FORM NUMBER: 88-174-03
DATE: 08/30/80
REVISED: 07/13/81, 06/04/84, 03/22/88

WARREN//SHERER

INSTALLATION & OPERATION MANUAL

MODEL:

M1A(G) - M4A(G) MEAT MERCHANDISER
M1AHG - CHEESE MERCHANDISER
PIZZA CASE

THIS REFRIGERATOR CONFORMS TO THE COMMERCIAL REFRIGERATOR MANUFACTURERS ASSOCIATION HEALTH AND SANITATION STANDARD
CRS-SI-86

WARREN//SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

1600 ROCKDALE INDUSTRIAL BLVD., CONYERS, GEORGIA 30207 / 770•483•5600

INSTALLATION AND OPERATING INSTRUCTIONS

FOR

M1A(G), M4A(G) and LM1(G) MODELS

SELF-SERVICE MEAT CASES

APPLICATION:

The Warren/Sherer single and multi-shelf and self-service meat cases are designed to merchandise packaged fresh (red) meats and deli products. The LM1(G) cases are designed for packaged frozen meat products. These cases should be installed and operated according to the instructions contained in the 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 temperature, 55% relative humidity, and *minimum of 65-degree-F, 35% relative humidity.

*Defrost times may be excessive if temperature and humidity drop below the minimum noted.

MODEL	DESCRIPTION
M1A	Single Deck Meat, Air Defrost, Metal Front
M1AG	Single Deck Meat, Air Defrost, Glass Front
M4A	Multi-Deck Meat or Deli, Air Defrost, Metal Front, Usually two or three Adjustable Shelves
M4AG	Multi-Deck Meat or Deli, Air Defrost, Glass Front, Usually two or three Adjustable Shelves
LM1	Single Deck Frozen Meat, Electric Defrost, Metal Front
LM1G	Single Deck Frozen Meat, Electric Defrost, Glass Front
M1AHG	Single Deck, High Glass, Air Defrost Cheese Merchandiser
M1A(G)	Single Deck, Air Defrost Pizza Merchandiser (Rear Work Surface and Condiment Trays)

ALL CLAIMS FOR SHORTAGES MUST BE MADE WITHIN TEN DAYS OF RECEIPT OF SHIPMENT. ANY SHORTAGES CLAIMED AFTER TEN DAYS WILL BE INVOICED AS ADDITIONAL PARTS.

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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.

NOTICE: 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 insulated bottom. A 1-1/2" galv. water seal trap is furnished for field installation.

INSTALLING DRIP PIPE

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

1. Use the external water seal provided with the equipment. Never double seal a line.

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.

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CLEANING

To insure minimum maintenance cost, cabinet should be thoroughly emptied and washed out every three (3) 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.

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 located on the top of the back baffle and each end of the refrigerator or over the front edge of adjustable shelves.

For proper operation, you must not stock merchandise above the load lines. 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 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 valves to determine wire size and circuit protection. Anti-condensate controllers can be used to control the anti-condensate heater.

On electric defrost models, the defrost heater amperages should be added together, and if their rating exceeds the defrost time clock or condensing unit breaker capacity, a defrost relay and circuit breaker must be employed and furnished by others. 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.

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

ANTI-SWEAT HEATERS
These heaters are placed in the fixture to eliminate sweat forming on certain areas of fixture.

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 2PSIG). 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
The refrigeration lines are located under the deck pans on the 8' and 12' cases. A refrigeration outlet is provided in the front RH end of the case. 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.

IMPORTANT - SEAL AROUND LINES AFTER CONNECTIONS ARE MADE. KEEP DIRECT FLAME FROM BOTTOM OF REFRIGERATOR, AS HEAT WILL DISINTEGRATE THE ALUMINUM 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 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 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. *See Chart #2 note 2.

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

"AIR DEFROST" Models - On these model refrigerators, the evaporator fans run continuously; however, they reverse the air flow during defrost cycle. In defrost, the air is pulled into the case through the refrigeration discharge grille, through the ducts, coils, and discharged out the return air duct.

Defrost termination is by bi-metal "fixed" temperature control, wired in series and set to terminate at 45°F on the coil. See Chart #2 for defrost clock control settings. The defrost cycle is started by the time clock, which reverses the contacts on the relay normally installed at the case, causing the evaporator fan motors to reverse and reverse the air flow to defrost the coils.

"HOT GAS DEFROST" Models - On hot gas defrost models, (optional for parallel compressors operation only) hot gas is routed through the suction line and evaporator coil. It exits the coil through a by-pass around the expansion valve and heat exchanger to return to the liquid line where the "condensed" liquid is used to feed the other cases on the same parallel unit. The case fans continue to operate during defrost to warm up the drain pan and air ducts.

On hot gas models, an adjustable termination control is used. The control is located at the left end of the case behind the lower front panel. The control bulb is at the same end of the case in the discharge air stream above the coil.

NOTE: DO NOT USE PUMP DOWN SYSTEMS WITH AIR DEFROST. ON PARALLEL COMPRESSOR SYSTEMS, AN ELECTRIC STOP EPR VALVE OR SOLENOID IS REQUIRED IN THE SUCTION LINE.

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Chart #1

Model	Evaporator Fans (Amps)	Anti-Cond Heater (Amps)	Lights (Amps)
M1A 8	.6	.7	---
M1AG 8	.6	1.1	---
M1A 12	.9	1.3	---
M1AG 12	.9	1.7	---
M4A 8	.6	.4	1.6
M4AG 8	.6	.8	1.6
M4A 12	.9	.6	2.1
M4AG 12	.9	1.1	2.1

For each lighted shelf, add .7 amps per shelf

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Chart #2

Recommended Control Settings

Model	Refrigerant & Applicant	LP Control Cut-out	LP Control Cut-in	EPR Valve	Thermostat (Disc. Air Temp) Cut-out	Thermostat (Disc. Air Temp) Cut-in
M1A(G)	R-12 - Meat	11 PSIG	27PSIG	12#	20	24
M1A(G)	502 - Meat	39 PSIG	63PSIG	38#	20	24
M4A(G)	R-12 - Meat	11 PSIG	27PSIG	12#	22	26
M4A(G)	R-502 - Meat	37 PSIG	63PSIG	38#	22	26
M4A(G)	R-12 - Deli	13 PSIG	27PSIG	14#	25	29
M4A(G)	R-502 Deli	42 PSIG	63PSIG	42#	25	29

Models	Defrost Periods Frequency	Termination Air	Termination Hot Gas	Fail Safe Setting Air	Fail Safe Setting Hot Gas
M1A(G)	3	45°F	50°F	45 min.	18 min.
M4AG	6	45°F	50°F	45 min.	18 min.

Note: (1) A defrost termination control is installed on the coil of each M1A and two on the M4A. These must be wired in series with trip solenoid on the time clock.

(2) Do not use pump down systems with air defrost. On parallel compressor systems, an electric EPR valve on solenoid is required in the suction line.

(3) Hot gas models use an adjustable defrost termination control.

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M1A(G) & M4A(G)
Parts List

Description	M1A(G) 8'	M4A(G) 8'	M1A(G) 12'	M4A(G) 12'	Part No.
Evap Fan Motor	2	2	3	3	9A10-39
Evap Fan Blade	2		3		9B10-13
		2		3	9B10-21
Expansion Valve	1				3A10-22
		1	1		3A11-23
				1	3A12-21
Defrost Control	1	2	1	2	8A11-26
Temp Cntrl (optional)					8A11-27
Defrost Relay	1	1	1	1	8E11-38
Defrost Relay Base	1	1	1	1	8E11-37
Alternate Def Relay	1	1	1	1	8E11-54
Capacitor	1	1			10K14-59
			1	1	10K14-58
Honeycomb (plastic)	2		3		13A15-12
Discharge Grille	1				54P16-207
			1		54P16-208
Ref. Jet Honeycomb		2		3	13A15-10
AntiSweat Htr(thermop)	1	1			81A12-34
			1	1	81A14-34
Back Rail Heater	1				
			1		
Honeycomb Heater		1			81C10-77
				1	81C11-77
Thermopane (Glass)	1	1			14D10-29
			1	1	14D10-30
Thermopane Cap	1	1			15J11-43
			1	1	15J11-44
Front Baffle (Glass)	2	2	3	3	54G28-74
Lamp Holders (Canopy)		1		2	10B11-19
		1		2	10B11-20
Lamps (canopy)		1			10A10-48
				2	10A10-47
Ballast (canopy)		1			10D10-27
				1	10D10-36
Lamp Holder (1/adj shlf)					10B11-17
					10B11-18
Lamp					10A10-17
Starter					10J12-11
Ballast					10D10-12
External Drain Trap	1	1	1	1	60N11-48
Deck Pans		4		6	56J13-12
	4		6		56J13-11
Adj Wire Rack	4	4	6	6	28G19-130
Lower Front Panel	1	1			51A12-114
			1	1	51A14-95
Upper Front Panel	1	1			51A12-115
			1	1	51A14-96
Canopy Front Panel		1			51C12-59
				1	51C14-55

(cont)

Revised 7/13/81

Parts List Cont.

Description	M1A(G) 8'	M4A(G) 8'	M1A(G) 12'	M4A(G) 12'	Part No.
Kickplate (painted)	1	1			51A12-118
			1	1	51A14-99
Kickplate (opt ss)					
Brushed	1	1	1	1	55A32-194
Bright	1	1	1	1	55A32-195
Brushed	1	1			55A32-198
Bright	1	1			55A32-199
Brushed			1	1	55A32-196
Bright			1	1	55A32-197
Colorband Brushed	1	1			55F12-77 (-79)*
			1	1	55F14-71 (-73)*
Canopy Colorband Insert (painted)	1	1			51A34-19
			1	1	51A34-20
Colorband Insert (painted)	1	1			51A34-10
			1	1	51A34-11
Colorband Insert (vinyl Heritage)	1	1			53E10-41
			1	1	53E10-42
Colorband Insert (gold anodized)	1	1			62J20-31
			1	1	62J20-33

*G Models

Rev. 7/13/81

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.

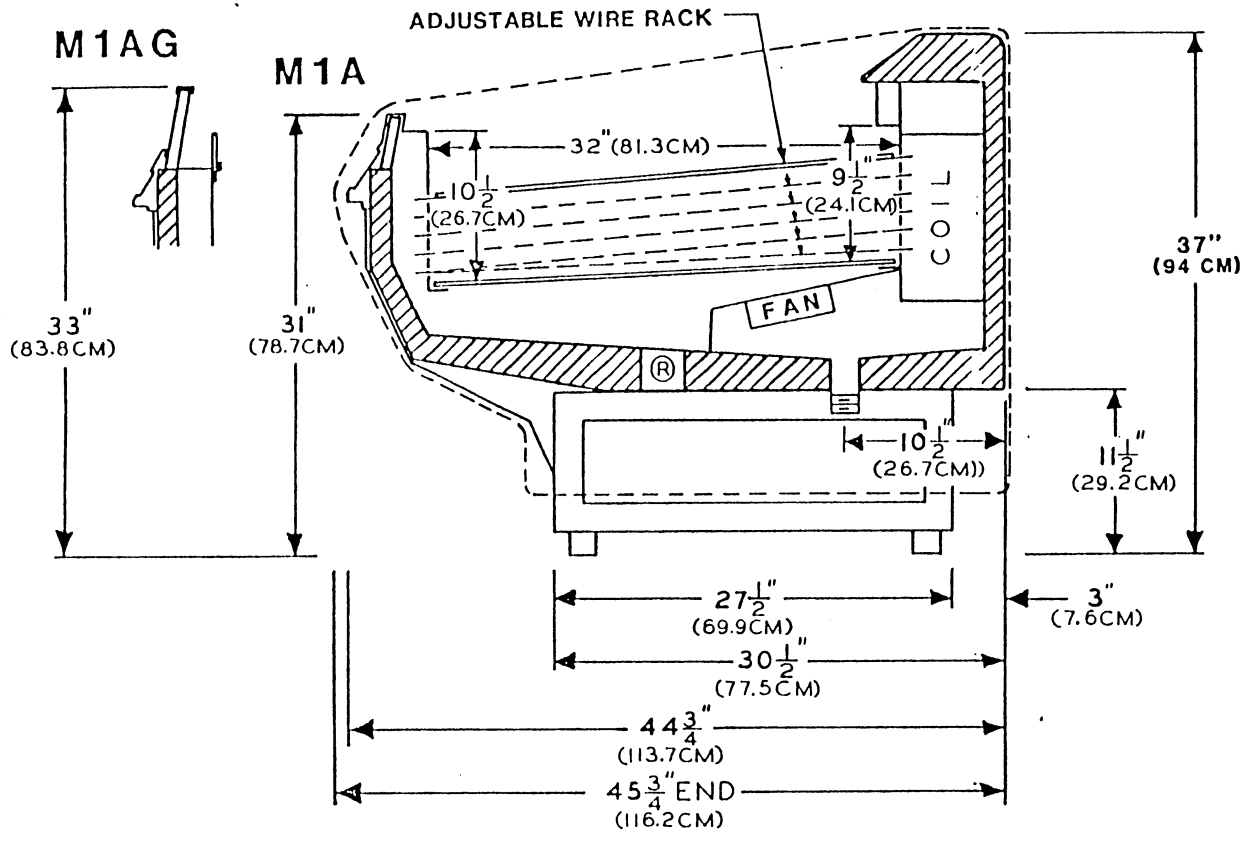
11. Provide expansion loops in suction lines on systems on hot gas defrost. An expansion loop is required for each 100' of straight run.

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.



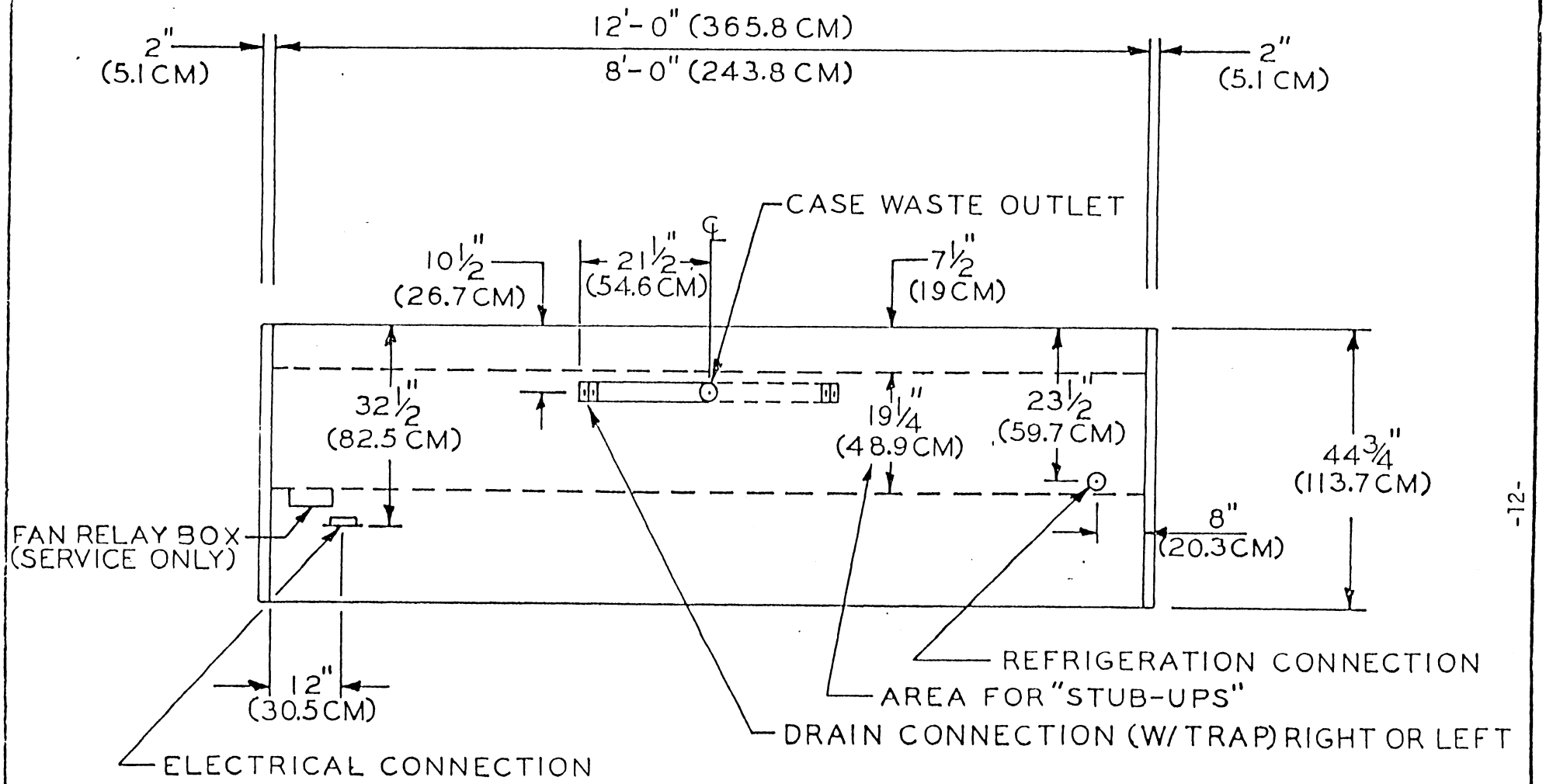
LETTER	REVISED	DATE	BY
	CHANGED HEIGHT FROM 36-1/2" TO 37"	13 APR 84	JP

DATE 15FEB83
SCALE 1/8" = 1"
DRAWN JP
APPD.

TITLE
CROSS SECTION
MODEL M1A(G)

KYSOR WARREN & SHERER
A Division of Kysor Industrial Corporation

DRAWING NUMBER
SB-83-707



-12-

LETTER	REVISED	DATE	BY

DATE 22SEP81

SCALE 1/2 = 1'-0"

DRAWN JP

APPD.

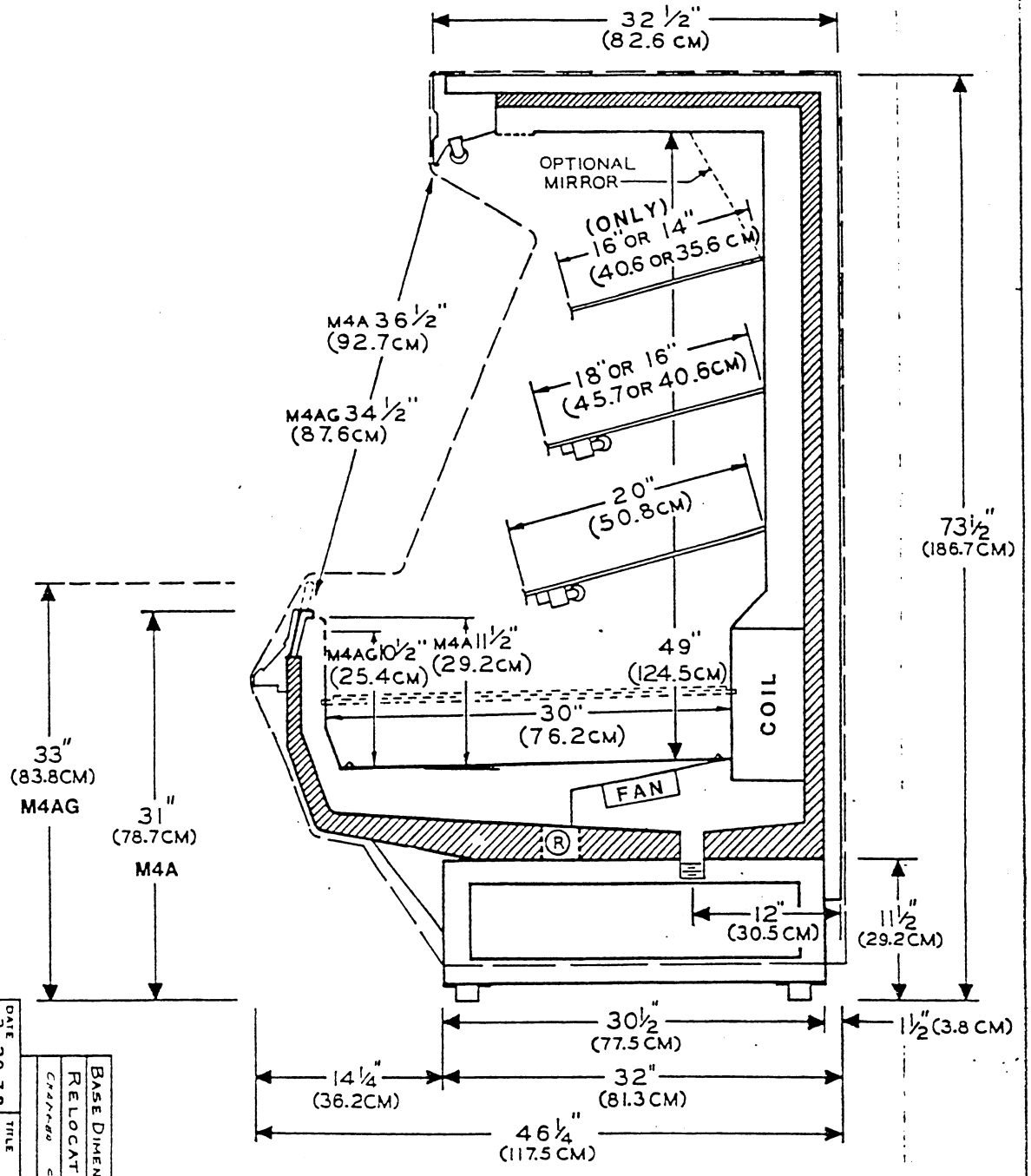
TITLE

PLAN VIEW
MODEL M1A (G)

WARREN / SHERER

DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER SA-[illegible]510



NOTE: UPPER SHELVES OPTIONAL ACCESSORY
(DOWNSLOPE OR HORIZONTAL—LIGHTED OR UNLIGHTED)

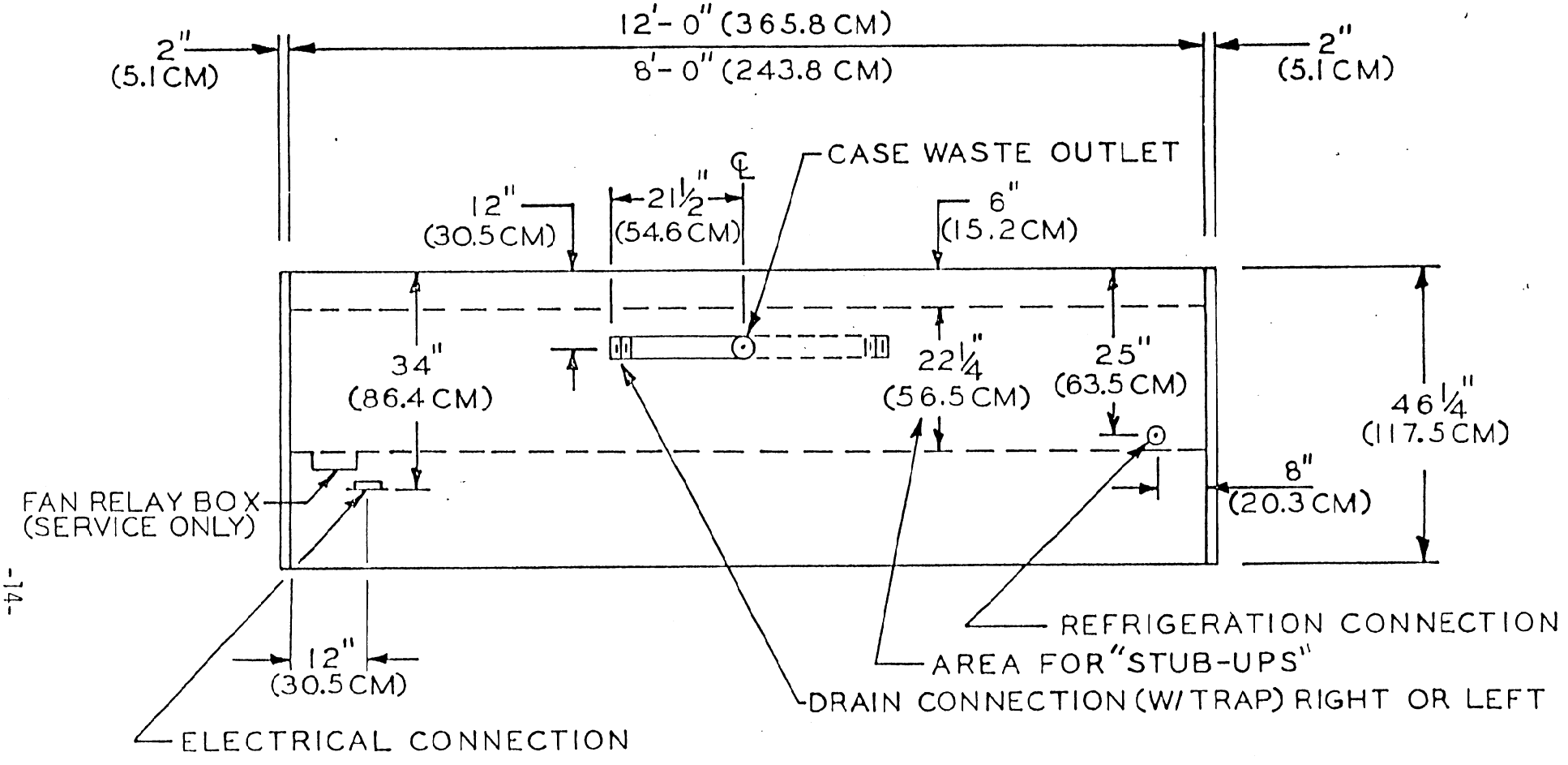
DATE	2-20-78
SCALE	1/8 = 1"
DRAWN	
APPD.	

KYSOR | WARREN/SHERER

TITLE: CROSS SECTION MODEL M4A(G)

DRAWING NUMBER: SB-78510

BY	DATE	REVISED
JP	12/10/81	BASE DIMENSION 27 1/2" TO 30 1/2"
JP	9/17/81	RELOCATE BASE - DRAIN DIMENSION
FC	7/2/8	CHANGED CROSS SECTION



-14-

	STUB-UP AREA	12/10/81	JP
LETTER	REVISED	DATE	BY

DATE 2 DEC 81

SCALE 1/2" = 1'-0"

DRAWN JP

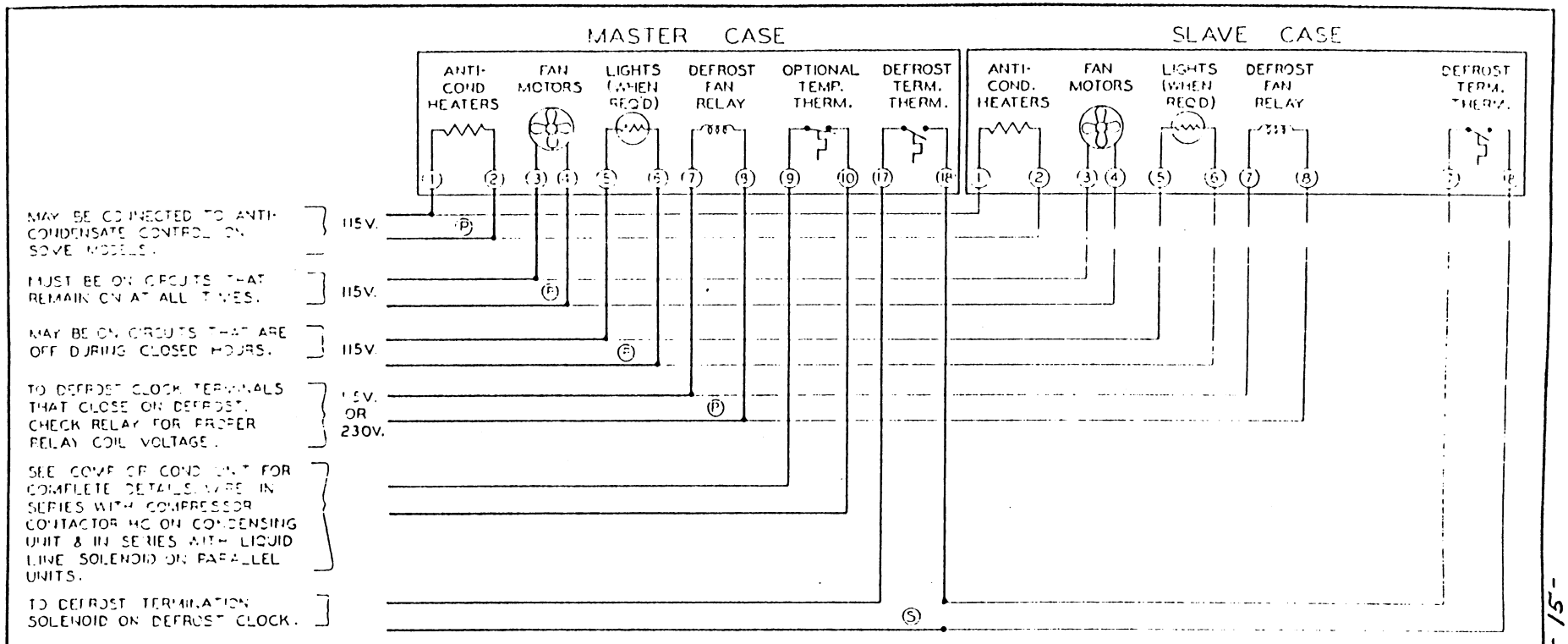
APPD.

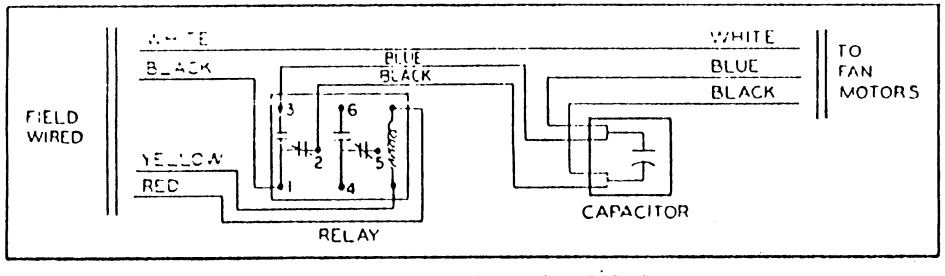
TITLE

PLAN VIEW
MODEL M4A (G)

KYSOR WARREN / SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
SA-81511





TYPICAL RELAY / CAPACITOR ASSEMBLY

(DEFROST RELAY SHOWN IN REFRIGRATION MODE)

NOTES: 1) OPTIONAL TEMPERATURE THERMOSTAT IS CLOSE ON RISE. ONE CONTROL REQUIRED PER L.T.E. - L.P.
2) DEFROST TERMINATION THERMOSTAT IS CLOSE ON RISE. ONE CONTROL PER CASE AND THEY MUST BE WIRED IN SERIES.

LEGEND - Ⓕ THESE LEADS ARE WIRED IN PARALLEL.
Ⓢ THESE LEADS ARE WIRED IN SERIES.

LETTER	REVISED	DATE	BY
A	CHANGED TO ACCOM. [illegible]		

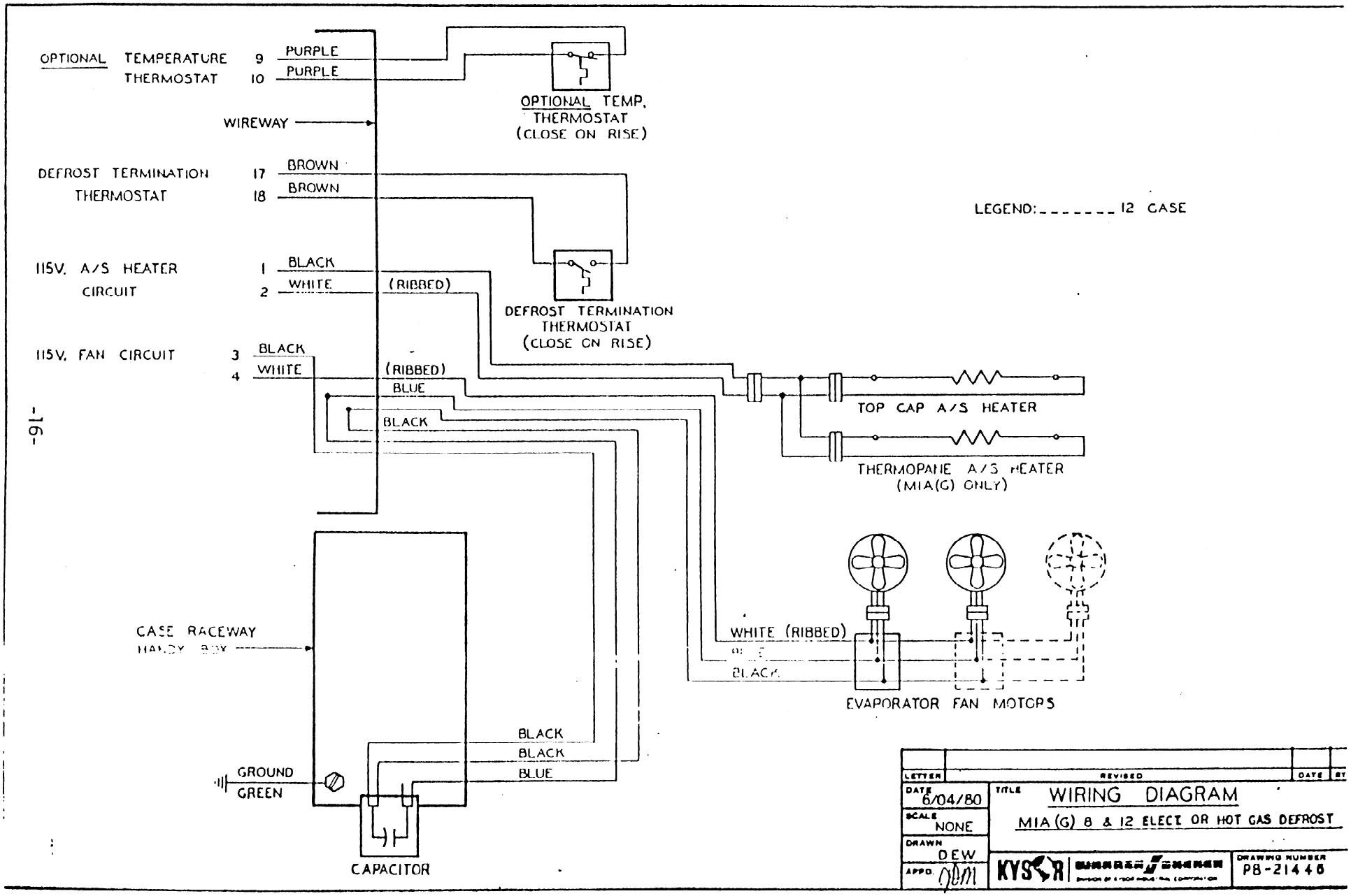
DATE 6/12/80
SCALE NONE
DRAWN DEW
APPD.

TITLE
TYPICAL AIR DEFROST FIELD WIRING
(FAN RELAY MOUNTED ON CASE)

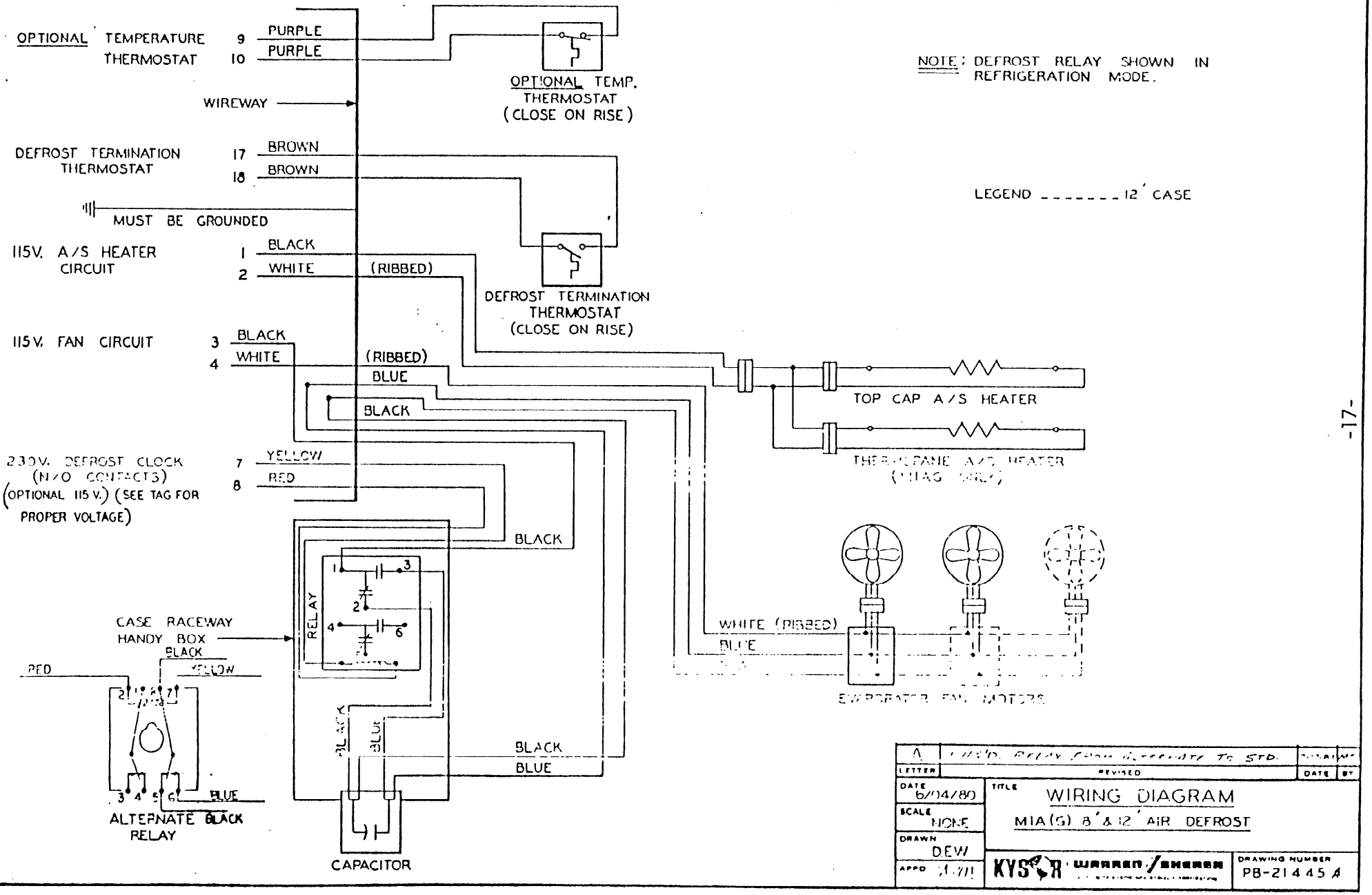
KYSOR | WARREN & ONEIDA

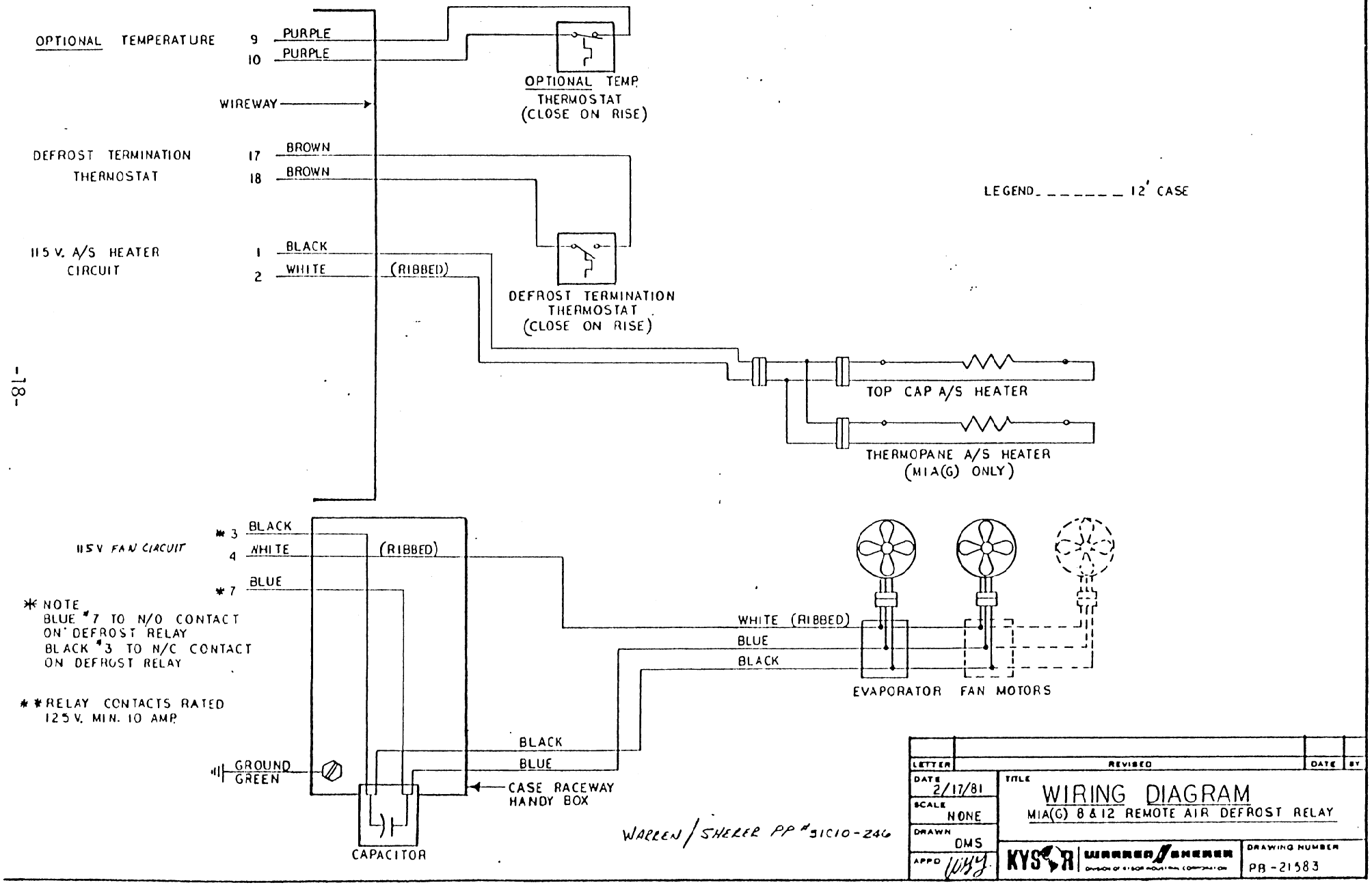
DRAWING NUMBER
PB-2 449

BRUNING 40-1014 41137



LETTER	REVISED	DATE	BY
DATE 6/04/80	TITLE WIRING DIAGRAM		
SCALE NONE	MIA(G) 8 & 12 ELECT OR HOT GAS DEFROST		
DRAWN DEW			
APPD.	KYSOR	DRAWING NUMBER PB-21446	


OPTIONAL TEMPERATURE THERMOSTAT
9 PURPLE
10 PURPLE
OPTIONAL TEMP. THERMOSTAT (CLOSE ON RISE)
WIREWAY
DEFROST TERMINATION THERMOSTAT
17 BROWN
18 BROWN
MUST BE GROUNDED
115V. A/S HEATER CIRCUIT
1 BLACK
2 WHITE (RIBBED)
DEFROST TERMINATION THERMOSTAT (CLOSE ON RISE)
115V. FAN CIRCUIT
3 BLACK
4 WHITE (RIBBED)
BLUE
BLACK
TOP CAP A/S HEATER
THERMOPANE A/S HEATER
230V. DEFROST CLOCK (N/O CONTACTS) (OPTIONAL 115 V.) (SEE TAG FOR PROPER VOLTAGE)
7 YELLOW
8 RED
BLACK
RELAY
CASE RACEWAY HANDY BOX
BLACK
RED
YELLOW
BLUE
ALTERNATE BLACK RELAY
CAPACITOR
BLACK
BLUE
WHITE (RIBBED)
BLUE
EVAPORATOR FAN MOTORS
NOTE: DEFROST RELAY SHOWN IN REFRIGERATION MODE.
LEGEND ------- 12' CASE
-17-
A
LETTER
REVISED
DATE
BY
DATE 6/04/80
SCALE NONE
DRAWN DEW
APPD
TITLE
WIRING DIAGRAM
MIA(G) 8' & 12' AIR DEFROST
KYSOR WARREN / SHERER
DRAWING NUMBER PB-21445 A



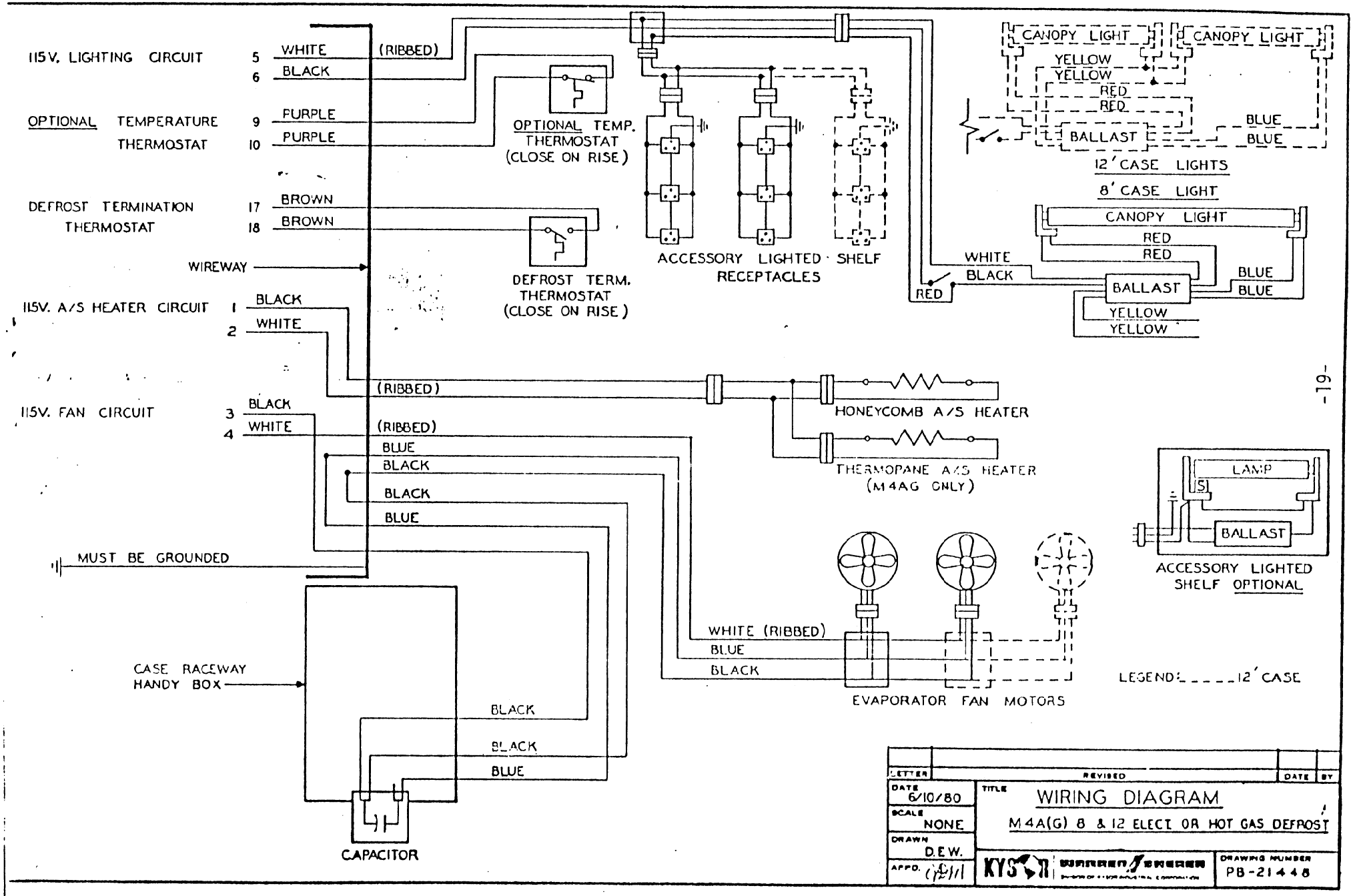
LETTER	REVISED	DATE	BY

DATE 2/17/81
SCALE NONE
DRAWN DMS
APPD WHY

TITLE
WIRING DIAGRAM
MIA(G) 8 & 12 REMOTE AIR DEFROST RELAY

KYSOR | WARREN & SHERER Division of Kysor Industrial Corporation

DRAWING NUMBER PB-21583



-19-

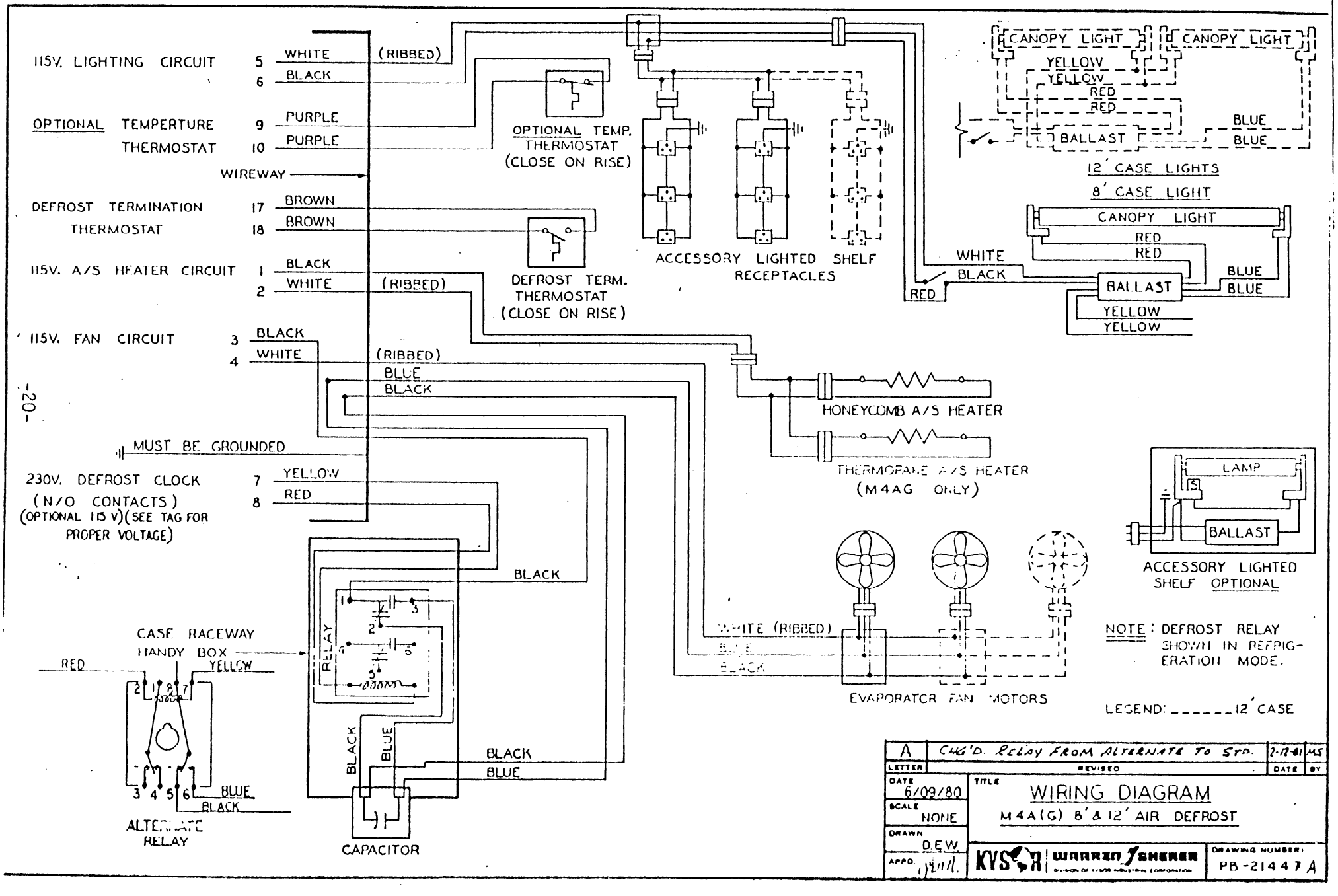
LETTER	REVISED	DATE	BY

DATE 6/10/80
SCALE NONE
DRAWN D.E.W.
APPD.

TITLE
WIRING DIAGRAM
M4A(G) 8 & 12 ELECT OR HOT GAS DEFROST

KYS AIR | WARREN & BROWN

DRAWING NUMBER PB-21448



-20-

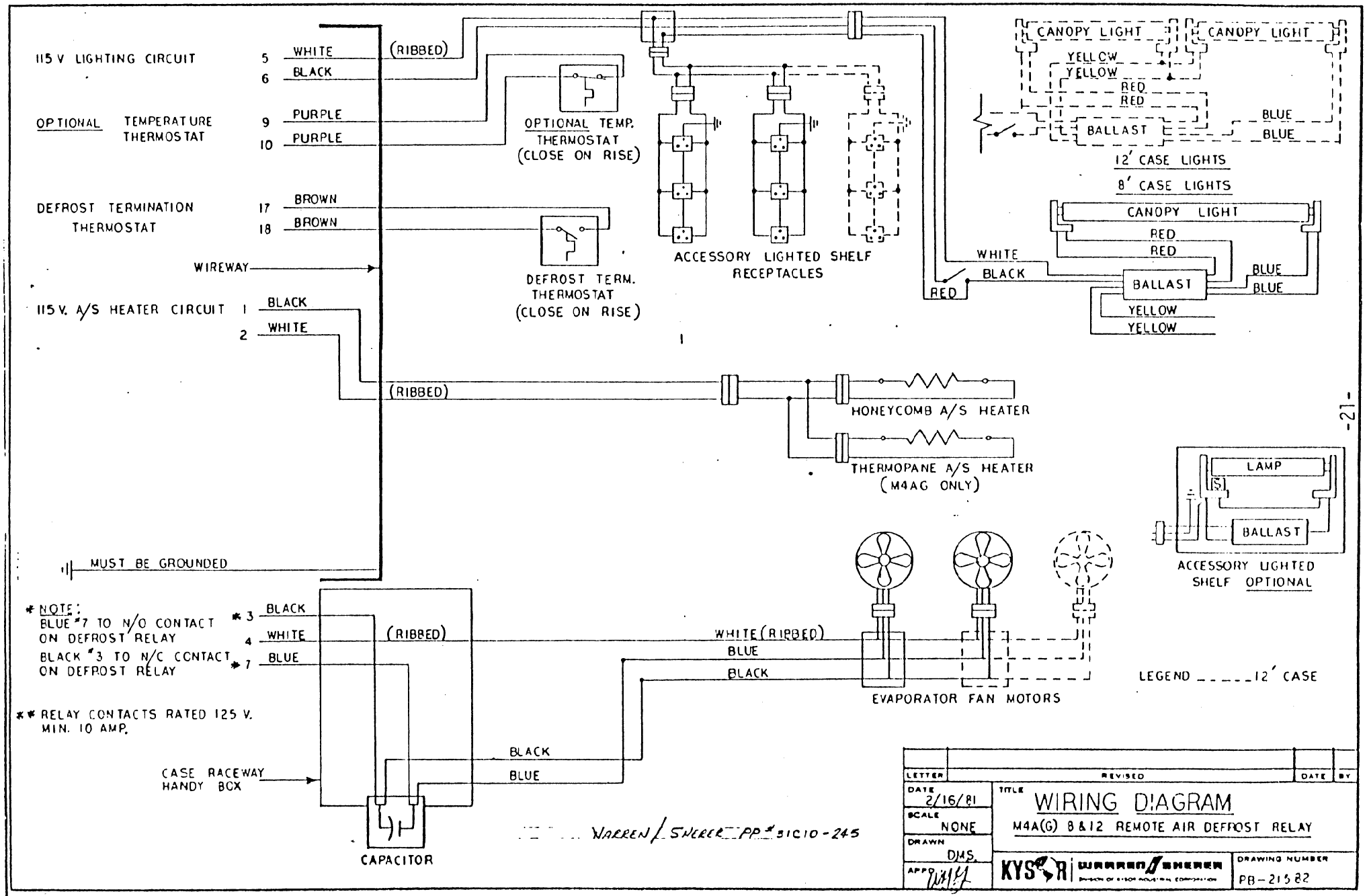
A	CHG'D. RELAY FROM ALTERNATE TO STD.	2-11-81	MS
LETTER	REVISED	DATE	BY

DATE 5/09/80
SCALE NONE
DRAWN D.E.W.
APPD.

TITLE
WIRING DIAGRAM
M4A(G) 8' & 12' AIR DEFROST

KVS WARREN GENERAL

DRAWING NUMBER
PB-21447A



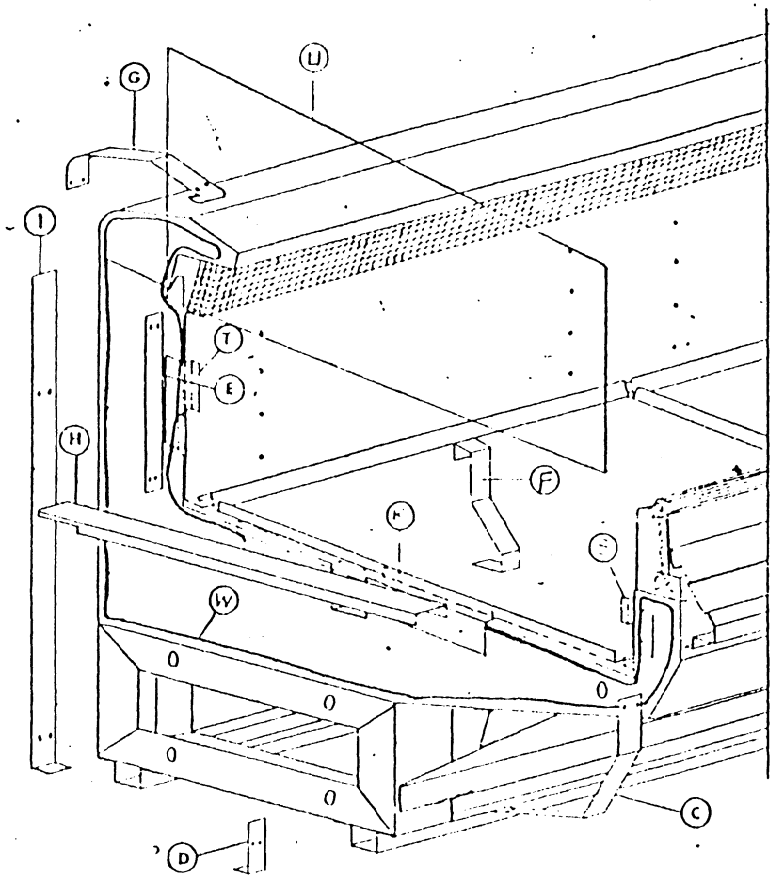
LETTER	REVISED	DATE	BY

DATE 2/16/81
SCALE NONE
DRAWN DAS.
APP'D

TITLE
WIRING DIAGRAM
M4A(G) 8 & 12 REMOTE AIR DEFROST RELAY

KYSOR | WARREN & SHERER

DRAWING NUMBER PB-21582



MODELS M1A-M1A W\ PLEX. DIVIDER		KIT NO. 94A13-454 94A13-426	KIT NO. 94A13-510 94A13-514	
		BRUSHED	BRIGHT	
ITEM	DESCRIPTION	PART NO.	PART NO.	QTY.
C	TRIM-UPPER FRONT PANEL JOINT	55P9-241	55P18-242	1
D	TRIM-KICKPLATE JOINT	51F11-119	51F11-119	1
E	TRIM-REAR BAFFLE JOINT	54L20-50	54L20-50	1
F	TRIM-COLORBAND JOINT	55P12-149	55P12-150	1
G	TRIM-TOP CAP JOINT	55P13-272	55P13-325	1
H	CHANNEL-JOINT DRIP	56F15-137	56F18-137	1
I	TRIM-BACK PANEL JOINT	51F11-15	51F11-15	1
J				
K	NUT-3/8 SQ HD TEE SMALL	19A15-13	19A15-13	6
L	WASHER-5/8 CUT SQ F	19B13-11	19B15-11	6
M	3/8-16X2 HEX HEAD MACHINE BOLT	20E10-11	20E10-11	6
N	SCREW-#8 x 3/4 SMS	21B11-12	21B11-12	18
O	SCREW #10-16 X 1/2 SMS SD	21B12-17	21B13-17	24
P				
Q	SCREW #10 X 3/4 SS FH	21B12-19	21B13-19	2
+ S	CANOPY BRACKET	56J10-67	56J10-67	1
+ S	FRONT SPACER	56J10-69	56J10-69	1
+ T	BACK DIVIDER	56J10-70	56J10-70	1
+ U	PARTITION-FLEX'GLASS	73F11-11	73F11-11	1
V	CAULKING PUTTY	29B10-17	29B10-17	1FT
W	BUTYL SEALER	29310-25	29B10-28	1TB

(+) PARTS USED W/DIVIDER
(-) PARTS NOT USED W/DIVIDER

NOTE: SEE PA-21541 FOR INSTALLATION INSTRUCTION

LETTER	REVISED	DATE	BY
A	ADDED 55P10-57, 55P10-117, 55P15-138, 21B11-12		

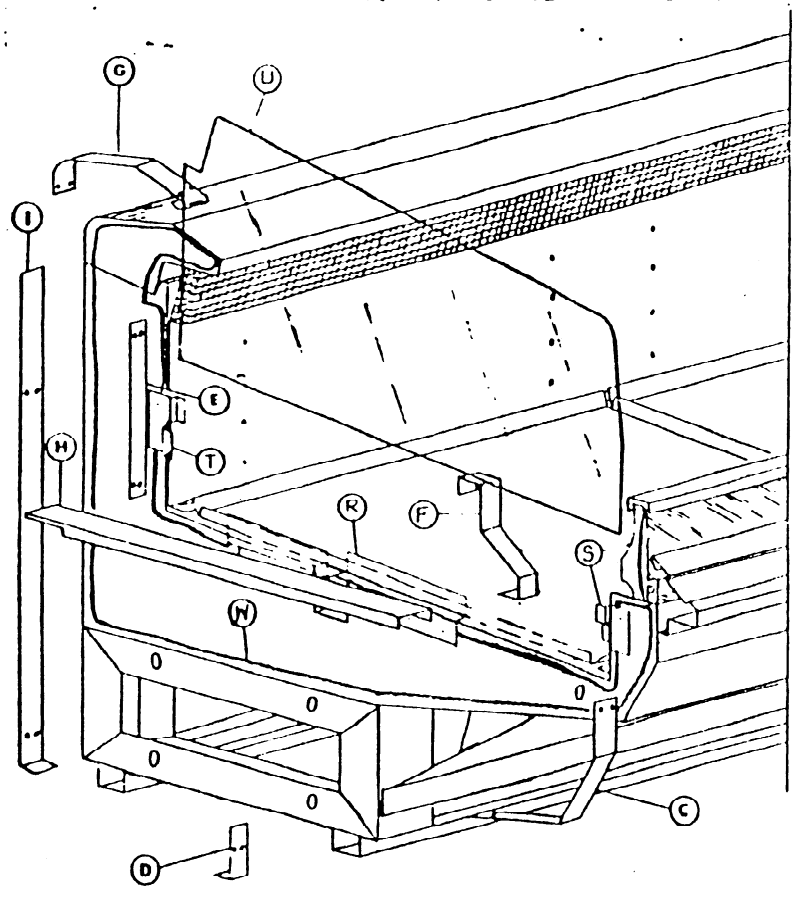
DATE 11-17-80
SCALE NONE
DRAWN MH
APPD JPM

TITLE: JOINT KIT ASS'Y. W/PLEX DIVIDER, M1A -M1A

KYSOR DIVISION OF DORSEY CORPORATION

DRAWING NO. PB-21522

ADDED: 55P10-147, 55P10-153



NOTE: SEE PA-21541A FOR INSTALLATION INSTRUCTION

MODELS M1AG-M1AG w\ PLEX. DIVIDER		KIT NO. 94A13-455 94A13-487 BRUSHED	KIT NO. 94A13-511 94A13-515 BRIGHT	
ITEM	DESCRIPTION	PART NO.	PART NO.	QTY.
A				
B				1
C	TRIM - UPPER FRONT PANEL JOINT	55P18-241	55P18-242	1
D	TRIM - KICKPLATE JOINT	51F11-119	51F11-119	1
- E	TRIM - REAR BAFFLE JOINT	54L20-50	54L20-50	1
F	TRIM - COLORBAND JOINT	55P12-145	55P12-186	1
G	TRIM - TOP CAP JOINT	55P13-272	55P13-325	1
- H	CHANNEL - JOINT DRIP	56F18-137	56F18-137	1
I	TRIM - BACK PANEL JOINT	51F11-15	51F11-15	1
J				
K	NUT - 3/8 HEXHD TEE SMALL	19A15-13	19A15-13	6
L	WASHER - 3/8 CUT SCP	19B13-11	19B13-11	6
M	3/8-16 X 2 HEX HEAD MACHINE BOLT	20E10-11	20E10-11	6
N	SCREW - #8-32 X 3/4 SMS	21B11-12	21B11-12	18
O	SCREW #10-16 X 1/2 SMS SD	21B12-17	21B12-17	24
P				
Q	SCREW - #10 X 3/4 SS FH	21B12-19	21B12-19	2
+ R	CAM-Y BACK DIVIDER	56J10-67	56J10-67	1
+ S	FRONT DIVIDER	56J10-69	56J10-69	1
+ T	BACK DIVIDER	56J10-70	56J10-70	1
+ U	PARTITION - PLEXIGLASS	73F11-133	73F11-133	1
V	CAULKING PUTTY	29B10-17	29B10-17	1 FT
W	BUTYL SEALER	29B10-28	29B10-28	1/16

(+) PARTS USED W/DIVIDER
(-) PARTS NOT USED W/DIVIDER

LETTER	REVISED	DATE	BY
A	ADDED: 55P12-145, 55P12-146		

DATE 11-17-80
SCALE NONE
DRAWN
APPD

TITLE: JOINT KIT ASSY. M1AG-M1AG

KYSOR | WARREN, MICHIGAN

DRAWING NUMBER PB-21530A

ADDED: 55P12-145, 55P12-146

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 THE SHIMS PROVIDED. (CASES MUST BE LEVELED FROM FRONT TO BACK & END TO END).

4. REMOVE ACCESS COVERS OVER LINE-UP HOLES & INSERT THE SMALL T-NUTS IN THE END FRAME, BOTH FRONT & BACK. DISCHARGE GRILLE MUST BE REMOVED FOR ACCESS TO LINE HOLES IN TOP REAR OF CASES. PLACE THE SPECIAL T-NUT WASHER ON THE 3/8" MCHN BOLT WITH HOLLOW SECTION AWAY FROM THE BOLT HEAD. ROTATE THE 3/8" BOLTS WITH W/T-NUT WASHER INTO THE T-NUTS ALTERNATELY UNTIL CASES ARE PULLED UP TIGHT & 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 BY USING PRY BAR. AFTER CASES ARE PULLED UP TIGHT, IT MAY BE NECESSARY TO SLIGHTLY LOOSEN THE LINE-UP BOLTS IN THE RETURN AIR DUCT SO THAT THE RETURN AIR PANELS WILL FIT OVER KEY HOLE SLOTS.

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

6. REPLACE LINE-UP ACCESS COVER PLUGS, PLATES, & DISCHARGE GRILLE.

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" COLORBAND JOINT TRIM - FASTEN COLORBAND JOINT TRIM "F" WITH (2) #21B12-17 IN UPPER HOLES FIRST, THEN (2) #21B12-19 IN LOWER HOLES.

8. "G" TOP CAP JOINT TRIM - HOOK TOP CAP TRIM OVER FRONT EDGE OF TOP CAP & PUSH REAR DOWN UNTIL TRIM COMES INTO LINE. FASTEN WITH #21B12-17 SMS.

9. "E" REAR BAFFLE JOINT TRIM - POSITION TRIM & FASTEN WITH (4) #8X5/8 SMS.

10. "H" JOINT DRIP CHANNEL - JOINT DRIP CHANNEL SEALS THE GAP CREATED BY JOINING OF THE TWO END FRAMES. CENTER THE CHANNEL & SLIP OVER THE FRAME.

11. "B" & "C" FRONT PANEL TRIM - LOWER TRIM "B" MUST BE INSTALLED FIRST. LOCATE IT & FASTEN WITH (2) #8X5/8 SMS. PLACE UPPER TRIM "C" IN PLACE AND INSTALL (4) #8X5/8 SMS.

12. "D" KIKCPLATE JOINT TRIM - POSITION & FASTEN WITH (2) #10-16X1/2 SMS.

NOTE: JOINT KIT ASSY - SEE PB-21529AF PB-21530-A

LETTER	REVISED	DATE	BY
A	REVISED COLORBAND JOINT TRIM NOTATION	1/30/81	TL

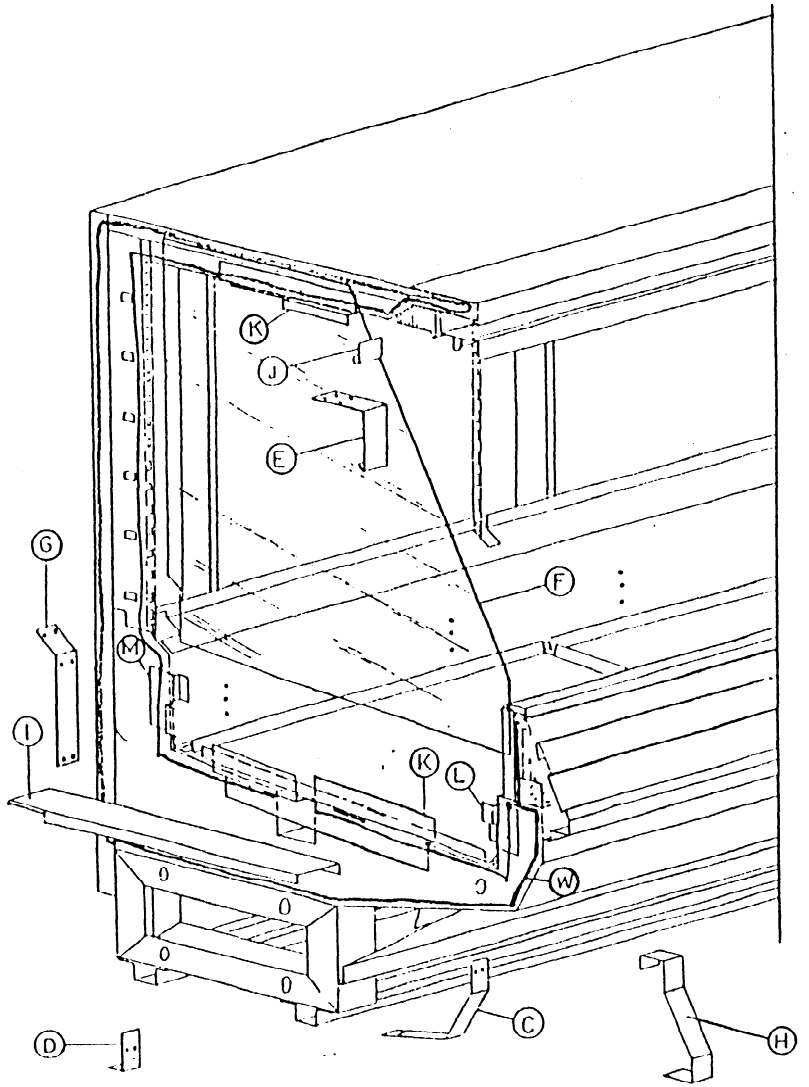
DATE 1-13-81
SCALE NONE
DRAWN TLA
APPD JPM

TITLE: JOINT KIT INSTALLATION INSTRUCTION FOR MIA(6)-MIA(6)

WYSOR / WARREN DIVISION OF WYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PA-21541-A

AF 8066



NOTE: SEE PA-21540 A FOR INSTALLATION INSTRUCTION.

ITEM	DESCRIPTION	KIT NO. 94A13-482 • 94A13-482 BRUSHED PART NO.	KIT NO. 94A13-518 94A13-522 BRIGHT PART NO.	QTY.
C	TRIM - UPPER FRONT PANEL JOINT	55P18-241	55P18-242	1
D	TRIM - KICKPLATE JOINT	51F11-119	51F11-119	1
E	TRIM - CANOPY JOINT	55P12-191	55P12-192	1
+F	DIVIDER - PLEXIGLASS	73F11-154	73F11-154	1
-G	TRIM - REAR BAFFLE JOINT	54L20-49	54L20-49	1
H	TRIM - COLORBAND JOINT	55P12-149	55P12-150	1
-I	CHANNEL - JOINT DRIP	56F18-138	56F18-138	1
J	TRIM - HEATER - RAIL EXTRUSION JOINT	56F18-139	56F18-139	1
+K	CANOPY BACK DIVIDER	56J10-67	56J10-67	2
+L	FRONT DIVIDER	56J10-69	56J10-69	1
+M	BACK DIVIDER	56J10-70	56J10-70	1
N	NUT - TEE 5/8-16 HEX HEAD 5/8 IN LONG	19A15-13	19A15-13	4
O	WASHER - 5/8 LOCK ST.	19B13-10	19B13-10	4
P	BOLT - 5/8-16 X 1/4 HEX HEAD MACH SCR	20E10-11	20E10-11	4
Q	SCREW - #8 X 3/4 SMS	21B11-12	21B11-12	15
R				
S				
T	SCREW - #10-16 X 1/2 SMS SD	21B12-17	21B12-17	24
U	SCREW - #10 X 3/4 SS	21B12-19	21B12-19	2
V	CAULKING PUTTY	29B10-17	29B10-17	1 FT
W	BUTYL SEALER	29B10-28	29B10-25	1 TB

+ PARTS USED W\ DIVIDER
- PARTS NOT USED W\ DIVIDER

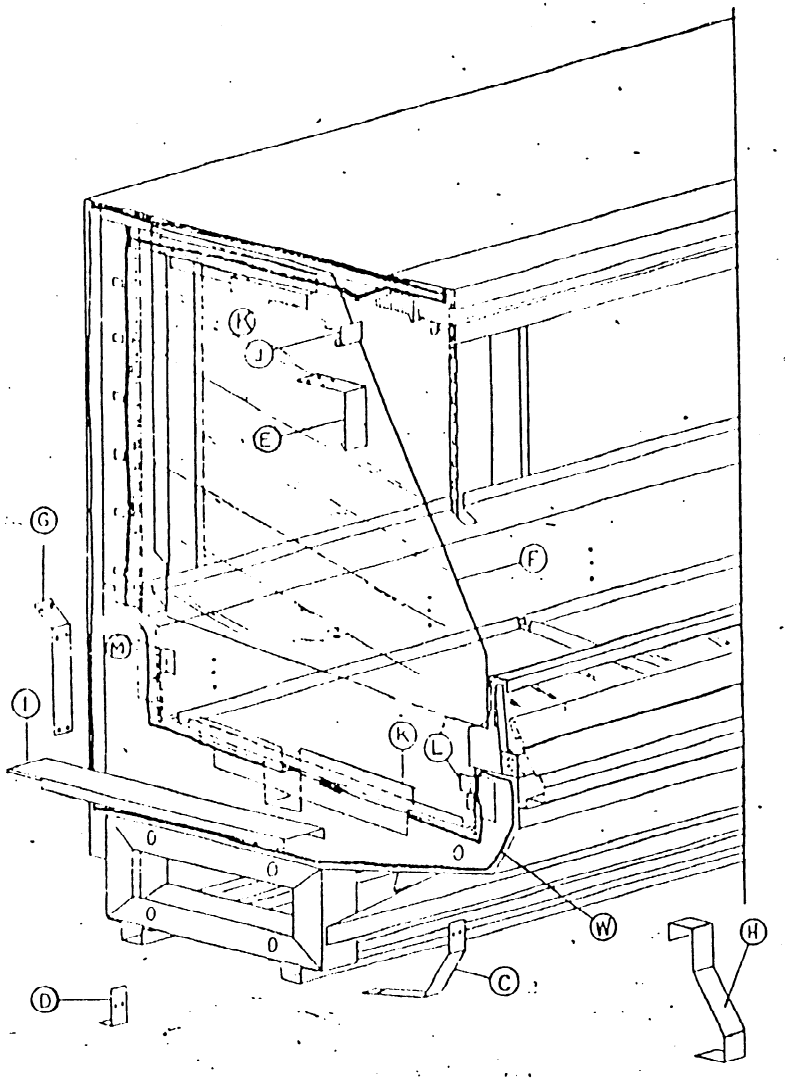
LETTER	REVISED	DATE	BY
	ADDED: 55P12-149, 55P12-150		
A	REMOVED 16 FIG-57, 55P12-115 & 55P12-183	9-19-81	ZA

DATE 11-17-80
SCALE NONE
DRAWN JM
APPD Jpm

TITLE
JOINT KIT ASSY.
M4A - M4A
W\ DIVIDER

KYSOR | WARREN // HEINER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PB-21531-A



NOTE: SEE PA-21540 A FOR INSTALLATION INSTRUCTION

ITEM	DESCRIPTION	KIT NO. 94A13-488 • 94A13-489 BRUSHED PART NO.	KIT NO. 94A13-519 94A13-523 BRIGHT PART NO.	QTY.
C	TRIM - UPPER FRONT PANEL JOINT	55P18-241	55P18-242	1
D	TRIM - KICKPLATE JOINT	51F11-119	51F11-119	1
E	TRIM - CANOPY JOINT	55P12-191	55P12-192	1
+F	DIVIDER - PLEXIGLASS	73F11-134	73F11-134	1
-G	TRIM - REAR BAFFLE JOINT	54L20-49	54L20-49	1
H	TRIM - COLOREAND JOINT	55P12-145	55P12-146	1
-I	CHANNEL - JOINT DRIP	56F18-138	56F18-158	1
J	TRIM - HEATER - RAIL EXTRUSION JOINT	56F18-139	56F18-159	1
+K	CANOPY BACK DIVIDER	56J10-67	56J10-67	2
+L	FRONT DIVIDER	56J10-69	56J10-69	1
+M	BACK DIVIDER	56J10-70	56J10-70	1
N	NUT - TEE 5/8-16 HEX HEAD 5/8 IN LONG	19A15-13	19A15-13	6
O	WASHER - 5/8 LOCK STL	15B13-10	15B13-10	6
P	BOLT - 3/8-16 X 1¼ HEX HEAD MACH SCR	20E10-11	20E10-11	6
Q	SCREW - #8 X 3/4 SMS	21B11-12	21B11-12	18
R				
S				
T	SCREW - #10-16 X ½ SMS SD	21B12-17	21B12-17	8
U	SCREW # 10 X 3/4 SS	21B12-19	21B12-19	2
V	CAULKING PUTTY	29B10-17	29B10-17	1 FT
W	BUTYL SEALER	29B10-28	29B10-28	1 FT.

+ PARTS USED W/ DIVIDER
- PARTS NOT USED W/ DIVIDER

LETTER	REVISED	DATE
A	ADDED: 55P12-145, 55P12-146 REMOVED 56F10-57, 55P12-115, 55P12-143	3-19-81
B	CORRECTED (5) TO (M). 6/14/84 - J.B.	

DATE 11-17-80
SCALE NONE
DRAWN JH
APPD JPM

TITLE: JOINT KIT ASSY. M4AG-M4AG W/ DIVIDER

KYSOR | WARREN ROGERS

DRAWING NUMBER PB-21532

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 THE SHIMS PROVIDED. (CASES MUST BE LEVELED FROM FRONT TO BACK & END TO END).

4. REMOVE ACCESS COVERS OVER LINE-UP HOLES & INSERT THE SMALL T-NUTS IN THE END FRAME, BOTH FRONT & BACK. DISCHARGE GRILLE MUST BE REMOVED FOR ACCESS TO LINE HOLES IN TOP REAR OF CASES. PLACE THE SPECIAL T-NUT WASHER ON THE 3/8" MCHN BOLT WITH HOLLOW SECTION AWAY FROM THE BOLT HEAD. ROTATE THE 3/8" BOLTS WITH W/T-NUT WASHER INTO THE T-NUTS ALTERNATELY UNTIL CASES ARE PULLED UP TIGHT & 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 BY USING PRY BAR. AFTER CASES ARE PULLED UP TIGHT, IT MAY BE NECESSARY TO SLIGHTLY LOOSEN THE LINE-UP BOLTS IN THE RETURN AIR DUCT SO THAT THE RETURN AIR PANELS WILL FIT OVER KEY HOLE SLOTS.

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

6. REPLACE LINE-UP ACCESS COVER PLUGS, PLATES, & DISCHARGE GRILLE.

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. "H" COLORBAND JOINT TRIM - FASTEN COLORBAND JOINT TRIM WITH (2) #21B12-17 IN UPPER HOLES, THEN (2) #21B12-19 IN LOWER HOLES.

8. "E" CANOPY JOINT TRIM - HOOK LOWER EDGE OF CANOPY JOINT TRIM INTO PLACE & PUSH TO THE REAR. FASTEN WITH (4) #8X3/4 SMS.

9. "G" REAR BAFFLE JOINT TRIM - POSITION TRIM & FASTEN WITH (4) #8X5/8SMS.

10. "I" JOINT DRIP CHANNEL - JOINT DRIP CHANNEL SEALS THE GAP CREATED BY JOINING OF THE TWO END FRAMES. CENTER THE CHANNEL & SLIP OVER THE FRAME.

11. "B" & "C" FRONT PANEL TRIM - LOWER TRIM "B" MUST BE INSTALLED FIRST. LOCATE IT AND FASTEN WITH (2) #8X5/8 SMS. PLACE UPPER TRIM "C" IN PLACE AND INSTALL (4) #8X5/8 SMS.

12. "D" KICKPLATE JOINT TRIM - POSITION & FASTEN WITH (2) #10-16X1/2 SMS.

NOTE: JOINT KIT ASSY - SEE PB-21531-A & PB-21532-A

LETTER	REVISED	DATE	BY
A	REVISED COLORBAND JOINT TRIM NOTATION	10/1/81	TLA

TITLE: JOINT KIT INSTALLATION INSTRUCTION FOR WHA(6)-M44A(6)

DATE 12-13-81 | SCALE NONE | DRAWN TLA | APPD. JPM

KYSOR | WARREN / SHERER — DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER PI-21540-A

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.