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TECHNICAL MANUAL
[*SGML VERSION; SEE CHANGE
RECORD*]

**UNDERCOUNTER
NON-MAGNETIC FREEZERS**

USN10LUCNM TYPE II STYLE II, 115V AC

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CHANGE RECORD

CHANGE NO.	DATE	TITLE AND/OR BRIEF DESCRIPTION/PREPARING ACTIVITY
2	15 JANUARY 2003	TMDER N47316-99-0007. ADDED R-134A COMPRESSOR PART NUMBER AND REFRIGERANT PRESSURE TEMPERATURE TABLE. CHANGE AUTHORIZED BY NSWCCD-SSES CODES 9441 AND 9213. THE FOLLOWING WERE CHANGED; PARAGRAPH(S) 1-1 TABLE(S) , 1-1 AND 1-2

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FOREWORD

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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.

KEEP AWAY FROM LIVE CIRCUITS Operating personnel must observe all safety regulations at all times. Do not replace components, make adjustments, or perform internal equipment maintenance without first securing electrical power. Dangerous potential may exist when the electrical power is in the OFF position because of charges retained by capacitors. Before touching, always secure electrical power and discharge the circuit by shorting through a load to ground with a shorting probe.

DO NOT REPAIR OR ADJUST ALONE Under no circumstances should any person reach into or enter equipment enclosures for the purpose of servicing or adjusting equipment except in the presence of personnel capable of rendering aid.

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 go unattended. Always obtain first aid or medical attention immediately.

ENERGIZED EQUIPMENT Before working on energized equipment, ensure against grounding. If possible, make repairs/adjustments with one hand, leaving the other hand clear of the equipment. Never work alone.

MOVING EQUIPMENT If equipment must be repaired/adjusted while in motion, a safety watch shall be posted. The safety watch must have a full view of the repair/adjustment operation and immediate access to controls that can stop the equipment in motion.

RESUSCITATION Personnel working with or near high voltages should be familiar with modern methods of resuscitation. 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 (S9086-KC-STM-000/CH-300R2).

REFRIGERANT HANDLING PRECAUTIONS. Read and observe all refrigerant handling precautions contained in NAVAL SHIP'S TECHNICAL MANUAL S9086-RW-STM 010/CH-516, paragraph 516-1.113 through paragraph 516-1.121.

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.

SAFETY SUMMARY - Continued

4. Do not make any unauthorized alterations to equipment.
5. Before working on electrical equipment, use 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 are summarized below for emphasis.

CAUTION

Disconnect the condensing unit from the power line before working around the condenser, (Page 1-3)

CAUTION

Make sure all the soap is removed before trying to sweat connection. (Page 1-4)

CAUTION

Make sure the service valve is back seated (valve stem turned counter clockwise as far as it will go. (Page 1-4)

CAUTION

Disconnect power from motor. (Page 1-5, page 1-5)

CAUTION

Make certain that both capillary tube ends are inserted at least 1/2 inch into adjoining part before re-sweating the connection. (This will prevent the capillary tube ends from becoming plugged with solder.) (Page 1-7)

CHAPTER 1

UNDERCOUNTER NON-MAGNETIC FREEZERS

1-1. GENERAL DATA

Refrigerators and freezers manufactured by DHORB CO. INC. Hudson, New York are designed to meet military specifications,

The outer shell of the cabinet is welded construction using 20 gauge stainless steel, type 302 with no. 4 finish. It contains a welded integral structural frame and is fastened with screws to a base assembly constructed of a painted steel angle, welded together, with legs provided at four corners for attachment to the deck.

The storage compartment is constructed of polished stainless steel, type 302 and is spot welded with the exterior seams sealed with a vapor barrier tape. Stainless steel wire shelves, adjustable on 1/2 inch centers are provided. The storage area is insulated with fiberglass insulation between the outer shell of the cabinet and the inner liner in such a manner as to prevent sagging or voids in the insulation.

Overlap type doors, insulated with fiberglass insulation are supported by heavy duty edgemount hinges and latches, adjustable to provide a tight seal by forcing the door gasket against the plastic breaker strip around the door opening,

The unit compartment contains the condensing, unit dehydrator remote reading thermometer, control and junction box for connecting electrical power supply. Access for repair or adjustment is obtained by removing the unit compartment cover.

The refrigerator is designed to store food at an average temperature of 40°F and the freezer at an average temperature of 0°F in an ambient ranging from 40° to 110° for the refrigerator and 0° to 110° for the freezer.

TO OBTAIN MAXIMUM USE it is important to install the equipment properly, See [paragraph 1-2](#) installation instructions.

DO NOT OVERLOAD WITH WARM FOOD AT ANY TIME.

WARRANTY: The manufacturer warrants that at the time of delivery the equipment will be free from defects in design, material and workmanship. This is a limited warranty and shall be in effect for one year from date of shipment.

VOLTAGE REQUIREMENTS: 115V A.C.

REFRIGERANT: F-12 (Compressor Model JFC1- 0025-1AA)

REFRIGERANT: R-134a (Compressor Model M400391)

DIMENSIONS: Height - 28" Width - 49" Depth - 32" Weight - 275 lbs. Storage Capacity - 10 cu.ft.

CENTER OF GRAVITY: See Outline Dimensional drawing [figure 1-5](#).

This freezer is Non-Magnetic and all material has a permeability of less than two except condensing unit-and the hardware.

1-2. INSTALLATION INSTRUCTIONS

UNCRATING: DHORB products are strongly crated so that they can be delivered to the place of installation without damage under conditions of ordinary handling by the commercial carrier. However, it is important that inspection for any damage which may have occurred in transit be made immediately upon receipt of the cabinet. Any visible damage to the crate or to the cabinet should be noted by the person receiving the cabinet on the carrier delivery receipt. This signifies that a claim for damage will be made.

Uncrate the cabinet by removing the four sides and top of the crate. This will leave the cabinet attached to the shipping skid by four bolts. Remove the four bolts and lift the cabinet off the skid. Inspect the cabinet for concealed damages. If any are found please notify the carrier (rail or truck) immediately. Their inspection is necessary at this point to file a claim for concealed damage. Make sure this claim is filed within the time limit set by the carrier.

INSTALLATION: It is most important that there is free circulation of clean cool dry air around the cabinet. Obtain best ventilation possible. Keep the cabinet at some distance from furnaces, ovens, etc. Avoid locations where water may drip on the cabinet. Place the cabinet so that there is at least 3" clearance from it to the back wall. This is important in order to allow heat from the condenser to escape. Allow at least 3" clearance, if possible, on each end of the cabinet for best ventilation. Avoid location where temperature goes below temperature to be maintained in the refrigerated section.

LEVELING: For best operation, the base of the cabinet should be as nearly level as possible. When the cabinet is in proper position, make sure it is setting absolutely level from end to end and from front to rear.

CHECK DOOR GASKET SEAL: Close the doors and check each door gasket seal and door latch and strike. The gasket should touch the cabinet evenly around the entire surface. Its purpose is to prevent any leakage of air into the refrigerated section. If necessary, in order to effect a correct seal, the door strike and hinge can be adjusted. The door strike is located at the front of the door opening in the body of the cabinet. Loosen the screw on the strike. Pull the strike out to loosen the pressure of the gasket against the cabinet or push in the strike to increase the pressure of the gasket against the cabinet. (Tap the strike in or out just a bit at a time for best results) Make sure to retighten the screws on the strike. When properly sealed a 0.003 feeler gauge will not slide between the gasket and the plastic breaker strip. See [figure 1-1](#) for hinge adjustment and [figure 1-2](#) for strike adjustment.

1-3. OPERATING

STARTING UP: After the cabinet has been set in its proper place the unit is now ready to be connected to a suitable power outlet.

DO NOT TURN OR CHANGE any valves or control settings. All shut off valves are open when the unit is shipped from the factory. Check the electrical requirements of the condensing unit from its name plate and make certain that the power available corresponds with these requirements. Be sure the power line is on at all times and is not connected with a line that can be accidentally cut off or is controlled by a time switch cut-off. If possible, obtain separate power line for the condensing unit to prevent overloading the circuit or obtaining low voltage. For satisfactory operation the voltage must not vary more than 10%.

NOTE

The hot leg is color coded black, the power return ground is color coded white and the safety ground is color coded green on the connecting leads in the junction box.

CONTROLS AND ADJUSTMENTS: All controls are factory set for proper operation. They should not be changed unless it is shown by use of an accurate thermometer that the cabinet is not holding correct operating temperature. We recommend a temperature of between 37°F to 43°F on refrigerators and between 0°F to -5°F on freezers.

LOADING: It is important that the cabinet is not loaded with perishables until the inside temperature has been brought down to an approximate operating level. Start up the refrigeration unit. Allow it to operate for about three hours before loading.

1-4. REFRIGERATION OPERATION

The maintenance of a constant and correct temperature in a refrigerated compartment is dependent upon the intermittent circulation and evaporation of a fixed supply of refrigerant in the evaporator.

By means of a control whose heat sensitive element is located in the refrigerated compartments the motor compressor pumps the heat laden gas out of the evaporator through the suction line and into the compressor. The low pressure gas is then compressed by the piston and forced out through the discharge line into the condenser.

The part of the system from the expansion device outlets including the evaporator, suction line, suction service valve, as well as the suction portion of the compressor is called the low side. That part of the system starting with the compression portion of the compressor and extending through the line to the condensers through the condenser, liquid receiver tank and the liquid line up to the expansion device is called the high pressure side.

As the high pressure vapor leaves the compressor and enters the condenser, the higher temperature vapor loses its heat to the air by means of radiating fins which forms a part of the condenser. The result is that the high pressure vapor is converted into liquid refrigerant. This liquid refrigerant then passes through the liquid line to the expansion device and into the evaporator.

As the liquid refrigerant in the evaporator is subject to a much lower pressure, due to the suction of the compressor it follows that evaporation of the liquid refrigerant will take place at a reduced pressure and temperature with the result that heat is absorbed from the refrigerated compartment. As the pressure and temperature in the evaporator are being lowered by the compressor, a point is reached where the refrigerated compartment has lost sufficient heat to lower the temperature to a point where the temperature control will break the motor circuit and stop the compressor. The lower suction pressure will soon rise due to the sustained boiling point of the refrigerant.

When the boiling stops the refrigerant will not absorb heat which results in the rise of the temperature in the refrigerated compartment. Finally, the point is reached where the thermostatic control cause the motor to cut in, starting the compressor and beginning the refrigeration cycle over again.

1-5. MAINTENANCE

CLEANING INTERIOR AND EXTERIOR. To remove grease and fatty acids - Sodium Metasilicate, Trisodium Phosphate, Sodium Metaphosphate, Sodium Pyrophosphate or a comparable commercial product work best. Also a 5% to 15% solution of Caustic Soda (hot or cold). Always rinse thoroughly. About once per month, clean door gasket and plastic breaker strips around door openings. Use mild soap and water. Be sure to wipe thoroughly dry.

CLEANING CONDENSER

CAUTION

Disconnect the condensing unit from the power line before working around the condenser,

It is most important that there is free circulation of air around and through the condenser. The condenser must be kept clean at all times. Unsatisfactory refrigeration operation results from failure to observe these points. Inspect the condenser frequently. Clean the dust and any other obstructions from the condenser with a vacuum cleaner or a soft bristle brush. Do not use a wire brush.

If the equipment is not to be used for an extended period of times disconnect the electric plug and open the doors. As soon as all parts are completely defrosted and the refrigerated sections have had a chance to warm up to room temperature wipe all parts dry. Leave all doors open and later check to see that no moisture has collected on any of the parts.

To start the unit again follow procedures outlined in [paragraph 1-3](#) - "Starting Up" and "Loading".

1-6. TESTING OPERATIONS

- A. (WHEN APPLICABLE) To test the operation of the expansion valve, heat valve feeler bulb with a warm (not hot) object. Feel tube temperature at discharge of expansion valve, if it is in operation, refrigerant flowing through valve will cool the tube. If valve does not open and cool tube, remove valve by first pumping down system and replace with operational valve.
- B. To test operation of switches install test light in electrical circuit behind switch and move switch to on position. If test light does not light, check power source with test light. If power source is O.K. and light does not glow when in circuit behind switch, replace switch with operational switch.
- C. To test temperature control place thermometer in cabinet to check temperature. If unit does not run when temperature of cabinet is warmer than setting of the control, remove cover from control and check switch contacts to see if they are closed. If the contacts are open check the control for proper setting. If the control is set properly and contact do not close, replace control with an operational control.
- D. To test for refrigerant leaks, use a halide lead detector or another type. If no detector is available use a thick soap paste to spread around the spots to be tested. If leak is present the soap will bubble. Check all flare connections and any sweat connections.

CAUTION

Make sure all the soap is removed before trying to sweat connection.

If a leak is found, repair by tightening or re-flaring or resweating.

1-7. REFRIGERATION SYSTEM REPAIR

- A. CHARGING SYSTEM: To charge the refrigeration system connect the charging hose from the refrigerant supply tank to the gauge port of the suction service valve.

CAUTION

Make sure the service valve is back seated (valve stem turned counter clockwise as far as it will go).

- B. Open supply tank valve and purge air from charging hose by loosening connection at charging port slightly until air is out of hose. Then tighten the connections at the charging port, open the back seated valve 2 turns

and start unit to charge systems checking amount of refrigerant going into system by weighing supply tank before starting, and shutting service valve and supply tank valve when correct amount is in system. Remove hose from gauge port.

- C. **PUMPING DOWN SYSTEM:** To pump down system close the discharge service valve at receiver outlet by turning clock-wise as far as it will go and connect a compound service gauge to the gauge port on the suction service valve. Recover refrigerant from system using authorized recovery/recycling unit see NSTM 516-8.2.57. Open door to cabinet so unit will continue to run until gauge show less than 0 lbs pressure when unit is stopped. Close suction service valve and remove gauge and recovery/recycle unit from port.

1-8. REPLACEMENT OF PARTS.

To replace any parts in refrigeration system see NSTM 516-8.2.58 for proper procedures, then pump down system using authorized recovery/recycling unit as listed in NSTM 516-8.2.57. To replace any other parts, remove screws holding part in place and replace with new parts. All tapping Plates for blind screws are hold in place by permanent fasteners, so all screws can be re-engaged without aligning tapping plates.

1-9. COMPRESSOR REPLACEMENT

CAUTION

Disconnect power from motor.

1. Remove belt from pulley when applicable.
2. Recover refrigerant from system using authorized recovery/recycling unit and proper procedures. See NSTM 516-8.2.57 and NSTM 516-8.2.58.
3. Remove flare nuts and lines from discharge and suction service valves and cap valves and lines to prevent contamination.
4. Remove bolts from base of compressor.
5. Slide compressor out of position.
6. Replace compressor and make all connections except electrical.
7. Connect a vacuum pump to the suction and discharge service ports through a charging gauge manifold and open valves to allow vacuum pump to evacuate system.
8. Leave vacuum pump on system for at least 1 hour. Then close all valves and remove vacuum rump and gauges from system.
9. Connect electrical power supply.
10. Charge system as outlined in [paragraph 1-7](#).

1-10. MOTOR REPLACEMENT on open type units

CAUTION

Disconnect power from motor.

1. Remove belt by loosening mounting screws on motor base and move motor to loosen belt.
2. Remove screws from base of motor.
3. Slide motor out of position.
4. To replace motor reverse procedure above.

1-11. DEHYDRATOR REPLACEMENT.

1. Evacuate refrigerant from system by using authorized recovery/recycling unit and proper procedures. See NSTM 516-8.2.57 and NSTM 516-8.2.58.
2. Heat ends of dehydrator with torch to break sweat connections.
3. Replace with a new dehydrator and re-sweat connections.
4. Charge system - see [paragraph 1-7](#) for instructions.

1-12. BELT REPLACEMENT on open type units

1. To remove belt, loosen screws at motor base, move motor toward compressor until belt is loose enough to remove.
2. Replace with new belt and move motor to tighten belt.
3. Secure motor by tightening screws.

1-13. DOOR GASKET REPLACEMENT.

1. To replace door gasket remove screws under door gasket with Phillips screwdriver. Door back clad and gasket can then be removed.
2. Place new gasket around edge of door back clad with flange of gasket under the door back clad. Make a 90° notch in gasket at four corners of door back clad.
3. Replace door back clad and gasket on door and pierce holes in the gasket flange (using any sharp instrument) at the locations of the holes in the door back clad.
4. Replace the screws through back clad into the door.
5. Adjust gasket seal if necessary. See [paragraph 1-2](#) for instructions.

1-14. CAPILLARY TUBE REPLACEMENT (WHEN APPLICABLE).

1. Pump down system to 0 lbs using authorized recovery/recycling unit and proper procedures. See NSTM 516-8.2.57 and NSTM 516-8.2.58.
2. Heat each end of capillary tube and remove from assembly.
3. Replace with new capillary tube.

CAUTION

Make certain that both capillary tube ends are inserted at least 1/2 inch into adjoining part before re-sweating the connection. (This will prevent the capillary tube ends from becoming plugged with solder.)

4. Resweat connections and recharge system.

1-15. EXPANSION VALVE REPLACEMENT or ADJUSTMENT (WHEN APPLICABLE).

See [paragraph 1-6](#).

1-16. TEMPERATURE CONTROL ADJUSTMENT

See [paragraph 1-22](#).

1-17. DOOR HINGE REPLACEMENT OR ADJUSTMENT

See [figure 1-1](#).

1-18. DOOR LATCH ADJUSTMENT

See [figure 1-2](#).

1-19. ORDERING REPLACEMENT PARTS.

When ordering replacement parts, it is essential that you furnish the necessary information pertaining to the part requested.

1. Refrigerator serial number and model - to be found on angle frame in front of condensing unit.
2. Complete description of items required,
3. Reason for replacement,

1-20. PREPARATION FOR RESHIPMENT.

If there are no specification requirements for repackaging and recrating for reshipping after installation the following can be used as a guide.

The crate should be constructed of a panel material, preferably plywood with furring strips nailed to the edges for support and for nailing. The skid should be made of at least 2" thick material and constructed with provision for use of a fork lift. The inside dimensions of the crate when attached to the skid should be 1" overall larger than cabinet to be crated (at top, side and front to back). After construction to crate proceed as follows:

1. Bolt base of cabinet to skid at 4 corners.
2. Secure shelves to clips with wire, make sure they are firm.
3. Lock door and secure keys to handle with tape, wire etc.

4. Nail back sides and top to skid and to each other, placing 1" thick carton material cut in 3" strips at each corner for protection of cabinet.
5. Nail front of crate to skid and crate sides.

The equipment is now ready for shipment.

1-21. TROUBLESHOOTING.

All repairs can be made by refrigeration technician

IN CASE OF OPERATION FAILURE

Table 1-1 TROUBLESHOOTING CHART.

OBSERVATION	PROBABLE CAUSE	TEST	REMEDY
Unit does not operate	1. Power failure at source	Check power at connections in junction box with a test light	Determine cause and correct
	2. Main switch open	Check position of switch lever at main switch box	Close switch
	3. Burned out fuse or tripped circuit breaker	Check fuse or circuit breaker at main power supply	Replace fuse or reset circuit breaker
	4. Control out of adjustment	See figure 1-3 and paragraph 1-22	Adjust control
	5. Control defective	See paragraph 1-6	Replace control
	6. Low voltage	Check with voltmeter. Voltage should be within 10% of voltage shown on plate of condensing unit or motor	Correct line voltage
Short Cycling	7. Defective overload protector	A continuity check of the overload protector can be made by placing a small bulb in the test cord and attach one test clip to overload protector terminal and the other test clip to the remaining overload protector terminal. Then connect the other end of the test cord to the power supply. If the bulb does not glow with its normal brilliance the overload protector is defective.	Replace overload protector
	8. Burned out motor or open winding applicable to open units	When connected to power the motor will not run or it will make a humming noise	Replace motor see paragraph 1-10
	9. Stuck compressor applicable to open units	Disconnect power to motor If flywheel will not turn by hand it is stuck	Replace compressor see paragraph 1-9
Short Cycling	1. Control out of adjustment	See figure 1-3 and paragraph 1-22	Adjust control
	2. Leaking Valve	If the head pressure and suction pressure equalize when the compressor is stopped, a valve is leaking	Replace

Table 1-1 TROUBLESHOOTING CHART. - Continued

OBSERVATION	PROBABLE CAUSE	TEST	REMEDY
	3. Insufficient refrigerant	Check evaporator-it should be completely active	Add refrigerant
	4. Restriction on high side	Loosen flare nut at expansion valve. Refrigerant should escape rapidly. On capillary tube system check head and back pressure. If back pressure is low and head pressure is high a restriction is probable	Isolate restriction by checking flow of refrigerant at each component in high side, i.e. drier, condenser
Unit does not shut off	1. Control out of adjustment	See figure 1-3 and paragraph 1-22	Check temperature and and adjust control
	2. Control defective	See paragraph 1-6	Replace control
	3. Insufficient refrigerant	Check evaporator-it should be completely active	Add refrigerant
	4. Dirty condenser	Visual	Clean condenser with a soft bristle brush
	5. Air temperature too high over condenser	Check air temperature to condenser against ambient to room	If temperature is higher than room ambient, provide sufficient air movement over condenser
	6. Condenser fan inoperative	Check for interference to fan blade or power to motor	Repair or replace
	7. Air restriction due to overcrowded shelves	Visual	Rearrange load to allow free circulation
	8. Unit defective	Check pressure at suction service valve with discharge service valve closed. Suction pressure should be at least 20" of vacuum	Replace if defective
	9. Expansion valve stuck open	Suction line frosted beyond expansion valve bulb toward compressor	Repair or replace See paragraph 1-6
	10. Poor contact between TX valve, feeler bulb and suction line	Suction line frosted beyond expansion valve bulb toward compressor	Relocate bulb and tighten clamp See figure 1-4
Low Head Pressure	1. Insufficient refrigerant	Check evaporator - it should be Completely active	Add refrigerant
	2. Leaking valve	If the head pressure and suction pressure equalize when the compressor is stopped, a valve is leaking	Repair or replace
	3. Operating in too low an ambient	Check ambient. It should be above operating temperature	Relocate unit to warmer place or restrict air flow through condenser
High head pressure	1. Overcharge of refrigerant	Receiver tank temperature should be room ambient temperatures. If higher it indicates system is overcharged	Purge
	2. Dirty condenser	Visual	Clean

Table 1-1 TROUBLESHOOTING CHART. - Continued

OBSERVATION	PROBABLE CAUSE	TEST	REMEDY																																								
	3. High air temperature over condenser	Check air temperature to condenser against ambient of room	If temperature is higher than room ambient, provide sufficient air movement over condenser																																								
	4. Air in system	<p>Let the unit stand idle until the condenser comes to room temperatures (This may be checked by attaching a thermometer to the condenser with putty-be sure the thermometer is in good contact with the tube.) At this time read the head pressure and compare the head pressure to the pressure in the Temperature-Pressure table for refrigerant below:</p> <table border="1" data-bbox="667 787 1049 1648"> <tr> <td colspan="2">F-12 Refrigerant Temperature-Pressure Table</td> </tr> <tr> <td>°F – Refrigerant pressure</td> <td></td> </tr> <tr><td>70 - 70.1</td><td></td></tr> <tr><td>75 - 76.9</td><td></td></tr> <tr><td>80 - 84.1</td><td></td></tr> <tr><td>85 - 91.7</td><td></td></tr> <tr><td>90 - 99.6</td><td></td></tr> <tr><td>95 - 108.1</td><td></td></tr> <tr><td>100 - 116.9</td><td></td></tr> <tr> <td colspan="2">If head pressure is higher than pressure shown in above table, air is in the system</td> </tr> <tr> <td colspan="2">R-134a Refrigerant Temperature-Pressure Table</td> </tr> <tr> <td>°F – Refrigerant pressure</td> <td></td> </tr> <tr><td>70 - 71.19</td><td></td></tr> <tr><td>74 - 77.20</td><td></td></tr> <tr><td>80 - 86.80</td><td></td></tr> <tr><td>84 - 93.59</td><td></td></tr> <tr><td>90 - 104.44</td><td></td></tr> <tr><td>94 - 112.11</td><td></td></tr> <tr><td>100 - 124.30</td><td></td></tr> <tr> <td colspan="2">If head pressure is higher than pressure shown in above table, air is in the system</td> </tr> </table>	F-12 Refrigerant Temperature-Pressure Table		°F – Refrigerant pressure		70 - 70.1		75 - 76.9		80 - 84.1		85 - 91.7		90 - 99.6		95 - 108.1		100 - 116.9		If head pressure is higher than pressure shown in above table, air is in the system		R-134a Refrigerant Temperature-Pressure Table		°F – Refrigerant pressure		70 - 71.19		74 - 77.20		80 - 86.80		84 - 93.59		90 - 104.44		94 - 112.11		100 - 124.30		If head pressure is higher than pressure shown in above table, air is in the system		Purge
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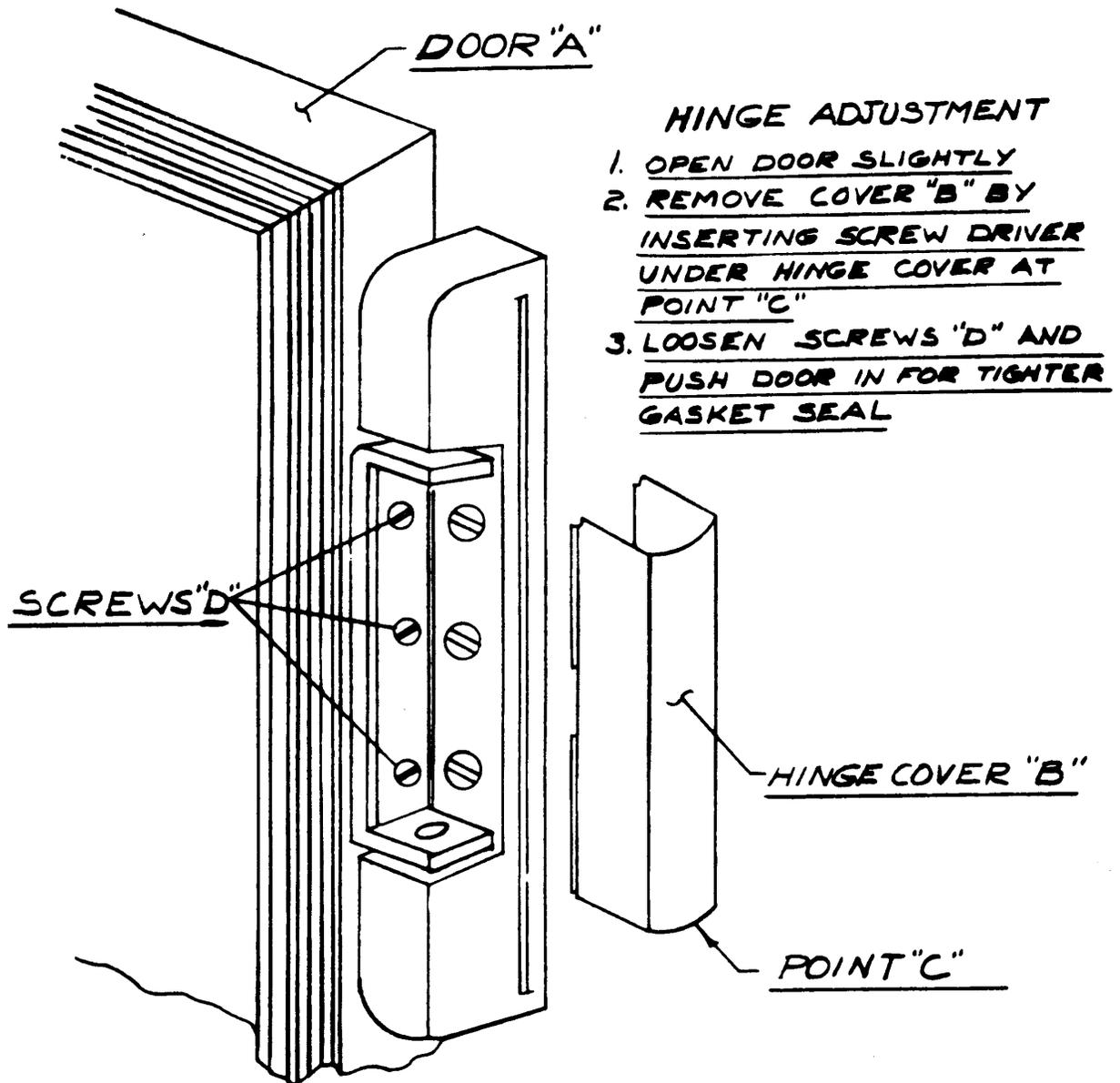


Figure 1-1. HINGE ADJUSTMENT

DOOR LATCH ASSEMBLY

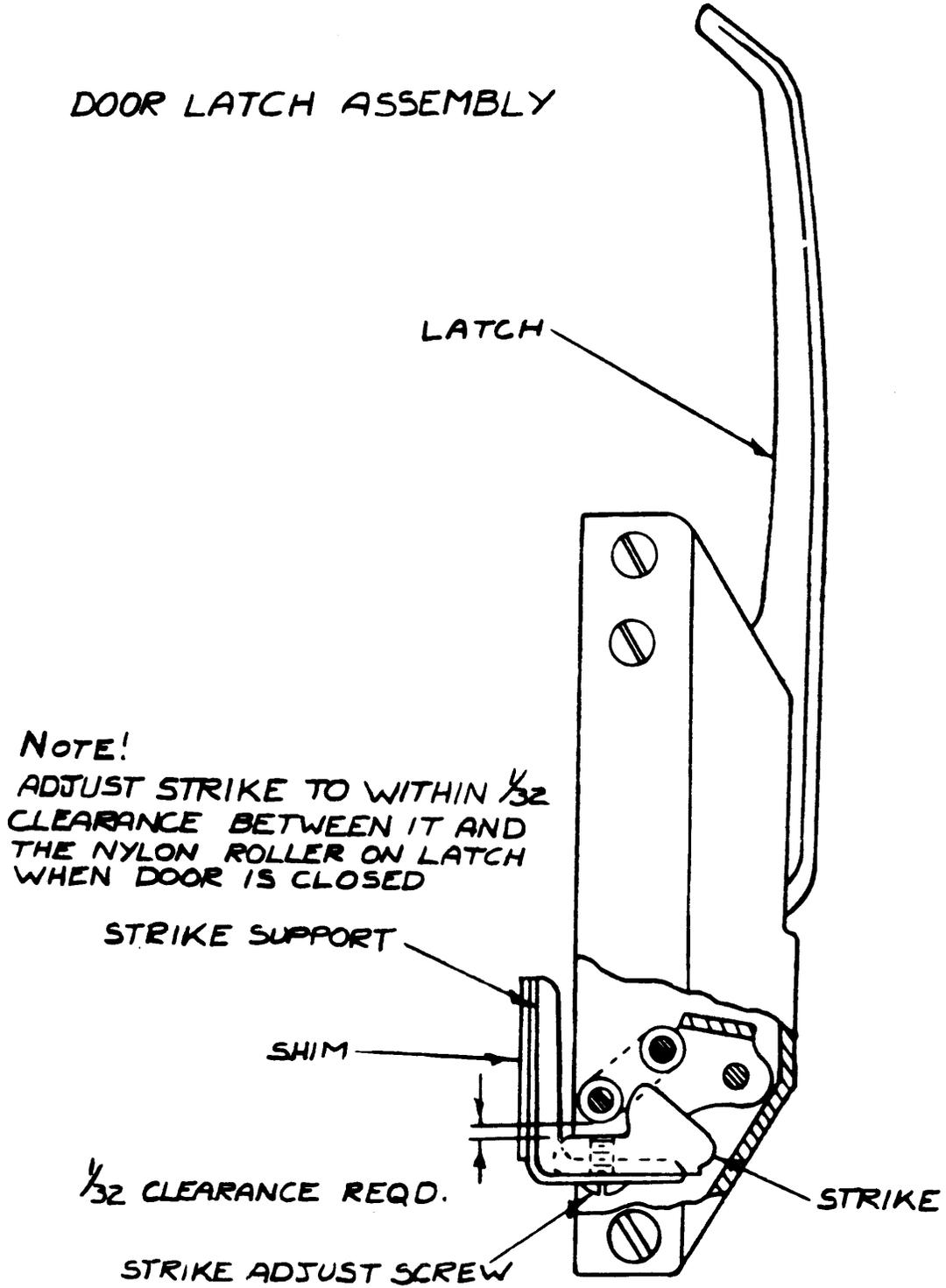


Figure 1-2. DOOR LATCH ASSEMBLY

INSTRUCTIONS FOR TYPE "010"

Single Temperature Control

SINGLE POLE, SINGLE THROW SWITCH ACTION

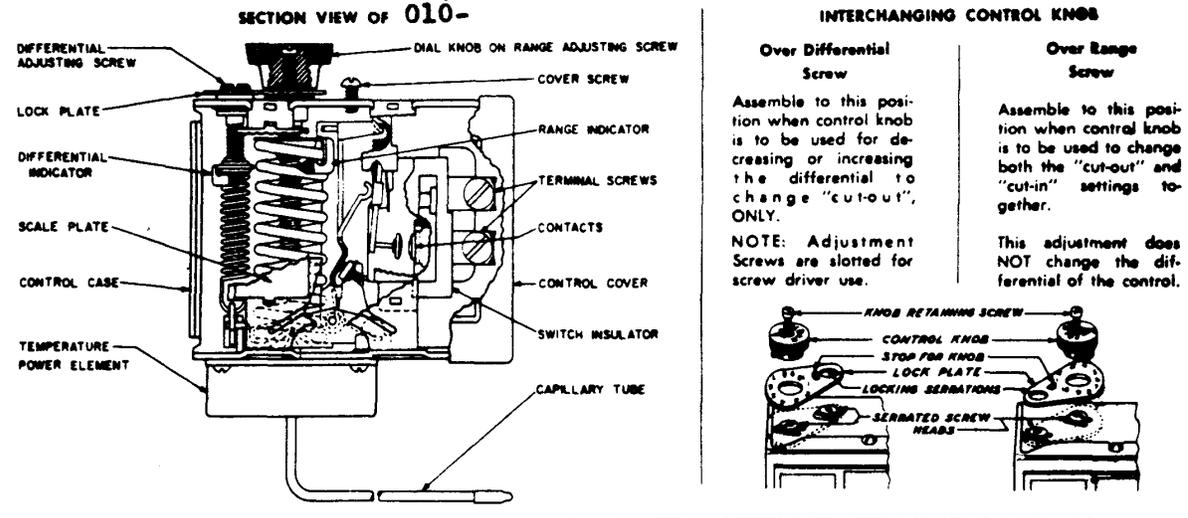


Figure 1-3. INSTRUCTIONS FOR TYPE "010" SINGLE TEMPERATURE CONTROL

1-22. OPERATION.

The "010" type control is a S.P.S.T. snap acting toggle switch that automatically cycles to CLOSE the circuit on rise and open the circuit on drop in temperature.

RANGE ADJUSTMENT. Turn the dial knob (attached to the range screw on both temperature types) counter clockwise to raise or clockwise to lower both the "cut-out" and "cut-in" points TOGETHER.

To Reset Controls. (Before making an adjustment note the position of the indicators on the scale plate.) "010" Scale plate is marked "CUT-OUT" is CUT-IN less DIFFERENTIAL. The range Screw adjusts the "cut-in" point, then use the Differential Screw to change the "cut-out" setting.

DIFFERENTIAL ADJUSTMENT. Turn the differential screw, on "010" and counter clockwise to decrease, or clockwise to increase the differential.

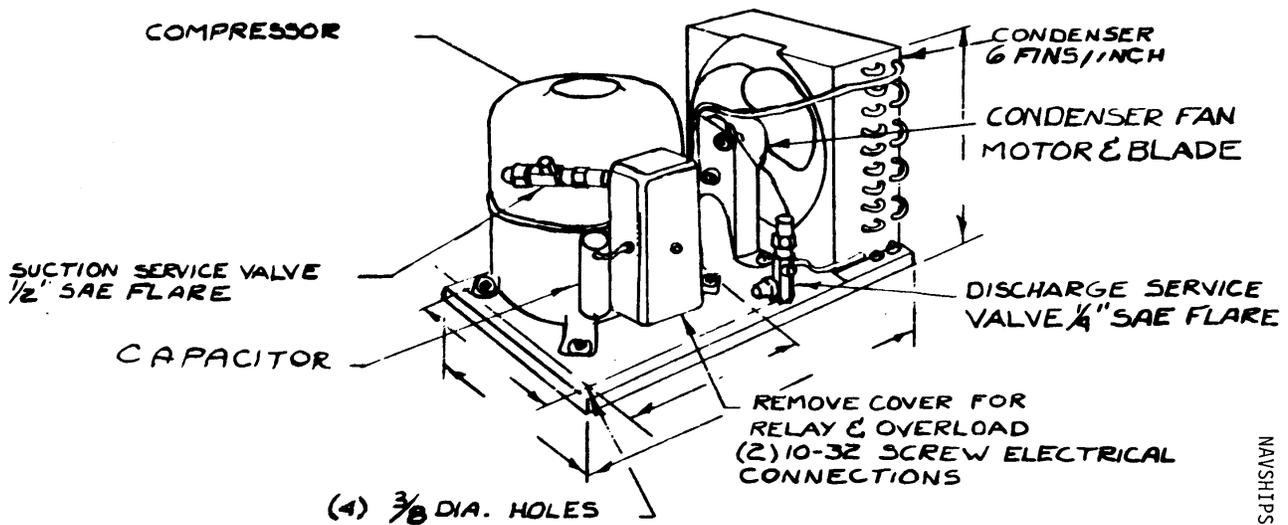
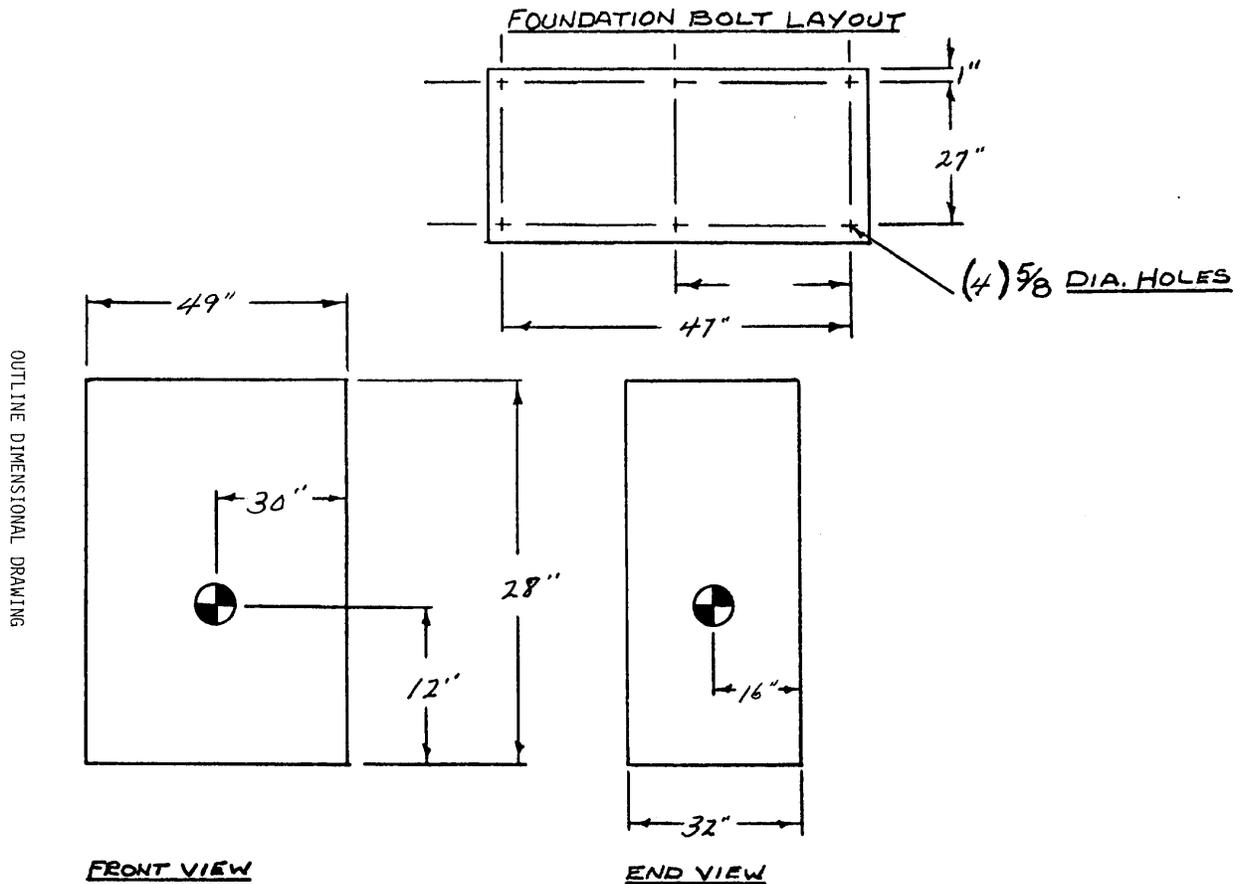


Figure 1-4. CONDENSING UNIT

Table 1-2 SPARE PARTS LIST Model USN10LUCNM

ITEM	DESCRIPTION	PART NO.	MANUFACTURER NAME & ADDRESS	ILLUSTRATION
1	Temperature Control	010-1408	Ranco Controls Columbus, Ohio	figure 1-3
2	Capillary Tube Assy	10-036	Dhorb Co. Inc. Hudson, N.Y.	*
3	Dehydrator	KS-14	Watsco Inc. Hialeah, Fla.	
4	Door Gasket	PSX137	Pawling Rubber Co. Pawling, N.Y.	
5	Set of Hinges	4-212	Kason Hdwre Co. Binghamton, N.Y.	figure 1-1
6	Door Latch	2830-211G-1110	Standard Keil Allenwood, N.J.	figure 1-2
7	Compressor (R-12)	JFC1-0025-1AA	Copeland Corp. Sidney, Ohio	figure 1-4
7a	Compressor (R-134a)	M400391	MGR Equipment Corp. Inwood NY 11096-1612	figure 1-4
8	Relay	040-0090-00	Copeland Corp. Sidney, Ohio	figure 1-6
9	Overload Protector	071-0369-11	Copeland Corp. Sidney, Ohio	figure 1-6
10	Start Capacitor	014-0032-00	Copeland Corp. Sidney, Ohio	figure 1-6
11	Fan Motor Assy	550-0278-00	Copeland Corp. Sidney, Ohio	figure 1-6

*CAPILLARY TUBE ASSEMBLY DESCRIPTION 10 ft. length of .036 ID copper capillary tubing



NOTE: ALL DIM ARE OVERALL INCLUDING HARDWARE

DHORB CO. INC.

NAVSHIPS 0934-LP-109-6010

Figure 1-5. OUTLINE DIMENSIONAL DRAWING

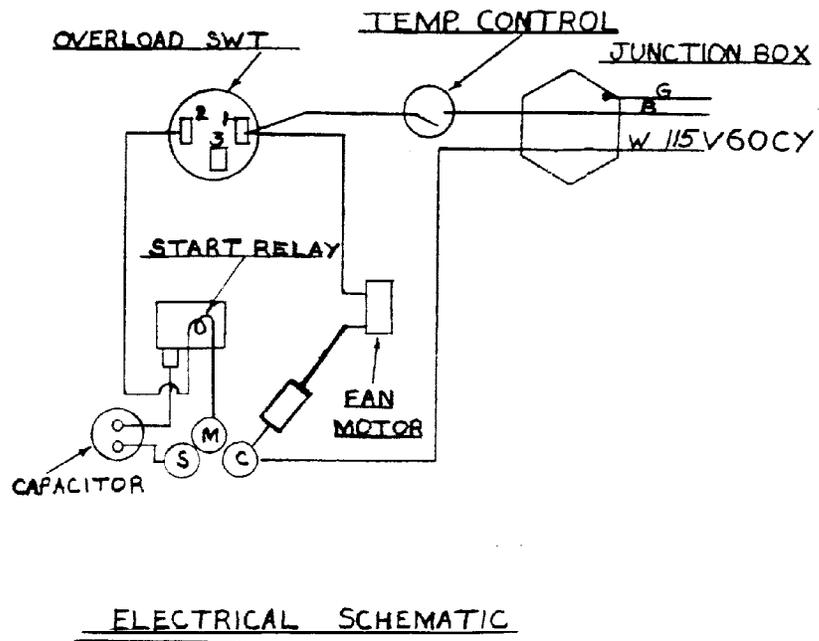
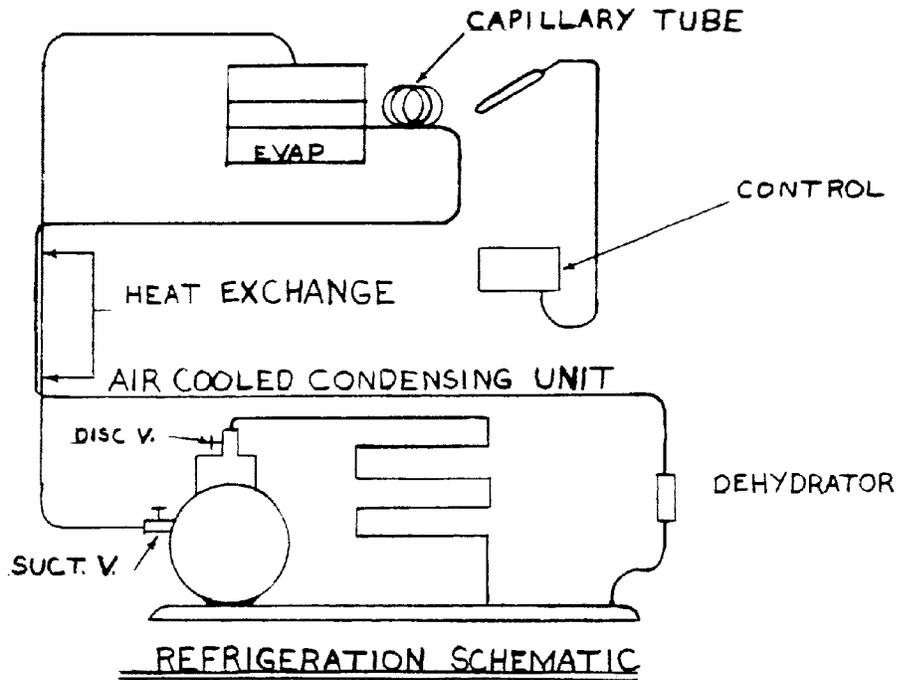


Figure 1-6. REFRIGERATION AND ELECTRICAL SCHEMATIC DIAGRAMS