

S6161-S8-FSE-010

MAINTENANCE MANUAL
FOR
FREEZER
MODEL F41-2M-SN-MLR
WITH ILLUSTRATED PARTS BREAKDOWN

(COSPOLICH REFRIGERATOR COMPANY)
KENNER, LA 70062



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FOREWORD

This technical manual covers the description, operation and maintenance of the F41-2M-SN-MLR Freezer installed aboard the Coastal Minehunter (MHC) 55. This technical manual also provides an explanation, capabilities and limitations of the equipment while furnishing a reference of technical information for required members of the crew.

The Technical Manual is divided into the following chapters:

- Chapter 1 - General Information
- Chapter 2 - Operation
- Chapter 3 - Functional Description
- Chapter 4 - Scheduled Maintenance
- Chapter 5 - Troubleshooting
- Chapter 6 - Corrective Maintenance
- Chapter 7 - Parts List
- Chapter 8 - Installation
- Chapter 9 - Assembly Drawings
- Chapter 10 - Assembly and Installation Instructions
- Glossary

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LIMITED WARRANTY

Cospolich warrants their cabinets to consumers only against defects in material or workmanship under normal use and service for a period of one year from the date of its original purchase by a consumer. We will repair or replace at our option, any part, assembly or portion there of which Cospolich's examination discloses to be defective. Cospolich will pay the labor costs for the repair up to twelve (12) months from date of purchase.

TERMS

EXCLUSIONS

Cospolich's obligations under this warranty shall not extend to any malfunction or other problem caused by unreasonable use, such as but not limited to improper setting of controls, improper installation, improper voltage supply, loose electrical connections or blown fuses, and damage not attributable to a defect in workmanship. This warranty shall not apply to any cabinet or component part which has been subject to any accident, alteration, abuse, misuse to any damage caused in fire, flood, or other acts of God and to any product which has been serviced by an unauthorized service person or company.

TO SECURE WARRANTY SERVICE

If you claim a defect under this warranty, direct your claim to whom you purchased the product giving model, serial and code numbers a description of the problem.

If the above procedure fails to satisfy your claim you may write directly to the DIRECTOR OF CUSTOMER RELATIONS, COSPOLICH REFRIGERATOR CO. INC. 949 Industry Rd. Kenner, Louisiana 70062. LISTING THE ABOVE.

There is no other express warranty on the Cospolich units except as stated herein. Any and all implied warrants of fitness and merchantability are limited in duration to the duration of this Warranty. The liabilities of Cospolich are limited solely and exclusively to replacement as stated herein and do not include any liability for any incidental, consequential, or other damages of any kind whatsoever, whether any claim is based upon theories of contract negligence or tort. Some states do not allow limitations on how long an implied warranty lasts, or the exclusion of limitations of incidental or consequential damages. So the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

SAFETY SUMMARY

GENERAL SAFETY NOTICES

The following general safety notices supplement specific warnings and cautions appearing in this manual. General and specific precautions must be understood and applied during operation and maintenance of equipment covered herein. The commanding officer or other authority will issue orders necessary for any situations not covered in these general and specific safety precautions.

DO NO REPAIR OR ADJUST ALONE

Under no circumstances should repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist due to retention of charges by capacitors. Circuits must be grounded and all capacitors discharged prior to attempting repairs.

TEST EQUIPMENT

Make certain test equipment is in good condition. If a test meter must be held, ground the case of the meter before starting measurement. Do not touch live equipment or personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded; these devices should not be held when taking measurements.

FIRST AID

An injury, no matter how slight, should never be unattended. Always obtain first aid or medical attention immediately.

RESUSCITATION

Personnel working with or near high voltages shall be familiar with approved resuscitation methods. If someone is injured and stops breathing, initiate resuscitation immediately. A delay could cost the victim's life. Refer to Naval Ships Technical Manual, Chapter 300.

GENERAL PRECAUTIONS

The following general precautions are to be observed at all times:

1. All electrical components associated with equipment shall be installed and grounded in accordance with applicable Navy regulations and approved shipboard practices.
2. All maintenance operations shall comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series.
3. Special precautionary measures are essential to prevent applying power to equipment at any time maintenance work is in progress.
4. Do not make any unauthorized alterations to equipment.
5. Before working on electrical equipment, use a voltmeter to ensure that system is not energized.
6. All circuits not known to be DEAD must be considered LIVE and dangerous at all times.
7. Do not wear loose clothing while working around rotating parts of machinery.
8. When working near electricity, do not use metal rules, flashlights, metallic pencils, or any other objects having exposed conducting material.
9. Be sure to deenergize all equipment before connecting or disconnecting meters or test leads.
10. When connecting a meter to terminals for measurement, use range higher than expected voltage.
11. Before operating equipment or performing any tests or measurements, ensure that frames of all motors and starter panels are securely grounded.
12. Ensure that area is well ventilated when using cleaning solvent. Avoid prolonged breathing of fumes and solvent contact with skin or eyes.

WARNINGS AND CAUTIONS

Specific warnings and cautions covered by this manual, with page references, are summarized below for emphasis.

WARNING

Prior to any cleaning of the system involving placing of hands in areas with moving parts, the system should be deactivated by disconnecting the power supply cord to prevent personnel injury. (page 2-3)

WARNING

The system should be deenergized when it is being checked for leaks to prevent personnel injury. (page 4-3)

WARNING

Prior to performing any work on the refrigeration system it is required that the unit be deenergized to prevent personnel injury. (page 6-1)

WARNING

It is unlawful to vent any refrigerant into the atmosphere. (page 6-3)

WARNING

Overcharging a refrigerant system can be dangerous to personnel. (page 6-4)

WARNING

Low or excessive voltage can severely injure personnel and damage the electrical system.
(page 8-2)

CAUTION

It is necessary to allow at least 2 1/2" clearance at the rear of the cabinet for ventilation to prevent damage to the equipment. (page 10-7)

CHAPTER 1

GENERAL INFORMATION

1-1 INTRODUCTION

This technical manual provides information on the installation, operation, maintenance, and inspection of this model F41-2M-SN-MLR freezer manufactured by Cospolich Refrigerator Co. Inc., Kenner, La. A complete parts breakdown is provided.

1-2 SCOPE OF THE MANUAL

This technical manual provides sufficient information for maintenance of the equipment.

1-3 EQUIPMENT DESCRIPTION

The freezer consists of the following parts:

- a. Storage Compartment - The insulated food storage compartment is a clear storage area. Included in this area are the adjustable shelves.
- b. Doors - Access to the storage compartment is through hinge mounted insulated doors. The doors are fully "gasketed" to provide a tight seal.
- c. Condensing Unit Compartment - This area is located below the storage compartment and contains the condensing unit along with the necessary controls.
- d. Evaporator Coil - The evaporator coil is located in the storage compartment and is responsible for distributing the cold air associated with the refrigeration system.
- e. Cabinet - The cabinet is the enclosure in which all of the above items are housed.

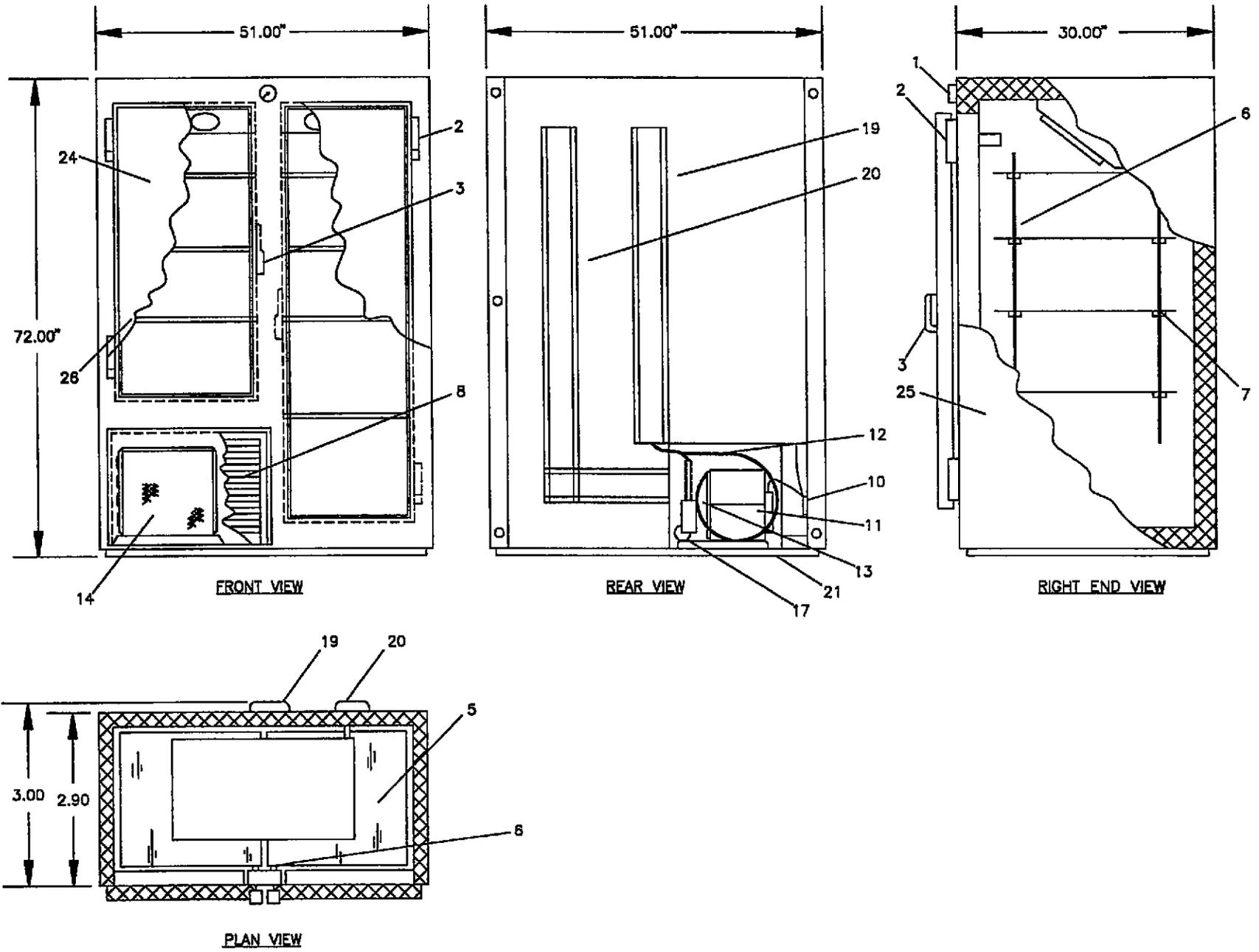
1-4 EQUIPMENT SUPPLIED

The freezer is shipped from the factory fully assembled except for the adjustable shelving which will require positioning on the pilaster standards as needed. The complete assembly is palletized and crated to minimize the possibility of damage in shipping and storage. Table 1-1 is a list of leading particulars for the unit and is shown in figure 1-1.

Table 1-1. Leading Particulars

<u>MANUFACTURER:</u>	COSPOLICH REFRIGERATOR CO., INC. Kenner, La. 70072
<u>TYPE:</u>	Marine Refrigerator Unit Cospolich Model F41-2M-SN-MLR
<u>PURPOSE:</u>	Storage of Frozen Food Items
<u>ELECTRICAL REQUIREMENTS:</u>	Power supply - 115 volt AC 1 phase Operating Current - 10.7 AMPS Maximum Power Demand - 15 AMPS
<u>DRAIN REQUIREMENTS:</u>	None
<u>WATER REQUIREMENTS</u>	None
<u>MISCELLANEOUS:</u>	Weight - Shipping: 640 lbs. (Approximate) Operating: 575 lbs. (Approximate) Volume - (Crated): 97 Cubic Feet

Figure 1-1. Freezer (Sheet 1 of 2)



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LEGEND

ITEM	DESCRIPTION
1	DIAL THERMOMETER
2	HINGE
3	LATCH
4	NOT USED
5	SHELF
6	PILASTER
7	SHELF CLIPS
8	LOUVERED GRILL
9	PRESSURE CONTROL
10	ELECTRICAL CONTROL PANEL
11	COMPRESSOR
12	SIGHT GLASS
13	RECEIVER
14	CONDENSER
15	BREAKER STRIP (FULL DOOR)
16	BREAKER STRIP (3/4 DOOR)
17	FILTER DRYER
18	NOT USED
19	REAR TUBING COVER (DRAIN
20	REAR TUBING COVER (REF LINES)
21	NOT USED
22	NOT USED
23	ASSEMBLY DOOR (FULL DOOR)
24	DOOR ASSEMBLE (3/4 DOOR)
25	DOOR GASKET (FULL DOOR)
26	DOOR GASKET (3/4 DOOR)

Figure 1-1. Freezer (Sheet 2)

CHAPTER 2

OPERATION

2-1 INTRODUCTION

This model freezer is a heavy duty piece of equipment designed for continuous use in a shipboard environment. It incorporates automatic controls to regulate the cycling of the refrigeration system.

2-2 CONTROLS AND INDICATORS

Refer to table 2-1 for a list of controls and indicators.

Table 2-1. Controls and Indicators

Index No.	Name	Type	Function
1.	Low Pressure Switch	Contact Points	Cycles the refrigerator system (automatic)
2.	Suction Valve	Manual Plunger Valve	Isolate suction at the compressor
3.	Discharge Valve	Manual Plunger Valve	Isolate discharge line at receiver
4.	Expansion Valve	Manual Stem	Regulates the flow of liquid refrigerant to the evaporator coil
5.	Power Control Switch (On/Off).	Contact Points	Terminates all of the electrical into and past the supply cord.

2-3 START UP PROCEDURE

The refrigeration system is completely factory assembled, precharged, and ready for operation. To energize the system it is only necessary to locate the power supply cord and connect it to a proper electrical supply source. Once the supply cord has been connected to a power source the unit can be activated by flipping the power control switch to the ON position (Refer to table 2-2).

Table 2-2. Start Up Procedure

Operation	Results
1. Activate system by inserting electrical service cord into electrical supply source and flip power control switch	Compressor should immediately come on line along with the condenser fan and the evaporator fan
2. Locate liquid refrigerant indication glass mounted on the receiver	Once the system has been operating for two minutes, the glass should appear clear and full of liquid refrigerant
3. Wait 15 minutes	The temperature in the storage area should begin to approach the "green zone" indicating adequate operation
4. Wait 3 hours.	Once the operating temperature has been reached stocking of the containment area can begin.

2-4 SHUT DOWN PROCEDURE

- a. To shut down disconnect the electrical supply cord and open the doors allowing the cabinet interior temperature to equalize with the room temperature (Refer to table 2-3).
- b. A mild detergent diluted in warm water should be used to wash down the interior and exterior surfaces of the cabinet.

Table 2-3. Shut Down Procedure

Operation	Results
Deenergize the system by flipping the power control switch OFF and disconnecting the electrical supply cord.	Once the system is deenergized the condenser fan, and the evaporator fan will cease operation.

WARNING

Prior to any cleaning of the system involving placing of hands in areas with moving parts, the system should be deactivated by disconnecting the power supply cord to prevent personnel injury.

2-5 PREPARATION FOR AN EXTENDED PERIOD OF INACTIVITY

This unit is designed for continued use at automatically cycled intervals. In case of an extended shut down both the mechanical refrigeration system as well as the food storage compartment must be serviced as shown in table 2-4.

Table 2-4. Shut Down Procedures for Extended Period

Operation	Results
1. Fully closed discharge valve at the receiver	Compressor will pump liquid refrigerant from system to receiver
2. Fully close suction valve at the compressor	This will isolate the refrigerant between the two valves
3. Disconnect Power Supply	Deenergizes system
4. Clean and wipe dry the food storage compartment.	This will reduce the odor buildup during shut down.

CHAPTER 3

FUNCTIONAL DESCRIPTION

3-1 SYSTEM DESCRIPTION

This model freezer is a self-contained, automatically controlled, continuous duty perishable food storage system. It is designed with the intent and purpose of storing food items.

The operating temperature is automatically monitored by a pressure control which is factory set to maintain a predetermined adequate condition.

The equipment is installed in two basic compartment assemblies. They are:

- a. Condensing Unit Compartment - This area is located below the storage compartment and contains the condensing unit along with the necessary controls.
- b. Storage Compartment - This insulated food storage area is a clear storage area. Included in this compartment are the adjustable shelving.

3-2 SYSTEM OPERATION

The design of the refrigerated cabinet focuses primarily on the safe storage of food products requiring refrigeration. In its engineering, considerable attention was placed on its functional as well as its serviceable capabilities.

The refrigeration system is a closed loop system. Barring a leak in the system, the adding of refrigerant is not required, however, a periodic check of its level is called for to insure that the system operates at the optimum level at which it was designed.

The condensing unit is located just below the refrigerated storage area. Also located in this compartment is the electrical control panel which contains the power switch and terminal box. On models which feature a air evaporator, a heated condensation evaporator is provided, it also is located in this compartment.

Special care in the initial loading of the storage compartment should be taken. It is suggested that the loading be scheduled in three equal portions allowing three hours between each loading.

The chilled food compartment is designed for the storage of previously frozen food and the freezing of small amounts of chilled items. It is a general rule that adequate spacing be allowed between storage items to allow proper air circulation.

CHAPTER 4

SCHEDULED MAINTENANCE

4-1 INTRODUCTION

To insure the longest and trouble free operation, a thorough periodic maintenance schedule is required. The maintenance system should be aimed at maximizing the efficient utilization of maintenance personnel, minimizing down time, and providing the orderly acquisition of spare parts support.

The Cospolich Navy refrigeration cabinet will generally be operated aboard active Naval vessels, where scheduled maintenance is performed in accordance Maintenance Index Plans. This chapter of the manual is intended as an alternate to any standard Naval maintenance program which may exist. The preventive maintenance schedule is based upon similar maintenance requirements for commercial refrigeration equipment.

4-2 PREVENTIVE MAINTENANCE ACTION INDEX

In the event that there is not a ships maintenance index plan, we have formulated our schedule for period maintenance shown in Table 4-1.

4-3 PREPARATION FOR MAINTENANCE

Since many of the area affected in the maintenance schedule are electrically supplied it may be necessary to deenergize the system when making these inspections.

4-4 MAINTENANCE

Refer to the following paragraphs and table 4-1.

4-4.1 Weekly Inspection

- a. The unit should first be deenergized by switching to the "OFF" position; the toggle switch is located on the control panel in the condensing unit compartment.

NOTE

It is necessary to first remove the front air grill by lifting it straight up then moving the bottom out and down.

- b. Using a vacuum or small hand broom brush the condenser coil in a vertical motion to remove any dust or debris which may have accumulated.

Table 4-1. Preventive Maintenance Action Index

Item	Frequency	Description
1.	Weekly	Inspect condenser coil to make certain that air flow is not hampered and that it is clear of dust and debris.
2.	Monthly	<ul style="list-style-type: none"> a. Inspect and clear drain line. b. Check the liquid refrigerant sight glass to make certain that the system is fully charged. c. Wipe down the interior liner with a mild soap and warm water solution. Be certain to dry thoroughly. d. Check both the condenser fan motor and the evaporator fan motor to make certain that they are operational and that the fans are tight and secure. (evaporator motor on forced air evaporator units only). e. Wipe door gaskets and breaker strips with a damp cloth. f. Clean exterior with mild soap and warm water and dry thoroughly.
3.	Annually	<ul style="list-style-type: none"> a. Slide condensing unit from compartment and check all joints and fittings for any signs of leaks or fatigue. b. Inspect electrical connection to make certain that there is a good contact and that wires are neither weakened or frayed. c. Check the integrity of the cabinet.

Table 4-1. Preventive Maintenance Action Index - Cont

Item	Frequency	Description
4.	Ships Overhaul	<ul style="list-style-type: none"> a. Replace door gaskets. b. Inspect motor shafts for noise or wear. c. Inspect electrical controls and wiring. d. Inspect door latch and hinges. e. Recalibrate thermometer.

4-4.2 Monthly Inspection

- a. Check the drain line at both the inlet and outlet ends to make certain that there are no obstructions. It is not recommended to use any chemicals in clearing a clogged drain. The preferred method of unstopping an obstructed drain is to use 60 lbs. of compressed air. (Forced air evaporator models only).

Simply remove the drain line at the evaporator coil and attach an air line to it.

- b. With the unit in a cooling cycle, use a flashlight and locate the liquid refrigerant sight glass. If the compressor has been running low for 3 minutes there should not be any bubbles visible.

WARNING

The system should be deenergized when it is being checked for leaks to prevent personnel injury.

- (1) If there should be a presence of bubbles it will be necessary to determine if there is a refrigerant leak and to locate and repair it.
- (2) Using a halide or electronic leak detector, check all fittings and connections for a leak.
- (3) Should a leak be found on a flared fitting, many times it can be repaired by simply tightening the brass flare nut a quarter of a turn. If this does not resolve the problem it may be necessary to reflare the tubing.

- (4) If a leak is found on a brazed joint, it will be necessary to pump down the systems refrigerant charge to remedy the problem.
 - (5) To pump the refrigerant into the receiver you must first connect service gauges to the system at the suction valve (on compressor) and liquid valve (on the receiver). Purge the gauges prior to opening the systems valves to avoid contamination. Run the receiver (liquid or high pressure) valve all of the way in to stop refrigerant from exiting the receiver. Start the unit up and allow it to run until the suction or low pressure gauge reads 5 lbs. When it does deenergize the system.
 - (6) At this point the necessary repairs can be made to mend the leaks.
- c. Using a mild non-abrasive detergent and soft cloth wipe the interior liner beginning with the top and working down. Also wipe the gasket as well as where it sits on the cabinet exterior.
 - d. With the front air grill removed. Unbolt the condensing unit and slide it out. With the unit off, check the fan motor and make certain it is not loose. Inspect the fan for cracks and make sure it is tight on the motor.

To inspect the evaporator motor, first turn the unit off. Then remove the drain line from the evaporator pan, loosen the four screws that hold this shroud. Lower the shroud and disconnect the polarized electrical connection. With the shroud out of the cabinet, proceed to inspect the motor mounting bolts as well as the fan for cracks or excessive play (on forced air systems).

- e. Using a mild detergent and water, wipe the vinyl gasket. Make certain to also clean under the gasket to remove any mildew or residue.
- f. Using a mild detergent (non-abrasive) and warm water, wipe the cabinet exterior. When cleaning, always follow the grain of the stainless steel so as not to scratch or mar the finish.

4-4.3 Annual Maintenance

- a. Slide condensing unit compartment and check all of the refrigerant lines for leaks or fatigue. Make certain that no exposed copper tubing is in contact with any other metal surface. If the case exist, install an insulating material between the two metal components.

- b. With the condensing unit out and the breaker at the main electrical panel OFF, inspect the systems wiring. Look for a tight fit of all connections and make certain that the wire restraining devices are tight. Inspect all wires and cords, paying particular attention to nicks or aging cracks in the insulation.
- c. Visually inspect the outer panels and components of the cabinet. Check screws and bolts to make certain they are tight. Check the bolts which secure the base frame to the deck to make certain they are tight.

4-4.4 Ships Overhaul

- a. Replace the door gaskets. To accomplish this it is first necessary to remove all of the products from the compartment. Take the door off of the cabinet and lay it on a flat surface. Lift the gasket flange and remove the fasteners that secure the gasket. The new gasket is replaced by reversing the process.
- b. Inspect all motors and shafts for both noise and wear. If they should show signs of age replace them.
- c. With the main power off, remove the condensing unit from its compartment and inspect all wiring. Also remove the cover from the controls and check them to make certain they are operational and do not show signs of wear.
- d. Inspect the operation of the door latch assembly. Look into the latch to make certain that the moving parts do not show any signs of wear. Check that the screws are tight on the latch and strike. To check the hinges, open the door at a 90 degree angle to the cabinet. With a little pressure lift up the outer edge of the door. If there is an upward movement of 1/2", replace the hinges.
- e. To recalibrate the thermometer remove it from the cabinet. Using a small flat screwdriver remove the lens. Prepare an ice water bath and submerge the bulb continually moving it. The indicator dial should read 32 degrees F. If it does not, the thermometer can be calibrated by placing your index finger on the opposite side of the needle that it needs to move. Using a flat screw driver turn the screw at the center of the dial 1/4 turn in the direction you want to move the dial. Repeat the procedure until you reach the desired temperature.

CHAPTER 5

TROUBLESHOOTING

5-1. INTRODUCTION

This chapter will assist in a systematic check of components in determining any cause of equipment failure.

It will be necessary that the individual involved in the troubleshooting operation be familiar with the function of the equipment as described in Chapter 3.

5-2. TROUBLESHOOTING GUIDE

Tables 5-1 and 5-2 list the most common symptoms which may be experienced and the recommended corrective action. The tables are separated into electrical maintenance, mechanical maintenance, and operator's actions.

Table 5-1. Mechanical and Electrical Troubleshooting Guide

Symptom	Possible Failure	Remedy
Unit does not operate	1. Control failure	Adjust control or replace
	2. Incorrect voltage	Correct
	3. Failed compressor.	Replace.
Unit runs continuously	1. Low on refrigerant	Leak check system and recharge
	2. Control failure	Adjust control or replace
	3. Bad connection at TXV	Check and secure sensor bulb to suction line
	4. Restricted air flow or dirty condenser	Rectify air flow problem and clean condenser
	5. Bad condenser fan motor	Check and replace if necessary

Table 5-1. Mechanical and Electrical Troubleshooting Guide -CONT

Symptom	Possible Failure	Remedy
Unit runs continuously	6. Expansion valve stuck open	Replace
	7. Compressor failure	Replace
	8. Ineffective door seal	Adjust door strike
	9. Circulation in storage restricted.	Redistribute food for even air flow.
Low head pressure	1. Defective compressor	Replace
	2. Low refrigerant	Leak check system and recharge
	3. Ambient temperature too low.	Raise room temp.
High head pressure	1. Blocked or dirty condenser	Clean and remove any obstructions
	2. Ambient temperature too high	Improve room temperature
	3. Systems contains air	Evacuate, change the filter dryer, and recharge
	4. Refrigerant overcharge.	Reduce refrigerant in the system.
Short cycling	Maladjusted control.	Adjust control.

Table 5-2. Operators Troubleshooting Guide

Symptom	Possible Failure	Remedy
Unit does not cool	1. Blown fuse	Replace fuse
	2. Bad connection at supply cord	Check supply cord at outlet
	3. Ill fitting gasket.	Tighten strike on door latch.

CHAPTER 6

CORRECTIVE MAINTENANCE

6-1 INTRODUCTION

This chapter focuses on the instruction needed in the removal and replacement of certain components. We will also address the repair of components not listed under the schedule maintenance index covered in Chapter 4.

Certain components are considered to be sufficiently acceptable as to be repairable by standard procedures. This repair data is limited to listing of part numbers of replaceable parts in Chapter 7.

6-2 REPAIR PROCEDURES

Refer to the following paragraphs and figure 6-1 for the repair procedures.

6-2.1 Replacement of Motor Compressor

WARNING

Prior to performing any work on the refrigeration system it is required that the unit be deenergized to prevent personnel injury.

- a. Prior to beginning the change out of the compressor, it is first necessary to disconnect electrical power to the unit. This should be done by turning off the circuit in the main supply panel. It should be noted on the panel that the refrigerator is being serviced and the breaker must remain off.
- b. To access the condensing unit, you must first remove the ventilation grill on the lower front of the cabinet. This is accomplished by lifting the grill vertically one inch, pulling out the bottom, and lowering the grill from the retainer angles.
- c. With the grill removed, use a 3/8" wrench or socket and ratchet to unscrew the mounting bolt which secures the condensing unit to the cabinet base.

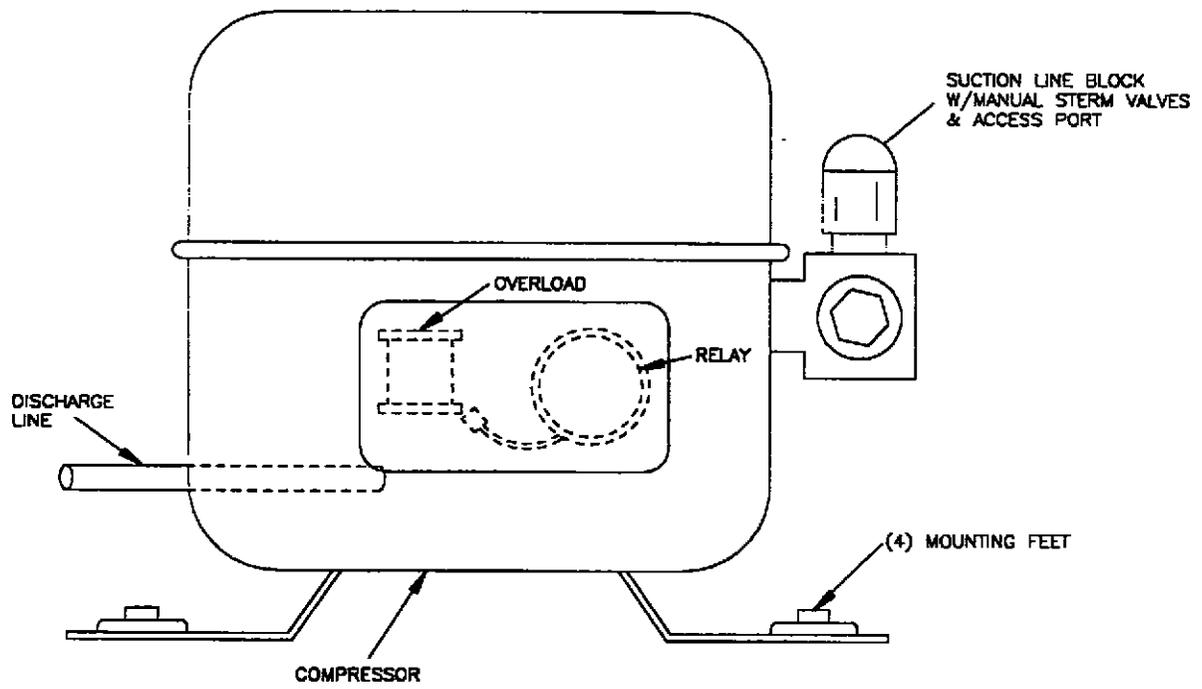


Figure 6-1. Compressor

- d. Once the mounting bolt is removed, carefully slide the condensing unit forward lifting it over the angle-mounting clip at the front of the base. The unit can be pulled completely out of the unit compartment and placed on the deck.
- e. Locate the electrical terminal box on the side of the compressor and remove the front cover. Disconnect the wires from the compressor. Remove the screws which attach the terminal box to the compressor. At this point the compressor will be electrically detached.
- f. Using wrenches, remove the suction valve stem cover caps located on each side of the compressor. Also remove the cap nut on the suction side. With both suction caps nuts off, screw the valve stem in one revolution. This will allow the refrigerant to escape.
- g. Disconnect the hi-side line at the compressor. This is done by heating the brazed connection using an acetylene and oxygen torch set.

WARNING

It is unlawful to vent any refrigerant into the atmosphere.

- h. To remove the low pressure control capillary tube and service fitting, loosen the 1/4" brass flare nut located on the suction valve.
- i. The final step in removing the compressor will be disconnecting it from its mounting. To accomplish this, remove the wire clips located on each of the four feet. This will free the compressor.
- j. To install the new compressor, place it in position on the base and reinstall the four wire clips.
- k. Reattach the suction and discharge valve blocks to the appropriate sides of the compressor.
- l. Reattach the low pressure control capillary tube and service fitting to the suction valve.
- m. Reattach the suction line to the compressor.

- n. In reconnecting the hi-pressure line, it will be necessary to first prepare the line end. Using a fine sand paper or emery cloth, clean the residue on the end. Also clean the connection on the compressor. Apply flux to both ends and braze.
- o. Remove the valve stem cap from the suction valve block on the side of the compressor. Run the valve stem all of the way out, and then in, one turn clockwise.

NOTE

It is recommended that whenever the system is open for a prolonged period, the filter dryer be changed (see section 6-2.4 Replacement of Filter Dryer).

- p. Place the refrigeration service manifold gauge hoses on the suction and hi-side valves. Attach a bottle of refrigerant 12 to the charging hose and charge the system with 150 psi of vapor. Using an electronic leak detector, check the new connects for leaks. Should a leak appear, release the charge and repair the leak. Repeat the leak check process again.
- q. If the system checks out with no leaks, release the charge by disconnecting the charging hose from the refrigerant cylinder and opening the two valves on the manifold.
- r. With the system pressure at zero, connect the vacuum pump and evacuate the system. The pump should run for 1 hour. The vacuum pump should pull the system down to 30 inches of vacuum.
- s. Reattach the electrical terminal box and secure all wiring.
- t. Check the refrigeration tag located on the unit for the number of ounces of R12 to place into the system for start up. Monitor the pressures on both the suction and discharge side of the manifold gauges. Check the sight glass as the temperature begins to fall which located on the receiver. Once the unit has been running for 5 minutes and bubbles continue in the sight glass, it may be necessary to add additional refrigerant (add refrigerant in small amounts to keep from over charging).

WARNING

Overcharging a refrigerant system can be dangerous to personnel.

If the system refrigerant overcharge is sufficient to immerse the major parts of a hermetic compressor in liquid refrigerant, a situation has been created which when followed by unusual but possible circumstances, can lead to compressor housing seam separation or rupture.

The sequence of circumstances which can lead to compressor housing seam separation or rupture occur in the following manner:

- (1) The system overcharge immerses the compressor motor, piston, connecting rods, cylinders, etc., in liquid refrigerant, thereby effectively forming a hydraulic block preventing the compressor from starting. This condition is known as locked rotor.
- (2) Electrical current continues to flow through the compressor motor windings which become, in effect, electric resistance heaters. The heat produced begins to vaporize the excessive liquid overcharge, causing a rapid increase in system pressure.
- (3) If the system compressor protective devices fail for any reason prior or during this locked rotor heating cycle, or cycles, liquid refrigerant may be vaporized sufficiently fast enough to raise the pressure within the system to extremes far in excess of the housing or weld seam design limits.
- (4) In some instances where the amount of refrigerant overcharge is critical in proportion to the system internal volume, the pressure reached can cause a compressor housing seam separation or rupture which can be hazardous.

The remedy to eliminate this exceedingly rare but potential possible hazard is to use correct refrigerant charging amounts and techniques.

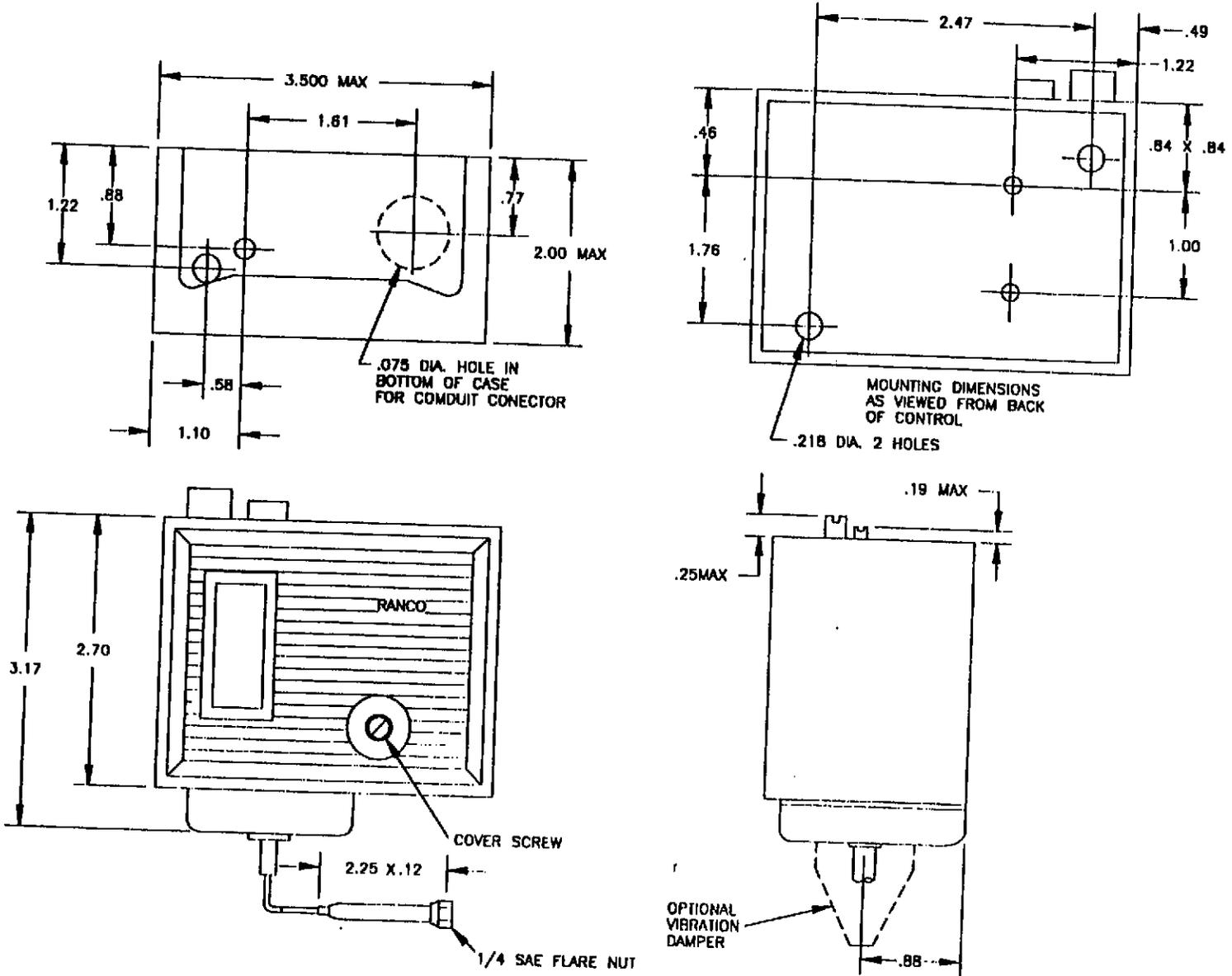
Cospolich Refrigerator Company urges that all individuals responsible for training, teaching, or advising installation mechanics and service personnel, emphasize proper charging techniques and strict adherence to limiting refrigerant charge amounts to those specifically recommended by the manufacturer of the refrigeration, air conditioning, or heat pump system.

6-2.2 Replacement of Low Pressure Control

Refer to steps a. through g. and figure 6-2.

- a. Disconnect refrigerator from electrical service.
- b. Remove control cover and disconnect electrical terminals

Figure 6-2. Low Pressure Control



- c. Disconnect capillary tube.
- d. Remove mounting fasteners on control base and install new control by reversing the procedure.

NOTE

The cabinet temperature (-5 -0 degrees) is regulated by system pressure rather than actual cabinet compartment temperature.

- e. To adjust the control, hook up the service manifold to the suction and discharge valves and crack them to allow the gauges to read.
- f. Coarse adjust the control by using a standard screwdriver by turning the adjustment screws located on the top of the control. Preset the cut in and cut out at 15 lbs. and 0 lbs.
- g. Start the system up. Allow it to run for 5 minutes. Monitor the low side pressure. Fine adjustments will be needed to achieve the required cycling pressures.

NOTE

The control adjustment process can be speeded up by running the suction valve in or out as required to affectively change the pressures.

6-2.3 Replacement of Expansion Valve

Refer to steps a. through d. and figure 6-3.

- a. Shut liquid valve and run compressor until it pumps refrigerant into receiver (low side service gauge will read 0 pounds). Close the suction line valve.
- b. Disconnect the sensor bulb on the suction line.
- c. Disconnect liquid line (1/4") and suction line (3/8"). Remove valve.
- d. Install new valve, reconnect lines and refasten sensor bulb.

NOTE

It is not recommended to adjust the valve super heat as this comes preset from the factory.

SPECIFICATIONS FOR TYPE F VALVE ELEMENT - NON-REPLACEABLE								
REFRIGERANT	TYPE	NOMINAL CAPACITY TONS OF REFRIGERATION	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH - INCHES	CONNECTIONS - INCHES SAE FLARE		NET WT. - LBS	SHIPPING WEIGHT - LBS
	INTERNAL EQUALIZER ONLY				INLET	OUTLET		
12	FF-1/4	1/4	C Z	30	1/4	1/2	1	1 1/2

- ① HAS LONG TAPER 1/4" OD TUBING CAN BE CONNECTED BY USING 1/8" X 1/4" REDUCING FLARE NUT
- ② CONICAL INSERT STRAINER PROVIDED WITH 1/4" INLET. REMOVAL BE STRAINER PROVIDED WITH 1/8" INLET.

CHARGE	BULB SIZE - INCHES REFRIGERANT		
	12	22	502
C	0.50 OD X 3.00		
Z			
ZP			

DIMENSIONS - INCHES CONNECTIONS - SAE FLARE			
INLET	A	B	C
1/4 ELBOW	1.06	1.50	-
3/8 ELBOW	1.25	1.38	-
OUTLET			
3/8	-	-	1.62
1/2	-	-	1.75

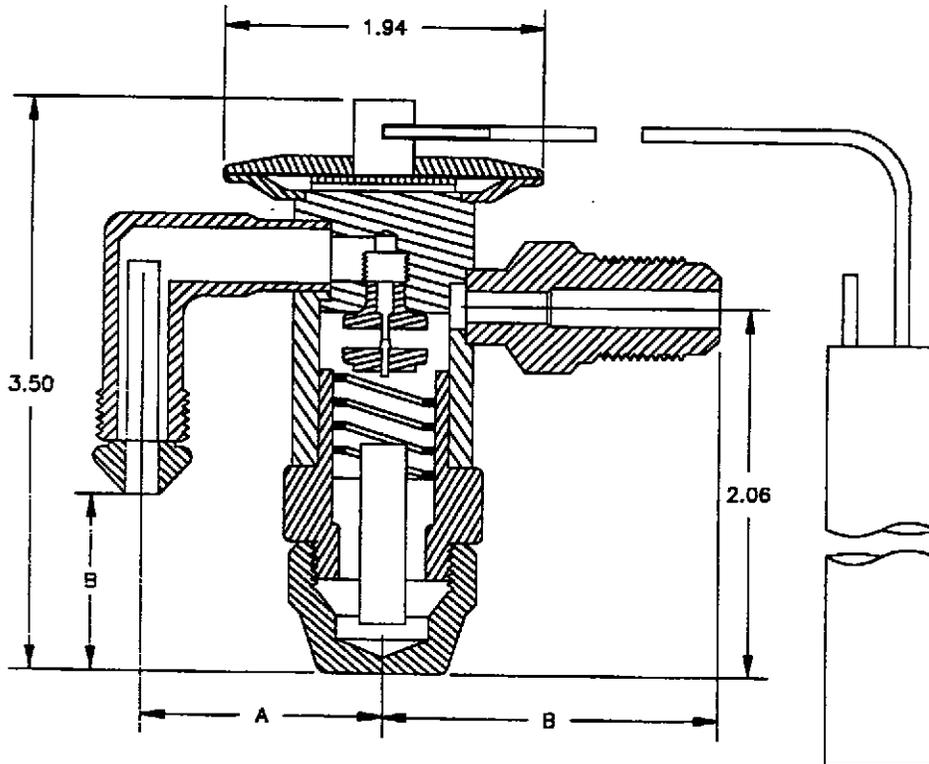


Figure 6-3. Expansion Valve

6-2.4 Replacement of Filter Dryer

- a. Close liquid line valve and run compressor until the low side refrigeration gauge indicates 0 pounds, then close suction valve.
- b. Remove filter dryer from system and replace with new dryer.
- c. Purge system and add refrigerant if needed.

6-2.5 Replacement of Condenser Fan Motor

Refer to steps a. through g. and figure 6-4.

- a. Disconnect all electrical power to the unit.
- b. Remove the condensing unit from the condensing unit compartment.

NOTE

The position of the pulley on the shaft so that there will be proper alignment when it is installed on the replacement motor.

- c. Remove the protective wire shroud.
- d. Disconnect the fan motor leads from the terminal box in the compressor.
- e. Remove the mounting screws at the motor base.
- f. Using an allen wrench, remove the aluminum fan.
- g. To install the new motor reverse the process.

6-2.6 Replacement of Condenser Fan

Refer to steps a. through f. and figure 6-4.

- a. Disconnect all electrical power to the unit.
- b. Remove the front grill by lifting vertically pulling the bottom out slightly and dropping down.
- c. Remove the mounting bolts on the condensing unit base & slide the refrigeration assembly out.
- d. Remove the protective shroud from around motor.

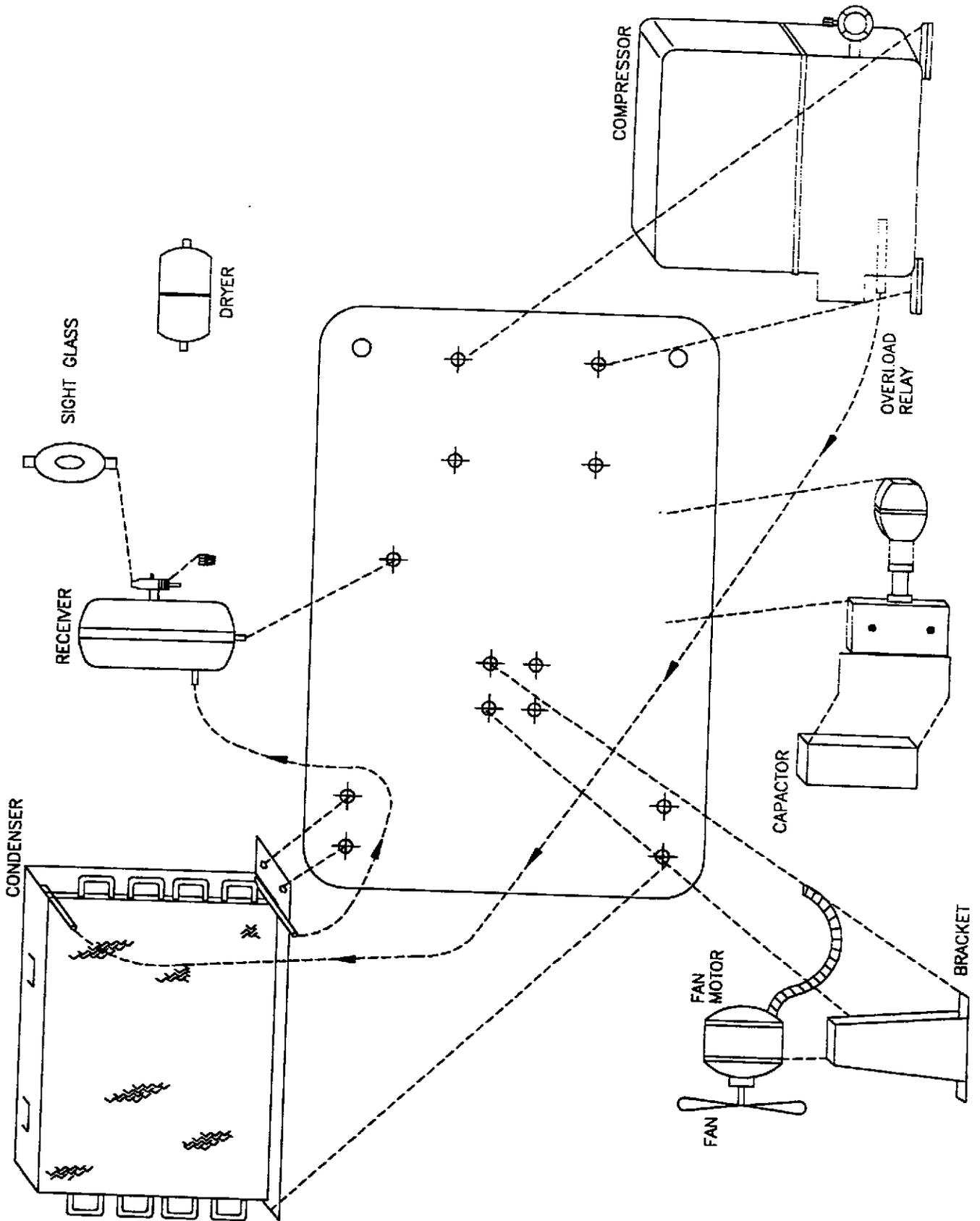


Figure 6-4. Condensing Unit Detail

- e. Using an allen wrench, loosen the set screw on the blade hub and slide blade from the shaft.
- f. Reverse procedure to reassemble.

6-2.7 Replacement of Anti-Condensate Heater

NOTE

The anti-condensate heater is located behind the front edge of the vinyl door opening breakers.

- a. Disconnect all electrical power supply to cabinet.
- b. Remove breakers by exerting pressure at the front edge toward the center of the door. Disconnect anti-condensate wiring connection under rail.
- c. Remove anti-condensate heater from recess in rail.
- d. Replace heater in rail and reconnect electrical.

6-2.8 Replacement of Door Handle

NOTE

It may be necessary to remove the handle assembly in order to get the cabinet through a door opening.

- a. Remove the three side mounting screws in latch.
- b. Remove two screws in strike.
- c. Replace in reverse order.

6-2.9 Replacement of Door Gasket

NOTE

It is suggested that the door be removed from the cabinet and placed face down on a work table.

- a. Remove the fasteners and pull old gasket off retainer.
- b. Clean gasket retainer and immediate area.
- c. Start new gasket into retainer. After gasket is positioned replace fasteners.

NOTE

Avoid cutting the gasket if possible.

6-2.10 Replacement of Door Hinge

NOTE

This procedure will require two people. One to hold the door while the other person removes the attachments screws.

- a. Using a screwdriver, remove door hinge cover, remove the three screws which attach the butt section of the hinges to the cabinet.
- b. With the door detached from the cabinet remove the screws which attach the second part of the hinge to the door.
- c. To install the replacement hinge, reverse the process.

6-2.11 Replacement of Power Switch

- a. First shut off all electrical power going to the refrigerator and tag the switch so that it can't be accidentally turned on.
- b. Remove the front air grill.
- c. Using a flat blade screwdriver, remove the cover plate with switch attached.
- d. Remove the wires connected to the switch.
- e. Unscrew the lock washer and remove the switch.
- f. Reverse the processing in installing the new switch.

6-2.12 Replacement of Shelf Standards

- a. To replace a shelf standard your must first remove all products from the shelves and then remove the shelves.
- b. With the shelves removed, move the standard vertically 1/2" to allow it to slip out to the retainer stud.

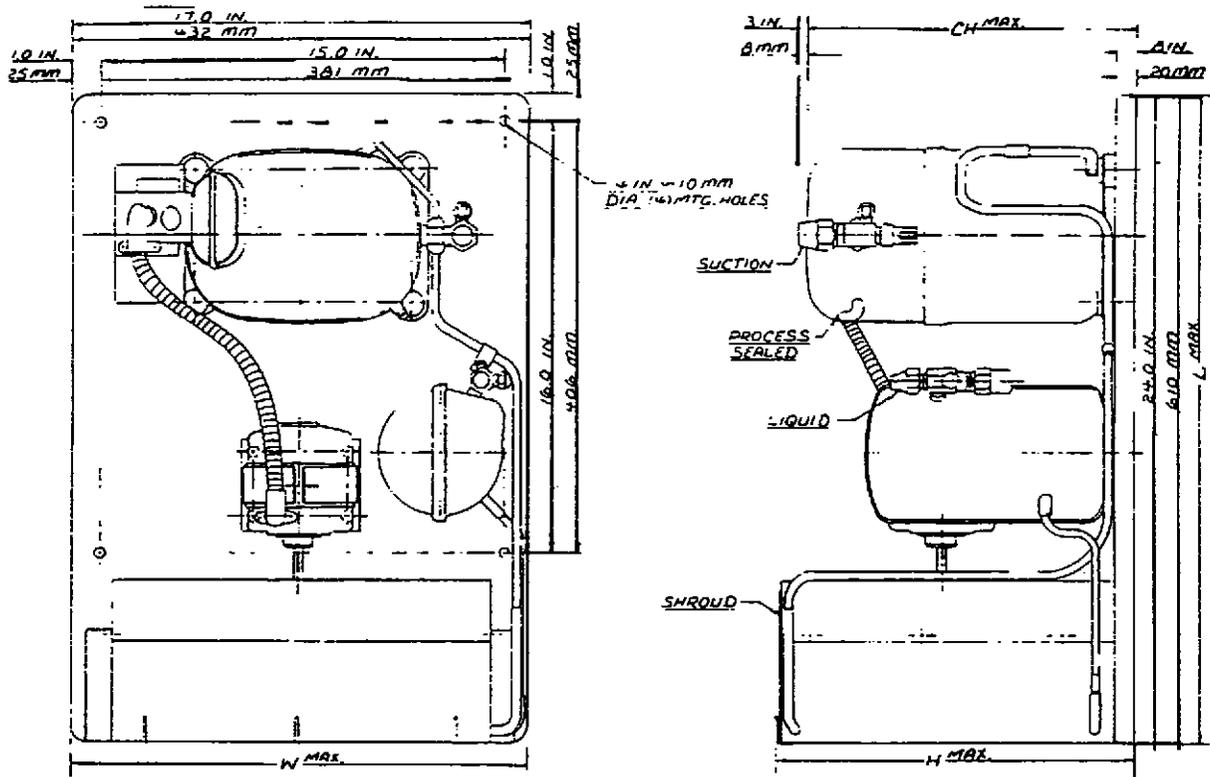
6-2.13 Charging Refrigeration System

- a. Connect service gauges to the suction and discharge service valves and open valves one full turn.

- b. If the system is pressurized slightly, open both manifold gauge valves and purge the service gauge lines.
- c. With manifold gauge valves closed, start up refrigeration system.
- d. Attach a drum of refrigerant 12 to the suction service side of the manifold gauges and add refrigerant until the liquid sight glass is clear of bubbles (Refer to figure 6-5).

6-2.14 Recalibrating Thermometer

- a. Prepare an ice bath in a small container.
- b. Remove the plastic lens cover on the thermometer.
- c. Remove the sensor element from its location on the interior of the cabinet.
- d. Place the sensor into the ice bath and stir. The thermometer should read 32 degrees F.
- e. To lower temperature - place left index finger at the left side of the wide end of pointer, but close to bulb. Insert screwdriver in pointer slot and turn slowly clockwise. Adjust to proper setting.
- f. To raise temperature - place left index finger at the wide end of pointer, but close to bulb. Insert screwdriver in pointer slot and turn slowly counter clockwise. Adjust to proper setting.



Model	Dimensions				*Line Connections		Pumpdown 90°F 90% Full	Air CFM	Oil Chg Oz.	Gross Wt. Lbs.
	L	W	H	CH	Suction	Liquid				
AJ7465AC	24.0	17.0	13.3	9.0	5/8 RF	3/8 F	7.6#	750	22	112
*F=Flare, S=Solder, RF or RS=Rotolock Valve with Flare or Solder Connections										
Factory Charge: 20 psig Nitrogen - Must be Evacuated										
60 Hz Performance										
Evaporator Approved		Ambient								
Range		90°F			100°F			110°F		
°F	PSIG	BTU/HR	Watts	Head	BTU/HR	Watts	Head	BTU/HR	Watts	Head
0	9.2	4260	870	158	4020	890	166	3780	910	174
+10	14.6	5355	1000	168	5110	1020	176	4830	1040	185
+15	17.7	5960	1085	173	5690	1110	181	5450	1130	188
+20	21.0	6560	1180	178	6300	1210	188	6080	1230	195
+25	24.6	7200	1280	186	6880	1315	194	6600	1350	202
+30	28.4	7650	1400	194	7510	1435	200	7100	1450	217

Figure 6-5. Freezer Charging System

CHAPTER 7

PARTS LIST

7-1 INTRODUCTION

This section of the manual contains lists of replaceable parts. Each of the tables contains a list of removable parts associated with an assembly of the cabinet or refrigeration system. No parts identification has been provided for details of permanently assembled items or those items which are not suitable for field repair.

7-2 SOURCE CODES

Vendor source codes are listed in table 7-1. Where no individual source code is listed (table 7-2 and 7-3), the part is available through COSPOLICH REFRIGERATOR CO. INC., KENNER, LA 70062 (FED. MFG. CODE #66682). A list of special tools are listed in table 7-4.

Table 7-1. Vendor Source Codes

Code No.	Name and Address
63291	Bohn Heat Transfer Danville, IL 61932
17479	Honeywell Minneapolis, MN 55440
32761	Kason Industries Shenandoah, GA 30265
42605	Paragon Electric Two Rivers, WI 54241
50992	Ranco Control 5 St. Louis, MO 63143
78462	Sporlan Valve St. Louis, MO 63143
59431	Tecumseh Corp. Tecumseh, MI 49286

Table 7-2. Parts List - Cabinet

Description	Mfg.	OEM Part No.	Qty
Latch	Kason	172BC	2
Hinge	Kason	217	5
Thermometer	Cooper	6142	1
Pilaster	Kason	65	8
Pilaster Clip	Kason	66	24
Shelves	Nashville Wire	20.5x23.5	6
Gasket (sm. door)	Kason	20.5x50	1
Gasket (lg. door)	Kason	50.5x64	1
Mullion Heater	EMF	FG142-2	1
Mullion Heater	EMF	FG172-2	1
Breaker Strip	Jeans	J20	1 SET
Breaker Strip	Jeans	J20	1 SET
Vaporizer	Component	T12-0372	1
Door (3/4)	Cospolich		1
Door (Full)	Cospolich		1
Louvered Grill	Cospolich		1
Drain Line Heater	Cospolich	GH251-2	1

Table 7-3. Parts List - Refrigeration

Description	Mfg.	OEM Part No.	Qty
Refrigerator			
Expansion Valve	Sporlan	FF/4Z	1
Condensing Unit	Tecumseh	AJ7465AC	1
Compressor	Tecumseh	AJ7465A	1
Cond. Fan & Motor	Tecumseh	81081-A	1
Condenser	Tecumseh	50787	1
Receiver Tank	Tecumseh	51069	1
Capacitor Start	Tecumseh	855S110C09	1
Capacitor Run	Tecumseh	85OR370E31	1
Filter Dryer	Spolan	C052S	1
Sight Glass	Allin	SG114	1
Low Pressure CTRL	Ranco	1402	1
Power CTRL Switch	Arrow Hart	82602	1
Terminal Box	EMF	82602	1
Electrical Panel	Cosp		1

Table 7-4. Parts List - Evaporator

Part Number	Description	Qty
R141212	Refrigerant service gauges with hoses	1
VA70264	Valve service wrench	1
R-12	Refrigerant 12	30 lbs

CHAPTER 8

INSTALLATION

8-1 UNPACKING

NOTE

Before unpacking unit, note any crating markings and check for damage to crating and notify the carrier if there should appear to be damage to the equipment.

The freezer is shipped from the factory securely fastened to a single shipping pallet protected by an external wrapping.

- a. Carefully remove all external wrappings and other protective coverings.
- b. Review the installation section of the manual completely prior to installation.
- c. Discard crating materials.

8-2 INSTALLATION

- a. Prior to moving the refrigerator to the installation sight, double check passageways to make certain that it will move through without modifications.

NOTE

In certain instances, it may be necessary to remove the doors and hardware to negotiate tight spaces.

- b. On most shipboard applications, a permanent base is fabricated by the ship builder to accommodate the base frame of the freezer.
- c. Position the freezer to allow sufficient ventilation, usually leave a 3" clearance from adjacent bulkheads and other equipment. Try not to place freezer near heat producing items such as ovens, ranges, and furnaces.
- d. Level the cabinet from front to back and from side to side. This is important so that when securing to the deck base the cabinet will not be pulled out of square.

- e. Evaporator coil drain lines are factory installed and are tied into a condensate evaporator which eliminates the need for exterior plumbing. Check to make certain that the drain line is located inside the condensate evaporator pan.
- f. Check the door gasket to make certain that they are sealing properly to the cabinet. It may be necessary to adjust the latch strike inward to compensate for the compression of the gasket with age.

WARNING

Low or excessive voltage can severely injure personnel and damage the electrical system.

- g. Prior to applying electrical power to the unit, you should first check the electrical characteristics of the condensing unit and make certain that they agree with those of the electrical supply source.

NOTE

It is not necessary to adjust any valves or controls on the system as this has been done at the factory.

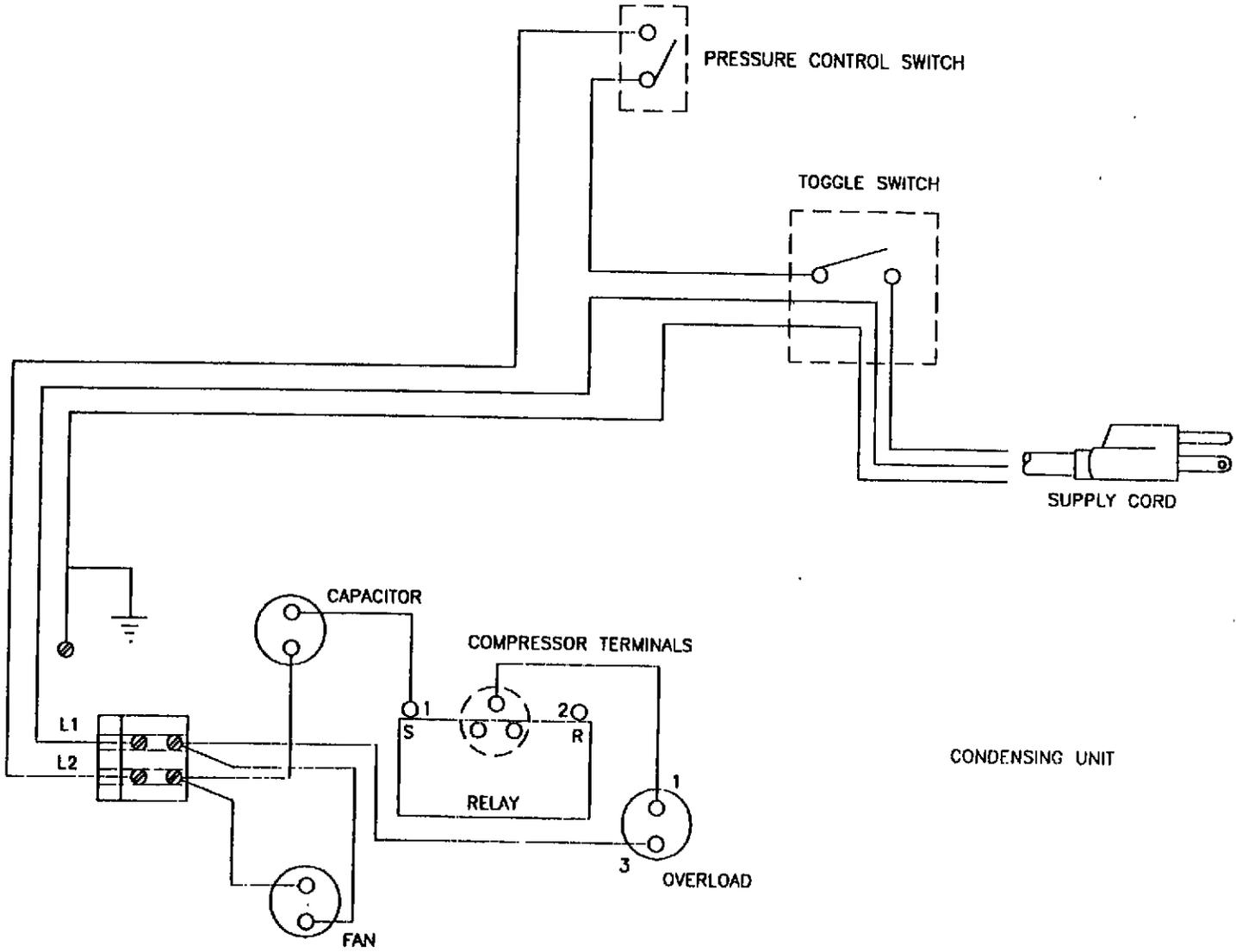
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CHAPTER 9

ASSEMBLY DRAWINGS

The following assembly drawings are applicable to the F41-2M-SN-MLR Freezer.

Figure 9-1. Electrical Schematic



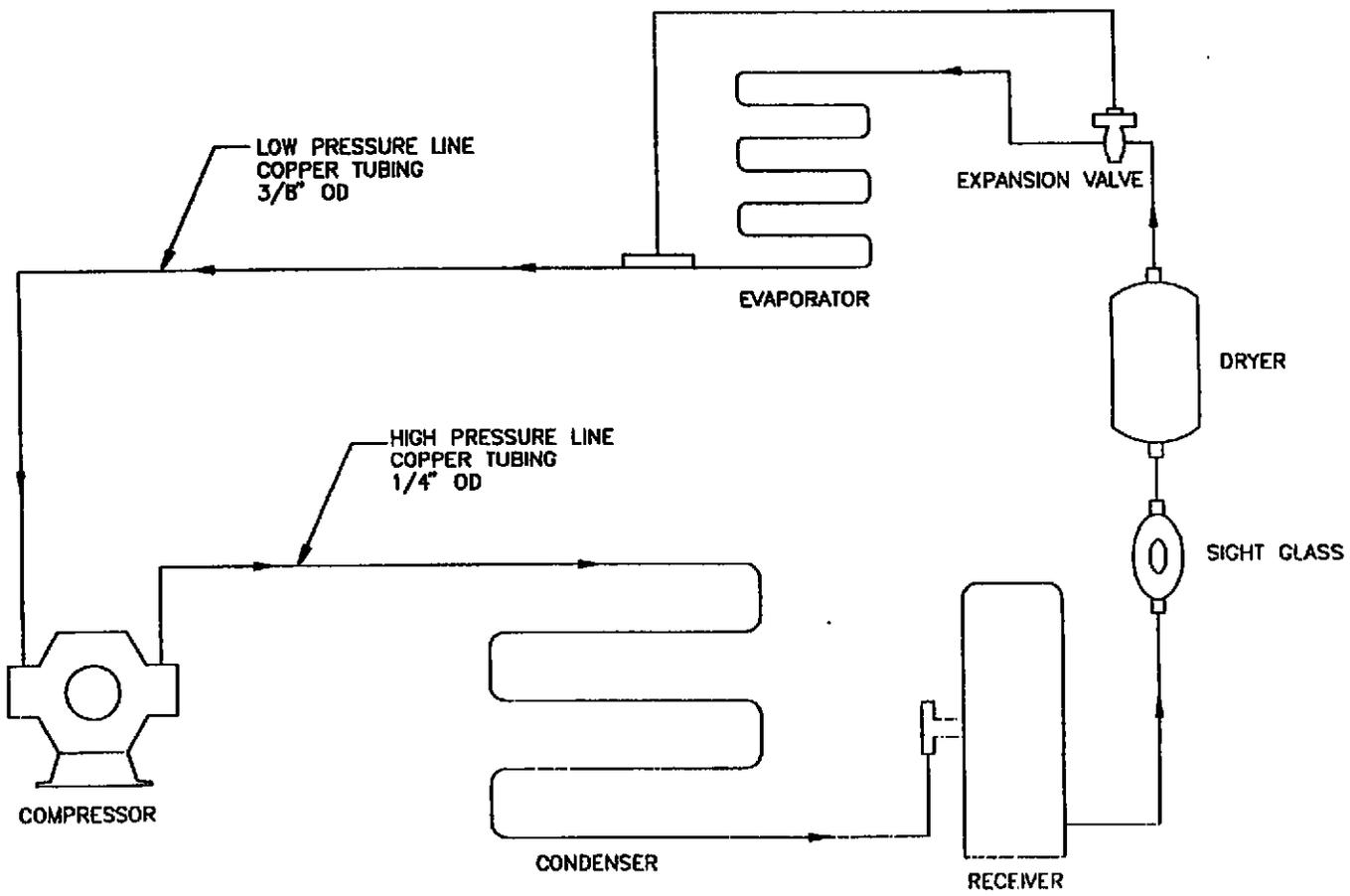
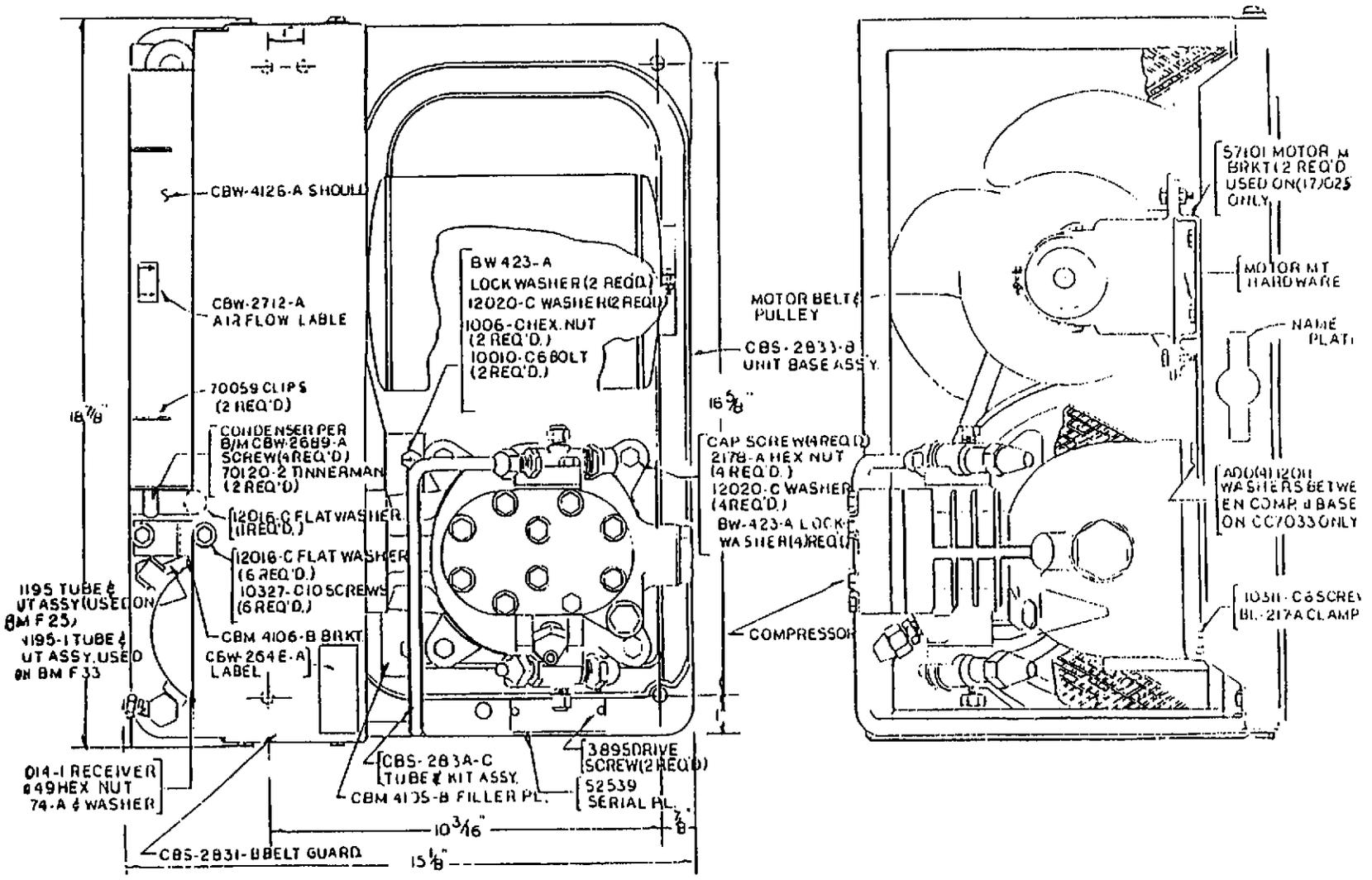


Figure 9-2. Freezer Refrigeration Piping

Figure 9-3. Condensing Unit Assembly



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CHAPTER 10

ASSEMBLY AND INSTALLATION INSTRUCTIONS

10-1 INTRODUCTION

These instructions were prepared to assist in the assembly and installation of the Cospolich modular freezer model F41-2M-SN-MLR. Should any questions arise with regards to the assembly, it is suggested that the factory be contacted.

10-2 TOOLS REQUIRED

- a. Panel Lock Wrench (Enclosed)
- b. 8" Adjustable Wrenches (2)
- c. Standard Screwdriver
- d. Caulking Gun
- e. 3/8" Socket and Ratchet
- f. 1/4" Nut Driver
- g. Phillips Screw Driver

10-3 UNCRATING

- a. Remove all wrappings and packaging materials.
- b. Inspect refrigerator cabinet to make certain that there is no damage.

10-4 DISASSEMBLY

- a. Take from inside the cabinet the shelves, breaker strips, and the box of components.
- b. Remove each of the two doors. To do this use a flat screwdriver and pop off the side hinge covers. Use a phillips screwdriver and remove the hinge screws which attach it to the cabinet.

Two people are required to perform this step. When the doors are removed place them safely out of the way.

- c. Tubing Cover: Using a 1/4" nut driver remove the stainless steel hex screws which secure the rear tubing covers. There are two tubing covers.

- d. Louvered Grill: Remove the ventilation grill on the front of the cabinet by lifting it up about 1/2" pulling the bottom out and dropping it down.
- e. Removing Condensing Units: Using the 3/8" socket and ratchet loosen and remove the mounting bolt located just below the condensers. This will allow the condensing units to slide out of the compartment. Locate the electrical leads to the condensing units and disconnect them from the electrical control panels.
- f. Precharged Refrigerant Lines: The refrigerant line sets have self sealing fittings on the ends. One set of ends is at the condensing units and the other at the back of the evaporator. Using wrenches loosen and remove the fittings from those locations. Once fittings are disconnected carefully remove the line set and place it out of the way.
- g. Mullion Heat Electrical: The electrical for the mullion heaters runs through the center vertical mullion. To disconnect these leads first locate the openings (top and bottom) on the right breaker on the vertical mullion. Remove the tape covering the openings and disconnect the electrical connections.
- h. Disassembling the Cabinet:
 - (1) Front Vertical Mullions: With the panel lock wrench provided, disengage the camlock panel fasteners. To do this insert the wrench into the 3/4" opening in the panel. Turn the wrench counter clockwise a half of turn. At this time the mullion will be held in place by the panel top and bottom track. As well as the alignment pins.
 - (2) Top: There are nine panel fasteners which join the top to the ends and back (six on the ends and three on the back). Again using the panel wrench unlock each cam by turning it a half turn in a counter clockwise direction. After all cams have been unlocked remove the top by lifting straight up.

NOTE

Before removing the top, have someone to hold the front mullion so that it doesn't fall when the top is removed.

- (3) Left End: At this time the end is fastened to the back and bottom at four points. Using someone to hold the panel, unlock the cam locks.

NOTE

It is necessary to unfasten the evaporator quick connect fittings. There are two of these at the top/back of each end.

- a. With the top off and the cams on the end unlocked, simultaneously loosen the quick connects and back them away from one another allowing each to self seal.
 - b. Lift the end away from the cabinet and store laying down with the evaporator lines up.
- (4) Right End: Again have someone to hold the panel in position, using the cam wrench, unlock the bottom two locks then those on the back. The end is now free.

NOTE

It is necessary to unfasten the evaporator quick connect fittings. There are two of these at the top/back of each end.

- a. With the top off and the cams on the end unlocked simultaneously loosen the quick connects and back them away from one another allowing each to self seal.
 - b. Lift the end away from the cabinet and store laying down with the evaporator lines up.
- (5) Back: There are three cam locks which attach the back to the bottom. With someone holding the back, unlock the cams by turning them 1/2 turn clockwise. The back is now free.
- (6) Bottom: The bottom doesn't breakdown any further.

NOTE

At this time it may be advisable to familiarize yourself with all of the components and equipment. The alignment of all panels is critical and the tight quarters in the galley area will add a degree of difficulty to reassembly.

i. Transferring Components For Reassembly:

- (1) The utmost care should be taken when transferring the components to the assembly area. Don't allow the perimeter foam edge of the panel to be dented or torn, as this will affect the seal of the walls.
- (2) Particular care should be in handling and moving the components as not to scratch or damage the panels.

j. Positioning Components For Reassembly:

- (1) Since the working area will be quite limited, it is suggested that with the exception of the bottom, the components should be safely placed in an adjacent area for easy access as needed.
- (2) The assembly of the unit can be accomplished in the exact spot that the unit will be operating. This is providing that there is a minimum of 2" of clearance in the rear and top for installation.
- (3) The base, which is the first component needed to begin the assembly process, should be placed in the position which the unit is to be assembled.

k. Assembly Information:

- (1) Work Space: It is suggested that there be 3 inches of clearance on the sides, back and top to allow for ease in installing.
- (2) Panel Alignment: All panels are marked with alignment markings. To insure that the cabinet fit together properly the marks must always be in line.
- (3) Caulking: A silicone caulking is furnished. It is to be applied into the female tracks to insure proper sealing.
- (4) Cam Lock Hook Position: When preparing to attach one panel to another make certain that the cam locks are in a fully extended position.

NOTE

When the cam hook is fully extended it should be approximately 1 1/2" from the top of the hook to the highest point of the hardrail.

1. Cabinet Assembly Process

- (1) Bottom: Place the bottom in the general area of the refrigerator's final installed location.
- (2) Left End and Back Panel: Using the silicone caulking furnished, lay a 1/4" bead in the urethane track on the bottom. Place the left end into position. With someone holding it in position and alignment marks correct, insert the cam wrench into the front most hole and turn it approximately 1/2 turn. Do the same with the rear cam latch. Next lay a 1/4" bead of silicone in the vertical track on the left end. Place the back into position and lock in the bottom cams and then the two cams in the vertical corner.

NOTE

When installing the left end you will need to once again attach the evaporator lines.

- a. Set the cams using the wrench. Turn it counter clockwise until the hook is fully extended and has a wiggle to it.
 - b. Replace the bottom hooks into the strikes on the cabinet bottom.
 - c. Bring the panel up to the vertical position. Using the wrenches fasten the evaporator quick connect fittings.
- (3) Right End: First lay a 1/4" bead of silicone caulking on the vertical corner edge of the panel. Place the panel into position and line up the alignment marks. Secure the two bottom locks and then the three vertical locks starting with the bottom.
 - (4) Vertical Mullion: Place the mullion into position with cam catches fully extended.
 - (5) Top: With the top lying bottom up, apply a 1/4" bead of silicone caulking in the hardrail groove around the perimeter of the top. Before placing the top into position turn all of the wall cam latches so they are fully extended. Place the top into position and secure the cams, starting with the one in the center of the back, follow by those to the right then the left (see step 15 for electrical connections).
 - (6) Doors: With assistance in holding the door into position, line up the hinge with the hole positions on the cabinet and start the screws. Once all screws are

in, tighten each. Carefully close the door checking the latching assembly to make certain it operates properly. Follow the same process in installing the second door.

- m. Electrical: Within the perimeter of the door opening lies the electrical wiring for the mullion heaters. It is necessary that the connections that were disconnected in disassembly be reconnected. Located on the bottom of the same vertical breaker, are the feed wires for the electrical power. The bottom section of the primary breaker (grey vinyl) is partially attached so that the wires can be pulled more easily to make the connection in the vertical mullion.
- n. Mullion Heaters: The mullion heaters are fiberglass braided wires which run around the door perimeters to prevent exterior condensation. The heaters are already electrically connected and only need to be unraveled and run along the notch, on the outside into the primary breaker. This process should be done on all doors.
- o. Secondary Breaker (Grey Cap): There are four breakers per door opening and all are pre-cut. Starting with the longest, set it over the primary breaker and gently tap it so that it snaps in place. Do the same on the opposite side. Next install the horizontals both on the top and bottom. Repeat this process on all other doors.
- p. System Start Up: With all electrical and refrigeration lines connected and checked, you should not start the system up as a test. Locate the supply cord and connect it to a 115 volt outlet. Flip the toggle switch to the on position and the condensing unit should start up immediately. At this time the evaporator fan should also be running. After ten minutes of operation turn the unit off.

NOTE

It will also be necessary to run the thermostat sensing bulb into the cabinet. This can be accomplished by locating the capillary tube on the control panel and carefully unrolling it so that it follows the refrigeration lines into the freezer compartment, use the bulb cover to conceal it.

- q. Cam Access Hole Covers: In the supply package are grey vinyl caps. Snap the caps into the cam access holes to prevent moisture from building in the walls.
- r. Caulk Seams: Using the silicone caulking provided, apply a thin bead in all vertical and horizontal seams in the interior. Wipe off excess silicone.

- s. Shelving: The shelving support clips provided can be placed on the pilaster standards where required.

NOTE

The freezer can now be placed in its permanent location, after the protective PVC has been removed from the stainless steel.

CAUTION

It is necessary to allow at least 2 1/2" clearance at the rear of the cabinet for ventilation to prevent damage to the equipment.

10-5 **FINAL CHECK LIST**

- a. With the freezer in position slide the condensing units back out and start the system up. Allow to run five minutes and check the liquid sight glass for bubbles. A clear glass indicates the system is fully charged.

NOTE

When check is completed turn unit off and slide the back into the condensing unit compartment and fasten it down to the mounting clip.

Temperature controls are factory set and should not be re-adjusted.

- b. Check that the cabinet panels and doors are properly aligned.

NOTE

Provisions for securing the refrigerator to the deck or sub base should be made.

GLOSSARY

LRA - Locked rotor amps

Locked rotor amps of a compressor is the current value recorded three seconds after rated voltage is applied under locked rotor conditions from a 75 degree F motor soakout temperature. (Voltage drop to be pre-determined and adjusted accordingly prior to test). This value appears on the compressor serial plate and on all compressor statistics sheets.

It may be well to note that the practice in the past was to show an additional column marked, LRA "U.L. Test Report". This is no longer needed, since the U.L. investigation work, as regards component rating, will be guided by the compressor manufacturer's published value.

MCG - Maximum continuous current

Maximum continuous current is a limiting ampere value which must not be greater than 156% of the rated load amps (RLA) of the compressor as marked on the nameplate of the particular unit into which that compressor is applied.

The 156% rule applies to all equipment except that which is rate 115v or 230v and can be protected (per N.E.C.) with a 20 amp or 15 amp fuse respectively. Further, the rule applies to all equipment rated 265v - single phase, 460v - three phase, and 575v - three phase, with no exceptions.

RLA - Rated load amps

Rated load amps is a measure of the current drawn by a compressor when operated at Tecumseh rating conditions at nominal voltage. This value is listed at U.L. and C.S.A. as "RLA". It is in agreement with the N.E.C. definition that the RLA be the current draw when the compressor is delivering rated output.

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