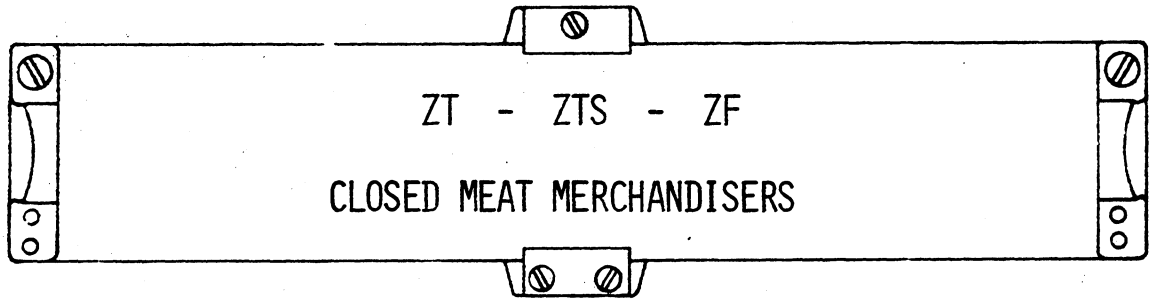
INSTALLATION & SERVICE INSTRUCTIONS

FOR MODEL(S)



please retain for future use

engineering dept.
bulletin # 75-105-2

KYSOR

WARREN / SHERER
DIVISION OF KYSOR INDUSTRIAL CORPORATION

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

West Industrial Road
Marshall, Michigan 49068
616 781-3911

WARREN "SCULPTURED PROFILE" CLOSED-CASE MERCHANDISERS

Display Model ZT for Fresh Meats and Deli

Model ZTS for Display and Storage • Display Model ZF for Fresh Fish or Poultry

TECHNICAL DATA

LENGTH:

Exterior less ends:

8-Ft. Models	8' 0"
12-Ft. Models	12' 0"
Thickness, pair ends	4"

CAPACITIES:	ZT-8	ZTS-8	ZF-8
Display Area	21.0 sq. ft.	21.0 sq. ft.	23.5 sq. ft.
Display Cube	35.46 cu. ft.	25.46 cu. ft.	27.14 cu. ft.
Storage Cube		24.6 cu. ft.	
	ZT-12	**ZTS-12**	**ZF-12**
Display Area	31.5 sq. ft.	31.5 sq. ft.	35.25 sq. ft.
Display Cube	38.19 cu. ft.	38.19 cu. ft.	40.71 cu. ft.
Storage Cube		37.0 cu. ft.	

EXTERIOR: Genuine acid-resistant white porcelain on front. Bright stainless-steel top. COLORAMICS® Bands are optional at no extra cost. Display fronts are two-glass FULL-VUE; three-glass FULL-VUE is available and recommended for fresh meat displays. The end molding and front trim are polished stainless steel in exclusive Warren patterns. Back of white baked enamel, including doors on storage models. Double electrical receptacle mounted on center back for easy access.

INTERIOR: White baked enamel with fiberglass liner in Models ZT and ZTS; stainless-steel liner in Model ZF.

ELECTRICAL-RACEWAY closure plate of satin-finish aluminum.

INSULATED THROUGHOUT WITH PERMASEAL, Warren polyurethane foamed-in-place waterproof insulation.

MULTIFINNED HIGH-HUMIDITY GRAVITY COIL provides ideal humidity for top-quality condition of product. Additional bare-tube gravity coil in bottom of ZT.

FLUORESCENT LIGHTING floods the entire display area with flattering illumination. Models ZT and ZTS have lights at front and rear of top; ZF has one row of lights at front, except where optional coil is used, then lights are at front and rear. Separate switches when lights are at front and rear.

MULTI-CASE CONSTRUCTION allows an endless ZT and ZTS line-up with one pair of ends. Models ZT and ZTS can be used in same line-up with Model ZF when separated by Plexiglas partition in display area.

SLIDING SERVICE DOORS of two-glass FULL-VUE with Riji-Tuf frames; 8-ft. has four doors; 12-ft. has four doors. Door track of rugged Polyvinyl for smoother action.

MODEL ZF is non-refrigerated and has deeper display well.

FORM NO. C-12/10M675LP/PRINTED IN U.S.A.
REPRINT 5M743HMLP

STORAGE COMPARTMENT IN MODEL ZTS has insulated sliding baked-enamel doors in rear—easily removable. Two doors in 8-ft. model; four doors in 12-ft. Multifinned booster coil mounted on front wall in bottom. Platter racks in storage compartment accommodate four platters per door section. Chrome-plated steel-wire floor racks are standard on Model ZTS. Insulated dry storage compartment in Models ZT and ZF has no doors—can be used for storage of wrapping materials or empty platters, etc.

ACCESSORIES

See price list for illustrations

13"-WIDE RACKS, sectional chrome-plated wire: flat, 2-step and 3-step, with stainless-steel pans available.

MEZZANINE RACKS, sectional chrome-plated wire: 13" and 26" wide, with stanless-steel pans available.

DELI-PAN RACKS, stainless steel; stainless pans available.

ALUMINUM PLATTERS to fit all racks.

8" x 40" WRAPPING BOARD, collapsible.

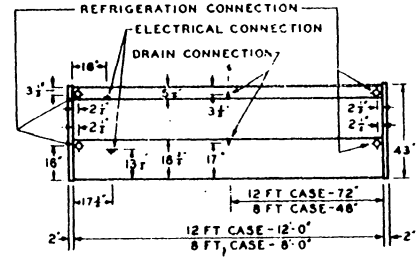
SCALE STAND: stainless steel or hardboard, adjustable.

PAPER CUTTER.

PLATTER RACKS (one per storage-door section).

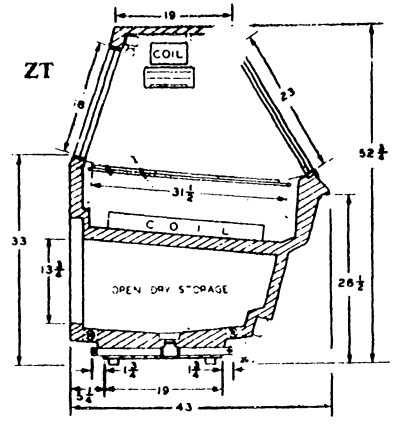
FLOOR RACKS for nonrefrigerated storage in ZT and ZF.

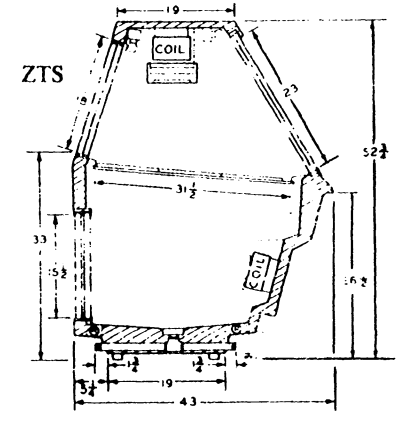
ICE PANS, stainless steel, for Model ZF.

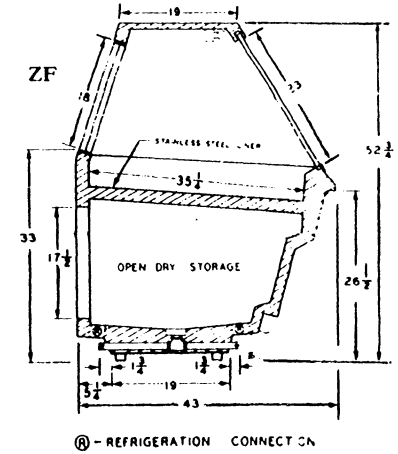


WARREN

THE WARREN COMPANY
INCORPORATED
P. O. Box 1436, Atlanta, Georgia 30301







INTRODUCTION

The following instructions are provided for your information to facilitate ease and economy of installation along with longevity of product service. Please utilize this important tool to its utmost. For information not contained in this booklet please consult directly with your Warren/Sherer Engineering or Service Department.

DESCRIPTION AND PURPOSE OF UNIT

Description

Utilized to display fresh meats, deli, fresh fish and poultry, the ZT series provides precise product temperature at ideal humidity all contained within a well lit product-projecting display.

These fixtures are built for continuous line-up, and are not sold as self-contained units. A continuous line-up may be made that incorporates the ZT, ZTS, and ZF cases.

MODEL	DESCRIPTION	SERIAL NUMBER DESIGNATION
ZT	Sculptured Profile Top Display Fresh Meat Case	382
ZTS	Sculptured Profile Top Display and Storage Fresh Meat Case	383
ZF	Sculptured Profile Fish and Poultry Case	384

COMPRESSOR REQUIREMENTS

Compressor requirements are listed in the Appendix for various length lineups based on stores having a maximum of 90° ambient and 60% RH.

MAINTENANCE

Periodically, racks and shelving should be removed and washed thoroughly using a detergent such as Tide, or preferably a bactericidal commercial cleaner. All interior surfaces should be wiped down with a solution of 1/2 cup Lysol (or equal) to one gallon of warm water. All areas should be wiped dry after cleaning. Use a glass cleaner on glass.

INSTALLATION

Leveling

Your Warren Refrigerator must be perfectly level to insure proper operation of the refrigeration system and also to insure proper drainage after defrost.

Proper leveling when multiplexing can be accomplished by finding the highest point on the floor at the location of the line-up by using a level and a chalk line. Place a refrigerator at this point and use shims as needed to line the other refrigerators to this high point. Make sure shims of sufficient quality are employed to prevent settling.

DEFROSTING

To properly maintain desired temperature in your closed case, it is necessary to use a defrost timer. The normal defrost is one time a day and usually at night. We recommend a straight time defrost for a period from 75 to 90 minutes duration. In some instances, it may become necessary to increase the defrost to two times daily. This usually occurs in very humid areas or when your refrigerator has a very heavy usage. The suction pressure during defrost should reach 42-46 psi to insure proper drainage of the condensate collected during the running cycle.

REFRIGERANT

All compressors on Warren sculptured profile meat case use R-12 refrigerant, and the amount of charge is variable, depending on the size of the compressor and the run of tubing.

OIL

Only pure refrigeration oil as specified by the compressor manufacturer is to be used - Viscosity 300. Each compressor is charged with oil at the factory, but, the oil level should be peroidically checked according to the compressor manufacturer's recommendations.

EXPANSION VALVE

Pressure limiting thermostatic expansion valves are used on these refrigerators. Inlet connections are 1/4 - 3/8 male SAE and outlet connections are 3/8 - 1/2 male SAE.

LIGHTS

A row of Natural fluorescent lamps are located above the front glass to give approximately 80 foot candles of illumination in the front display area. Another row of lights are located above the rear sliding doors to give adequate lighting at the rear of the refrigerator. The rear light has a separate switch and can be turned on and off as the user deems necessary. The switch on the outside of the refrigerator controls both lights. The two receptacles are rated at 660 watts each or about 6 amperes which is sufficient for scales, but not suitable for large motors usually found in meat departments.

DRAINS

Warren sculptured profile meat cases are equipped with a 1" drain connection, which terminates in the toe space at both the front and the back of the refrigerator. Be sure to keep the drain cap in place. Note: Be sure that the holes through which the refrigerant tubing enters the case are properly plugged with mastic that will prevent the escape of cold air.

MULTIPLE CASE INSTALLATION

Only one pair of ends should be ordered. See price list. Where cases join, a sealer is used to keep moisture and debris from getting into the joint. There should be two bead of this sealer used for this purpose. The sealer should be placed around the inside and outside edges of each case before they are pulled up. Cases made into a continuous line-up are held together at each joint by eight (8) 3/8" hex bolts. There are two (2) bolts in the cross member at the center of the end, two (2) bolts at the front of the case, and two (2) bolts in the back of the case. The remaining two (2) bolts are at the outside bottom of the fixture. Tighten these bolts first.

START-UP

Electric

Make sure that the proper electric current is supplied. Check electric current characteristics on compressor name plate, which must correspond with available current, and should correspond with wiring diagrams and refrigerator name plate. The size of wires and all wiring devices and materials must conform to local and national codes.

CONTROLS

Thermostats are not furnished installed as standard equipment on ZT, ZTS, or ZF fixtures. When thermostatic control is desired on a line-up of cases refrigerated by one compressor, select the case that will have the greatest fluctuation of air temperatures and use the control on it. When thermostats are ordered with the fixtures, the bulbs will be installed at the factory. Pressure controls are often used on multiple line-ups, where the compressors are not subjected to below freezing temperatures. This is left to the discretion of the installer. Recommended pressure control settings should be 28 pounds cut-in and 18 pounds cut-out for delicatessen and 27 pounds cut-in and 16 pounds cut-out for fresh meat. These settings will not maintain a defrosting cycle.

DEHYDRATION OF REFRIGERATION SYSTEM

PLEASE READ CAREFULLY BEFORE PLACING SYSTEM INTO OPERATION

1. After laying refrigerant lines, they should be blown out before making final connection at fixture or condensing unit. Use either carbon dioxide or dry nitrogen to prevent any foreign matter being left in the lines. Keep pressure below 250 pounds.

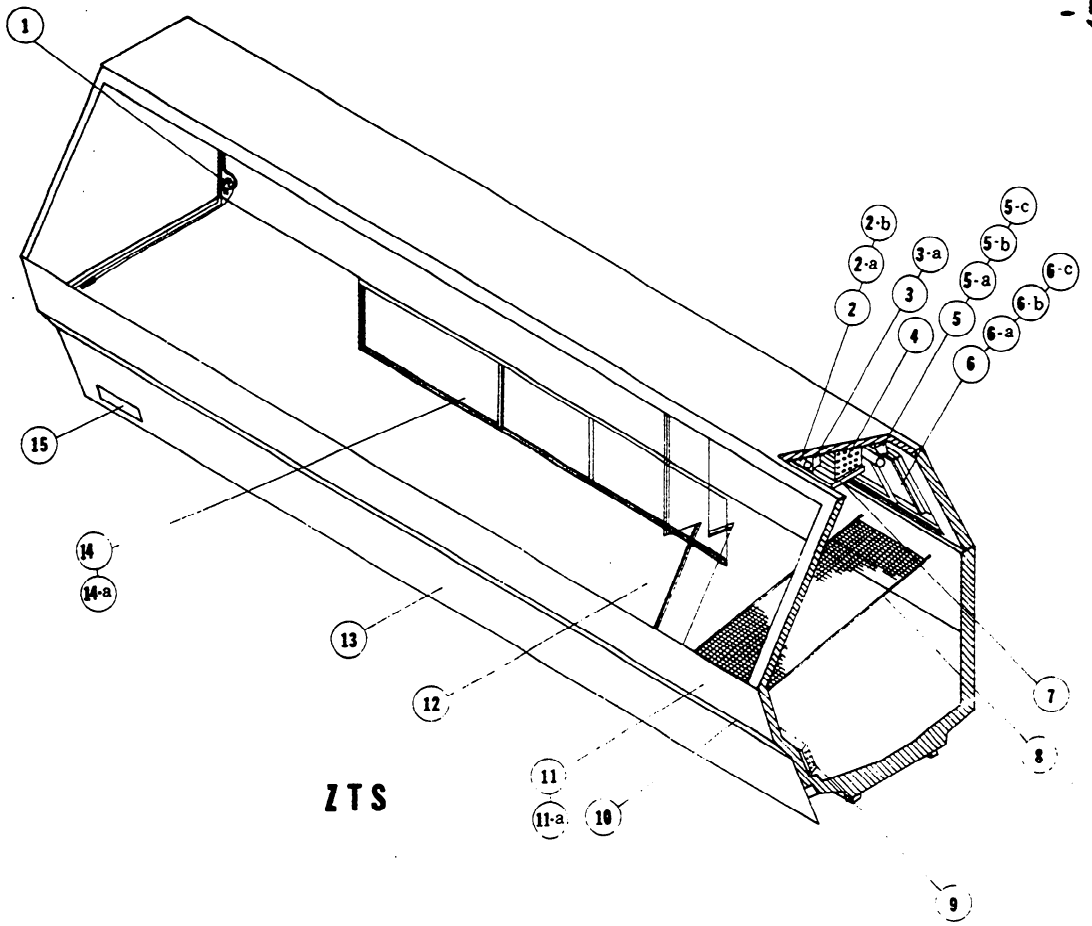
2. To prevent scaling due to brazing, dry nitrogen should be allowed to flow through lines while brazing operations are taking place.

3. After installation is complete and checked for leaks, pump a deep vacuum using a vacuum pump. DO NOT USE THE CONDENSING UNIT FOR THIS PURPOSE!!!

4. Break vacuum on system by releasing refrigerant through a dehydrator until pressure gauge reads above zero pounds. Repeat steps three and four.

5. A dehydrator should be used in the charging line when adding refrigerant.

6. A dehydrator of sufficient capacity must be installed in the liquid line before placing system into operation.


1
2-b
2-a
2
3-a
3
4
5-c
5-b
5-a
5
6-c
6-b
6-a
6
15
14
14-a
13
12
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11-a
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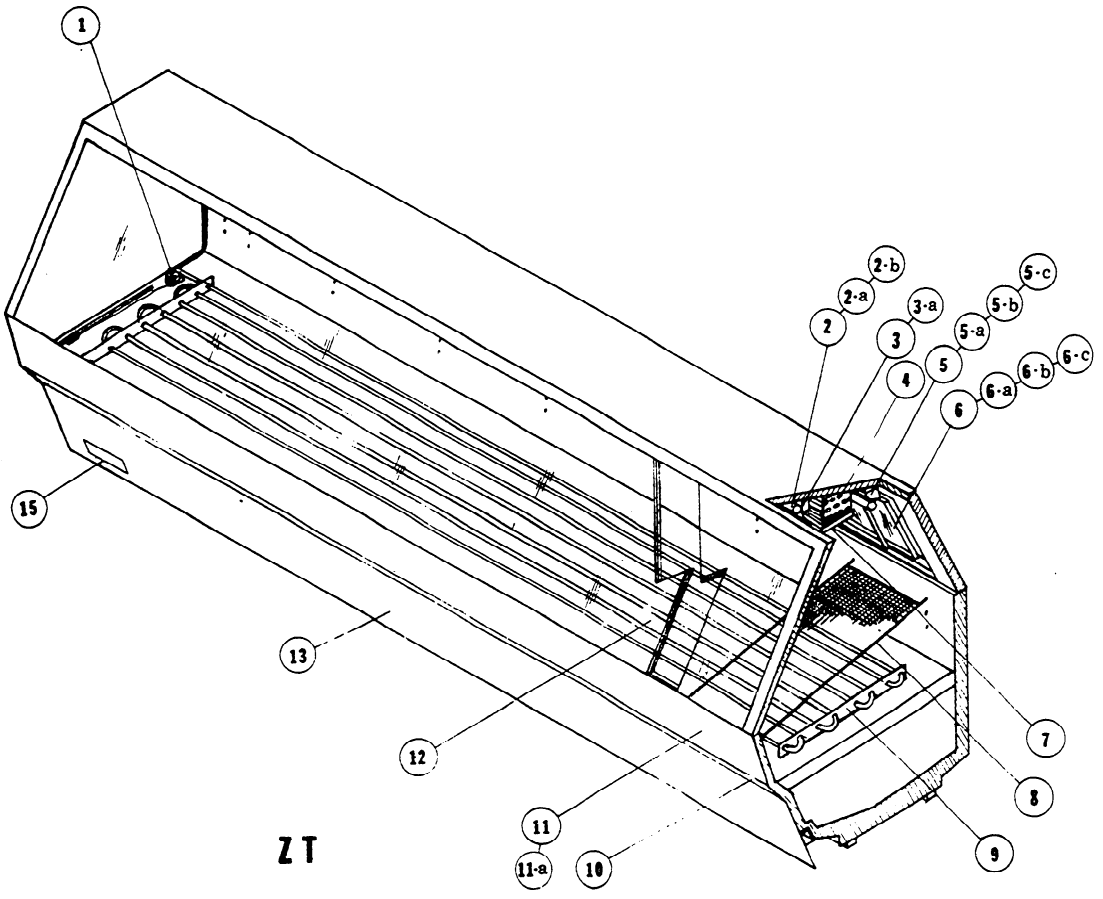
8
7

ZTS


1
2-b
2-a
2
3-a
3
4
5-c
5-b
5-a
5
6-c
6-b
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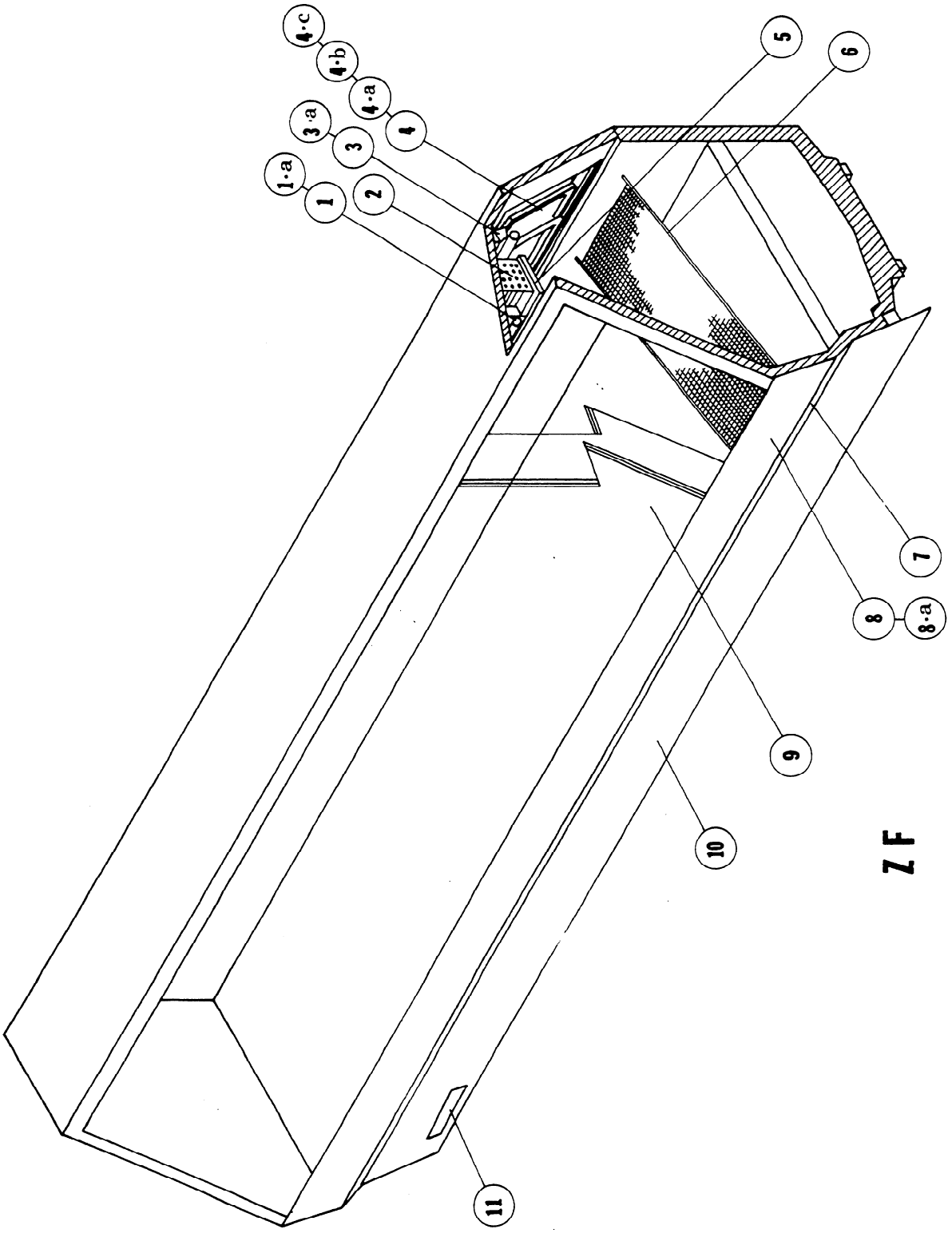
6
15
13
12
11
11-a
10
9
8
7

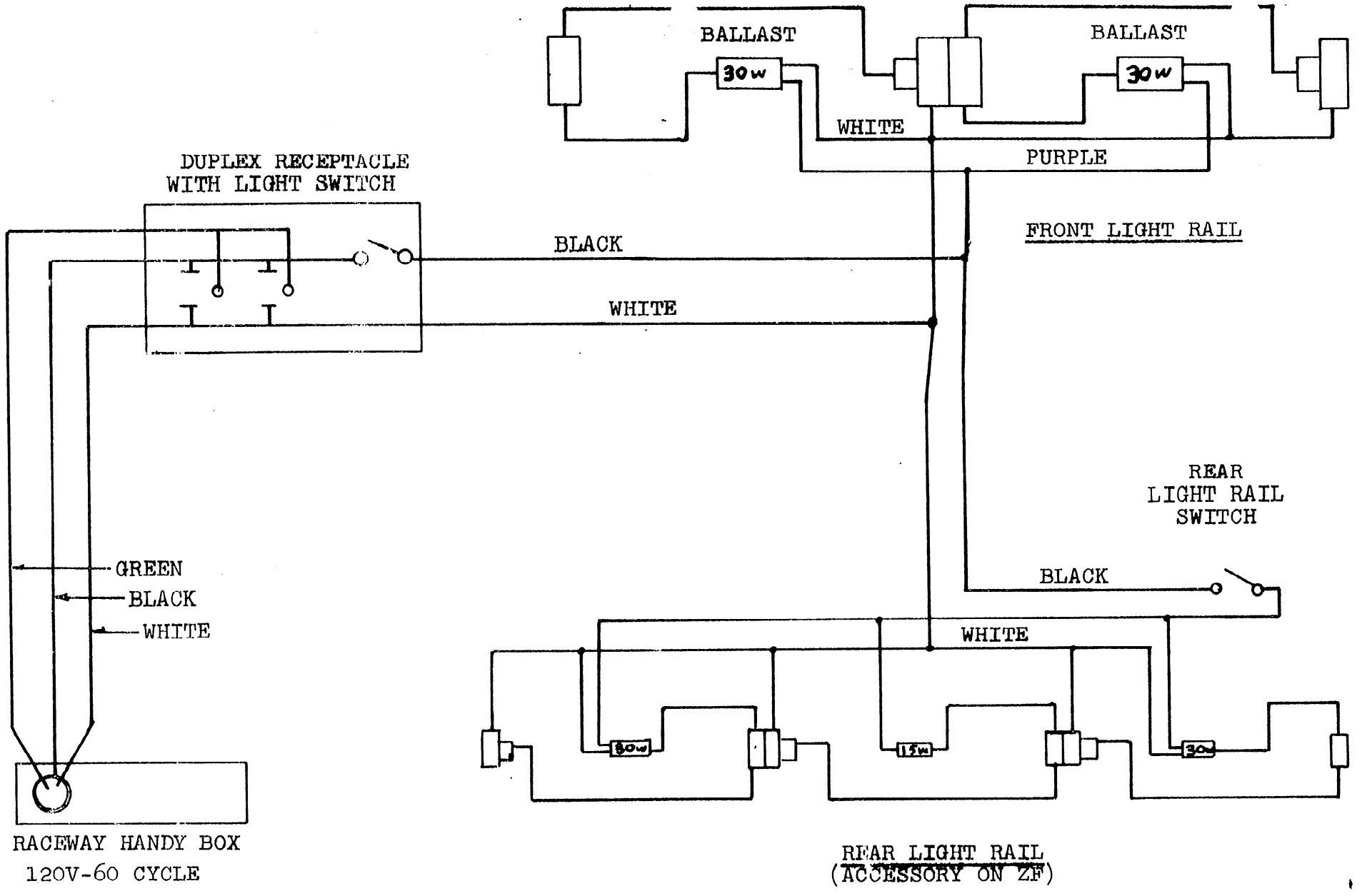
ZT



ZF

	REF. NO.	ZF		
		8'	12'	
FLUORESCENT BULB	1	10A10-22	10A10-22	
STARTERS	1A	10J12-11	10J12-11	
*12-TUBE COIL ASSEMBLY	2			
LIGHT RAIL COVER ASSEMBLY	3	80B14-10	80B18-10	
LIGHT RAIL ASSEMBLY	3A	80B17-10	80B19-11	
LEFT-HAND INSIDE DOOR ASSEMBLY	4	90E11-22	90E12-14	
RIGHT-HAND INSIDE DOOR ASSEMBLY	4A	90E11-23	90E12-17	
LEFT-HAND OUTSIDE DOOR ASSEMBLY	4B	90E11-24	90E12-16	
RIGHT-HAND OUTSIDE DOOR ASSEMBLY	4C	90E11-25	90E12-15	
*TOP COIL DRIP PAN ASSEMBLY	5	89D11-17	89D13-12	
TYPICAL WIRE RACK - FLAT***	6	28G19-85	28G19-85	
COLOR BAND BUMPER	7	15J11-16	15J11-18	
COLOR BAND PORCELAIN	8	51A17-33	51A19-33	
COLOR BAND	8A	15J10-16	15J10-15	
**MULTI-PANE 2-PANE ASSEMBLY	9	14D10-60	14D10-61	
KICKPLATE	10	56E10-40	56E10-39	
RACEWAY HANDY BOX COVER	11	51W25-87	51W25-87	
*12-TUBE COIL ASSEMBLY IS AN ACCESSORY				
INCLUDING EXPANSION VALVE		3A10-17	3A10-17	
**A MULTI-PANE 3-PANE ASSEMBLY CAN BE				
ORDERED AS AN ACCESSORY		14D11-32	14D11-33	
*** ACCESSORY - 2-STEP WIRE RACK		28G19-86	28G19-86	
3-STEP WIRE RACK		28G19-87	28G19-87	

	REF. NO.	ZT		ZTS	
		8'	12'	8'	12'
EXPANSION VALVE	1	3A10-17	3A10-17	3A10-17	3A10-17
FLUORESCENT BULB F30T-8N	2	10A10-17	10A10-17	10A10-17	10A10-17
FLUORESCENT BULB F15T-8N	2A	10A10-18	10A10-18	10A10-18	10A10-18
FLUORESCENT BULB F40T-12N	2B	10A10-22	10A10-22	10A10-22	10A10-22
STARTERS FS-2	3	10J12-10	10J12-10	10J12-10	10J12-10
STARTERS FS-4	3A	10J12-11	10J12-11	10J12-11	10J12-11
12-TUBE COIL ASSEMBLY	4	86C10-28	86E10-17	86C10-28	86E10-17
LIGHT RAIL ASSEMBLY	5	80B17-10	80B19-11	80B17-10	80B19-11
LIGHT RAIL COVER ASSEMBLY	5A	80B14-10	80B18-10	80B14-10	80B18-10
REAR LIGHT RAIL ASSEMBLY	5B	80B18-11	80B20-11	80B18-11	80B20-11
REAR LIGHT REFLECTOR	5C	54T14-18	54T14-19	54T14-18	54T14-19
LEFT-HAND INSIDE DOOR ASSEMBLY	6	90E11-22	90E12-14	90E11-22	90E12-14
LEFT-HAND OUTSIDE DOOR ASSEMBLY	6A	90E11-24	90E12-16	90E11-24	90E12-16
RIGHT-HAND INSIDE DOOR ASSEMBLY	6B	90E11-23	90E12-17	90E11-23	90E12-17
RIGHT-HAND OUTSIDE DOOR ASSEMBLY	6C	90E11-25	90E12-15	90E11-25	90E12-15
TOP COIL DRIP PAN ASSEMBLY	7	89D11-17	89D13-12	89D11-17	89D13-12
TYPICAL WIRE RACK - FLAT**	8	28G19-85	28G19-85	28G19-85	28G19-85
8-TUBE COIL ASSEMBLY	9	86K12-15	86K12-16	86C10-29	86D10-16
COLOR BAND BUMPER	10	15J11-16	15J11-18	15J11-16	15J11-18
COLOR BAND PORCELAIN	11	51A17-33	51A19-33	51A17-33	51A19-33
COLOR BAND	11A	15J10-16	15J10-15	15J10-16	15J10-15
*MULTI-PANE 2-PANE ASSEMBLY	12	14D10-60	14D10-61	14D10-60	14D10-61
KICKPLATE	13	56E10-40	56E10-39	56E10-40	56E10-39
OUTER DOOR ASSEMBLY - STORAGE	14			90A16-19	90A16-29
INNER DOOR ASSEMBLY - STORAGE	14A			90A16-20	90A16-22
RACEWAY HANDY BOX COVER	15	51W25-87	51W25-87	51W25-87	51W25-87
*A MULTI-PANE 3-PANE ASSEMBLY		14D11-32	14D11-33	14D11-32	14D11-33
CAN BE ORDERED AS AN ACCESSORY					
**ACCESSORY - 2-STEP WIRE RACK		28G19-86	28G19-86	28G19-86	28G19-86
3-STEP WIRE RACK		28G19-87	28G19-87	28G19-87	28G19-87



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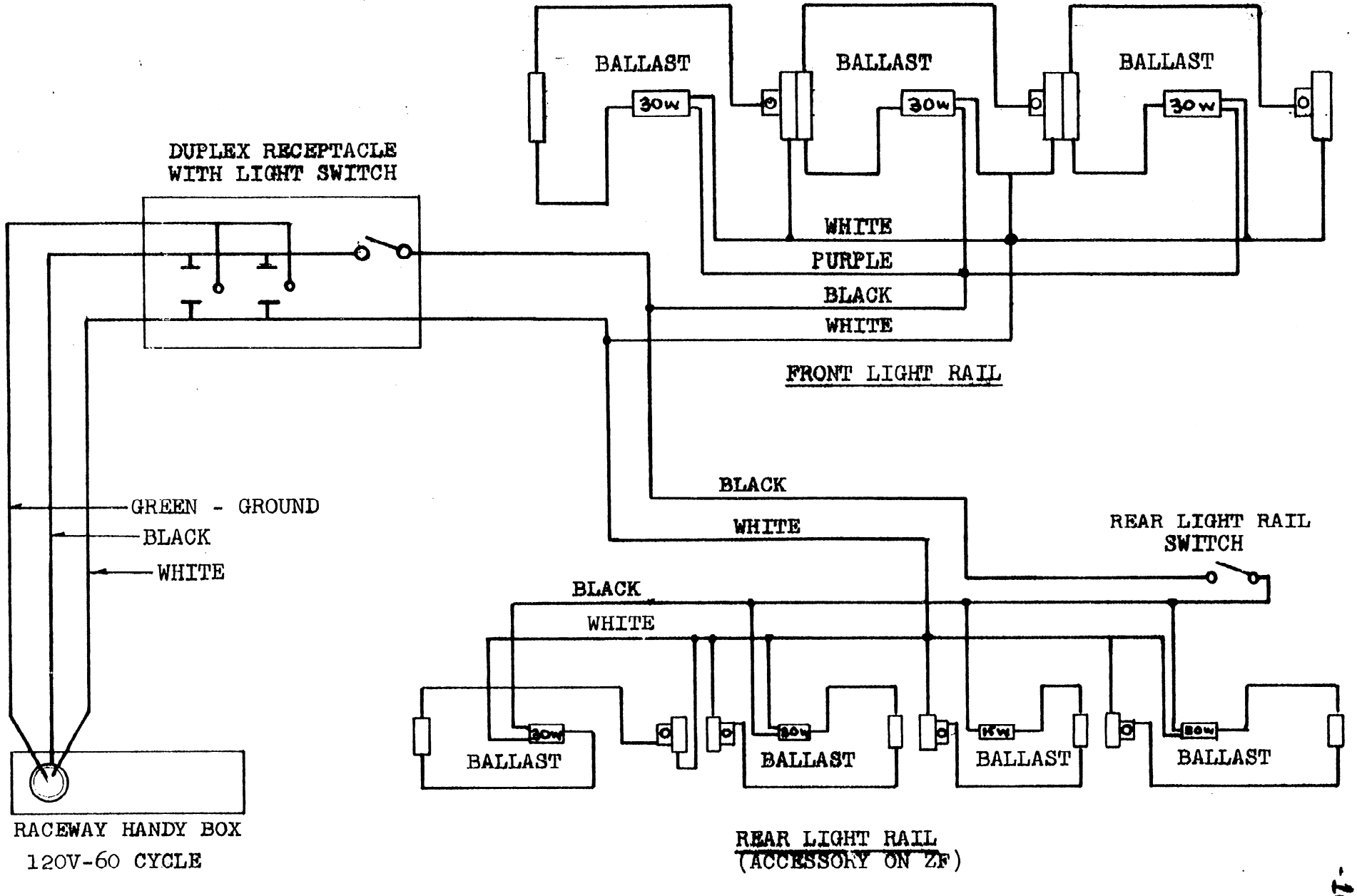
TITLE ZT, ZTS, ZF-8' CASE WIRING DIAGRAM	DRAWN P.C.L.	SCALE	THE WARREN COMPANY INCORPORATED ATLANTA 1, GEORGIA	DRAWING NUMBER PAW-10647
	APPROVED	DATE 2-8-67		



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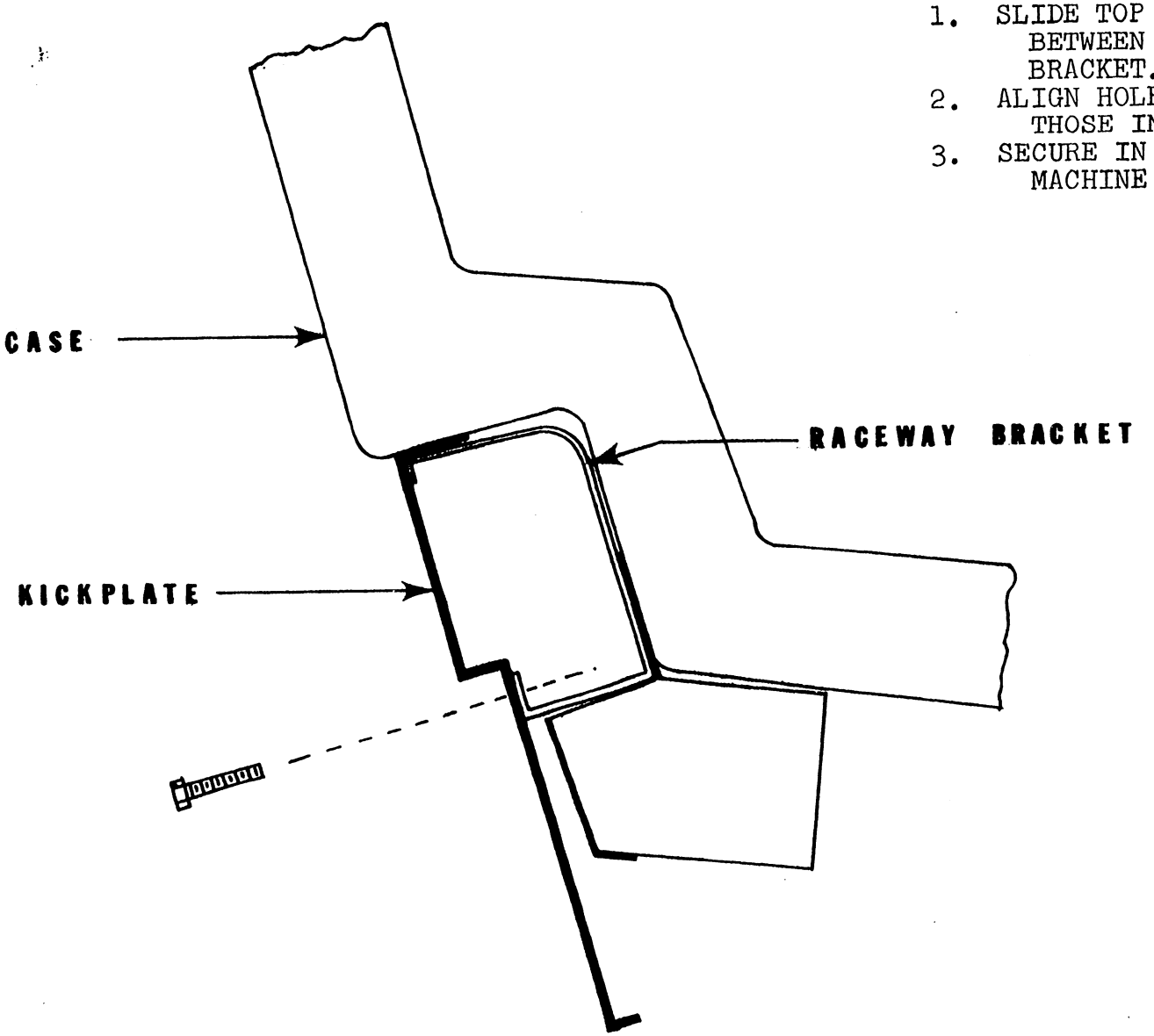
TITLE ZT, ZTS, ZF-12' CASE WIRING DIAGRAM	DRAWN P.C.L.	SCALE	THE WARREN COMPANY INCORPORATED ATLANTA 1, GEORGIA
	APPROVED	D/ 2/8/67	DRAWING NUMBER PAW-10648

1. SLIDE TOP FLANGE OF KICKPLATE BETWEEN CASE AND RACEWAY BRACKET.
2. ALIGN HOLES IN KICKPLATE WITH THOSE IN RACEWAY BRACKET.
3. SECURE IN PLACE WITH #10-24 x 1/2" MACHINE SCREWS.



CASES		LINEAR FEET	Up to 90° Store BTUH REQ'D.	COMPRESSOR SIZE						LINE SIZES R-12				LINE SIZES R-502				ELECTRICAL DATA DEFROST AMPS				ELECTRICAL DATA 115V. AMPS			
				SAH			SWH			0-75'		75'-150'		0-75'		75'-150'		230V. 1PH		208V. 3PH		Fans & A-ox		Lights	
8	12			FC		RC	FC		RC	L	S	L	S	L	S	L	S	AMPS	Wire	AMPS	Wire	AMPS	Wire	AMPS	Wire
1		8	2460	1/2 HP			1/2 HP			3/8	7/8	3/8	7/8											3.1	14
	1	12	3690	70			70																	4.5	14
2		16	4920	70			70																	6.2	14
1	1	20	6150	100			100																	7.6	14
	2	24	7380	100			100																	9.0	14
2	1	28	8610	150			100																	10.7	14
1	2	32	9840	150			150					1/2	1/8											12.1	14
	3	36	11070	200		210	150				1/8			1/2	7/8	1/2	1/8							13.5	14
2	2	40	12300	200		210	200		210															15.2	12
1	3	44	13530	200		210	200		210	1/2														16.6	12
	4	48	14760	200		210	200		210						1/8									18.0	12
2	3	52	15990	300		210	200		210															19.7	12
1	4	56	17220	300		310	300		210								5/8							21.1	10
	5	60	18450	300		310	300		310															22.5	10
2	4	64	19680	300		310	300		310				1 3/8											24.2	10
1	5	68	20910	300		310	300		310															25.6	10
	6	72	22140	300		310	300		310			5/8					1 3/8							27.0	10
2	5	76	23370	500		310	300		310															28.7	10
1	6	80	24600	500		310	500		310		1 3/8			5/8										30.1	8
	7	84	25830	500		410	500		310															31.5	8
2	6	88	27060	500		410	500		410															32.2	8
1	7	92	28290	500		410	500		410	5/8														34.6	8
	8	96	29520	500		410	500		410						1 3/8									36.0	8

NOTES:

1. COMPRESSOR RECOMMENDATIONS ARE BASED ON STORES HAVING A MAXIMUM OF 90° AMBIENT AND 60% R.H.
2. SAH(AIR-COOLED UNITS) ARE BASED ON 90° AIR ENTERING CONDENSER. SWH (WATER-COOLED UNITS) ARE BASED ON 75° WATER ENTERING CONDENSER. WHEN USING REMOTE CONDENSER CONDENSING UNITS "RAH", USE BTU REQUIREMENTS OF "SAH".
3. SUFFIX ON UNITS ARE AS FOLLOWS: LOW-TEMPERATURE--"FL"--REFRIGERANT-12; "DL", "D2L"--REFRIGERANT-22; "RL", "R2L"--REFRIGERANT-502. "D2L" AND "R2L" ARE TWO-STAGE COMPRESSORS. MEDIUM TEMPERATURE--"FC"--REFRIGERANT-12; "RC"-- REFRIGERANT-502.
4. CAUTION! THESE RECOMMENDATIONS ARE BASED ON THE LIMITING CONDITIONS OUTLINED ABOVE. SINCE CONDITIONS MAY VARY FROM THE ABOVE, WE SUGGEST THAT PERSONS USING THESE RECOMMENDATIONS DO SO AT THEIR OWN DISCRETION AND RISK. WE CAN ASSUME NO LIABILITY FOR RESULTS OBTAINED AS A CONSEQUENCE OF APPLICATIONS OUTSIDE OF WARREN'S CONTROL.
5. RISERS--IN THE SUCTION LINE ANY ELEVATION AS MUCH AS SIX FEET OR MORE MUST HAVE THE SUCTION LINE REDUCED TO THE NEXT SMALLER SIZE. ALL RISERS MUST HAVE AN OIL TRAP INSTALLED AT THE BOTTOM.
6. EQUIVALENT LENGTH IS LENGTH FROM COMPRESSOR TO REFRIGERATOR FURTHEST FROM COMPRESSOR PLUS 4' FOR EACH FITTING IN MAIN TRUNK LINE. USING THIS EQUIVALENT LENGTH, SELECT SIZE OF MAIN TRUNK LINE FROM CHART ABOVE. FOR BRANCH LINES REDUCE TO NEXT SMALLEST LINE SIZE FOR SECOND CASE, NEXT SMALLEST SIZE FOR THIRD CASE; ETC., BUT ALWAYS MAINTAIN AT LEAST ONE SIZE LARGER THAN CASE OUTLET EXCEPT FOR REFRIGERATOR FURTHEST FROM COMPRESSOR. IT IS NOT NECESSARY TO RUN THE LARGE TUBING INTO REFRIGERATOR ITSELF, MERELY TO THE TUBING FERRULE ENTRANCE.
7. EXPOSED SUCTION LINES SHOULD BE INSULATED TO PREVENT CONDENSATE DRIP.
8. ELECTRICAL WIRE SIZES ARE BASED ON AMERICAN WIRE GUAGE FOR 100 FEET OF THERMOPLASTIC TYPE T & TW.
9. LIGHTS--AMPERAGE LISTED IS FOR STANDARD LIGHTING. WHERE EXTRA LIGHTS ARE USED CHECK NAMEPLATE DATA.
10. DEFROST VOLTS: FOR 208V/1-PHASE, MULTIPLY 230V AMPS BY 0.9.

    FOR 220V/1-PHASE, MULTIPLY 230V AMPS BY 0.95.

    FOR 220V/3-PHASE, MULTIPLY 208V AMPS BY 1.06.

    THREE PHASE AMPERAGE (A/LEG) IS THE MAXIMUM PER LEG.

ENG. FORM 67-341-90-1
REVISED - 9-13-6[illegible]

WARREN REFRIGERANT LINES & ELECTRICAL DATA

UP TO 90° STORE

BTU DATA BASED ON +15° SUCTION. CALCULATE TOTAL LENGTH OF LINES AND THEN ADD 4' FOR EACH FITTING.

COMPRESSOR SIZE CHART

MODEL(S) ZT

COMPRESSOR SIZE

CASES 8	CASES 12	LINEAR FEET	Up to 90° Store BTUH HEB'D.	SAH FC	SAH	SAH RC	SWH FC	SWH	SWH RC	SUCTION LINE SIZES R-12 0-75' L	R-12 0-75' S	R-12 75'-150' L	R-12 75'-150' S	R-502 0-75' L	R-502 0-75' S	R-502 75'-150' L	R-502 75'-150' S	ELECTRICAL DATA DEFROST AMPS 230V. 1PH AMPS	Wire	208V. 3PH AMPS	Wire	115V. AMPS Fans & A.mp AMPS	Wire	Lights AMPS	Wire
1		8	2920	1/2 HP			1/2 HP			3/8	7/8	3/8	7/8											3.1	14
	1	12	4380	70			70																	4.5	14
2		16	5840	100			100																	6.2	14
1	1	20	7300	150			150																	7.6	14
	2	24	8760	150			150																	9.1	14
2	1	28	10220	150			150					1/2	1 1/8											11.7	14
1	2	32	11680	200		210	150				1 1/8			1/2	7/8	1/2	1 1/8							12.1	14
	3	36	13140	200		210	200		210	1/2														13.5	14
2	2	40	14600	200		210	200		210						1 1/8									15.2	12
1	3	44	16060	300		210	300		210															16.6	12
	4	48	17520	300		310	300		310															18.0	12
2	3	52	18980	300		310	300		310				1 3/8			5/8								19.7	12
1	4	56	20440	300		310	300		310															21.1	10
	5	60	21900	300		310	300		310			5/8					1 3/8							22.5	10
2	4	64	23360	500		310	300		310															24.2	10
1	5	68	24820	500		410	500		310		1 3/8			5/8										25.6	10
	6	72	26280	500		410	500		410															27.0	10
2	5	76	27740	500		410	500		410	5/8														28.7	10
1	6	80	29200	500		410	500		410						1 3/8									30.1	8
	7	84	30660	500		510	500		410															31.5	8
2	6	88	32120	500		510	500		410															32.2	8
1	7	92	33580	550		510	500		410				1 5/8											34.6	8
	8	96	35040	550		510	550		510															36.0	8

NOTES:

1. COMPRESSOR RECOMMENDATIONS ARE BASED ON STORES HAVING A MAXIMUM OF 90° AMBIENT AND 60% R.H.
2. SAH(AIR-COOLED UNITS) ARE BASED ON 90° AIR ENTERING CONDENSER. SWH (WATER-COOLED UNITS) ARE BASED ON 75° WATER ENTERING CONDENSER. WHEN USING REMOTE CONDENSER CONSIDERING UNITS "RAH", USE BTU REQUIREMENTS OF "SAH".
3. SUFFIX ON UNITS ARE AS FOLLOWS: LOW-TEMPERATURE--"FL"--REFRIGERANT-12; "BL", "RBL"--REFRIGERANT-22; "RL", "R2L"--REFRIGERANT-502. "RBL" AND "R2L" ARE TWO-STAGE COMPRESSORS. MEDIUM TEMPERATURE--"FC"--REFRIGERANT-12, "RC"-- REFRIGERANT-502.
4. CAUTION! THESE RECOMMENDATIONS ARE BASED ON THE LIMITING CONDITIONS OUTLINED ABOVE. SINCE CONDITIONS MAY VARY FROM THE ABOVE, WE SUGGEST THAT PERSONS USING THESE RECOMMENDATIONS DO SO AT THEIR OWN DISCRETION AND RISK. WE CAN ASSUME NO LIABILITY FOR RESULTS OBTAINED AS A CONSEQUENCE OF APPLICATIONS OUTSIDE OF WARREN'S CONTROL.
5. RISERS--IN THE SUCTION LINE ANY ELEVATION AS MUCH AS SIX FEET OR MORE MUST HAVE THE SUCTION LINE REDUCED TO THE NEXT SMALLER SIZE. ALL RISERS MUST HAVE AN OIL TRAP INSTALLED AT THE BOTTOM.
6. EQUIVALENT LENGTH IS LENGTH FROM COMPRESSOR TO REFRIGERATOR FURTHEST FROM COMPRESSOR PLUS 4' FOR EACH FITTING IN MAIN TRUNK LINE. USING THIS EQUIVALENT LENGTH, SELECT SIZE OF MAIN TRUNK LINE FROM CHART ABOVE. FOR BRANCH LINES REDUCE TO NEXT SMALLEST LINE SIZE FOR SECOND CASE, NEXT SMALLEST SIZE FOR THIRD CASE; ETC., BUT ALWAYS MAINTAIN AT LEAST ONE SIZE LARGER THAN CASE OUTLET EXCEPT FOR REFRIGERATOR FURTHEST FROM COMPRESSOR. IT IS NOT NECESSARY TO RUN THE LARGE TUBING INTO REFRIGERATOR ITSELF, MERELY TO THE TUBING FERRULE ENTRANCE.
7. EXPOSED SUCTION LINES SHOULD BE INSULATED TO PREVENT CONDENSATE DRIP.
8. ELECTRICAL WIRE SIZES ARE BASED ON AMERICAN WIRE GUAGE FOR 100 FEET OF THERMOPLASTIC TYPE T & TW.
9. LIGHTS--AMPERAGE LISTED IS FOR STANDARD LIGHTING. WHERE EXTRA LIGHTS ARE USED CHECK NAMEPLATE DATA.
10. DEFROST VOLTS: FOR 208V/1-PHASE, MULTIPLY 230V AMPS BY 0.9.

    FOR 220V/1-PHASE, MULTIPLY 230V AMPS BY 0.95.

    FOR 220V, 1-PHASE, MULTIPLY 208V AMPS BY 1.06.

    THREE PHASE AMPERAGE (A/LEG) IS THE MAXIMUM PER LEG.

WARREN REFRIGERANT LINES & ELECTRICAL DATA

UP TO 90° STORE

BTU DATA BASED ON +/5° SUCTION. CALCULATE TOTAL LENGTH OF LINES AND THEN ADD 4' FOR EACH FITTING.

COMPRESSOR SIZE CHART

MODEL(S) ZTS

EIG. FORM 67-342-90-1
REVISED - 9-19-69