FORM NUMBER: 31E01004
DATE: 2-22-91
REVISED:

KYSOR/WARREN

The Leading Edge of Technology

INSTALLATION & OPERATION MANUAL

MODEL: **HZVS1**

PRODUCE

THIS REFRIGERATOR CONFORMS TO THE COMMERCIAL REFRIGERATOR MANUFACTURERS ASSOCIATION HEALTH AND SANITATION STANDARD.

KYSOR/WARREN

DIVISION OF KYSOR INDUSTRIAL CORPORATION

1600 INDUSTRIAL BLVD., CONYERS, GEORGIA 30207 / 404•483•5600
5201 TRANSPORT BLVD., COLUMBUS, GEORGIA 31907

INSTALLATION AND OPERATING INSTRUCTIONS

FOR

HZVS1

SELF-SERVICE PRODUCE MERCHANDISERS

APPLICATION:

The Kysor//Warren single and multi-deck produce cases are designed to merchandise bulk or packaged vegetables. These cases should be installed and operated according to the instructions contained in this manual to insure proper performance. They are designed for display of products in an air-conditioned store where temperature and humidity are maintained at a maximum of 75-degree F dry bulb, 55% relative humidity.

MODELS	DESCRIPTION
HZVS1	Air Curtain Produce Case 74" High With Mirrors

Rev.

GENERAL

These display refrigerators may be installed individually or in a continuous line-up consisting of several 8' and 12' sections by using a joint trim. A plexiglass divider kit must be used between cases operating on different refrigeration systems. Divider will be factory installed if specified on order.

SHIPPING DAMAGE

All equipment should be examined for shipping damage before and during unloading. If there is any damage, the carrier should be notified immediately and an inspection requested. The delivery receipt must be noted that the equipment was received damaged. If damage is of a concealed nature you must contact the carrier immediately or no later than three days following delivery. A claim must be filed with the carrier by the consignee for all damages.

NOTE: ALL CLAIMS FOR SHORTAGES MUST BE MADE WITHIN TEN DAYS AFTER RECEIPT OF SHIPMENT.

LOCATION

This refrigerator must be located on a firmly based floor and leveled within plus or minus 1/16". Use shims provided to level your refrigerator.

JOINING

Two or more fixtures of like models can be joined together to form a continuous line-up. Instructions for joining fixtures are included in the joint kit. Before lining up refrigerator, inspect refrigeration lines, electrical connections and controls to insure refrigerators are in proper line-up and are in the proper sequence.

NOTE: THESE REFRIGERATORS ARE LINED UP AT THE FACTORY AND ARE NUMBERED. INSURE THEY ARE LINED UP IN THE FIELD IN THE SAME SEQUENCE NUMBER.

WASTE OUTLET

These cases are equipped with a 1-1/2" FPI waste outlet connection which terminates in the center of the refrigerator below the insulated bottom. A 1-1/2" galv. water seal trap is provided for field installation.

INSTALLING DRIP PIPE

Improperly installed drip pipes can seriously effect the operation of this equipment and result in increased maintenance cost. Listed below are some general rules for drip pan installation:

1. Never use a double water seal.

2. Never use a pipe smaller than the size pipe or water seal supplied with the equipment.

INSTALLING DRIP PIPE (Cont.)

3. Always provide as much fall as possible in drip pipe. (1" fall for each 4' of drip pipe.)

4. Avoid long runs in drip pipe which make it impossible to provide maximum fall in pipe.

5. Provide a drip space between drip pipe and floor drain or sewer connection.

6. Do not allow drip pipe to come in contact with uninsulated suction lines, which will cause the condensation from your refrigerator to freeze.

CLEANING

To insure minimum maintenance cost, cabinet should be thoroughly emptied and washed out every three months. The exterior should be washed weekly. A mild soap and water solution is recommended for painted surfaces of the cabinet. Do not use cleaners containing abrasive materials which will scratch or dull finish. The waste outlet should be flushed with a bucket of water following each cleaning.

NOTE: NEVER INTRODUCE WATER INTO THE FIXTURE FASTER THAN THE WASTE OUTLET CAN CARRY IT AWAY.

When cleaning lighted shelves, wipe down with a wet sponge or cloth so that water does not enter the light rails. Do not use a hose or submerge shelves in water. BE SURE REFRIGERATION IS TURNED OFF AND ALL ELECTRICAL IS OFF BEFORE WASHING YOUR REFRIGERATOR.

LOADING

Merchandise should not be placed in the fixture until all controls have been adjusted and the refrigerator is at proper temperature.

At no time should the fixture be stocked beyond the load line or over the front edge of adjustable shelves. In doing so, you will seriously affect the performance which will result in higher product temperatures and increase operating costs.

ELECTRICAL

All field installed wiring must comply with the NATIONAL ELECTRICAL CODES and LOCAL CODES.

ELECTRICAL RACEWAY

An electrical raceway is provided with each refrigerator for running your fan, anti-sweat heaters, and defrost circuits from case to case without using conduit. This applies, of course, when the front panel is properly secured into position. This is an approved method by the Underwriters' Laboratories; however, wiring must be run in accordance with local and national electrical codes.

ELECTRICAL CONNECTIONS

All field connections are made in the electrical raceway.

Make sure that proper voltage is supplied to your refrigerator. Check refrigerator nameplate for fan and anti-sweat volts and defrost volts. If a canopy is furnished, use a separate fused circuit. ALL REFRIGERATORS MUST BE GROUNDED.

Fan motors must operate continuously and panel must be marked sufficiently to prevent the fan motors and anti-sweat heaters from being turned off accidentally. When refrigerators are multiplexed, add the total of these amperage values to determine wire size and circuit protection.

Chart #1 shows the electrical ratings for your refrigerator. This is the same information that appears on your refrigeration nameplate.

REFRIGERATION FAN MOTORS

The fan motors employed are permanently oiled for the life of the motor and require no periodic maintenance. They are wired according to the enclosed wiring diagram and MUST RUN CONTINUOUSLY.

EXPANSION VALVE

The expansion valve furnished with your refrigerator has been sized for maximum coil efficiency. To adjust superheat, place a thermocouple under the expansion valve bulb. Read the suction line pressure as near coil as possible. (If at the condensing unit, estimate suction line loss at 2 PSIG.) Convert coil suction pressure to temperature. The difference between coil temperature and the thermocouple temperature is superheat. (Use average superheat when expansion valve is hunting.) Do not set superheat until cases have pulled down to operating temperature and never open or close valve over 1/4 turn between adjustments and allow 10 minutes or more between adjustments. Superheat should be set to 6-8-degree F.

REFRIGERATION LINES

The refrigeration lines are located under the deck pans on the 8' and 12' cases. A refrigeration outlet is provided in the front right hand end of the HZV and ZV cases. Make sure all refrigeration lines lie as close to the refrigerator bottom so as not to obstruct the air pattern or block the deck pans. See the section on "Recommended Piping Practices" for additional details on piping practices.

These 8' and 12' refrigerators have polyurethane foamed-in-place insulation. In opening a ferrule hole, simply heat a piece of copper tubing of the same size as the tubing to be employed and force it through the ferrule hole.

REFRIGERATION LINES (Cont.)

NOTE: SEAL AROUND LINES AFTER CONNECTIONS ARE MADE. KEEP DIRECT FLAME FROM BOTTOM OF REFRIGERATOR, AS HEAT WILL DISINTEGRATE THE BOTTOM AND INSULATION. USE A HEAT SHIELD WHEN WELDING NEAR THE BOTTOM OF THE CASES.

REFRIGERANT

R-12 expansion valves are standard. If other refrigerant is used, the order must specify the expansion valve to be supplied.

HEAT EXCHANGER

Heat exchangers are optional in these refrigerators. They aid to increase operating efficiency and reduce frosting and flood-back to compressor.

OPERATION

On single condensing unit systems a thermostat should be used to control temperatures. The thermostat bulb should be mounted in the discharge air. On parallel units, temperature control can be provided by EPR valve, thermostat and liquid line solenoid or solid state low pressure controls on compressor unit. Chart #2 shows approximate settings for merchandisers. Since many variables are present in each installation, such as store temperature, length of tubing runs, temperature desired in refrigerator, etc., Chart #2 is only a guide for the installer.

DEHYDRATION OF REFRIGERATION SYSTEMS

PLEASE READ CAREFULLY BEFORE PLACING SYSTEM INTO OPERATION. After laying refrigerant lines, they should be blown out before making final connection at fixture or condensing unit. Use dry nitrogen to prevent any foreign matter being left in the lines. Keep pressure below 250 pounds. To prevent scaling due to brazing, dry nitrogen should be allowed to flow through lines while brazing operations are taking place.

After the refrigeration system has been pressure-tested and proven leak-free, it is recommended that the system be dehydrated with a vacuum pump to 1000 microns for the first two evacuations and 500 microns on the third. The triple evacuation method requires evacuating the system three successive times and breaking each vacuum with dry refrigerant. Allow the pressure to rise above atmospheric pressure.

DEFROST CYCLE

Off-time defrost is standard on these models. The fans run continuously and defrost termination is by pressure or time (fail safe). See Chart #2 for defrost settings.

CHART #1

ELECTRICAL RATINGS

MODEL	EVAPORATORS FANS (AMPS)	ANTI-COND HEATER (AMPS)	LIGHT (AMPS)
HZVS1-8	1.0	0.0	1.6*
HZVS1-12	1.5	0.0	2.1*

*Light amps indicated is for canopy only. If lighted shelves are used, add .7 amps for each shelf.

CHART #2

RECOMMENDED CONTROL SETTINGS

MODEL	REFRIGERANT & APPLICATION	LP CONTROL CUT-OUT	LP CONTROL CUT-IN	SETTING	THERMOSTAT CUT-OUT	THERMOSTAT CUT-IN
HZVS1	R- 12 Produce	20 PSIG	35 PSIG	19#	34-degF	40-degF
	R-502 Produce	52 PSIG	68 PSIG	50#	34-degF	40-degF

MODEL	*DEFROST PERIODS PER 24 HOURS	PRESSURE TERMINATION R-12	PRESSURE TERMINATION R-502	FAIL SAFE SETTING PRES. TER.	FAIL SAFE SETTING TIME OFF
HZVS1	4	45#	90#	32 min.	32 min.

*Defrost frequency is specified at design conditions. Higher temperature or humidity may require frequent defrost settings.

PARTS LIST

HZS1

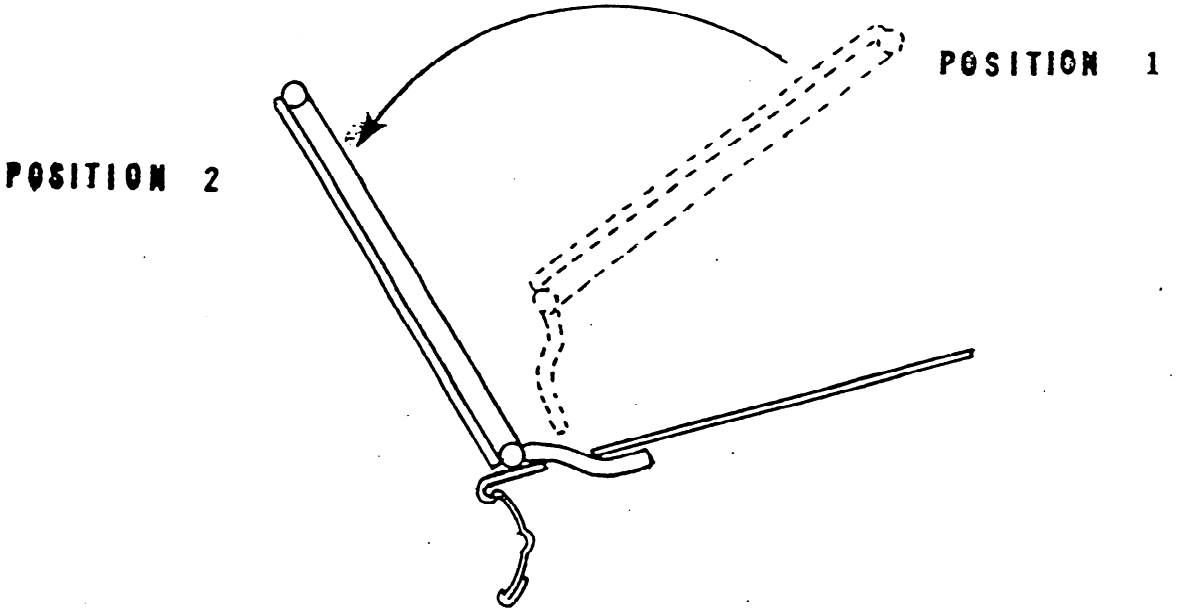
DESCRIPTION	REF. NO.	PART NO. 8'	PART NO. 12'
Expansion Valve(BFF-A-C)	1	3A11-046	3A11-046
Fan Blade	2	9B10-042	9B10-042
Fan Motor	3	9A10-017	9A10-017
Light Switch	4	10J10-030	10J10-030
Fan Wiring Harness	5	10M10-100	10M10-100
Mirror	6	14E10-040	14E10-040
Receptacle Harness (Main)	7	10M10-110	10M10-110
Lower Front Panel	10	51A12-276	51A14-207
Upper Front Panel	11	51A12-274	51A14-205
Colorband	12	55F12-165	55F14-143
Canopy Front Panel	13	51C12-081	51C14-78
Back Baffle	15	54H28-064	54H30-051
Upper Air Grille	16	54P16-223	54P16-224
Plenum Chamber	18	96C19-071	96C19-072
Coil Cover	19	54N12-262	54N14-213
Deck Pan	21	56J13-013	56J13-013
Front Baffle	22	56B10-075	56B10-076
Mirror Edging	23	13A12-079	13A12-079
Evaporator	24	5A20-038	5A20-038

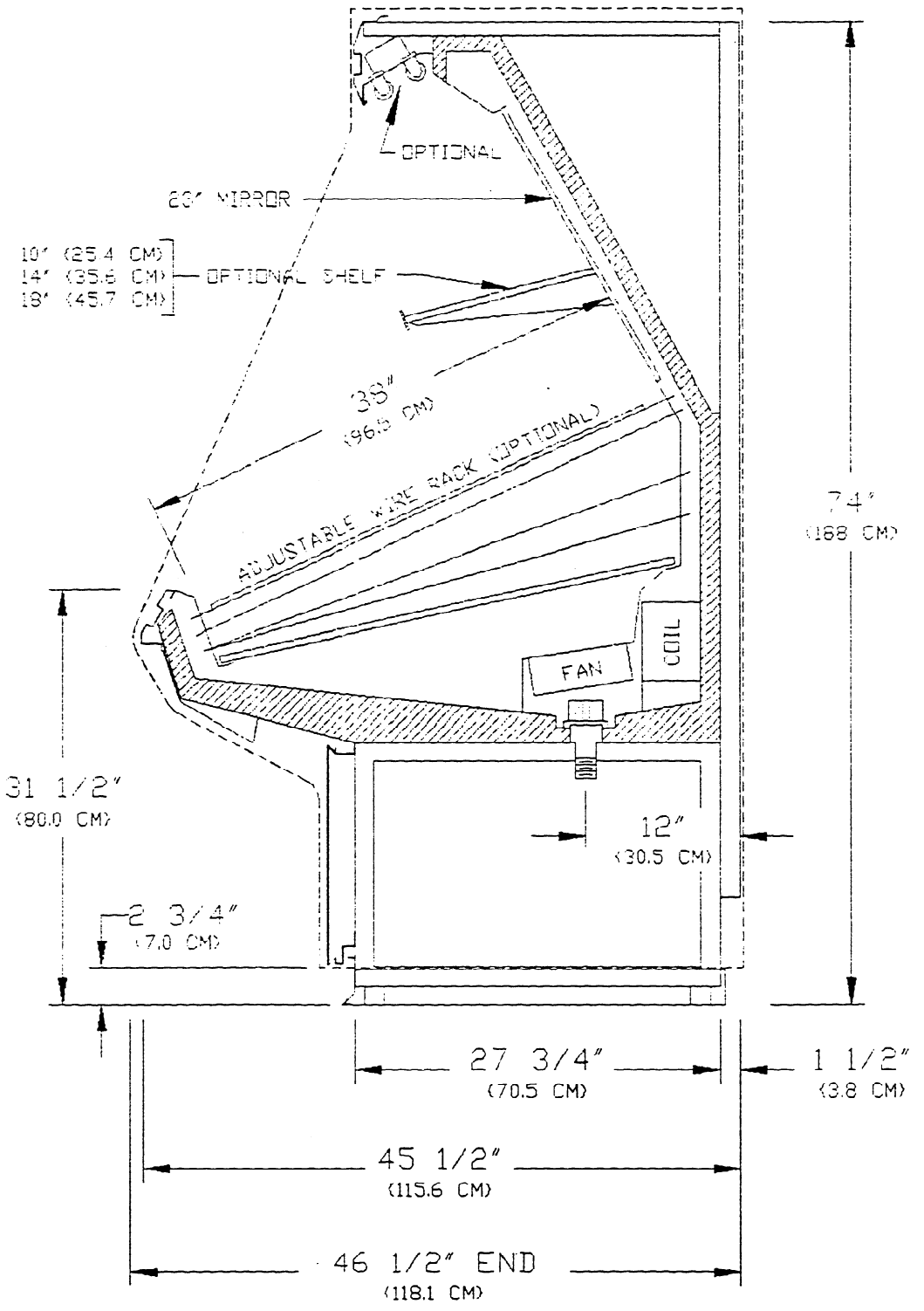
SHELF AND FENCE

Optional shelf is shipped installed when ordered. However, the shelf may be removed and re-installed if so desired. To remove, lift entire shelf up until tabs clear and lift out and away from the shelf standard. To install, insert the top tab on both shelf brackets into the slots in the shelf standards Insert the remaining tabs and push downward to lock in position. Care must be taken to insure that the mirror edging is positioned to cover all slots not occupied by the shelf brackets. The flow of refrigerated air might be affected if the slots are left uncovered. This would also distract from the appearance of the case.

To install fence, tilt fence back as shown in View "A", Position 1 and bring foward until in Position 2.

VIEW A





LETTER	REVISION	DATE	BY

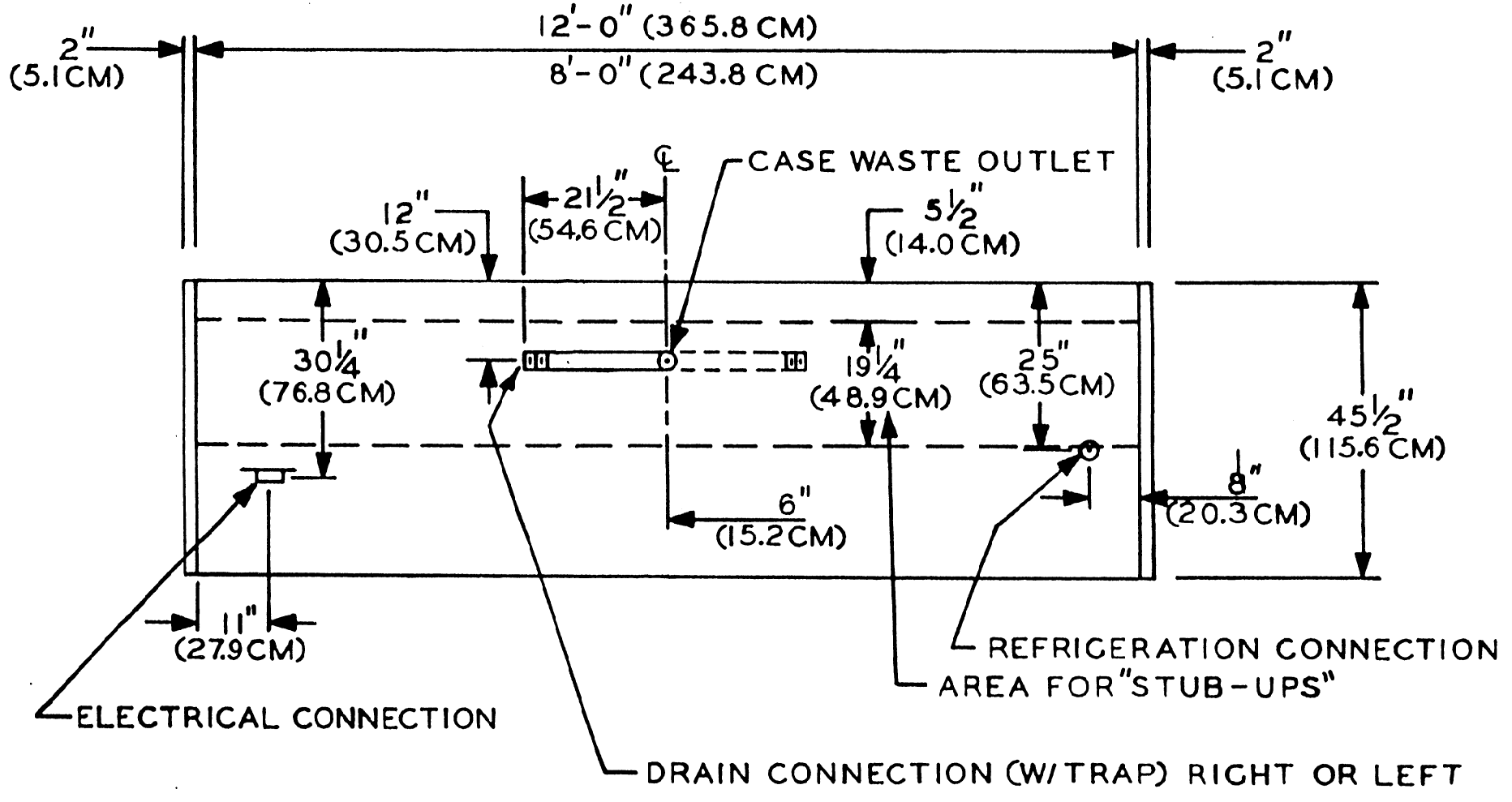
DATE 2/9/91
SCALE 1/8"=1'0"
DRAWN BY BEF
SHEET

LAYOUT FOR

HZVS1
CROSS SECTION

KYSOR | WARREN // SHERER
DIVISION OF KYSOR INDUSTRIAL CORP.

DRAWING NUMBER



-10-

LETTER	REVISED	DATE	BY

DATE 2-20-91

SCALE 1/2"=1'-0"

DRAWN

APPD.

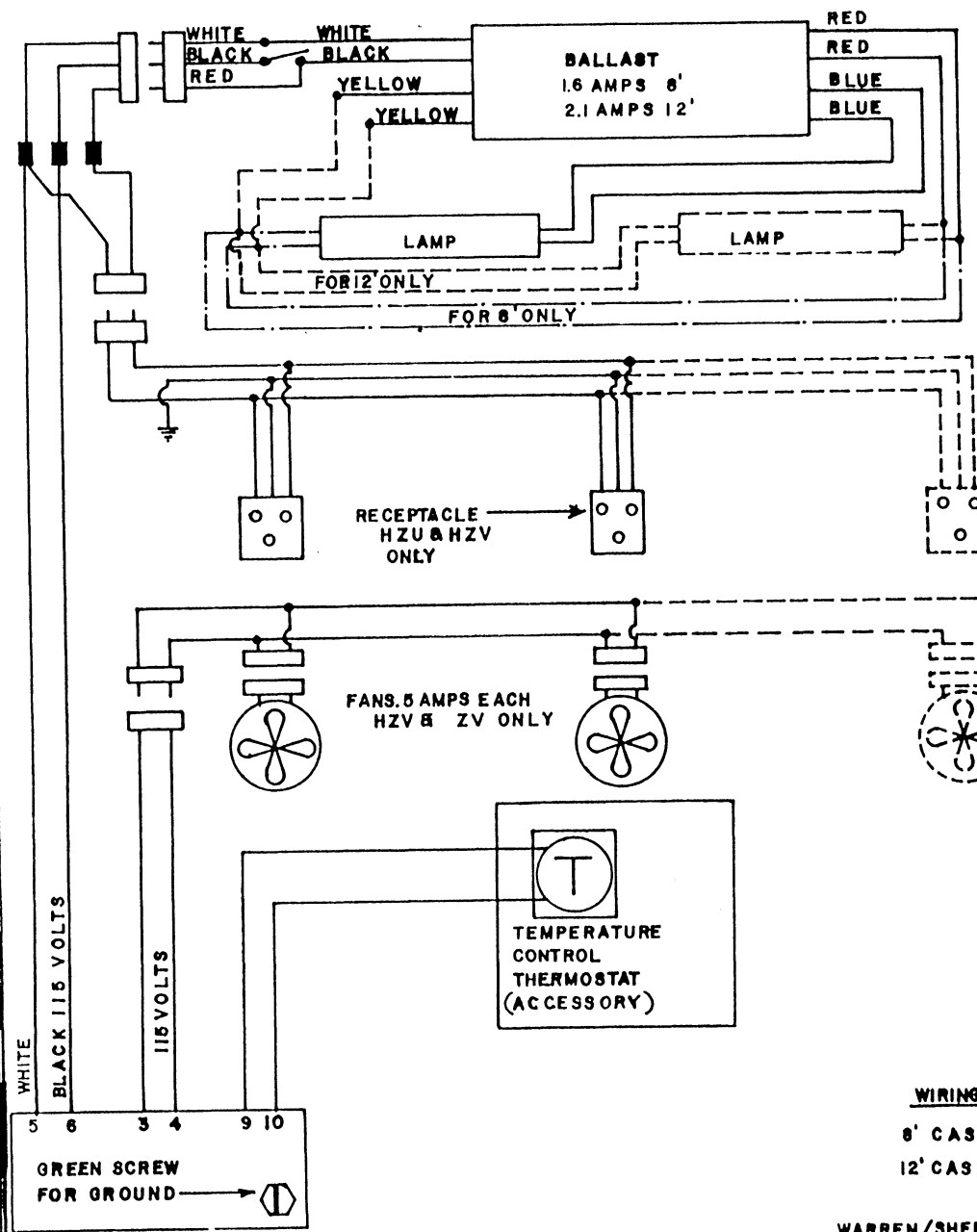
TITLE

PLAN VIEW

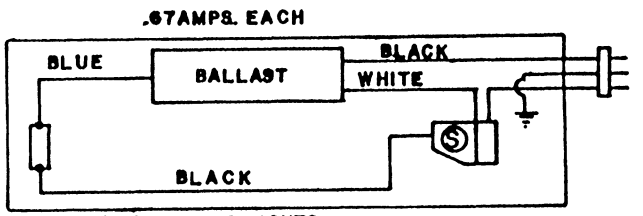
MODEL HZVS1

KYSOR | WARREN / SHERER

DRAWING NUMBER



NOTE: ZV 8' & 12' DOES NOT UTILIZE RECEPTACLES, ACCESSORY SHELF LIGHTS OR CANOPY LIGHTS.



ACC. SHELF LIGHTS
(TYPICAL)

WIRING LEGEND

8' CASE ——.——.——

12' CASE — — — — —

WARREN/SHERER PP.NO. 31C10-144

A	ADDED HZVS1 TO TITLE	2-21-91	
LETTER	REVISED	DATE	
DATE 5-79	TITLE WIRING DIAGRAM FOR HZU-HZV-ZV 8' & 12' HZVS1 - 8' & 12'		
SCALE NTS			
DRAWN RAM	WARREN/SHERER	DRAWING NUMBER	

~1. Proper size refrigeration lines are essential to good refrigeration performance. Suction lines are more critical than liquid or discharge lines. Oversized suction lines may prevent good oil return to the compressor. Undersized lines can rob refrigeration capacity and increase operating cost. Consult the technical manual or legend sheet for proper line sizes.

~2. Refrigeration lines in cases in line-ups can be reduced. However, the lines should be no smaller than the main trunk lines in at least 1/3 of the cases and no smaller than one size above the case lines to the last case. Reductions should not exceed one line size per case. It is preferred to bring the main trunk lines in at the center of line-up. Liquid lines on systems on hot gas defrost must be increased one line size above the main trunk line for the entire line-up. Individual feed lines should be at the bottom of the liquid header.

~3. Do not run refrigeration lines from one system through cases on another system.

~4. Use dry nitrogen in lines during the brazing to prevent scaling and oxidation.

~5. Insulate suction lines from the cases to the compressor with 3/4" wall thickness Armaflex or equal on low temperature cases to provide maximum of 65-degree sub-cooled gas back to the compressor and prevent condensation in exposed areas. Insulate suction lines on medium temperature cases with 1/2" thick insulation in exposed areas to prevent condensate droppage.

~6. Suction and liquid lines should never be taped or soldered together. Adequate heat exchanger is provided in the case.

~7. Refrigeration lines should never be placed in the ground unless they are protected against moisture and electrolysis attack.

~8. Always slope suction lines down toward the compressor, 1/2" each 10'. Do not leave dips in the line that would trap oil.

~9. Provide "P" traps at the bottom of suction line risers, 4' or longer. Use a double "P" trap for each 20' of risers. "P" traps should be the same size as the horizontal line. Consult the technical manual or legend sheet for proper size risers.

10. Use long radius ells and avoid 45-degree ells.

11. Provide expansion loops in suction lines on systems on hot gas defrost. An expansion loop is required for each 100' of straight run.

12. Strap and support tubing to prevent excessive line vibration and noise.

13. Brazing of copper to copper should be with a minimum of 10% silver. Copper to brass or copper to steel should be with 45% silver.

14. Avoid the use of "bull head" tees in suction lines. An example is where suction gas enters both ends of the tee and exits the center. This can cause a substantial increase in pressure drop in the suction lines.

15. When connecting more than one suction line to a main trunk line, connect each branch line with an inverted trap.

IN THE CONSTANT EFFORT TO IMPROVE OUR PRODUCTS, WE RESERVE THE RIGHT TO CHANGE AT ANY TIME SPECIFICATIONS, DESIGN, OR PRICES WITHOUT INCURRING OBLIGATION.

KYSOR//WARREN

DIVISION OF KYSOR INDUSTRIAL CORPORATION

P.O. Box C
1600 Industrial Blvd.
Conyers, Georgia 30207
404 483-5600

ONE-YEAR WARRANTY

KYSOR/WARREN warrants to the original purchaser this new equipment and all parts thereof, to be free from defects in material and workmanship under normal use and service. If any part or parts of the equipment should prove defective during the period of one year from installation date (not to exceed one year and thirty days from the date of original shipment from the factory), KYSOR/WARREN hereby guarantees to replace or repair, without charge (F.O.B. CONYERS, GEORGIA), such part or parts as prove defective, and which KYSOR/WARREN's examination discloses to its satisfaction to be thus defective, with a new or functionally operative part. The liability of KYSOR/WARREN under this warranty shall be limited to claims made by the original purchaser to KYSOR/WARREN or its local distributor within the warranty period.

GLAZING: Glass is not guaranteed against breakage. If this refrigerator is equipped with a glazing assembly carrying the manufacturer's brand name (Thermopane, Twindow, etc.), the manufacturer's glazing warranty in effect at the time of this shipment is extended to that assembly. It is void outside the continential United States.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS, AND ALL OTHER OBLIGATIONS OR LIABILITIES OF KYSOR/WARREN.

THIS WARRANTY SHALL NOT APPLY:

1. To the condensing unit used with refrigerated equipment unless same was sold and shipped by KYSOR/WARREN.

2. When this equipment or any part thereof is damaged by fire, flood, act of God, or when the original model and serial—number plate has been altered, defaced, or removed.

3. When this equipment or any part thereof is subject to accident, alteration, abuse, misuse, tampering, operation on low or improper voltages, or is put to a use other than recommended by KYSOR/WARREN.

4. When this equipment or any part thereof is damaged, or when operation is impaired, due to failure to follow installation manual (improper installation is the responsibility of the installer).

5. Outside the continental United States.

6. To labor cost for replacement of parts, or for freight or shipping expenses.

7. If the Warranty holder fails to comply with all the provisions, terms and conditions of this Warranty.

Parts replaced under this Warranty are warranted only through the remainder of the original Warranty. KYSOR/WARREN may, at its option and in its discretion, elect to honor this Warranty and to disregard the original purchaser's noncompliance with any of the provisions, terms and conditions of this Warranty.

THIS WARRANTY DOES NOT COVER CONSEQUENTIAL DAMAGES.

KYSOR/WARREN shall not be liable under any circumstances for any consequential damages, including loss of profits, additional labor costs, loss of refrigerant or food products, or injury to person or property caused by defective material or parts or for any delay in the performance of this Warranty due to causes beyond its control. The foregoing shall constitute the sole and exclusive remedy of any purchaser and the sole and exclusive liability of KYSOR/WARREN in connection with this product.