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KYSOR/WARREN

The Leading Edge of Technology

INSTALLATION & OPERATION MANUAL

MODEL: **S39S(J)1 - S35S(J)1**

DELI - MEAT

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
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INSTALLATION AND OPERATING INSTRUCTIONS

FOR

S39S(J)1, S35S(J)1 MODELS

SERVICE DELI/MEAT CASES

APPLICATION

The Kysor//Warren service case is designed to merchandise fresh meat and delicatessen products. The forced air model should only be used for deli, while the gravity coil model can be used for deli or fresh meat. These cases should be installed and operated according to the instructions contained in this manual to insure proper performance. They are designed for the 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
S39SJ1	Service Deli Forced Air Coil - 29" Front Glass Remote Refrigeration
S35SJ1	Service Deli Forced Air Coil - 25" Front Glass Remote Refrigeration
S39S1	Service Meat - 29" Front Glass Gravity Coil Remote Refrigeration
S35S1	Service Meat - 25" Front Glass Gravity Coil Remote Refrigeration

NOTICE TO INSTALLER

CAUTION

WHEN MOVING THIS CASE LIFT IT AS EVENLY AS POSSIBLE TO PREVENT TWISTING WHICH CAN CAUSE THE GLASS TO BREAK.

WARNING

BEFORE INSTALLING THIS CASE, CHECK THE ENTIRE FLOOR SURFACE ON WHICH THE CASE WILL BE PLACED. THE ENTIRE BASE MUST BE PROPERLY SHIMMED UNDER EACH BASE LEG FRONT AND REAR TO PREVENT SETTLING AND TWISTING OF THE CASE. FAILURE TO PROPERLY SUPPORT THE BASE OF THE CASE AT EACH LEG LOCATION CAN WARP THE GLASS MOUNTING CHANNEL WHEN THE CASE IS LOADED CAUSING THE GLASS TO BREAK.

NOTICE TO OWNER OR OPERATOR

WARNING

FAILURE TO PROPERLY INSTALL AND SUPPORT THE BASE OF THIS CASE CAN CAUSE FUTURE GLASS BREAKAGE WHEN THE CASE IS LOADED AND PLACED IN OPERATION.

CAUTION

BEFORE LOADING AND OPERATING THIS CASE, CHECK TO SEE THAT THE INSTALLER HAS SUPPORTED EACH BASE LEG FRONT AND REAR. IF THERE ARE AIR SPACES BETWEEN THE FLOOR AND ANY BASE LEG, THE CASE CAN TWIST WHEN LOADED CAUSING SUBSEQUENT GLASS BREAKAGE.

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 kit. 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 10 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 insulation bottom. A 1-1/2" galvanized 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 pipe 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 emptied and thoroughly washed out once a week. 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 power 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 JUNCTION

On these cases, an electrical junction box is provided for field connections. The junction box is located along the rear of the case and contains the case thermostat,all lighting ballasts and receptacles.

ELECTRICAL CONNECTIONS

All field connections are made in the electrical junction box.

Make sure that proper voltage is supplied to your refrigerator. Check refrigerator nameplate for correct circuits, volts, and amps. ALL REFRIGERATORS MUST BE GROUNDED.

When refrigerators are multiplexed, add the total of these amperage values to determine wire size and circuit protection.

Make sure that proper wire size and branch circuit protection are employed for safe operation.

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

REFRIGERATION FAN MOTORS (S39SJ1 & S35SJ1 ONLY)

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.

NOTE: ON S35S1 AND S39S1 CASES USED FOR FISH, THE EXPANSION VALVE BULB MUST BE MOVED FROM THE FRONT OF THE LONG COIL TO THE REAR OF THE COIL. THIS WILL ALLOW THE LONG COIL TO CLEAR DURING A DEFROST CYCLE.

REFRIGERATION LINES

Refrigerant connections (suction & liquid) are stubbed underneath the case. Cases multiplexed together must be field connected by running refrigerant lines in the space under the case. The field installed suction lines must be insulated to prevent condensation accumulation on the floor. See the section on "Recommended Piping Practices" for additional details on piping practices.

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-502 expansion valves are standard. If another refrigerant is used, the order must specify the expansion valve to be supplied.

HEAT EXCHANGER

Heat exchangers are standard 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 is mounted on the rear baffle on gravity coil models and in the discharge air on the forced air models. On parallel units, temperature control can be provided by EPR valve and thermostat. 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 100 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.

CAUTION: DURING INSTALLATION AND SERVICE OF THIS EQUIPMENT, PRECAUTIONS SHOULD BE TAKEN TO PREVENT LOSS OF REFRIGERANT TO THE ATMOSPHERE.

DEFROST CYCLE

Off-time defrost is standard on these models. The fans run continuously on the forced air cases. Defrost termination is by time (fail safe). See Chart #2 for defrost settings.

CHART #1

ELECTRICAL RATINGS
(115V/60/1 PHASE)

MODEL	FAN AMPS	LIGHT AMPS *	RECEPTACLE AMPS
S39SJ1/S35SJ1 8	1.0	.8	15.0
S39SJ1/S35SJ1 12	1.5	1.3	15.0
S39S1/S35S1 8		.8	15.0
S39S1/S35S1 12		1.3	15.0

* Cases are standard with one row of lights in the top front. A second row of lights can be added at the rear top. For the second row of lights, add .8 amps to 8' cases and 1.3 amps to 12' cases. If lighted shelves are used, add .64 amps for each shelf. This case can have a maximum of two rows of lighted shelves.

CHART #2

RECOMMENDED CONTROL SETTINGS

REFRIGERANT	LP CONTROL CUT-OUT	LP CONTROL CUT-IN	EPR VALVE SETTING	THERMOSTAT SETTING (Degree-F) CUT-OUT	THERMOSTAT SETTING (Degree-F) CUT-IN
R-22 S39SJ1/S35SJ1	18	40	45#	28 (Disch Air)	32
R-502 S39SJ1/S35SJ1	24	50	54#	28 (Disch Air)	32
R-22 S39S1/S35S1	18	40	45#	34	38
R-502 S39S1/S35S1	24	50	54#	34	38

NOTE: ALL S3(9)(5)1 SERIES CASE TEMPERATURES SHOULD BE CONTROLLED WITH A THERMOSTAT AND EPR VALVE. ON CONVENTIONAL CONDENSING UNITS, THE THERMOSTAT SHOULD CYCLE THE CONNECTED COMPRESSOR. ON PARALLEL REFRIGERATION SYSTEMS, THE THERMOSTAT MUST CYCLE AN EPR/SUCTION STOP OR A LIQUID LINE SOLENOID VALVE. IF A LIQUID LINE SOLENOID IS USED, IT MUST BE LOCATED AT THE CASE.

DEFROST SETTING:

NUMBER OF PERIODS	TERMINATION	FAIL SAFE	Model
1/24 hours	Time	46 mins.	S39SJ1/S35J1
1/24 hours	Time	80 mins.	S39S1/S35S1

PARTS LIST

S39S(J)1/S35S(J)1

DESCRIPTION		8'	12'
Interior Top Lights			
Ballast (GE 8G10-22W)		(1) 10D10-038	(1) 10D10-038
(GE 8G10-63)			(1) 10D10-037
Lamps (F40T12-N)		(2) 10A10-056	(3) 10A10-056
Shelf Lights			
Ballast (Robertson S40B)		(1) 10D10-012	(1) 10D10-012
Lamps (F30T8-N)		(1) 10A10-017	(1) 10A10-017
Expansion Valve (BFR-A-C)		(1) 3A11-050	(1) 3A11-050
Fan Motor (Forced Air Only)	(GE 5KSMS1AG)	(2) 9A10-017	(3) 9A10-017
Fan Blade (Forced Air Only)		(2) 9B10-013	(3) 9B10-013
Lower Front Panel (Ptd)		(1) 51A12-208	(1) 51A14-160
Kickplate (Bright)		(1) 55A32-389	(1) 55A32-390
End Kickplate (Bright)	L.H.	(1) 55A32-398	(1) 55A32-398
	R.H.	(1) 55A32-400	(1) 55A32-400
Outside Top (Brushed)		(1) 55F12-145	(1) 55F14-124
Outside Top (Bright)		(1) 55F12-146	(1) 55F14-125
LH IS Door		(2) 18F10-144	(3) 18F10-144
RH OS Door		(2) 18F10-145	(3) 18F10-145
Front Glass - 25"		(1) 14D11-047	(1) 14D11-048
Front Glass - 29"		(1) 14D11-045	(1) 14D11-046

RECOMMENDED PIPING PRACTICES FOR KYSOR//WARREN CASES

~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 proper oil return to the compressor. Undersized lines can rob refrigeration capacity and increase operating costs. 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 F superheated 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. See Engineering Bulletin #85-204-3 for detail.

RECOMMENDED PIPING PRACTICES FOR KYSOR//WARREN CASES (continued)

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

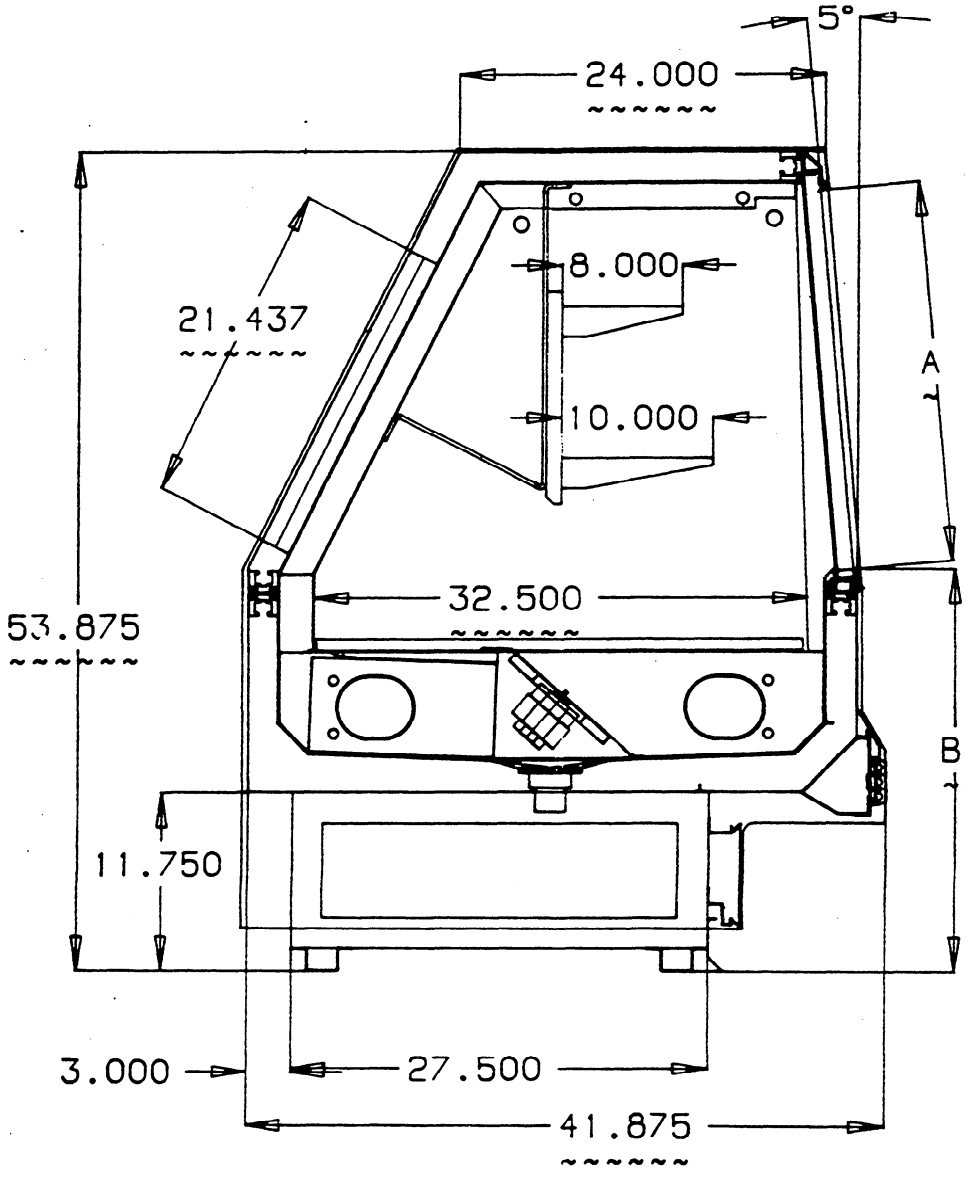
13. Brazing of copper to copper should be with a minimum of 10% silver. Copper to brass or copper to steel should be with 45% silver.

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.

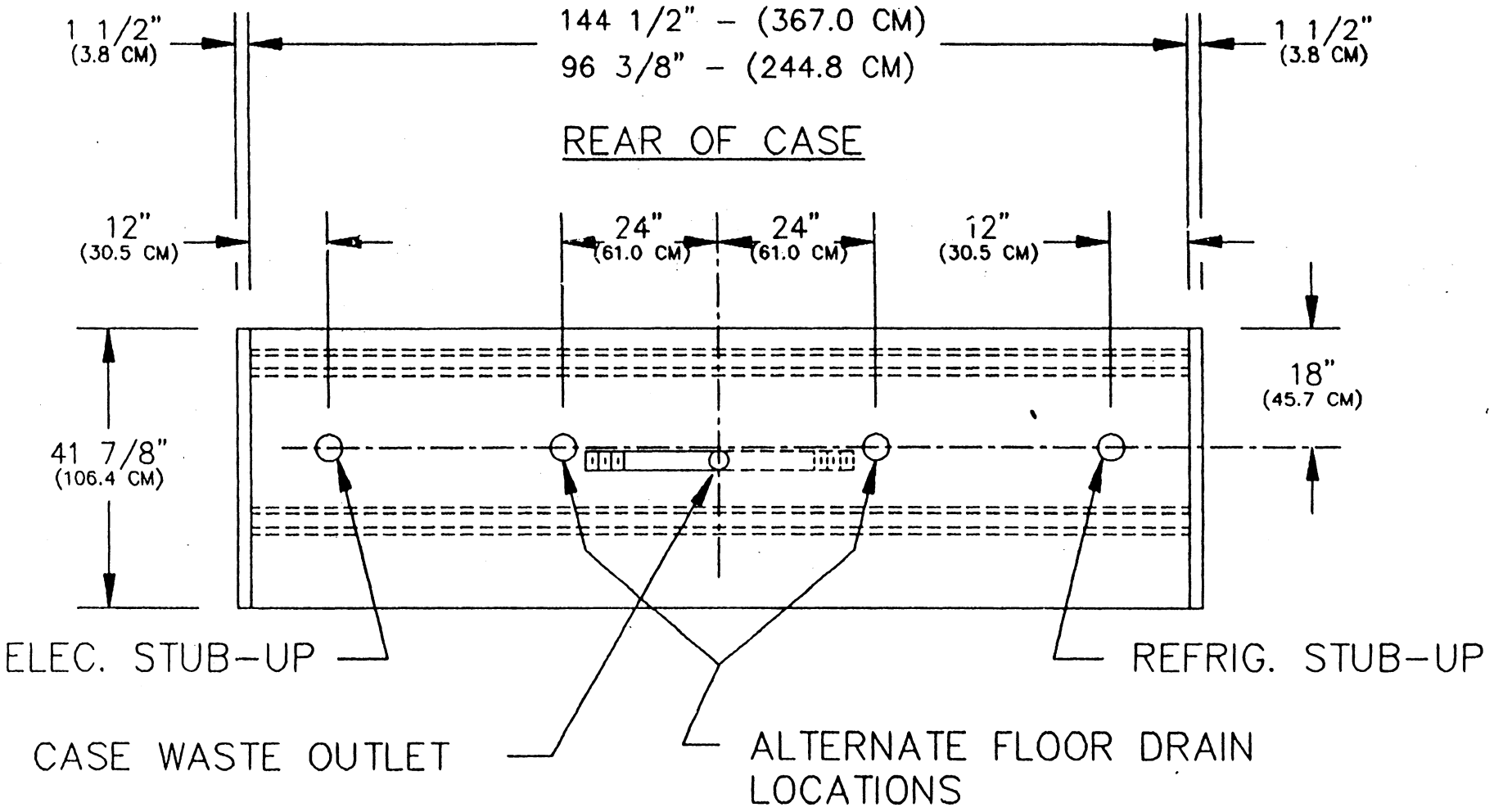
15. When connecting more than one suction line to a main trunk line, connect each branch line with an inverted trap.

07/25/80
Revised 07/25/85

	S35SJ1	S39SJ1
A	25.063	29.063
B	26.343	22.593



S35SJ1/S39SJ1



LETTER	REVISION	DATE	BY

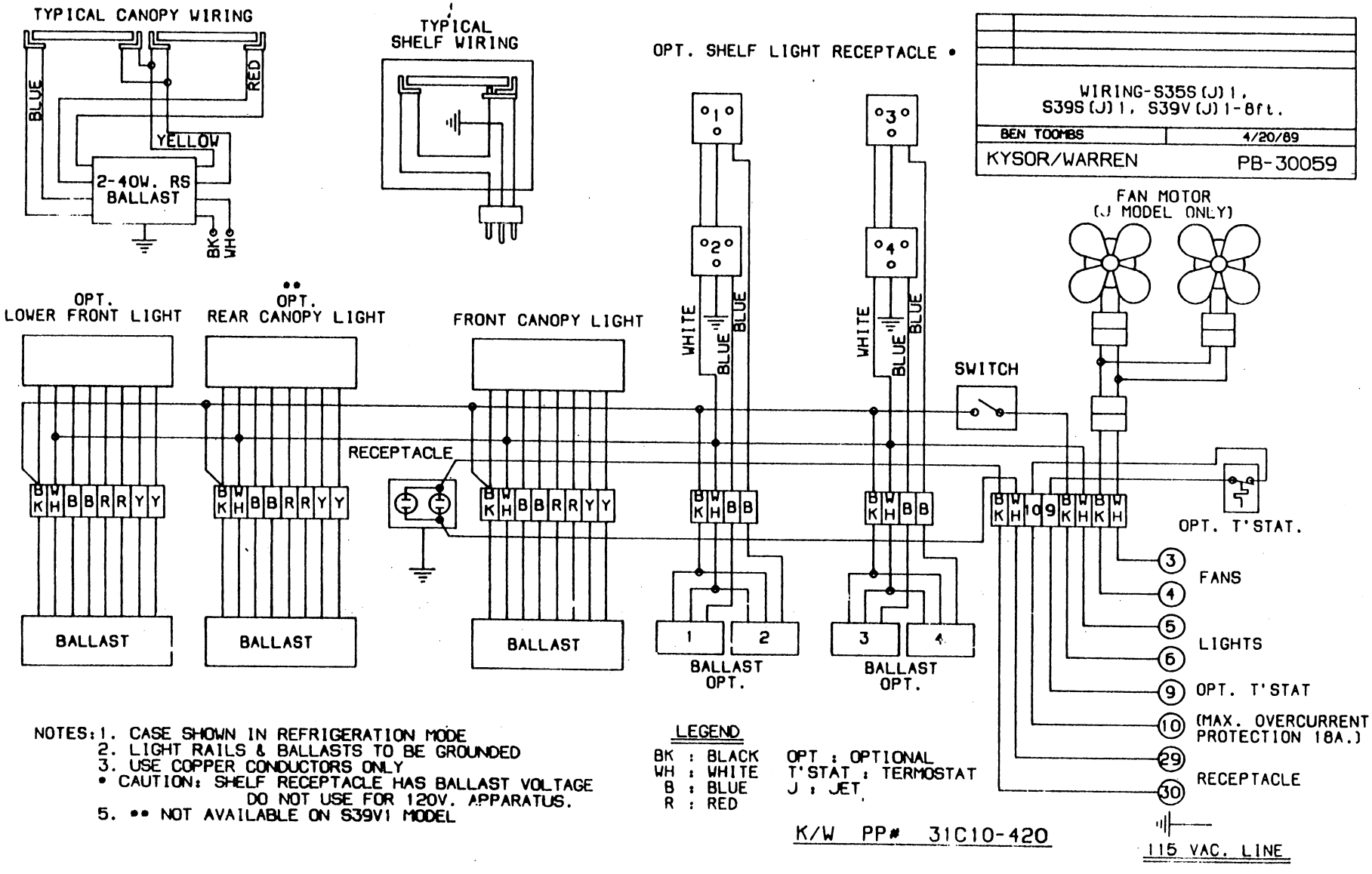
DATE 5 APR 89
SCALE 1/2"=12"
DRAWN BY JESSE
SHEET

LAYOUT FOR

S39(S)(J)(V)1
S35(S)(J)1
PLAN VIEW

KYSOR//WARREN

DRAWING NUMBER
PLAN VIEW

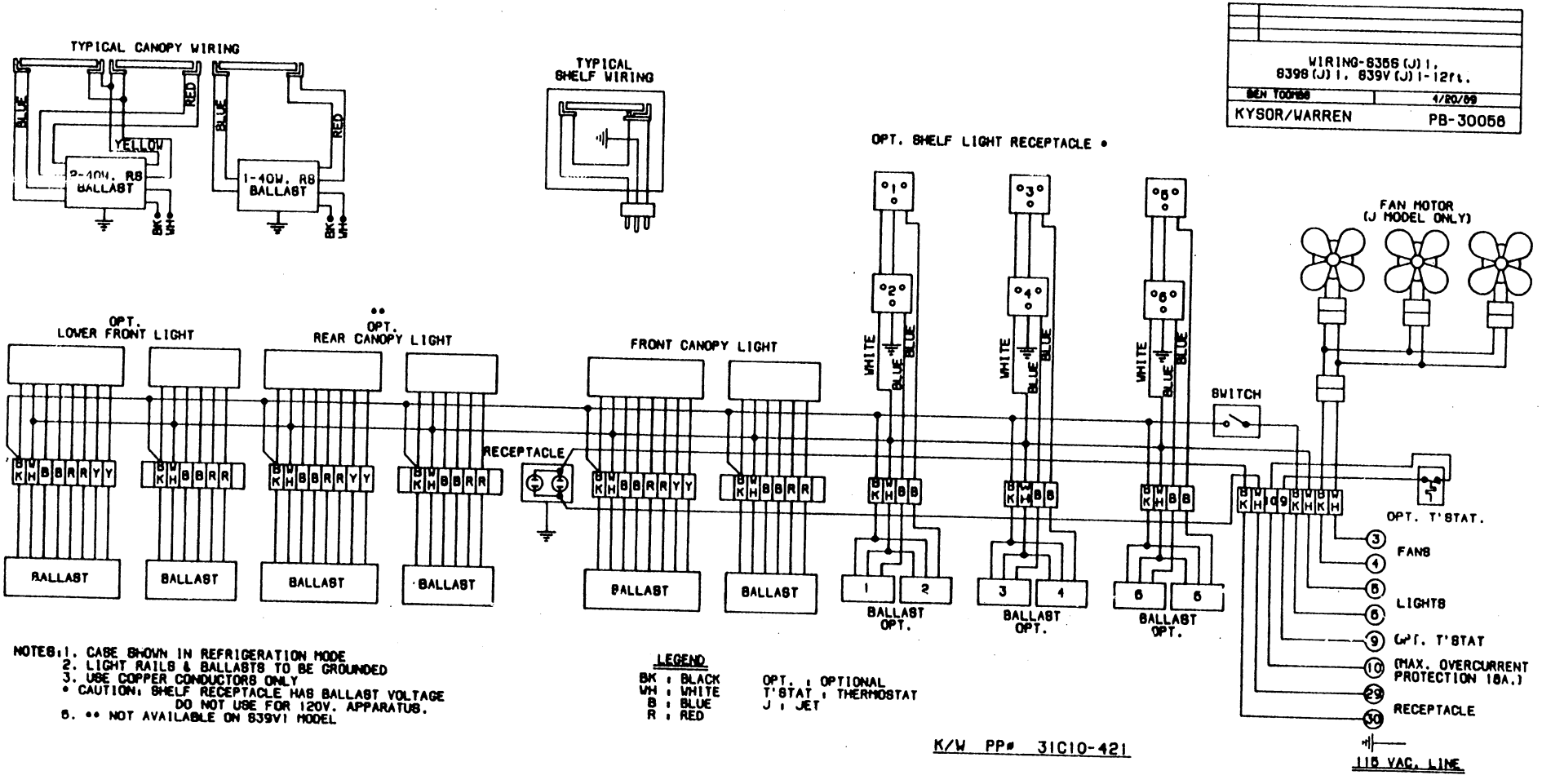


NOTES: 1. CASE SHOWN IN REFRIGERATION MODE
2. LIGHT RAILS & BALLASTS TO BE GROUNDED
3. USE COPPER CONDUCTORS ONLY
• CAUTION: SHELF RECEPTACLE HAS BALLAST VOLTAGE DO NOT USE FOR 120V. APPARATUS.
5. •• NOT AVAILABLE ON S39V1 MODEL

LEGEND

BK : BLACK
WH : WHITE
B : BLUE
R : RED
OPT : OPTIONAL
T'STAT : TERMOSTAT
J : JET

K/W PP# 31C10-420



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BK : BLACK
WH : WHITE
B : BLUE
R : RED
OPT. : OPTIONAL
T'STAT : THERMOSTAT
J : JET

K/W PP# 31C10-421