FORM NUMBER: 31E02-004
DATE: 5/30/91
REVISED:

KYSOR/WARREN

The Leading Edge of Technology

INSTALLATION & OPERATION MANUAL

MODEL: **D6S1/D6SC1**

DAIRY MERCHANDISER

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

KYSOR/WARREN

DIVISION OF KYSOR INDUSTRIAL CORPORATION

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5201 TRANSPORT BLVD., COLUMBUS, GEORGIA 31907

INSTALLATION AND OPERATING INSTRUCTIONS

FOR

D6S1 and D6SC1 MODELS

NARROW MULTI DECK DAIRY CASES

APPLICATION:

The Kysor//Warren Narrow Multi-Deck Dairy Cases are designed to merchandise packaged dairy products. 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 75Dg F dry bulb temperature, 55% relative humidity.

MODELS	DESCRIPTION
D6S1	Narrow Dairy Display Case Remote Refrigeration R-22
D6SC1	Narrow Dairy Display Case Self Contained R-22

GENERAL

The D6S1 case is designed to be installed individually or in a continuous line-up. Cases in a line-up must have appropriate joint kits or mutual ends. The D6SC1 -self-contained model is designed to be used individually. For additional viewing the end can be supplied w/ a large glass insert. Adjustable glides are provided on each case for leveling.

All cases are factory charged and checked before shipment. All refrigerant valves are in the OPEN position so that case is ready to be started.

NOTE: Check evaporator fan and condenser fan for free rotation before placing case in operation.

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 damage.

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". Each case is provided with adjustable legs for leveling purposes. There must be 12" of clear space behind the self contained model to allow air to flow freely through the condensing unit.

CLEANING

To insure minimum maintenance cost, the case should be thoroughly emptied and cleaned every three (3) months. The exterior should be cleaned weekly. A mild soap and water solution is recommended for painted surfaces of the case. Do not use cleaners containing abrasive materials which will scratch or dull finish. The waste outlet should be checked and cleaned.

CAUTION: DO NOT FLUSH THE SELFCONTAINED MODEL WITH WATER. This case is not connected to a drain system and has its own evaporating pan with limited capacity.

BE SURE REFRIGERATION IS TURNED OFF AND ALL ELECTRICAL IS OFF BEFORE WASHING YOUR REFRIGERATOR.

The condenser coil on the condensing unit should be cleaned with a soft brush to remove dust every six (6) months.

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 each end of the refrigerator.

For proper operation, you must not stock merchandise past the load lines. In doing so, you will seriously affect the performance, which will result in higher product temperatures and increased operating costs.

ELECTRICAL

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

ELECTRICAL CONNECTIONS

All field connections are made to terminal blocks located in the case electrical panel. The electrical panel is accessed by removing the lower front panel. Make sure that proper voltage is supplied to the refrigerator. Standard power for this case is 115/60/1. Make sure that proper size wire and branch circuit protection are employed for safe operation.

ALL REFRIGERATORS MUST BE GROUNDED.

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

FAN MOTORS

All fan motors employed are permanently oiled for the life of the motor and require no periodic maintenances.

The evaporator fans are wired for continuous operation.

Condenser fan motors on the self-contained models operate only when the compressor is operating.

EXPANSION VALVE

The expansion valve furnished with the refrigerator has been sized for maximum coil efficiency. The superheat on this expansion valve has been preset at the factory and should require no further adjustment. The standard case valve is a Sporlan FBVE1C sweat type.

REFRIGERANT LINES

On the refrigerated models, the suction line is 1/2" OD and the liquid line is 1/4" OD. The liquid and suction lines are connected to service valves on the condensing unit base with flare nuts. All other refrigerant connections are sweat type.

On remote model cases, the refrigerant lines are located under the deck pans with a refrigeration outlet provided in the front R.H. end of the case.

WARNING: Remote cases are shipped with holding charge on coil. Remove pressure carefully before cutting lines. For remote models, consult the Application Department for proper line sizes. See Recommended Piping Practices on page 14 for proper procedure for installing refrigerant lines.

REFRIGERANT

All models are manufactured for use with R-22.

HEAT EXCHANGER

The refrigerated cases have the suction and liquid lines soldered together to act as a heat exchanger. This increases the operating efficiency and reduces flood back to the compressor.

OPERATION

Each self-contained case has a thermostat for temperature control. On remote models, one thermostat should be used to control temperature in the cases as multiplexed. The thermostat bulb is located in the DISCHARGE AIR. The thermostat is located in the electrical box behind the lower front panel.

Defrost on all refrigerated cases is Off-Time. On self-contained models, the time clock in the electrical panel stops the compressor at the preset time. The defrost is then time terminated. The evaporator fan runs continuously during defrost. An electric condensate evaporating pan is used to catch and dissipate the defrost water between defrost cycles. See Chart #2 for all defrost and control settings.

CONDENSING UNIT

The condensing unit, as manufactured by Kysor//Warren, utilizes a R-22 Copeland Compressor.

The condensing unit is not intended to be removed from the case except in the event a compressor must be replaced.

To remove the condensing unit, disconnect the flare suction/liquid connections on the base valves at the right front of the case.

CAUTION: Before attempting to remove the condensing unit, be sure that all electrical power to the case has been turned off. Also, caution should be used when releasing pressure on the refrigerant system.

NOTE: The refrigerant charge for this case is very critical. If the case should need to be recharged, an accurate charging device must be used. No refrigerant should be released into the atmosphere. It must be reclaimed.

MODEL	CHARGE - R-22
D6SC1	2 lb. - 8 oz.

SHELVING

Case shelving is shipped uninstalled to prevent damage in shipment. The light rails must be attached to the shelf brackets before installing in the case. Install this shelf bracket and light rail assembly into the desired position. Install wire shelves in slots provided in the shelf bracket. Plug shelf cord into receptacle at left side of case (from rear).

NOTE: All shelf ballasts are located in the electrical box located behind the removable lower front panel.

Chart #1

ELECTRICAL SPECIFICATIONS

All 115/60/1

	D6S1-4 Amps	D6S1-6 Amps
Refrigeration Cycle:	.50	1.0
Defrost Cycle:	.50	1.0
Lighting:	.80	1.20
Min. Circuit Amps:	15	15
Max. Overcurrent Protection:	15	15

Shelf Light: .64 per each lighted shelf.

	D6SC1-4' Amps	W/4 lighted shelves
Refrigeration Cycle:	16.4	18.96
Defrost Cycle:	8.4	10.96
Min. Circuit Amps:	18.6	21.16
Max. Overcurrent Protection:	20.0	20.0

CHART #2

CONTROL SETTINGS

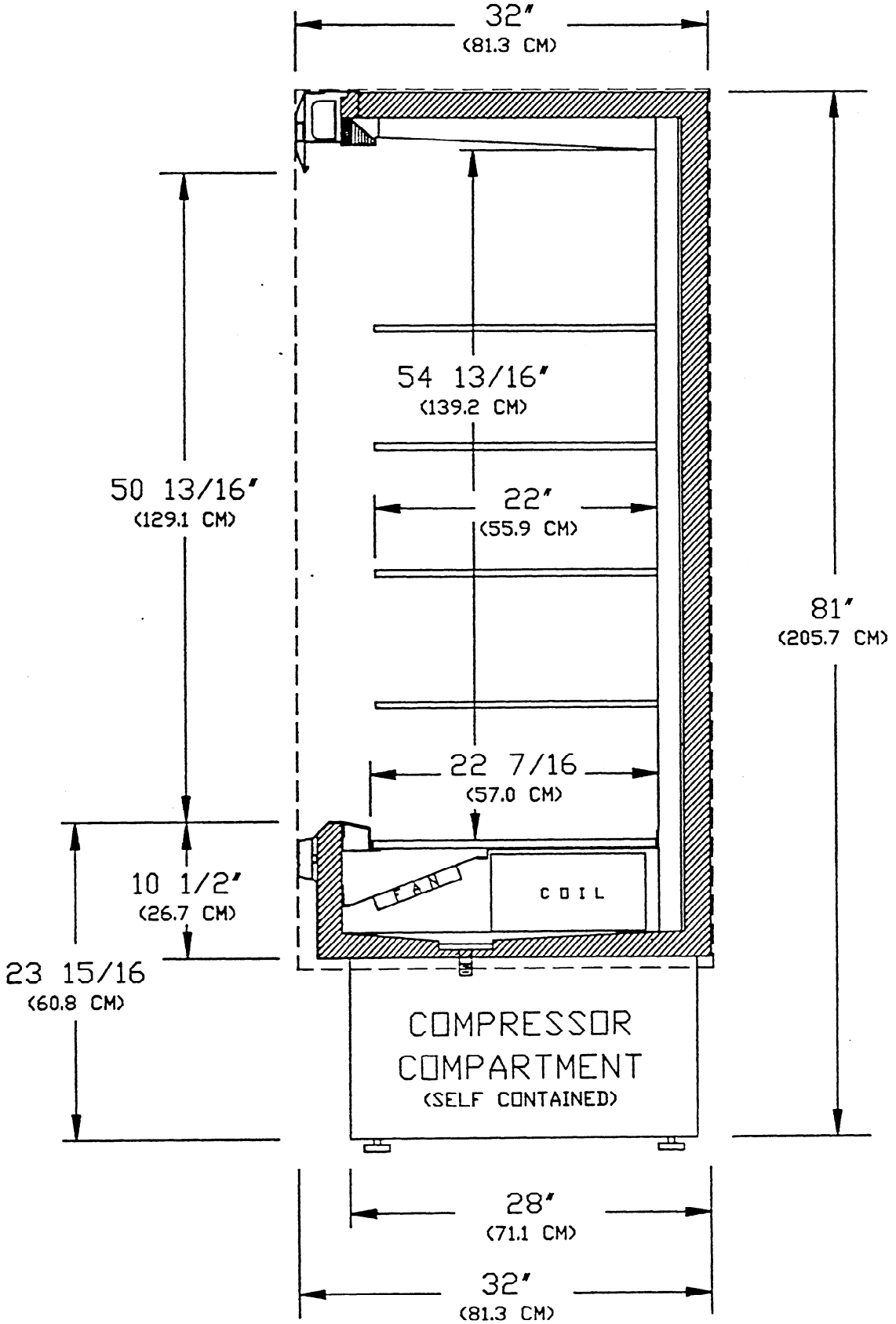
MODEL	THERMOSTAT DISCHARGE AIR TEMPERATURE CUT-OUT AND CUT-IN
D6S1-4	22/26
D6S1-6	22/26
D6SC1-4	22/26

DEFROST

MODEL	NUMBER OF PERIODS	TIME
D6S1-4	6	30 min.
D6S1-6	6	30 min.
D6SC1-4	6	30 min.

PARTS LIST

DESCRIPTION	PART NO.	D6S1-4	D6S1-6	D6SC1-8
Expansion Valve (FBVE1C)	3A10-066	1	1	1
Evaporator Fan Motor	9A10-017	1	2	1
Evaporator Fan Blade (20 deg)	9B10-059	1	2	1
Lampholder	10B11-019	1	1	1
Lampholder	10B11-020	1	1	1
Ballast - Canopy	10D10-050	1		1
Ballast - Canopy	10D10-055		1	
Lampholder-Shelf	10B11-017	1	1	1
Lampholder-Shelf	10B11-018	1	1	1
Ballast - Shelf	10D10-012	1	1	1
Deck Pan	54N18-291	2	3	2
Canopy Panel - Painted	51C10-024	1		1
Canopy Panel - Painted	51C11-028		1	
Lower Front Panel	54X21-046			1
Lower Front Panel	54X21-052		1	
Lower Front Panel	54X21-051	1		
Front Panel Painted	51A10-067	1		1
Front Panel Painted	51A11-148		1	
Color Insert	51A34-068	1		1
Color Insert	51A34-069		1	
Compressor -JRL4-0100	2E10-022			1
Condenser Fan Motor-(16W)	9A10-065			1
Condenser Fan Blade-(30 deg.)	9B10-063			1
Thermostat	8A11-027			1
Time Clock-Paragon 8145	8A10-086			1



LETTER	REVISION	DATE	BY

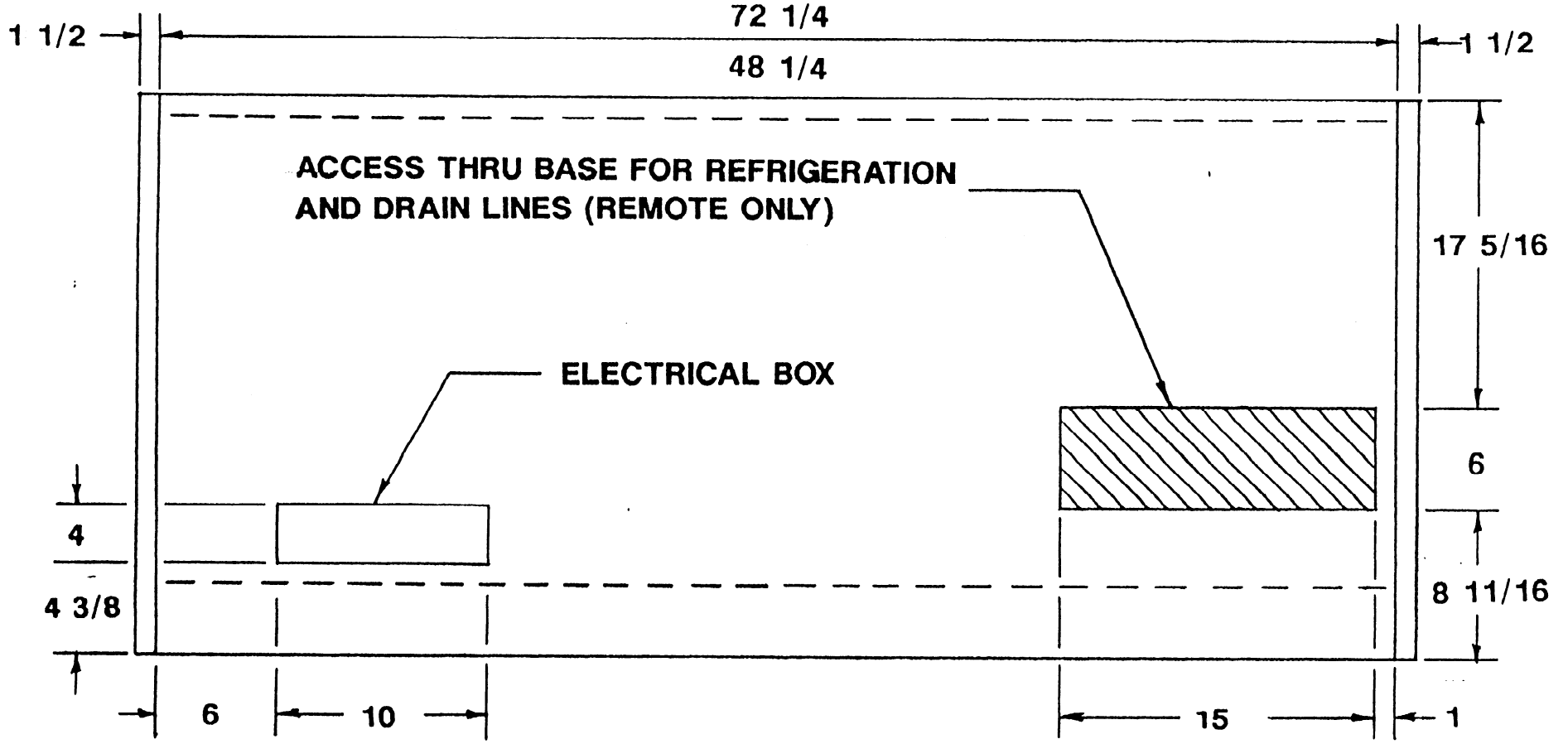
DATE 14 MAY 91
SCALE 1"=12"
DRAWN BY JESSE
SHEET

LAYOUT FOR

D6S(C)1
CROSS SECTION

KYSOR // WARREN

DRAWING NUMBER
CROSS SECTION



LETTER	REVISED	DATE	BY

DATE 5/20/91

SCALE NONE

DRAWN EB

APPD. JB

TITLE

PLAN VIEW
D6S(C)1

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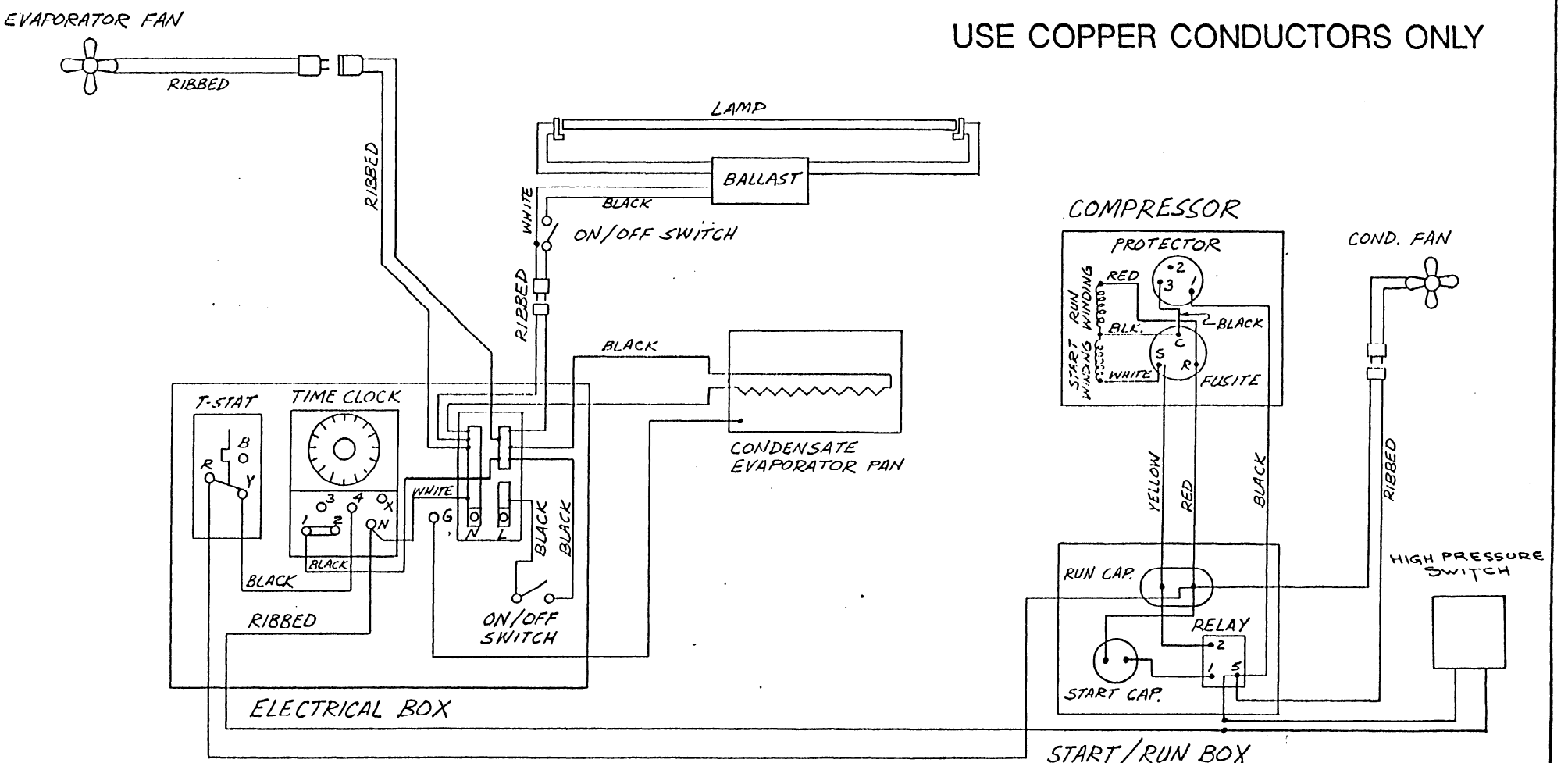
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
PA-30267



A	ADDED HIGH PRESSURE SWITCH	1/22/91	JH
LETTER	REVISED	DATE	BY

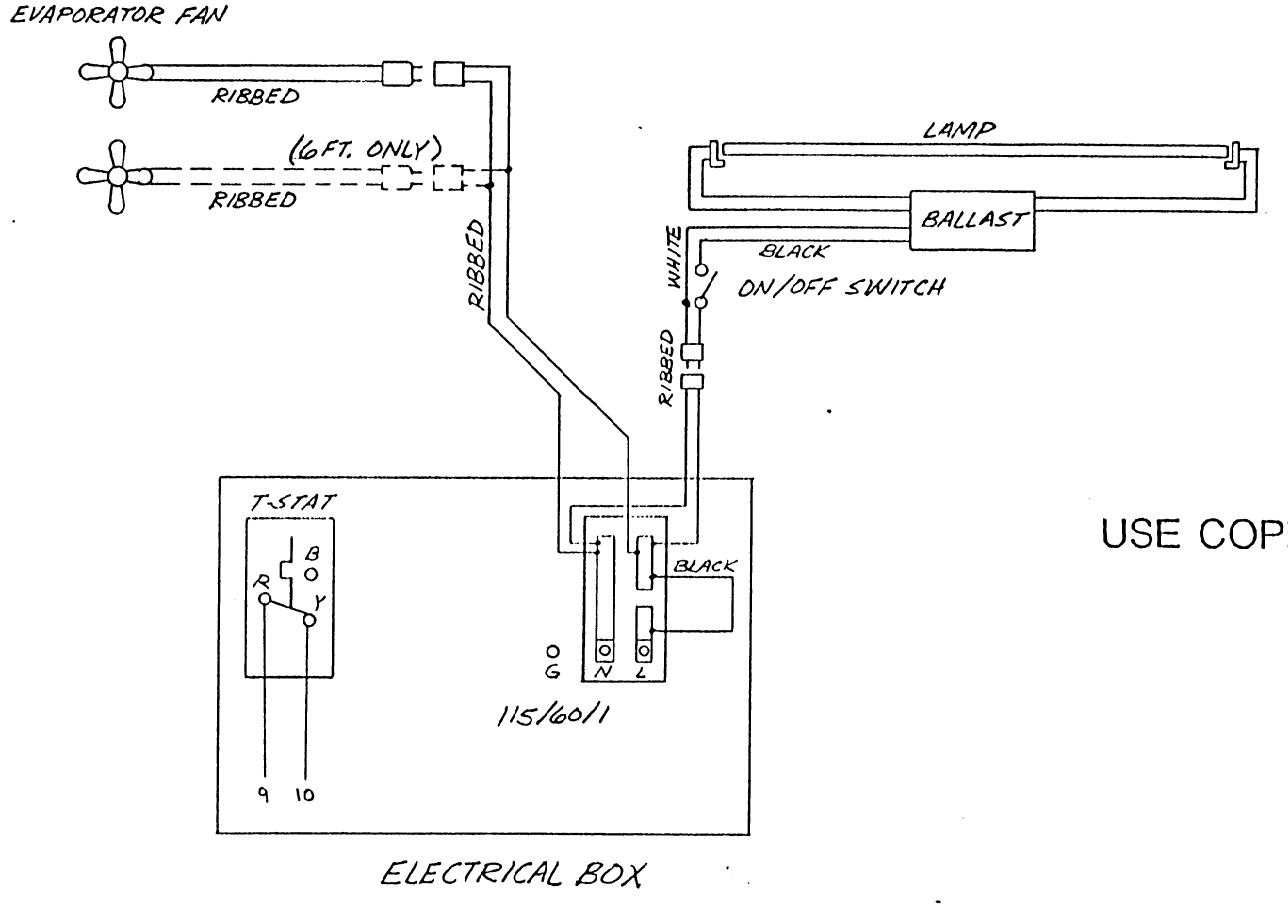
DATE 7-30-90
SCALE NONE
DRAWN EB
APPD

TITLE
WIRING DIAGRAM
D6SC1-4

KYSOR/WARREN
DIVISION OF KYSOR INDUSTRIAL CORPORATION

DRAWING NUMBER
PB-30202-A

PP# 31C10-541



USE COPPER CONDUCTORS ONLY

PP# 31C10-542

LETTER	REVISED	DATE
DATE 7-30-90	TITLE WIRING DIAGRAM D651-4&6	
SCALE NONE		
DRAWN EB		
APPD. PJL	KYSOR/WARREN DIVISION OF KYSOR INDUSTRIAL CORPORATION	DRAWING NUMBER PB-30203

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 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 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.

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

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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.