FORM NUMBER: #84-193-6
DATE: 11/23/81
REVISED: 6/4/84

WARREN//SHERER

INSTALLATION & OPERATION MANUAL

MODEL:

S3(J) - S3(J)C

DELI - MEAT

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

CRS-SI-78

WARREN//SHERER

DIVISION OF KYSOR INDUSTRIAL CORPORATION

1600 ROCKDALE INDUSTRIAL BLVD., CONYERS, GEORGIA 30207/404•483•5600

INSTALLATION AND OPERATING INSTRUCTIONS

FOR

S3J, S3JC, S3, S3C MODELS

SERVICE DELI/MEAT CASES

APPLICATION:

The Warren/Sherer 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°F dry bulb, 55% relative humidity.

MODELS	DESCRIPTION	SERIAL CODE DESIGNATION
S3J	Service Deli Forced Air Coil Remote Refrigeration	770-A
S3JC	Service Deli Forced Air Coil Self-contained Refrigeration	776-A
S3	Service Meat Gravity Coil Remote Refrigeration	774-B
S3C	Service Meat Gravity Coil Self-contained Refrigeration	775-B

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GENERAL
These display refrigerators may be installed individually or in a continuous line-up consisting of several 8-foot and 12-foot 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 (3) days following delivery. A claim must be filed with the carrier by the consignee for all damages.

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 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.
3. Always provide as much as 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 throughly 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.

Caution: 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 SHUT-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 CODE AND LOCAL CODES.

ELECTRICAL JUNCTION

On these cases, an electrical junction box is provided for field connections. The junction box is located at the left rear of the case and contains the case thermostat and all lighting ballasts. On self-contained models, a separate circuit should be provided for the condensing unit.

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 (S3J 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 1/2 turn between adjustments and allow 10 minutes or more between adjustments. Superheat should be set to 6-8°F.

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 additonal details on piping practices.

IMPORTANT - 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 (S3J Only)

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 S3 models and in the discharge air on the S3J. 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.

Revised 11/23/81

DEFROST CYCLE

Off-time defrost is standard on these models. The fans run continuously on the S3J. Defrost termination is by time (fail safe). See Chart #2 for defrost settings.

Self-Contained Models

The self-contained S3(J)C uses a Copeland "F" line air cooled condensing unit. The condensing unit is located under the display area. R-12 is the standard refrigerant in this system. The unit may be serviced by sliding out of case. This is done by removing the retaining clamps on back of the case and pulling the unit out carefully. Care must be taken so as not to block the condenser air inlet and outlet.

Chart #1

Electrical Ratings
(115V/60/1 Phase)

MODEL	FAN AMPS	LIGHT AMPS*	RECEPTACLE AMPS	COND. UNIT AMPS
S3J 8	.5	.8	15.0	
S3J 12	1.0	1.3	15.0	
S3JC 8	.5	.8	15.0	7.3
S3JC 12	1.0	1.3	15.0	9.9
S3 8		.8	15.0	
S3 12		1.3	15.0	
S3C 8		.8	15.0	7.3
S3C 12		1.3	15.0	9.9

*Add .7 amps for each lighted shelf. Amperage indicated is for one row of lights in top of case.

This case should have a maximum of 2 rows of lighted shelves.

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6/4/84

Chart #2

Recommended Control Settings

REFRIGERANT	LP CONTROL CUT-OUT	LP CONTROL CUT-IN	EPR VALVE SETTING	THERMOSTAT SETTING CUT-OUT	THERMOSTAT SETTING CUT-IN
R-12 S3J Remote	5	20	22#	28°F (Disch Air)	32°F
R-12 S3JC (Self-contained)	5	20	22#	28°F (Disch Air)	32°F
R-502 S3J Remote	24	50	54#	28°F (Disch Air)	32°F
R-12 S3Remote	5	20	22#	34°F	38°F
R-12 S3C (Self-contained)	5	20	22#	34°F	38°F
R-502 S3 Remote	24	50	54#	34°F	38°F

Note: All S3(J)(C) 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 on 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
1-2 / 24 hrs.	Time	46 min.	S3J(C)
1-2/24 hrs.	Time	80 min.	S3(C)

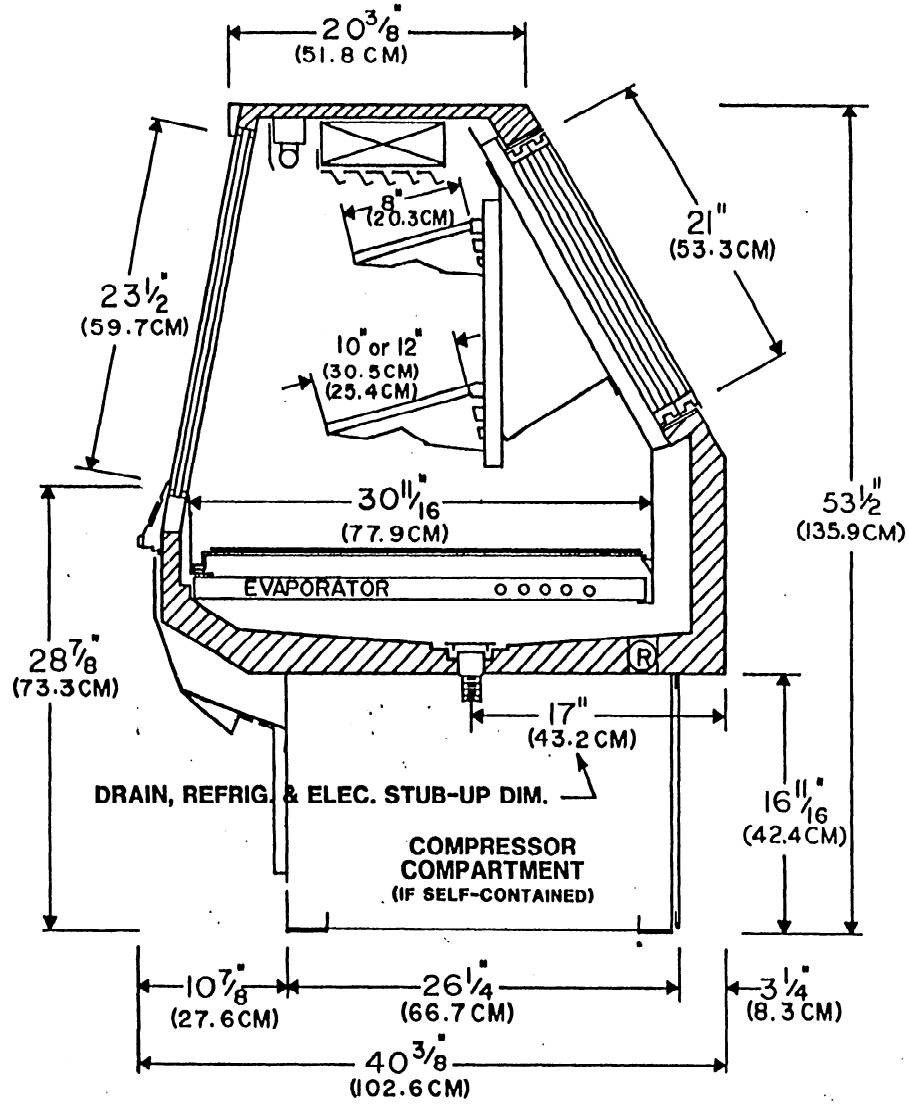
Revised 11/23/81
6/4/84

Parts List

S3(J)

Description	8'	12'
Interior Top Lights Ballast	(1) 10D10-38	(1) 10D10-38 (1) 10D10-37
Lamps	(2) 10A10-56	(3) 10A10-56
Shelf Lights Ballast	(1) 10D10-12	(1) 10D10-12 (1) 10D10-13
Lamps	(1) 10A10-17	(1) 10A10-17 (1) 10A10-18
Expansion Valve	(1) 3A10-34 (FF1-/4C)	(1) 3A10-17 (GF-1/2C)
Fan Motor (S3J only)	(1) 9A10-17	(2) 9A10-17
Fan Blade (S3J only)	(1) 9B10-27	(2) 9B10-27
Lower Front Panel (Ptd)	51A12-119	51A14-100
Lower Front Panel (Her. Vinyl)	53E11-187	53E11-188
Kickplate (Brushed)	55A32-188	55A32-190
Kickplate (Bright)	55A32-189	55A32-191
End Kickplate (Brushed)	55A32-192	55A32-192
End Kickplate (Bright)	55A32-193	55A32-193
Colorband (Brushed)	55F12-85	55F14-79
Colorband (Bright)	55F12-86	55F14-80
Outside Top (Brushed)	55F12-87	55F14-81
Outside Top (Bright)	55F12-88	55F14-82
LH IS Door	(2) 18F10-144	(3) 18F10-144
RH OS Door	(2) 18F10-145	(3) 18F10-145

Revised 11/23/81
6/4/84



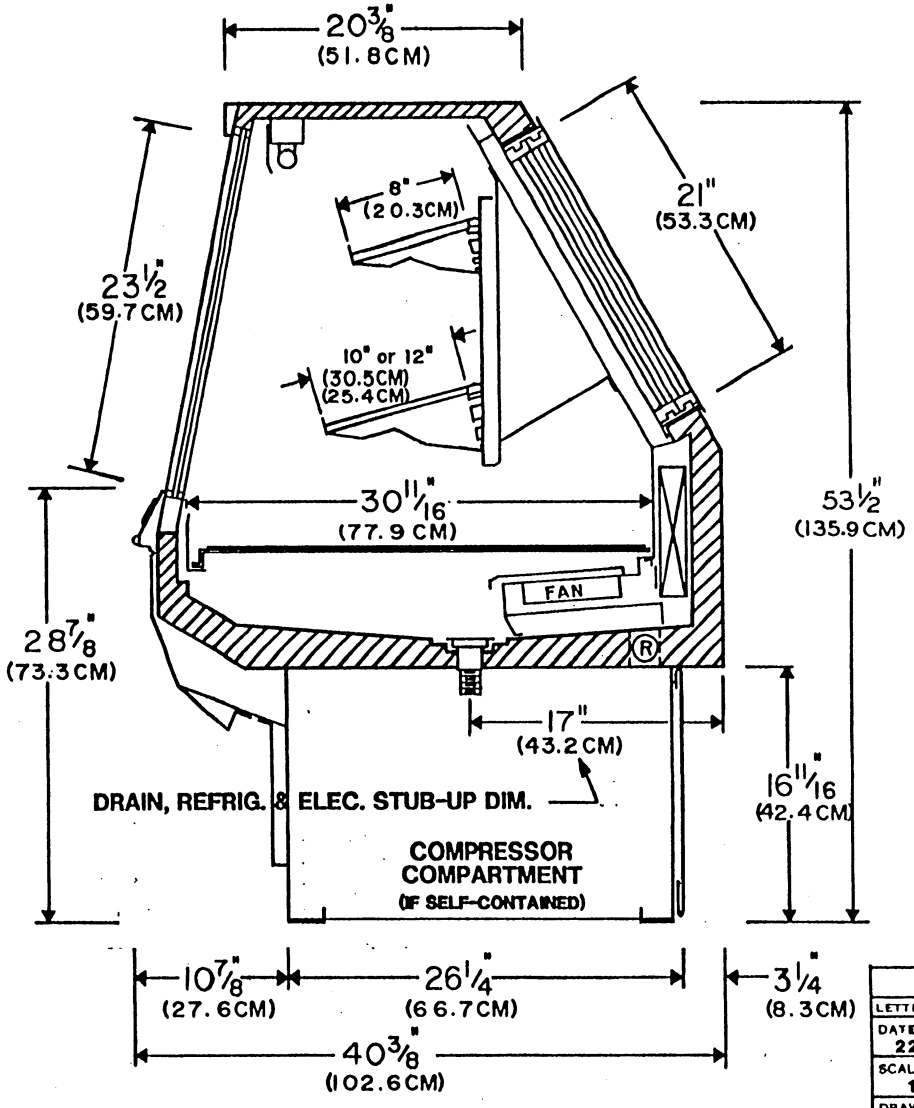
LETTER	REVISED	DATE	BY

DATE 22NOV83
SCALE 1/8" 1"
DRAWN JHP
APPD.

TITLE
CROSS SECTION
MODEL **S3** (MEAT)

KYSOR | WARREN // SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
SB-83-701



LETTER	REVISED	DATE	BY

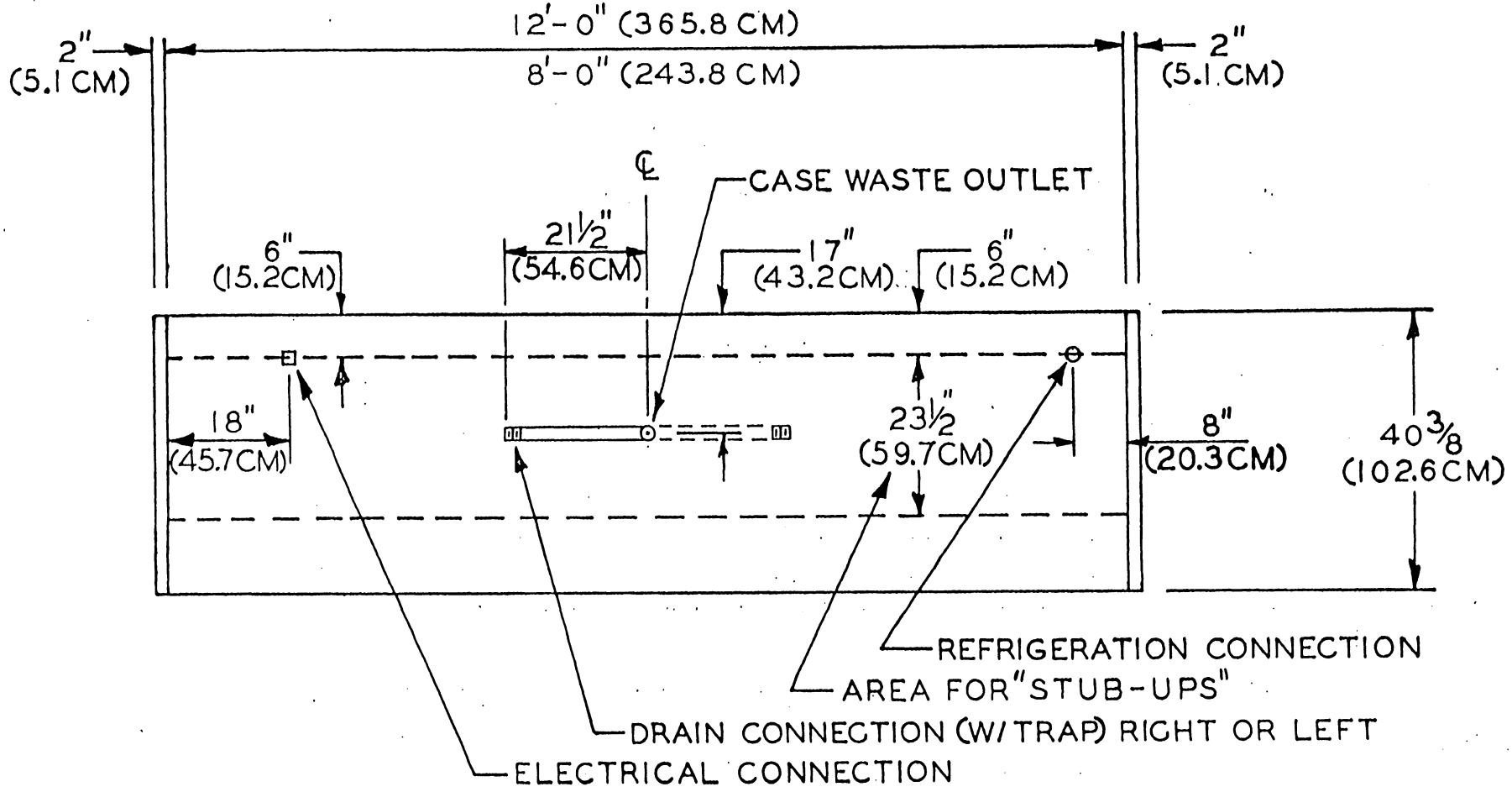
DATE	22NOV83
SCALE	1/8 1"
DRAWN	JHP
APPD.	

TITLE

CROSS SECTION
MODEL **S3J** (DELI)

KYSOR | WARREN / SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
SB-83-703



-10-

LETTER	REVISED	DATE	BY

DATE 1 DEC 81

SCALE 1/2"=1'-0"

DRAWN J-P

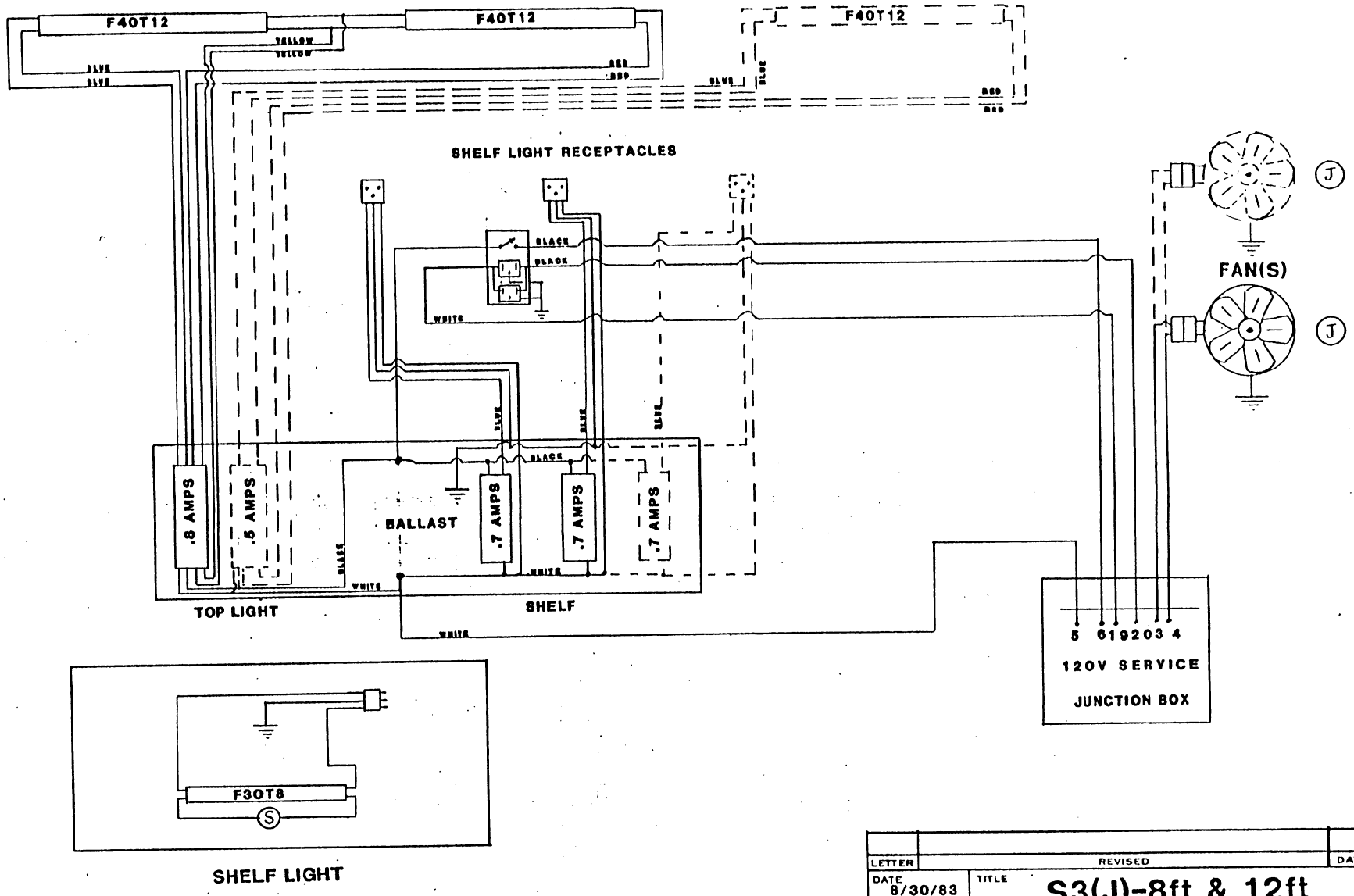
APPD.

TITLE

PLAN VIEW
MODEL S3(J)

KYSOR | WARREN / SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
SA-81507



— — — — 12ft CASE ONLY

(J) FORCED AIR CASE ONLY

WARREN/SHERER PP# 31C10-251

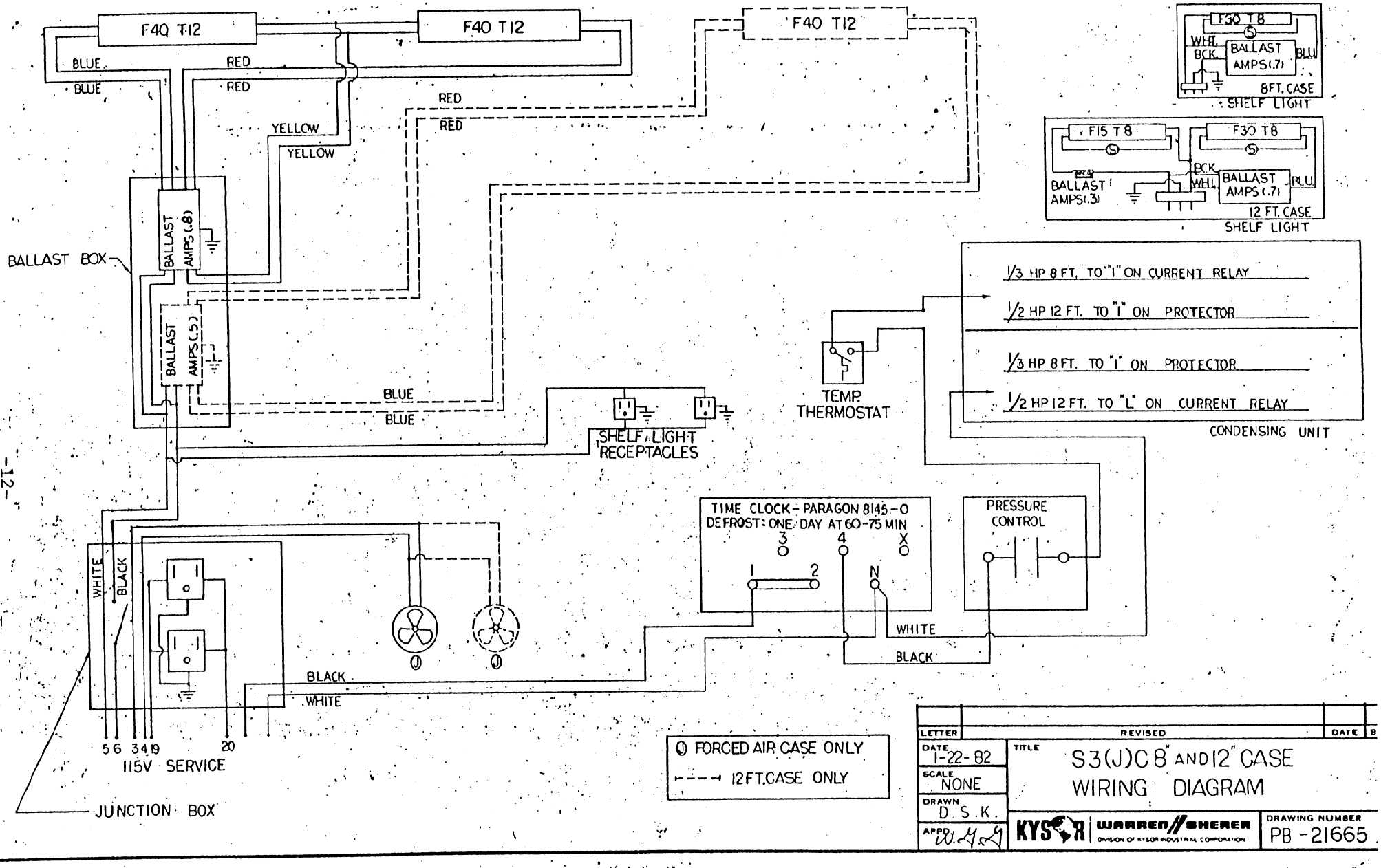
LETTER	REVISED	DATE

DATE 8/30/83
SCALE NONE
DRAWN WGG
APPD J. Bell

TITLE
S3(J)-8ft & 12ft
WIRING DIAGRAM

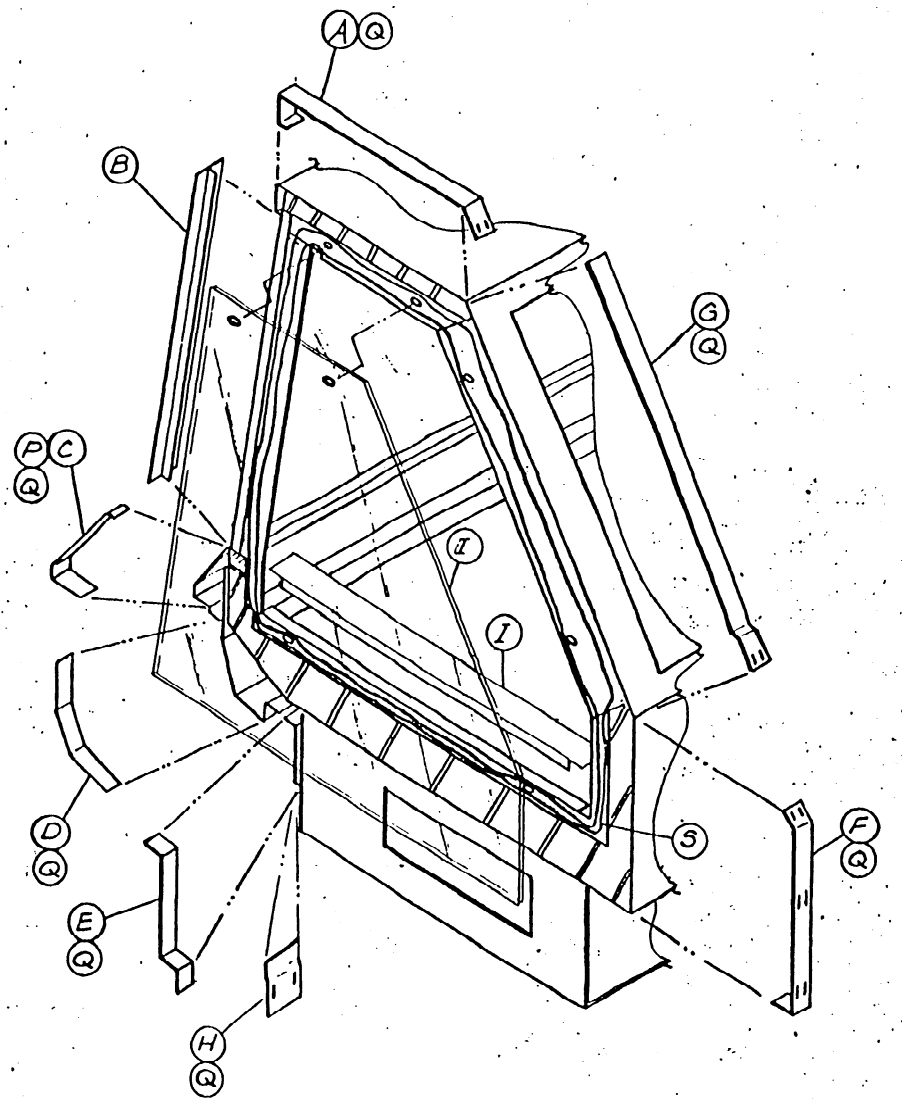
KYSOR | WARREN/SHERER — DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PB-21911



-12-

LETTER	REVISED	DATE	B
DATE 1-22-82	TITLE S3(J)C 8" AND 12" CASE WIRING DIAGRAM		
SCALE NONE			
DRAWN D.S.K.			
APPD. W.H.G.	KYSOR / WARREN / SHERER DIVISION OF KYSOR INDUSTRIAL CORPORATION	DRAWING NUMBER PB-21665	



INSTALLATION INSTRUCTION REF. PA-21625

MODELS: S3(J)(C) S3(J)(C) W/ PLEX. DIVIDER		KIT NO. 94F13078 94F13079	KIT NO. 94F13080 94F13081	
		BRUSHED	BRIGHT	
ITEM	DESCRIPTION	PART NO.	PART NO.	QTY.
A	TRIM - TOP JOINT	55P12-181	55P12-182	1
B	TRIM - FRONT GLASS JOINT	55P12-183	55P12-184	1
C	TRIM - COLORBAND JOINT	55P12-185	55P12-186	1
D	TRIM - UPPER FRONT PANEL JOINT	55P18-241	55P18-242	1
E	TRIM - LOWER FRONT JOINT	55P12-247	55P12-248	1
F	TRIM - REAR JOINT LOWER	55P18-140	55P18-191	1
G	TRIM - REAR JOINT UPPER	55P13-350	55P13-351	1
H	TRIM - KICKPLATE JOINT	51F11-092	51F11-092	1
I	CHANNEL JOINT DRIP	55P18-230	55P18-230	1
I	DIVIDER-PLEXIGLASS ACC	73F11-150	73F11-150	1
J	WASHER-TEE NUT	54V10-13	54V10-13	4
K	NUT-3/8-16 HEX SCP	19A15-10	19A15-10	2
L	NUT-3/8-SW HD TEE SMALL	19A15-13	19A15-13	4
M	WASHER-3/8 CUT SCP	19B13-11	19B13-11	2
N	BOLT-3/8-16X1 1/4 HEX HD MACH SCREW	20E10-11	20E10-11	6
O				
P	SCREW-10-16X1/2 SER PH TEX 2SD STL	21B12-17	21B12-17	2
Q	SCREW-10-16X3/4 SD PHILL. FLATHD SS	21B12-19	21B12-19	24
R	GASKET-POLYURETHANE 1/4X3/8 ADH ON 1 3/8	24C10-24	24C10-24	11 FT.
S	SEALER-POLYB. WHITE	29B10-17	29B10-17	1 FT.
-	BUTYL RUBBER	29B10-28	29B10-28	1 TB

LETTER	REVISED	DATE	BY
A	UPDATED D+E, THEY WERE 55P18-220,221, 55P12-187, 188	6-25-81	JM

DATE 8-5-81
SCALE NONE
DRAWN JM
APPD

TITLE S3(J)(C) JOINT KIT ASS'Y. 8' & 12'

KYSOR | WARREN HEATER DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PB-21620-A

NOTES

1. MOVE REFRIGERATORS AS NEAR THEIR PERMANENT LOCATION AS POSSIBLE BEFORE REMOVING SHIPPING BRACES, SKIDS, OR ROLLERS. NOTE: THESE REFRIGERATORS WERE LINED UP AT FACTORY & NUMBERED. INSURE THEY ARE LINED UP IN THE FIELD BY THE SAME SEQUENCE NUMBER. (THE NUMBER IS LOCATED ON THE HANDRAIL.)

2. REMOVE SKIDS AND SHIPPING BRACES. INSTALL APPROX. A 5/16" BEAD OF SEALER AT ONE END OF CASE AS NOTED BY HEAVY LINE ON CROSS-SECTION.

3. MOVE CASES AS CLOSE TOGETHER AS POSSIBLE & LEVEL BY USING SHIMS PROVIDED. (CASES MUST BE LEVELED FROM FRONT TO BACK & END TO END.)

4. REMOVE ACCESS COVERS OVER LINE-UP HOLES AND INSERT THE SMALL T-NUTS IN THE END FRAME, BOTH FRONT AND BACK. PLACE THE SPECIAL T-NUT WASHER ON THE 3/8" MACHINE BOLT WITH THE HOLLOW SECTION AWAY FROM THE BOLT HEAD. ROTATE THE 3/8" BOLTS WITH T-NUT WASHER INTO THE T-NUTS ALTERNATELY UNTIL CASES ARE PULLED UP TIGHT AND THE JOINT IS COMPLETELY SEALED. (REASONABLE CARE SHOULD BE EXERCISED IN THIS PROCEDURE TO PREVENT END FRAME DISTORTION). ASSIST PULLING CASE UP TIGHT BY BUMPING FROM OPPOSITE END OF CASE OR USING PRY BAR.

5. INSPECT JOINT FOR PROPER AIR AND WATER TIGHT SEAL BOTH INSIDE AND OUTSIDE THE CASE.

6. REPLACE LINE-UP ACCESS COVER PLUGS OR PLATES.

JOINT TRIM - MOST JOINT TRIM CAN & SHOULD BE INSTALLED IMMEDIATELY AFTER CASES ARE LINED UP. WHERE POSSIBLE, INSTALL ALL TRIM IMMEDIATELY SO IT WILL NOT BE LOST. THE TRIM THAT CANNOT BE INSTALLED IMMEDIATELY SUCH AS KICKPLATE AREA, STORE IN A SAFE PLACE UNTIL REFRIGERATION AND ELECTRICAL WORK IS COMPLETED.

7. "F" REAR JOINT TRIM LOWER - POSITION ON CASE AS SHOWN AND SECURE WITH (4) 8x5/8 SHEET METAL SCREWS, LEAVING THE TWO SLOTS OPEN.

8. "G" REAR JOINT TRIM UPPER - POSITION ON CASE AS SHOWN WHILE ALIGNING THE BOTTOM PAIR OF HOLES WITH SLOTS IN PART "F". SECURE WITH (4) 8x5/8 SHEET METAL SCREWS.

9. "B" FRONT GLASS JOINT TRIM - POSITION IN CENTER OF JOINT AND SEAL WITH 1/4" BEAD SEALER. (29B10-17) PUSH FIRMLY TO INSURE SEAL.

10. "A" TOP PANEL JOINT TRIM - POSITION ON CASE AS SHOWN WHILE ALIGNING THE BOTTOM PAIR OF SLOTS IN PART "G". SECURE WITH (4) 8x5/8 SMS.

11. "D" FRONT PANEL JOINT TRIM - POSITION ON CASE AS SHOWN. SECURE WITH (6) 8x5/8 SMS.

12. "E" KICKPLATE JOINT TRIM - PLACE AS SHOWN AND SECURE WITH (2) #10-16 x 3/4 SMS.

13. a. "I" JOINT TRIM CHANNEL - POSITION JOINT TRIM CHANNEL FLANGES OVER EDGE OF END FRAME
    b. "I" PLEXIGLASS DIVIDER - FACTORY INSTALLED CAULK ALL JOINTS

14. COLORBAND JOINT TRIM - FASTEN CBAND & JOINT TRIM "C" AFTER JOINT TRIM "B" & "D" ARE POSITIONED. FASTEN W/(2) 21B12-19 ON TOP SIDE & (2) 21B12-17 BTM SIDE. NOTE: JOINT KIT ASSY PB-21620.

LETTER	REVISED	DATE	BY

DATE 8-5-81
SCALE NONE
DRAWN
APPD. WWH

TITLE: JOINT KIT INSTALLATION INSTRUCTION FOR S3 (J)(C)

KYSOR WARREN / SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PA-21625

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 temp cases to provide maximum of 65° sub-cooled gas back to the compressor and prevent condensation in exposed areas. Insulate suction lines on medium temp cases with 1/2" thick insulation in exposed areas to prevent condensate drippage.

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 risors, 4' or longer. Use a double "P" trap for each 20' of risors. "P" traps should be the same size as the horizontal line. Consult the technical manual or legend sheet for proper size risors.

10. Use long radius ells and avoid 45° 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.