air leaving the evaporator.
2. Adjust the refrigeration thermostat to control the temperature slightly below the EPR setting to protect the product at times of reduced loads (lights off, lower ambients. etc.)
3. Set low pressure control as shown. The low pressure control does not control temperature.
4. Set EPR to control evaporator pressure as indicated.
5. Defrosts are time initiated and pressure terminated; time terminated for outdoor units. The defrost timer on outdoor units must be a time terminated type and control a liquid line solenoid for pumpdown prior to defrost only. The failsafe then becomes the defrost length and must be increased 4 minutes to compensate for the pumpdown period.

 **VGSR/VGLR MODELS ONLY**
 Defrost Frequency Every 12 Hours
 Failsafe 80 Minutes

MIXED MULTIPLEXING

| REFRIGERATION CONTROL [△] 1 | | | | DEFROST CONTROL | |
|--------------------------------------|------------------------------|-------------|-------------------------------|--------------------------|-------------------------|
| PRODUCT TEMPERATURE | THERMOSTAT CUT-OUT (At Bulb) | REFRIGERANT | EVAPORATOR PRESSURE REGULATOR | FREQUENCY [△] 5 | LENGTH OFF TIME |
| 36°F | 22°F | R-502 | 58 psig | One Every 24 Hours | 110 min. [△] 5 |

[△]1 Refrigeration temperature must be controlled by a combination of an evaporator pressure regulator valve and a thermostat. The thermostat must have a differential of 3 to 5°F, have its sensing bulb installed in the discharge air leaving the evaporator and it must control a liquid line solenoid valve located at the refrigerator, not at the compressor.

2 Adjust the refrigeration thermostat to control the temperature slightly below the EPR setting to protect the product at times of reduced loads (lights off, lower ambients, etc.)

3 Set EPR to control evaporator pressure as indicated.

4 All defrosts are time initiated and time terminated.

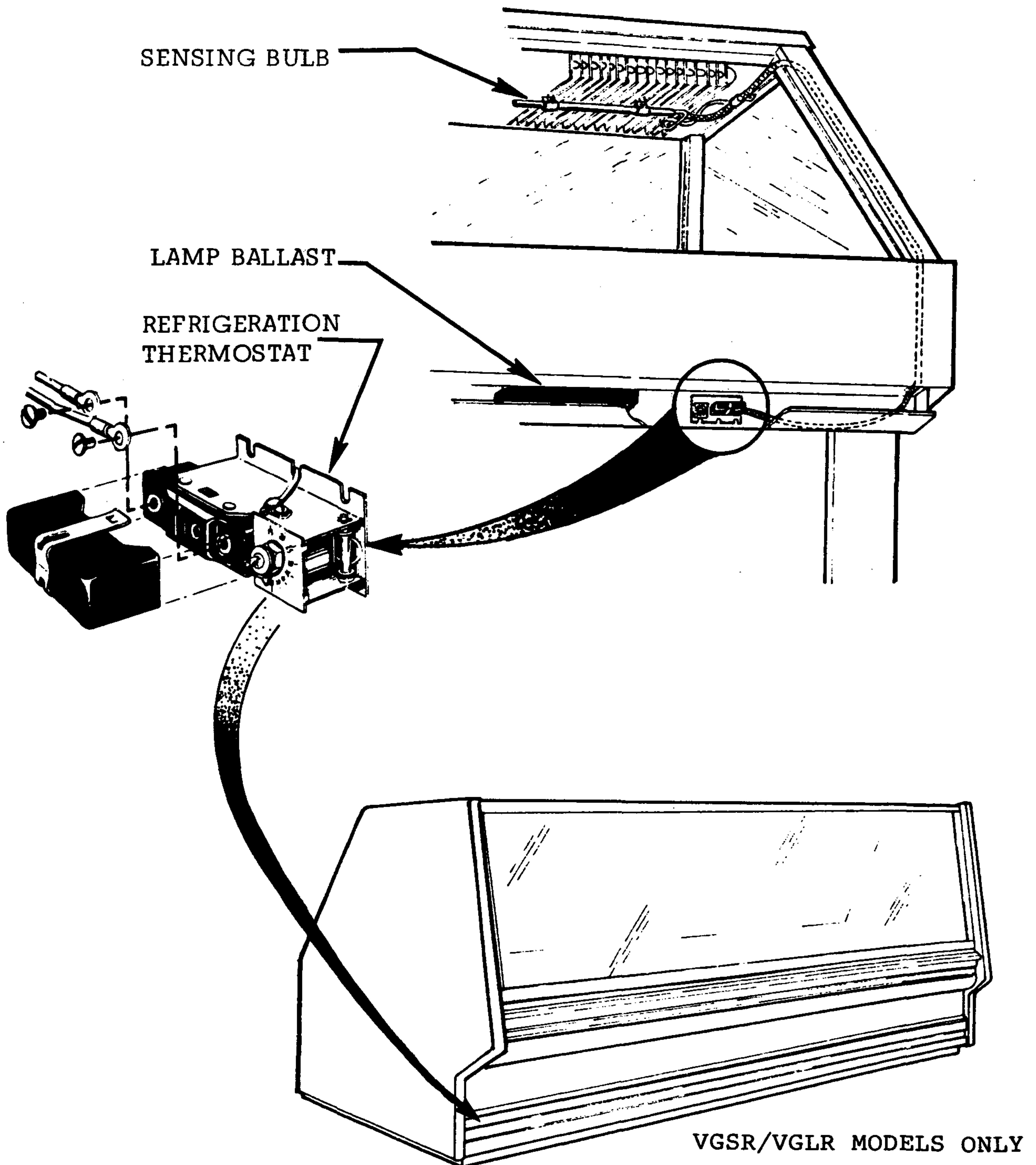
[△]5 VGSR/VGLR MODELS ONLY

Defrost Frequency.....Every 12 Hours

Length, Off Time.....80 Minutes

REFRIGERATION THERMOSTAT

When factory installed, the refrigeration thermostat will be located as shown below. Field installed thermostats should be installed in like manner with the sensing bulb routed through the electrical wiring conduit and secured below the coil.



SECTION 4

ELECTRICAL

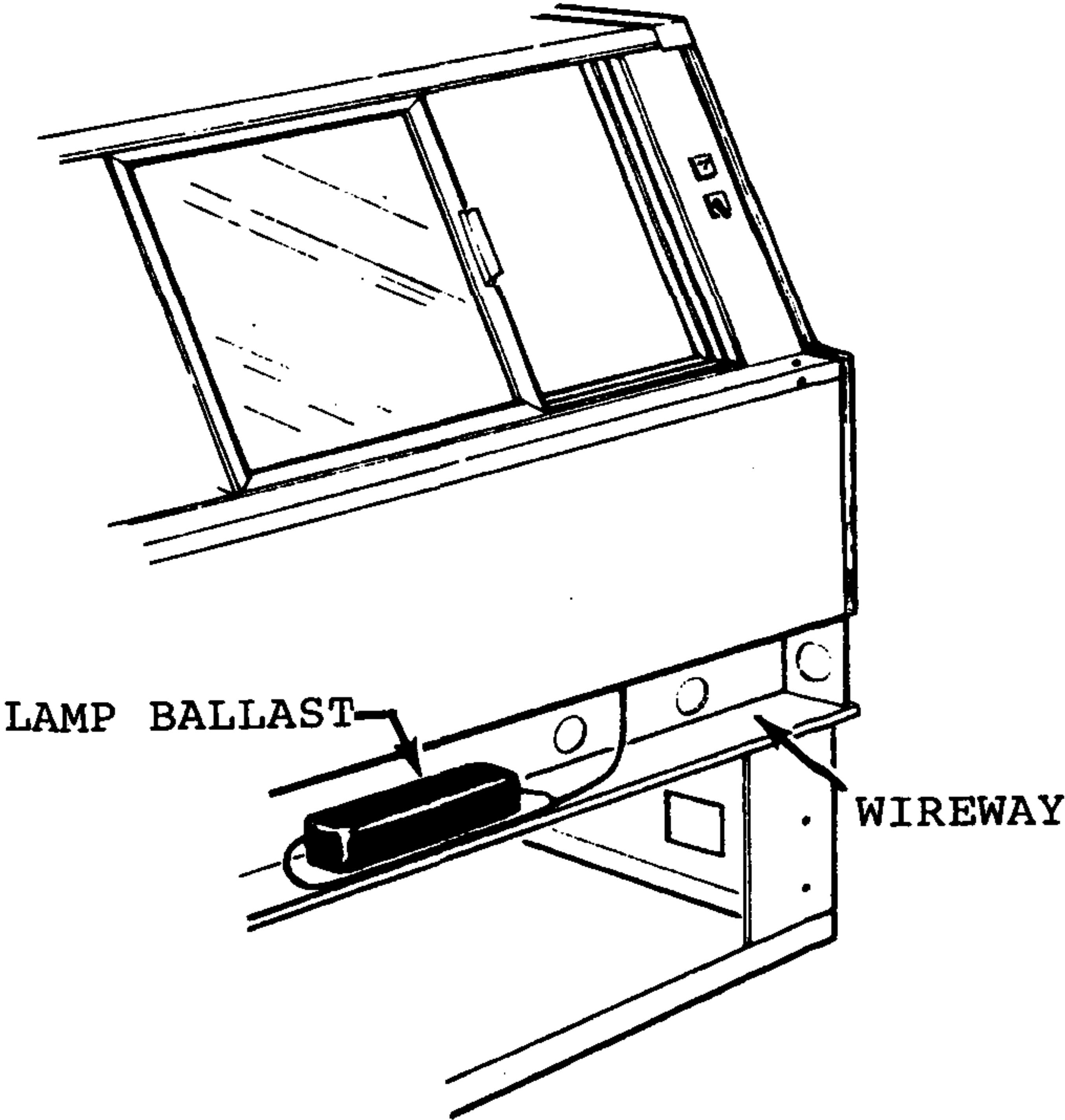
CONNECTIONS

All connections for the refrigerator's electrical circuits are to be made in the wireway located at shown below.

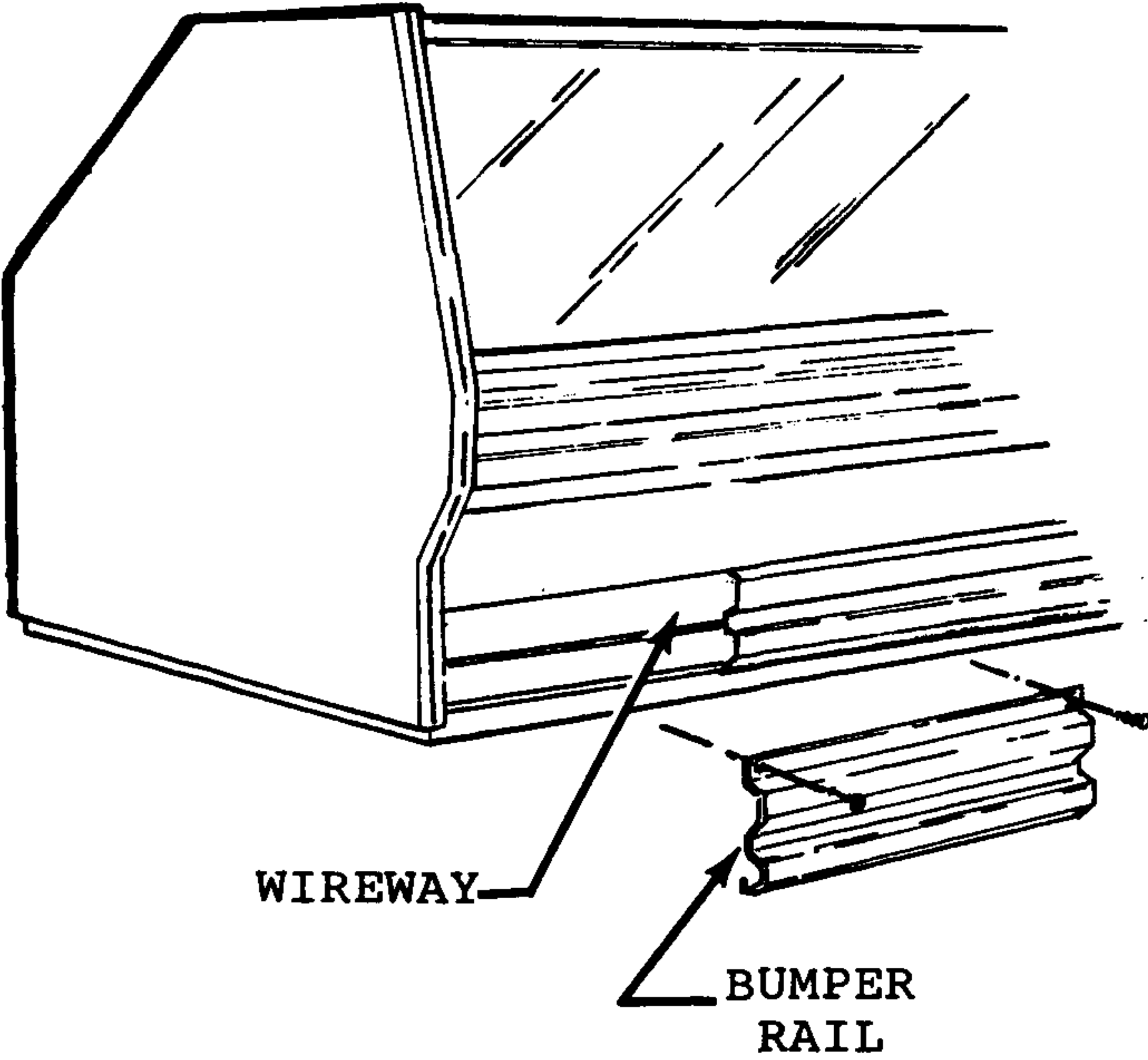
WIRING IDENTIFICATION

All electrical circuits will be identified by color coded plastic bands which correspond to those listed in the following table.

| WIRING COLOR CODE | |
|--|--------------------------------|
| LEADS FOR ALL ELECTRICAL CIRCUITS ARE IDENTIFIED BY A COLORED PLASTIC BAND. NEUTRAL WIRE FOR EACH CIRCUIT HAS EITHER WHITE INSULATION OR A WHITE PLASTIC SLEEVE IN ADDITION TO THE COLOR BAND. | |
| PINK | REFRIG. THERMOSTAT LOW TEMP |
| LIGHT BLUE | REFRIG. THERMOSTAT NORM. TEMP. |
| DARK BLUE | DEFROST TERM. THERMOSTAT |
| PURPLE | ANTI-SWEAT HEATERS |
| BROWN | FAN MOTORS |
| GREEN* | GROUND |
| ORANGE OR TAN | LIGHTS |
| MAROON | RECEPTACLES |
| YELLOW | DEFROST HEATERS, 120V |
| RED * | DEFROST HEATERS, 208V |
| * EITHER COLORED SLEEVE OR COLORED INSULATION | |
| ELECTRICIAN NOTE: CASE MUST BE GROUNDED | |



ALL OTHER MODELS



VGSR/VGLR MODELS

SERIAL PLATE AMPERAGES

Serial Plate amperes 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.

AMPERAGES

| MODEL | 120 VOLT, 60 HZ CIRCUITS | | |
|---------|---|--|-----------------------------|
| | LIGHTS ¹ | | |
| | STANDARD ONE ROW OF FLUORESCENT INTERIOR LAMPS | OPTIONAL TWO ROWS OF FLUORESCENT INTERIOR LAMPS | RECEPTACLES ² |
| All 8' | 3.4 | 4.2 | 15.0 |
| All 12' | 5.2 | 6.5 | 15.0 |



The amp values include described lighting and the maximum number of lighted shelves.



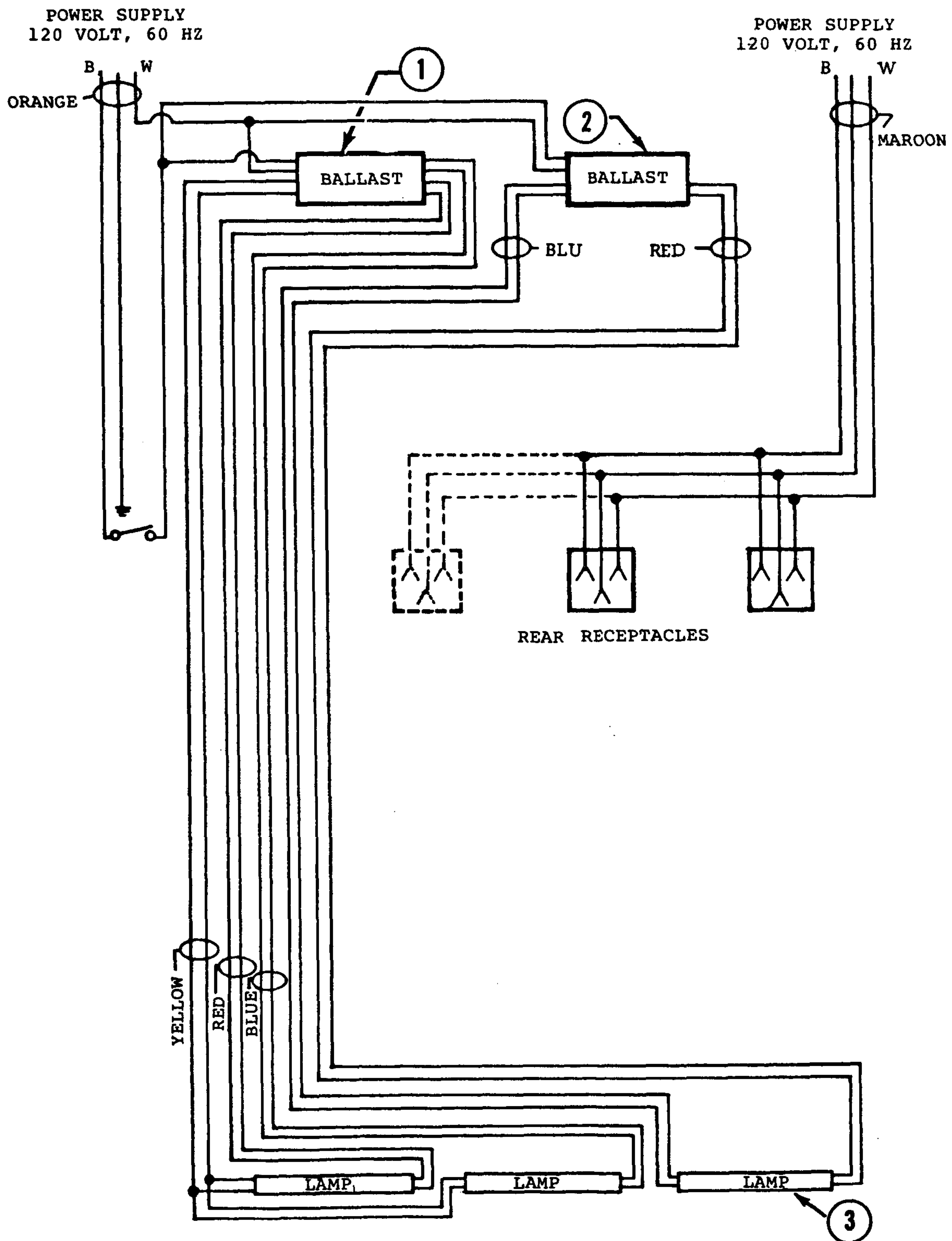
The receptacles located on the lower rear of this refrigerator are intended for small lighted displays and scales, not for large motors or other high wattage appliances.

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

REFRIGERATION THERMOSTAT: When this optional item is installed, it will need to be wired to the condensing unit control panel.

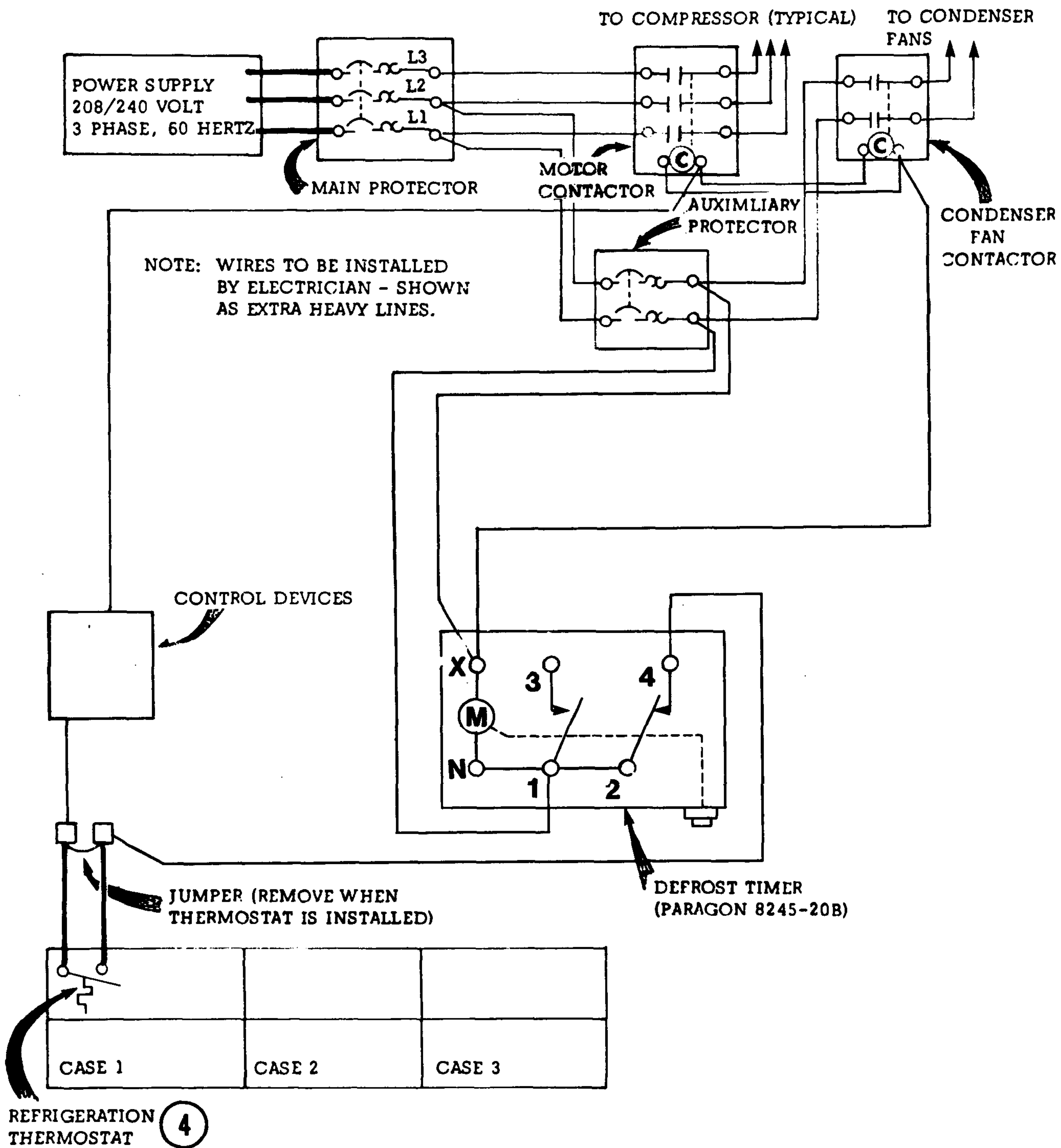
WIRING DIAGRAM

ALL MODELS

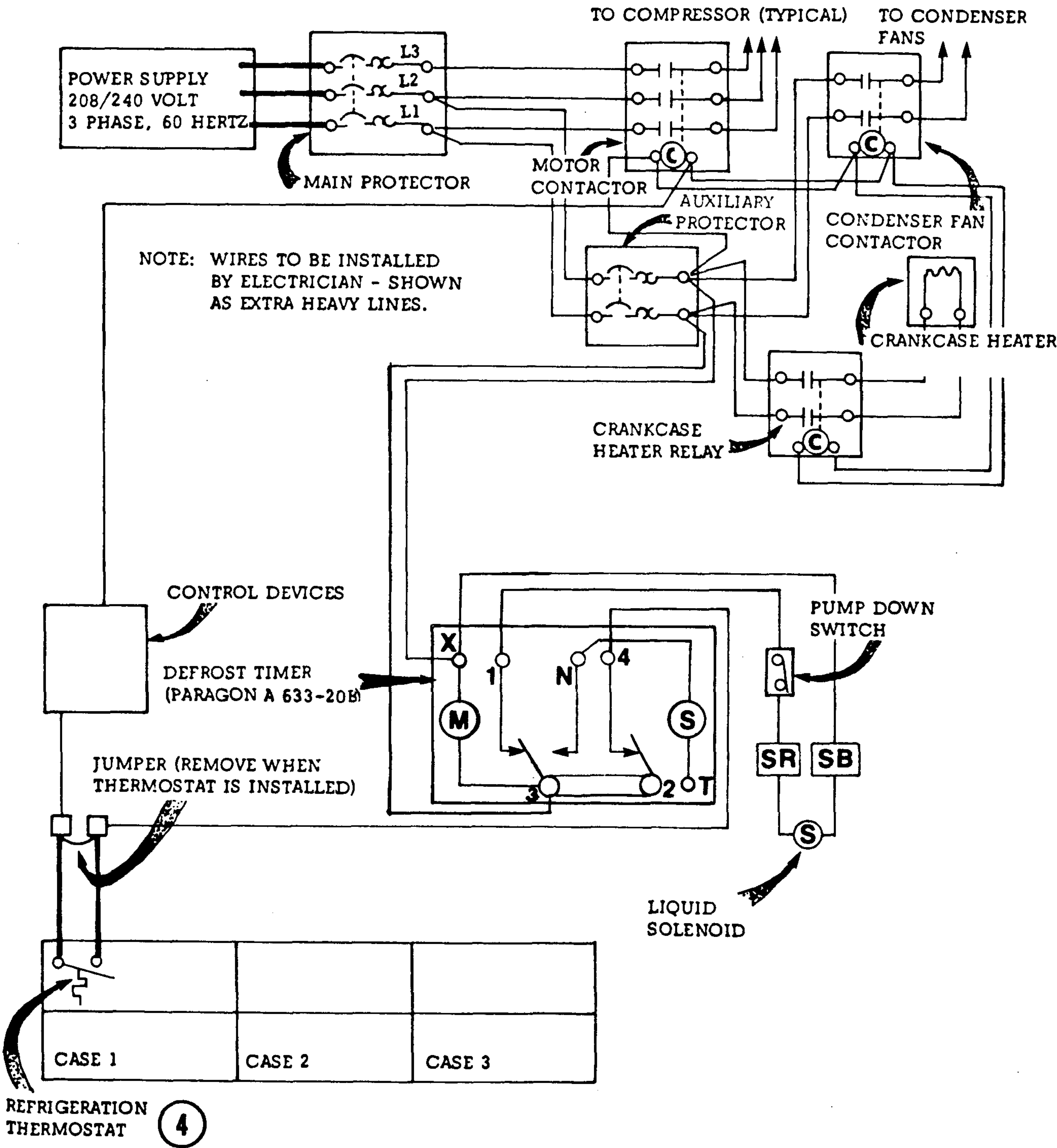


REFRIGERATOR MUST BE GROUNDED

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



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



WARNING
REFRIGERATOR MUST BE GROUNDED

REPLACEMENT PARTS LIST

| <u>ITEM</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|-------------|--------------------|---|
| 1. | 0147080 | Ballast, 2 lamp GE #6G1022G49 |
| 2. | 0147082 | Ballast, 1 lamp Advance #HM 140 |
| 3. | 0020725 | Fluorescent lamp F40T12/CWX |
| 4. | 0113625 | Refrigeration Thermostat, Option Penn #A19AGD-21 |

SECTION 5

USER INFORMATION

These refrigerated display merchandisers have been designed to provide maximum protection, essential for fresh meat and delicatessen products to retain their freshness and color. To realize the best results of this equipment and achieve the maximum product shelf life, a few simple procedures should be followed.

STOCKING:

Improper temperature and lighting will cause serious product loss. Discoloration, dehydration, and spoilage can be controlled with the proper use of the equipment and handling of the product. To achieve the protection required always...

- ... operate the cooler at a constant 28° to 34°F temperature.
- ... control processing room temperature at 55°F or lower.
- ... restrict processing time to avoid damaging temperature rise to the product.
- ... keep the air in and around the deli area free of gas foreign to clean air, or food will rapidly deteriorate. Poorly vented space heaters are a common cause of carbon monoxide gas.
- ... maintain the display merchandisers temperature controls as outlined in the refrigeration section of this instruction.
- ... allow display merchandiser to operate for at least six hours before stocking any product.
- ... close the service doors. Refrigeration performance will be seriously affected if left open for prolonged periods of time.
- ... avoid the use of supplemental flood or spot lighting. Display light intensity has been designed for maximum visibility and product life. The use of high output fluorescent lamps (HO and VHO) will shorten the shelf life of the product if used in these merchandisers.
- ... completely cover the product each night as closing with clean butcher paper. Make sure the paper is in direct contact with the product.
- ... rotate product displayed on any mezzanine shelves that may be installed in the merchandisers. The temperature will be slightly higher on these shelves and the product life will be shorter.

CLEANING

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

Every surface in the deli department must be cleaned and sanitized regularly.

Items that are in non-refrigerated areas and come in contact with the product must be cleaned daily. This includes items such as knives, scales, tables, trays, preparation room floors, etc.

Other items that require a weekly cleaning are coolers, walls and the display refrigerator.

HOW TO CLEAN

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

The INTERIOR may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions.

CAUTION

DO NOT USE HOT WATER ON COLD GLASS SURFACES. THIS CAN CAUSE THE GLASS TO SHATTER AND COULD RESULT IN PERSONAL INJURY. ALLOW GLASS FRONTS, ENDS, AND SERVICE DOORS TO WARM BEFORE APPLYING HOT WATER.

TO CLEAN:

- A. Remove all product from the display area.
- B. Thoroughly clean all surfaces with soap and hot water. (Excluding Cold Glass).
- C. Rinse with hot water, but do not flood.
- D. Apply the sanitizing solution according to the manufacturer's directions.
- E. Dry completely before resuming operation.

-CLEANING PRECAUTIONS-

WHEN CLEANING, DO NOT USE A HOSE WITH HIGH WATER PRESSURE AND NEVER INTRODUCE WATER FASTER THAN THE WASTE OUTLET CAN CARRY IT AWAY.

SOME CLEANING AND SANITIZING SOLUTIONS CONTAIN A MINERAL OIL BASE WHICH WILL DISSOLVE THE BUTYL SEALANTS USED IN THIS REFRIGERATOR, THESE SHOULD NOT BE USED.

LOAD LIMITS

The recommended load limit for the product displayed within these cases should not exceed 100 pounds per lineal foot. If this limitation is exceeded, distortion and possible structural damage to these cases could occur.

ELECTRIC SERVICE RECEPTACLES

The receptacles located on the exterior back of these cases are intended for scales and lighted displays. They are not intended or suitable for large motors that are found in meat and delicatessen departments.

SHELVES

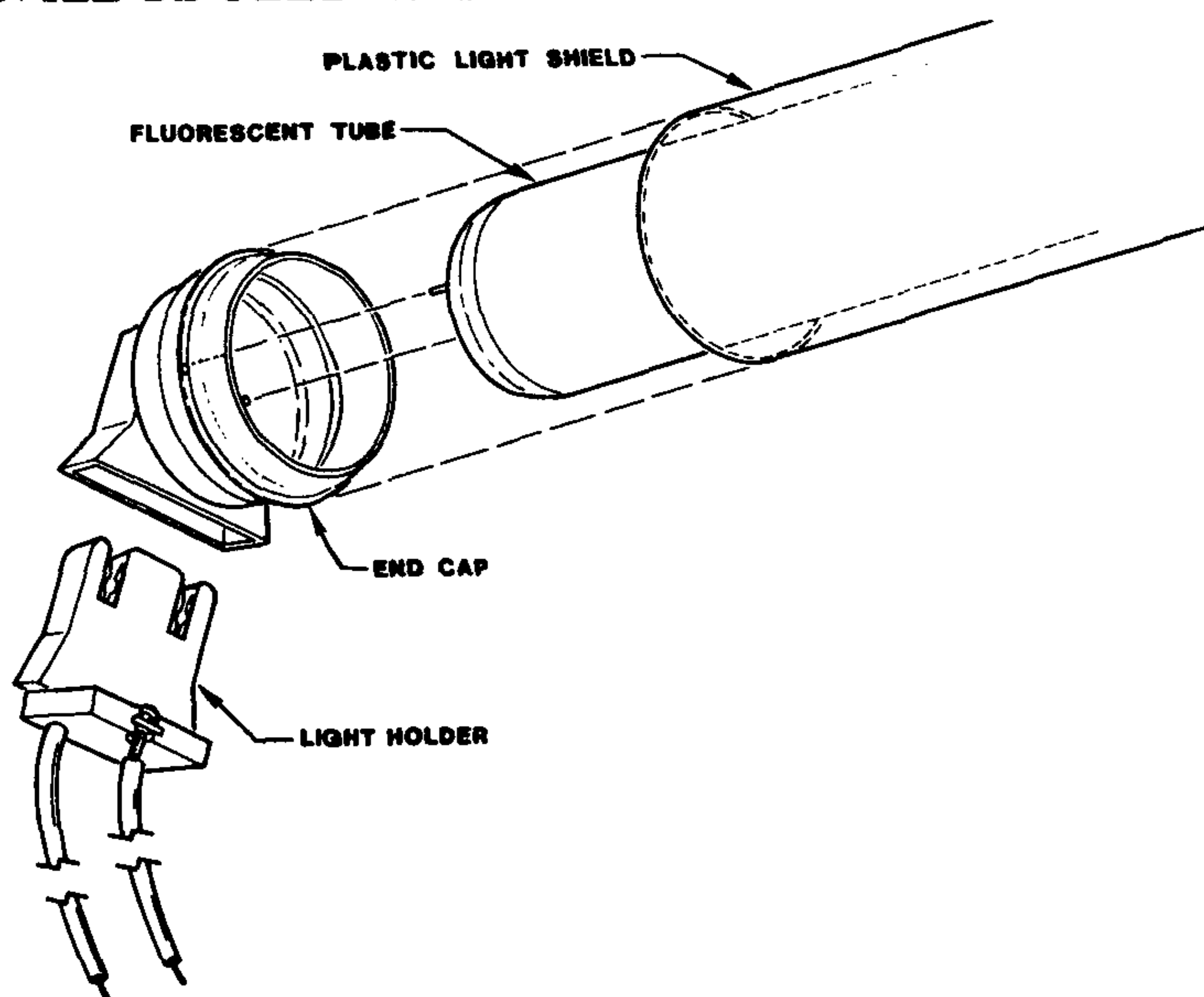
A wide selection of scale stands, wrapping boards, salad pan racks, step displays and wire shelves are available as optional equipment. For more detailed information, see Hussmann sales literature.

When full length wire display shelves are used in the 8' cases, a 16 inch wide shelf must be installed in the center of the case. If step display racks are used in combination with shelves, install the 16 inch shelf immediately adjacent to the step display rack. The 16 inch shelf will not fit at the ends of the case.

REPLACING FLUORESCENT LAMPS

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

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



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