DOLE REFRIGERATING COMPANY

1420 Higgs Road • Lewisburg, Tennessee 37091
Phone (931) 359-6211 1-800-251-8990
www.doleref.com

MODEL 2735 PLATE FREEZER

OPERATION & MAINTENANCE MANUAL

June 2002

Freze-Cel

Model 2735

Table of Contents

Table of Contents (cont)

Introduction

This manual provides instructions for installing, operating, and maintaining the Dole Freze-Cel Model 2735 double contact plate freezer. This model uses hydraulics to raise and lower double-contact evaporator freezer plates to permit loading and unloading product.

Refrigerant is fed to the evaporator freezer plates through a Phillips injector that can provide a 2/1 liquid re-circulation rate for maximum freezing efficiency. Refrigerant options include R-404A and R-507. Electrical options offered are 230/60, 208/3/60, 380/3/50, 480/3/60, and 550/3/60. The Model 2735 has a water-cooled condenser, which can be piped for city water or cooling tower operation. It can also be furnished with a condenser compatible with seawater cooling.

The Model 2735 is named for the size of its evaporator plates, 27 inches by 35 inches. It is furnished completely assembled, charged with refrigerant.

Description

1. Purpose of the Equipment

The FREZE-CEL Model 2735 provides a reliable method of freezing products quickly to preserve their quality. Because the product is tightly clamped between the flat freezer plates during the freezing process, the shape of the frozen product can be controlled.

2. General Description

The freezer consists of an insulated cabinet, a top freezer section, and a lower refrigeration section. The Model 2735 is offered in several configurations:

A. Electrical Power

230/60 VAC
208/3/60 VAC
380/3/50 VAC
440/ 3/60 VAC
550/3/60 VAC

B. Condensing Medium

City Water
Cooling tower water
Seawater

C. Freezing Stations

Stations	Plates	Max. Opening (inches)	Min. Opening (inches)
6	7	3 1/8	1
7	8	2 5/8	1
8	9	2 1/8	3/4
9	10	1 ¾	3/4
10	11	1 ½	3/4

Note: Any combination of the above options can be chosen. Special features can be provided, e.g. freezer to operate off a remote air-cooled condensing unit, freezer to be provided with one door (one door is standard), etc.

3. Detailed Description

A. Cabinet

The cabinet is made of three-inch thick foamed-in-place urethane insulation with a 1/8-inch jel-coat surface to provide for maximum insulation and an easy to clean surface.

B. Top Section

The top section contains the freezer plates, each with its own flexible liquid and suction hoses, lifting bolts, and spacers. The plates are opened for loading and unloading and are closed during freezing by means of an operator-controlled hydraulic actuator.

C. Lower Section

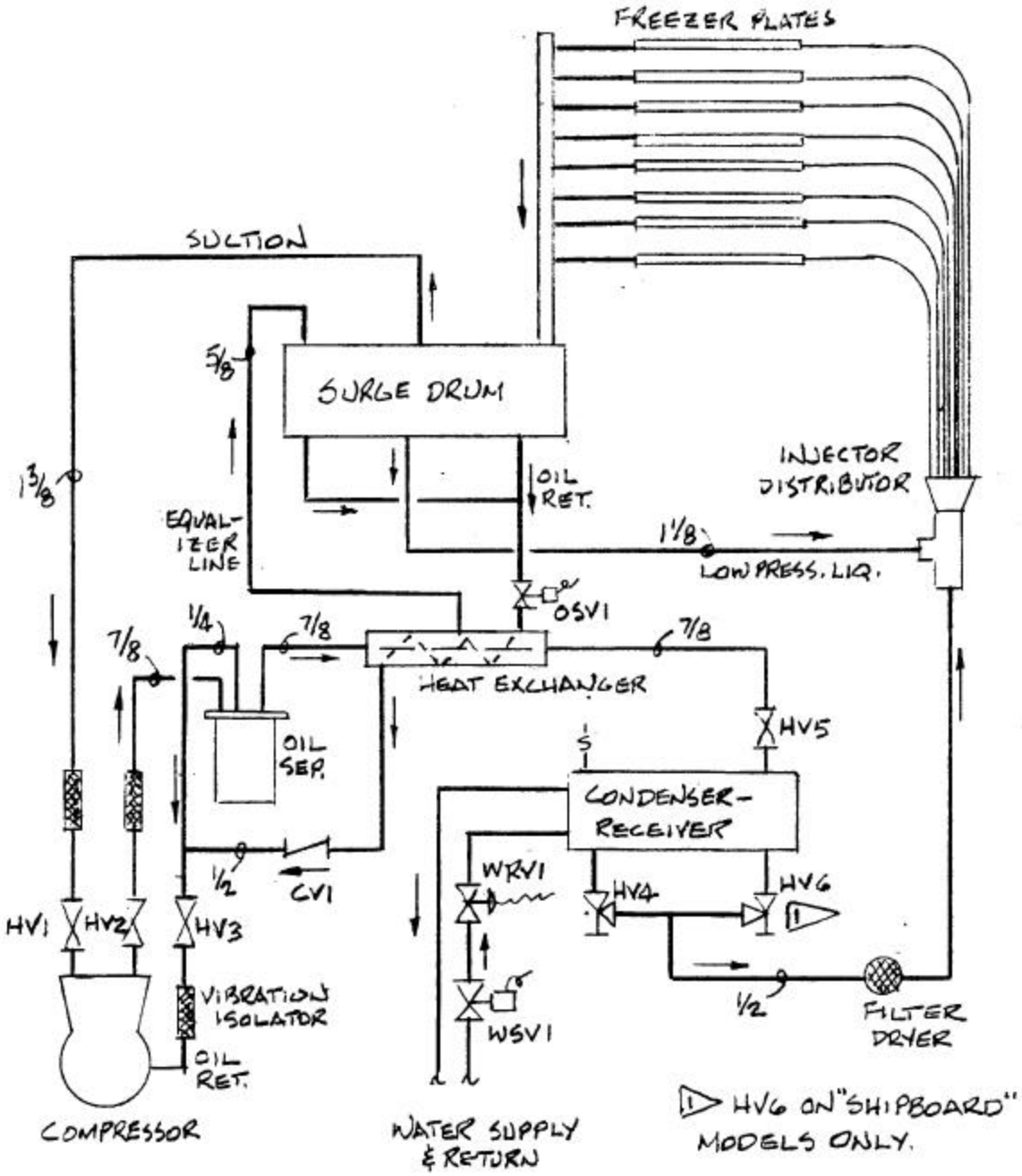
The lower section houses the high-side refrigeration and hydraulic systems. It includes a compressor, a water-cooled condenser/receiver, high-side and low-side oil separators, a suction surge drum, a refrigerant injector/distributor, the system hydraulic power unit and actuator, an operator control panel, wiring, lines, fittings, valves, gages, etc.

D. Refrigeration Cycle

Refrigerants offered in the Model 2735 are R-404A and R-507. The refrigeration system schematic is shown on Figure 1.

The refrigeration cycle is as follows: high-pressure liquid refrigerant stored in the condenser/receiver flows through a filter/drier to the injector/distributor. In flowing through a nozzle in the injector the refrigeration pressure is reduced and the liquid gains in velocity as it enters the injector throat. In the throat this liquid stream is mixed with the low temperature liquid from the suction surge drum and carried through the distributor to each freezer plate via the flexible liquid supply hoses. A portion of the liquid boils as a result of picking up heat on its journey through the plates. The exiting mixture of vapor and liquid is returned to the suction surge drum, where the vapor and liquid are separated, with the vapor returning to the compressor and the liquid in the bottom of the surge drum returning to the injector for mixing and redistribution to the plates.

Figure 1 - Refrigeration System Schematic



The compression of the vapor in the compressor results in a high-temperature, high-pressure gas, which is routed through a high-stage oil separator, oil in the gas returning to the compressor crankcase, and the refrigerant vapor passing through a heat exchanger where some of its heat is transferred to the oil in the low-pressure liquid (from the surge drum). The oil is returned through a check valve (CV1) to the compressor crankcase. The vapor exiting the heat exchanger is routed to a water-cooled condenser/receiver where the vapor is condensed to high-pressure liquid and stored for reuse.

E. Oil Return System

A heat exchanger is used to transfer heat from the compressor discharge vapor to an oil/vapor mixture from the low-side surge drum. A thermostat is mounted on the outside of the exchanger and, as long as the surface temperature is at least 95 degrees F., the oil return solenoid valve (OSV1) will be energized and open. This permits the flow of liquid through the heat exchanger. The liquid refrigerant boils off and returns to the top of the surge drum through an equalizer line and the oil passes out of the heat exchanger, through CV1 to the compressor crankcase. Depending upon the particular operating conditions of the freezer, the oil return solenoid valve will be open approximately once every 10 to 20 minutes. This will prevent an adverse buildup of oil in the surge drum.

The oil separator in the high side (compressor discharge) makes use of a float in the bottom, of the separator which permits oil to be removed from the vapor before it can reach the low-side plates.

F. Electrical System

The electrical system is factory-wired and pre-tested prior to shipment. The user must assure that the proper power source is provided to the unit. In some areas voltage can vary to such an extent that damage to a compressor can result if built-in compressor protection devices fail to operate fast enough. A power-line circuit breaker, installed in accordance with applicable local codes, is recommended. For details of the electrical system see Figure 2 for the 230 max 60 HZ VAC electrical configuration, Figure 3 for the 208/3/60 configuration, Figure 4 for the 380/3/50 configuration, Figure 5 for the 480/3/60 configuration and Figure 6 for the 550/3/60 configuration. These figures not only show the actual wiring, but also present the electrical schematics, which depict the system logic.

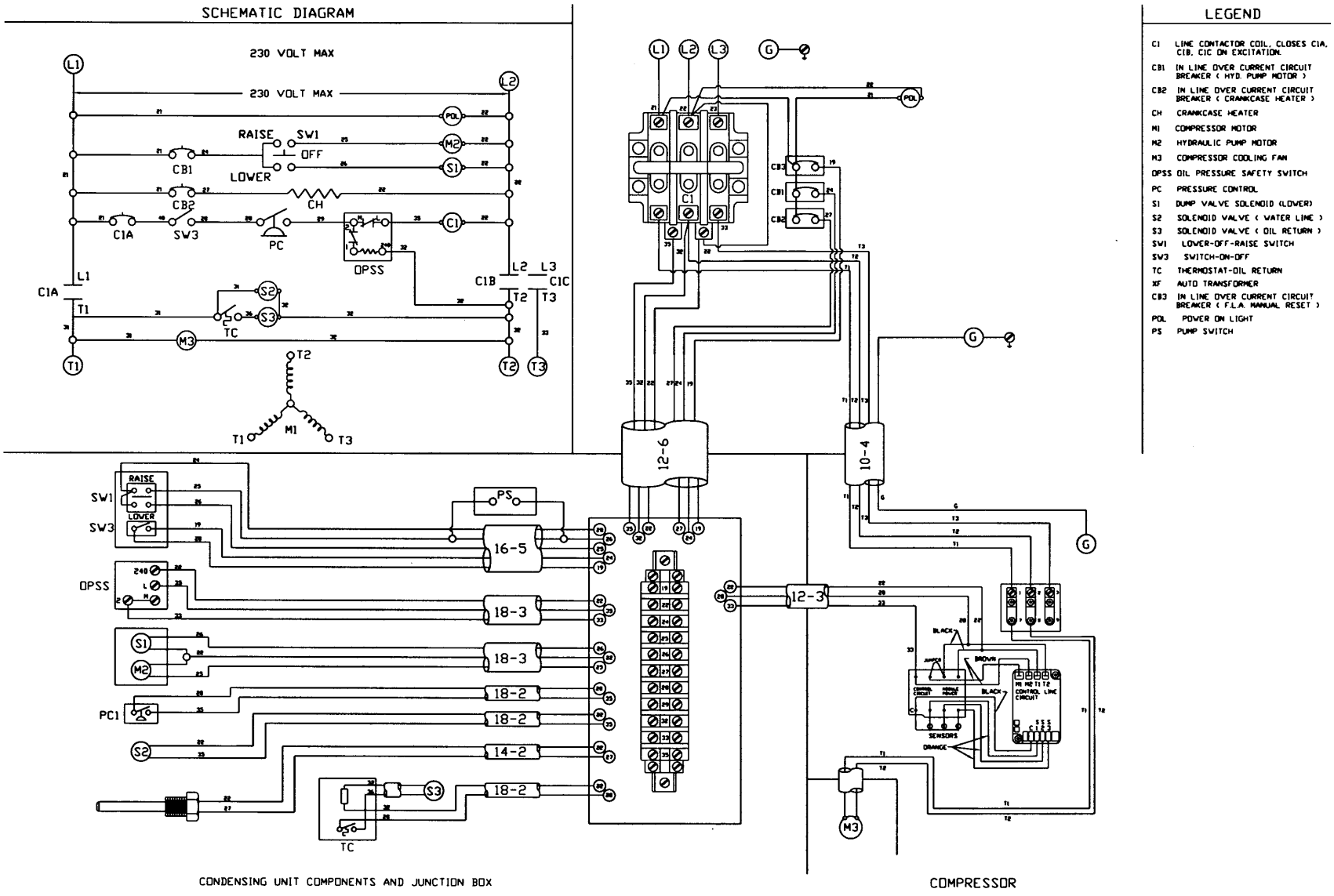


Figure 2 Schematic Wiring Diagram 230 Max VAC Single Phase

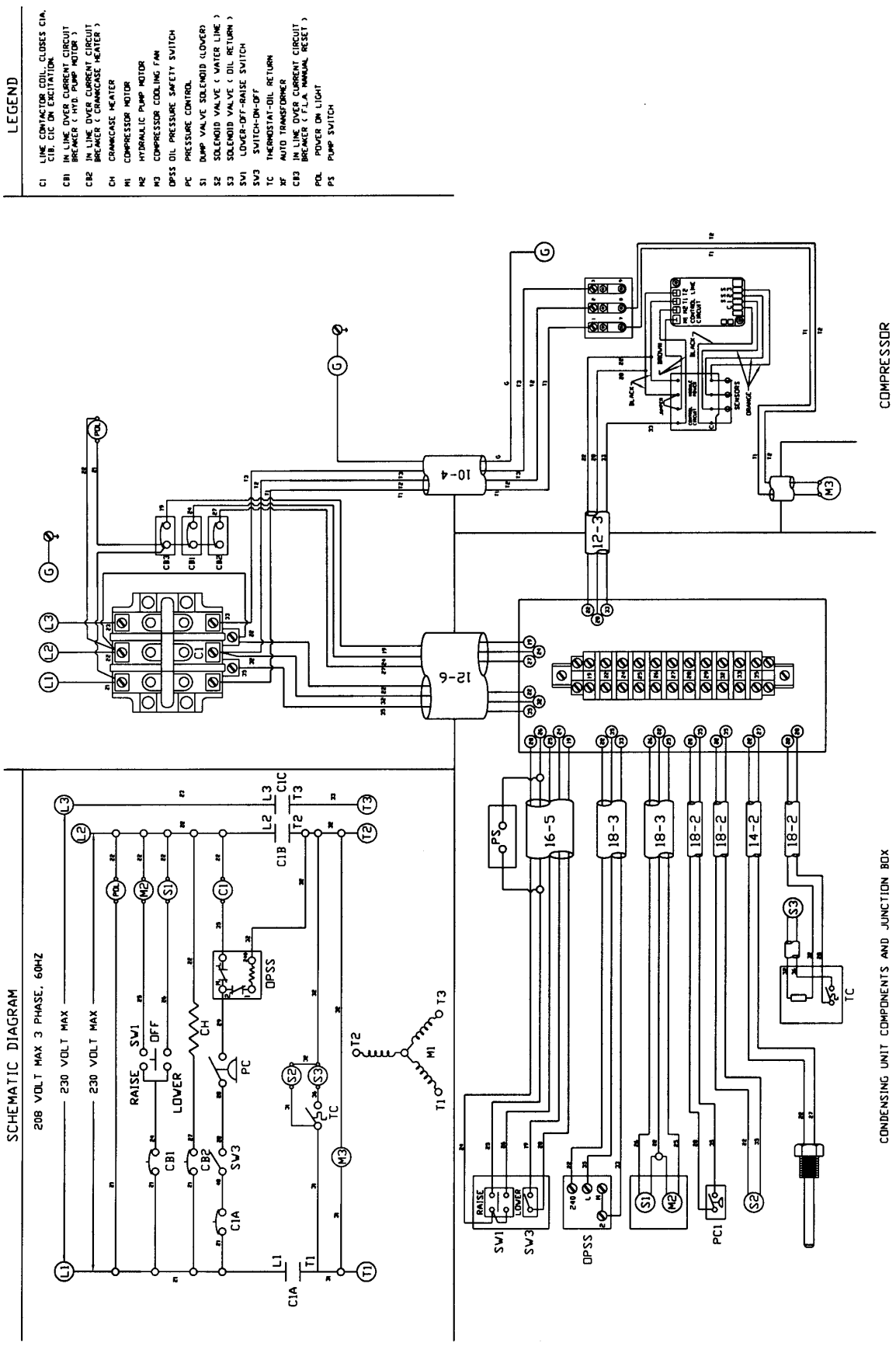


Figure 3 Schematic Wiring Diagram 208 Max VAC, 3 Phase

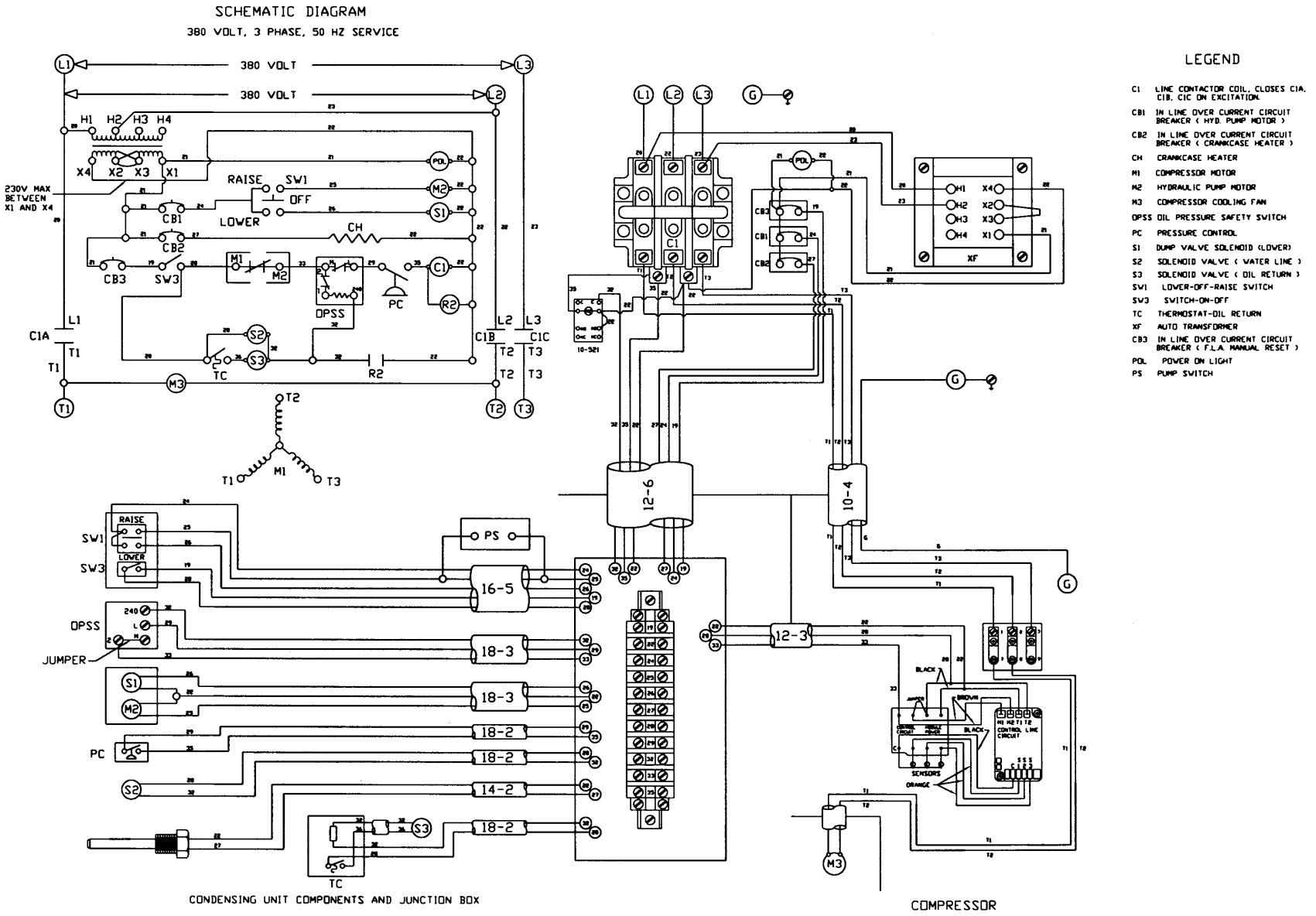


Figure 4 Schematic Wiring Diagram 380 Max VAC, 3 Phase, 50 HZ

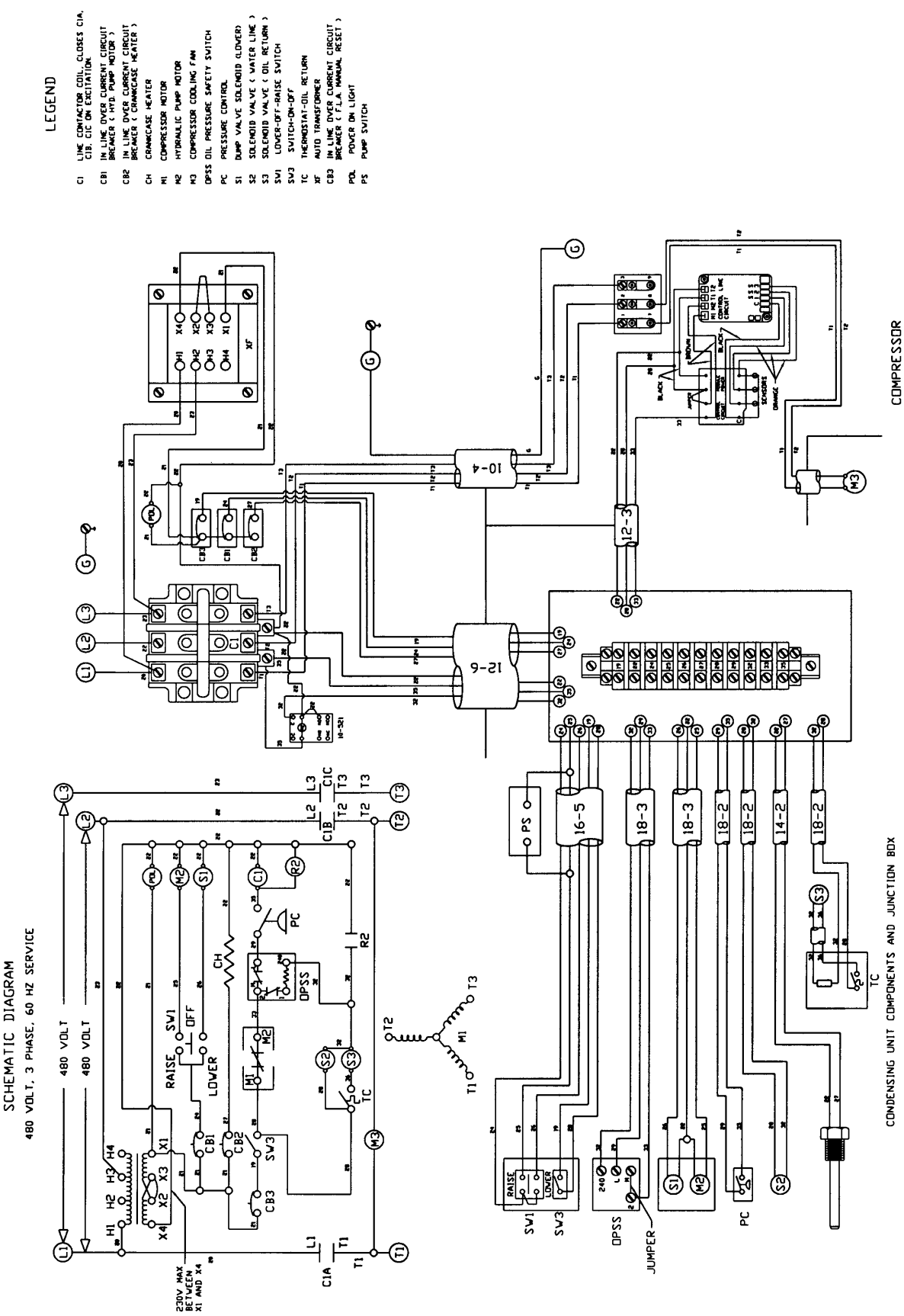


Figure 5 Schematic Wiring Diagram 480 Max VAC, 3 Phase, 60 HZ

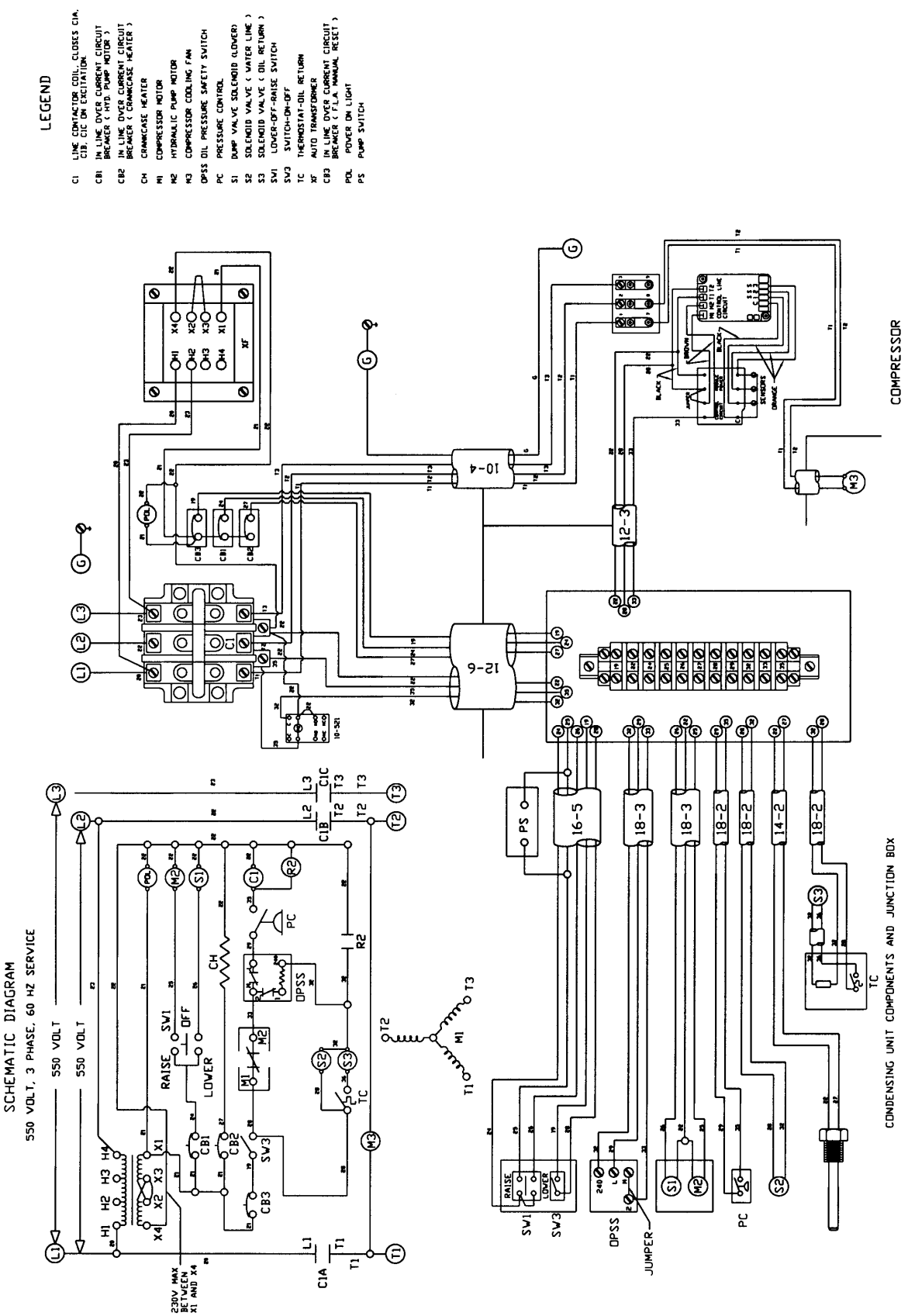


Figure 6 Schematic Wiring Diagram 550 Max VAC, 3 Phase, 60 HZ

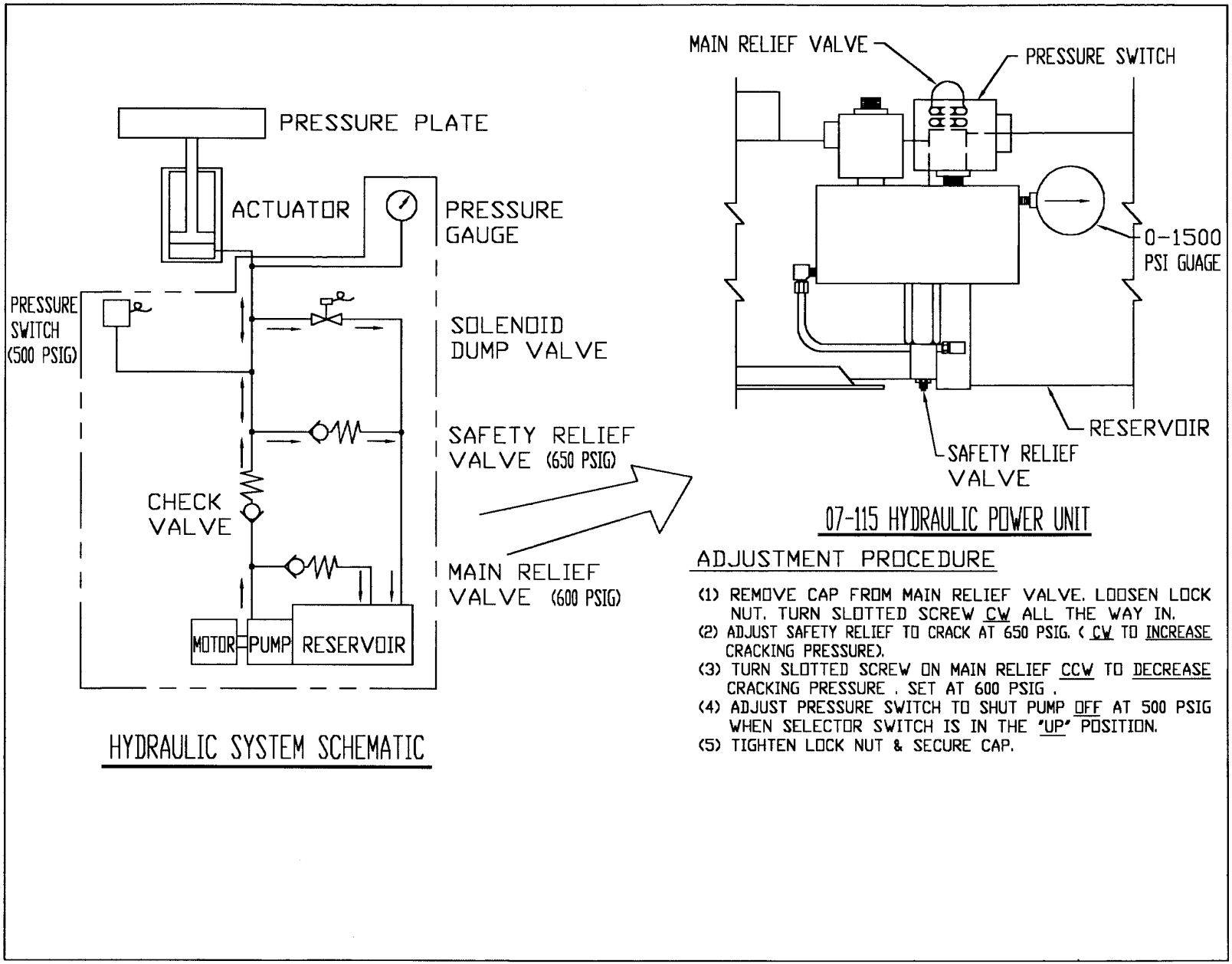


Figure 7 Hydraulic System Schematic

G. Hydraulic System

Figure 7 presents the hydraulic system schematic. A “Raise, Lower” switch controls the hydraulic system. When the “Raise” button is pushed, the hydraulic pump is activated and pressure is routed to the hydraulic actuator, which raises the plates, thereby closing the spaces between plates and clamping the product between the plates. The hydraulic pressure will rise until it reaches 430 psi, where a relief valve will maintain that pressure. When the “Raise” button is released, the pressure will remain at 430 psi throughout freezing. As the product is frozen, it will tend to expand. Unless the plates are able to accommodate this expansion, structural damage could result. The relief valve provides protection by assuring that the pressure in the system will not exceed 430 psi throughout the freezing operation.

In the “Lower” position the solenoid dump valve is energized, permitting the fluid in the actuator to flow back to the power unit reservoir. The plates and product will move downward due to gravity. In this position the frozen product can be unloaded and new product loaded in anticipation of the next freezing cycle.

The Hydraulic Power Unit will have been adjusted prior to shipment. Should additional adjustment be required, the following procedure should be used

Remove cap from Main Relief Valve. Loosen Lock Nut. Turn slotted screw clockwise all the way in.
Adjust Safety Relief Valve to crack at 150 psi above desired operating pressure. (Clockwise to increase relief pressure; counter-clockwise to reduce relief pressure).
Turn slotted screw on Main Relief Valve counter-clockwise to decrease relief pressure to 50 psi above desired operating pressure when Selector Switch is in the UP position.
Adjust Pressure Switch to shut Pump OFF at desired operating pressure when Selector Switch is in the UP position.
Tighten Lock Nut and secure Cap.

Installation Instructions

1. Unpacking the Freezer

   Carefully remove wood crating, lumber, skids, and waterproof plastic covering. DO NOT REMOVE internal shipping and plate bracing until the unit has been positioned and leveled in its permanent location.

2. Locating the Freezer

   Note: The floor on which the freezer is to be located must be capable of supporting a 250 psi load.

   The freezer's overall dimensions are 73 ½inches high, 46 inches deep and 51 inches wide. By removing the cabinet doors, the freezer will pass through a doorway 42 inches wide. By also removing the door hinge hardware the freezer will pass through a 38 inch opening.

   Sufficient room should be provided to permit removal of cabinet sides where required to service refrigerant hoses in the upper section of the freezer and to operate and service the various refrigerant and hydraulic components in the lower section.

   A minimum space of 50 inches is required on one side (either side) of the freezer to provide for rodding the water-cooled condenser/receiver.

3. Leveling the Freezer

   IT IS IMPORTANT THAT THE FREEZER BE LEVEL FOR SATISFACTORY PERFORMANCE.

   Once the freezer has been set in place, screw the four bolts provided into the nuts on the base skid and level the unit.

   When the freezer has been leveled, shim or grout under the skids to prevent the unit from permanently resting on the leveling screws.

4. Connecting the Utilities

   A. Electrical Connections

      System power and fused disconnect switch (supplied by others) should be installed in compliance with all applicable state, national, shipboard electrical codes. Refer to Figure 2 for the 230 max 60 HZ VAC electrical configuration, Figure 3 for the 208/3/60 configuration, Figure 4 for the 380/3/50 configuration, Figure 5 for the 480/3/60 configuration and Figure

6 for the 550/3/60 configuration. These diagrams can be referenced for servicing and installation.

Connect power line of proper size to terminals L1, L2, and L3 and ground at top of terminal strip located in electrical control box in lower machine compartment.

B. Recommended Fuse Capacities

230/3/60---Fusetron FRN-60 or standard 70 Amps
380/3/50---Fusetron FRS-25 or standard 35 Amps
440/3/60---Fusetron FRS-25 or standard 30 Amps
550/3/60---Fusetron FRS-20 or standard 30 Amps

CAUTION

DO NOT TURN THE COMPRESSOR ON UNTIL ELECTRICAL POWER HAS BEEN SUPPLIED TO THE FREEZER FOR A PERIOD OF AT LEAST FOUR HOURS. THE CRANKCASE HEATER WILL REQUIRE FOUR HOURS TO EVAPORATE ANY LIQUID REFRIGERANT, WHICH MAY HAVE MIGRATED TO THE CRANKCASE DURING SHIPMENT.

DO NOT OPERATE COMPRESSOR BEFORE SERVICE VALVES HV1, HV2, HV3, HV4, AND HV5 HAVE BEEN OPENED, PLUS HV6 ON SHIPBOARD UNITS. (REFER TO FIGURE 1 REFRIGERATION SYSTEM SCHEMATIC).

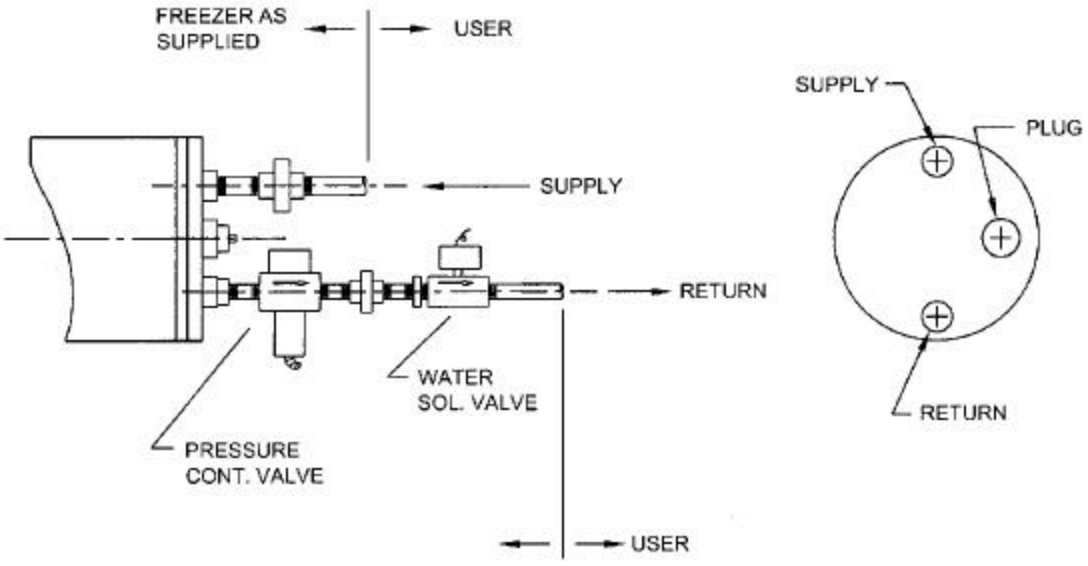
C. Water and Drain Connections

Note: The freezer is supplied to be piped to city water or cooling tower water. A seawater option is also available for shipboard units. See Figure 8 Condenser Piping.

Connect 3/4-inch water supply and return lines as shown in Figure 8. All water and drain connections should be made in compliance with applicable local, state, and national plumbing codes. Extend a flexible defrost water drain line from the freezer drain fitting to a pan or other suitable disposal site.

When the ambient temperature in the vicinity of the freezer is below 32 degrees F and the freezer is to be shut down for a period of time, the condenser/receiver and its associated water piping should be completely drained. This is necessary to prevent the formation of ice inside the condenser, which could result in damage to condenser tubes.

Figure 8 Condensor Piping



Operating Instructions

1. General

Once water and electrical power have been connected, the freezer is ready for operation. However, it is important that certain procedures be followed to assure safe and efficient operation.

2. Checking Electrical Power

CAUTION

DO NOT OPERATE THE COMPRESSOR UNTIL POWER HAS BEEN ON FOR AT LEAST FOUR HOURS. THIS WILL ASSURE THAT THE CRANKCASE WILL HAVE HAD TIME TO EVAPORATE ANY LIQUID REFRIGERANT, WHICH MAY HAVE MIGRATED INTO THE CRANKCASE DURING SHIPMENT.

3. Positioning Service Valves

The freezer will have been shipped with all service valves in the closed position. These valves must be opened prior to operating the compressor. Open valves HV1, HV2, HV3, HV4, and HV5. In the case of a “shipboard” freezer, HV6 must also be opened. See Figure 1 Refrigeration System Schematic for location of these valves. Turn on the compressor.

4. Operator Control Panels

Figure 7 presents the Operator Control Panel. When lit, the “POWER” light is on it indicates that power is available to the unit. A switch is providing to turn the compressor on and off. A “RAISE-LOWER” switch provides a means of lowering or opening up the plates to permit product loading and /or unloading, and a means of raising or closing the plates on the product for freezing.

5. Refrigeration Mode

With power on the system (POWER light lit) and the compressor on the system should be free to circulate liquid refrigerant through the evaporator plates. The compressor switch should be in the “ON” position at all times except when the freezer is to be out of service for more than a week. If the compressor switch has been left in the “OFF” position for more than a day, observe the following:

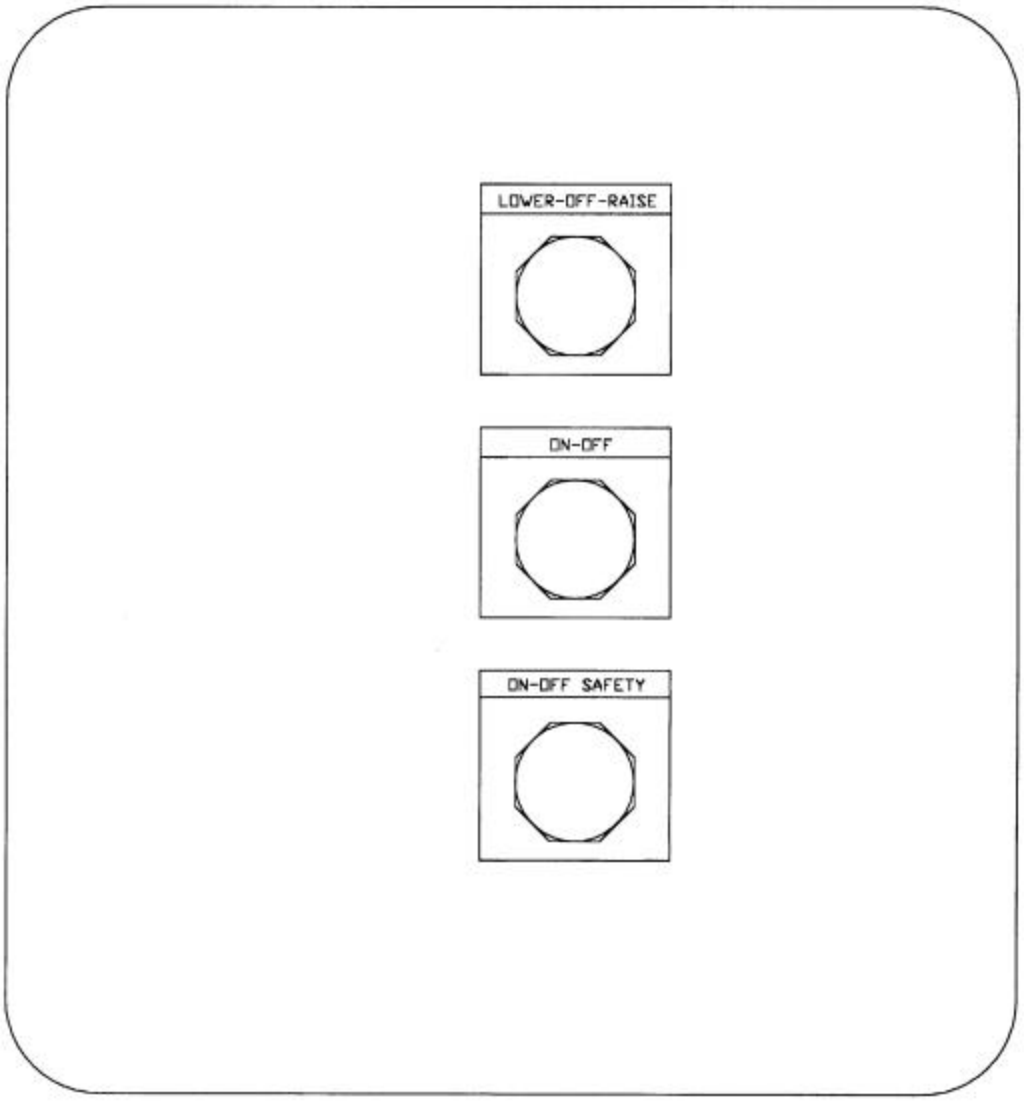


Figure 9 - Operator Control Box

CAUTION:

DO NOT OPERATE COMPRESSOR UNTIL ELECTRICAL POWER HAS BEEN SUPPLIED TO THE FREEZER FOR A PERIOD OF AT LEAST FOUR HOURS. THE CRANKCASE HEATER REQUIRES POWER FOR AT LEAST FOUR HOURS TO EVAPORATE ANY REFRIGERANT WHIC H MAY HAVE MIGRATED TO THE CRANKCASE SINCE THE UNIT WAS SHUT DOWN.

DO NOT OPERATE COMPRESSOR UNLESS ALL FIVE SERVICE VALVES (SIX ON SHIPBOARD UNITS) HAVE BEEN OPENED.

DO NOT OPERATE COMPRESSOR BEFORE COOLING WATER HAS BEEN CONNECTED AND TURNED ON TO THE CONDENSER.

6. Loading the Product

The freezer should be ready for product loading approximately one hour of compressor operation. Place the “RAISE-LOWER” switch in the “LOWER” position to fully open the plates. Place product packages or trays on plates. The product should be loaded uniformly on each plate. DO NOT PARTIALLY LOAD A PLATE.

For most efficient freezing, all stations should be loaded with product. If a station(s) is to be empty due to lack of product to fill all stations, the empty station(s) should be located ABOVE all loaded stations. For efficient freezing, plates should be free of frost before a new freezing cycle is initiated.

7. Liquid Refrigerant Level

Check the refrigerant level in the Surge Drum AFTER THE COMPRESSOR HAS BEEN IN OPERATION FOR TWO HOURS. The liquid level should stabilize at the centerline of the sight glass.

CAUTION:

DO NOT ADD REFRIGERANT TO SYSTEM UNLESS SIGHT GLASS INDICATES AN UNDERCHARGED CONDITION AFTER RUNNING FOR AT LEAST TWO HOURS.

8. Crankcase Oil Level

AFTER THE COMPRESSOR HAS BEEN OPERATING FOR AT LEAST TWO HOURS, check the compressor crankcase oil level. The oil level in the crankcase sight glass should stabilize at the center of the sight glass, with the

compressor operating. After initial inspection of crankcase oil level, check the level at least once a week.

9. Setting the Water Regulating Valve

The water-regulating valve will have been factory preset at 210 psi compressor discharge pressure. It should be maintained at that pressure to assure operating efficiency. To increase discharge pressure, adjust the valve counterclockwise. This will decrease the cooling water flow and cause the discharge pressure to increase. To decrease the compressor discharge pressure, adjust the valve clockwise. This will increase the cooling water flow and cause the discharge pressure to fall.

CAUTION:

COMPRESSOR DISCHARGE SHOULD NOT BE ALLOWED TO RISE ABOVE 250 PSI OR TO FALL BELOW 150 PSI.

10. Miscellaneous

For efficient freezing, evaporator plates should be kept free of frost. When the freezer is not in use the doors should be left open to aid in defrosting the plate surfaces.

Products of different thickness may be frozen at the same time, but in separate stations. This is not an efficient method of freezing. Thicker packages take longer to freeze than thinner ones. Therefore, the freezing rate (pounds per hour) of a load of different-sized products will tend to equal the rate for the thicker packages, which is lower than the rate for thinner packages.

Maintenance

1. General

   This section provides preventive maintenance, refrigerant charging, liquid pumpdown, and compressor oil charging procedures.

2. General Maintenance

   Refrigerant level in the surge drum sight glass should be checked once a day, with the compressor running. A liquid level consistently above the ¾point of the sight glass indicates refrigerant overcharge. If such is the case, refrigerant should be pumped out and reclaimed. Liquid level consistently below the center of the surge drum sight glass indicates either a refrigerant undercharge condition or possibly a refrigerant leak.

   If there is less than 3/8 inch of oil on top of the refrigerant liquid level in the sight glass, the oil return system is operating satisfactorily. If more than 3/8 inch of oil on top of the refrigerant is observed, it indicates an inoperative component in the oil return system, i.e. a defective solenoid valve, check valve, or crankcase oil heater.

3. Crankcase Oil Level

   The crankcase oil level in the crankcase sight glass should be checked at least once a week, with the compressor running. Oil level below the center of the crankcase sight glass indicates the compressor is low on oil.

4. Oil Pressure Safety Control

   In the event that the oil pressure control shuts off the compressor, the compressor should be turned off and the oil return system checked. If no defective components are found, charge the proper amount of oil to the crankcase. DO NOT RESET THE OIL SAFETY CONTROL BEFORE ADDING OIL.

5. Door Panel Hinges

   The door panel hinges should be checked periodically to eliminate door sag, which can result from loosening of door hinge mounting screws. Check door panel gaskets regularly. Adjust hinges and door latch if necessary to maintain a proper seal. If a tendency for the gasket to freeze to the doorjamb is observed, apply Dow Corning “Slipicone” or other suitable gasket dressing to the gasket surface.

6. Liquid Pumpdown Procedure

If a freezer is to be shut down for a period of more than two days, or if the unit is to be relocated, the following pumpdown procedure should be followed:

If the freezer has just completed a freezing cycle, turn off the compressor. Let the unit sit overnight with doors open and the Main Power switch on. This will insure that the crankcase heater remains energized to prevent refrigerant migration to the crankcase.

Close the liquid outlet valve HV4 (and HV6 for seawater condensers) at the bottom of the condenser/receiver.

Connect a gage manifold to the back-seated suction valve HV1 and discharge valve HV2 charging ports. Close both valves one turn.

Start the compressor and jumper wire 28 to 29 ("L" & "M" on the High-Low Pressure Switch, refer to Figure 3 or 4) to keep the compressor running at low suction pressure. When suction pressure gage indicates an 8 to 10 inch vacuum, turn the compressor off.

Close HV5, HV1, HV2, and HV3. Refer to Figure 1.

7. Crankcase Oil Charging Procedure

If the oil level in the crankcase falls below the center of the sight glass and no defective parts are found in the oil return system, additional oil should be added to the crankcase. The following procedure should be followed:

Close the oil return valve HV3. Refer to Figure 1.

Close the compressor suction valve HV1. Refer to Figure 1. The compressor suction pressure should be 1 + or –1 psig.

Close the compressor discharge valve HV2. Refer to Figure 1.

Unscrew the hex plug from the brass cross on the front of the compressor. Pump oil into the crankcase until the oil level reaches 3/4 of the sight glass. Copeland Ultra 22 Polyester Lubricant, Synthetic Refrigeration Oil is used from the factory.

Screw the hex plug loosely to the brass cross. Crack the compressor suction valve HV1 off of its seat for one to two seconds to purge the crankcase. Tighten the hex plug to the cross.

Open HV1, HV2, and HV3. Refer to Figure 1.

8. Charging Procedure After Leak Repair

Connect a refrigerant charging hose to the gage manifold charging port. Crack the refrigerant drum gas valve to purge the hose, and then tighten the gage manifold to the compressor suction valve HV1 gage port.

Close the compressor suction valve HV1 one turn.

Open the refrigerant drum gas valve and charge the proper amount of "gaseous" refrigerant into the system while the compressor is running until the liquid level shown on the surge drum sight glass reaches the center of the sight glass.

CAUTION: DO NOT OVERFILL THE SYSTEM

Close the suction connection on the gage manifold.

9. Refrigeration System Data

A. System Capacity:

Evap. Temp. (Deg F)	Capacity (BTUH)	Power (watts)	Water Consumption (GPM)
-10	49,000	6,900	9.6
-20	38,200	6,200	7.4
-30	28,800	5,500	5.7
-40	21,200	4,900	4.3

Note: These figures are for 60Hz systems. For 50 Hz systems multiply above figures by 0.833 (50Hz/60Hz).

B. Refrigerant Charge:

Refrigerant	2735-6	2735-7	2735-8	2735-9	2735-10
R-404A (lbs)	17	18	19	20	21
R-50t (lbs)	17	18	19	20	21

C. Compressor Oil:

R-404A or R-507 Refrigerant—Mobil Arctic 22C Synthetic Refrigeration Oil #998-E022-01.

D. Oil Safety Control:

9 psi fixed differential, 9-120 seconds time delay, manual reset.

E. Low Pressure Control:

(R-502)	Cut out at 1 + or –1 psig. Cut in at 11 + or – 1 psig.
(R-404A or R-507)	Cut out at 2 + or –1 psig. Cut in at 12 + or – 1 psig

F. Relief Valve Setting:

350 psig

G. Setting High Pressure Control:

The high-pressure control should be set to turn off the compressor at 325 psig discharge pressure.

H. Oil Return Thermostat:

Set at 105 Deg F Close, 90 Deg F Open, fixed differential.

10. Hydraulic System Data

A. Oil Charge:

Four quarts of Dectol 21, Non-Foaming, Non-Detergent, 400 Deg F Flashpoint, 3 Deg F to 5 Deg F Pour Point. Viscosity: 210SSU at 100 Deg F. Viscosity Index: 100.

Or Dexron II Automotive transmission fluid.

B. Control Settings:

Hydraulic Pressure Limit Switch: 600 psig Open, 500 psig Close
Hydraulic Pressure Relief Valve: 1000 psig

Parts List

Dole Part No.	Description	NO. REQD.
04-120	Copeland Compressor No. 9RB1-0760-TFC for 208-220/3/60 Unit	1
04-110	Copeland Compressor No. 9RB1-0760-TFM for 380/3/50 Unit	1
04-115	Copeland Compressor No. 9RB1-0760-TFD for 440/3/60 Unit	1
04-116	Copeland Compressor No. 9RB1-0760-TFE for 550/3/50	1
24-101	Crankcase Heater (Indeeco No. 14-5979-2)	1
04-121	Copeland Compressor Cooling Fan Assy, No. 998-1307-00	1
05-082	Standard Refrigeration No. SST-500 Condenser for Inland Operation	1
05-084	Standard Refrigeration No. SST-500-CN Condenser for Dockside Seawater Application	1
05-086	Standard Refrigeration No. SST-500-CN Condenser with two liquid outlets for Shipboard Seawater Application	1
05-085	Standard Refrigeration No. SST-500 Condenser with two liquid outlets for shipboard Fresh Water Application	1
10-113	Furnas Def. Purpose Contactor, 240 VAC, 50/60 Hz, 3 Pole, N. O. 40 Amp	1
31-103	Temprite #503 Oil Separator	1
31-202	Phillips No. 2040SLD Injector with type 9-6-8 Distributor And No. 36 Nozzle (for 6 Station Unit)	1
31-203	Phillips No. 2040SLD Injector with type 9-6-9 Distributor And No. 36 Nozzle (for 7 Station Unit)	1

Parts List (Continued)

Dole Part No.	Description	NO. REQD.
31-205	Phillips No. 2040SLD Injector with type 9-6-10 Distributor And No. 36 Nozzle (for 8 Station Unit)	1
31-205	Phillips No. 2040 SLD Injector with type 9-6-11 Distributor And No. 36 Nozzle (for 9 & 10 Station Units)	1
29-076	Horizontal Surge Drum with glass (for inland and dockside units only)	1
29-084	Horizontal Surge Drum with side glass (for shipboard units Only)	1
31-406	Detroit No. 300-8 Drier-Filter	1
06-019	Hi-Lo Pressure Control, #P70LN	1
07-115A	½HP Hydraulic Power Unit	1
7511-AS9	Hydraulic Power Unit Assy	1
21-006	Marshalltown Fig. No. 78, 2-1/2 inch dial, 0-1500 psi Pressure Gage	1
07-002	Fluid Product 2-inch x 16-inch Hydraulic Cylinder with 3-3/4 inch Rod Extension	1
28-217	Republic Angle Relief Valve No. 621-5-1/4-2	1
10-203	Allen-Bradley Push Button Switch – Lower, No. AB HK 6A	1
10-204	Allen-Bradley Push Button Switch – Raise, No. AB HK 2A	1
10-202	Allen-Bradley No. HK 2A “on-OFF” Switch	1
28-121	Sporlan Direct-Acting Solenoid Valve, #B651, 240VAC coil	1
06-074	PennThermostat A19CAC-1	1
06-134	Penn No. P45NCA-49 Low Oil Pressure Safety Switch	1

Parts List (Continued)

Dole Part No.	Description	REQD. NO.
28-287	Henry Valve No. 5232, ¼inch MPT Relief Valve, set at 350 psig	1
11-701	ETA Products No. 44-100-P20 Manual Reset Thermal Circuit Breaker, 0.5 Amp	1
11-703	ETA Products No. 44-100-P20 Manual Reset Thermal Circuit Breaker, 4.5 Amp	1
28-204	Penn No. 246PO6AR, ¾inch FPT Water Regulating Valve, (for fresh water applications only)	1
28-209	Penn No. 246MPO6AR, ¾inch FPT Water Regulating Valve, with bronze and monel body (for Seawater)	1

Table 1 - Model 2735 Freezing Data

	Max Opening	3 1/8"	2 5/8"	2 1/8"	1 3/4"	1 1/2"
Product	**Product**		**Volume (cu ft of product)**			
Thickness (in.)	**Package**	**2735-6**	**2735-7**	**2735-8**	**2735-9**	**2735-10**
0.75	plastic film	2.21	2.58	2.95	3.32	3.69
1	plastic film	2.95	3.45	3.94	4.43	4.92
1.25	plastic film	3.69	4.31	4.92	5.54	
1.5	plastic film	4.43	5.17	5.91	6.64	
1.75	plastic film	5.17	6.03	6.89		
2	plastic film	5.91	6.89			
2.5	plastic film	7.38				
3	plastic film	*				

Note:Based on 90% plate coverage

Product	**Product**	**Freezer Capacity (pounds product/cycle)**				
Thickness (in.)	**Package**	**2735-6**	**2735-7**	**2735-8**	**2735-9**	**2735-10**
0.75	plastic film	148	173	198	223	247
1	plastic film	198	231	264	297	330
1.25	plastic film	247	289	330	371	
1.5	plastic film	297	346	396	445	
1.75	plastic film	346	404	462		
2	plastic film	396	462			
2.5	plastic film	495				
3	plastic film	*				

Note: Based on 67lb/cu ft density

Product	**Product**		**Required Cooling (BTU)**			
Thickness (in.)	**Package**	**2735-6**	**2735-7**	**2735-8**	**2735-9**	**2735-10**
0.75	plastic film	20329	23717	27105	30493	33881
1	plastic film	27105	31622	36140	40657	45174
1.25	plastic film	33881	39528	45174	50821	
1.5	plastic film	40657	47433	54209	60986	
1.75	plastic film	47433	55339	63244		
2	plastic film	54209	63244			
2.5	plastic film	67762				
3	plastic film	*				

Product	**Product**		**Freezing Capacity** (pounds product/hour)			
Thickness (in.)	**Package**	**2735-6**	**2735-7**	**2735-8**	**2735-9**	**2735-10**
0.75	plastic film	180	180	180	180	180
1	plastic film	180	180	180	180	180
1.25	plastic film	180	180	180	180	
1.5	plastic film	180	180	180	180	
1.75	plastic film	180	180	180		
2	plastic film	180	180			
2.5	plastic film	180				
3	plastic film	*				

Note: Based on 7 1/2 HP motor, 60hz electrical service and 90 degree condensing temperature

Product	**Product**		**Freezing Time** (hours)			
Thickness (in.)	**Package**	**2735-6**	**2735-7**	**2735-8**	**2735-9**	**2735-10**
0.75	plastic film	0.82	0.96	1.10	1.24	1.37
1	plastic film	1.10	1.28	1.47	1.65	1.83
1.25	plastic film	1.37	1.60	1.83	2.06	
1.5	plastic film	1.65	1.92	2.20	2.47	
1.75	plastic film	1.92	2.24	2.56		
2	plastic film	2.20	2.56			
2.5	plastic film	2.75				
3	plastic film	*				

* Contact Dole Engineering
Note: Based on 67lb/cu ft density

Limited Warranty

Dole Refrigerating Company
1420 Higgs Road
Lewisburg, TN 37091

Terms of Limited Warranty- Dole Plate Freezers

Limited Warranty

Dole warrants to the original purchaser-user that the new product is free from defects of manufacture, material and/or workmanship at the time of shipment from **Dole**. This warranty does not extend to future performance. Any claims against **Dole** must be initiated within the time periods stipulated in paragraphs following, and not later.

Dole obligation, and purchaser-user's exclusive remedy, under this warranty is limited to furnishing a new or rebuilt part in exchange for a part which, is both defective and in-warranty, within 12 months from the date of startup, or 14 months from date of shipment from **Dole**, whichever is earlier.

This warranty is given to the original purchaser-user in lieu of all other warranties and shall not be assignable.

Limitations And Exclusions

This warranty shall not apply to:

a. Spoilage or loss of perishables for any reason
b. Refrigerant
c. Charges for installation of any part or parts furnished under this warranty
d. Transportation costs of the new or rebuilt part to the installation site, or of the defective part from the installation site to **Dole**.
e. Normal service and maintenance costs.

Dole shall not be liable for defects or damage which result from or are caused by:

a. Improper installation, wiring, electrical current characteristics, or maintenance.
b. Accident, misuse or abuse, fire, flood, alteration and/or misapplication of the product.
c. Default or delay in performance caused by war, government restrictions, strikes, material shortages and contingency beyond the control of **Dole**, or acts of God.

Anything in the warranty notwithstanding. **ALL IMPLIED WARRANTIES OF FITNESS FOR PARTICULAR PURPOSE AND MERCHANTABILITY ARE EXCLUDED.**

MANUFACTURER EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGE OR PERSONAL INJURY FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.