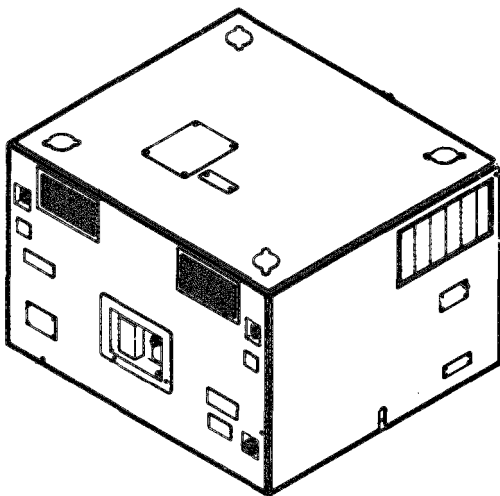


**TECHNICAL MANUAL
OPERATOR'S, ORGANIZATIONAL, DIRECT
SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL**

**AIR CONDITIONER,
BASE MOUNTED, AIR COOLED,
208 VAC, 3-PHASE, 60 Hz,
SINGLE PACKAGE,
36,000 BTU/HR**

NSN 4120-01-122-0629



CHAPTER 1	INTRODUCTION
CHAPTER 2	OPERATING INSTRUCTIONS
CHAPTER 3	OPERATOR'S MAINTENANCE INSTRUCTIONS
CHAPTER 4	ORGANIZATIONAL MAINTENANCE INSTRUCTIONS
CHAPTER 5	DIRECT SUPPORT MAINTENANCE INSTRUCTIONS
CHAPTER 6	GENERAL SUPPORT MAINTENANCE INSTRUCTIONS
APPENDIX A	REFERENCES
APPENDIX B	MAINTENANCE ALLOCATION CHART
APPENDIX C	COMPONENTS OF END ITEM LIST
APPENDIX D	EXPENDABLE SUPPLIES AND MATERIALS LIST
APPENDIX E	WIRE LIST AND DIAGRAMS
	GLOSSARY
	ALPHABETICAL INDEX

WARNINGS

Disconnect main power connector before attempting any electrical servicing of air conditioner.

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100 degrees F (38 degrees C).

Avoid bodily contact with liquid refrigerant and avoid inhaling refrigerant gas. Be especially careful that Refrigerant 22 does not come in contact with eyes. In case of refrigerant leaks, ventilate area immediately.

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Purge system with dry nitrogen prior to soldering. Refrigerant heated to 1200 degrees F creates phosgene gas.

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

The air conditioner must be grounded prior to operation. Connect one end of a number 6AWG (American Wire Gage) copper wire ground lead to an underground metallic water piping system or a driven metal ground rod or buried metal plate. Connect the other end of the ground lead to the grounding bolt on the upper left front corner of the unit.

Refrigerant-22 is contained in the refrigerant system under high pressure. Extreme care must be exercised to prevent refrigerant from coming in contact with exposed skin and eyes. Provide adequate ventilation when discharging the system in a confined area.

Polyurethane foam insulation breaks down to form toxic gases when heated to brazing temperature. All refrigerant gas must be discharged from system before performing any removal procedures of refrigerant components.

Avoid contact with refrigerant acid. Burns could result from contact with refrigerant.

Acetone and methylethyl ketone are flammable and their vapors are explosive. Prolonged or repeated inhalation of fumes on contact with the skin can be toxic. Use in a well ventilated area, wear gloves and keep away from sparks or flame. Scrape or pull off as much of the damaged insulation as possible. Soften the remaining insulation and adhesive with acetone or MEK.

CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 28 February 1995

**Operator's, Organizational, Direct Support, and
General Support Maintenance Manual**

AIR CONDITIONER, BASE MOUNTED, AIR COOLED,
208 VAC, 3-PHASE, 60 HZ, SINGLE PACKAGE, 36,000 BTU/HR
PART NO. 97403-13219E0790
MODEL UAC40-5/6-08, NSN 4120-01-122-0629
MODEL 2463T100-1 , NSN 4120-01-218-6912

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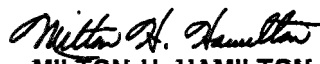
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CHANGE

NO. 2

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WASHINGTON, D.C., 1 JULY 1992

Operator's, Organizational, Direct Support, and
General Support Maintenance Manual

**AIR CONDITIONER, BASE MOUNTED, AIR COOLED,
208 VAC, 3-PHASE, 60 HZ, SINGLE PACKAGE, 36,000 BTU/HR
PART NO. 97403-13219E0790
MODEL UAC40-5/6-08, NSN 4120-01-122-0629
MODEL 2463T100-1, NSN 4120-01-218-6912**

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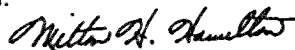
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Operator's, Organizational, Direct Support, and
General Support Maintenance Manual

AIR CONDITIONER, BASE MOUNTED, AIR COOLED,
208 VAC, 3-PHASE, 60 HZ, SINGLE PACKAGE, 36,000 BTU/HR
PART NO. 97403-13219E0790

Model
UAC40-5/6-08
2463T100-1

NSN
4120-01-122-0629
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4-107 and 4-108
4-111 and 4-112
5-21 and 5-22
A-1/A-2

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2-7 and 2-8
4-7 and 4-8
4-53 through 4-60
4-63 and 4-64
4-107 and 4-108
4-111 and 4-112
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General, United States Army
Chief of Staff

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The Adjutant General

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To be distributed in accordance with DA Form 12-25A, Operator, Unit, Direct Support and General Support Maintenance requirements for Air Conditioner, Base Mounted, 36,000 BTU, 208V, AC, 60HZ, 3PH (VAC-40-5/6-08).

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 21 October 1983

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,

AND GENERAL SUPPORT MAINTENANCE MANUAL

AIR CONDITIONER, BASE MOUNTED, AIR COOLED,

208 VAC, 3-PHASE, 60 HZ,

SINGLE PACKAGE, 36,000 BTU/HR

PART NO. 97403-13219E0790

M O D E L	NSN
UAC40-5/6-08	4120-01-122-0629
2463T100-1	4120-01-218-6912

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

TABLE OF CONTENTS

	Page
CHAPTER 1. INTRODUCTION	
Section I. General Information-----	1-1
Section II. Equipment Description and Data-----	1-3
Section III. Principles of Operation-----	1-6
CHAPTER 2. OPERATING INSTRUCTIONS	
Section I. Description and Use of Operators's Controls and Indicators-----	2-1
Section II. Operator Preventive Maintenance Checks and Services-----	2-1
Section III. Operation Under Usual Conditions-----	2-5

TABLE OF CONTENTS (continued)

		Page
Section	IV. Operation Under Unusual conditions -----	2-7
CHAPTER	3. OPERATOR'S MAINTENANCE INSTRUCTIONS	
Section	I. Lubrication Instructions -----	3-1
Section	II. Troubleshooting -----	3-1
CHAPTER	4. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS	
Section	I. Repair Parts, Special Tools, TMDE, and Support Equipment -----	4-1
Section	II. Service upon Receipt of Equipment -----	4-2
Section	III. Preventive Maintenance Checks and Services -----	4-7
Section	IV. Troubleshooting -----	4-12
Section	V. Maintenance Procedures -----	4-20
Section	VI. Preparation for Storage or Shipment -----	4-134
CHAPTER	5. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS	
Section	I. Repair parts, Special Tools TMDE, and Support Equipment -----	5-1
Section	II. Troubleshooting -----	5-2
Section	III. Maintenance Procedures -----	5-7
CHAPTER	6. GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	
Section	I. Troubleshooting -----	6-1
Section	II. Maintenance Procedures -----	6-2
APPENDIX		
	A. References -----	A-1
	B. Maintenance Allocation Chart -----	B-1
	C. Components of End Item List -----	C-1
	D. Expendable Supplies And Materials List -----	D-1
	E. Wire List and Diagram -----	E-1
	F. Glossary -----	F-1
	ALPHABETICAL INDEX -----	INDEX- 1

CHAPTER 1

INTRODUCTION

CHAPTER OVERVIEW

The purpose of this chapter is twofold:

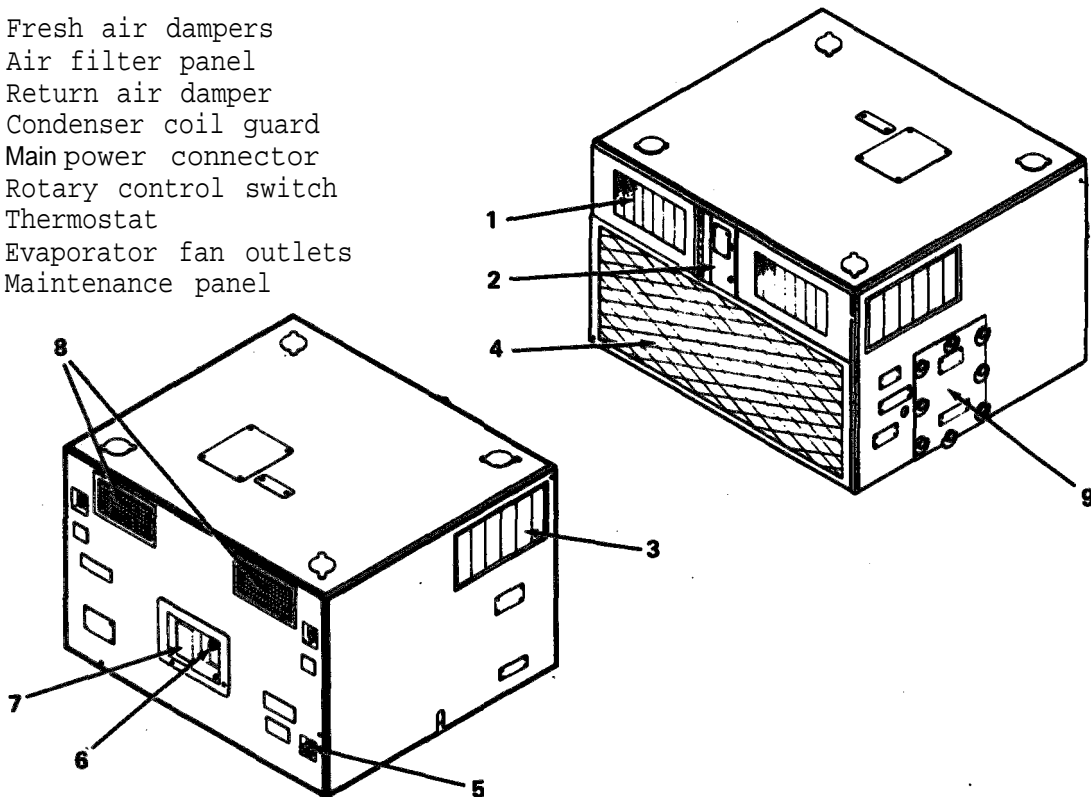
- a. To provide you with the standard data required in all manuals (i.e. forms and record data).
- b. To acquaint you with the air conditioner. This is done by giving you a physical and functional description of those major equipment parts that you are likely to come in contact with.

INDEX

SECTION		PAGE
I.	General Information.	1-1
II.	Equipment Description.	1-3
III.	Technical Principles of Operation.	1-6

SECTION I. GENERAL INFORMATION

1. Fresh air dampers
2. Air filter panel
3. Return air damper
4. Condenser coil guard
5. Main power connector
6. Rotary control switch
7. Thermostat
8. Evaporator fan outlets
9. Maintenance panel



1-1. SCOPE .

- a. Type of Manual: Operator's, Organizational, Direct Support, and General Support Maintenance.
- b. Model Number and Equipment Name: Unifab Industries Inc. model number UAC 40-5/6-08, Talley Corporation model number 2463T100-1, Air conditioner 36,000 BTU/HR, Base Mounted, 208 volt, 3 Phase, 50/60 Cycle, AC, Single Package.
- c. Purpose of Equipment: Provide filtered, cooled air to a desired predetermined range and circulating the air to provide cooling of equipment or personnel within the air conditioned area.

1-2. MAINTENANCE FORMS AND RECORDS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 378-750, the Army Maintenance Management Systems (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE.

Refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy use, for information about destruction.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

Instructions for preparation for storage and shipment are in Chapter 4.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your air conditioner needs Improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do or do not like about your equipment. Let us know why you do not like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 Quality Deficiency Report. Mail it directly to Commander, U.S. Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis; MO 63120-1798.

SECTION II. EQUIPMENT DESCRIPTION

1-6. PURPOSE OF AIR CONDITIONER.

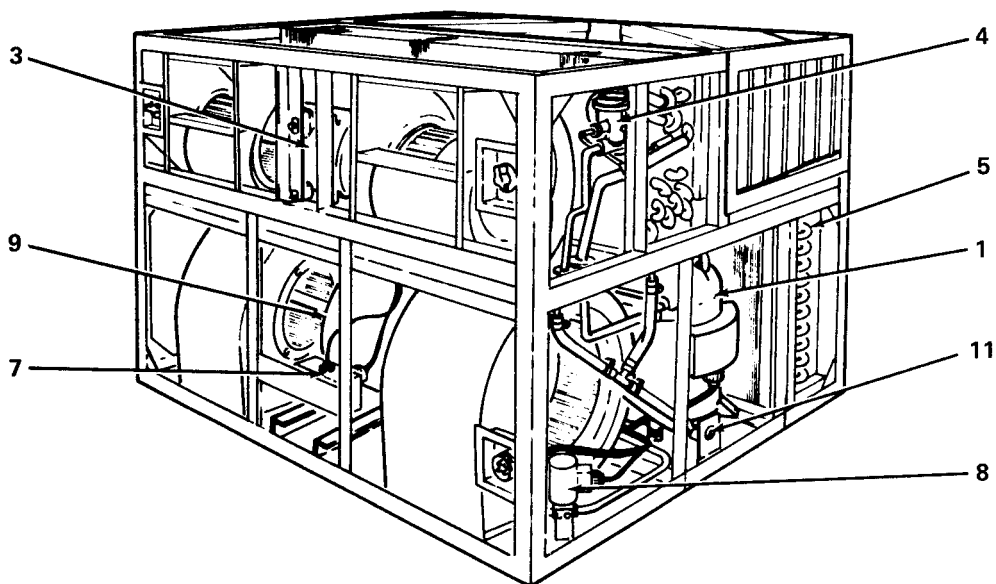
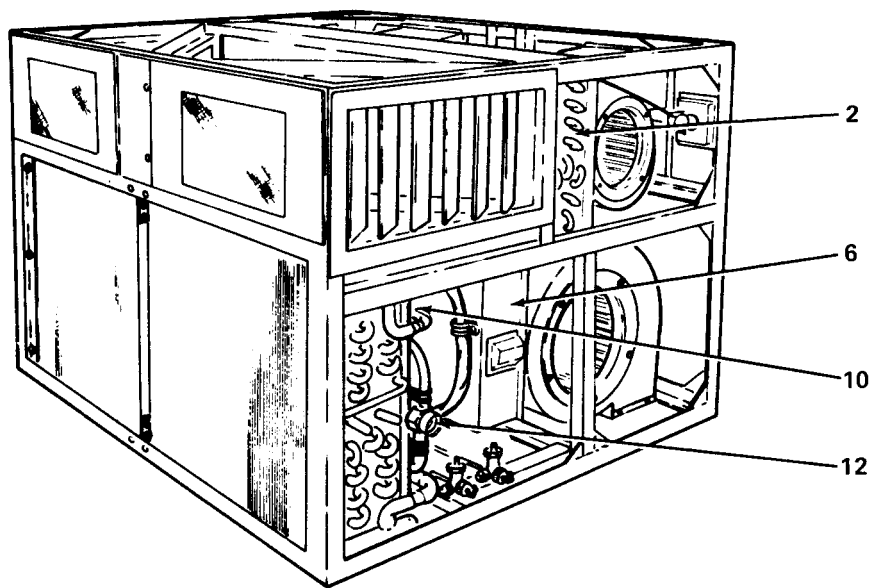
The air conditioner is used primarily in van type enclosures. The units provide filtered, cooled air, as required, to maintain the service conditions necessary for the efficient operation of electronic equipment in the vans. The air conditioner also provide for the comfort of operating personnel housed within the vans.

1-7. CAPABILITIES AND FEATURES.

- a. Base mounted and air cooled.
- b. Electric motor driven and designed for continuous operation under varying loads.
- c. Furnishes air circulation.
- d. Furnishes 36,000 BTU/HR for cooling.
- e. Furnishes fresh air.

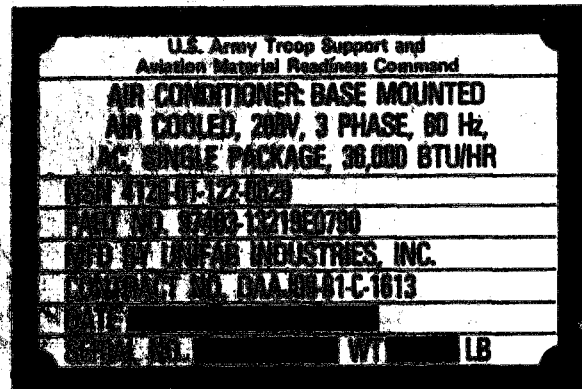
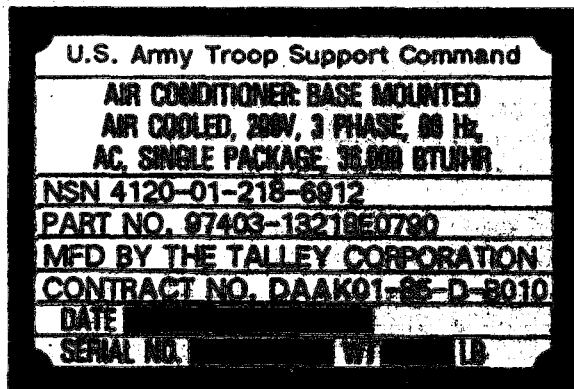
1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

1. Compressor
2. Evaporator coil
3. Evaporator fan motor
4. Expansion valve
5. Condenser coil
6. Junction box
7. Dual pressure switch
8. Solenoid valve
9. Condenser fan motor
10. Dryer
11. Condensate drain exit
12. Sight glass



1-9. IDENTIFICATION.

The air conditioner has one identification plate, it is located on the front panel. It provides the Air Conditioner nomenclature, national stock number, part number, contract number, serial number, and weight.



1-10. EQUIPMENT DATA.

GENERAL

Description	Air Conditioner, Base Mounting
Manufacturer	Unifab Industries, Inc.
Model	UAC 40-5/6-08
National Stock Number	4120-01-122-0629
Manufacturer	The Talley Corporation
Model	2463T100-1
National Stock Number	4120-01-218-6912
Part Number	97403-13219E0790

DIMENSIONS AND WEIGHT

Length	36.92 IN. (.93 m)
Width	42.34 IN. (1.07 m)
Height	27.85 IN. (.70 m)
Weight	475 lbs. (215 kg)
Max Power Requirement	8.5 kw

SPECIFICATIONS

Capacity	36,000 BTU/HR
Volts	208
Hertz	60
Phase	3

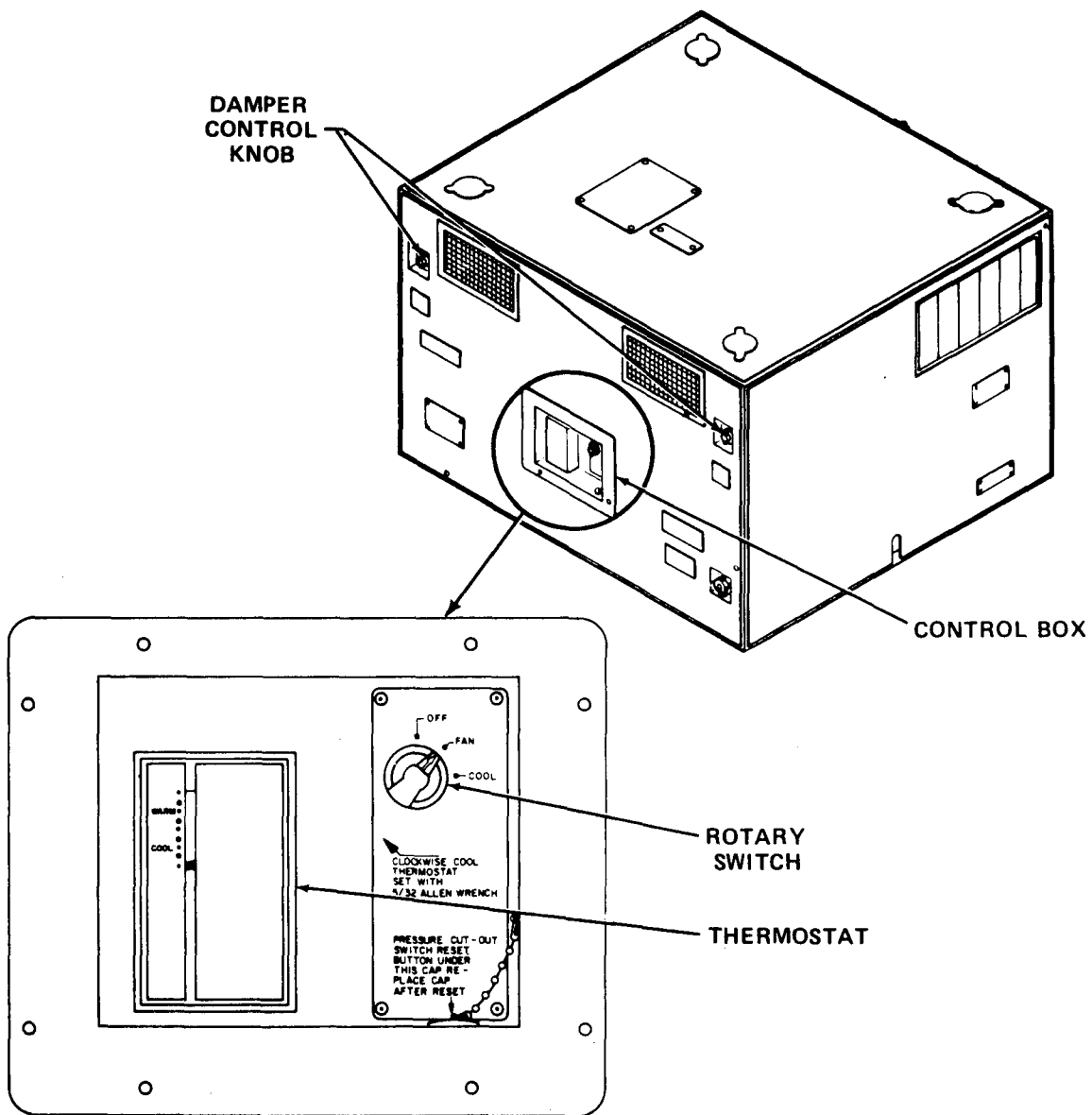
SECTION III. TECHNICAL PRINCIPLES OF OPERATION

1-11. GENERAL.

The air conditioner is a base mounted, self-contained, electric motor driven unit that provides 36,000 BTU/HR for cooling. Once started, it operates automatically due to the relationship of the components, controls and instruments.

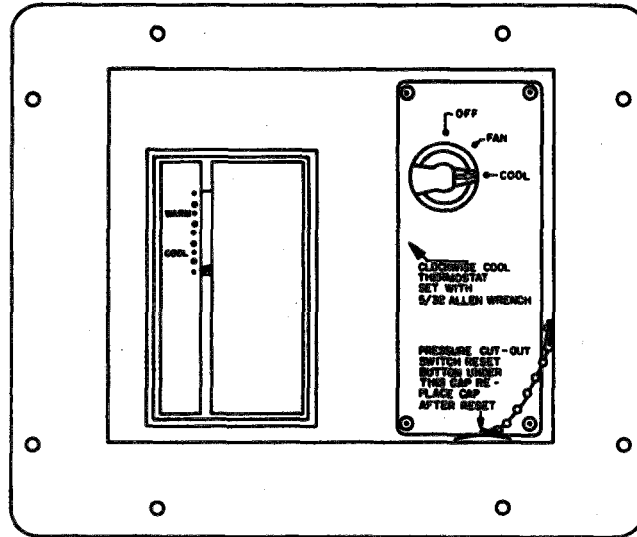
1-12. VENTILATION.

Placing the selector switch in the FAN position energizes the fan motor which forces air out of the evaporator fan guard. The amount of outdoor air used for ventilation is determined by the position of the damper control knobs.



1-13. COOLING.

With the selector switch in the COOL position the fan motors and the compressor are energized. The fan motors and compressor run continuously. The thermostat controls the amount of cooling.



CHAPTER 2

OPERATING INSTRUCTIONS

CHAPTER OVERVIEW

This chapter contains a functional description of the major components of the air conditioner. It explains how to operate the Air Conditioner. For your convenience, below is an index of this chapter.

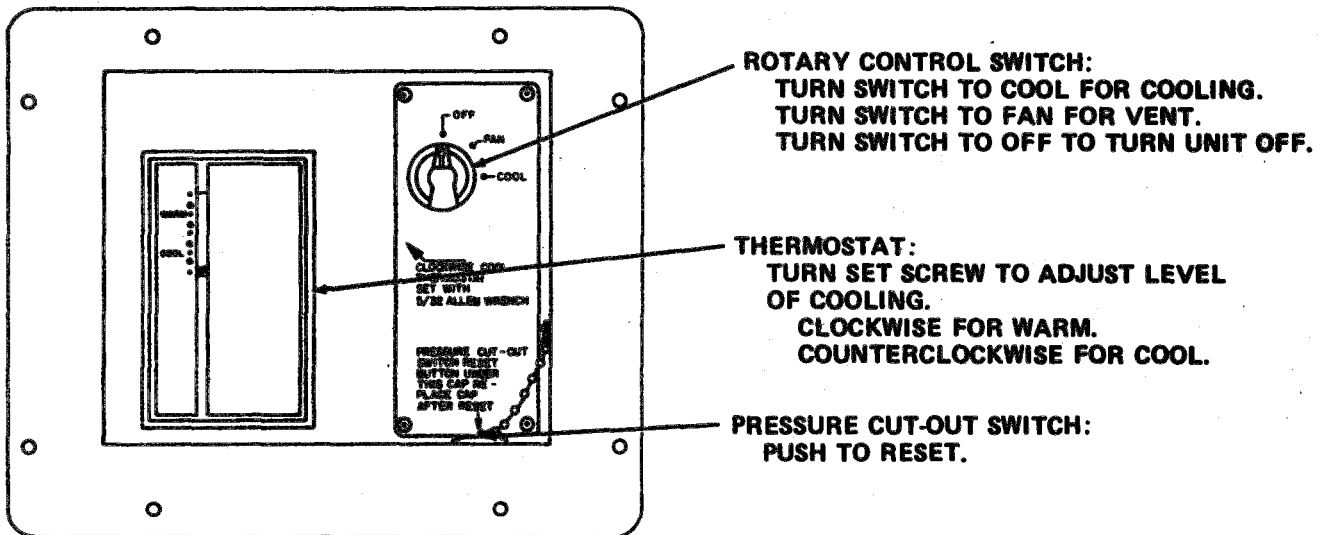
INDEX

SECTION	TITLE	PAGE
I.	Instructions	2-1
II.	Under Usual Conditions	2-5
III.	Under Unusual Conditions	2-7
IV.	Preventive Maintenance Checks and Services	2-2

SECTION I. DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

2-1. GENERAL.

This section describes, locates, illustrates, and furnishes the operator/crew personnel sufficient information about the various controls and indicators for the proper operation of the air conditioning unit.



SECTION II. PREVENTATIVE MAINTENANCE CHECKS AND SERVICES

2-2. GENERAL.

Preventative Maintenance Checks and Services (PMCS, Table 2-1.) are to be completed to ensure the air conditioner is ready to use at all times. These checks and services help you find and repair defects before the air conditioner is damaged or fails.

2-3. PMCS PROCEDURES.

- a. Item numbers in the first column of Table 2-1 are the order in which inspections are to be done. Column two "Interval" lists when to do them.
- b. If minor defects are found when the air conditioner is running take notes on what they are and notify organizational maintenance.

CAUTION

While the air conditioner is running, if any defect develops that you think will damage the air conditioner, stop it at once.

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

B-Before Operation		D-During Operation		A-After Operation
ITEM NO.	INTERVAL B D A	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
1	*	Inspect controls and fittings for defective or loose parts.		
2	*	Screens and Grilles (Check for dirt and obstructions).		

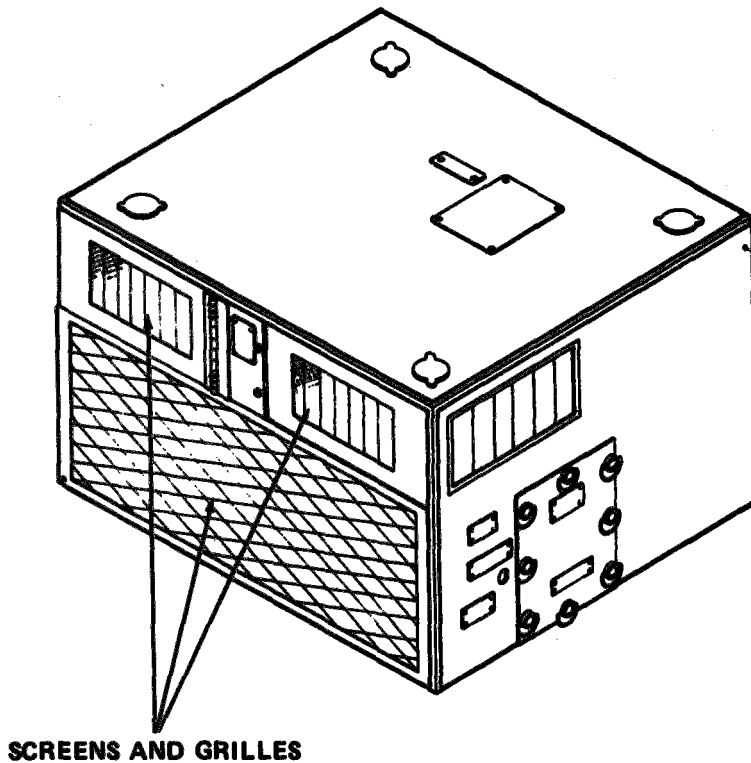


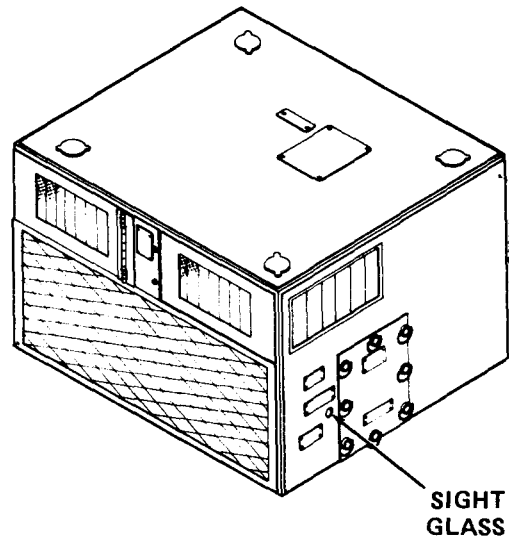
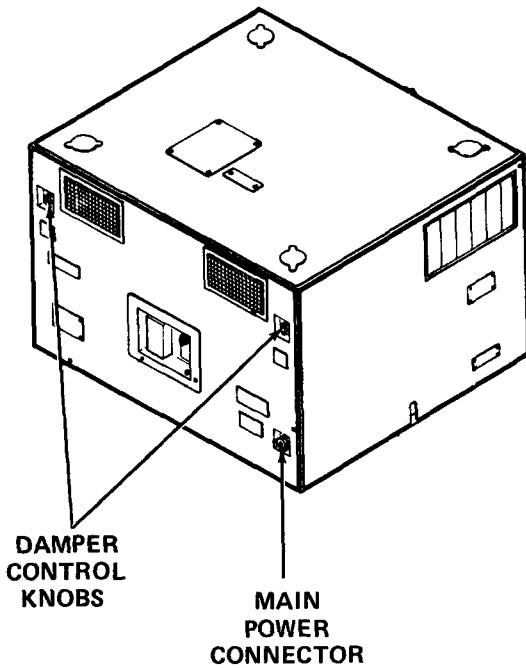
TABLE 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICE

B-Before Operation		D-During Operation		A-After Operation
ITEM NO.	INTERVAL B D A	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
3	*	Sight Glass (Check for cloudy or bubbles).		
4	*	Damper Control (Check for Freedom of movement).		
5	*	Noise or Vibration (Listen for any unusual noise or vibration).		
6	*	Panels (Check for damage).		

WARNING

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

7 * Main Power Connector (Inspect for loose connection).



SECTION III. OPERATION UNDER USUAL CONDITIONS

2-4. PREPARATION FOR USE.

- a. Inspect the entire unit for external damage. Report any deficiencies to the proper maintenance level.

WARNING

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

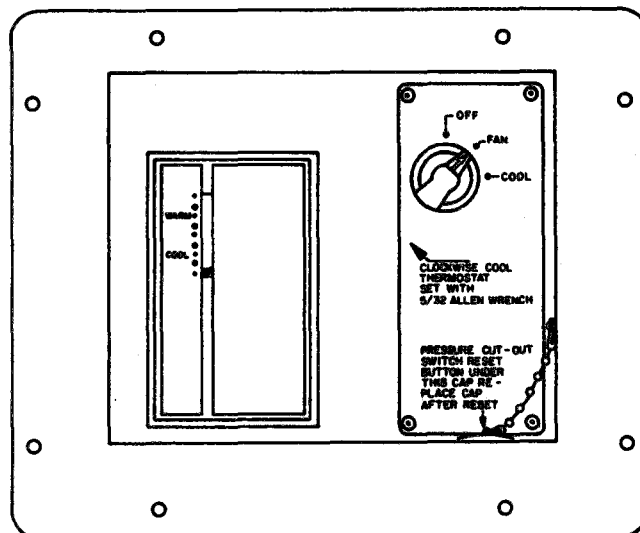
- b. Connect power.
- c. Perform preventive maintenance checks and services.

2-5. STARTING THE EQUIPMENT.

Before you operate: Always keep in mind the CAUTIONS AND WARNINGS.

a. Ventilation mode.

- (1). Turn rotary control switch to FAN position.
- (2). Adjust damper to admit fresh air as desired.



2-5. STARTING THE EQUIPMENT (cont.).

CAUTION

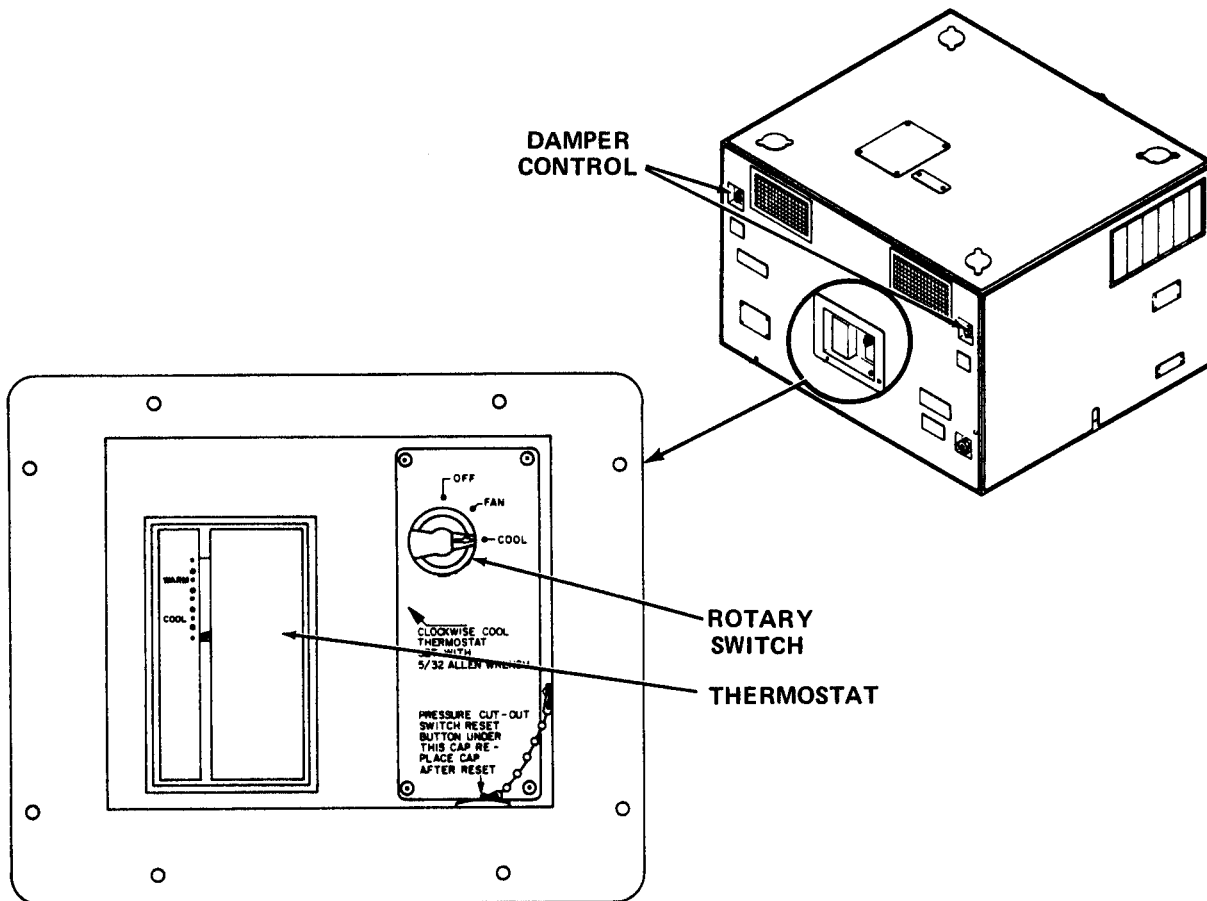
Assure that crankcase heater is on six hours prior to operating.

NOTE

For maximum cooling capacity when outside temperature is high, set damper controls at full MIN position.

b. Cooling mode.

- (1). Set thermostat for desired room temperature.
- (2). Turn rotary control switch to COOL.
- (3)0 Turn damper control knobs to desired position from MIN (100% RETURN-AIR) to MAX (100% FRESH-AIR).

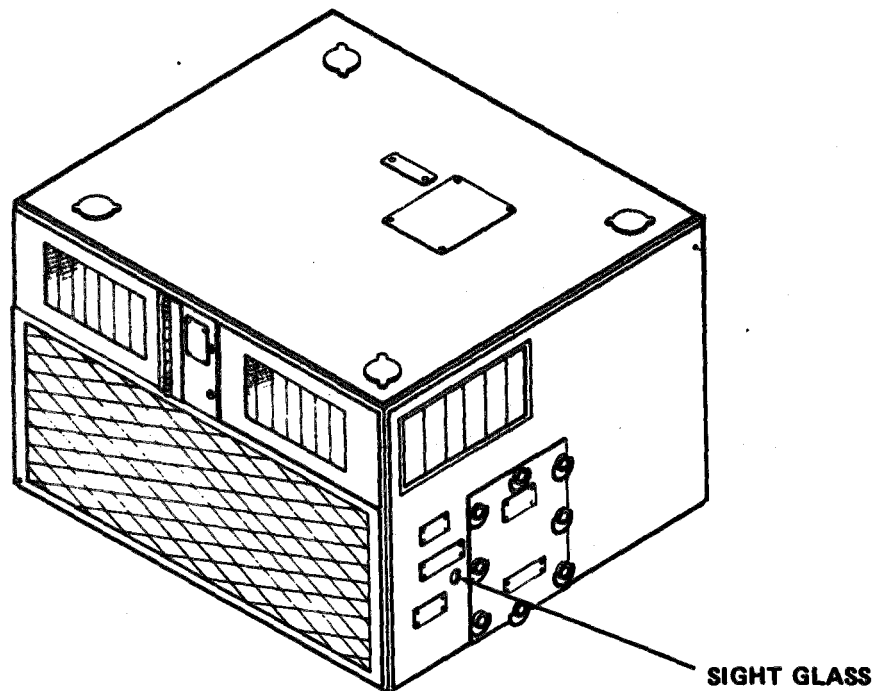


2-6. OPERATION.

Allow 15 minutes operation to ensure unit has stabilized, then check sight glass for cloudiness. If unit does not operate, refer to troubleshooting procedures in Chapter 3 of this manual.

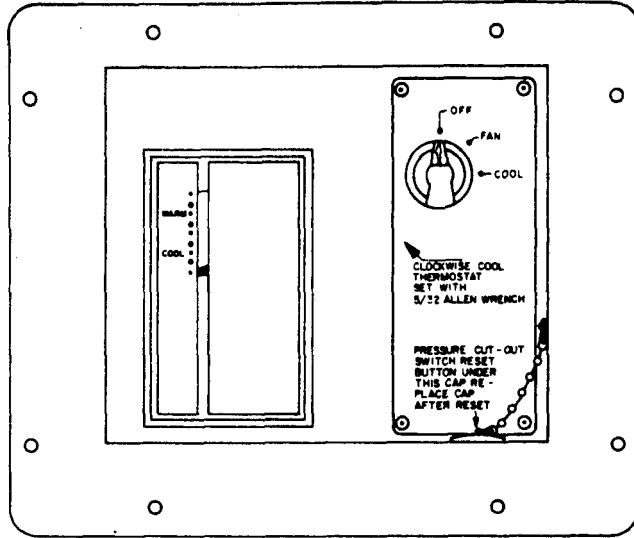
CAUTION

Check sight glass for bubbles or yellow color. If sight glass is bubbly yellow color, notify Direct Support Maintenance. If the glass is free of bubbles and the dot is green, the system is properly charged.

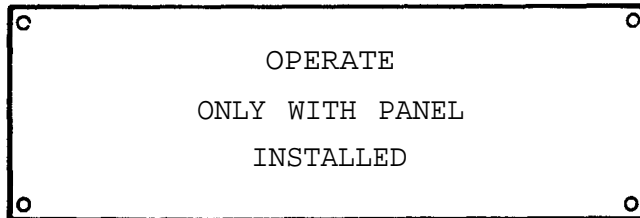
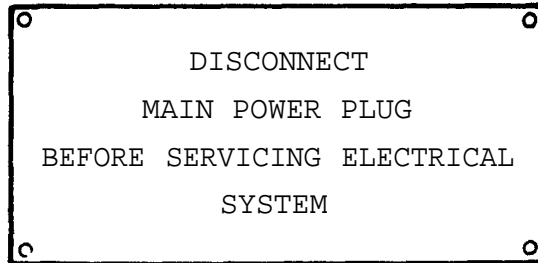


2-7. STOPPING.

Turn rotary control switch to OFF position.



2-8. OPERATIONAL INSTRUCTION WARNING PLATES.



SECTION IV OPERATION UNDER UNUSUAL CONDITIONS

2-9. OPERATION IN EXTREME COLD.

- a. Keep entire unit free of snow and ice.
- b. Cover unit when not in use.

2-10. OPERATION IN EXTREME HEAT.

- a. Shade air conditioner from direct sunlight.**
- b. Cut amount of fresh air used.

2-11. OPERATION IN DUSTY OR SANDY AREAS.

When used for extended period of time a checking and cleaning procedure should be followed at frequent intervals to prevent accumulation.

2-12. OPERATION UNDER RAINY OR HUMID CONDITIONS.

- a. Keep unit clean and dry.
- b. Cover unit when not in use.
- c. Remove cover during dry periods and allow unit to dry.

2-13. OPERATION IN SALT WATER AREAS.

- a. Rinse with clean water and dry as much of unit as possible to prevent corrosion.
- b. Cover unit when not in use.

2-14. OPERATION IN HIGH ALTITUDES.

- a. The operating efficiency of the unit will be reduced at higher altitudes.
- b. The unit is designed to operate in altitudes up to 5000 feet.**

CHAPTER 3

OPERATOR'S MAINTENANCE INSTRUCTIONS

CHAPTER OVERVIEW

This chapter contains all the necessary maintenance instructions to keep your air conditioner in good repair.

INDEX

SECTION	TITLE	PAGE
I.	Lubrication Instructions.	3-1
II.	Operator Troubleshooting.	3-1
III.	Operator Troubleshooting Table.	3-2

SECTION I. LUBRICATION INSTRUCTIONS

3-1. There is no lubrication required for this air conditioner.

SECTION II. TROUBLESHOOTING

3-2. GENERAL.

- a. Table 3-1 provides information useful in diagnosing and correcting malfunctions which you may find during the operation or maintenance of the unit or its components. Perform the tests/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

SECTION III. OPERATOR TROUBLESHOOTING TABLE

TABLE 3-1 OPERATOR TROUBLE SHOOTING TABLE

MALFUNCTION	TEST OF INSPECTION	CORRECTIVE ACTION
VENTILATION MODE (ONLY)		

1. AIR CONDITIONER FAILS TO OPERATE.

WARNING

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

Step 1. Check to see if main power cord is plugged in.

Connect power cable to air conditioner.

Step 2. Check to see that power supply circuit breaker is in the ON position.

Place circuit breaker to the ON position.

Step 3. Check to see if selector switch is in fan position.

Place selector switch in fan position.

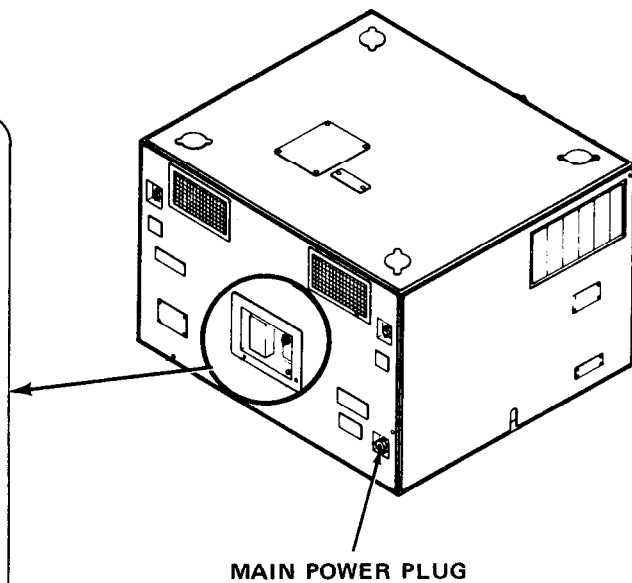
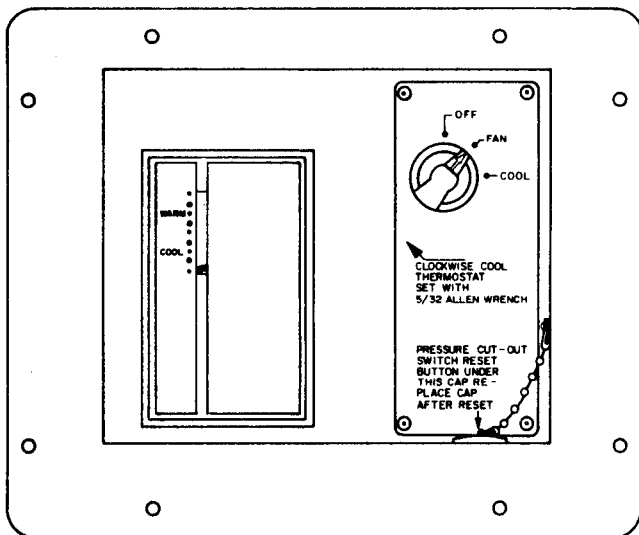


TABLE 3-1 OPERATOR TROUBLESHOOTING TABLE (cont.)

MALFUNCTION	TEST OF INSPECTION	CORRECTIVE ACTION
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COOLING MODE

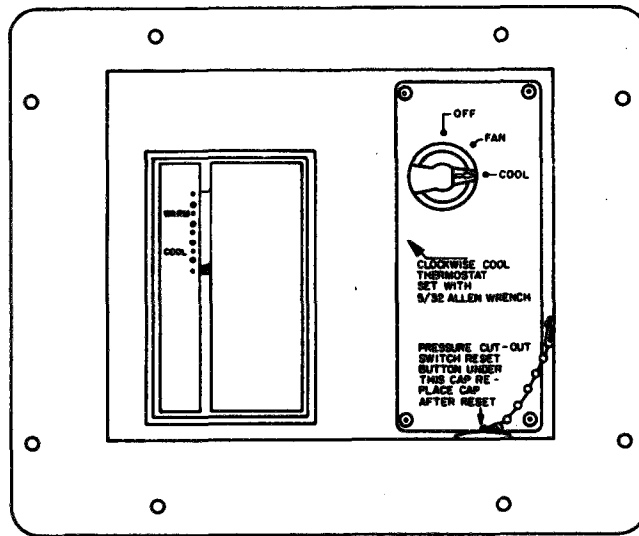
2. INSUFFICIENT COOLING.

Step 1. Check to see if selector switch is in COOL position.

Place selector switch in COOL position.

Step 2. Check to see if THERMOSTAT is in COOLER position.

Notify Organizational Maintenance.



Step 3. Inspect air filter and return air grilles for obstructions.

Notify Organizational Maintenance.

Step 4. Inspect sight glass for bubbles.

Notify Organizational Maintenance.

CHAPTER 4

ORGANIZATION MAINTENANCE INSTRUCTIONS

This chapter contains the following frequently used maintenance information.

The symptom index on page 4-12 is a guide to the troubleshooting information. There is also an index to the maintenance procedures on page 4-21.

INDEX

SECTION	TITLE	Page
I.	Repair Parts, Special Tools, TMDE, and Support Equipment	4 - 1
II.	Service Upon Receipt	4 - 2
III.	Preventive Maintenance Checks and Services	4 - 7
IV.	Troubleshooting	4-12
V.	Maintenance Procedures	4-20
VI.	Preparation for Shipment or Storage	4-134

SECTION I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organizational and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

No special tools, TMDE, or support equipment are required for this air conditioner.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 5-4120-375-24P.

SECTION II. SERVICE UPON RECEIPT

4-4. UNLOADING THE EQUIPMENT.

The crated air conditioner may be unloaded and moved by any means, provided the unit weight is supported by the base platform.

4-5. UNPACKING THE EQUIPMENT.

CAUTION

So that the unit is protected, it should be left crated until moved to the location where it is to be installed.

- a. General. To uncrate the unit, remove the bands from the top panel and lift off the top. Remove sides in a similar manner. The unit is then ready for inspection.
- b. Depreservation. Prepare the air conditioner for inspection and operation as outlined on DA Form 2258 (depreservation Guide for Vehicles and Equipment).

4-6. INSPECTING AND SERVICING EQUIPMENT.

- a. Inspect the entire air conditioning unit, including motors, fans, controls, etc., to be certain that all parts have been received and without damage. Report any deficiencies to the proper maintenance level.

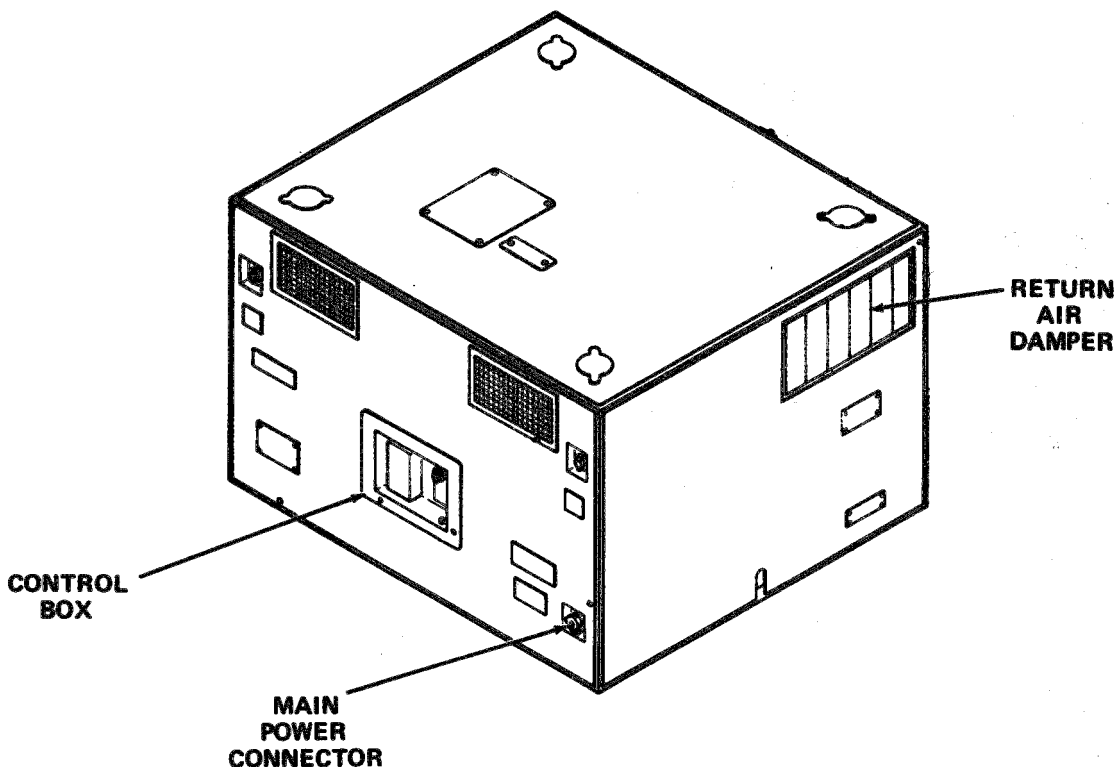
CAUTION

Do not remove tags from equipment until the instructions have been followed. Failure to follow these instructions can result in serious damage to the equipment.

- b. Test the joints in the refrigerant circuit for leaks in accordance with paragraph 5-17.

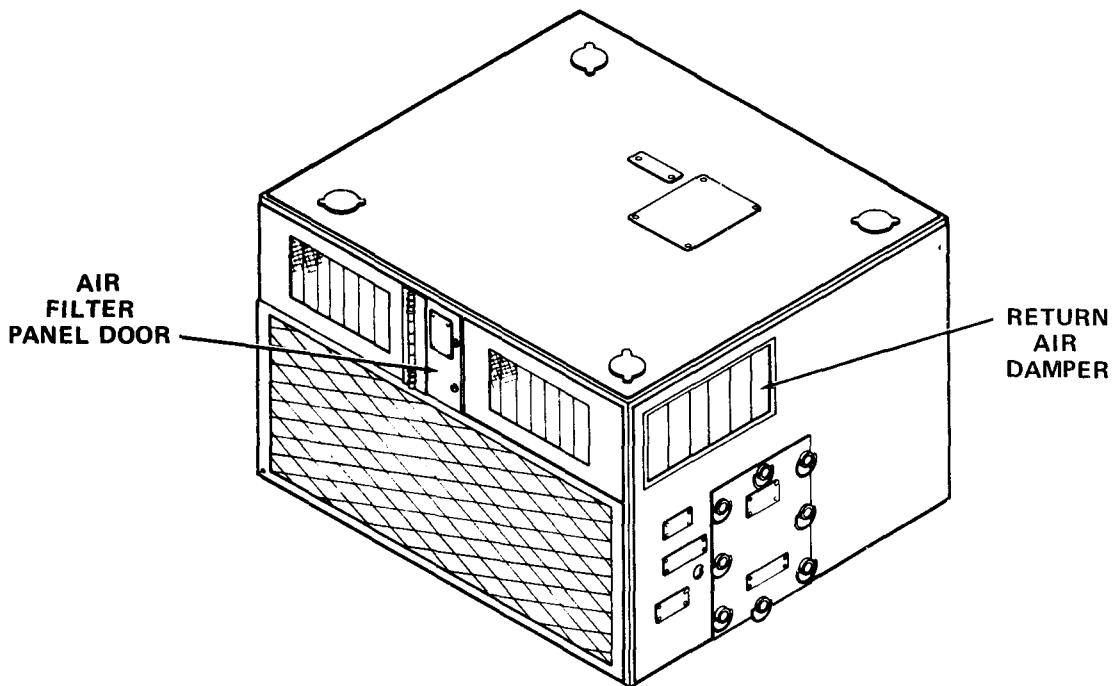
4-7. SERVICE UPON RECEIPT CHECKLIST.

LOCATION	ITEM	ACTION
1. Exterior	Panels and Grilles	a. Inspect for signs of rough handling and damage. b. Service or reject any component if damage prevents the air conditioner from working.
2. Front	Control Box	a. Check for broken or damaged knob. Insure that switches move freely from position to position. b. Repair any component that is found to be malfunctioning.
3. Front Panel	Main Power Connector	a. Inspect main power connector for damage. b. Repair or replace main power connector properly.



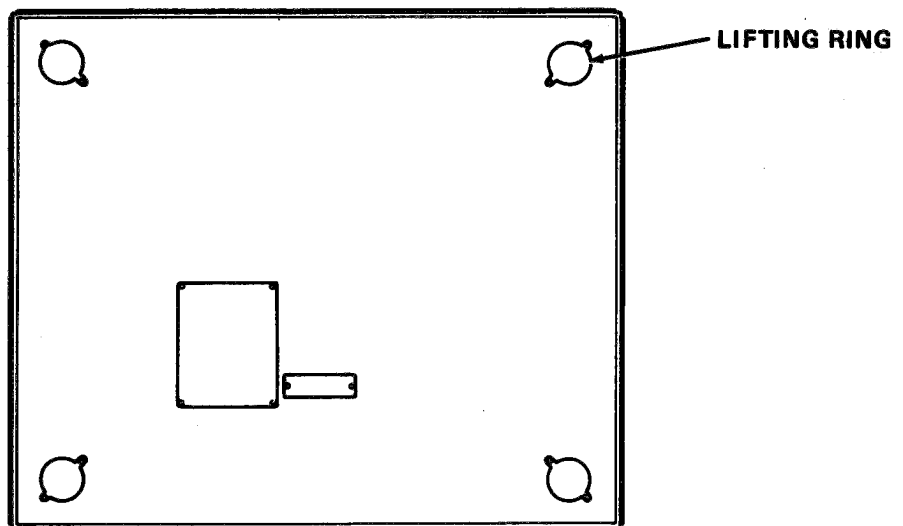
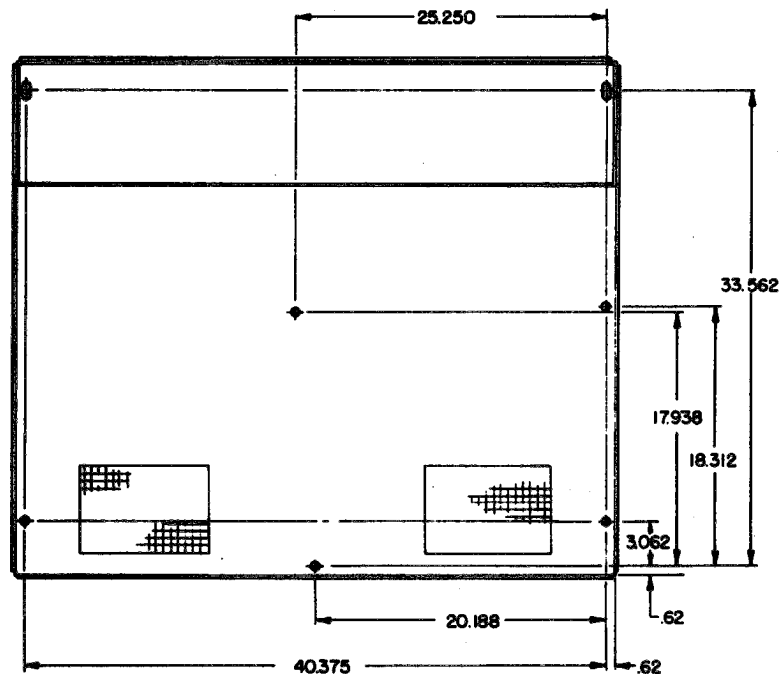
4-7. SERVICE UPON RECEIPT CHECKLIST. (cont.)

LOCATION	ITEM	ACTION
4. Back	Air Filter	<ul style="list-style-type: none"> a. Open air filter panel door. b. Remove air filters and inspect the filter for accumulation of dirt. c. Clean filter.
5. Side	Return Air Damper	<ul style="list-style-type: none"> a. Check to see that the FRESH AIR control moves freely between the the MIN and MAX position and that the return air damper opens and closes properly. b. Adjust or repair FRESH AIR controls.



4-8. INSTALLATION INSTRUCTIONS.

- a. The unit may be supported by, or suspended from, any convenient part of the van or trailer capable of withstanding a concentrated load of approximately 550 pounds (292 kg.).
- b. If the unit is to be mounted near a wall or partition, allow clearance to permit removal of panels.
- c. Follow the base plan in figures below in selecting a suitable location or in constructing an installation base. Lift unit by lifting rings only.



4-8. INSTALLATION INSTRUCTIONS. (cont.)

- d. Connect a 1/2 inch threaded pipe to the drain connections on the bottom right side of the unit to remove condensate water. Extend piping or hose to deposit water in a suitable location or container. Drain system must have "U" trap on exterior drain line.
- e. Be sure the main rotary switch on the control box is in the OFF position, and connect a 208 volt, 60 cycle, 3 phase power source to the main power connector at the lower right front corner of the unit.

WARNING

The air conditioner must be grounded prior to operation. Connect one end of a number 6AWG (American Wire Gage) copper wire ground lead to an underground metallic water piping system or a driven metal ground rod or buried metal plate. Connect the other end of the ground lead to the grounding bolt on the upper left front corner of the unit.

- f. The new unit should not require servicing, as it is shipped completely assembled and ready to operate when power is applied. However, if any defects have been found during the inspection of the equipment they should be corrected as necessary before the unit is placed into operation.

SECTION III. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**4-9. GENERAL.**

To insure that the air conditioner is ready for operation at all times, it must be inspected systematically so that the defects may be discovered and corrected before the result is serious damage or failure. Defects discovered during operation of the unit shall be noted for future corrections to be made as soon as an operation has ceased. Stop operation which would damage the equipment if operation were to continue. All deficiencies and shortcomings shall be recorded together with the corrective action taken on DA Form 2404 "Equipment Inspection and Maintenance Worksheet", at the earliest opportunity. If your equipment fails to operate, troubleshoot with proper equipment. Report any deficiencies using proper forms, (See DA PAM 738-750).

4-10. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).**WARNING**

Dry cleaning solvent, P-D-680, or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100 degrees F (38 degrees C).

WARNING

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi (2.11 kg/cm²) and then only with effective chip guarding and personal protective equipment.

Table 4-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

M-Monthly		Q-Quarterly		S-Semiannually
ITEM NO.	INTERVAL M Q S	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
1.	*	Controls and fittings	Check for defective or loose parts.	If damaged repair or replace controls in accordance with paragraph 4-16.
2.	*	Refrigeration components	Check for visable and audible leaks.	If leak exist notify Direct Support Maintenance.
3.	*	Fresh air filters	Check for dirt or damage.	Replace fresh air filters in accordance with paragraph 4-19.

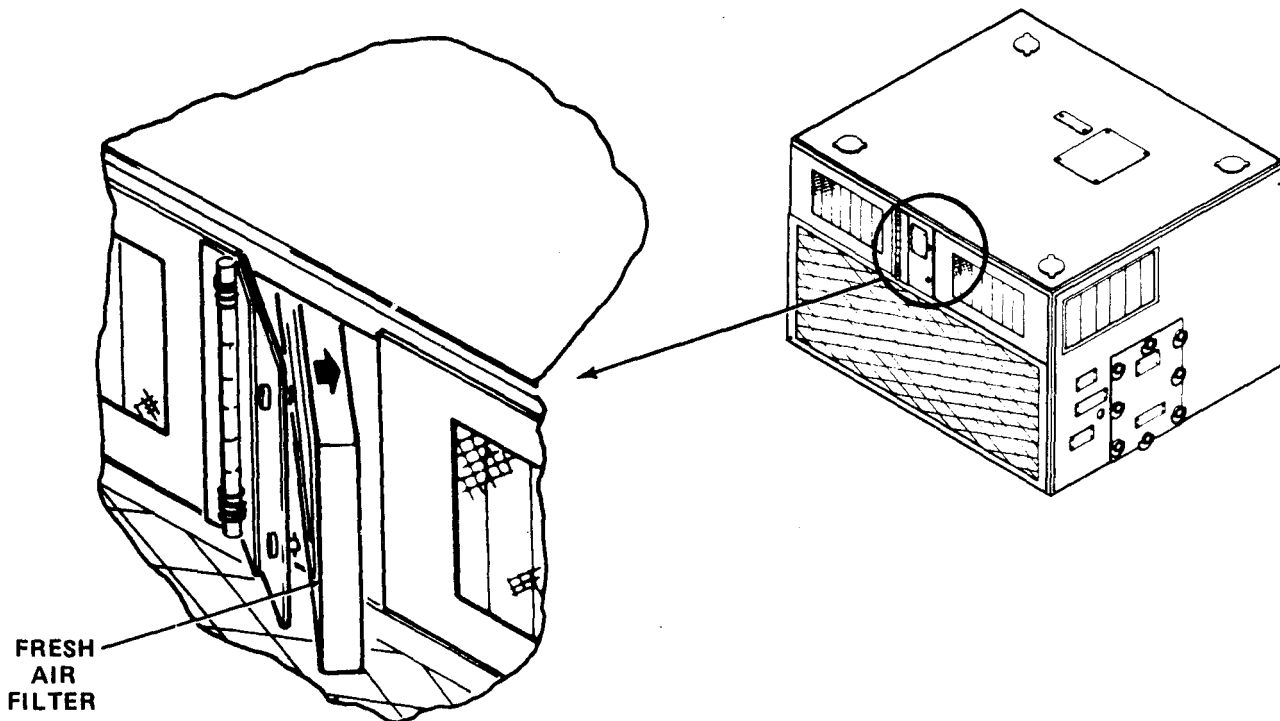


Table 4-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (cont.)

M-Monthly		Q-Quarterly		S-Semiannually
ITEM NO.	INTERVAL M Q S	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY; AVAILABLE IF':
4.	*	Screens and Grilles	Check for dirt or damage.	If damaged repair or replace screens and grilles in accordance with paragraph 4-17 and 4-18.
5.	*	Damper control	Check for freedom of movement.	Adjust or replace damper control in accordance with paragraph 4-20.

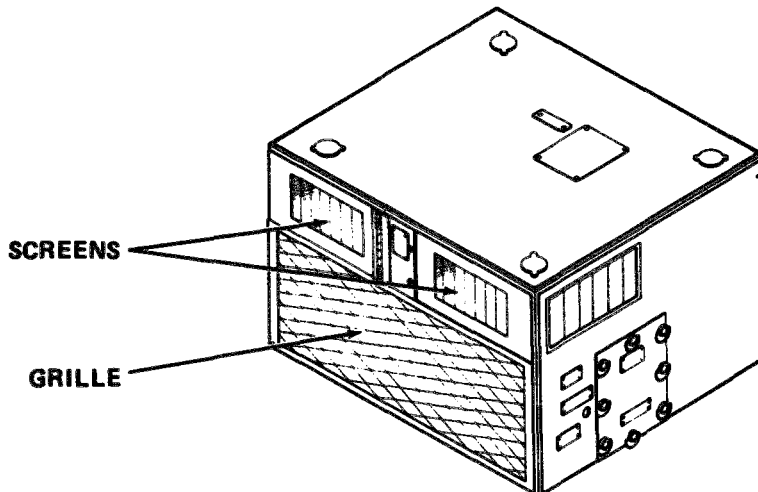
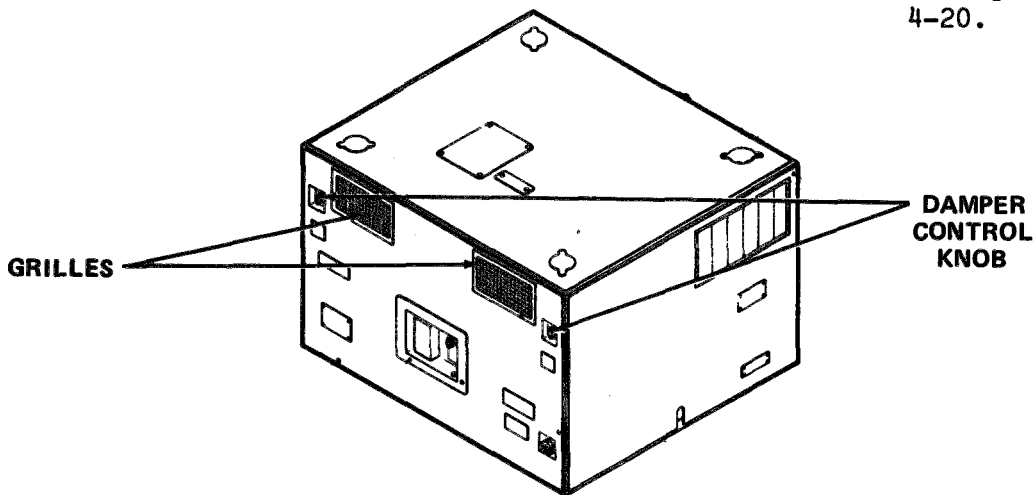
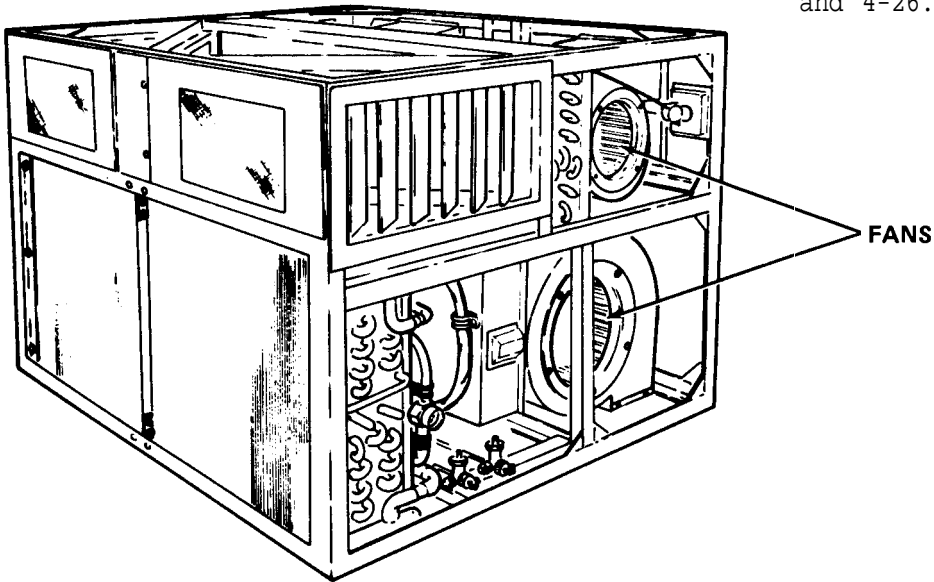


Table 4-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (cont.)

M-Monthly		Q-Quarterly		S-Semiannually
ITEM NO.	INTERVAL M Q S	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
6.	* S	Fans	Check for security of attachment, bent or broken blades.	If damaged repair or replace fans in accordance with paragraphs 4-25 and 4-26.



7.	* S	Thermostat	Check for proper operation. Inspect for security of attachment.	If damaged repair or replace thermostat in accordance with paragraph 4-16.
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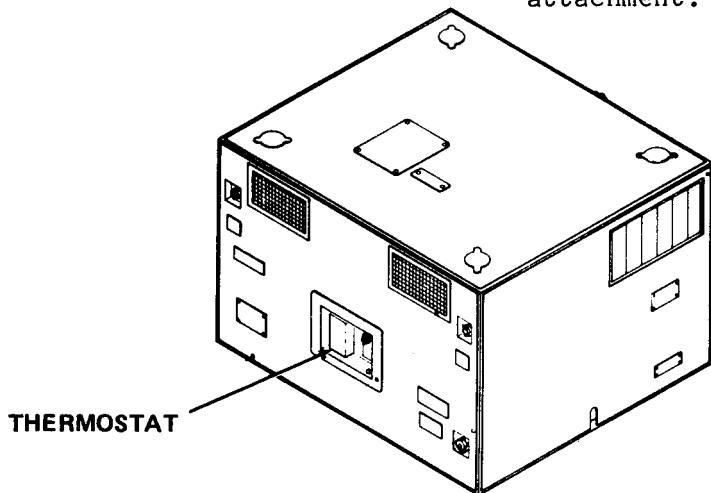
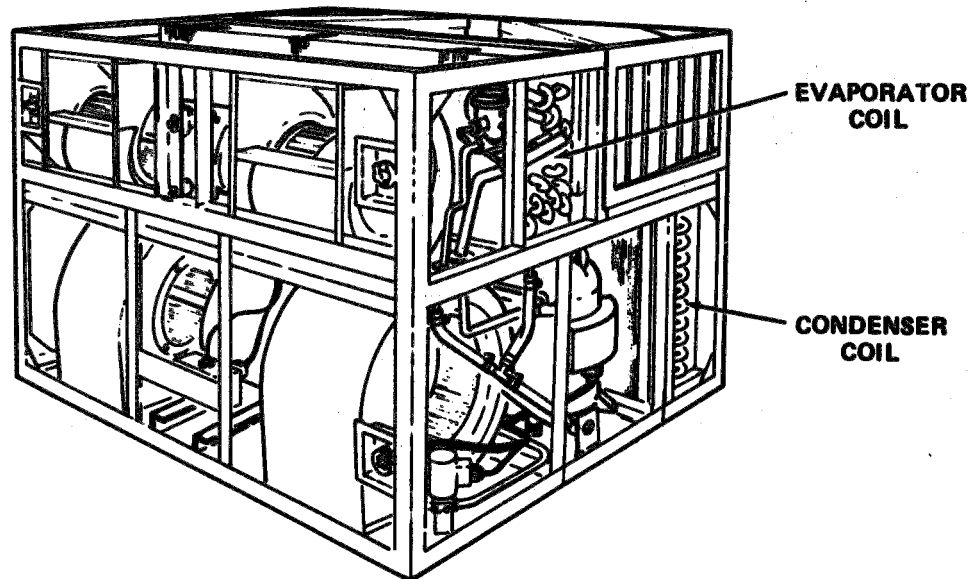


Table 4-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (cont.)

M-Monthly		Q-Quarterly		S - Semiannually
ITEM No.	INTERVAL M Q S	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
8.	*	Evaporator coil	Check evaporator coil for cleanliness. Check for visible and audible leaks.	If leaks exist notify Direct Support Maintenance.
9.	*	Condenser coil	Check condenser coil for cleanliness. Check for visible and audible leaks.	If leaks exist notify Direct Support Maintenance.



SECTION IV. TROUBLESHOOTING

4-11. TROUBLESHOOTING.

- a. Table 4-2 contains troubleshooting information for locating and correcting most of the operating troubles which are the responsibility of organizational maintenance. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. Perform the tests/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.
- c. Only those functions within the scope of organizational maintenance are listed. For troubleshooting procedures within the scope of operator/crew maintenance, refer to Table 3-1 .

4-12. SYMPTOM INDEX.

Locate the malfunction which is the same, or most nearly the same, as the trouble you are having with the air conditioner. The Symptom Index lists the first page of troubleshooting information for that malfunction. Follow the steps one by one, and perform the corrective actions listed.

Malfunction Number	Description	Page
1.	Air conditioner fails to operate.	4-13
2.	Compressor fails to start.	4-14
3.	Insufficient cooling.	4-15
4.	Evaporator fan fails to operate	4-15
5.	Condenser fan fails to operate	4-16

Table 4-2. TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

VENTILATION MODE ONLY

1. AIR CONDITIONER FAILS TO OPERATE.

WARNING

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

Step 1. Check to see if main power is plugged in.

Connect power cable to a source supplying 208VAC, three phase, 60 Hz. power.

Step 2. Check to see if main power connector is defective in accordance with paragraph 4-23.

Replace defective main power connector in accordance with paragraph 4-23.

Step 3. Check for loose electrical connections.

Tighten electrical connections.

Step 4. Check for defective wiring in accordance with paragraph 4-24.

Replace defective wiring. Use identical wire consult Appendix F-and solder (Item 12, table D-1) all terminals connectors in accordance with paragraph 4-24.

Step 5. Check to see that selector switch is in FAN position.

Place selector switch in FAN position. If the air conditioner will NOT operate check for a defective switch in accordance with paragraph 4-16. Replace defective switch in accordance with paragraph 4-16.

Table 4-2. TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
COOLING MODE		
2. COMPRESSOR FAILS TO START.	Step 1. Loosen eight turnlock fasteners on maintenance panel. Remove maintenance panel.	Place circuit breaker in the ON position. If the air conditioner will not operate in the COOL position, check for a defective circuit breaker in accordance with paragraph 4-22. Replace defective circuit breaker in accordance with paragraph 4-22.
	Step 2. Check to see if dual pressure switch contacts are open.	Push reset button at the dual pressure switch. If compressor does not start, stop air conditioner. Notify Direct Support Maintenance.
<u>WARNING</u>		
Be careful when working with high voltage. Failure to comply can result in serious injury or death.		
	Step 3. Check to see that selector switch is in COOL position.	Place selector switch in COOL position. If the air conditioner will NOT operate check for a defective switch in accordance with paragraph 4-16. Replace defective switch in accordance with paragraph 4-16.

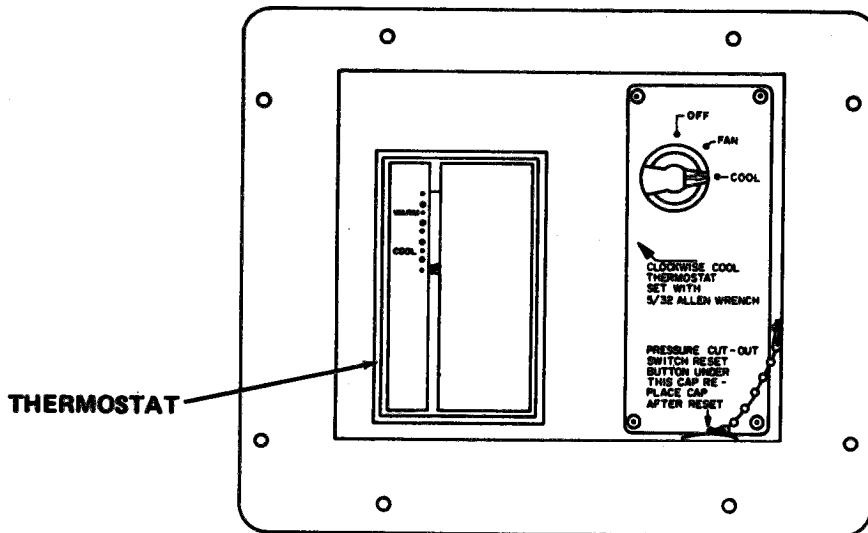
Table 4-2. TROUBLESHOOTING (cont.)

MALFUCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. INSUFFICIENT COOLING.

Step 1. Check to see that thermostat (temperature control) is set correctly.

Place thermostat in cooler position.
 Replace defective thermostat in accordance with paragraph 4-16.



Step 2. Check for correct operation of evaporator fan assembly.

Replace or repair damaged evaporator fan assembly in accordance with paragraph 4-25.

Table 4-2. TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

Step 3. Check for correct operation of condenser fan assembly.

Replace or repair damaged condenser fan assembly in accordance with paragraph 4-26.

Step 4. Check fresh air dampers.

Remove eight screws and eight rubber washers securing lifting ring covers to top panel and frame.

Remove lifting ring covers.

Remove twenty-three screws and eight screws securing top panel to frame.

Remove top panel.

Inspect for freedom of movement, lubricate if required (Item 17, table D-1).

Tighten loose mountings.

Replace or repair fresh air dampers, in accordance with paragraph 4-20.

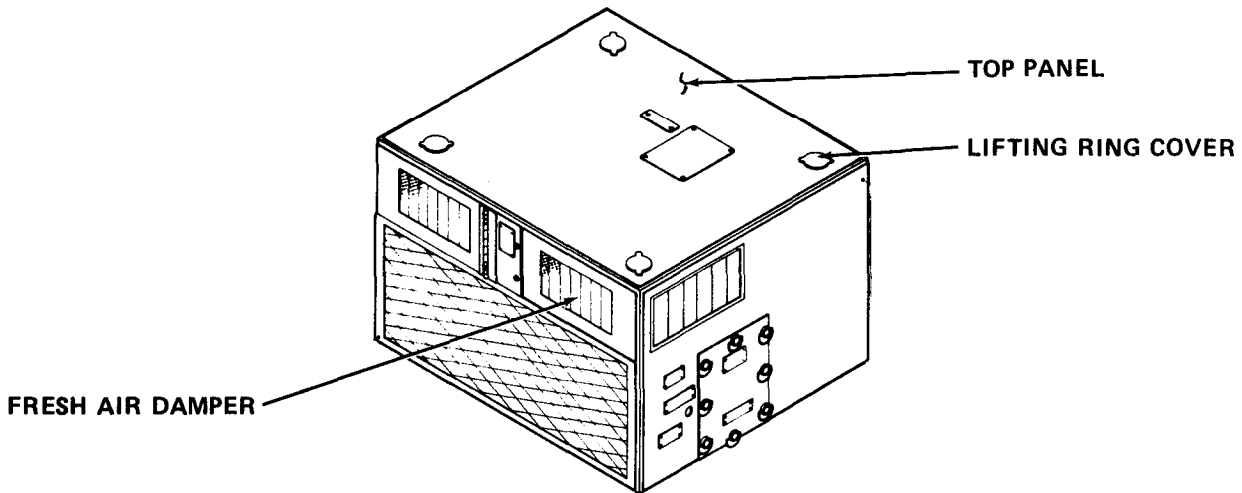


Table 4-2. TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 5. Check evaporator fresh air filter.

Loosen two turnlock fasteners on air filter panel door.

Open door.

Slide air filters out of unit and inspect filters.

Spray filters with a water hose in opposite direction of air flow (see arrow on filter frame) .

Shake water from filter and allow to dry before installing.

Inspect air filter for damage.

Replace air filter if damaged in accordance with paragraph 4-19.

CAUTION

Do not use oil on filters.

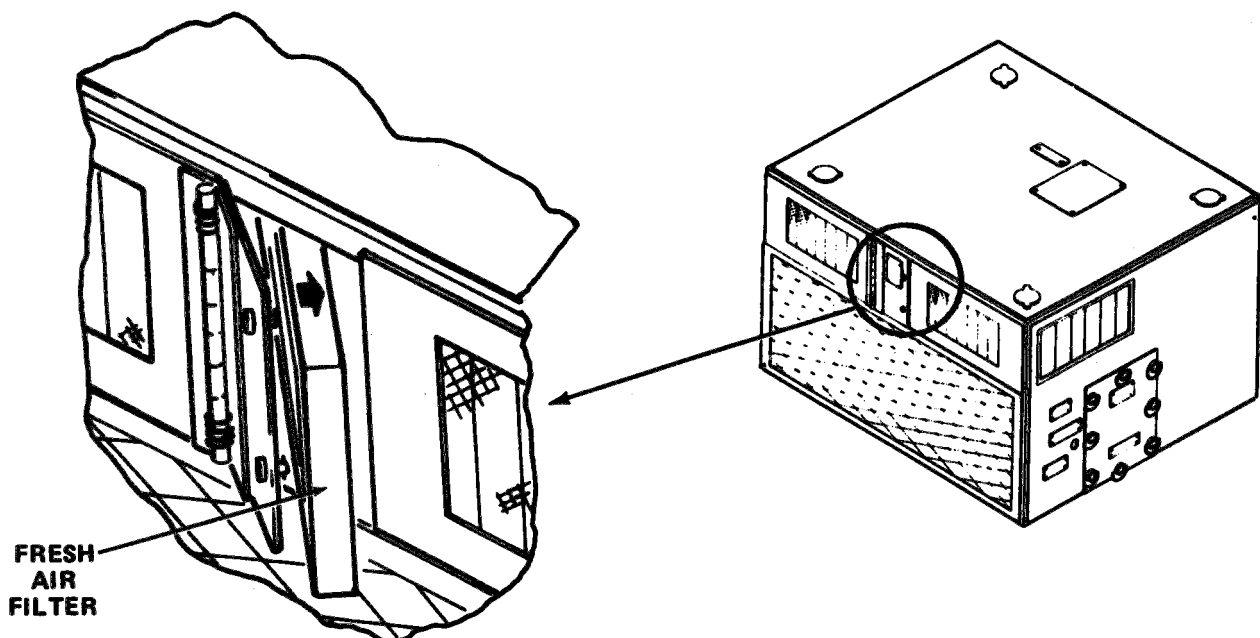


Table 4-2. TROUBLESHOOTING (cont.)

Step 6. Check evaporator fan outlets for obstruction.

Remove obstruction.

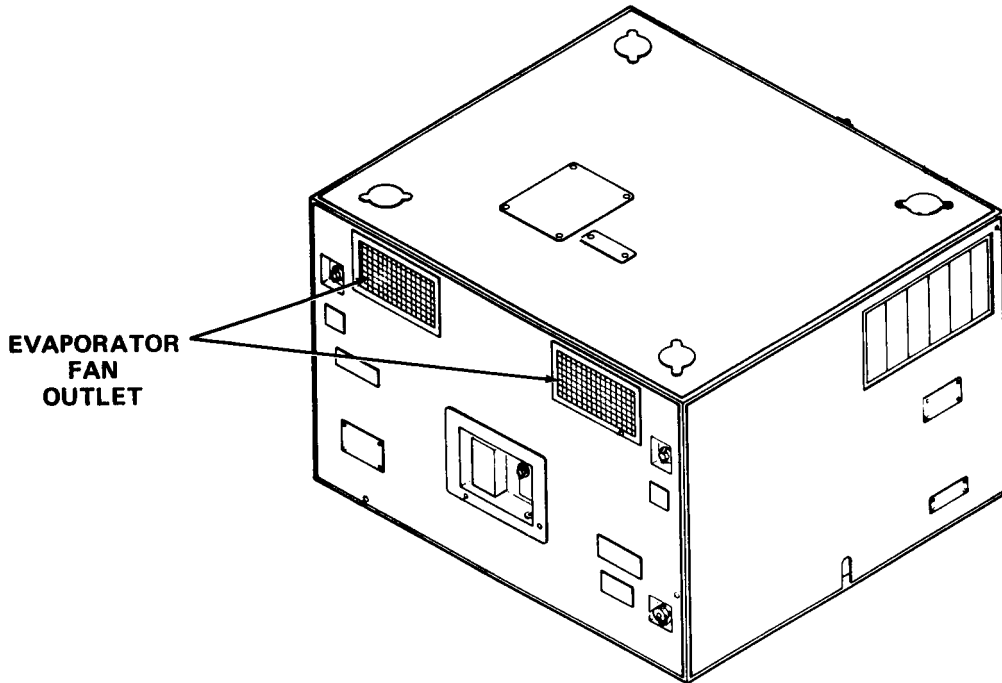
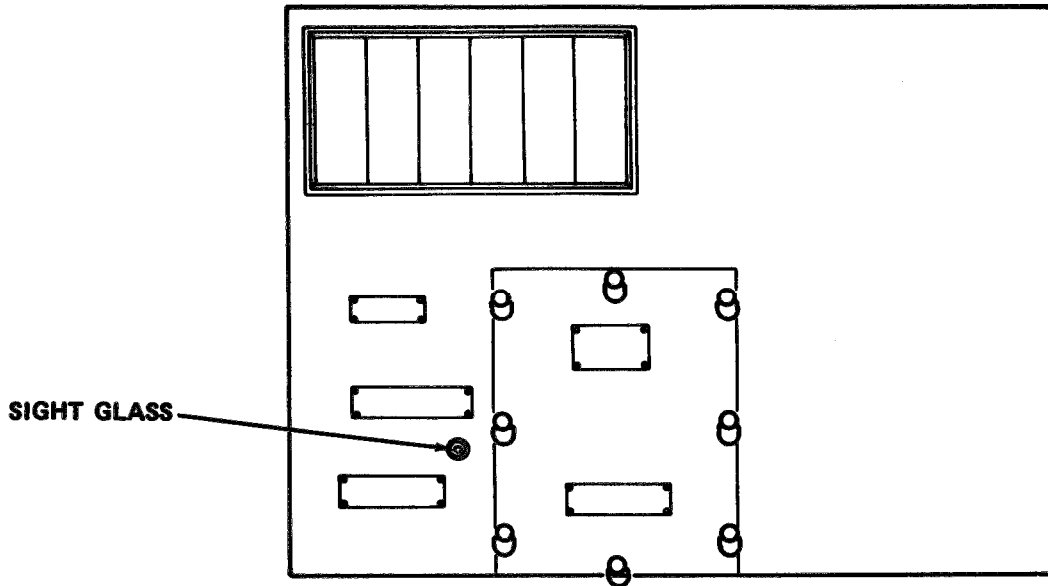


Table 4-2. TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 7. Check for correct system pressures in accordance with Table 5-2.	Notify direct support maintenance.	
Step 8. Check for moisture in system.	Notify Direct Support Maintenance.	

CAUTION

Check sight glass for green color indicating unit is charged properly. If sight glass is a yellow color, notify Direct support maintenance.



Step 9. Check for correct discharge pressure in accordance with Table 5-2.
 Notify direct support maintenance.

SECTION V. ORGANIZATIONAL MAINTENANCE PROCEDURES

4-13. GENERAL INSTRUCTIONS.

Most maintenance instructions in this section will list resources required, personnel required and equipment for the start of the procedure.

NOTE

Resources required are not listed unless they apply to the procedure.

Personnel required are listed only if the task requires more than one. If PERSONNEL is not listed, it means one person can do the task.

The normal standard equipment condition to start a maintenance task is air conditioner stopped and control switch OFF. EQUIPMENT CONDITION is not listed unless some other condition is required besides the power being OFF.

ORGANIZATIONAL MAINTENANCE PROCEDURES INDEX

	Paragraph	Page
Air Filters	4-19	4-47
Condensate Main and Fittings	4-21	4-68
Condenser Fan Motor and Housing	4-26	4-114
Condenser Coil Guard	4-18	4-45
Control Box	4-16	4-34
a. Rotary Control Switch	4-16	4-35
b. Thermostat	4-16	4-36
Dampers and Controls	4-20	4-49
Evaporator Fan Motor and Housing	4-25	4-105
Evaporator Fan Guard	4-17	4-43
Junction Box	4-22	4-76
a. Circuit Breaker	4-22	4-78
b. Relays	4-22	4-79
c. Electrical Connectors	4-22	4-80
Lifting Ring Covers	4-14	4-22
Panels	4-15	4-24
Power Wiring Harness	4-24	4-97
Wiring Harness	4-23	4-88

4-14. LIFTING RING COVER

This task cover:

- a. Removal
 - b. Inspection
 - c. Installation
-

INITIAL SETUP

Test Equipment
None

Tools
TOOL KIT (SC 5180-90-C-N18)

References
None

Troubleshooting References
None

Special Environmental Conditions
None

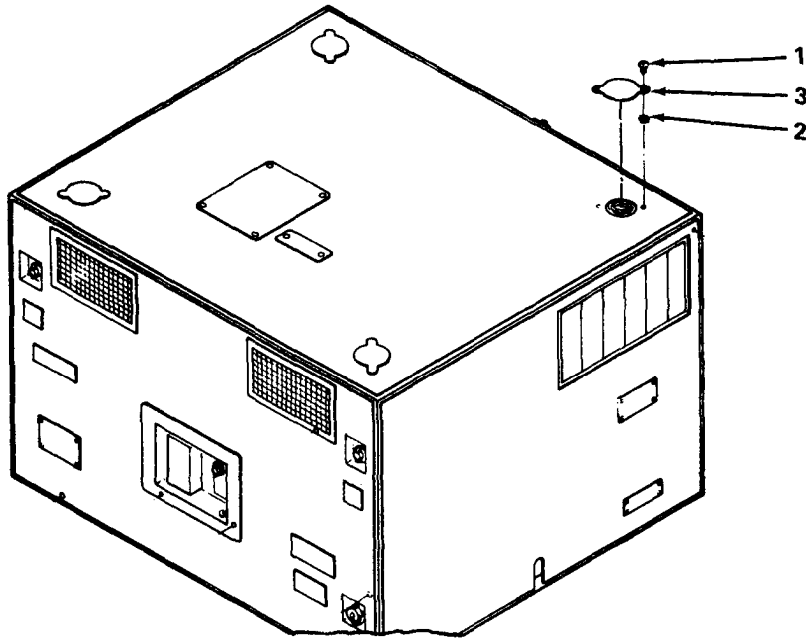
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Lifting Ring Cover

- a. Remove two screws (1), and two rubber washers (2) securing lifting ring cover (3) to frame and top panel.
- b. Remove lifting ring cover.



LIFTING RING COVER (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSPECTION

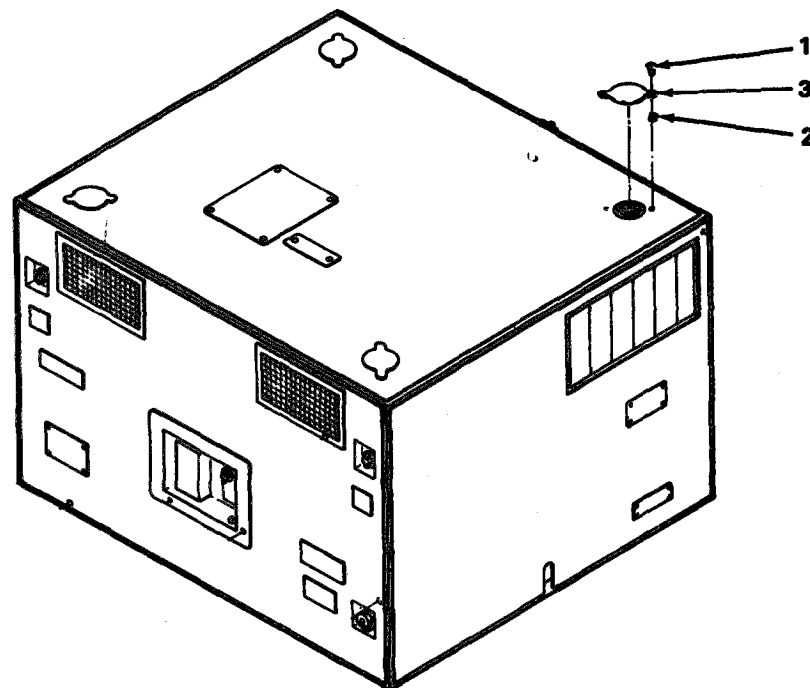
- 2. Lifting Ring Cover
 - a. Inspect for damage.
 - b. Repair or replace if damaged.

INSTALLATION

NOTE

Rubber washers are to be placed between lifting ring cover and top panel.

- 3. Lifting Ring Cover
 - a. Align holes in lifting ring cover (3) with frame and top panel.
 - b. Secure lifting ring cover with two screws (1) and two rubber washers (2) to frame and-top panel.



4-15. PANELS

This tasks covers:

- a. Removal
 - b. Inspection, service and repair
 - c. Installation
-

INITIAL SETUP

Test Equipment
None

Tools
TOOL KIT (SC 5180-90-C-N18)

References
None

Troubleshooting References
None

Special Environmental Conditions
None

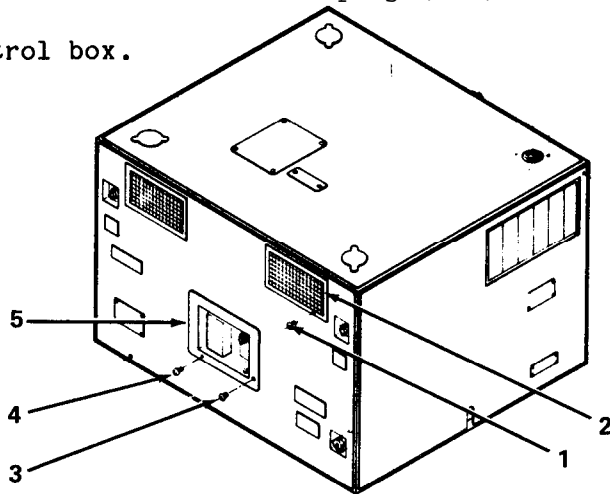
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATIONS/ITEM	ACTION	REMARKS
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REMOVAL

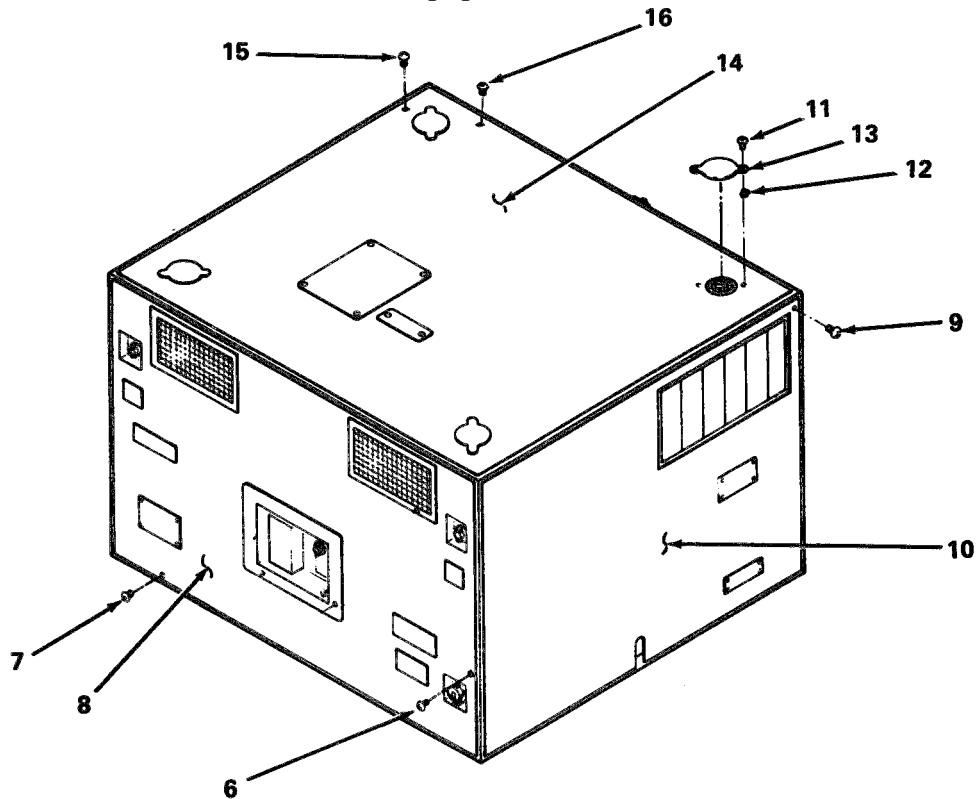
1. Evaporator Fan Guard
 - a. Remove four screws (1) securing evaporator fan guard (2) to front panel and frame.
 - b. Remove evaporator fan guard.

2. Control Box
 - a. Remove four screws (3) and four screws (4) securing control box (5) to frame and front panel.
 - b. Disconnect electrical connector plug (P-6).
 - c. Remove control box.



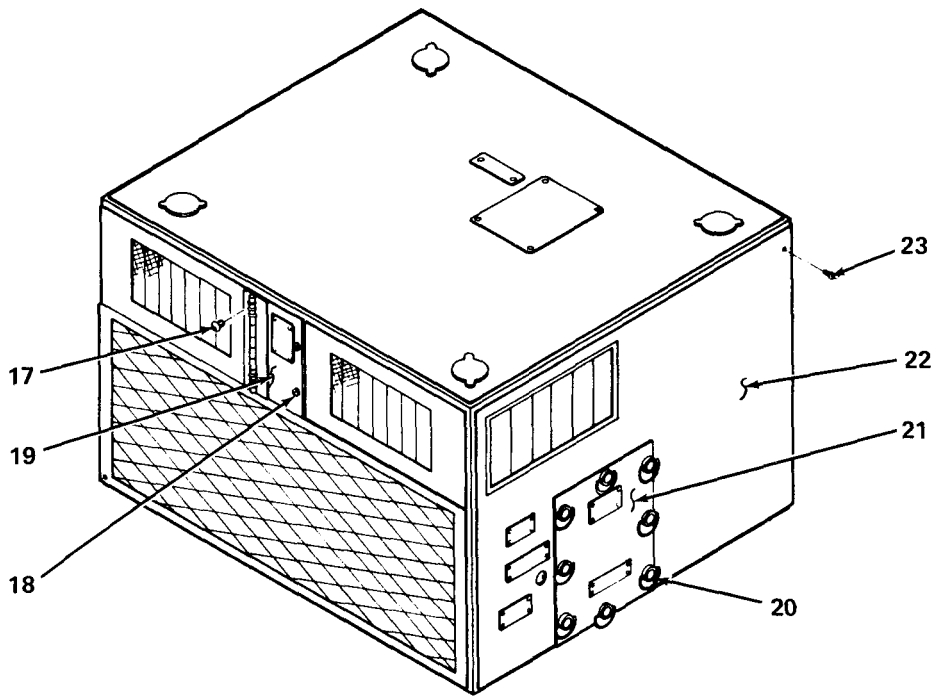
PANELS (CONT.)

LOCATIONS/ITEM	ACTION	REMARKS
REMOVAL		
3. Front Panel	a. Remove thirty-four screws (6) and two screws (7) securing front panel (8) to frame . b. Remove front panel.	
4. Right Side Panel	a. Remove thirty-one screws (9) securing right side panel (10). b. Remove right side panel.	
5. Top Panel	a. Remove eight screws (11), eight rubber washers (12) securing lifting ring covers (13) to frame and top panel (14). b. Remove four lifting ring covers. c. Remove eight screws (15) and twenty-three screws (16) securing top panel to frame. d. Remove top panel.	



PANELS (CONT.)

LOCATIONS/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		
6. Air Filter Panel	a. Remove two screws (17) and loosen two turn lock fasteners (18) securing air filter panel (19) to frame. b. Remove air filter panel.	
7. Maintenance Panel	a. Loosen eight turnlock fasteners (20) securing maintenance panel (21) to left side panel (22) and frame. b. Remove maintenance panel.	
8. Left Side Panel	a. Remove twenty-seven screws (23) securing left side panel (22) to frame. b. Remove left side panel.	



PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSPECTION, SERVICE AND REPAIR</u>		

9. Front Panel

- a. Inspect for loose or damaged gaskets.
- b. Replace damaged gasket material and secure gaskets with adhesive in accordance with item 2, table D-1.
- c. Inspect for loose or damaged insulation.
- d. Replace damaged insulation material and secure insulation with adhesive in accordance with item 2, table D-1.
- e. Inspect information plates for damage.
- f. If damaged notify Direct Support Maintenance.
- g. Inspect panel for damage.
- h. Repair or replace if damaged.

10. Right Side Panel

- a. Inspect for loose or damaged gaskets.
- b. Replace damaged gasket material and secure gaskets with adhesive in accordance with item 2, table D-1.
- c. Inspect for loose or damaged insulation.
- d. Replace damaged insulation material and secure insulation with adhesive in accordance with item 2, table D-1.
- e. Inspect information plates for damage.
- f. If damaged notify Direct Support Maintenance.
- g. Inspect panel for damage.
- h. Repair or replace if damaged.

PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION, SERVICE AND REPAIR

11. Air Filter Panel

- a. Inspect for loose or damaged insulation.
- b. Replace damaged insulation material and secure insulation with adhesive in accordance with item 2, table D-1.
- c. Inspect hinge for damage and freedom of movement.
- d. Lubricate hinge as required.
- e. Inspect information plates for damage.
- f. If damaged notify Direct Support Maintenance.
- g. Inspect turnlock fasteners for damage.
- h. Replace damaged turnlock fasteners.
- i. Inspect panel for damage.
- j. Repair or replace if damaged.

PANELS (CONT.)

 LOCATION/ITEM

ACTION

REMARKS

INSPECTION, SERVICE AND REPAIR

12. Maintenance Panel

- a. Inspect for loose or damaged gaskets.
- b. Replace damaged gasket material and secure gaskets with adhesive in accordance with item 2, table D-1.
- c. Inspect for loose or damaged insulation.
- d. Replace damaged insulation material and secure insulation with adhesive in accordance with item 2, table D-1.
- e. Inspect information plates for damage.
- f. If damaged notify Direct Support Maintenance.
- g. Inspect turnlock fastener for damage.
- h. Replace damaged turnlock fastener.
- i. Inspect panel for damage.
- j. Repair or replace if damaged.

PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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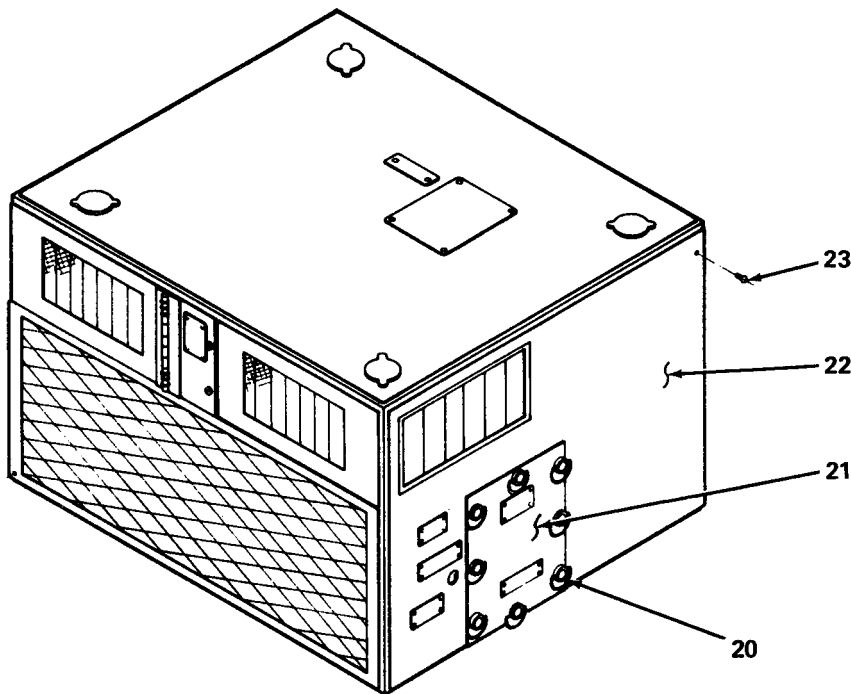
INSTALLATION

13. Left Side Panel

- a. Align holes in left side panel (22) with holes in frame.
- b. Secure left side panel with twenty-seven screws (23).

14. Maintenance Panel

- a. Align holes in maintenance panel (21) with holes in left side panel and frame.
- b. Secure maintenance panel with eight turnlock fasteners (20).



PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

15. Air Filter Panel

- a. Align holes in air filter panel (19) with holes in frame.
- b. Secure air filter panel with two screws (17) and two turnlock fasteners (18).

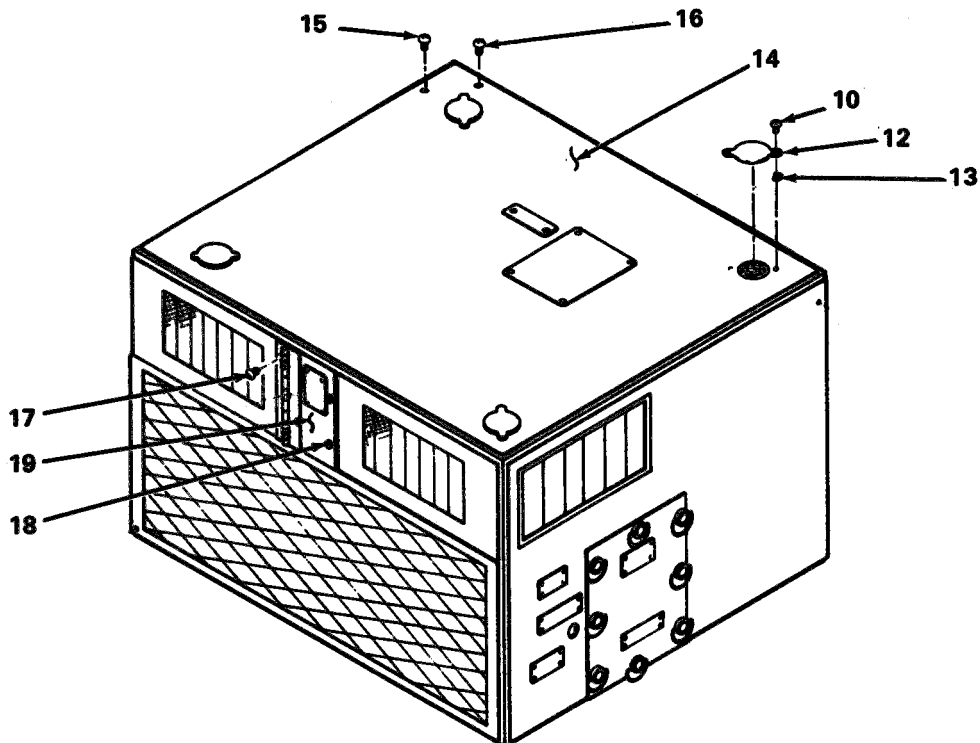
16. Top Panel

- a. Align holes in top panel with holes in frame.
- b. Secure top panel (14) with twenty-three screws (16) and eight screws (15).
- c. Align four lifting ring covers (13) with top panel and frame.

NOTE

Rubber washers are to be placed between lifting ring cover and top panel.

- d. **Secure lifting ring covers with eight screws (11) and eight rubber washers (12).**



PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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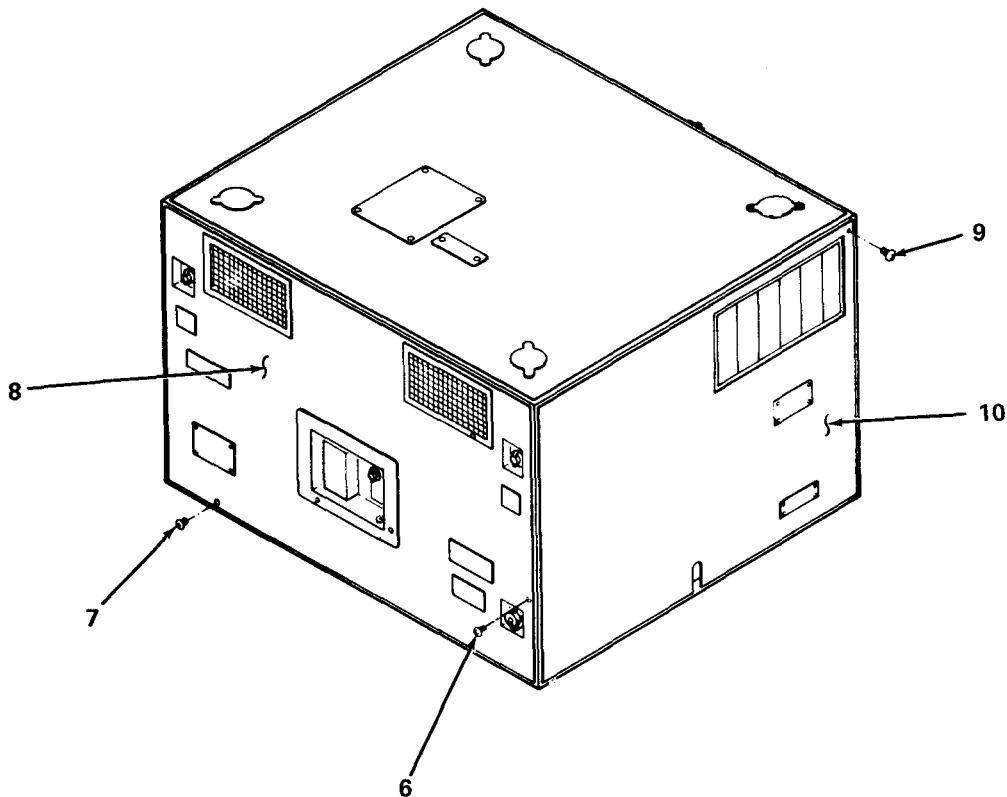
INSTALLATION

17. Right Side Panel

- a. Align holes in right side panel (10) with holes in frame.
- b. Secure right side panel with thirty-one screws (9).

18. Front Panel

- a. Align holes in front panel (8) with holes in frame.
- b. Secure front panel with thirty-four screws (6) and two screws (7).



PANELS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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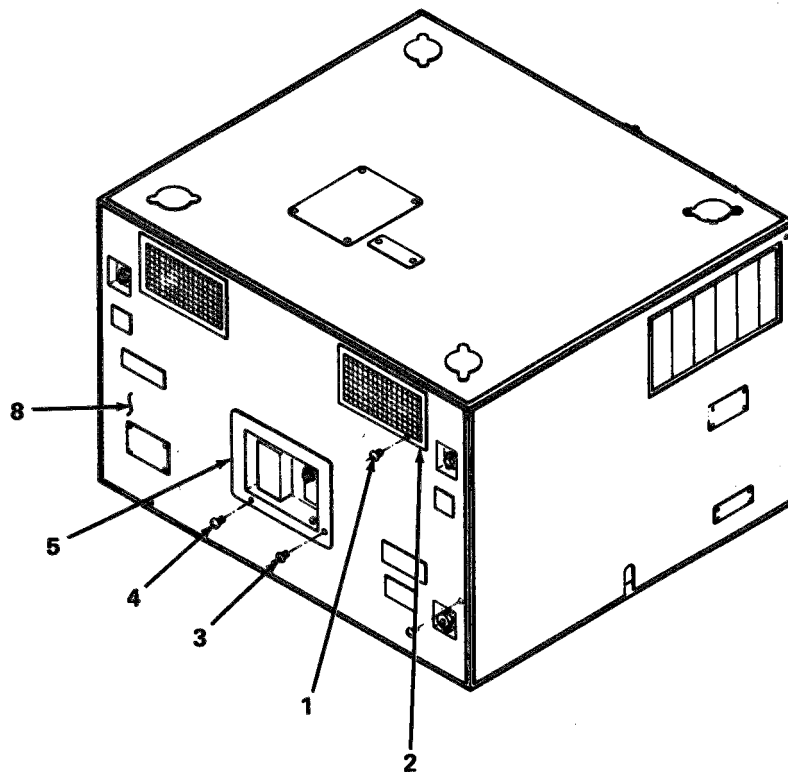
INSTALLATION

19. Control Box

- a. Connect electrical connector (P-6) to control box.
- b. Align holes in control box (5) with holes in front panel and frame.
- c. Secure control box with four screws (4) and four screws (3).

20. Evaporator Fan Guard

- a. Align holes in evaporator fan guards (2) with holes in front panel (8) and frame.
- b. Secure evaporator fan guards with eight screws (1).



4-16. CONTROL BOX

This task covers:

- a. Removal
 - b. Test/Inspection
 - c. Installation
-

INITIAL SETUP

Test Equipment
None

Tools
TOOL KIT (SC 5180-90-C-N18)

References
None

Troubleshooting References
None

Special Environmental Conditions
None

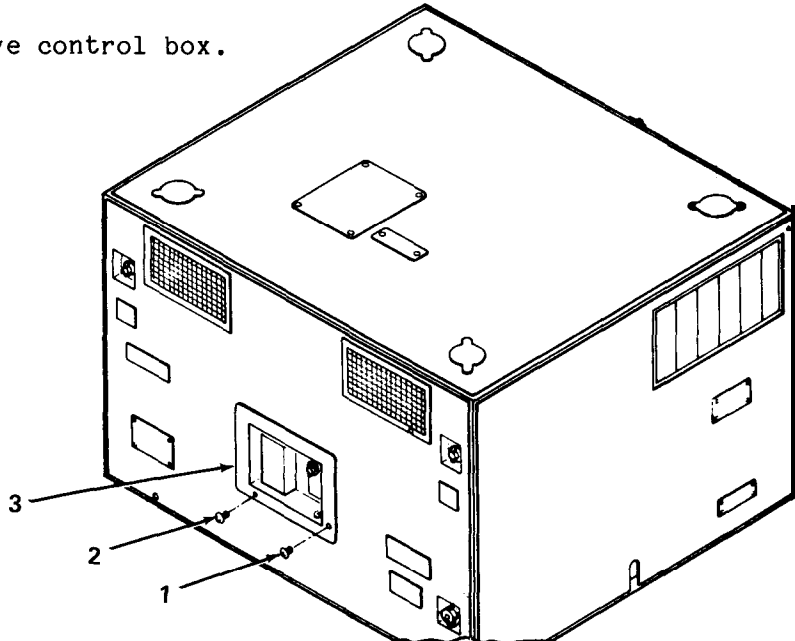
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Control Box

- a. Remove four screws (1) and four screws (2) securing control box (3) to frame and front panel.
- b. Disconnect electrical connector (P-6).
- c. Remove control box.



CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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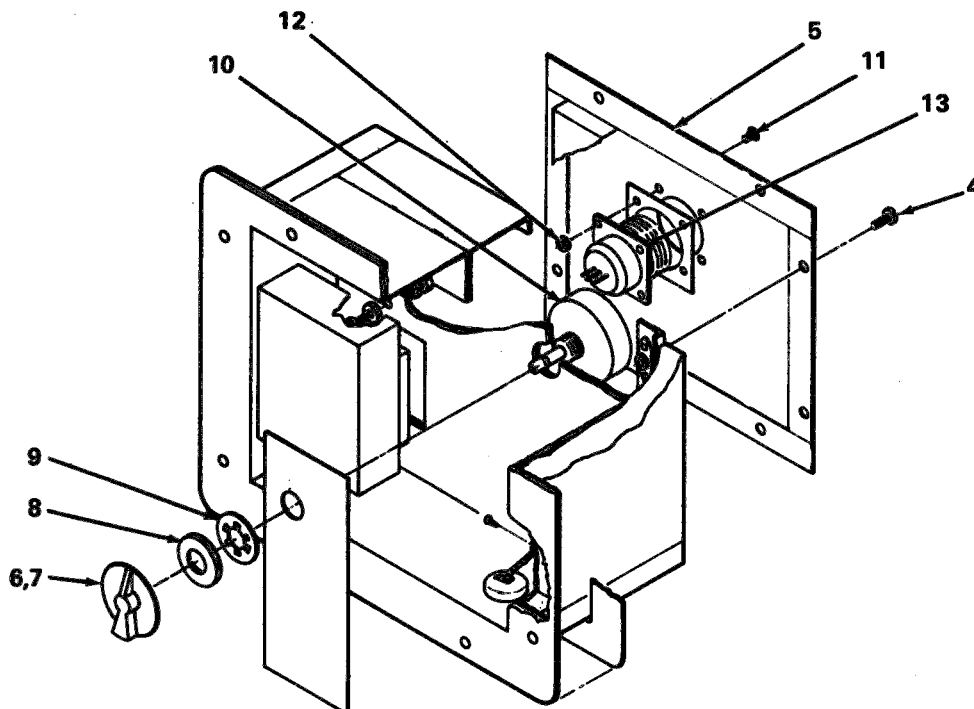
REMOVAL

2. Rotary Switch

- a. Remove eight screws (4) securing control box back panel (5) to control box.
- b. Loosen two set screws (6) securing rotary switch knob (7) to rotary switch (10).
- c. Remove knob (7).
- d. Remove nut (8) and washer (9) securing rotary switch to control box.
- e. Tag and remove wires from rotary switch terminal numbers 11, 12, and 13.
- f. Remove rotary switch (10) from control box.

3. Control Box
Wiring Harness

- a. Remove four screws (11) and four lock nuts (12) securing control box wiring harness (13) to control box back panel (5).
- b. Remove control box wiring harness.



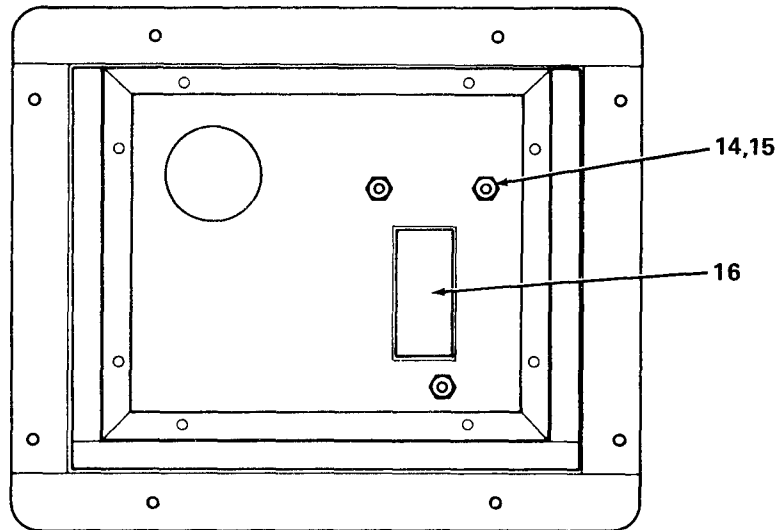
CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

4. Thermostat

- a. Tag and remove wires from thermostat.
- b. Remove three flat nuts (14) and three star washers (15) securing thermostat (16) to control box .
- c. Remove thermostat.



CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TESTING/INSPECTION</u>		
5. Rotary Switch	<ul style="list-style-type: none"> a. Place knob in the OFF position. b. Check for the lack of continuity between terminals 11 and 12, 11 and 13, and 12 and 13. c. Place knob in the FAN position. d. Check for continuity between terminals 11 and 12. Check for lack of continuity between terminals 11 and 13 and 12 and 13. e. Place knob in the COOL position. f. Check for continuity between terminals 11 and 12 and 11 and 13. g. Replace defective rotary switch. 	

CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TESTING/INSPECTION</u>		
6. Thermostat	<ul style="list-style-type: none"> a. Place thermostat in ambient temperature of 80 -90 F (28-32 C). b. Place temperature control on thermostat in WARM position. c. Check for continuity between terminals COM and NC. d. If lack of continuity is found replace defective thermostat. e. Place temperature control on thermostat in the COOL position. f. Check for continuity between terminals COM and NO. g. If lack of continuity is found replace defective thermostat. h. Place thermostat in ambient temperature of 40 -50 F (4-10 c). i. Place temperature control on thermostat in the WARM position. j. Check continuity between terminals COM and NC. k. If lack of continuity is found replace defective thermostat. l. Place temperature control on thermostat in the COOL position. m. Check continuity between terminals COM and NO. n. If lack of continuity is found replace defective thermostat. 	

CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TESTING/INSPECTION</u>		
7. Control Box	<ul style="list-style-type: none"> a. Inspect for loose or damaged gaskets. b. Replace damaged gasket material and secure gaskets with adhesive in accordance with item 2, table D-1. c. Inspect for loose or damaged insulation. d. Replace damaged insulation material and secure insulation with adhesive in accordance with item 2, table D-1. e. Inspect information plates for damage. f. If damaged notify Direct support maintenance. g. Inspect panel for damage. h. Repair or replace damaged panel. i. Inspect chain assembly for damage. j. Replace if damaged. 	

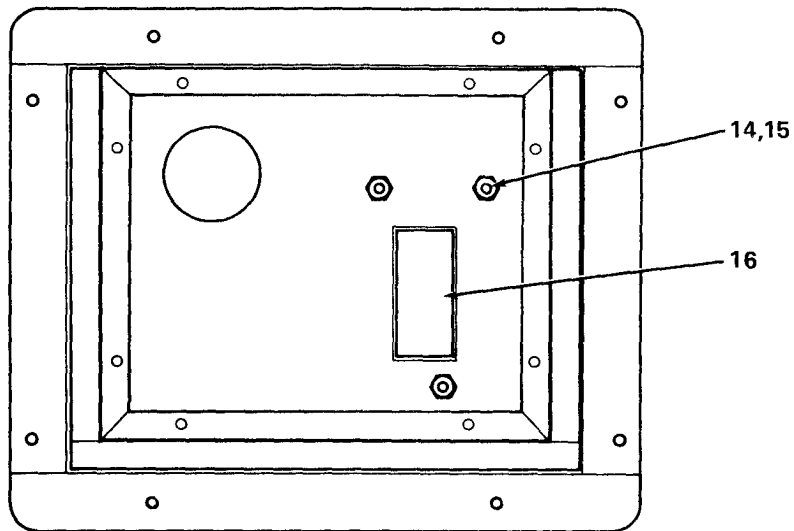
CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

8. Thermostat

- a Align thermostat (16) with holes in control box (3).
- b Attach two wires to proper terminals on thermostat and one wire to thermostat mounting stud.
- c. Secure thermostat and wires with three flat nuts (14) and three star washers (15).



CONTROL BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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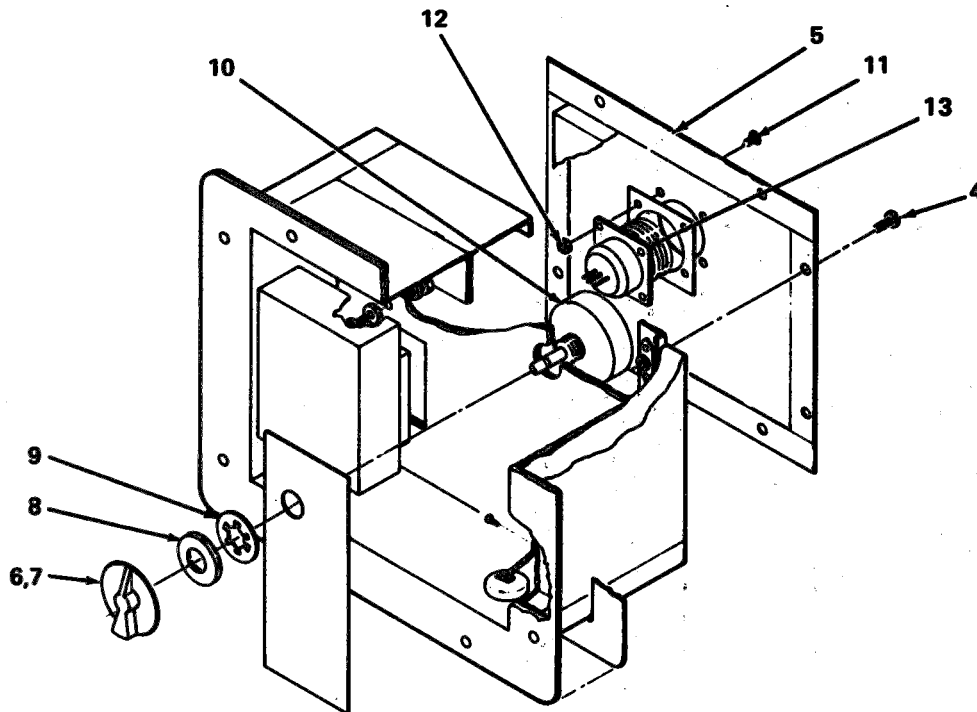
INSTALLATION

9. Rotary Switch

- a. Attach wires to terminal numbers 11,12 and 13.
- b. Align rotary switch (10) with hole in control box.
- c. Secure rotary switch to control box with star washer (9) and retaining nut (8).
- d. Attach rotary switch knob to rotary switch.
- e. Secure rotary switch knob (7) to rotary switch by tightening two set screws (6) on rotary switch knob.

10. Control Box
Wiring Harness

- a. Align control box wiring harness (13) with control box back panel (5).
- b. Secure control box wiring harness to control box back panel with four screws (11) and four screws (12).



CONTROL BOX (CONT.)

LOCATION/ITEM

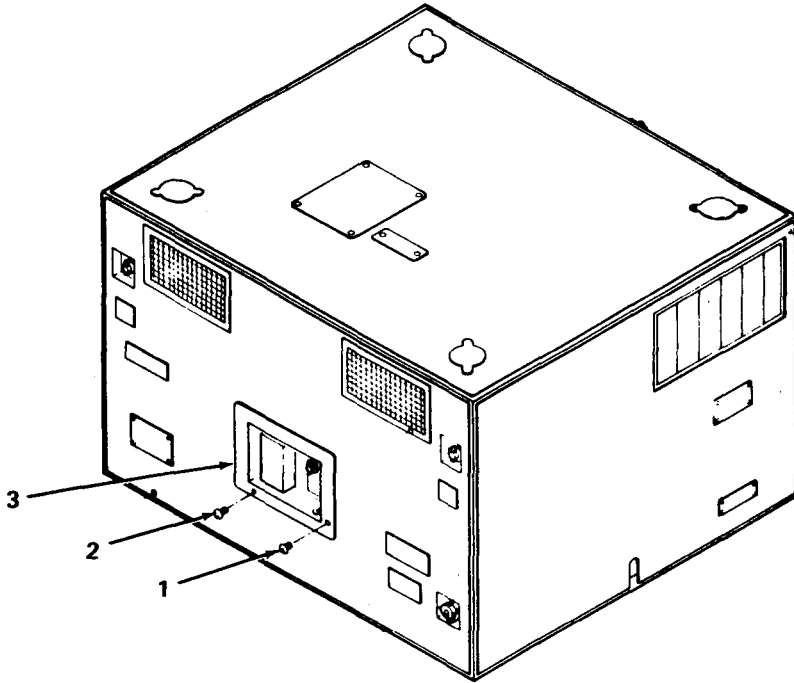
ACTION

REMARKS

INSTALLATION

11, Control Box

- a. Align control box (3) with holes in frame.
- b. Secure control box with four screws (2) and four screws (1).



4-17. EVAPORATOR FAN GUARD

This task covers:

- a. Replacement
- b. Inspection
- c. Installation

INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM

ACTION

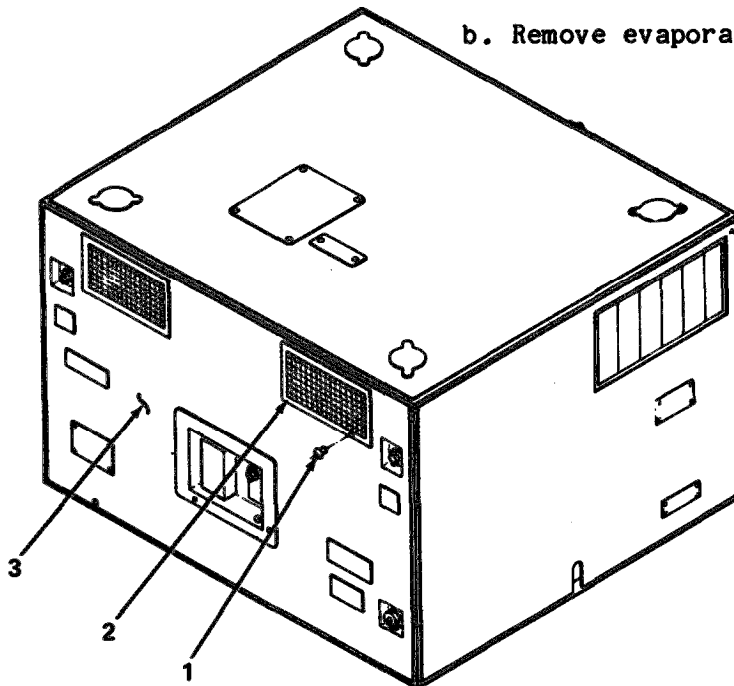
REMARKS

REMOVAL

1. Evaporator Fan Guard

a. Remove four screws (1) securing evaporator fan guard (2) to front panel (3) and frame.

b. Remove evaporator fan guard.



EVAPORATOR FAN GUARD (CONT.)

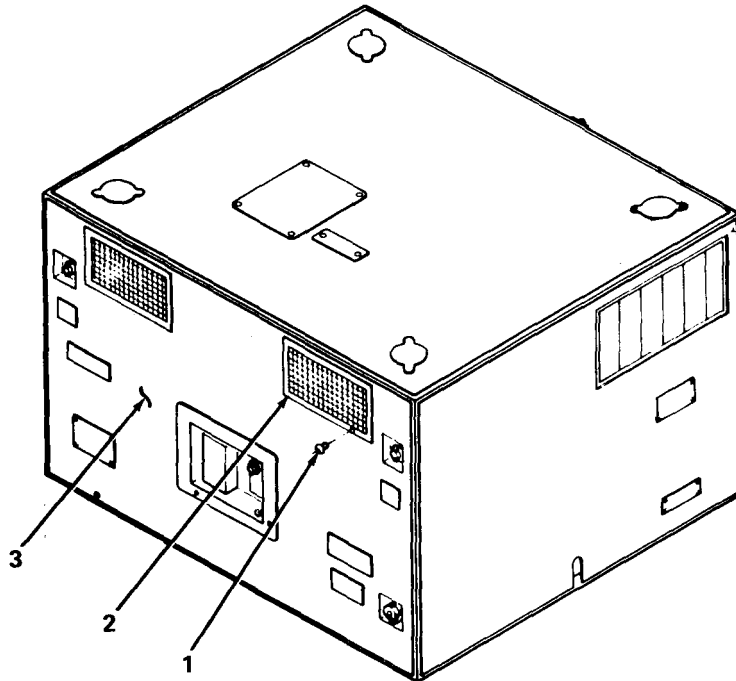
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- 2. Evaporator Fan Guard
 - a. Inspect for damage.
 - b. Repair or replace if damaged.

INSTALLATION

- 3. Evaporator Fan Guard
 - a. Align evaporator fan guard (2) with holes in front panel (3) and frame.
 - b. Secure evaporator fan guard with four screws (1).



4-18. CONDENSER COIL GUARD

This task covers:

- a. Removal
- b. Inspection
- c. Installation

INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

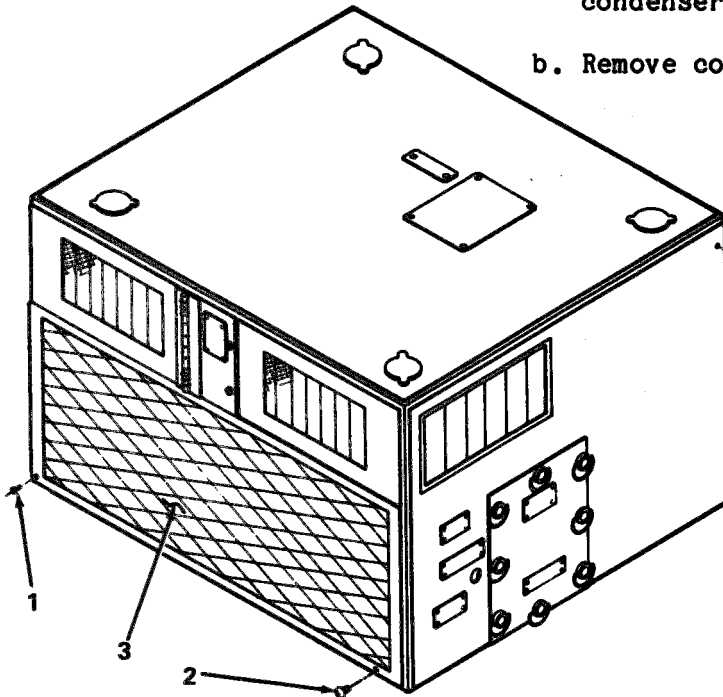
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Condenser Coil Guard

- a. Remove sixteen screws (1) and two screws (2) securing condenser coil guard (3) to frame.
- b. Remove condenser coil guard.



CONDENSER COIL GUARD (CONT.)

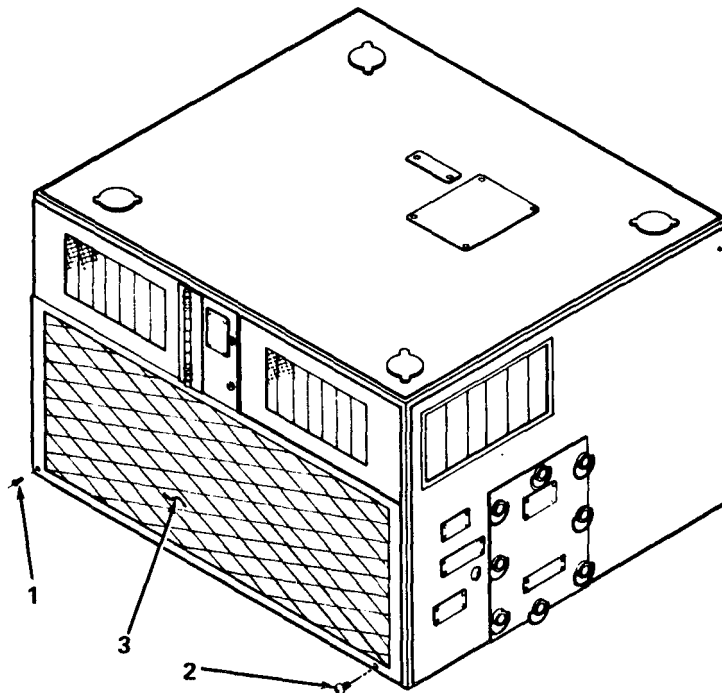
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- 2. Condenser Coil Guard
 - a. Inspect for damage.
 - b. Repair or replace if damaged.

INSTALLATION

- 3. Condenser Coil Guard
 - a. Align condenser coil guard (3) with holes in frame.
 - b. Secure condenser coil guard with sixteen screws (1) and two screws (2).



4-19. AIR FILTERS

This task covers:

- a. Removal
- b. Inspect and Service
- c. Installation

INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

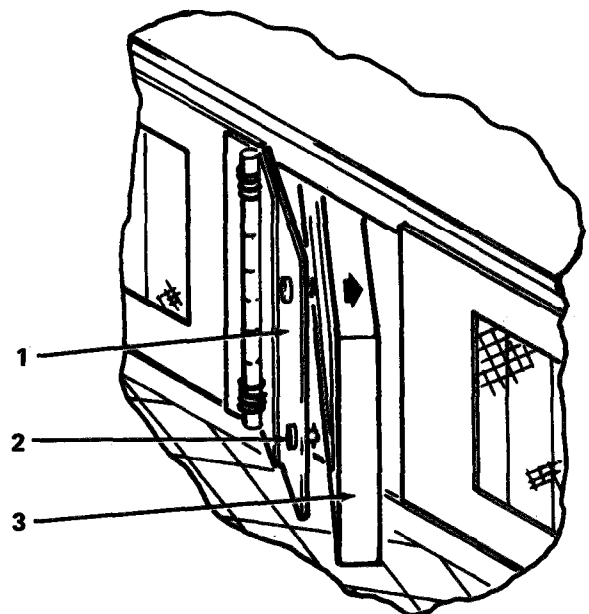
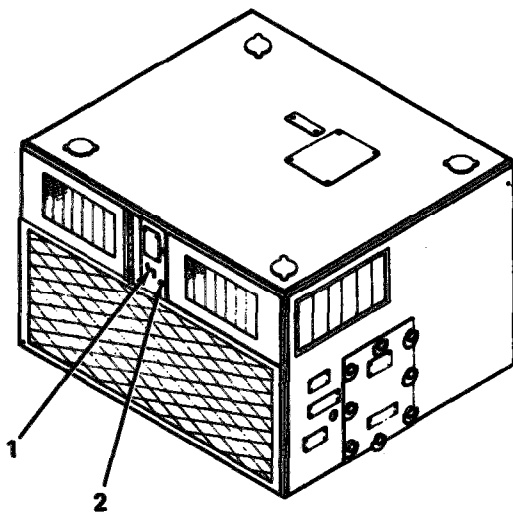
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Air Filters

- a. Open air filter panel (1) by turning two turnlock fasteners (2).
- b. Slide air filters (3) out of unit.



AIR FILTERS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION AND SERVICE

2. Air Filters

- a. Spray filters with a water hose in opposite direction of air flow (See arrow on filter frame)
- b. Shake water from filter and allow to dry before installing.
- c. Inspect for damage.
- d. Replace if damaged.

CAUTION

Do not use oil on filters.

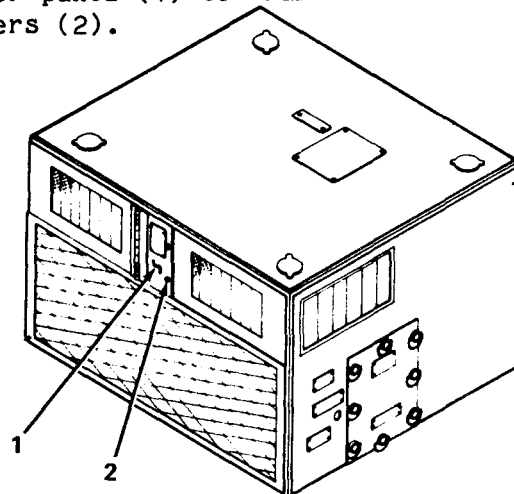
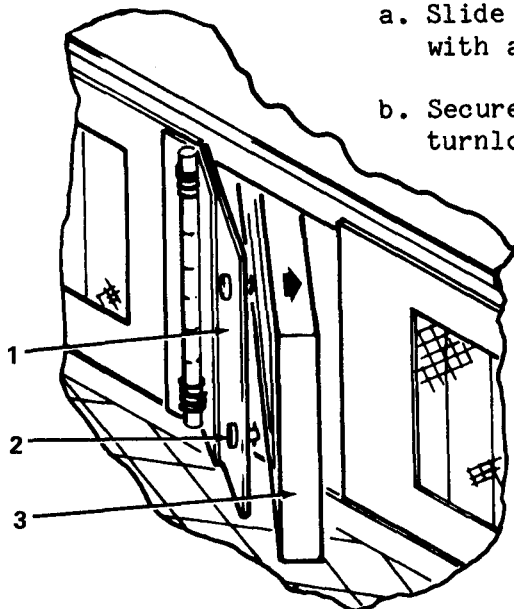
INSTALLATION

NOTE

Note position arrow on filter frame when installing air filters. Arrow must point toward evaporator coil.

3. Air Filter

- a. Slide air filter (3) back into air conditioner with air flow indicator in proper position.
- b. Secure air filter panel (1) to frame with two turnlock fasteners (2).



4-20.DAMPERS AND CONTROLS

THIS TASKS COVERS:

- a. Removal
 - b. Inspection and repair
 - c. Installation
-

INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM

ACTION

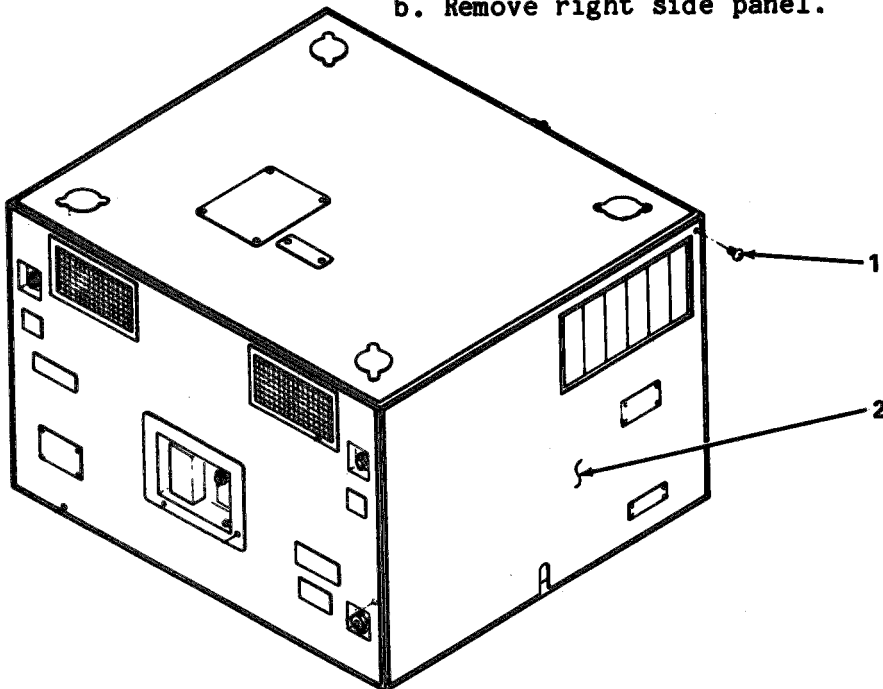
REMARKS

REMOVAL

1. Right Side Panel

- a. Remove thirty-one screws (1) securing right side panel (2) to frame.

- b. Remove right side panel.**



DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

2. Lifting Ring Covers

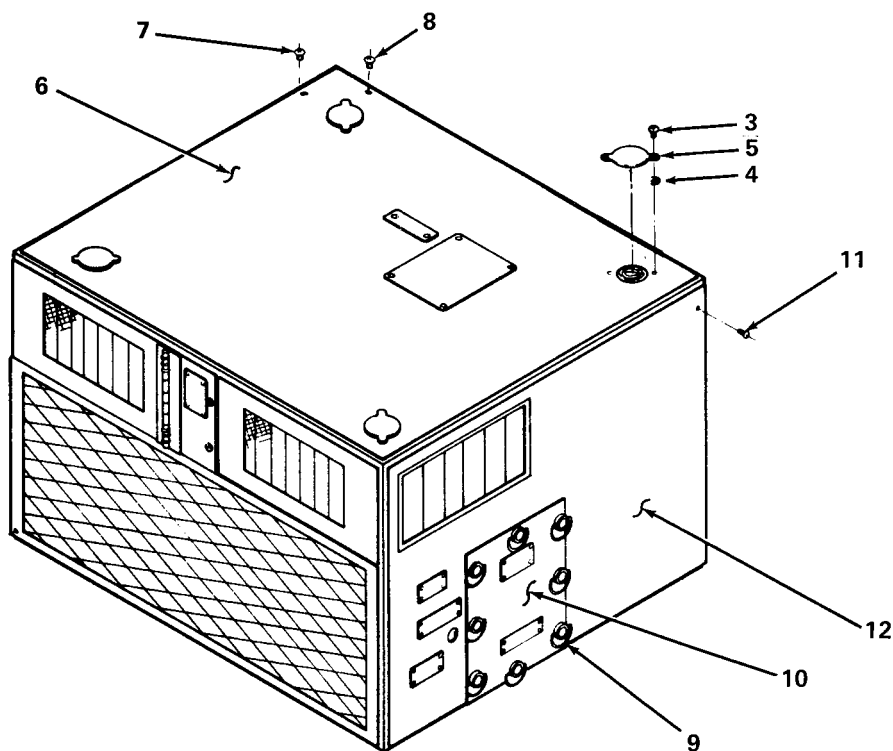
- a. Remove eight screws (3) and eight rubber washers (4) securing lifting ring cover (5) to top panel (6) and frame.
- b. Remove lifting ring cover.

39 Top Panel

- a. Remove twenty-three screws (7) and eight screws (8) securing top panel (6) to frame.
- b. Remove top panel.

4. Left Side Panel

- a. Loosen bottom center turnlock fastener (9) in maintenance panel (10).
- b. Remove twenty-seven screws (11) securing left side panel (12) to frame.
- c. Remove left side panel.

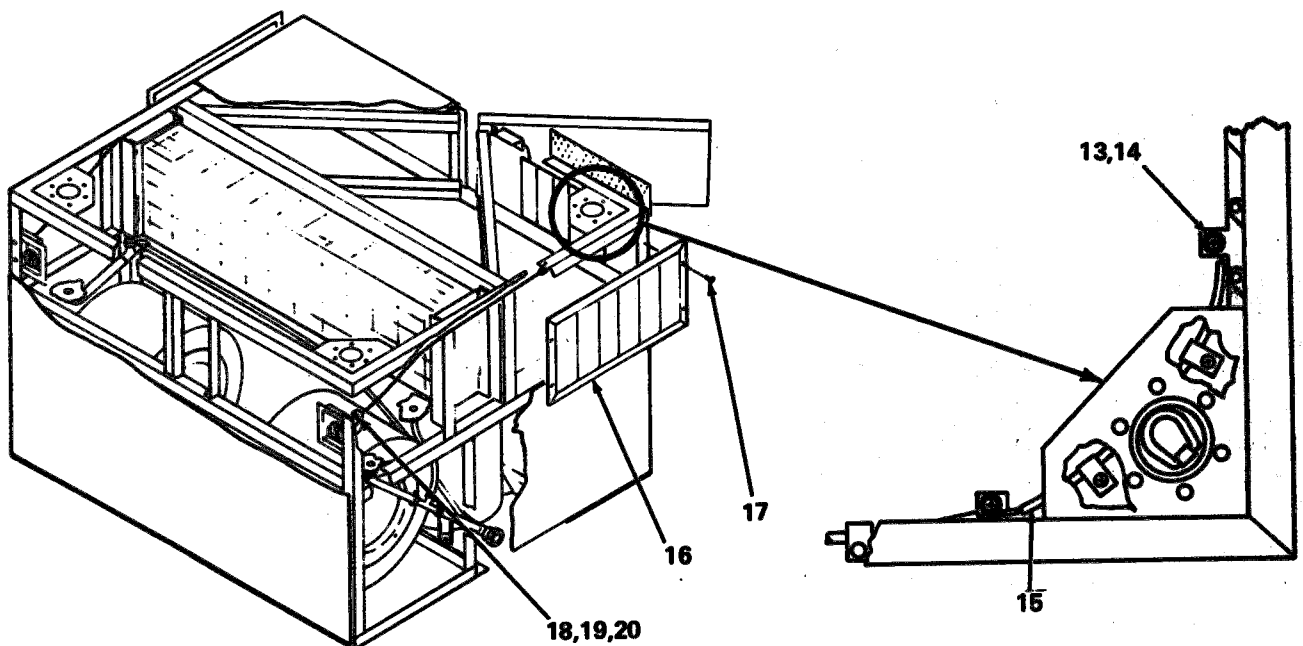


DAMPERS AND CONTROL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

5. Left Return Air Damper

- a. Loosen two screws (13) on mechanical post (14) securing control cable (15) to left return air damper (16) and fresh air damper.
- b. Remove two screws (17) securing left return air damper to frame.
- c. Loosen screw (18) securing control cable housing (19) to control mechanism (20).
- d. Pull control cable through control cable housing until it clears mechanical post on left return air damper.
- e. Remove left return air damper.



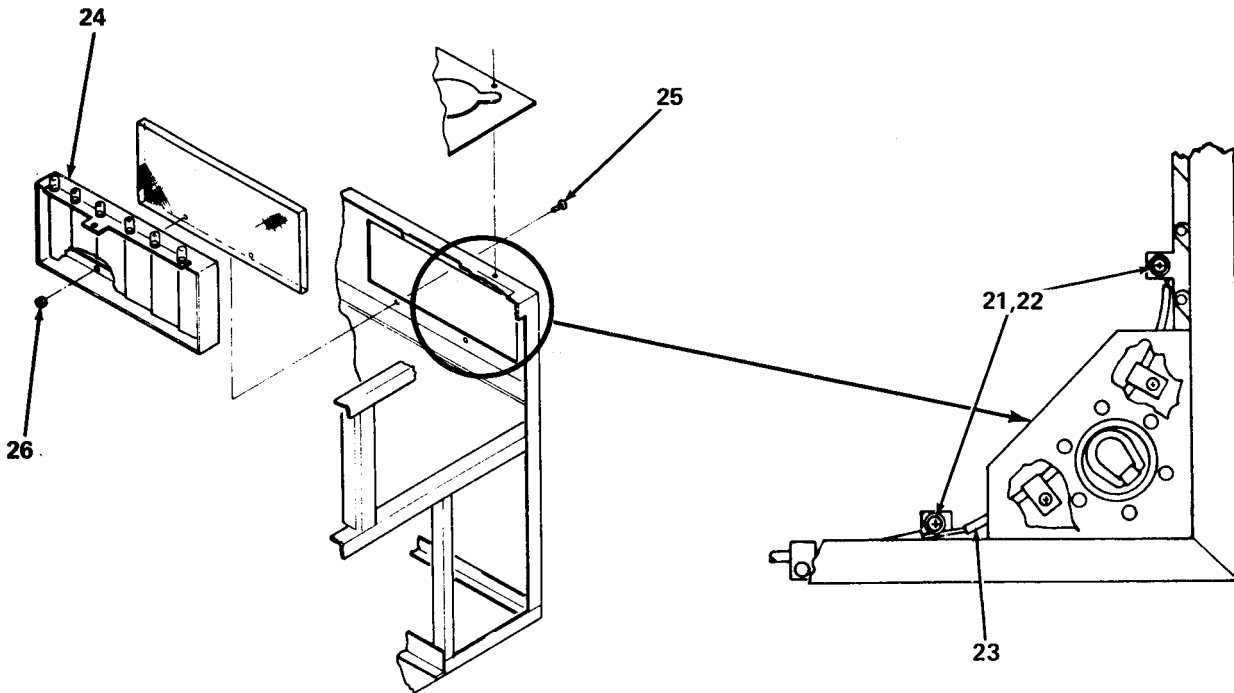
DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
6. Left Fresh Air Damper and Screen	<p>a. Loosen screws (21) on mechanical post (22) securing control cable (23) to left return air damper and fresh air damper (24).</p> <p>b. Pull control cable through control cable housing until it clears mechanical post on left return air damper.</p> <p>c. Remove four screws (25) and four nuts (26) securing left fresh air damper (24) and screen to frame.</p> <p>d. Remove fresh air damper and screen.</p>	

REMOVAL

6. Left Fresh Air Damper and Screen

- a. Loosen screws (21) on mechanical post (22) securing control cable (23) to left return air damper and fresh air damper (24).
- b. Pull control cable through control cable housing until it clears mechanical post on left return air damper.
- c. Remove four screws (25) and four nuts (26) securing left fresh air damper (24) and screen to frame.
- d. Remove fresh air damper and screen.

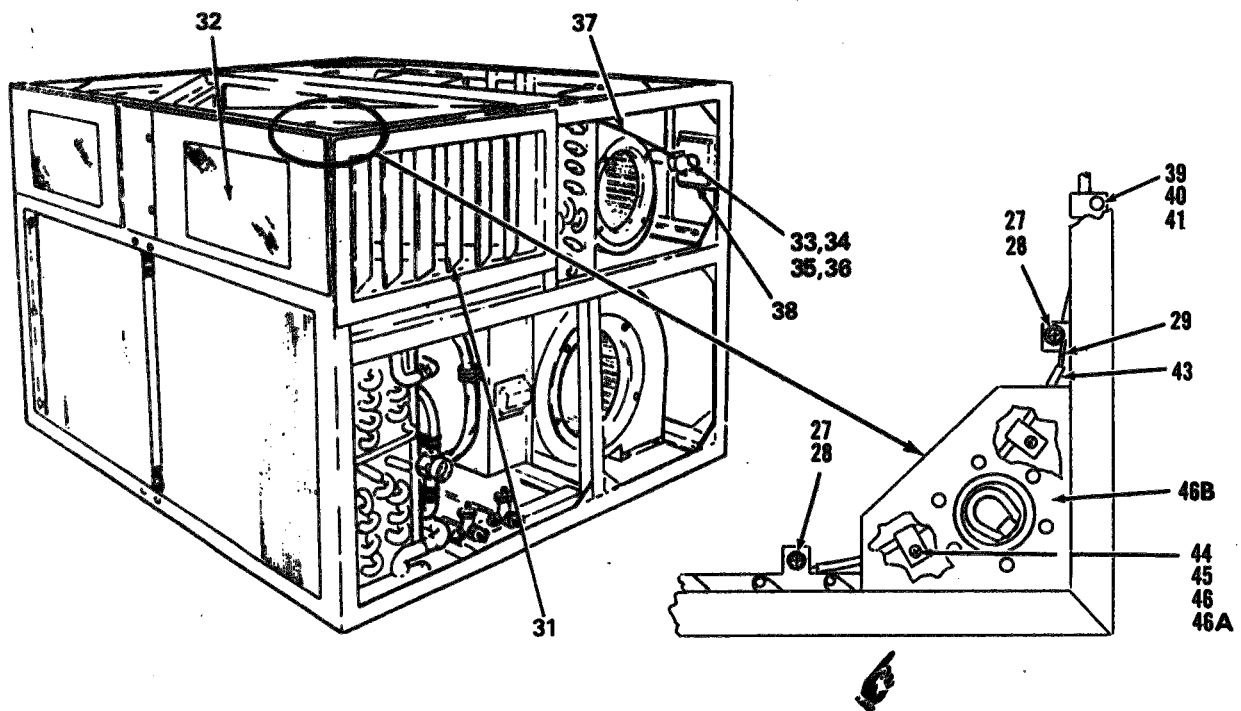


DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

7. Left Control Cable

- a. Loosen screws (27) on mechanical post (28) securing control cable (29) to left return air damper (30) and fresh air damper (31).
- b. Loosen set screw (33) on control cable knob (34).
- c. Remove control cable knob.
- d. Remove retaining nut (35) and star washer (36) securing control cable (37) to damper control box (38).
- e. Remove one screw (39) and one lock nut (40) securing clamp (41) to frame,
- f. Remove clamp (42) from control cable housing (43).
- g. Slide control cable and housing out of unit.
- h. Remove two screws (44), nuts (45), and clamps (46) securing control cable housing (43) to lifting ring bracket (46B). On Talley Model 2643T100-1 air conditioners, remove spacers (46A) used between clamps and lifting ring bracket.



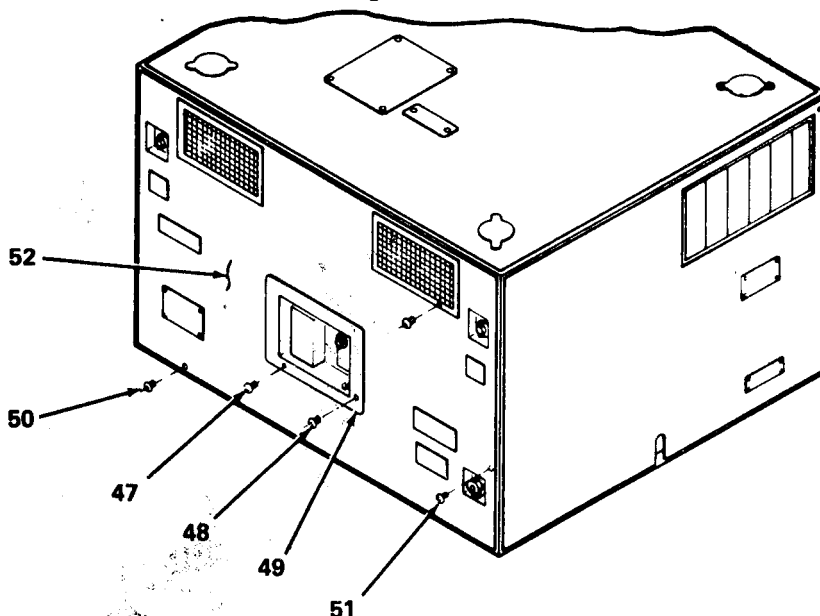
DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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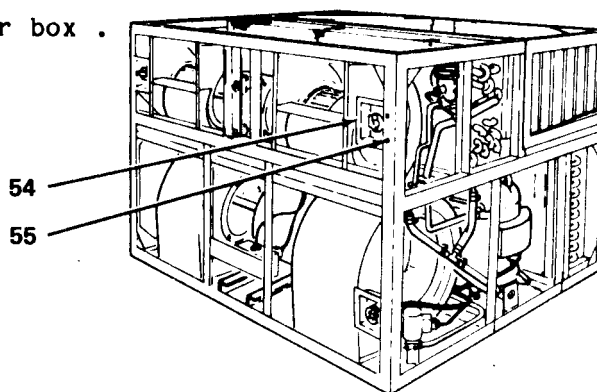
REMOVAL

8. Damper Box

- a. Remove four screws (47) and four screws (48) securing control box (49) to frame and front panel.
- b. Disconnect electrical connector (P-6) from back of control box.
- c. Remove control box.
- d. Remove thirty-four screws (50) and two screws (51) securing front panel (52) to frame.
- e. Remove front panel.



- f. Remove two screws (54) securing damper box (55) to frame.
- g. Remove damper box .



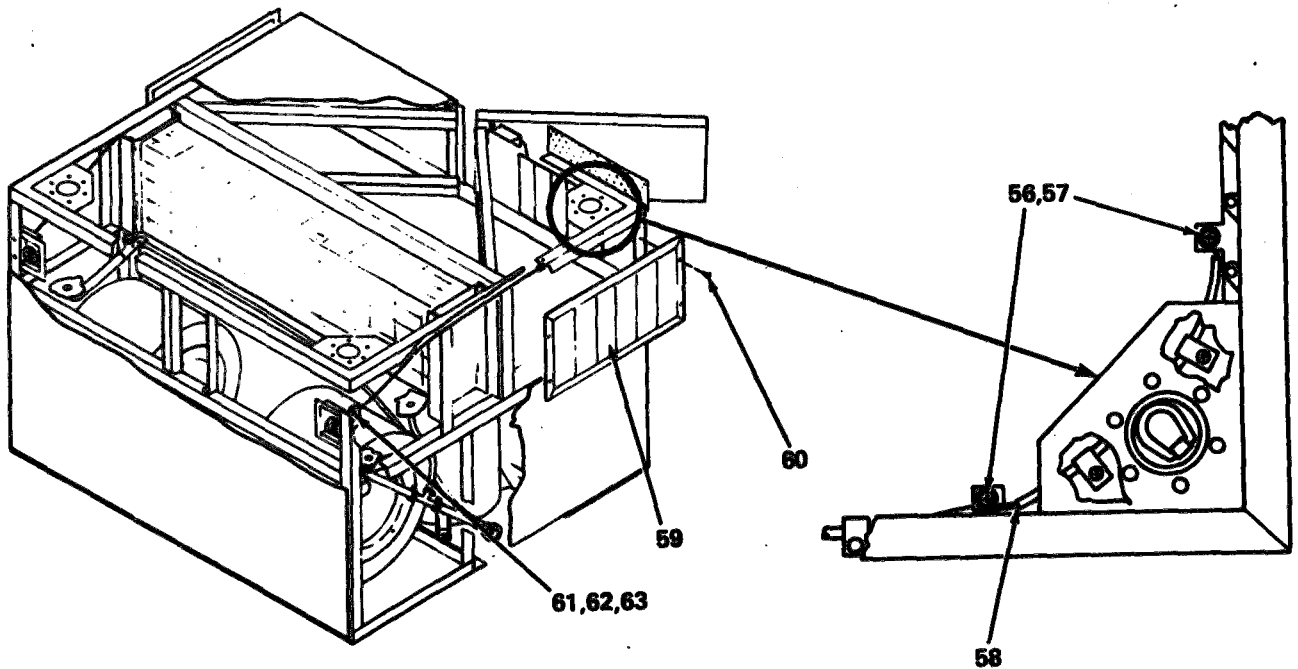
DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

9. Right Return Air Damper

- a. Loosen screws (56) on mechanical post (57) securing control cable (58) to right return air damper (59) and fresh air damper .
- b. Remove two screws (60) securing right return air damper to frame.
- c. Loosen screw (61) securing control cable housing (62) to control mechanism (63).
- d. Pull control cable through control cable housing until it clears mechanical post on right return air damper.
- e. Remove right return air damper .



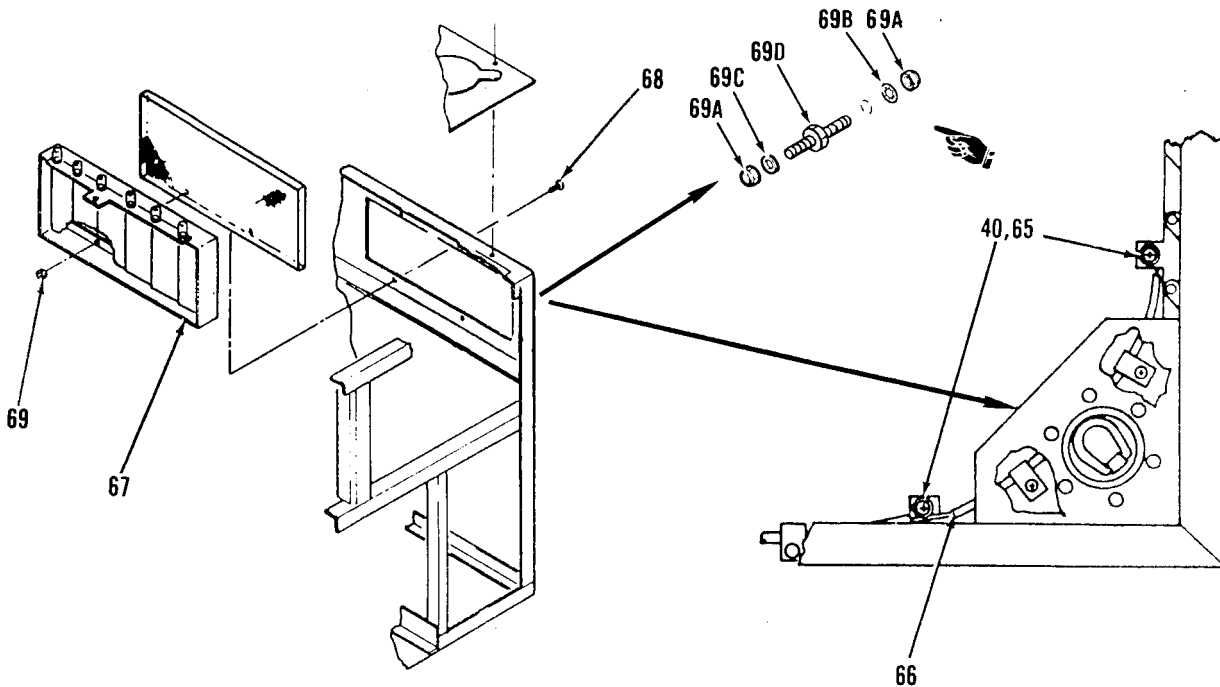
DAMPERS AND CONTROLS (CONT)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

10. Right Fresh Air

- Damper and Screen
- a. Loosen screws (40) on mechanical post (65) securing control cable (66) to right return air damper and fresh air damper (67).
 - b. Pull control cable through control cable housing until it clears mechanical post on right return air damper.
 - c. Remove four screws (68) and four nuts (69) securing right fresh air damper and screen to frame.
 - d. Remove two lock nuts (69A), lock washer (69B), flat washer (69C), and grounding stud (69D).
 - e. Remove fresh air damper and screen.



DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM

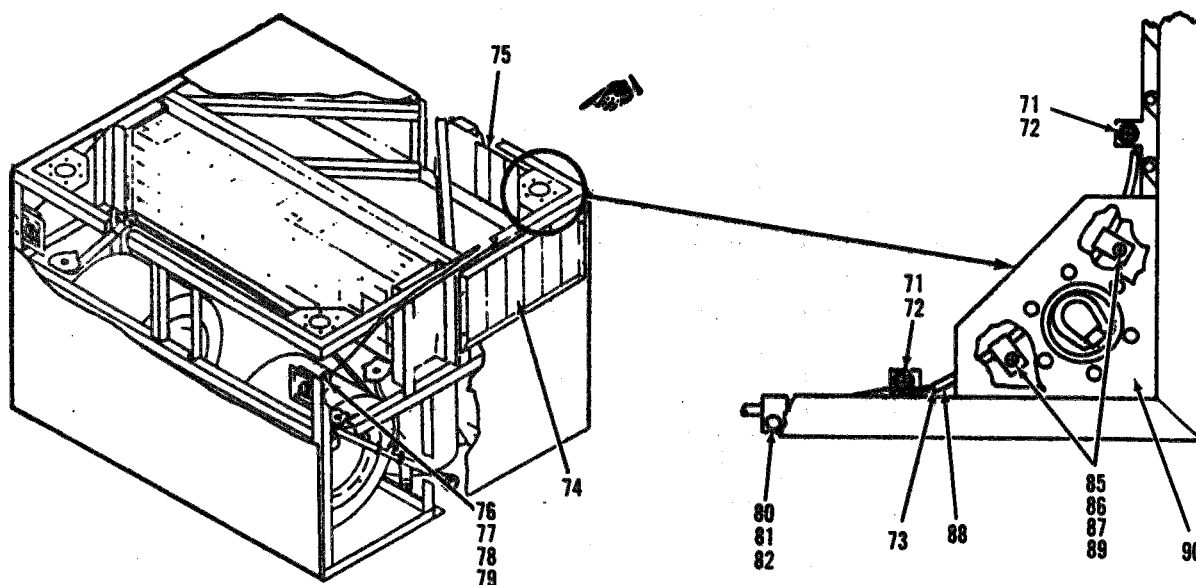
ACTION

REMARKS

REMOVAL

11. Right Control Cable

- a. Loosen screws (71) on mechanical post (72) securing control cable (73) to right return air damper (74) and fresh air damper (75).
- b. Loosen set screw on control cable knob.
- c. Remove control cable knob.
- d. Remove retaining nut (76) and star washer (77) securing control cable (78) to damper control box (79).
- e. Remove one screw (80) and one lock nut (81) securing clamp (82) to frame.
- f. Remove clamp from control cable housing.
- g. Slide control cable and housing out of unit.
- h. Remove two screws (85), nuts (86), and clamps (87) securing control cable housing (88) to lifting ring bracket (90). On Talley Model 2643T100-1 air conditioners, remove spacers (89) between clamps and lifting ring bracket.



DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSPECTION AND REPAIR

12. Damper Control and Cable

- a. Inspect for freedom, of movement, lubricate if required (Table D-1, Item 17).
- b. Tighten loose mountings.
- c. Replace defective controls.

13. Damper

- a. Inspect for freedom of movement.
- b. Inspect for damage.
- c. Straighten bent louver blades.
- d. Inspect for damaged gaskets.
- e. Replace damaged gasket material and secure gasket with adhesive (Table D-1, Item 2).
- f. Replace damaged damper.

DAMPERS AND CONTROLS (CONT.)

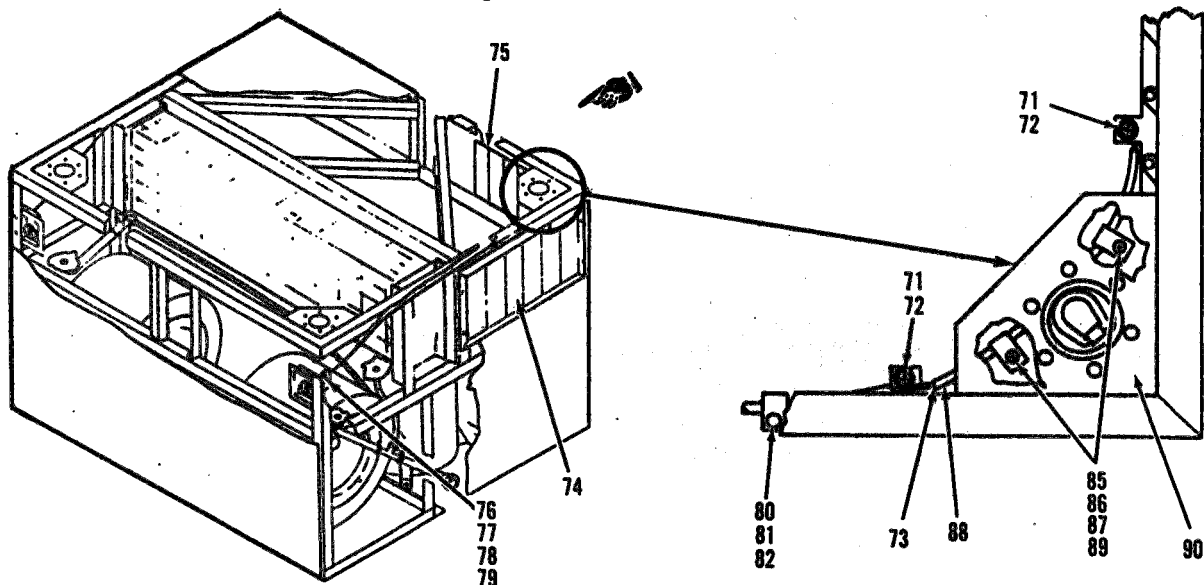
LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

NOTE

On installation, connect cable so that, with control knob at minimum, fresh air damper is fully closed and return-air damper is fully open.

14. Right Control Cable

- a. Slide control cable (73) into unit insuring that cable passes through mechanical post (72) on left return air (74) and fresh air damper (75).
- b. Secure control cable housing (88) to lifting ring bracket (90) with two screws (85), nuts (86), and clamps (87). On Talley Model 2463T100-1 air conditioners, use 0.35 inch long spacers (89) between clamps and lifting ring bracket.
- c. Secure control cable housing (88) to frame with one screw (80) and one locknut (81) and one clamp (82).
- d. Align control cable (73) with damper box.
- e. Secure control cable (78) to damper control box (79) with retaining nut (76) and star washer (77).
- f. Attach control cable knob to control cable (73).
- g. Tighten set screw on control cable knob.
- h. Tighten screws (71).

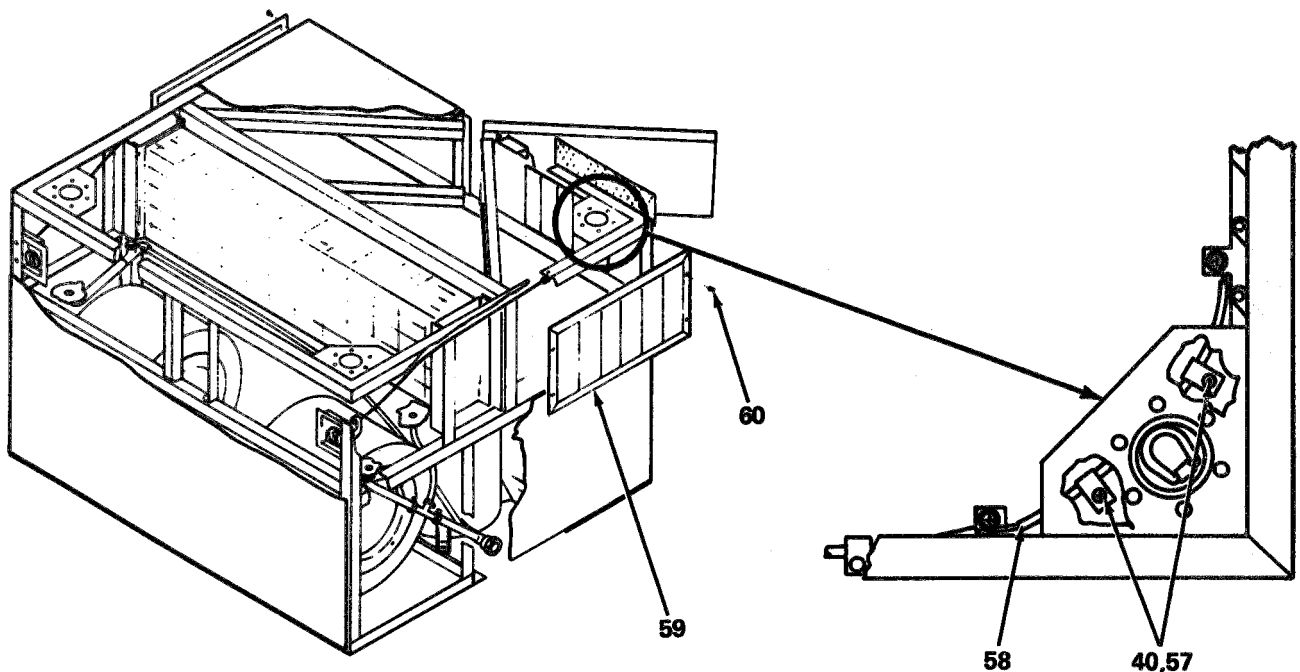


DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

16. Right Return Air Damper

- a. Align right return air damper (59) to frame.
- b. Secure right return air damper to frame with two screws (60).
- c. Slide control cable (58) into unit insuring that cable passes through mechanical post (57) on right return air damper.
- d. Secure control cable to right return air damper with mechanical post and tighten screw (40).



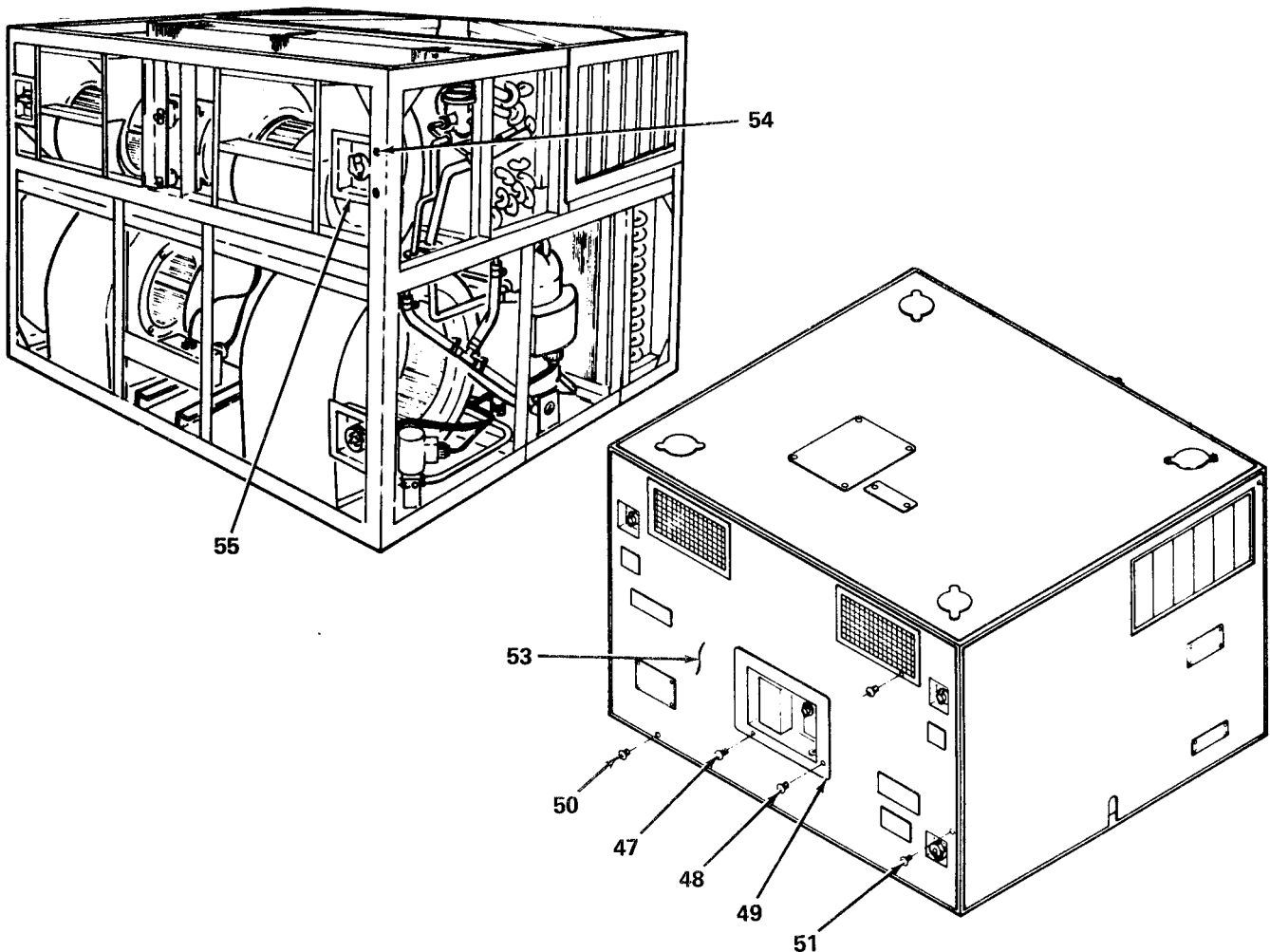
DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

17. Damper Box

- a. Align damper box (55) with holes in frame.
- b. Secure damper box to frame with two screws (54).
- c. Align front panel (53) with holes in frame.
- d. Secure front panel to frame with thirty-four screws (50) and two screws (51).
- e. Connect electrical connector (P-6).
- f. Align control box (49) with holes in front panel and frame.
- g. Secure control box to front panel and frame with four screws (47) and (48).



DAMPERS AND CONTROLS (CONT.)

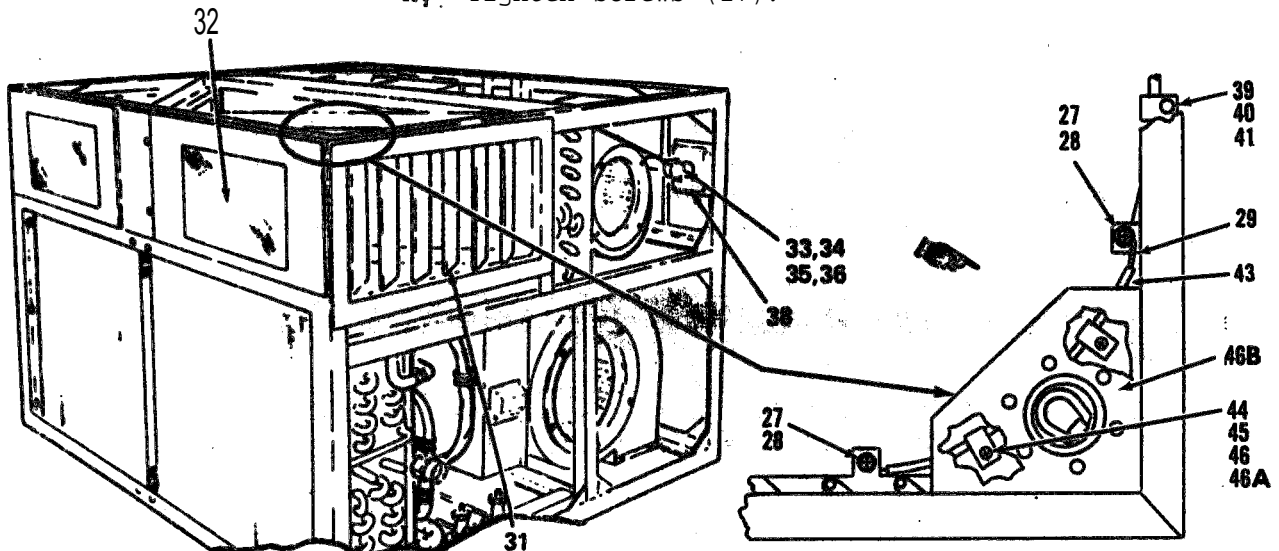
LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

NOTE

On installation, connect cable so that, with control knob at minimum, fresh air damper is fully closed and return-air damper is fully open.

18. Left Control Cable

- a. Slide control cable (29) into unit, insuring that cable passes through mechanical post (28) on left return air damper (31) and fresh air damper (32).
- b. Secure control cable housing (43) to lifting ring bracket (46B) with two screws (44), nuts (45), and clamps (46). On Talley Model 2463T100-1 air conditioners, use 0.35 inch long spacers (46A) between clamps and lifting ring bracket.
- c. Secure control cable (29) to frame with one screw (39) and one locknut (40) and one clamp (41).
- d. Align control cable with damper box (38).
- e. Secure control cable (29) to damper control box with retaining nut (35) and star washer (36).
- f. Attach control cable knob (34) to control cable (29).
- g. Tighten set screw (33) on control cable knob.
- h. Tighten screws (27).



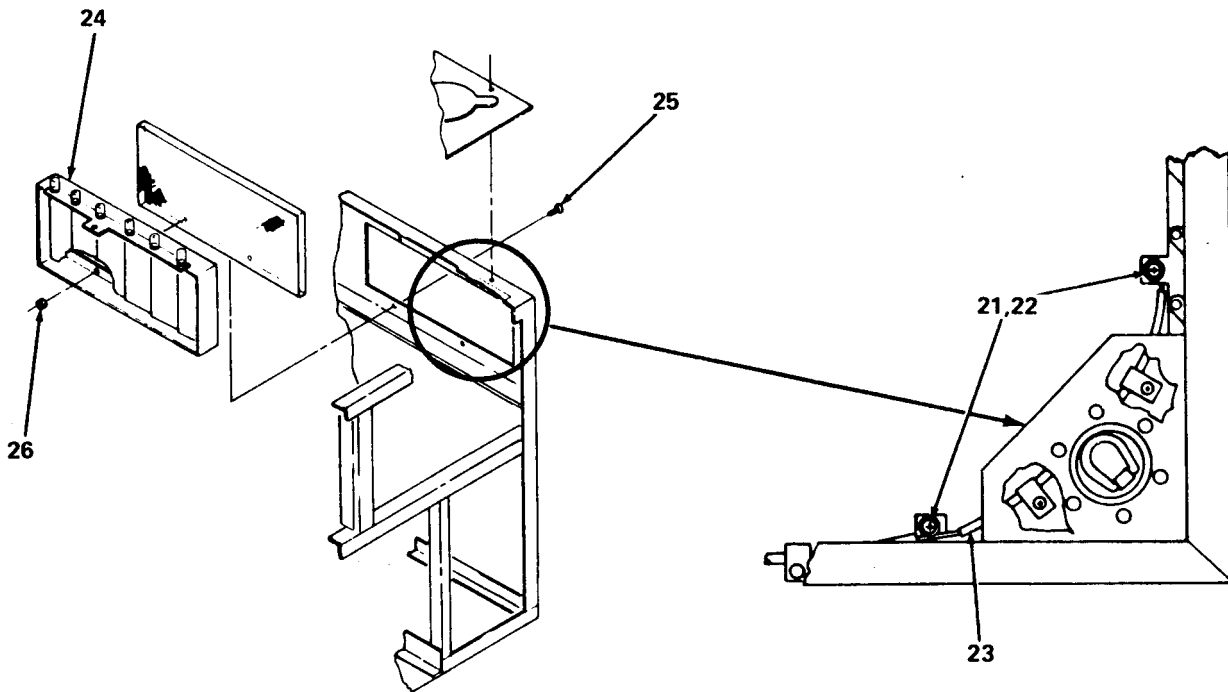
DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

19. Left Fresh Air Damper and Screen

- a. Align left fresh air damper (24) and screen to frame.
- b. Secure left fresh air damper and screen to frame with four screws (25) and four locknuts (26).
- c. Secure control cable (23) to left fresh air damper with mechanical post (22) and tighten screw (21) on mechanical post.



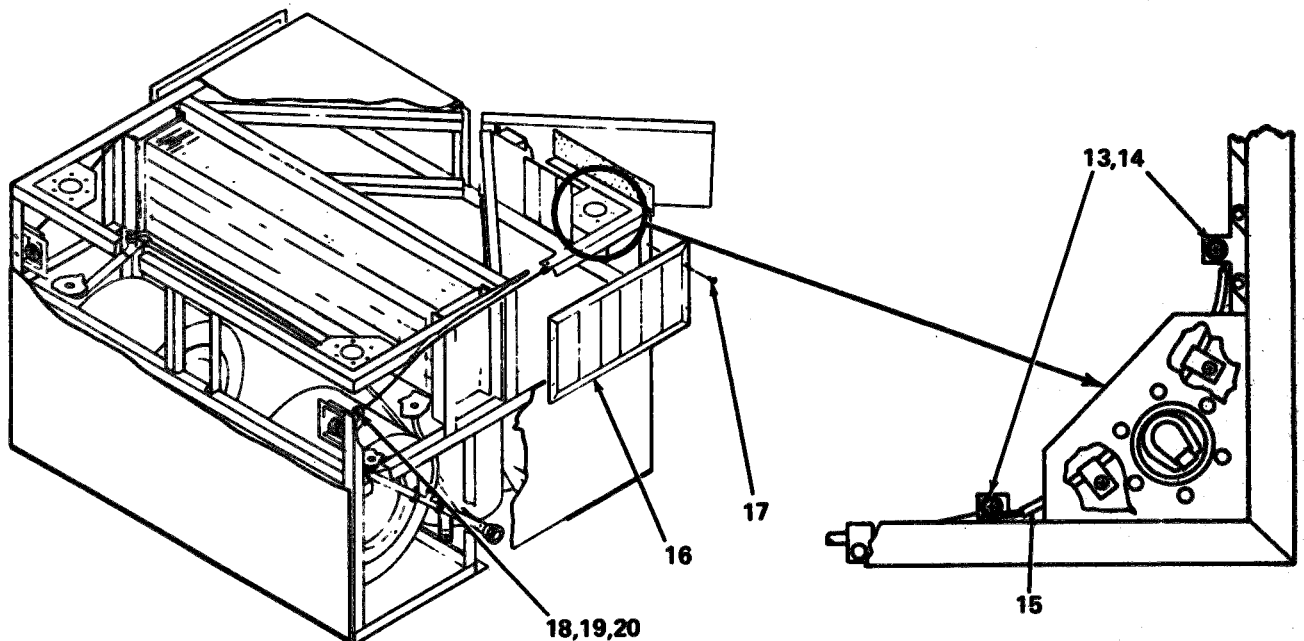
DAMPERS AND CONTROL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

20. Left Return Air Damper

- a. Align left return air damper (16) to frame.
- b. Secure left side return air damper to frame with two screws (17).
- c. Slide control cable (15) into unit insuring that cable passes through mechanical post (14) on left return air damper and fresh air damper.
- d. Secure control cable to left return air damper with mechanical post and tighten screw (13) on mechanical post (14).
- e. Align control cable housing (19) with control mechanism (20).
- f. Secure control cable housing to control mechanism with one screw (18).

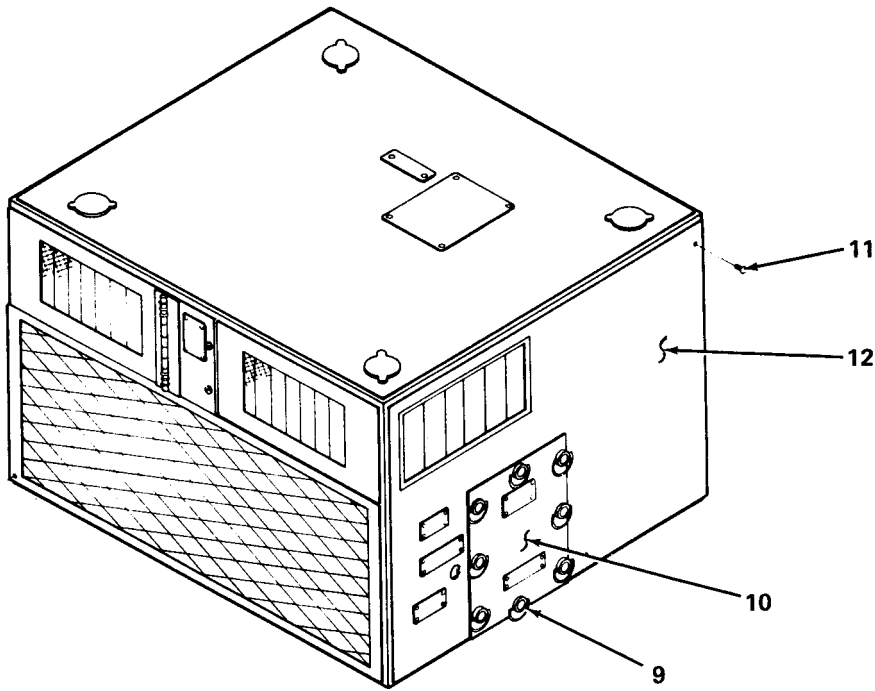


DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

21. Left Side Panel

- a. Align holes in left side panel (12) and maintenance panel (10) with holes in frame.
- b. Secure left side panel with twenty-seven screws (11).
- c. Tighten bottom center turnlock fastener (9) on maintenance panel.



DAMPERS AND CONTROLS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

22. Top Panel

- a. Align holes in top panel (6) with holes in frame.
- b. Secure top panel with twenty-three screws (7) and eight screws (8).

23. Lifting Ring Covers

- a. Align four lifting covers (5) with top panel and frame.

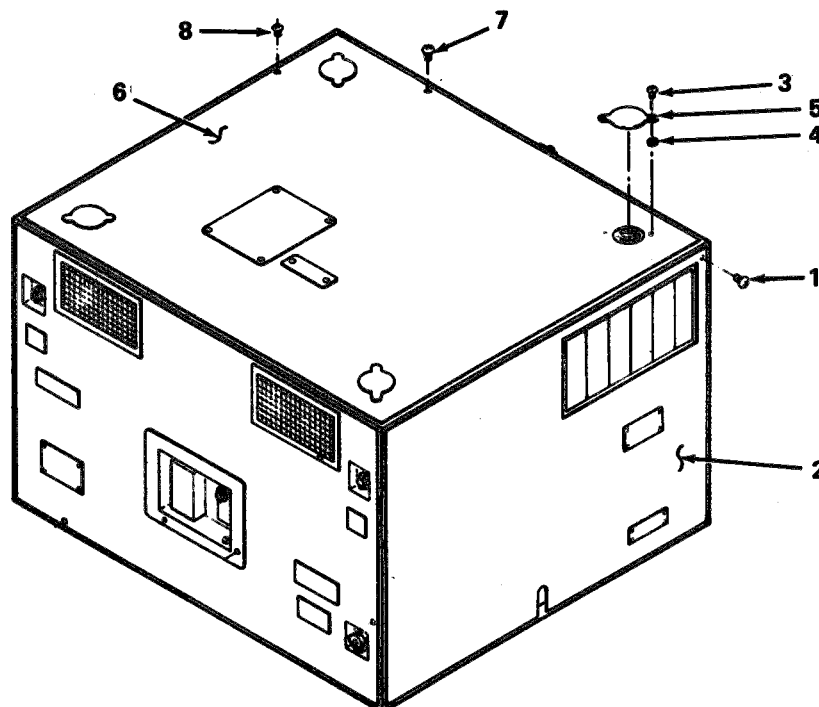
NOTE

Rubber washers are to be replaced between lifting ring cover and top panel.

- b. Secure lifting ring cover with eight screws (3) and eight rubber washers (4).

24. Right Side Panel

- a. Align holes right side panel (2) with holes in frame.
- b. Secure right side panel with thirty-one screws (1).



4-21. CONDENSATE DRAIN AND FITTINGS

This task covers:

- a. Removal
- b. Inspection
- c. Installation

INITIAL SETUP

Test Equipment
None

Tools
TOOL KIT (SC 5180-90-C-N18)

References
None

Troubleshooting References
None

Special Environmental Conditions
None

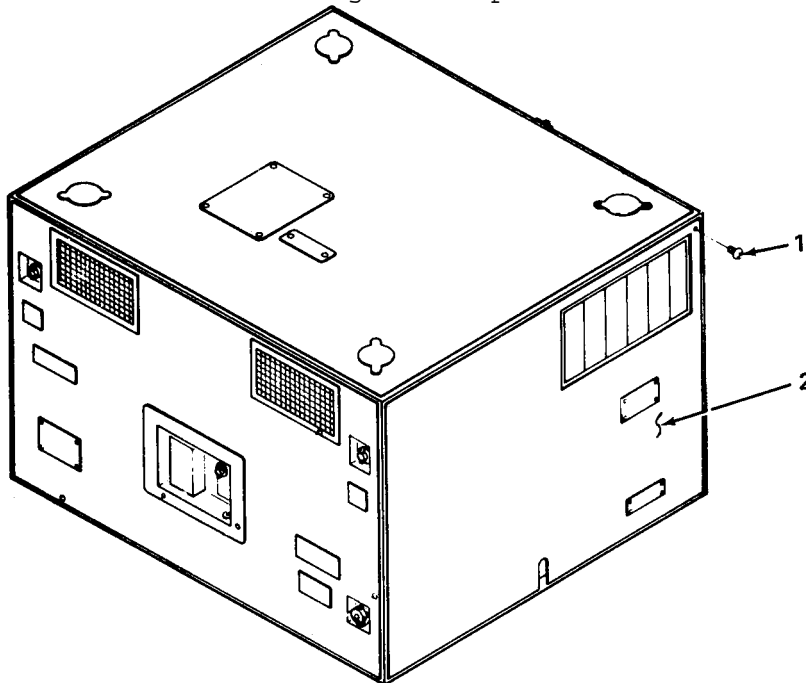
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

1. Right Side Panel

- a. Remove thirty-one screws (1) securing right side panel (2) to frame.
- b. Remove right side panel.

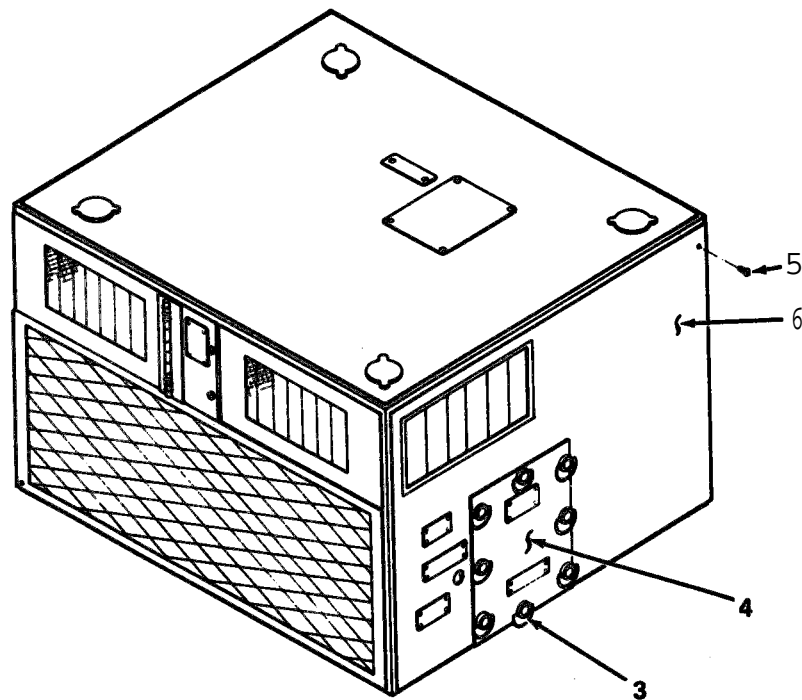


CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

2. Left Side Panel

- a. Loosen bottom center turnlock fastener (3) on maintenance panel (4).
- b. Remove twenty-nine screws (5) securing left side panel (6) and maintenance panel to frame.
- c. Remove left side panel and maintenance panel.



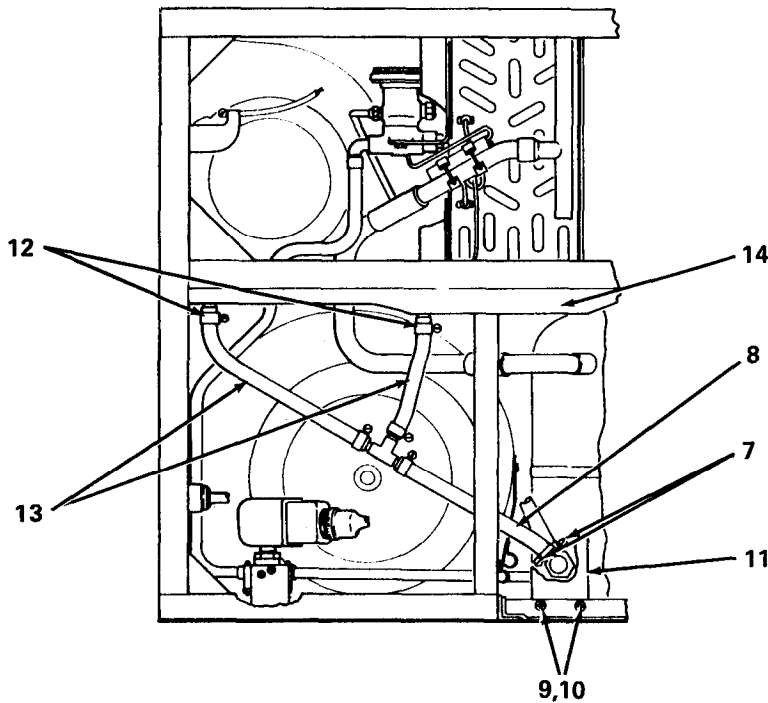
CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

3. Condensate Drain

- a. Loosen two clamps (7) securing drain lines (8) to drain connector.
- b. Disconnect drain lines.
- c. Remove two screws (9) and two locknuts (10) securing drain connector to frame.
- d. Remove drain connector (11) from frame.
- e. Loosen clamps (12) securing drain lines (13) to evaporator drain pan (14).
- f. Remove drain lines from drain pan.



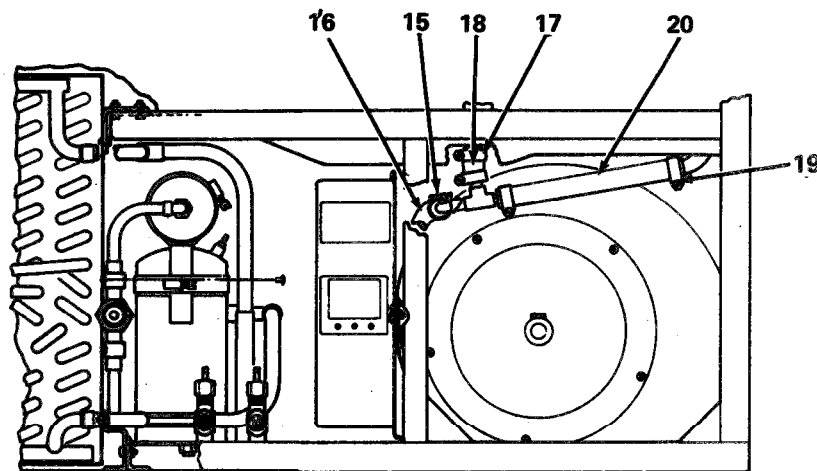
CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

3. Condensate Drain

- g. Remove drain line clamp (15) securing drain line (16) to evaporator drain pan (14).
- h. Slide long section of rubber hose through unit from left side.
- i. Loosen clamp (17) securing drain line (18) to evaporator drain pan.
- j. Remove drain line from drain pan.
- k. Loosen clamp (19) securing drain line (20) to evaporator drain pan.
- l. Remove drain line from drain pan.



CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

4. Condensate Drain Assembly

- a. Place a 2 x 4 inch board under one side of the air conditioner to tilt it slightly, then pour about one pint (one-half liter) of water into the drip pan below the evaporator coil.
- b. Verify that the water flows out of the drip pan through the drain tube.
- c. If it does not, remove and repair or replace drain tube.
- d. Check to see that rubber is not cracked or affected by dry rot.
- e. Replace if damaged.

5. Drain Connector

- a. Inspect for damage.
- b. Repair or replace if damaged.

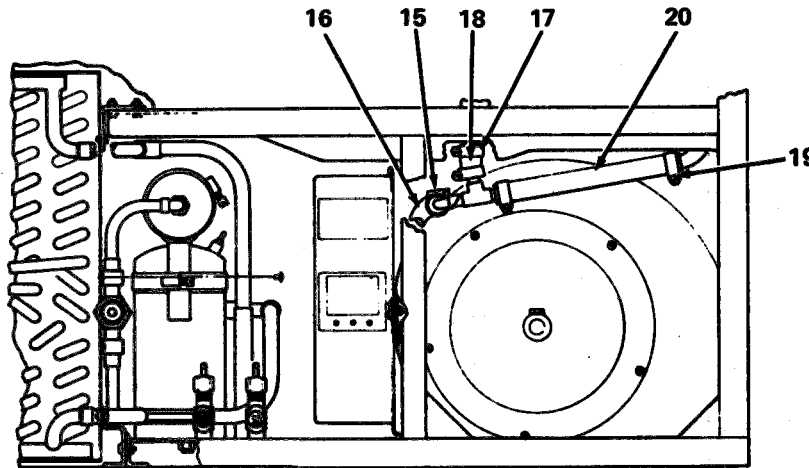
CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

6. Condensate Drain

- a. Connect drain line (20) to evaporator drain pan (14)
- b. Tighten clamp (19) on drain line.
- c. Connect drain line (18) to evaporator drain pan.
- d. Tighten clamp (17) on drain line.
- e. Slide long section of drain from left side to right side of unit.
- f. Connect drain line (16) to evaporator drain pan.(23)
- g. Tighten clamp (15) on drain line.



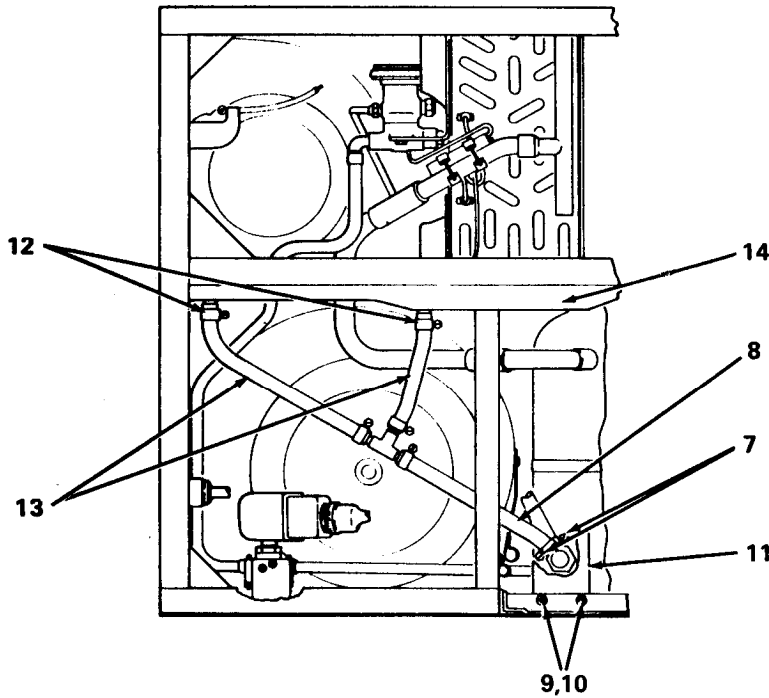
CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

6. Condensate Drain

- h. Connect drain lines (13) to evaporator drain pan (14).
- i. Tighten two clamps (12) on drain line.
- j. Align drain connector (11) with frame.
- k. Secure drain connector with two screws (9) and two locknuts (10)
- l. Connect drain lines (8) to drain connector.
- m. Tighten two clamps (7) on drain connector.

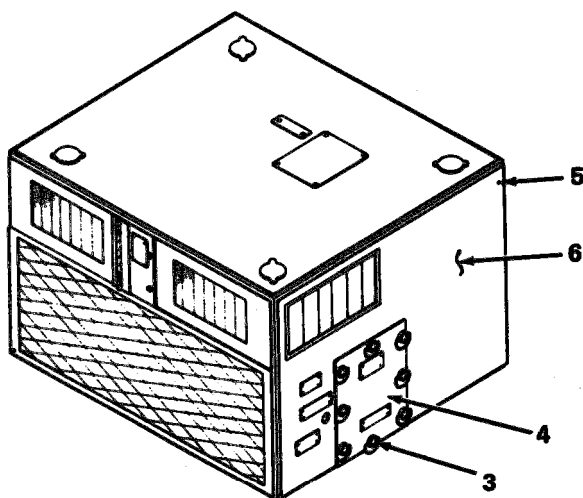


CONDENSATE DRAIN AND FITTINGS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

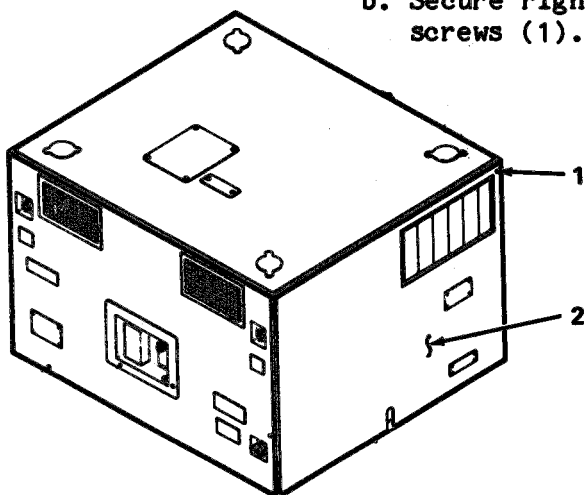
7. Left Side Panel

- a. Align left side panel (6) and maintenance panel (4) with frame.
- b. Tighten bottom center turnlock fastener (3) on maintenance panel.
- c. Secure left side panel with twenty-nine screws (5).



8. Right Side Panel

- a. Align right side panel (2) with frame.
- b. **Secure right side panel with thirty-one screws (1).**



 4-22. JUNCTION BOX

- This task covers:
 a Removal
 b. Inspection
 c. Test
 d. Installation

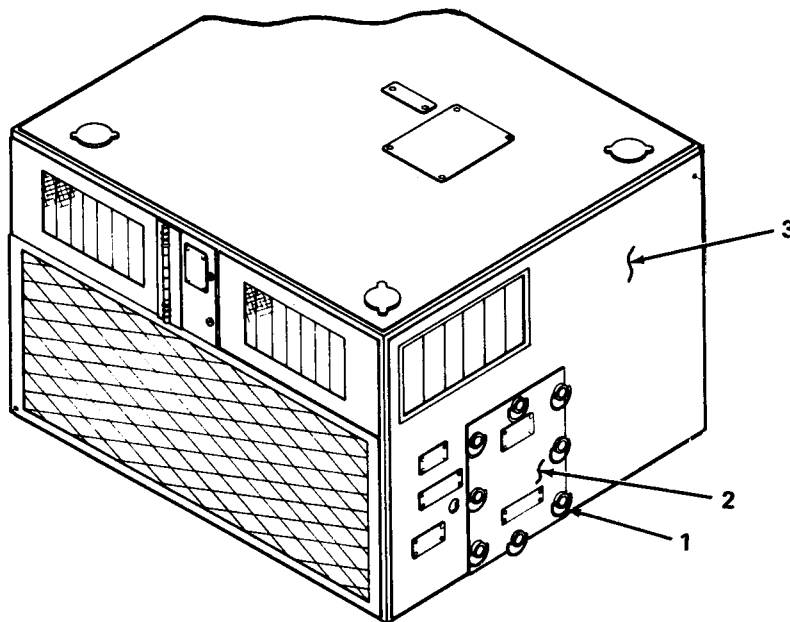
 INITIAL SETUP

- Test Equipment
 None
 Tool s
 TOOL KIT (SC 5180-90-C-N18)
 References
 None
 Troubleshooting References
 None
 Special Environmental Conditions
 None
 General Safety Instructions
 Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

1. Maintenance Panel
 - a. Release eight turnlock fasteners (1) securing maintenance panel (2) to left side panel (3).
 - b. Remove maintenance panel.



JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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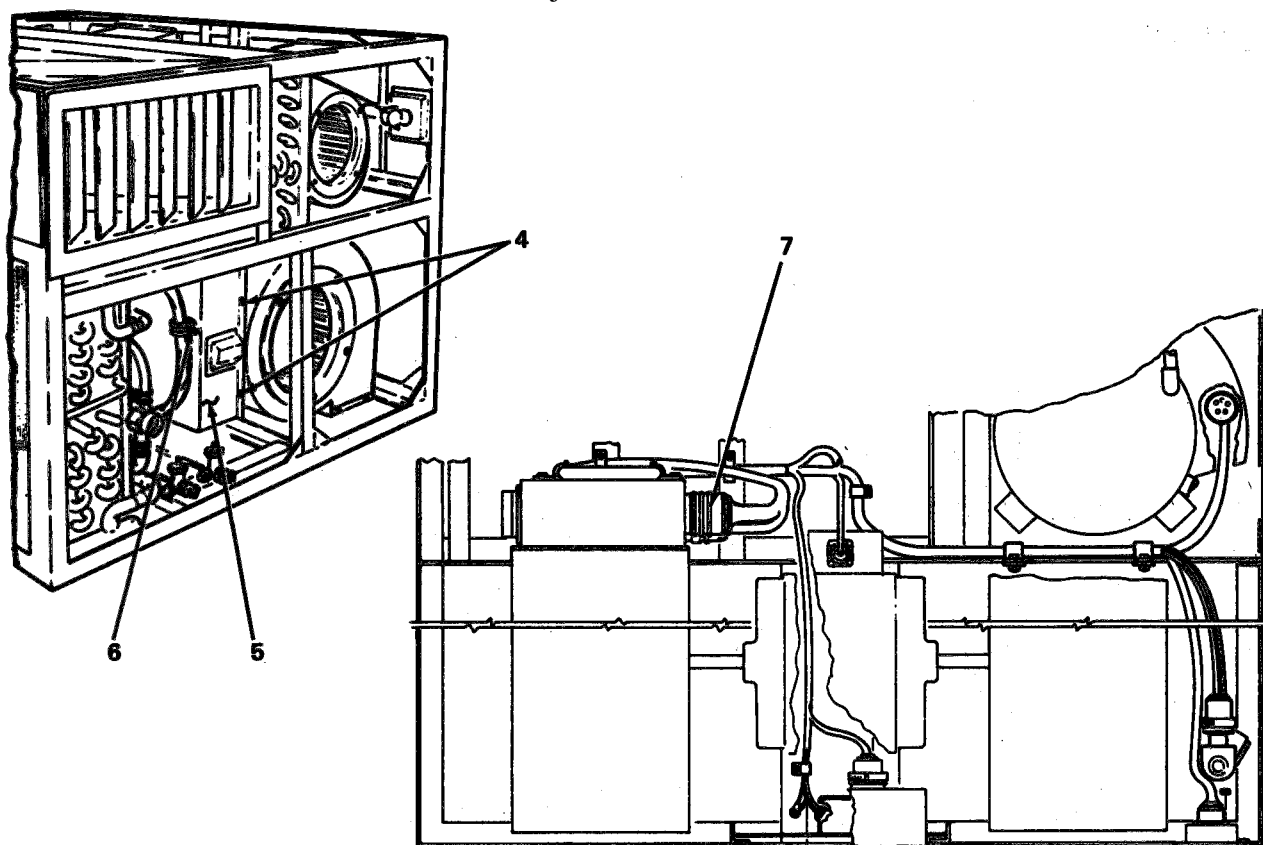
REMOVAL

2. Junction Box

WARNING

Disconnect main power connector before attempting any electrical servicing with air conditioner.

- a. Remove two screws (4) securing junction box (5) to junction box support plate, slide junction box out to allow removal of clamps (6).
- b. Release the two clamps (6) that secure the wiring harness to the junction box.
- c. Disconnect two electrical connectors P-4 and P-5 (7).
- d. Remove junction box.



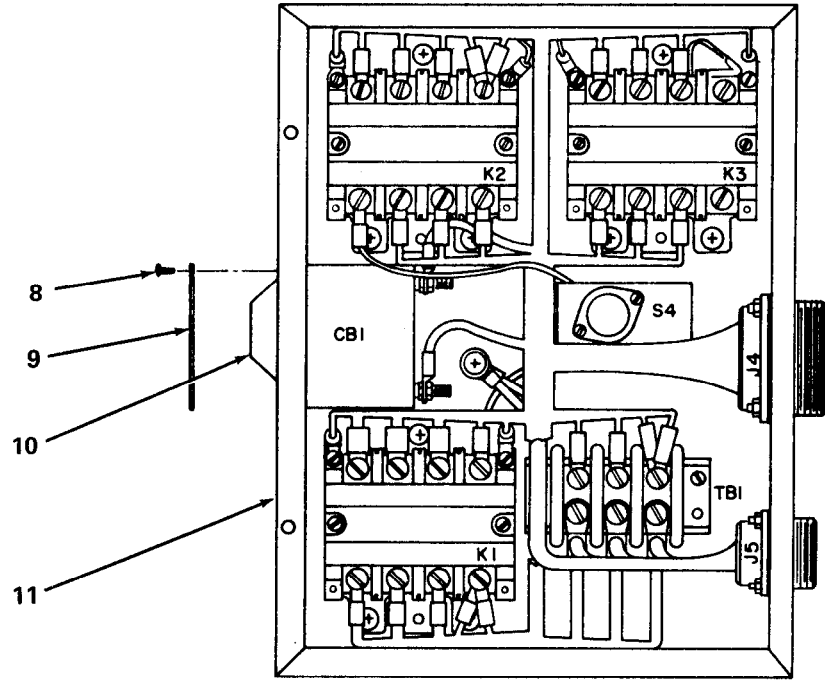
JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

3. Circuit Breaker (CB1)

- a. Remove six screws (8) and circuit breaker shield (9) securing circuit breaker (10) to junction box (11).
- b. Tag and remove six wires from circuit breaker.
- c. Remove circuit breaker.



JUNCTION BOX (CONT.)

LOCATION/ITEM

ACTION

REMARKS

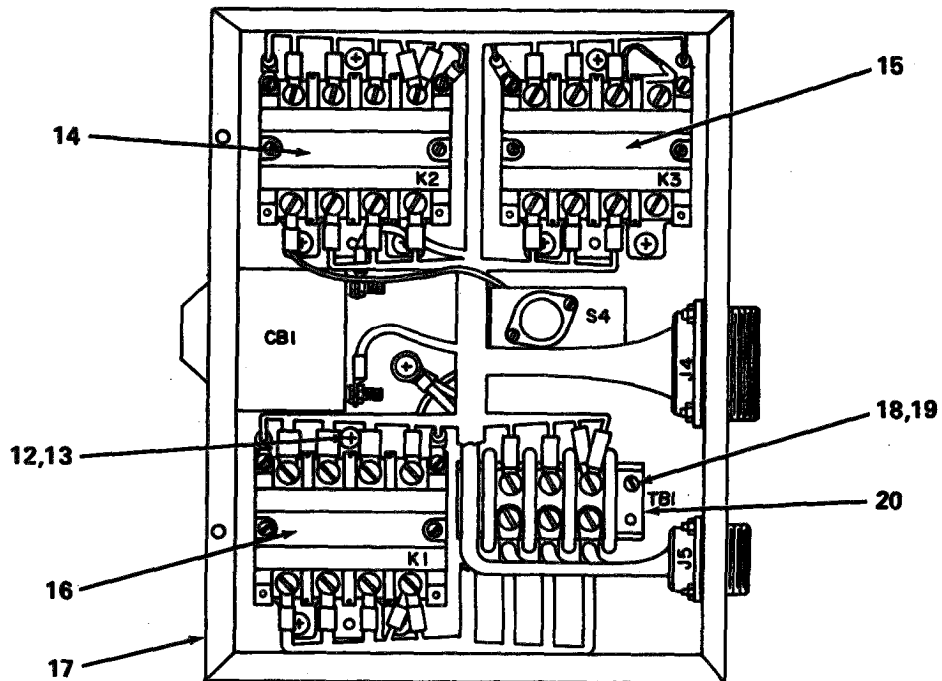
REMOVAL

4. Relays (K1, K2, & K3)

- a. Remove three screws (12) and three lock nuts (13) securing relays (14,15 and 16) to junction box (17).
- b. Tag and Remove wires from relay.
- c. Remove relay.

5. Terminal Board (TB1)

- a. Remove two screws (18) and two nuts (19) securing terminal board (20) to junction box.
- b. Tag and remove wires.
- c. Remove terminal board.



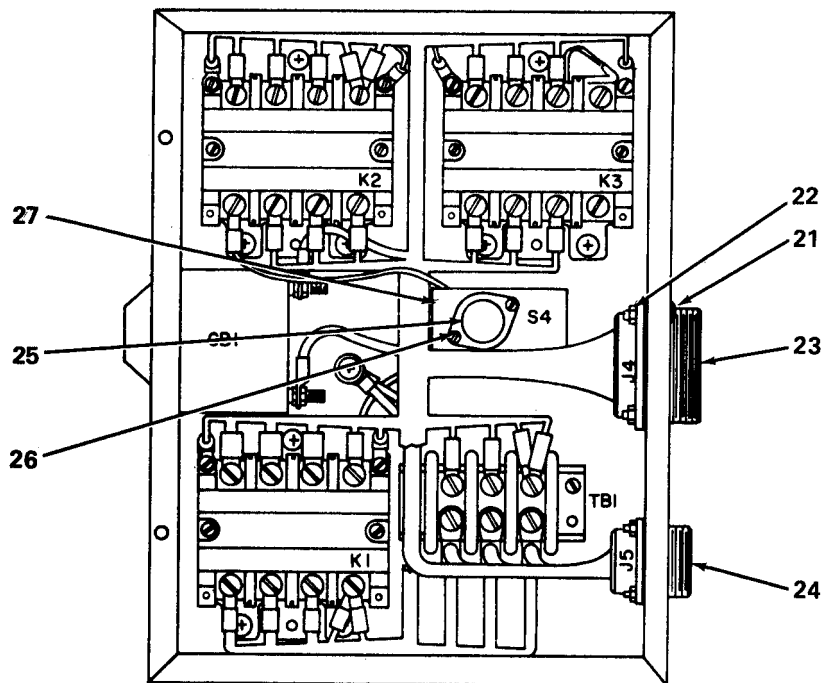
JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

6. Electrical Connectors (J4 & J5)
 - a. Remove four screws (21) and four nuts (22) securing electrical connectors (23 and 24) to junction box.
 - b. Remove electrical connectors.

- 7* Thermal Relay Assembly (S-4)
 - a. Tag and remove wires from thermal relay assembly S-4 (25).
 - b. Remove two screws (26) securing thermal relay assembly S-4 to mounting bracket (27).
 - c. Remove thermal relay assembly.



JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSPECTION</u>		
8 Junction Box	<ul style="list-style-type: none"> a. Inspect all components and wiring connections for security of attachments. b. Tighten any loose component or wiring connectors. c. Inspect information plate for damage. d. If damaged notify Direct Support Maintenance. 	
9. Circuit Breaker	<ul style="list-style-type: none"> a. Inspect circuit breaker for damage. b. Replace if damaged. 	
10. Relays	<ul style="list-style-type: none"> a. Inspect relay for damage. b. Replace if damaged. 	
11. Terminal Board (TB1)	<ul style="list-style-type: none"> a. Inspect for damage. b. Replace if damaged. 	
12. Electrical Connectors (J-4 and J-5)	<ul style="list-style-type: none"> a. Inspect for damage. b. Replace if damaged. 	
13. Thermal Relay Assembly (S-4)	<ul style="list-style-type: none"> a. Inspect for damage. b. Replace if damaged. 	

JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TEST</u>		
14. Circuit Breaker	<ul style="list-style-type: none"> a. Use a multimeter and test between terminals 1 and 4, 2 and 5, and 3 and 6 with the circuit breaker in the ON position. If continuity does not exist in any of the three test positions the circuit breaker is defective. b. Replace defective circuit breaker. 	
15. Relays (K-1,K-2 and K-3)	<ul style="list-style-type: none"> a. Tag and remove wire from terminal number 8. b. Check for continuity between terminals 8 and 10. c. If continuity does not exist the relay is defective. d. Replace defective relay. 	
16. Electrical Connectors (J-4 and J-5)	Using a multimeter test for continuity between connector termination in accordance with wiring diagram Appendix F.	
17. Thermal Relay Assembly (S-4)	<ul style="list-style-type: none"> a. Use a multimeter and test between terminals 2&7,2&3,2&5,3&5,3&7 and 5&7. b. If continuity does not exist in any of the test positions the thermal relay is defective. c. Replace defective thermal relay assembly. 	

JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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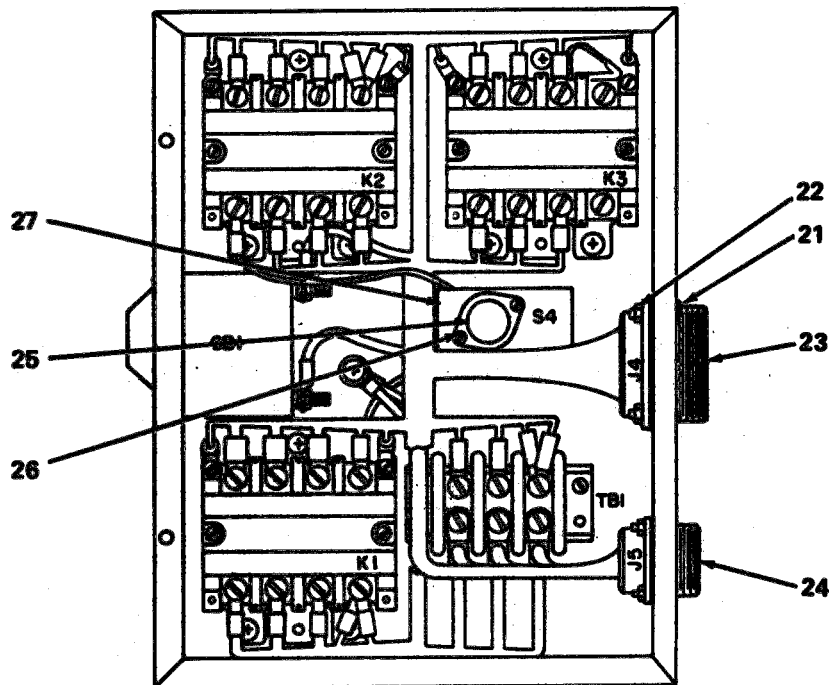
INSTALLATION

18. Thermal Relay Assembly (S-4)

- a. Align thermal relay assembly S-4 (25) with mounting bracket (27).
- b. Secure thermal relay assembly S-4 to mounting bracket with two screws (26).
- c. Attach wires to appropriate terminals.

19. Electrical Connectors (J4 & J5)

- a. Align electrical connectors (23 and 24) with junction box.
- b. Secure electrical connectors with four screws (21) and four lock nuts (22).
- c. Attach wires to appropriate terminals.



JUNCTION BOX (CONT.)

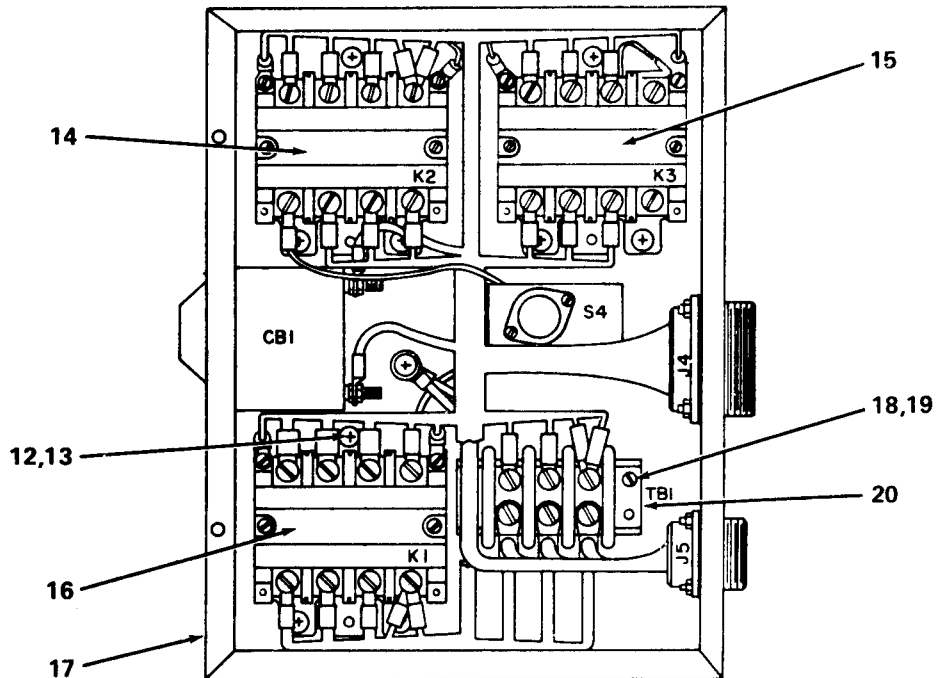
LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

20. Terminal Board (TB-1)

- a. Align terminal board (20) with junction box.
- b. Secure terminal board to junction box with two screws (18) and two lock nuts (19).
- c. Attach any wires that may have been removed.

21. Relays (K-1, K-2 & K-3)

- a. Align relays (14,15 and 16) with holes in junction box (17).
- b. Secure relays to junction box with three screws (12) and three nuts (13).
- c. Attach wires to appropriate terminals on relays.



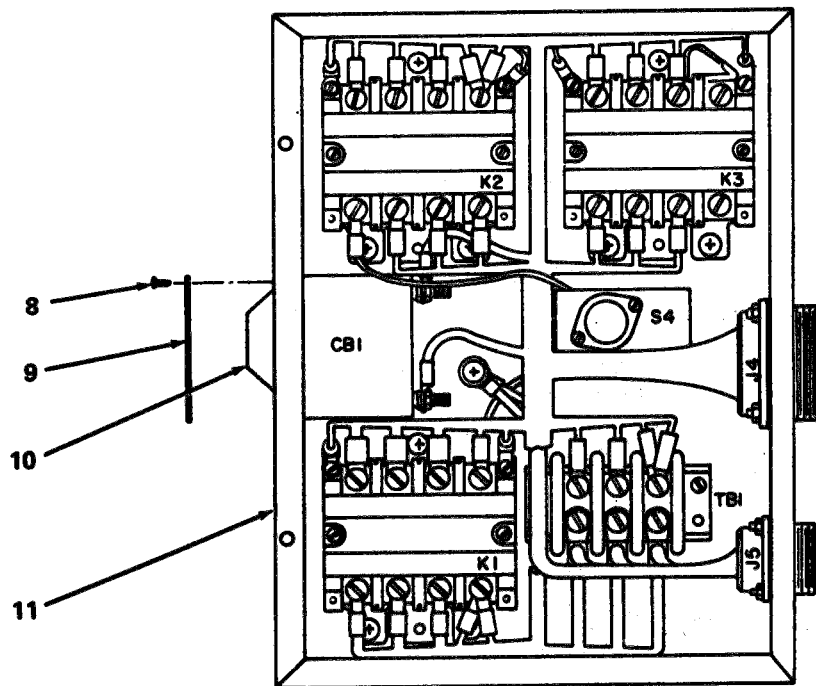
JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

22. Circuit Breaker (CB1)

- a. Align circuit breaker (10) and circuit breaker shield (9) with junction box.
- b. Secure circuit breaker to junction box with six screws (8).
- c. Attach wires to appropriate terminals on circuit breaker.



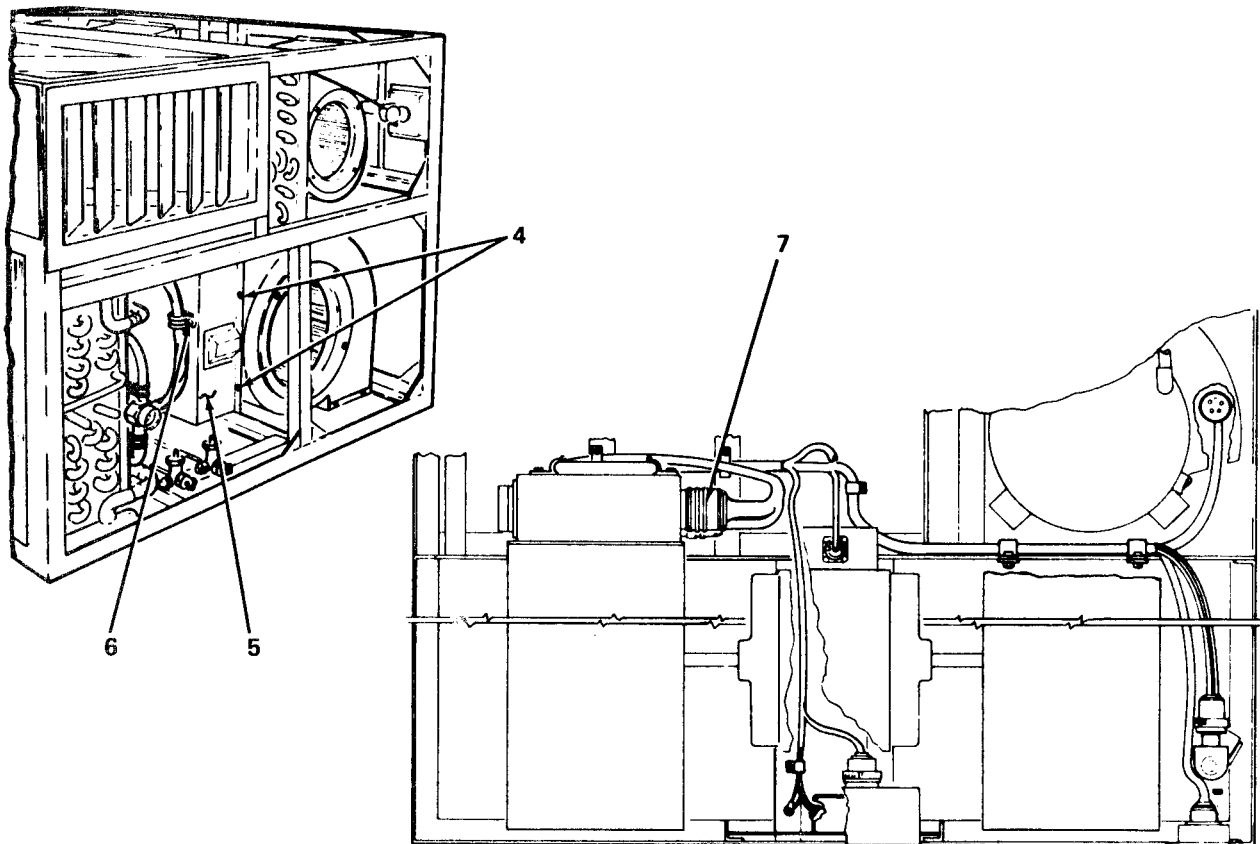
JUNCTION BOX (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

23. Junction Box

- a. Align junction box (5) with junction box support panel.
- b. Connect two electrical connectors (7) to junction box.
- c. Secure junction box to junction box support panel with two screws (4).
- d. Secure wiring harness to junction box by tightening clamps (6).



JUNCTION BOX (CONT.)

LOCATION/ITEM

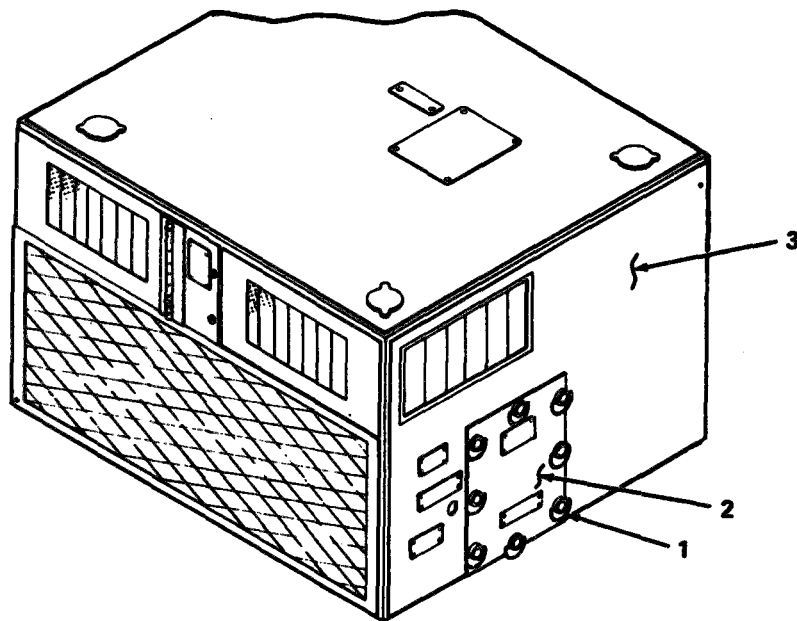
ACTION

REMARKS

INSTALLATION

24. Maintenance Panel

- a. Align maintenance panel (2) with frame.
- b. Secure maintenance panel to frame and left side panel (3) with eight turnlock fasteners (1).



 4-23. WIRING HARNESS

This task covers:

- a Removal
- b. Inspection
- c. Test
- d. Installation

 INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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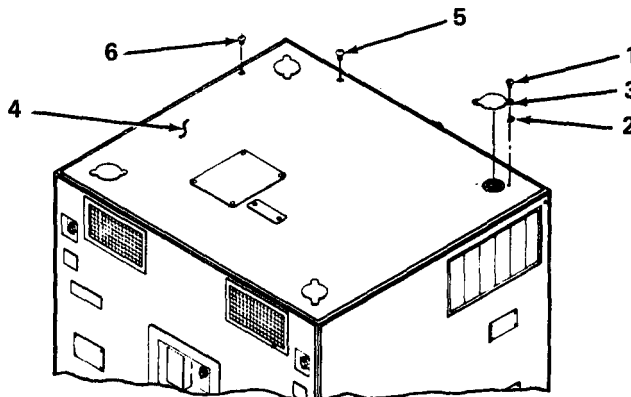
REMOVAL

1. Lifting Ring Covers

- a. Remove eight screws (1) and eight rubber washers (2) securing lifting ring covers (3) to top panel (4) and frame.
- b. Remove lifting ring covers.

2. Top Panel

- a. Remove twenty-threeI screws (5) and eight screws (6) securing top panel (4) to frame.
- b. Remove top panel.



WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

3. Left Side Panel

- a. Loosen bottom center turnlock fastener (7) on maintenance panel (8).
- b. Remove twenty-nine screws (9) securing left side panel (10) and maintenance panel to frame.
- e. Remove left side panel.

4. Right Side Panel

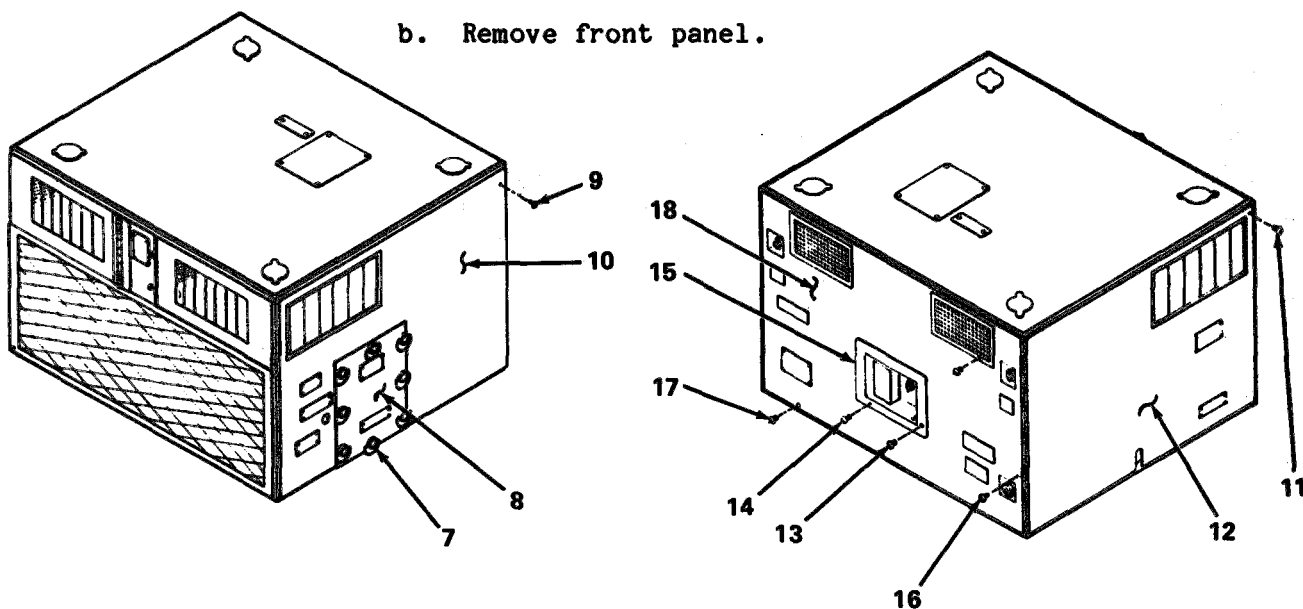
- a. Remove thirty-one screws (11) securing right side panel (12).
- b. Remove right side panel to frame.

5. Control Box

- a. Remove four screws (13) and four screws (14) securing control box (15) to front panel and frame.
- b. Disconnect electrical connector (P-6).
- c. Remove control box.

6. Front Panel

- a. Remove thirty-four screws (16) and two screws (17) securing front panel (18) to frame.
- b. Remove front panel.



WIRING HARNESS (CONT.)

 LOCATION/ITEM

ACTION

REMARKS

REMOVAL

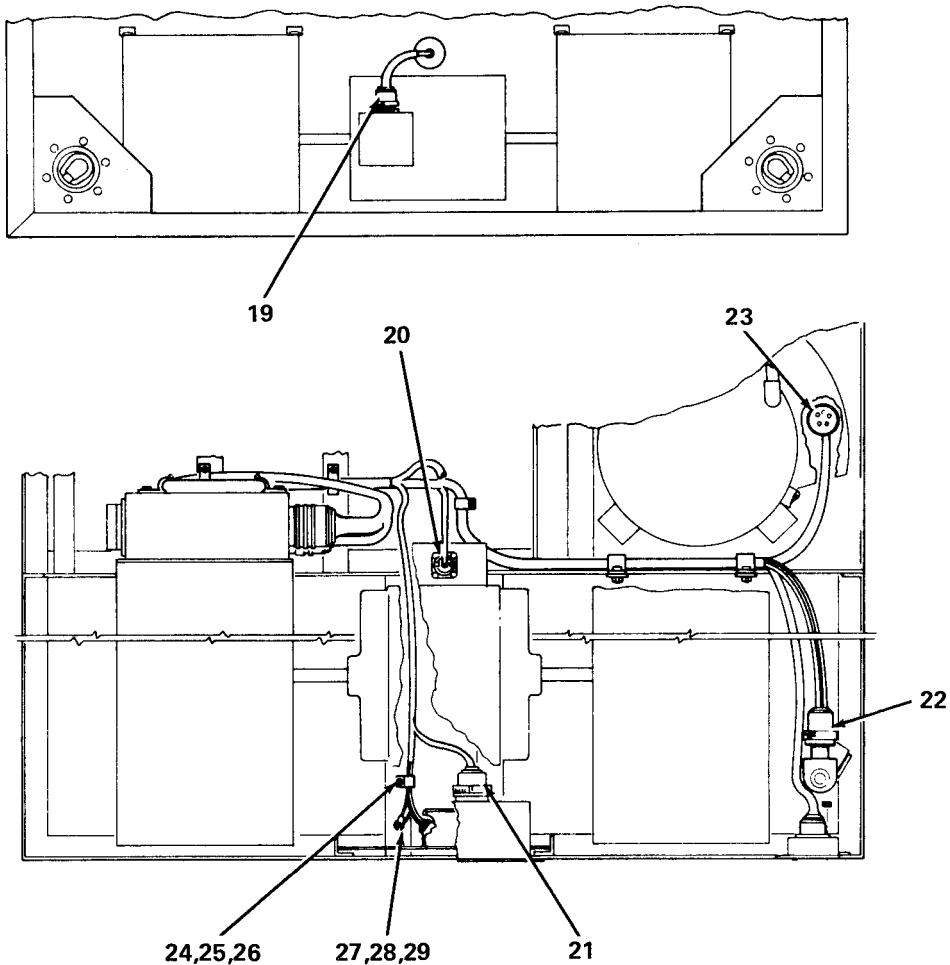
7. Main Wiring Harness

- a. Disconnect electrical connectors from:
 1. Evaporator Fan Motor P-3 (19).
 2. Condenser Fan Motor P-2 (20).
 3. Pressure Switch P-9 (21).
 4. Solenoid Valve P-8 (22).
 5. Compressor P-1 (23).

- b. Remove one screw (24) and lock nut (25) securing clamp (26) to frame on electrical ground wires.

- c. Remove clamp.

- d. Remove one screw (27), star washer (28) and lock nut (29) securing ground wire terminals to



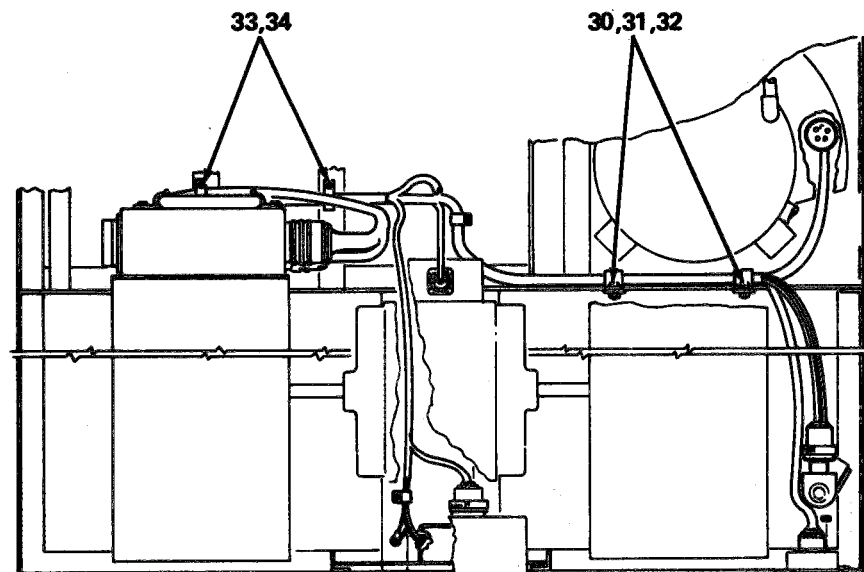
WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARK
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REMOVAL

7. Main Wiring Harness

- e. Remove two screws (30) and lock nuts (31) securing two clamps (32) and main wiring harness to condenser fan housing brackets.
- f. Remove clamps.
- g. Remove two screws (33) securing two clamps (34) and main wiring harness to frame.
- h. Remove two clamps.
- i. Remove main wiring harness from unit.



WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- 8. Main Wiring Harness
 - a. Inspect for damage.
 - b. Repair or replace if' damaged.

TEST

- 9. Main Wiring Harness
 - a. Using a multimeter test for continuity between connectors and accordance with wire list (Appendix E).
 - b. Continuity does not exist. the wiring harness is defective.
 - c. Repair or replace if defective.

NOTE

Assure that the grommet is installed properly in the evaporator drain pan. Seal the grommet to the evaporator drain pan with sealant.

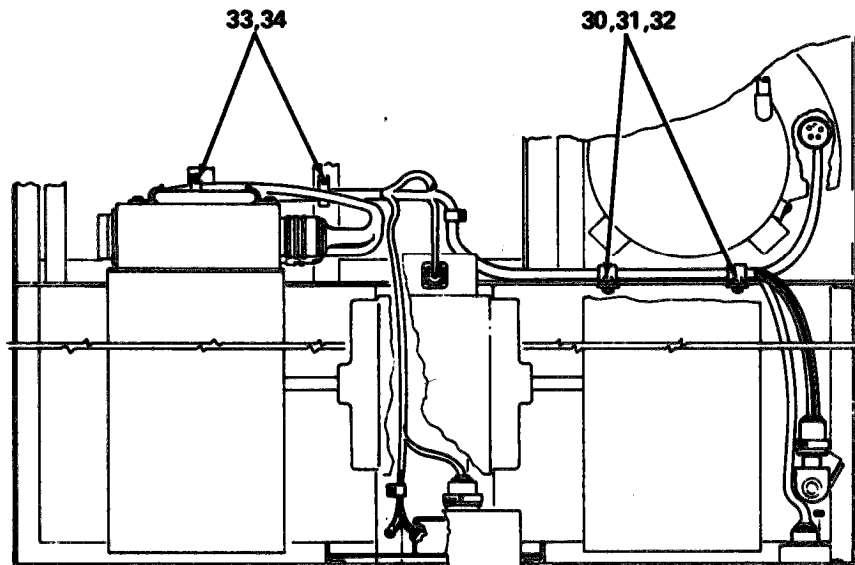
WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

10. Main Wiring Harness

- a. Slide main wiring harness to appropriate areas.
- b. Align two clamp (34) and main wiring harness with frame.
- c. Secure two clamps to frame with two screws (33).
- d. Align two clamps (32) and main wiring harness with condenser fan housing brackets.
- e. Secure two clamps to condenser fan housing brackets with two screws (30) and two nuts (31).



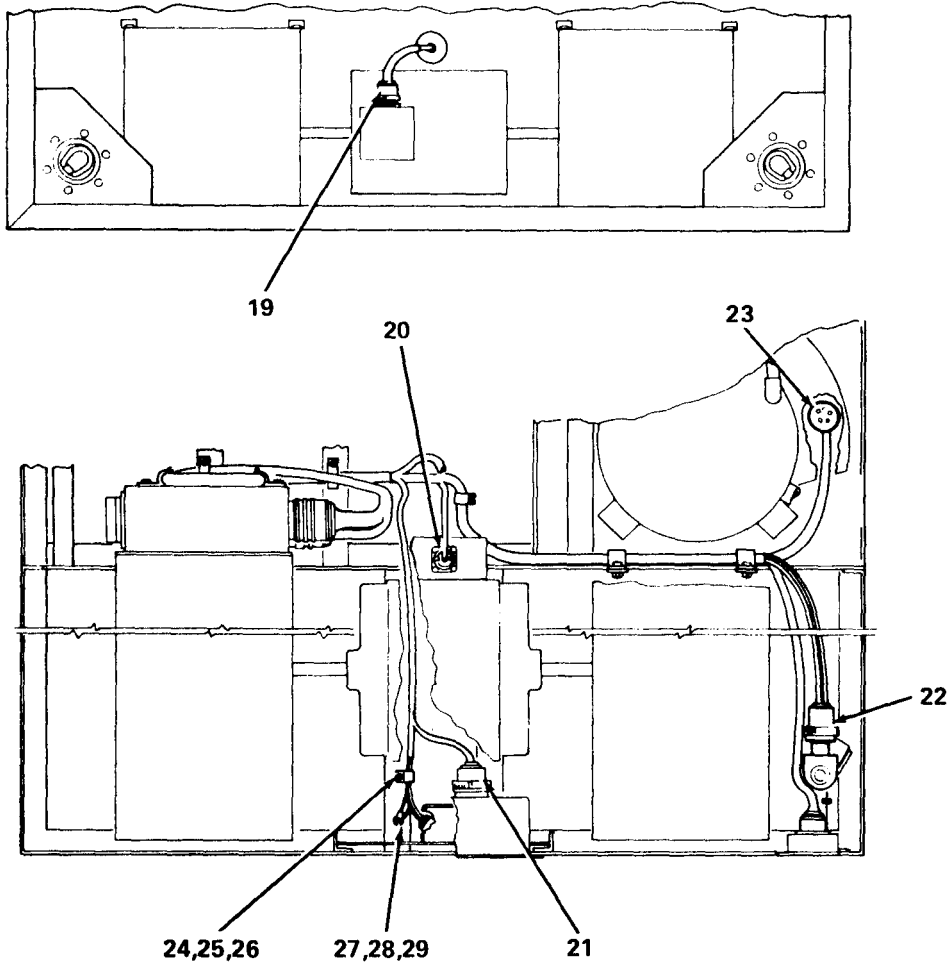
WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

10. Main Wiring Harness

- f. Align ground wire terminals with frame.
- g. Secure wire terminals to frame with one screw (27), one starwasher (28) and lock nut (29).
- h. Align clamp (26) for ground wires with frame.
- i. Secure clamp for ground wires to frame with one screw (24) and one lock nut (25).
- j. Connect electrical connectors to:
 1. Evaporator Fan Motor P-3 (19).
 2. Condenser Fan Motor P-2 (20).
 3. Pressure Switch P-9 (21).
 4. Solenoid Valve P-8 (22).
 5. Compressor P-1 (23).



HIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

11. Front Panel

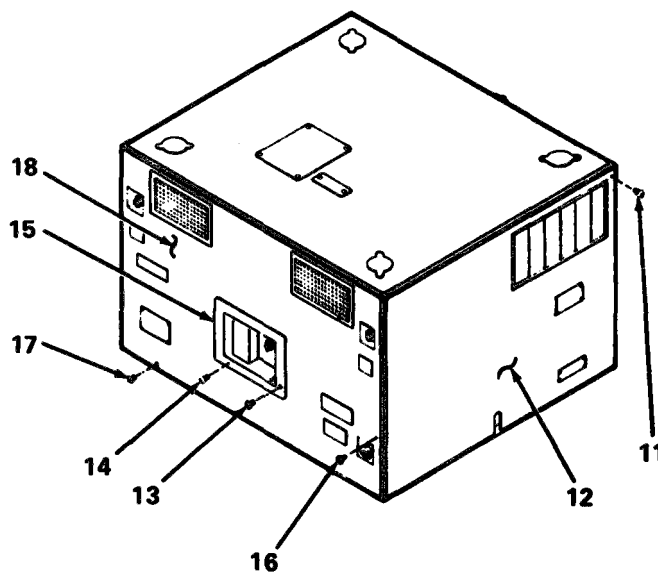
- a. Align holes in front panel (18) with holes in frame.
- b. Secure front panel with thirty-four screws (16) and two screws (17).

12. Control Box

- a. Connect electrical connector (P-6) to control box .
- b. Align holes in control box (15) with holes in front panel.
- c. Secure control box with four screws (13) and four screws (14).

13. Right Side Panel

- a. Align holes in right side panel (12) with holes in frame.
- b. Secure right side panel with thirty-one screws (11).



WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

14. Left Side Panel

- a. Align holes in left side panel (10) and maintenance panel (8) with frame.
- b. Tighten bottom center turnlock fastener (7) on maintenance panel.
- c. Secure left side panel with twenty-nine screws (9).

15. Top Side Panel

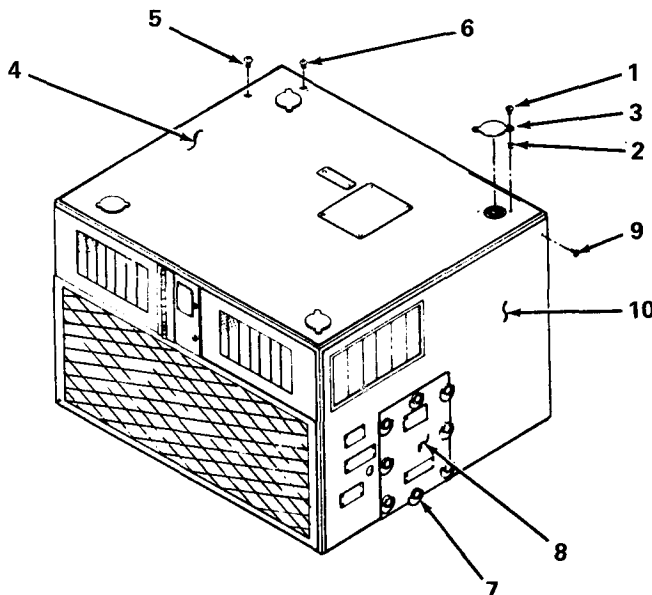
- a. Align hole top panel (4) with holes in frame.
- b. Secure top side panel with twenty-three screws (5) and eight screws (6).

NOTE

Rubber washers are to be placed between lifting ring cover and top panel.

16. Lifting Ring Covers

- a. Align holes in lifting ring covers (3) with holes in top panel and frame.
- b. Secure lifting ring covers with eight screws (1) and eight rubber washers (2).



4-24. POWER WIRING HARNESS

This task covers:

- a. Removal
- b. Inspection
- c. Test
- d. Installation

INITIAL SETUP

Test Equipment

None

Tools

TOOL KIT (SC 5180-90-C-N18)

References

None

Troubleshooting References

None

Special Environmental Conditions

None

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM

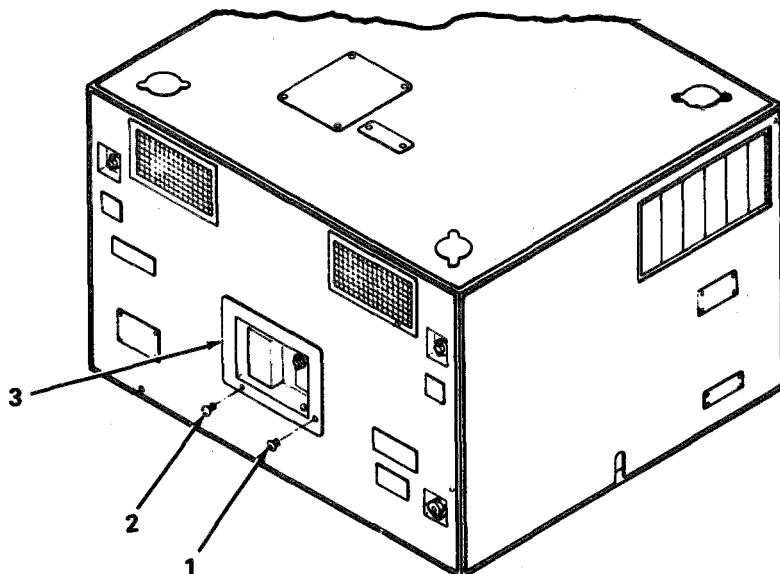
ACTION

REMARKS

REMOVAL

1. Control Box

- a. Remove four screws (1) and four screws (2) securing control box (3) to front panel and frame.
- b. Disconnect electrical connector P-6.
- c. Remove control box.



LOCATION/ITEM	ACTION	REMARKS
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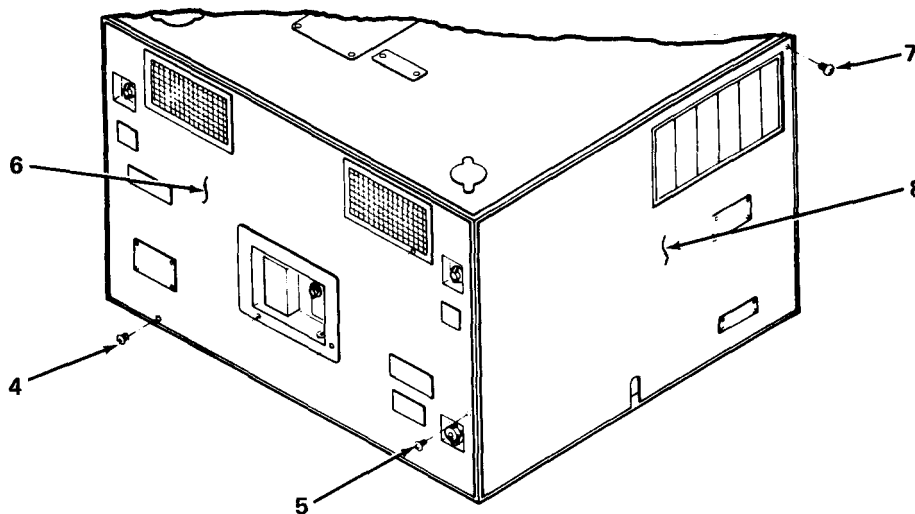
REMOVAL

2. Front Panel

- a. Remove thirty-four screws (4) and two screws (5) securing front panel (6) to frame.
- b. Remove front panel.

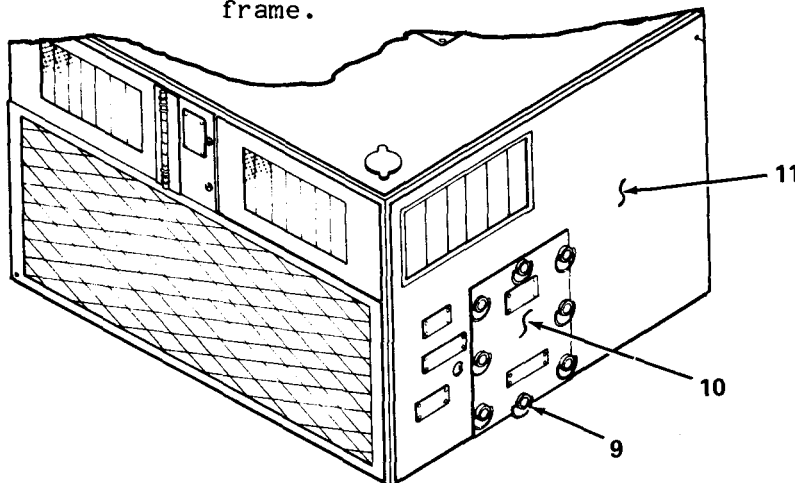
3. Right Side Panel

- a. Remove thirty-one screws (7) securing right side panel (8).
- b. Remove right side panel.



4. Maintenance Panel

- a. Loosen eight turnlock fasteners (9) securing maintenance panel (10) to left side panel (11) and frame.



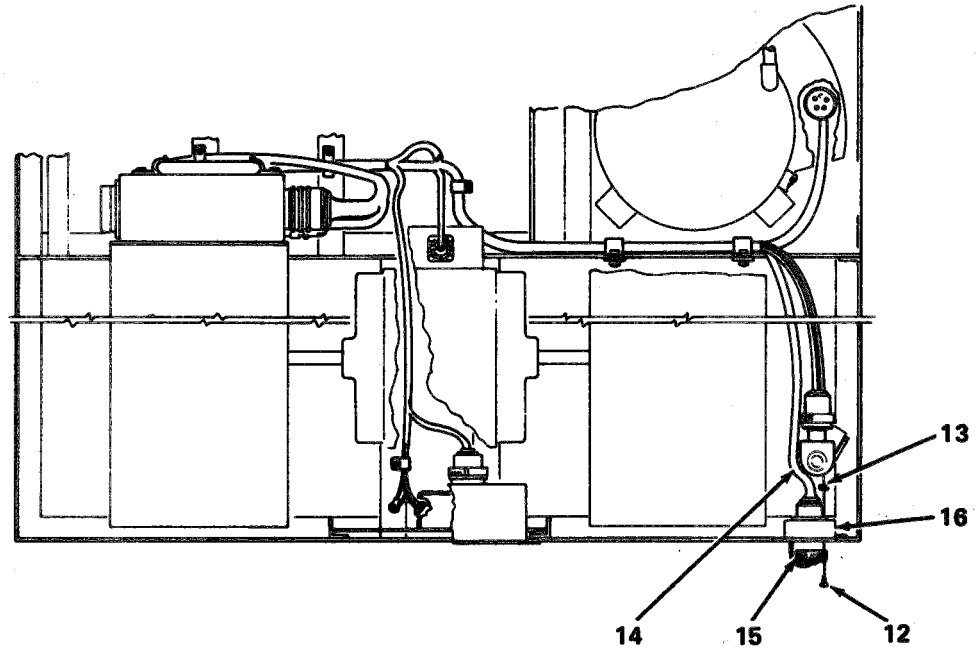
POWER WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

5. Power Wiring Harness

- a. Remove four screws (12) and four locknuts (13) securing power wiring harness (14) and cap (15) to power box (16).
- b. Remove cap.



LOCATION/ITEM

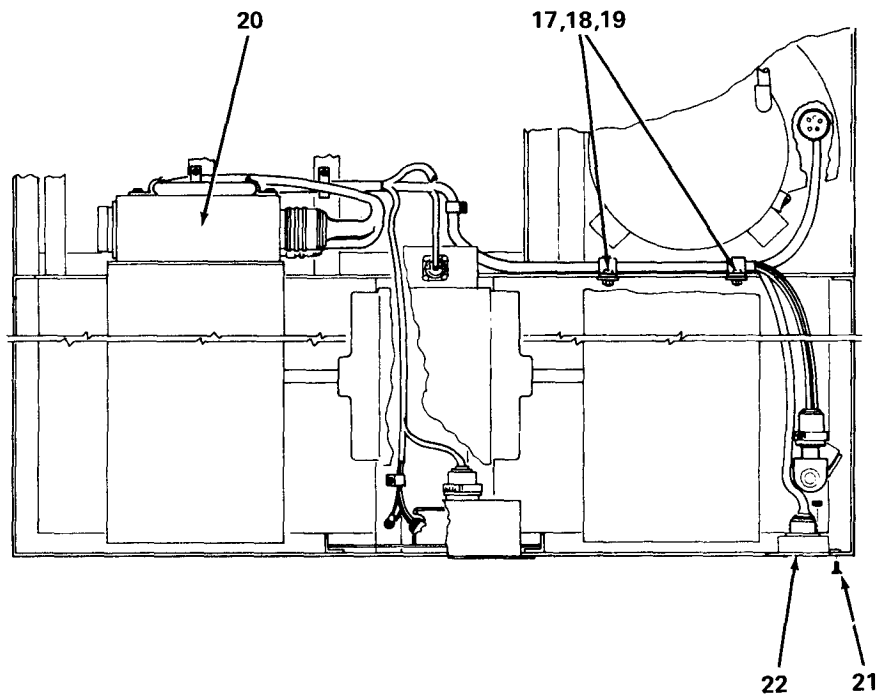
ACTION

REMARKS

REMOVAL

5. Power Wiring Harness

- c. Remove two screws (17) and two locknuts (18) and two clamps (19) securing power wiring harness to condenser fan housing mounting brackets.
- d. Disconnect electrical connector (P-4) from junction box (20).
- e. Remove wiring box.
- f. Remove two screws (21) securing power box (22) to frame.
- g. Remove power box.



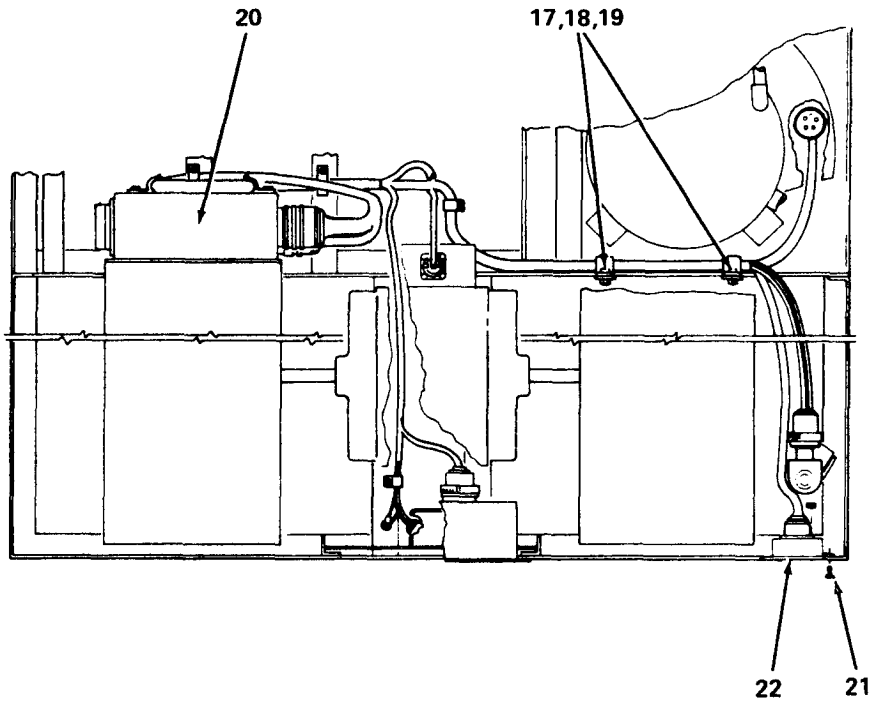
POWER WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

8. Power Wiring Harness

- a. Align power box (22) with frame.
- b. Secure power box to frame with two screws (21).
- c. Install power wiring harness to appropriate areas.
- d. Connect electrical connector (P-4) to junction box (20).
- e. Align two clamps (19) and power wiring harness with condenser fan housing mounting brackets.
- f. Secure power wiring harness and clamps to condenser fan housing mounting brackets with two screws (17) and two locknuts (18).



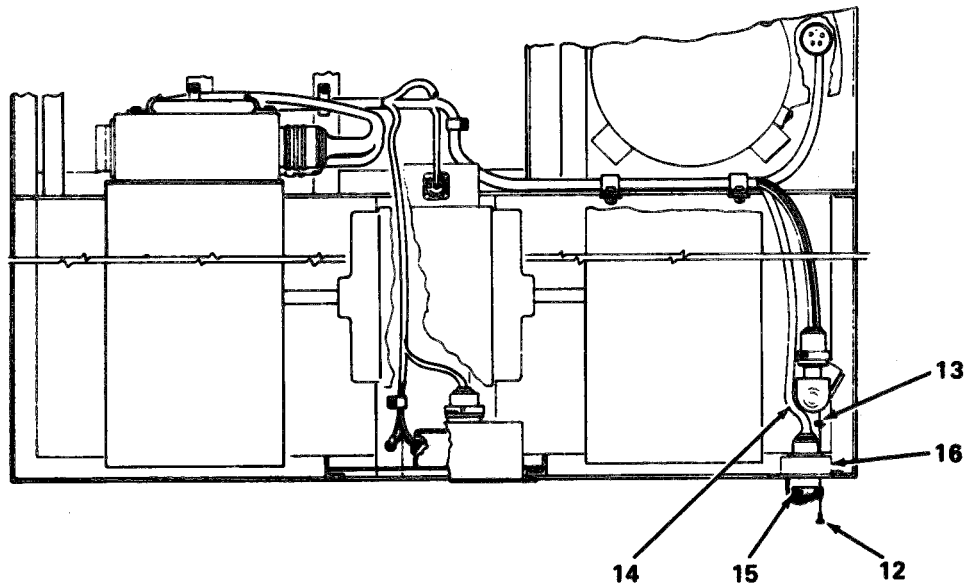
POWER WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

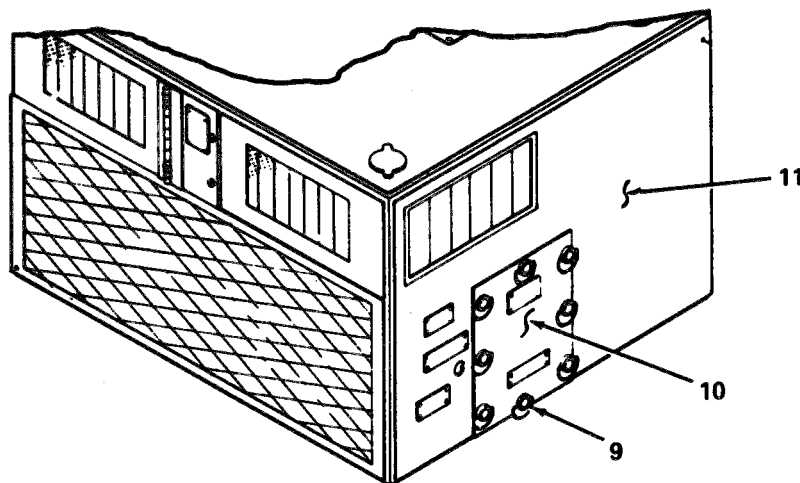
8. Power Wiring Harness

- g. Align power wiring harness (14) and cap (15) with power box (16).
- h. Secure power wiring harness and cap to power box with four screws (12) and four locknuts (13).



9. Maintenance Panel

- a. Align maintenance panel (10) with frame.
- b. Secure maintenance panel to left side panel (11) and frame with eight turnlock fasteners (9).



POWER WIRING HARNESS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

10. Right Side Panel

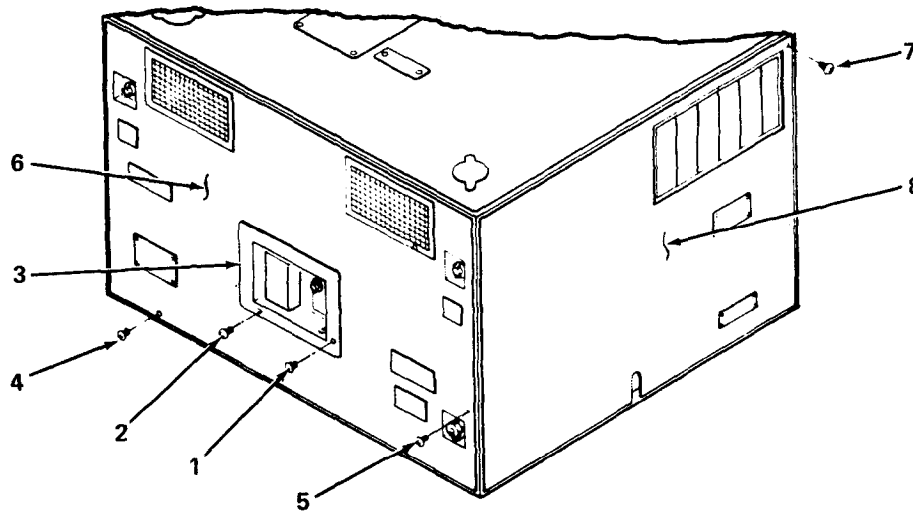
- a. Align holes in right side panel (8) with holes in frame.
- b. Secure right side panel with thirty-one screws (7).

11. Front Panel

- a. Align holes in front panel (6) with holes in frame.
- b. Secure front panel with thirty-four screws (4) and two screws (5).

12. Control Box

- a. Connect electrical connector (P-6) to control box .
- b. Align holes in control box (3) with holes in front panel and frame.
- c. Secure control box with four screws (2) and four screws (1).



 4-25. EVAPORATOR FAN MOTOR & HOUSING

This task covers:

- a. Removal
- b. Inspection
- c. Test
- d. Installation

 INITIAL SETUP

Test Equipment

NONE

Tools

NONE

References

NONE

Troubleshooting References

NONE

Special Environmental Conditions

NONE

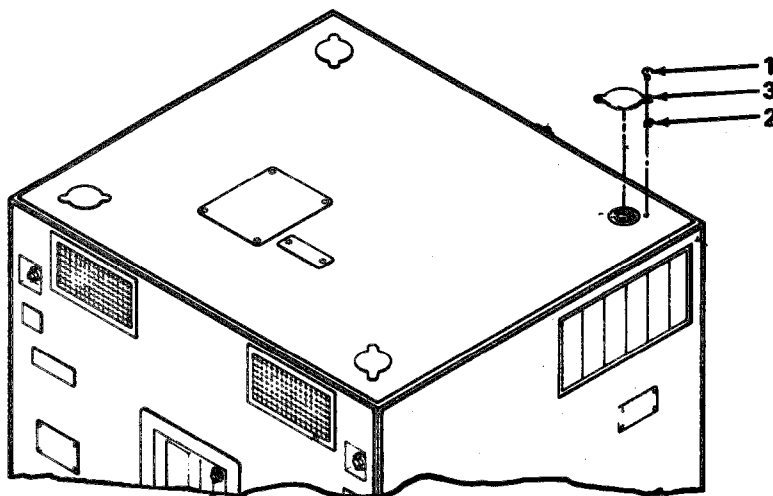
General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

1. Lifting Ring Covers
 - a. Remove eight screws (1) and eight rubber washers (2) securing lifting ring covers (3) to frame and top panel.
 - b. Remove the four lifting ring covers.



EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM.	ACTION	REMARKS
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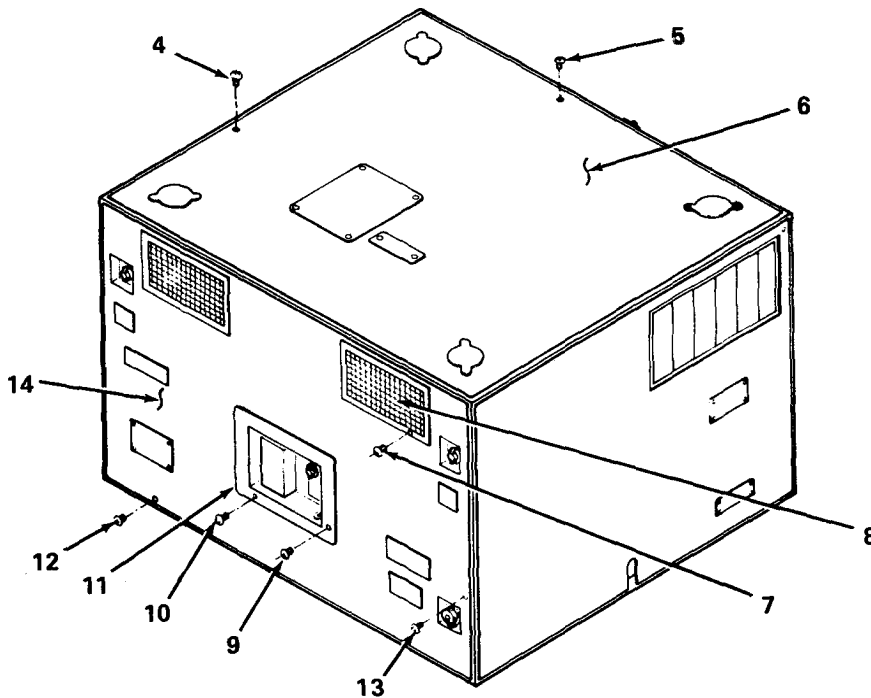
REMOVAL

2. Top Panel
 - a. Remove eight screws (4) and twenty-three screws (5) securing top panel (6) to frame.
 - b. Remove top panel.

3. Evaporator Fan Guards
 - a. Remove eight screws (7) securing evaporator fan guards (8) to frame.
 - b. Remove evaporator fan guards.

4. Control Box
 - a. Remove four screws (9) and four screws (10) securing control box (11) to frame.
 - b. Disconnect electrical connector (P-6).
 - c. Remove control box.

5. Front Panel
 - a. Remove thirty-four screws (12) and two screws (13) securing front panel (14) to frame.
 - b. Remove front panel.



EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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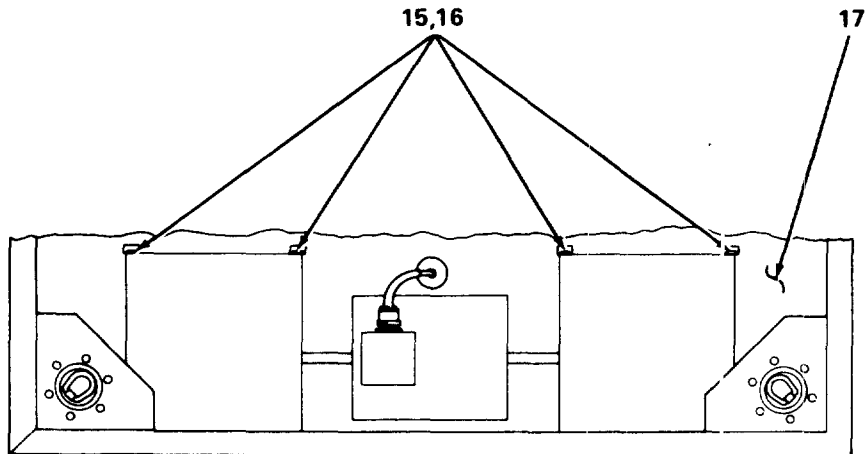
REMOVAL

6. Evaporator Fan Motor and Housing Assembly

- a. Remove four screw (15) and four lock washers (16) securing evaporator fan housing (17) to evaporator drain pan.

CAUTION

Be careful to avoid damaging fans during removal.

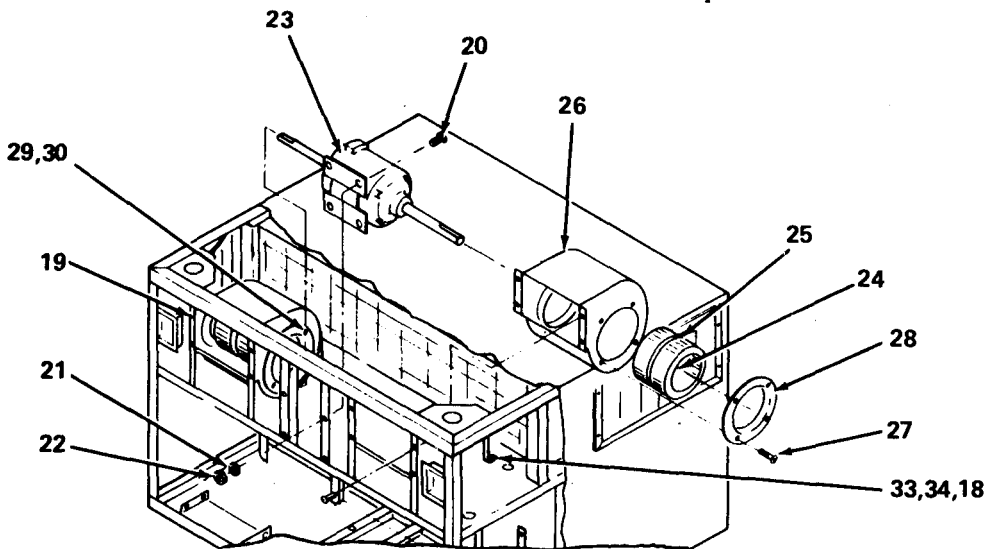


EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- 6. Evaporator Fan Motor and Housing Assembly
 - b. Remove eight screws (19) securing evaporator fan housing to frame.
 - c. Remove four bolts (20), eight flat washers (21) and four locknuts (22) securing evaporator fan motor (23) to frame.
 - d. Remove evaporator fan motor and housing assembly.
 - e. Remove eight screws (27) securing outer inlet rings (28) to the fan housings.
 - f. Loosen set screws (24) in hubs of both impellers.
 - g. Slide impellers (25) and housings (26) off of the motor shafts.
 - h. Remove four screws (29) securing the inner inlet rings (30) to the fan housings.
 - i. Remove impellers from fan housings.
 - j. Remove four screws (33) and four locknuts (34) securing evaporator fan housing mounting brackets (18) to evaporator housing.
 - k. Remove evaporator fan housing mounting bracket.



EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSPECTION</u>		
7.. Evaporator Fan Housing	<ul style="list-style-type: none"> a. Inspect for damage. b. Repair or replace if damaged. 	
8. Inlet Ring	<ul style="list-style-type: none"> a. Inspect for damage. b. Repair or replace if damaged. 	
9. Impeller	<ul style="list-style-type: none"> a. Inspect for damage. b. Repair or replace if damaged. 	
10. Evaporator Fan Motor	<ul style="list-style-type: none"> a. Inspect for damage. b. Repair or replace if damaged. 	
<u>TEST</u>		
11. Evaporator Fan Motor	<ul style="list-style-type: none"> a. Using an ohmmeter or other continuity testing device, check continuity between connector pins A-B, A-C, and B-C. b. If continuity does not exist evaporator fan motor is defective. c. Replace defective evaporator fan motor. d. Using an ohmmeter or other continuity testing device, check to be sure that no continuity exists between each pin and the motor frame (stator). e. If continuity requirements are not met, motor is defective. f. Replace defective evaporator fan motor. 	

EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

CAUTION

Do not hammer the impeller onto the motor shaft. In case of difficulty, dress out rough spots on the shaft with a fine file, stone or abrasive cloth. Apply a coating of light oil to ease assembly.

CAUTION

Be careful to avoid damaging fans during installation.

CAUTION

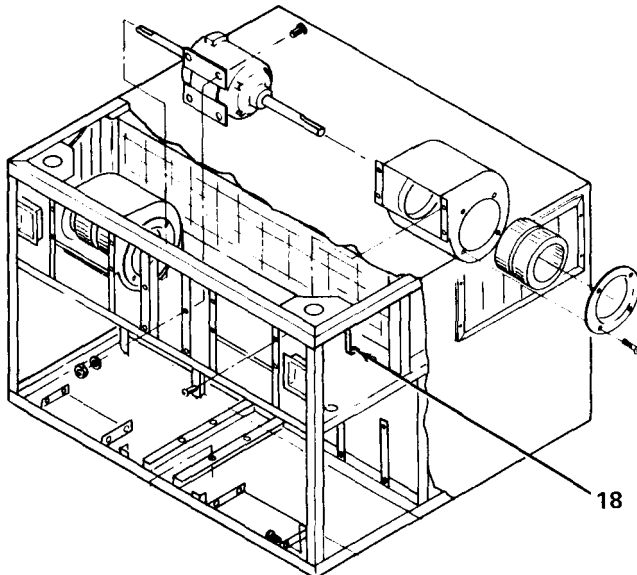
Center impeller in fan housing and spin shafts to be sure no parts are rubbing.

NOTE

Install motor so rotation is toward front of unit and be sure arrows on fans indicate the same direction as motor rotates.

12. Evaporator Fan Motor and Housing Assembly

- a. Align evaporator fan housing mounting brackets (18) with holes in evaporator fan housings.



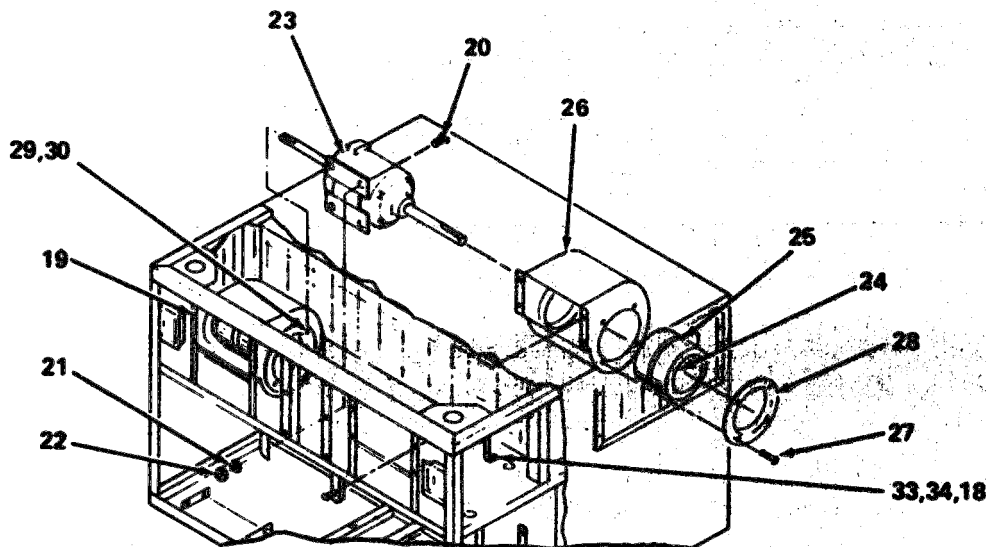
EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

12. Evaporator Fan Motor and Housing Assembly

- b. Secure evaporator fan housing mounting brackets with four screws (33) and four locknuts (34).
- c. Align inner inlet rings (30) with holes in evaporator fan housings.
- d. Secure inner inlet rings with eight screws (29).
- e. Slide evaporator fan housings over motor shafts.
- f. Slide impellers (25) onto motor shafts.
- g. Secure outer inlet rings (26) with eight screws (27).
- h. Align evaporator fan motor and housing assembly with holes in frame.
- i. Secure evaporator fan motor (23) and housing assembly with four bolts (20), eight flat washers (21) and four locknuts (22).
- j. Secure evaporator fan housing with eight screws (19) to frame.
- k. Align evaporator fan housing mounting brackets (18) with evaporator drain pan holes.



EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

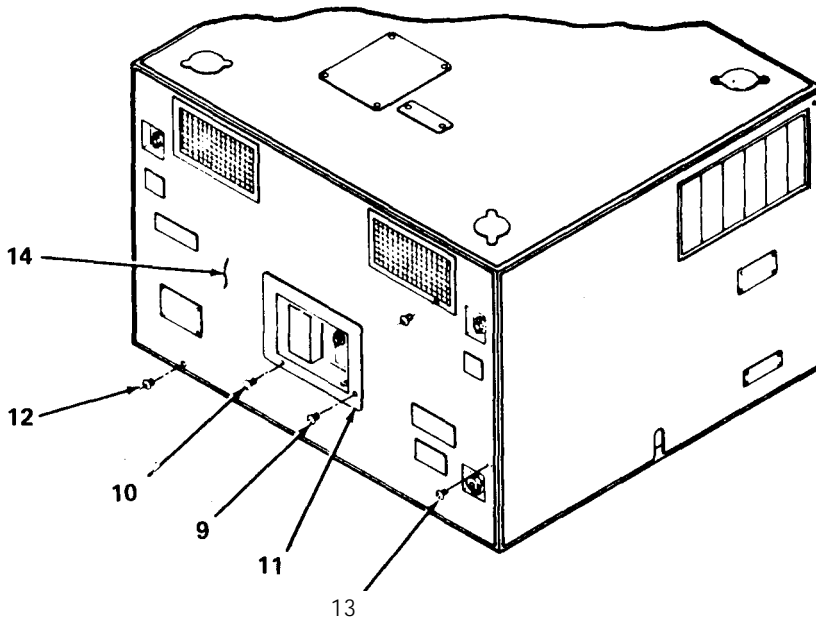
LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

13. Front Panel

- a. Align holes in front panel (14) with holes in frame.
- b. Secure front panel with thirty-four screws (12) and two screws (13).

14. Control Box

- a. Connect electrical connector (P-6) to control box .
- b. Align holes in control box (11) with front panel (14).
- c. Secure control box with four screws (9) and four screws (10).



EVAPORATOR FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

15. Evaporator Fan Guard

- a. Align evaporator fan guards (8) with front panel and frame.
- b. Secure evaporator fan guards to front panel and frame with eight screws (7).

16. Top Panel

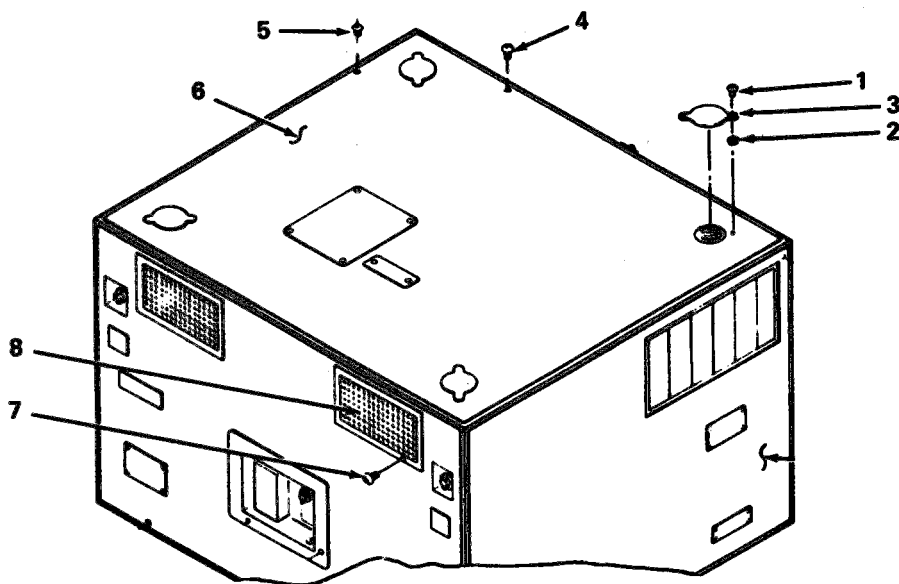
- a. Align holes in top panel (6) with holes in frame.
- b. Secure top panel with twenty-three screws (5) and eight screws (4).

17. Lifting Ring Covers

NOTE

Rubber washers are to be placed between lifting ring cover and top panel.

- a. Align holes in lifting ring covers (3) With top panel.
- b. Secure lifting ring covers with eight screws (1) and eight rubber washers (2).



4-26 CONDENSER FAN MOTOR AND HOUSING

This task covers:

- a. Removal
- b. Inspection
- c. Test
- d. Installation

INITIAL SETUP

Test Equipment

NONE

Tools

NONE

References

NONE

Troubleshooting References

NONE

Special Environmental Conditions

NONE

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM

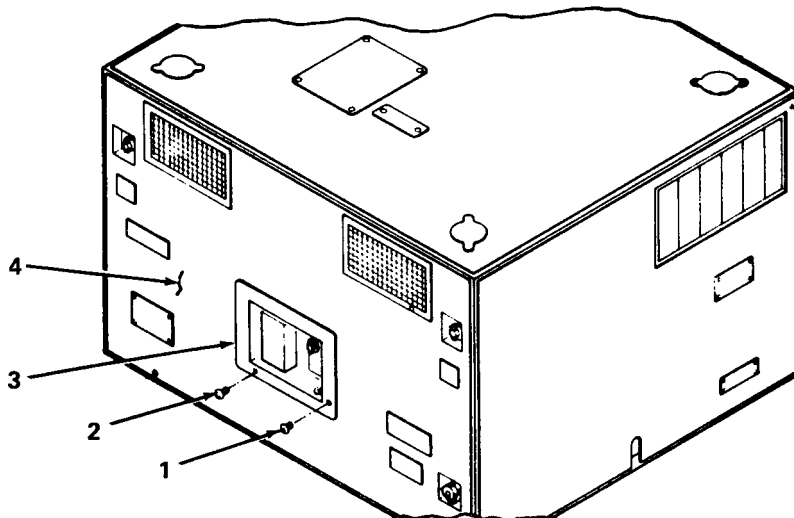
ACTION

REMARKS

REMOVAL

1. Control Box

- a. Remove four screws (1) and four screws (2) securing control box (3) to front panel (4) and frame.
- b. Disconnect electrical connector (P-6)
- c. Remove Control Box.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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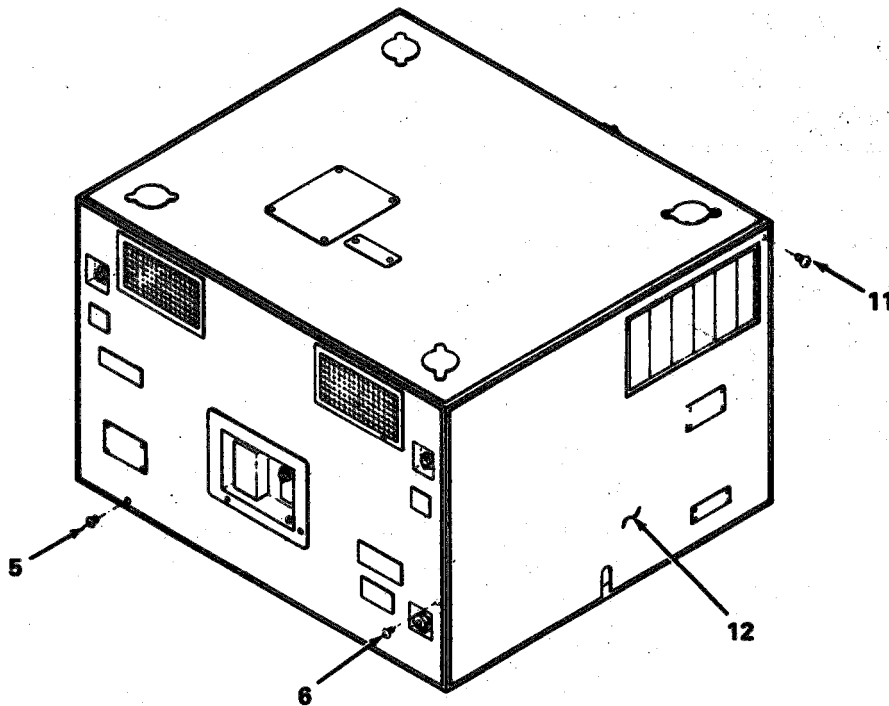
REMOVAL

2. Front Panel

- a. Remove twenty-three screws (5) and eight screws (6) securing front panel to frame.
- b. Remove front panel.

3. Right Side Panel

- b. Remove thirty-one screws (11) securing right side panel (12) to frame.
- c. Remove right side panel.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM

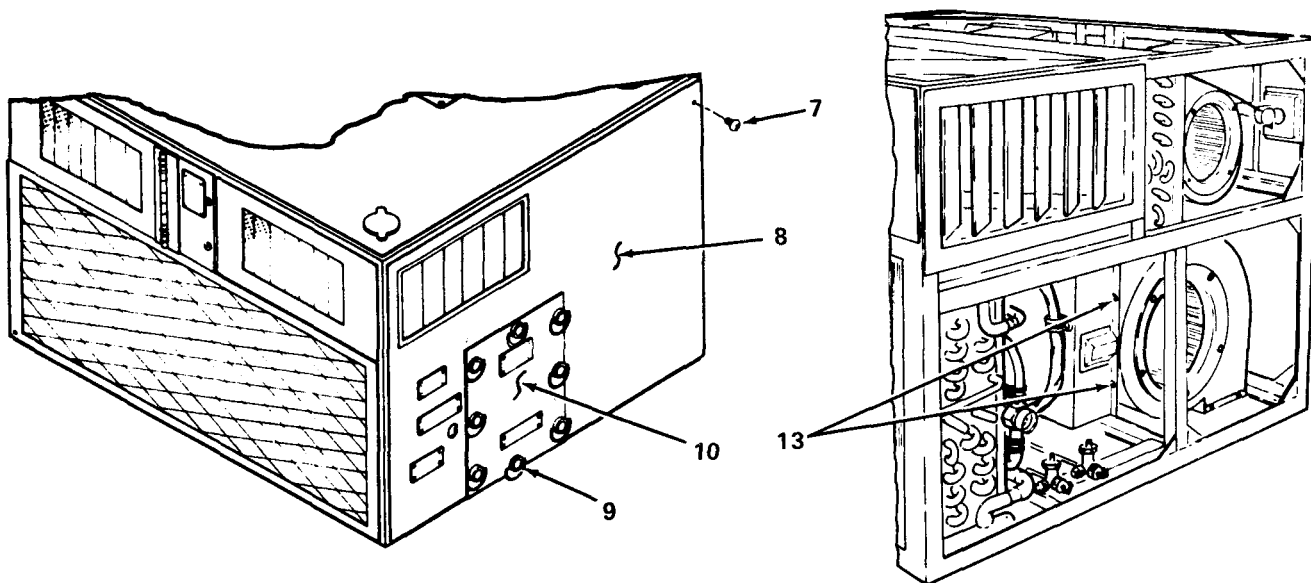
ACTION

REMARKS

REMOVAL

4. Left Side Panel

- a. Remove twenty-nine screws (7) securing left side panel (8) to frame.
- b. Loosen bottom center turnlock fastener (9) maintenance panel (10).
- c. Remove left side panel and maintenance panel.



5. Junction Box

- a. Remove two screws (13) securing junction box to support plate.
- b. Release the two clamps that secure the wiring harness to the junction box.

WARNING

Disconnect main power connector before attempting any electrical servicing on the unit.

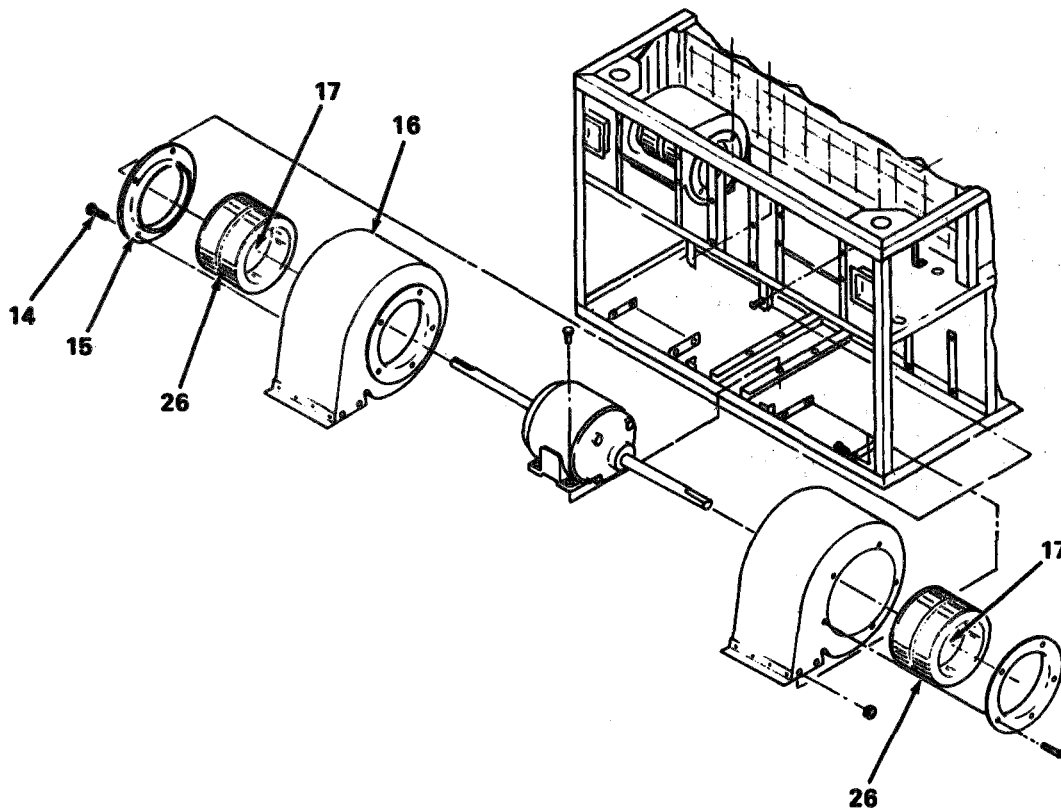
- c. Disconnect two electrical connectors.
- d. Remove junction box.

CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		

6. Condenser Fan Motor and Housing

- a. Remove five screws (14) that secure outer inlet ring (15) to left condenser fan housing (16).
- b. Remove inlet ring.



- c. Loosen set screws (17) in both impeller hubs (Right and Left) (26).

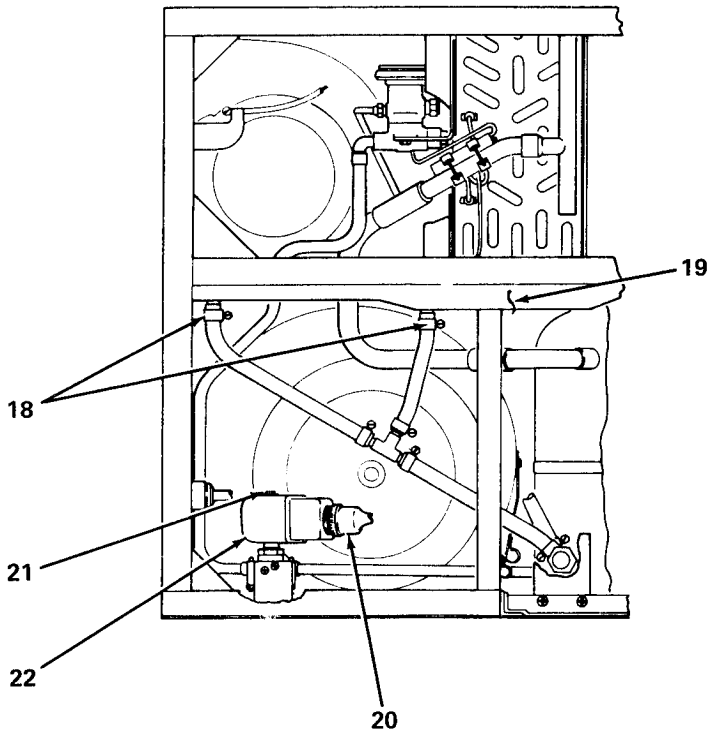
CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

6. Condenser Fan Motor and Housing

- d. Remove two clamps (18) securing condensate drain lines to evaporator drip pan (19).
- e. Move condensate drain line out of the way to allow access to impeller.
- f. Disconnect electrical connector (P-8) (20) from solenoid valve.
- g. Remove retaining cap (21) on solenoid valve.
- h. Remove solenoid valve coil assembly (22).



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM

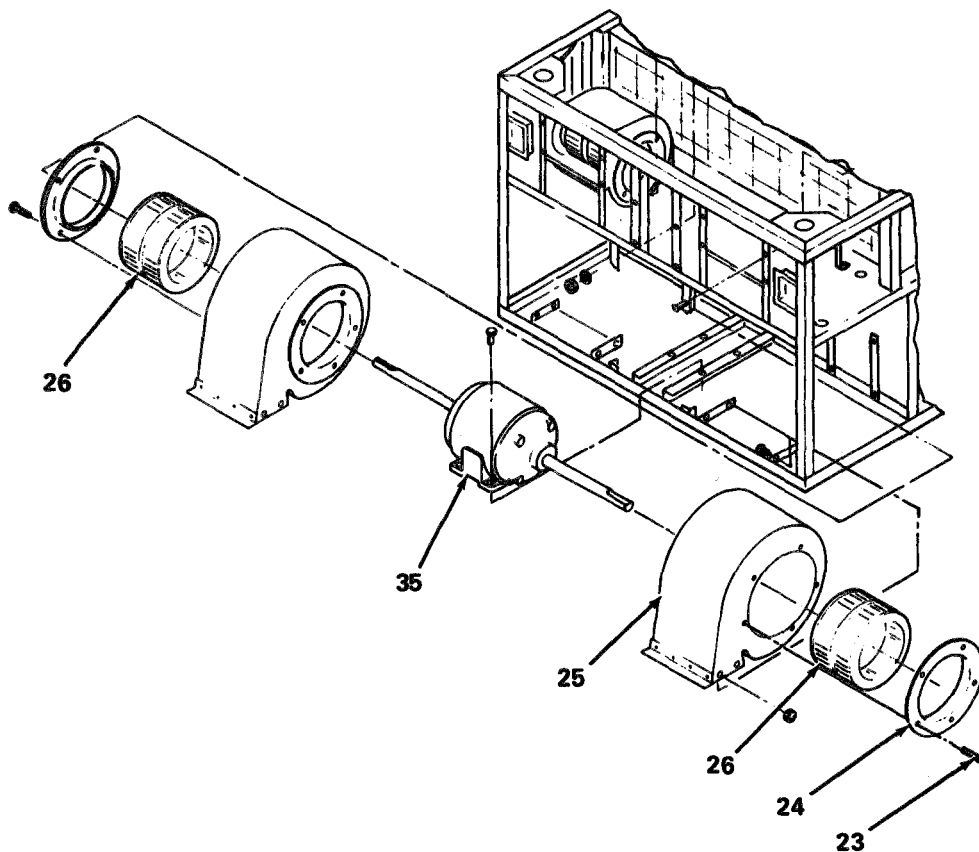
ACTION

REMARKS

REMOVAL

6. Condenser Fan Motor and Housing

- i. Remove five screws (23) that secure outer inlet ring (24) to right condenser fan housing (25).
- j. Remove inlet ring.
- k. Remove both impellers (26) from shaft.
- l. Disconnect electrical connector (P-2) from fan motor (35).



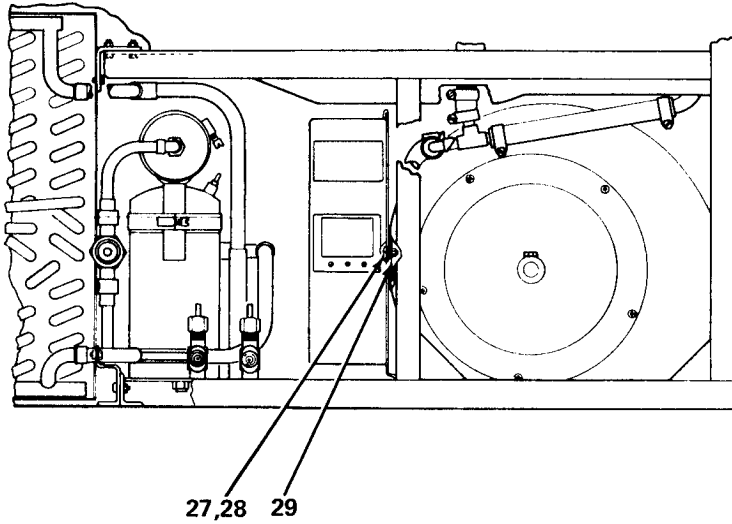
CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

6. Condenser Fan Motor and Housing

- m. Remove two screws (27) and nuts (28) securing left condenser fan housing to junction box support.
- n. Remove junction box stiffener (29).



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM

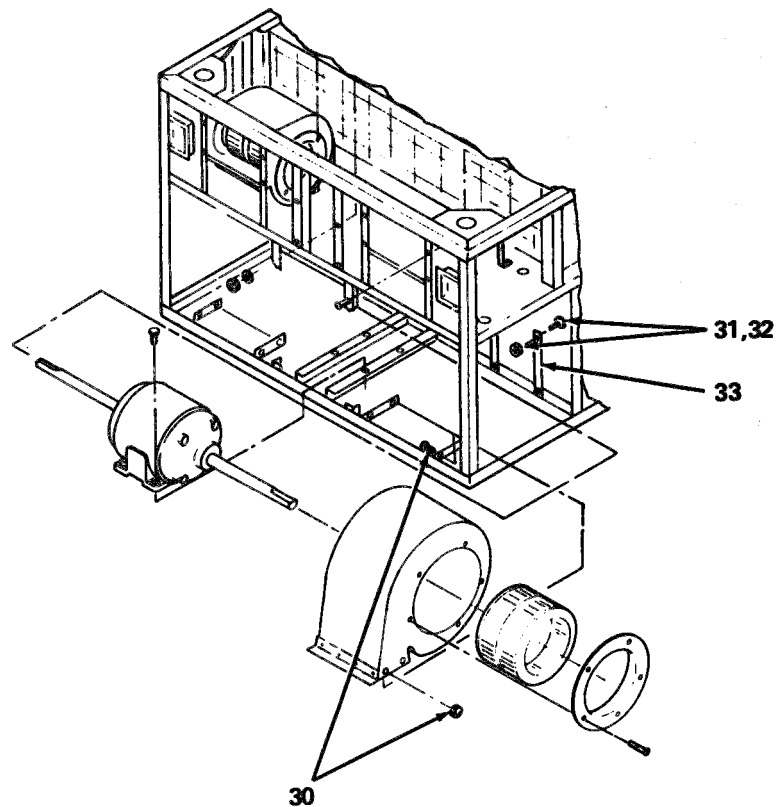
ACTION

REMARKS

REMOVAL

6. Condenser Fan Motor and Housing

- o. Remove eight screws (30) and nuts securing condenser fan housings (bottom) to the frame.
- p. Remove two screws (31) and nuts (32) securing right condenser fan housing to condenser fan housing mounting brackets (33).
- q. Rotate condenser fan housings so outlets point toward the front of the unit.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

 LOCATION/ITEM

ACTION

REMARKS

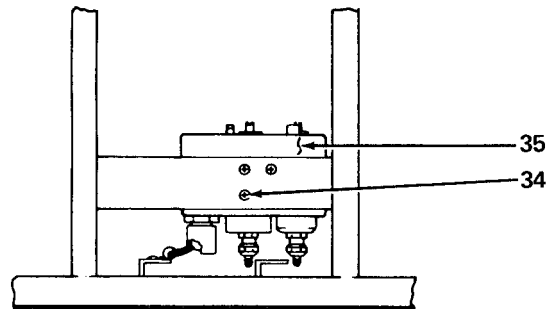
REMOVAL

6. Condenser Fan Motor and Housing

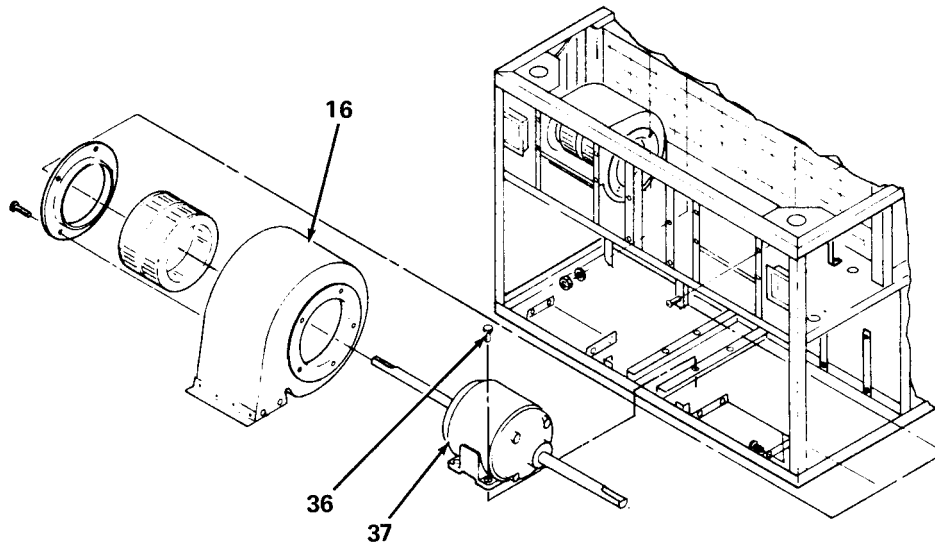
- r. Remove three screws (34) securing dual pressure switch (35) to frame.

NOTE

Take special care not to bend or kink tubing. Place switch to one side while removing motor bolts.



- s. Remove four bolts (36) securing motor (37).
- t. Slide motor to the extreme right.
- u. Remove left fan housing (16).
- v. Remove condenser fan motor.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

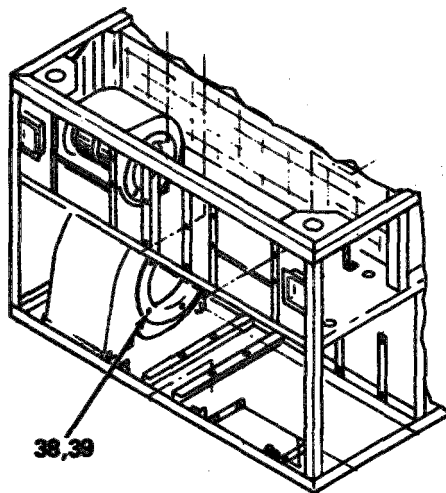
LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

6. Condenser Fan Motor and Housing

NOTE

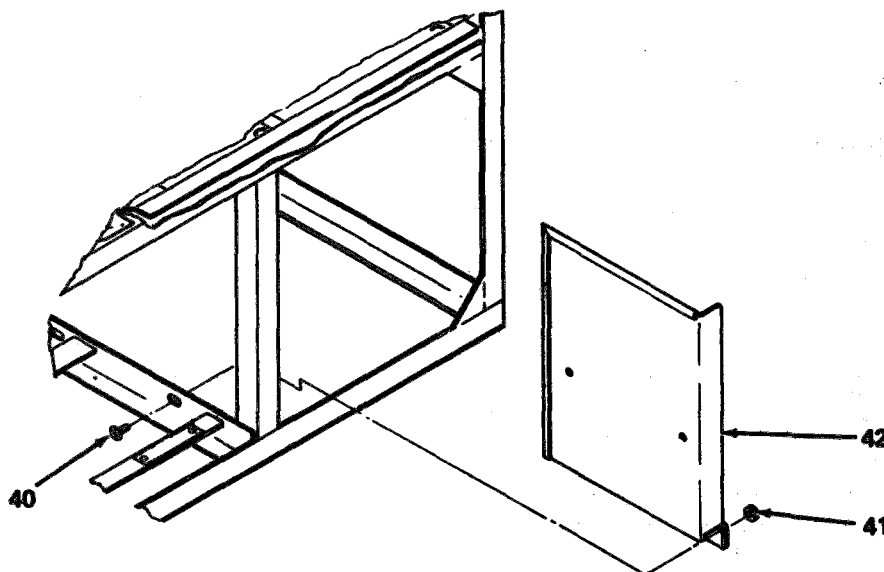
Left housing and fan motor must be removed before right housing can be removed.



- w. Remove right condenser fan housing.
- x. Remove four screws (38) securing inlet ring to fan housing (39).
- y. Remove inlet ring.

- z. Remove two screws (40) and two locknuts (41) securing junction box mounting plate (42) to frame.

- aa. Remove junction box mounting plate.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

7. Condenser Fan Motor

- a. Inspect for damage.
- b. Repair or replace if damaged.

8. Condenser Fan Housing

- a. Inspect for damage.
- b. Repair or replace if damage.

9. Inlet Ring

- a. Inspect for damage.
- b. Repair or replace if damage.

10. Impellers

- a. Inspect for damage.
- b. Repair or replace if damage.

TEST

11. Condenser Fan Motor

- a. Using an ohmmeter or other continuity testing device, check continuity between connector pins A-B, A-C, and B-C.
- b. If continuity does not exist condenser fan motor is defective.
- c. Replace defective condenser fan motor.
- d. Using an ohmmeter or other continuity testing device, check to be sure that no continuity exists between each pin and the motor frame (stator).
- e. If continuity requirements are not met, motor is defective.
- f. Replace defective condenser fan motor.

CONDENSER FAN MOTOR AND HOUSING (CONT.)

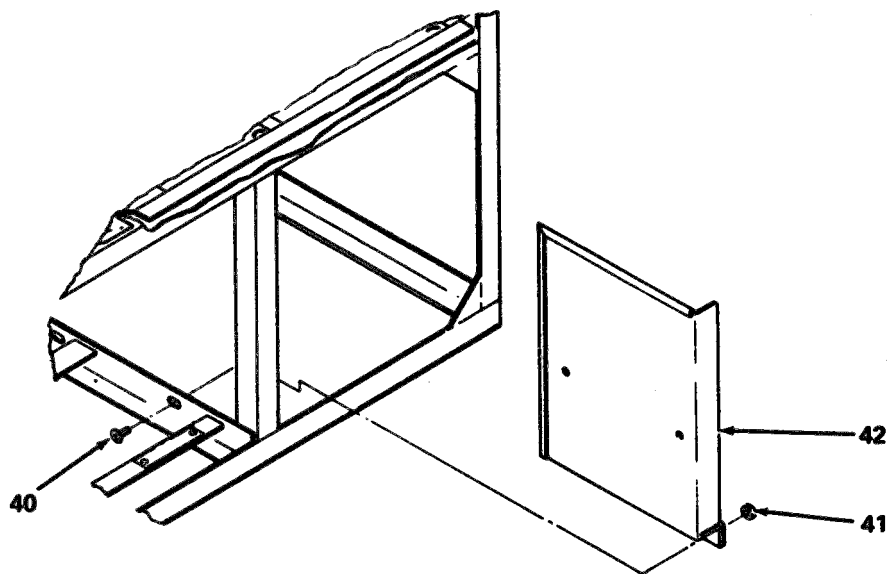
LOCATION/ITEM	ACTION	REMARK
<u>INSTALLATION</u>		

12. Condenser Fan Motor & Housing

NOTE

All arrows should show clockwise rotation when viewed from left side of unit. Install impeller hubs so they are even with ends of motor shaft. Rotate by hand to assure running clearance.

- a. Align junction box mounting plate (42) with frame.
- b. Secure junction box mounting plate with two screws (40) and two locknuts (41).



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

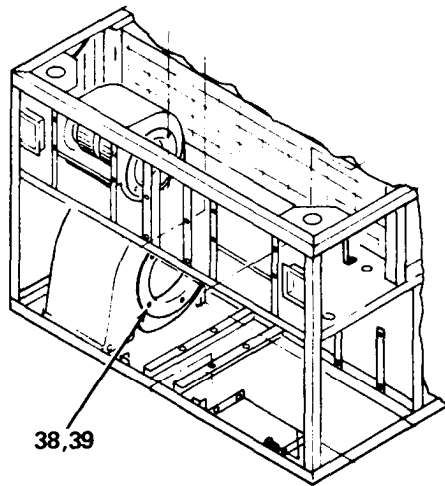
12. Condenser Fan Motor & Housing

- c. Align inside inlet rings with fan housing (39).
- d. Secure inlet ring to fan housing with four screws (38).

NOTE

Install right fan housing before fan motor and left fan housing.

- f. Align right condenser fan housing with holes in bottom of unit.
- g. Install condenser fan motor, so that the motor shaft is to the right as far as possible.

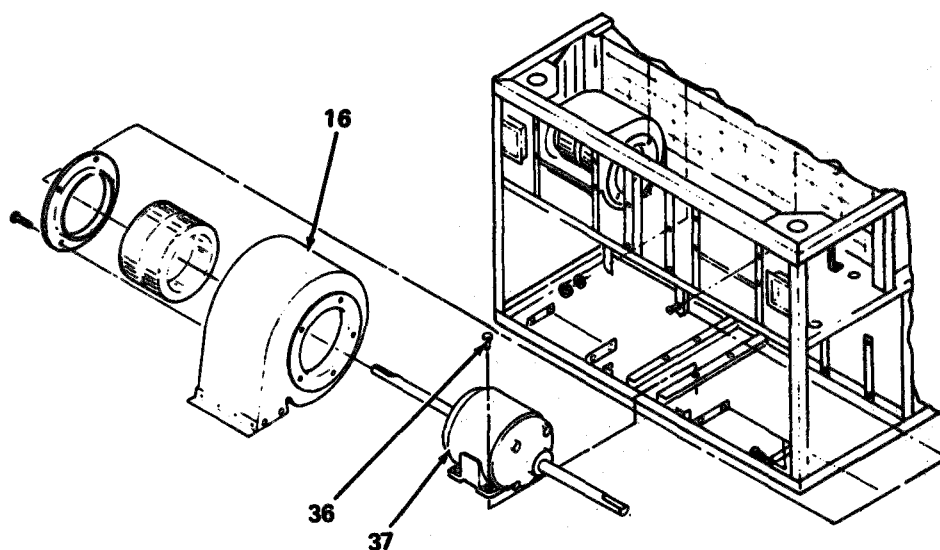


CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

12. Condenser Fan Motor & Housing

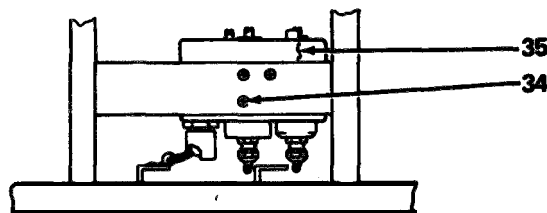
- h. Align left condenser fan housing (16) with holes in bottom of unit.
- i. Align condenser fan motor with holes in frame.
- j. Secure motor with four mounting bolts (36).



- k. Align dual pressure switch (35) holes with frame.
- l. Secure dual pressure switch with three screws (34).

NOTE

Take special care not to bend or kink tubing. Rotate fan housing so outlet points toward rear.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

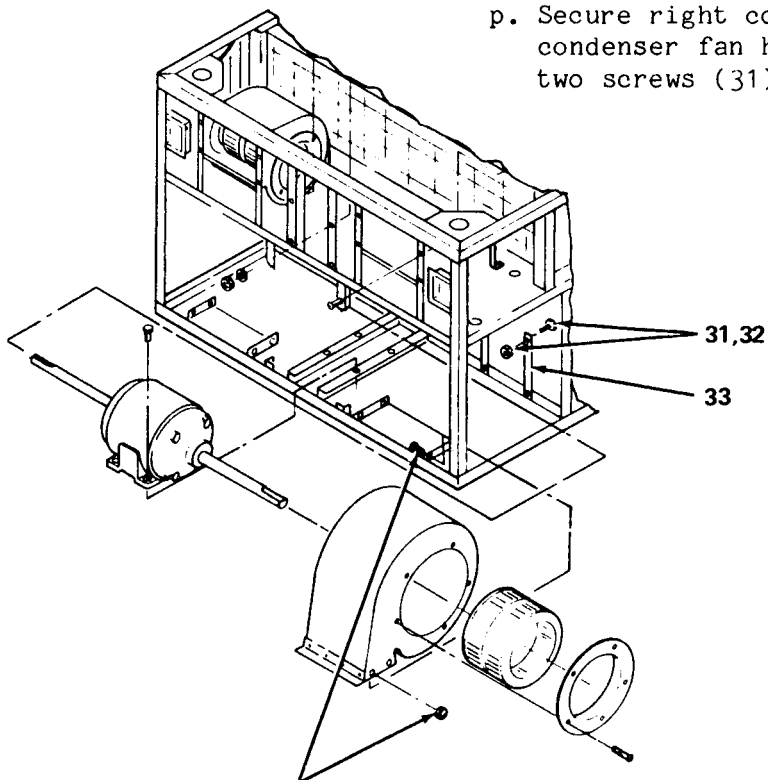
12. Condenser Fan Motor & Housing

- m. Connect electrical connectors to condenser fan motor and dual pressure switch.
- n. Slide both impellers into motor shaft.

CAUTION

Do not hammer the impeller onto the motor shaft.
 In case of difficulty, dress out rough spots on the shaft with a fine file, stone or abrasive cloth. Apply a coating of light oil to ease assembly.

- o. Secure condenser fan housings to bottom of unit with eight screws (30) and nuts .
- p. Secure right condenser fan housing to condenser fan housing brackets (33) with two screws (31) and nuts (32).



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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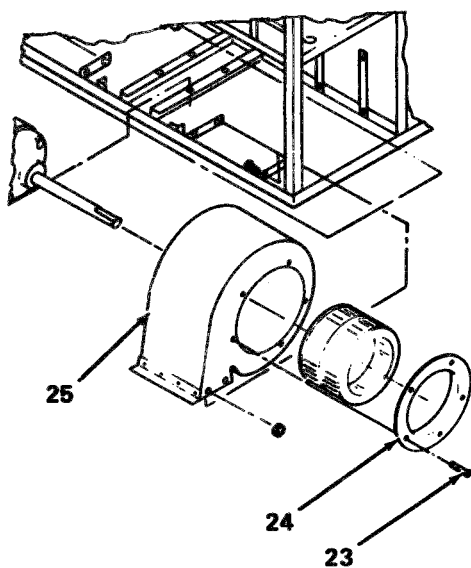
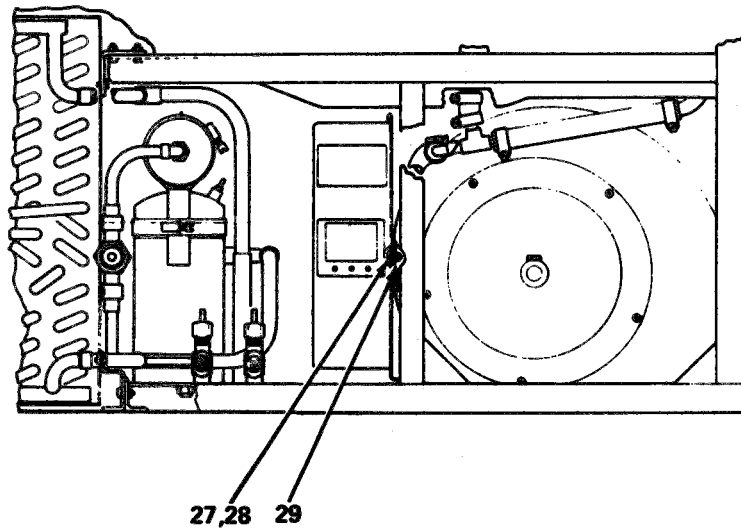
INSTALLATION

12. Condenser Fan Motor & Housing

- q. Secure left condenser fan housing to junction box stiffener (29) with two screws (27) and nuts (28).

NOTE

Be sure to install junction box stiffener plate between left condenser fan housing and junction box mounting plate.



- r. Align inlet ring (24) with right housing (25).

- s. Secure inlet ring to right housing with five screws (23).

CONDENSER FAN MOTOR AND HOUSING (CONT.)

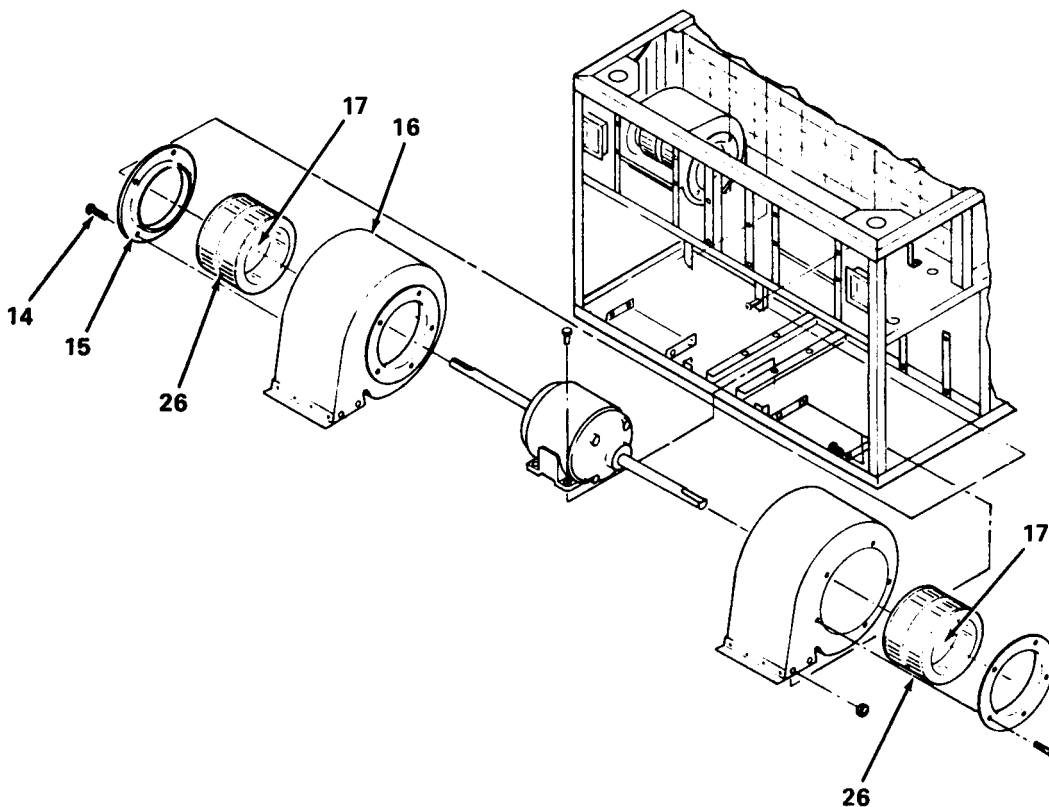
LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

12. Condenser Fan Motor & Housing

- t. Align inlet ring (15) with left housing (16).
- u. Secure inlet ring to left housing with five screws (14).
- v. Tighten set screws (17) on both hubs (26).

NOTE

Center impeller in fan housing and spin shafts to be sure no parts are rubbing.

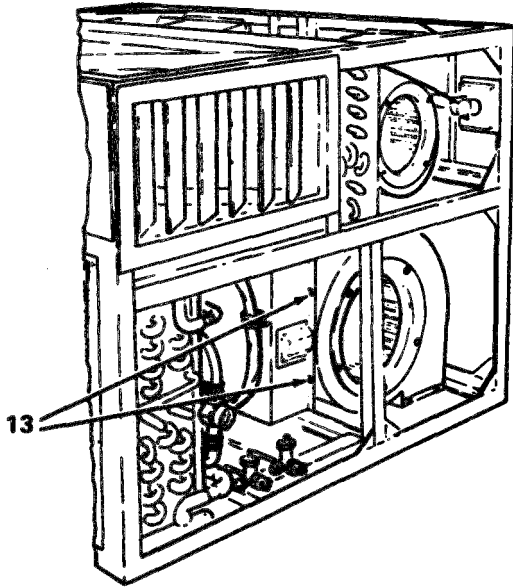


CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARK
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INSTALLATION

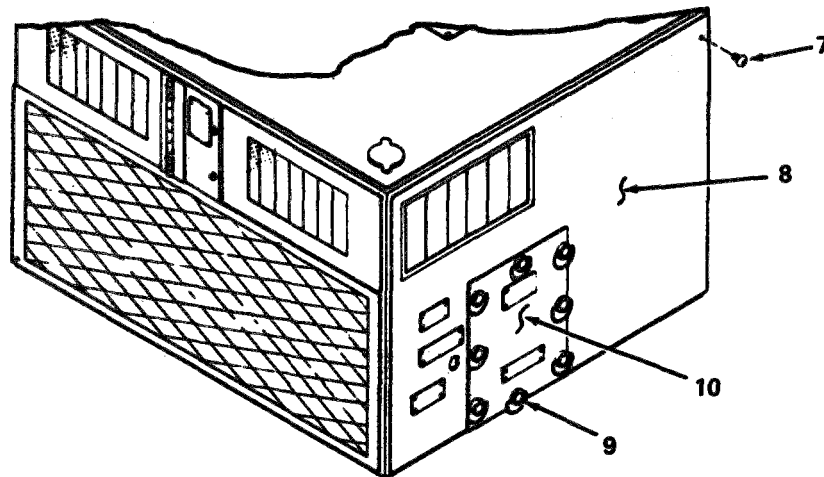
14. Junction Box



- a. Connect two electrical connectors (P-4, P-5).
- b. Align junction box with holes in junction box support plate.
- c. Secure junction box to junction box support plate with two screws (13).

15. Left Side Panel

- a. Align left side panel (8) and maintenance panel (10) with holes in frame.
- b. Secure left side panel with twenty-nine screws (7).
- c. Tighten bottom center turnlock fastener on maintenance panel.



CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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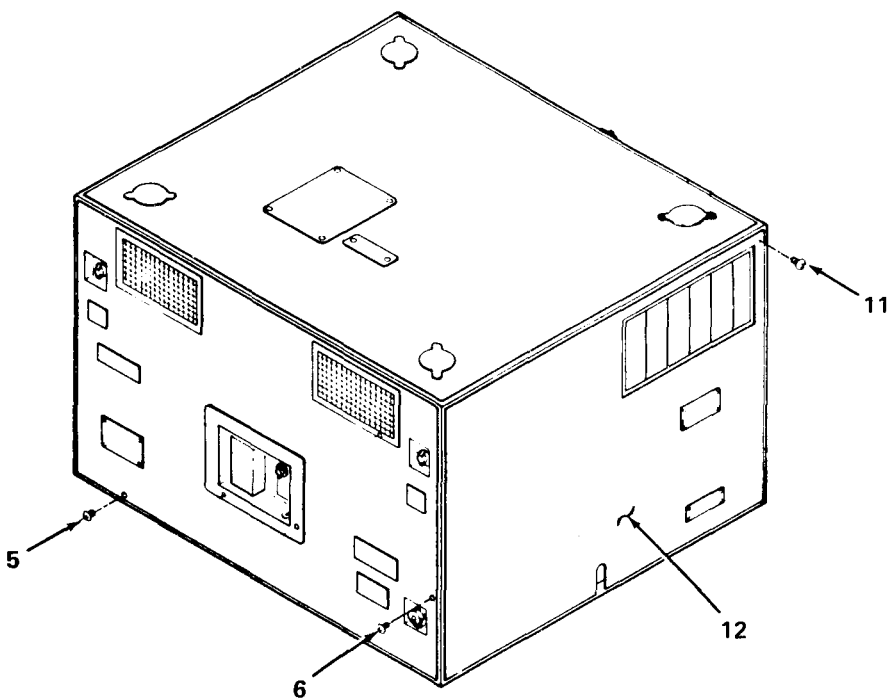
INSTALLATION

16. Right Side Panel

- a. Align right side panel (12) with holes in frame.
- b. Secure right side panel with thirty-one screws (11).

17. Front Panel

- a. Align front panel (4) with holes in frame.
- b. Secure front panel with twenty-three screws (5) and eight screws (6).

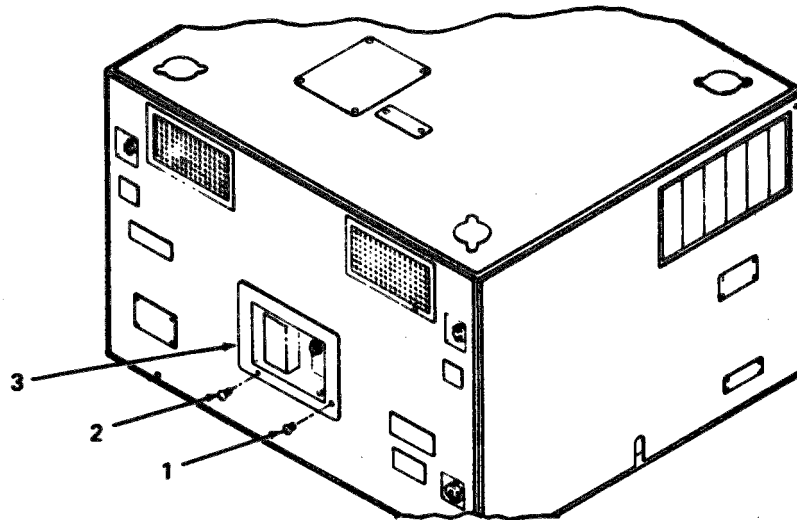


CONDENSER FAN MOTOR AND HOUSING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

18. Control Box

- a. Align control box (3) with holes in front panel and frame.
- b. Secure control box with four screws (2) four screws (1).



SECTION VI PREPARATION FOR STORAGE OR SHIPMENT

4-25 Preparation For Storage

WARNING

Make sure the power supply is off at the source before disconnecting the power supply line.

The air conditioner is prepared for storage or movement by performing the following:

1. Turn off electrical power supply to air conditioner and disconnect power cable from unit.
2. Remove the external power connector and secure to inside of the maintenance panel.
3. Prepare the air conditioner assembly for storage in accordance with TM-740-90-1.

4-26 Shipment

CAUTION

Keep unit vertical.

1. Short Distance Movement

Lift unit at base with a forklift or carry unit to new worksight using lifting rings on top of unit.

2. Long Distance Movement

Crate the air conditioner, providing adequate protection for panels and control box. Refer to TM 38-250 for crate job.

Provide suitable blocking and tie downs to prevent unit from shifting during transfer.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

INTRODUCTION

This chapter is for the use of direct support maintenance personnel. It contains a section on troubleshooting and maintenance procedures for discharge, leak testing, evacuation, charging, pressure testing of the air conditioner after the replacement of components that require system discharge. In Appendix F is a refrigerant flow diagram that is included to assist maintenance of refrigerant components. For your convenience, below is an index of this chapter.

INDEX

SECTION	PAGE
I. Repair Parts, Special Tools, TMDE, and Support Equipment	5-1
II. Troubleshooting	5-2
III. Maintenance Procedures	5-7

SECTION I REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to Your unit.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

No special tools, TMDE, or support equipment is required for this air conditioner.

5-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM-5-412-375-24P.

SECTION II TROUBLESHOOTING

5-4. TROUBLESHOOTING.

- a. Table 5-1 contains troubleshooting information for locating and correcting most of the operating troubles which are the responsibility of direct support maintenance. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. Perform the tests/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.
- c. Only those functions within the scope of direct support maintenance are listed. For troubleshooting procedures within the scope of operator/crew maintenance, refer to Table 3-1 and organizational maintenance refer to Table 4-1.

5-5. SYMPTOM INDEX.

Locate the malfunction which is the same, or most nearly the same, as the trouble you are having with the air conditioner. The Symptom Index lists the first page of troubleshooting information for that malfunction. Follow the steps one by one, and perform the corrective actions listed.

Malfunction Number	Description	Page
1	Insufficient cooling	5-3
2	Compressor fails to start	5-4
3	Compressor starts but stops at once	5-4
4	Compressor runs but does not cool	5-6

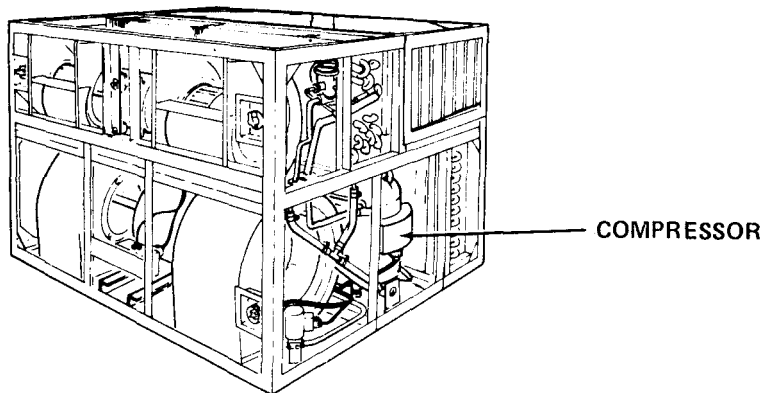


Table 5-1. DIRECT SUPPORT MAINTENANCE TROUBLESHOOTING

MALFUNCTION

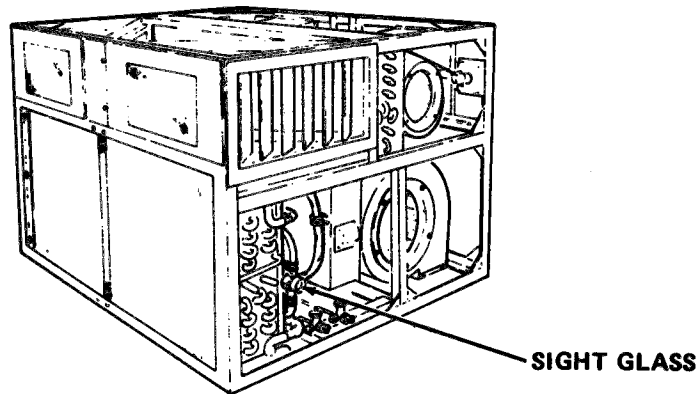
TEST OR INSPECTION

CORRECTIVE ACTION

1. INSUFFICIENT COOLING.

Step 1. Check sight glass for bubbles. If bubbles exist, leak check system in accordance with paragraph 5-16.

Repair or replace sight glass in accordance with paragraph 5-33.



Step 2. Feel dehydrator (filter-drier) to see whether it is cold to the touch or is frosted or sweating. Cold discharge indicates obstruction.

Replace dehydrator (filter-drier) in accordance with paragraph 5-28.

Step 3. Check solenoid valve for proper operation.

Test solenoid valve in accordance with paragraph 5-34.

Step 4. Check thermostat expansion valve for proper operation.

Test thermostat expansion valve in accordance with paragraph 5-29.

Table 5-1. DIRECT SUPPORT MAINTENANCE TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. COMPRESSOR FAILS TO START.	Step 1. Check pressure reset button on pressure switch. Test pressure switch in accordance with paragraphs 5-19 thru 5-24.	
	Step 2. Disconnect plug, from compressor receptacle. Using an ohmmeter or continuity tester, test compressor receptacle pins A-B, A-C, B-C, and D-E. Continuity should be indicated. Test points A,B, C to compressor casing or common ground. No continuity should be indicated.	Replace compressor that does not meet continuity requirements in accordance with paragraph 5-35.
· COMPRESSOR STARTS BUT STOPS AT ONCE	Step 1. Check sight glass for bubbles.	If bubbles exist leak check system in accordance with paragraph 5-16.
	Step 2. Loosen eight turnlock fasteners securing maintenance panel to left side panel.	Remove maintenance panel. Connect pressure gauges to suction and discharge service valves. Check system pressures in accordance with Table 5-2.

Table 5-2. NORMAL TEMPERATURE-PRESSURE RELATIONSHIPS

95 F (36 C) dry bulb return air to unit					
Outdoor ambient temperature	50F 10c	75F 24C	100F 38C	110F 4.35C	125F 52C
Gauge Pressures					
Suction (psig)	58-65	58-70	60-75	62-72	65-75
(Kg/Cm ²)	4.1-4.6	4.1-4.9	4.2-5.3	4.4-5.1	4.6-5.3
Discharge (psig)	120-155	170-205	250-290	300-390	370-410
(Kg/Cm ²)	8.4-10.9	11.9-14.4	17.6-20.4	21.1-2.4	26.0-28.8

NOTE

Dry bulb temperatures are measured with an ordinary thermometer
 If pressures are too low, check for leaks and add refrigerant:
 if too high, bleed off refrigerant until pressure is normal.

Step 3. Pressure reset button on pressure switch.

Test pressure switch in accordance with paragraphs 5-19 thru 5-24.

CAUTION

Do not exceed 12-second operating time, or vacuum may be formed in suction side of refrigeration system and damage compressor. Bleed off refrigerant slowly, over a period of about one hour, to prevent oil being blown out of system, then replace faulty pressure cutout switch and recharge system.

WARNING

Be careful when working with high voltage. Failure to comply can result in serious injury or death.

Table 5-1. DIRECT SUPPORT MAINTENANCE TROUBLESHOOTING (cont.)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. COMPRESSOR RUNS BUT DOES NOT COOL.	Step 1. Check sight glass for bubbles.	If bubbles exist leak check system in accordance with paragraph 5-16.
		Replace sight glass in accordance with paragraph 5-33.
	Step 2. Install gauges in accordance with paragraph 5-21.	Check system pressure in accordance with Table 5-2.
	Step 3. Check compressor for damaged valves.	Test compressor in accordance with paragraph 5-35.

SECTION III MAINTENANCE PROCEDURES

5-10. GENERAL INSTRUCTIONS.

Most maintenance instructions in this section will list resources required, personnel required and equipment condition for the start of the procedure. Note the following:

* Resources required are not listed unless they apply to the procedure.

*Personnel required are listed only if the task requires more than one of PERSONNEL is not listed, it means one person can do the task.

*The normal standard equipment condition to start a maintenance task turn OFF air conditioner and disconnect main power source. Equipment condition is not listed unless some other condition is required besides the power being OFF.

5-11. MAINTENANCE PROCEDURE INDEX.

REFRIGERATION SYSTEM	Paragraph	Page
Brazing	5-15	5-12
Charging the System	5-18	5-17
Compressor	5-36	5-83
Compressor Motor Burnout	5-36	5-88
Condenser Coil	5-40	5-97
Dehydrator (Filter-Drier)	5-29	5-46
Discharging the System	5-12	5-8
Evacuating the System	5-17	5-15
Evaporator Coil	5-38	5-106
Instruction Plates	5-39	5-115
Insulation	5-40	5-133
Leak Checking	5-16	5-13
Pressure Switch	5-26	5-26
Pressure Relief Valve	5-33	5-71
Pressure Testing	5-19	5-21
Receiver	5-32	5-67
Refrigeration Tubing	5-27	5-35
Replacing Tubing	5-14	5-10
Service Valves	5-28	5-42
Sight Glass	5-34	5-74
Solenoid Valve	5-35	5-78
System Discharge	5-12	5-8
Thermal Expansion Valve	5-30	5-49
Thermal Expansion Valve (Quench)	5-31	5-60

5-12. SYSTEM DISCHARGE.

WARNING

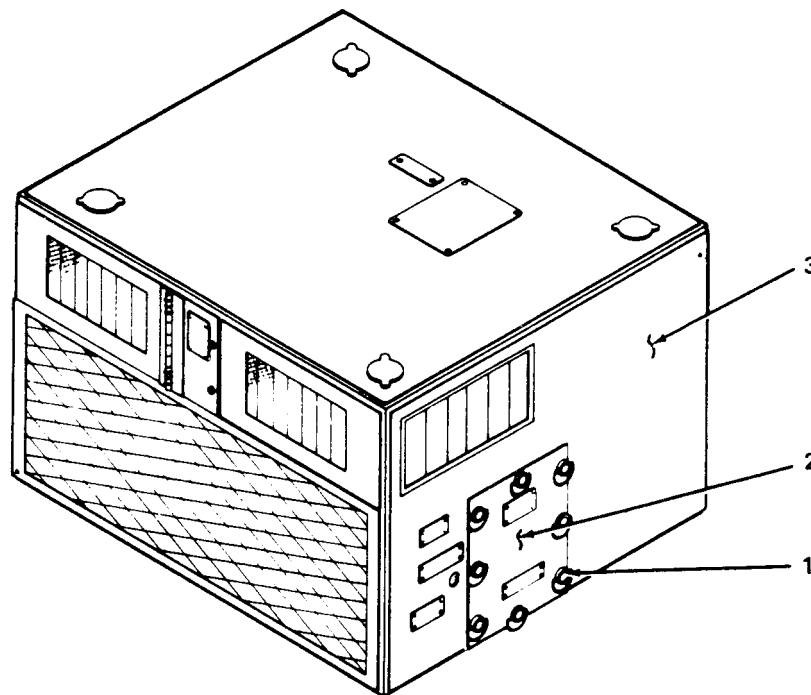
Refrigerant-22 is contained in the refrigerant system under high pressure. Extreme care must be exercised to prevent refrigerant from coming in contact with exposed skin and eyes. Provide adequate ventilation when discharging the system in a confined area.

NOTE

- Prior to opening the refrigerant system for maintenance, the system must be discharged.

5-13. DISCHARGING THE REFRIGERANT.

- a. Loosen eight turnlock fasteners (1) securing maintenance panel (2) to left side panel (3).
- b. Remove maintenance panel.



5-13. DISCHARGING THE REFRIGERANT (cont.).

- c. Remove caps from discharge (4) and suction (5) service valves.
- d. Install changing manifold hoses to air conditioner service valves.

NOTE

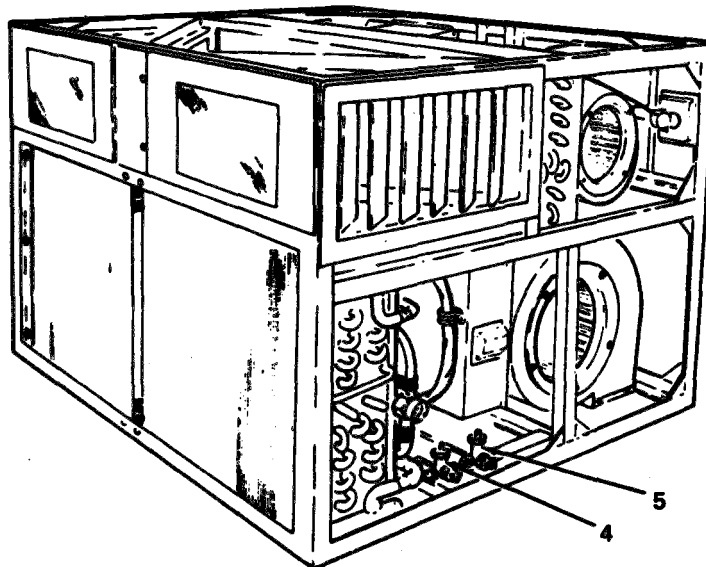
In accordance with Environmental Protection Agency regulations refrigerants cannot be discharged into the atmosphere. A refrigerant recovery & recycling unit must be used whenever discharging the refrigerant system.

Operation of the recovery/recycling unit must be by **AUTHORIZED PERSONNEL ONLY**

- e. Connect and operate a recovery/recycling unit in accordance with the manufacturer's instructions.
- f. Connect a cylinder of dry nitrogen (item 8, table D-1) to the gauge port of the discharge service valve. Open the cylinder shutoff valve and the discharge service valve slightly and completely open the suction service valve to purge the system of refrigerant gas. Use 1-2 cfm (0. 1.02 M³/minute).

NOTE

Dry nitrogen is always used to purge the refrigeration system during brazing or debrazing of connections, to prevent internal oxidation scaling.



5-14. REPLACING TUBING, FITTINGS OR REFRIGERANT COMPONENTS.

WARNING

Purge system with dry nitrogen prior to soldering refrigerant heated to 1200 F creates phosgene gas.

WARNING

Dry nitrogen is always used to purge the refrigeration system during brazing or debrazing of connections to prevent internal oxidation scaling.

NOTE

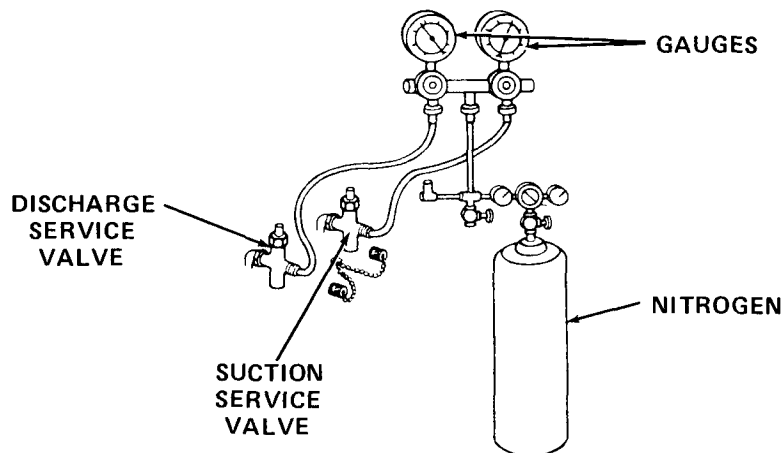
A careful; analysis of any trouble should first be made to determine if replacement is necessary. The cause of failure must be determined before replacement is made.

a. SYSTEM DISCHARGE.

Discharge system in accordance with paragraph 5-12 and 5-13.

b. DEBRAZING JOINTS.

- (1). Connect a cylinder of dry nitrogen (item 8, table D) to the gauge port of the suction service valve. Open the cylinder shutoff valve and the suction service valve slightly, and completely open the discharge service valve to purge the system of refrigerant gas.
Use 1-2 cfm (0.1 to 1.02 M³/minute).
- (2). Unbrazed those joints which must be removed in order to replace the tubing, fitting, or refrigerant components that is defective.



5-14. REPLACING TUBING, FITTINGS OR REFRIGERANT COMPONENTS (cont.).

c. CUTTING COPPER TUBING.

(1). Use a tubing cutter.

(2) . Cut tubing square and remove all burrs from inside and outside with a sharp fine file. Hold tubing so filings will drop away from tube opening.

d. BRAZING.

Braze joints in accordance with paragraph 5-15.

e. LEAK CHECK.

Leak check in accordance with paragraph 5-16.

f. SYSTEM EVACUATION.

Evacuate system in accordance with paragraph 5-17.

g. CHARGING THE SYSTEM.

Charge system in accordance with paragraph 5-18.

h. PRESSURE TEST.

Pressure test in accordance with paragraphs 5-19 thru 5-24.

5-15. BRAZING.

WARNING

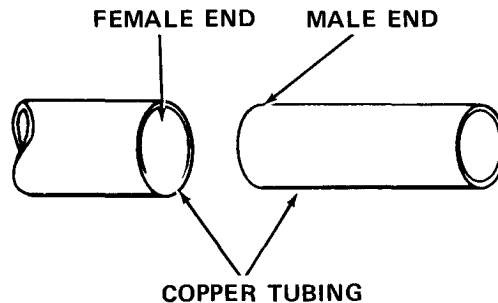
Purge system with dry nitrogen prior to soldering refrigerant heated to 1200 F creates phosgene gas.

a. PREPARATION FOR BRAZING.

- (1). Cut tubing using a tube cutter.
- (2). If not perfectly round, size the end of the tube with a sizing tool.
- (3). Clean the ends of the tubing with crocus cloth or wire brush. Do not under any circumstances use sandpaper, emery cloth or steel wool for this purpose.
- (4). Flux female end of tubing.
- (5). Slip tubing into fitting until it seats properly.

b. BRAZING.

- (1). Heat evenly to recommended temperature. Keep the torch moving constantly in a "figure-eight"-motion.
- (2). Apply silver brazing alloy to the heated parts. Do not heat (melt) the silver brazing alloy with the torch.
- (3). Cool the joint.
- (4). Clean the joint, using warm water and a brush.
- (5). Be sure all flux has been removed.

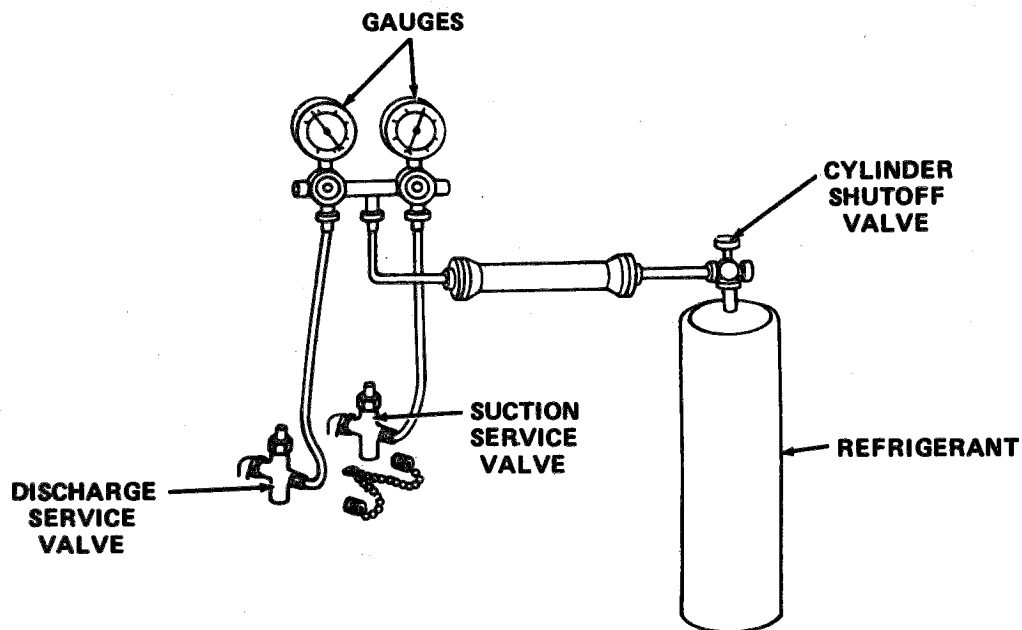


5-16. Leak Checking.

- a. Connect a pressure gauge to the suction service valve and a cylinder of refrigerant (item 21, table D-1) to the discharge service valve. Open both service valves and the cylinder shutoff valve. Let refrigerant flow into the system until the pressure gauge indicate 50 psig (3.5 kg/cm²). Close cylinder shutoff valve and discharge service valve and disconnect the refrigerant cylinder.
- b. Connect a cylinder of dry nitrogen (item 8, table D-1) to the discharge service valve. Open the cylinder shutoff valve and the discharge service valve and pressurize the system to 350 psig (22 kg/cm²). Close all three valves and test for leaks, using an electronic leak detector or the soap bubble method as described below:

NOTE

The electronic leak detector is sensitive to the presence of refrigerant gas (Table D-1, Item 1) in the atmosphere. When refrigerant gas is present in the atmosphere of the work area, false indications can result. Use in a well ventilated but draft-free area.



5-16. Leak Checking (cont.).

- (1). ELECTRONIC LEAK DETECTOR. Turn the electronic unit on and slowly pass the probe around all points of the refrigeration system at which a leak could exist. Depending upon the type of detector used, a leak will be indicated by an audible signal light, or by meter deflections.
- (2) . SOAP SOLUTION. Brush soap solution on all possible points of leakage and watch for bubbles. Follow a definite sequence to avoid missing any joints that should be tested. Wipe the solution from all joints and mark any point at which a leak is found.
- (3). Discharge the system after leak checking by connecting a hose to the suction service valve and cracking the valve open slightly to slowly discharge the gas. Rapid discharge will cause oil to be blown out of the compressor. If leaks were detected, repair them and retest in accordance with paragraph 5-19 thru 5-24. If the system is leak tight, double evacuate and charge the system in accordance with paragraph 5-18.

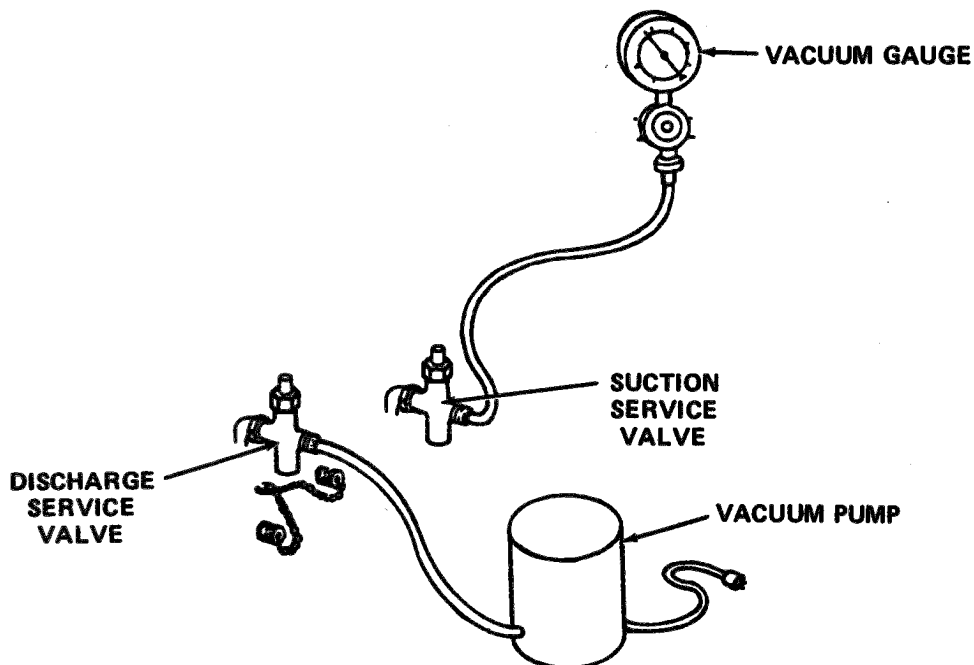
5-17. EVACUATING THE SYSTEM.

Before the system is charged with refrigerant, it must be completely evacuated to exhaust water vapor, non-condensable gases and other impurities which would prevent the system from operating.

NOTE

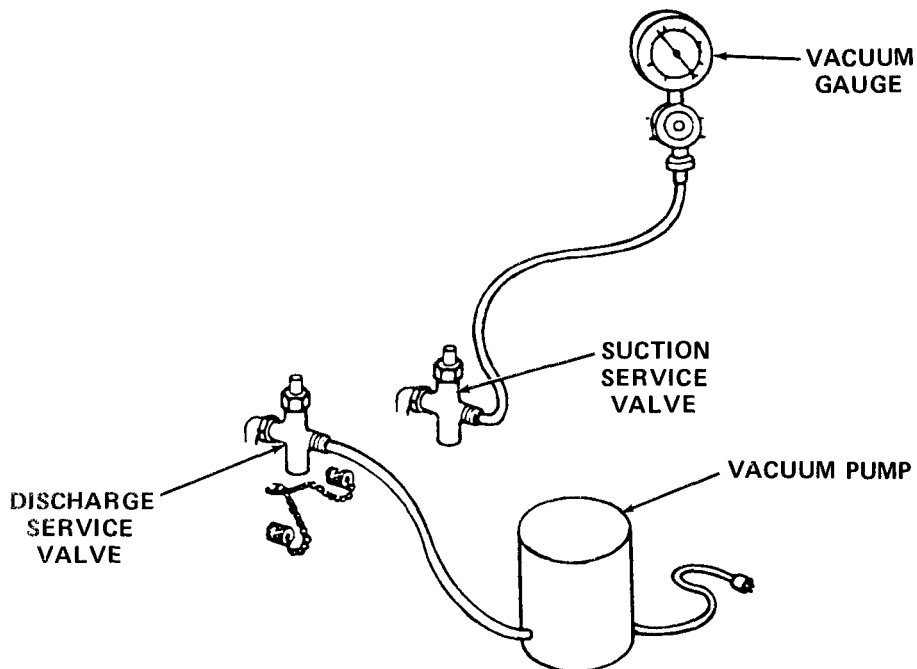
The following instructions are provided for use by refrigeration shops furnished with only the most basic equipment. If more sophisticated equipment, such as two-valve or four-valve service manifolds is available, it should be used by making appropriate modifications to these instructions.

- a. Connect a vacuum pump to the suction service valve and a vacuum gauge to the discharge service valve. Start the pump and open both service valves. Operate the vacuum pump until pressure in the system is reduced to 500 microns. Close the suction service valve and turn the vacuum pump off. Let the unit stand in this condition for at least one hour. If the system holds the vacuum without change of pressure, continue with step B. If the 500-micron vacuum cannot be held for one hour, break the vacuum with dry nitrogen and check for leaks. If 500-micron vacuum cannot be achieved, one or more of the following reasons may account for the problem.



5-17. EVACUATING THE SYSTEM (cont.).

- (1). Presence of water vapor in the system. Continued pumping will correct this condition.
- (2). Leaks in the refrigeration system. Break the vacuum with dry nitrogen (item 8, table D-1) and retest for leaks in accordance with paragraph 5-16.
- (3). Internal leakage of vacuum pump. Test the pump by connecting a vacuum gauge direct to the vacuum pump intake and continue to pump. If pump still fails to reach 500-microns, the pump is faulty.
- (4). With the suction line service valve closed, disconnect the vacuum pump and attach a cylinder of dry nitrogen (item 8, table D-1). Leave the connection to the suction service valve somewhat loose and open the nitrogen cylinder shutoff valve slightly for a few seconds to purge the line of air. Tighten the connection and crack the suction service valve open slightly to break the vacuum. Leave in this configuration until the system reaches atmospheric pressure (760mm) then close the suction service valve and the cylinder shut-off valve and disconnect the nitrogen cylinder.
- (5). Reconnect the vacuum pump to the suction service valve gauge port and start the pump. Open the suction service valve and again pump until a 500-micron vacuum is achieved. This double evacuation will remove all traces of water vapor and non-condensable gas from the system. Close the suction service valve and disconnect the vacuum pump. Close the discharge service valve and remove the vacuum gauge. Charge system in accordance with paragraph 5-18.

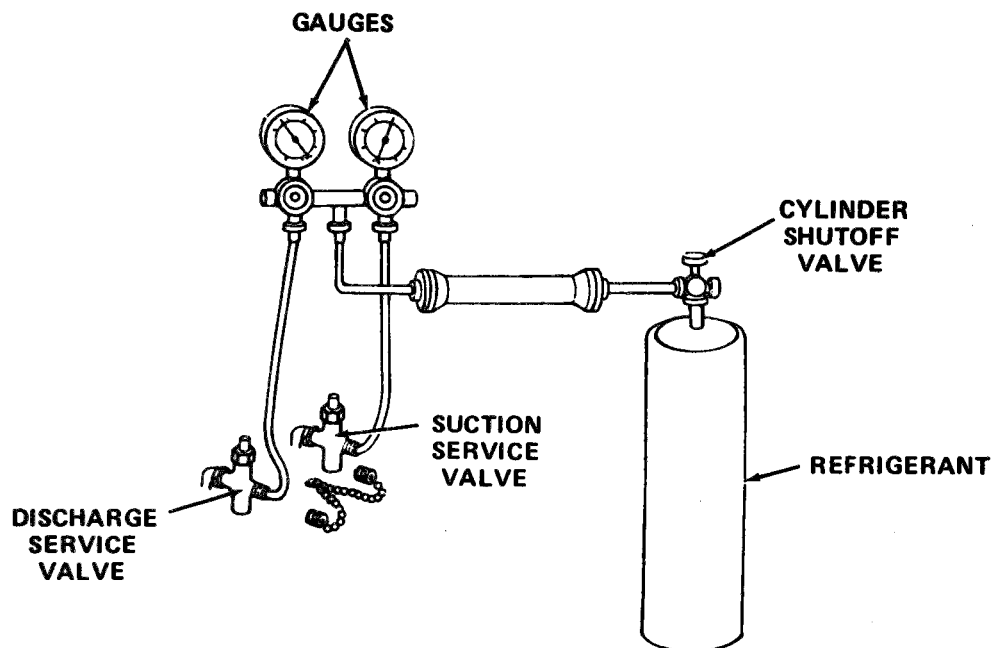


5-18. CHARGING THE SYSTEM.

WARNING

Avoid contact with refrigerant. Acid burns could result from contact with refrigerant.

When charging the system use a manifold assembly similar to that shown below. Connect a manifold and a cylinder of refrigerant (item 11, table D-1), loosely to the service valves and open the cylinder shutoff valve for a few seconds to purge the line of air. Tighten the service valve connections.



5-18. CHARGING THE SYSTEM (cont.).

CAUTION

Do not attempt to charge liquid refrigerant into the suction line. The compressor would be damaged.

NOTE

Two kinds of refrigerant cylinders are in general use. One is equipped with a single shutoff valve, and must be inverted when charging liquid refrigerant. The other is equipped with a vapor valve and a liquid valve, which makes it possible to charge with either liquid or vapor when the cylinder is upright.

- Whenever available, use recycled refrigerant for charging the refrigeration system.

5-18. CHARGING THE SYSTEM (cont.).

- a. Place the refrigerant cylinder on a scale of sufficient capacity.
- b. Weigh the cylinder and record the weight.
- c. Open the suction service valve and slightly open the cylinder shutoff valve. Gas refrigerant will be sucked into the refrigeration system rapidly at first, then more slowly as pressures begin to equalize. When pressures have equalized or 10 pounds (4.48 kg) of refrigerant gas have flowed into the refrigerant system, close the suction service valve and the cylinder shutoff valve.
- d. Check operation and top off refrigerant as necessary, in the following manner:

CAUTION

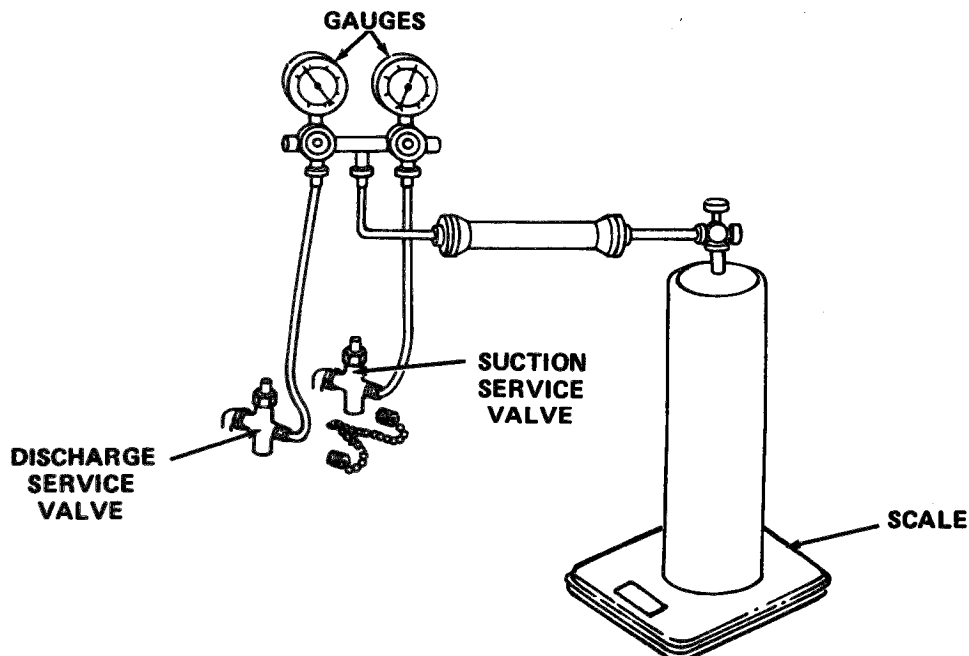
If knocking or pounding is heard when starting the air conditioner, shut down at once and release some refrigerant before attempting another start.

NOTE

The vapor valve is not used on a two valve system.

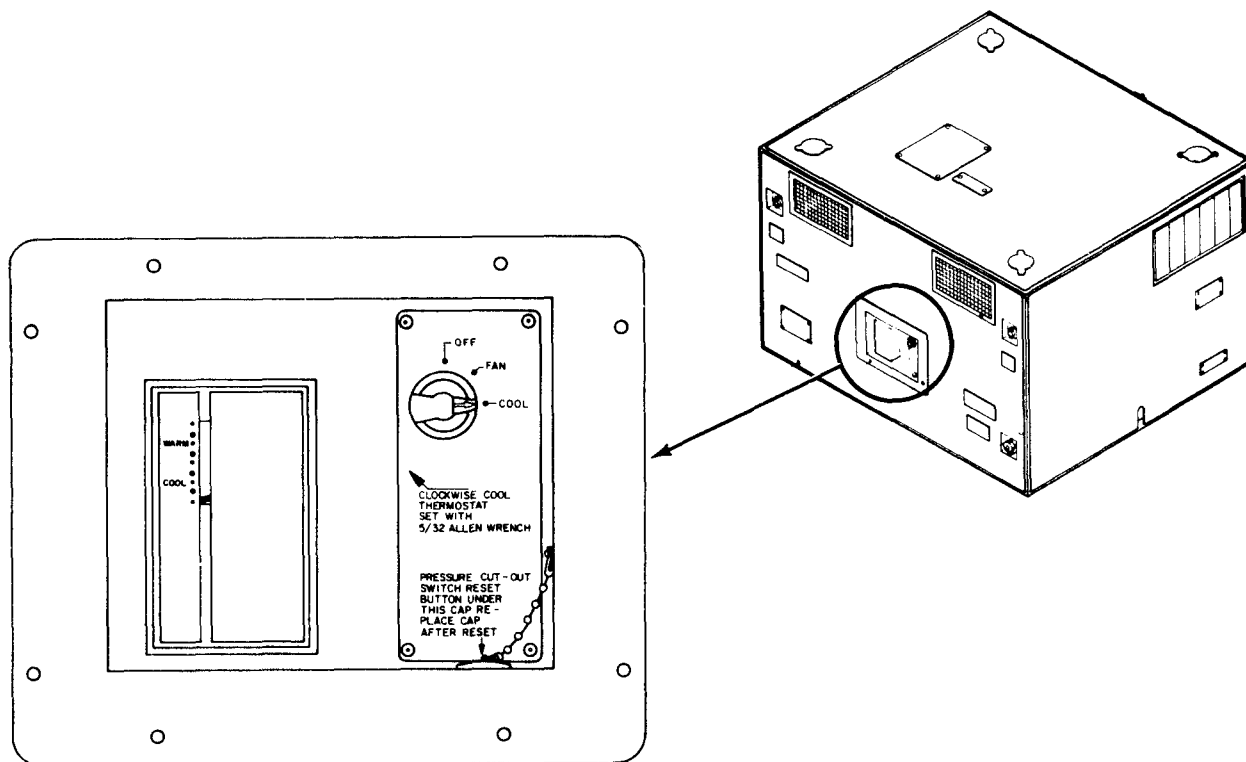
NOTE

If a one valve cylinder is used invert the cylinder.



5-18. CHARGING THE SYSTEM. (cont.)

With power connected to the air conditioner, turn the rotary selector switch to COOL and the temperature control thermostat to the maximum COOLER position. Let the air conditioner operate for 15 minutes in this mode, then observe the sight-glass liquid indicator while the air conditioner is running. If bubbles or milkyiness appears, top off the refrigerant charge as follows:



- (1). With the air conditioner compressor operating, open the suction service valve and the cylinder shutoff valve to charge refrigerant gas into the system. Continue to observe the sight-glass liquid indicator.
- (2). When the liquid in the sight-glass liquid indicator runs clear and free of bubbles, add additional 6-8 ounces (168-264 g) of refrigerant. Close the suction service valve and the cylinder shutoff valve.
- (3). Disconnect the manifold assembly and the refrigerant cylinder and pressure-test the air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-19. PRESSURE TESTING.

Pressure testing the refrigeration system is an important diagnostic procedure which you should perform whenever the system has been newly recharged after replacement of a component or when the air conditioner is operating inefficiently. Pressure testing is accomplished by connecting individual pressure gauges or a refrigeration servicing manifold to the suction line and discharge line service valves.

5-20. DESCRIPTION.

Every refrigeration system has its own specific operating pressures for the suction and discharge sides of the compressor at a given ambient temperature. The temperature-pressure relationships for the air conditioner are shown in table 5-2.

Table 5-2. NORMAL TEMPERATURE-PRESSURE RELATIONSHIPS

80 F (27 C)		DRY BULB RETURN AIR TO UNIT			
Outdoor ambient temperature	50 F 10 C	75 F 24 C	100 F 38 C	110 F 43.5 C	125 F 52 C
Gauge Pressures					
suction (psi)	58-65	58-70	60-75	62-72	65-75
(kg/Cm 2)	4.1-4.6	4.1-4.9	4.2-5.3	4.4-5.1	4.6-5.3
Discharge (psi)	120-155	170-205	2540-290	300-390	370-410
(kg/Cm 2)	8.4-10.9	11.9-14.4	17.6-20.4	21.1-27.4	26.-28.8

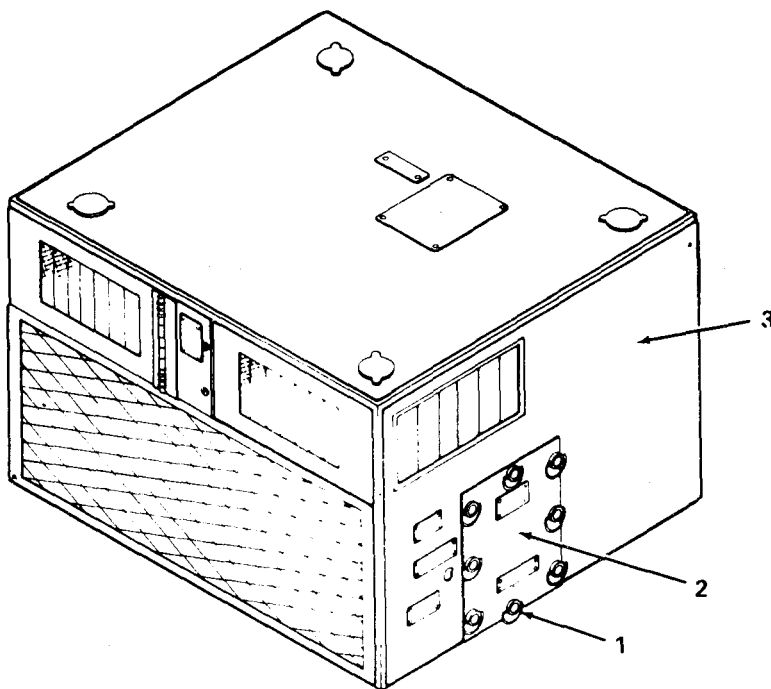
NOTE

Dry bulb temperatures are measured with an ordinary thermometer.

5-21. SET UP.

Prepare the air conditioner for pressure-testing as shown below. and as directed in accordance with paragraph 5-21 steps a thru g.

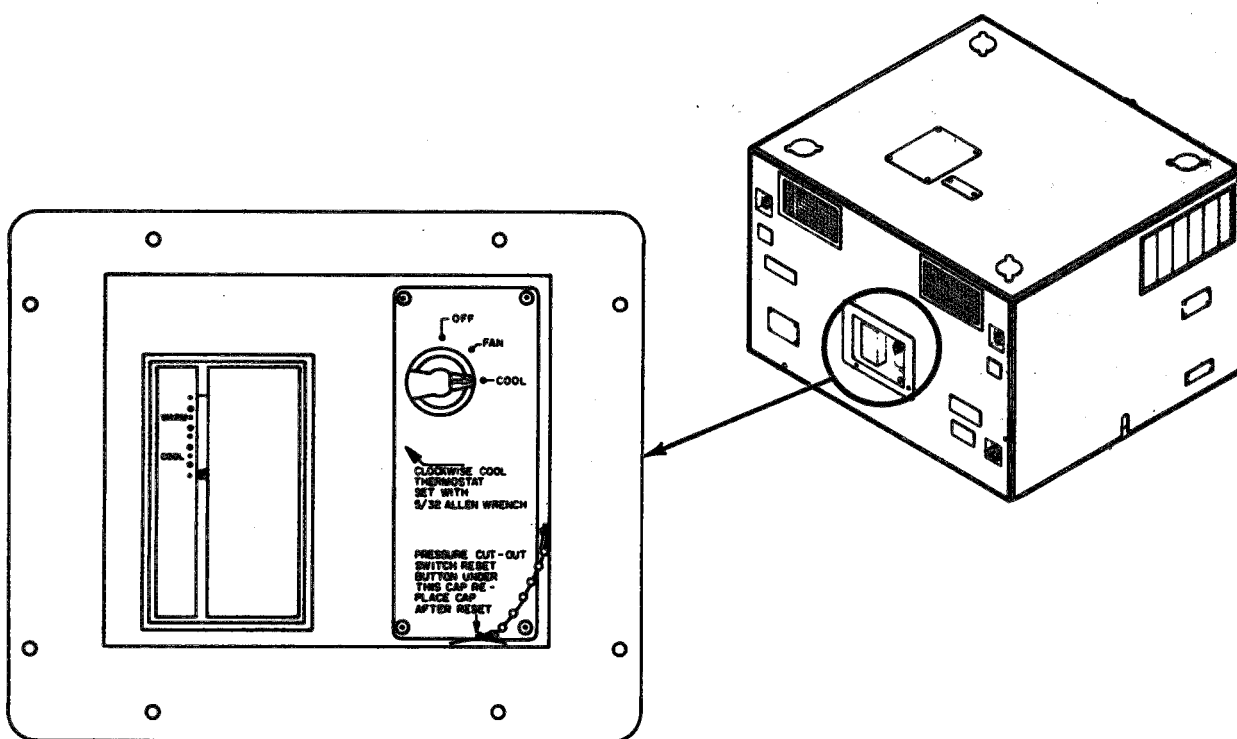
- a. Make sure that the return air damper is completely closed, and that the fresh air damper is open.
- b. Hang an accurate thermometer directly in front of the evaporator fresh air damper to register, "dry bulb return air to unit, temperature.
- c. Hang an accurate thermometer directly in front of the condenser coil guard, making sure that the thermometer is shaded from direct sunlight, to record "outdoor ambient temperature".
- d. Loosen eight turnlock fasteners (1) securing maintenance panel (2) to left side panel (3).
- e. Remove maintenance panel.
- f. Connect a refrigeration service manifold to the suction and discharge service valves, purging the manifold of any air trapped in the lines.
- g. If indoor ambient temperature is too low, provide a space heater to raise the "dry bulb to return air to unit" temperature to 80 degrees F (27 degrees-C).



5-22. PROCEDURE.

Perform the pressure test in the following manner:

- a. Turn the rotary selector switch to COOL, and the temperature control thermostat to maximum DECREASE at 65 degrees F (18 degrees C) or greater.
- b. Slowly open the suction line and discharge line service valves to which pressure gauges have been connected.
- c. Let the air conditioner operate for at least 15 minutes in the cooling cycle, so that all parts of the system are stabilized.



- d. Record the temperatures indicated by both thermometers and the pressures indicated by both pressure gauges.
- e. Compare the readings obtained from pressure testing with the normal ranges shown in Table 5-2.

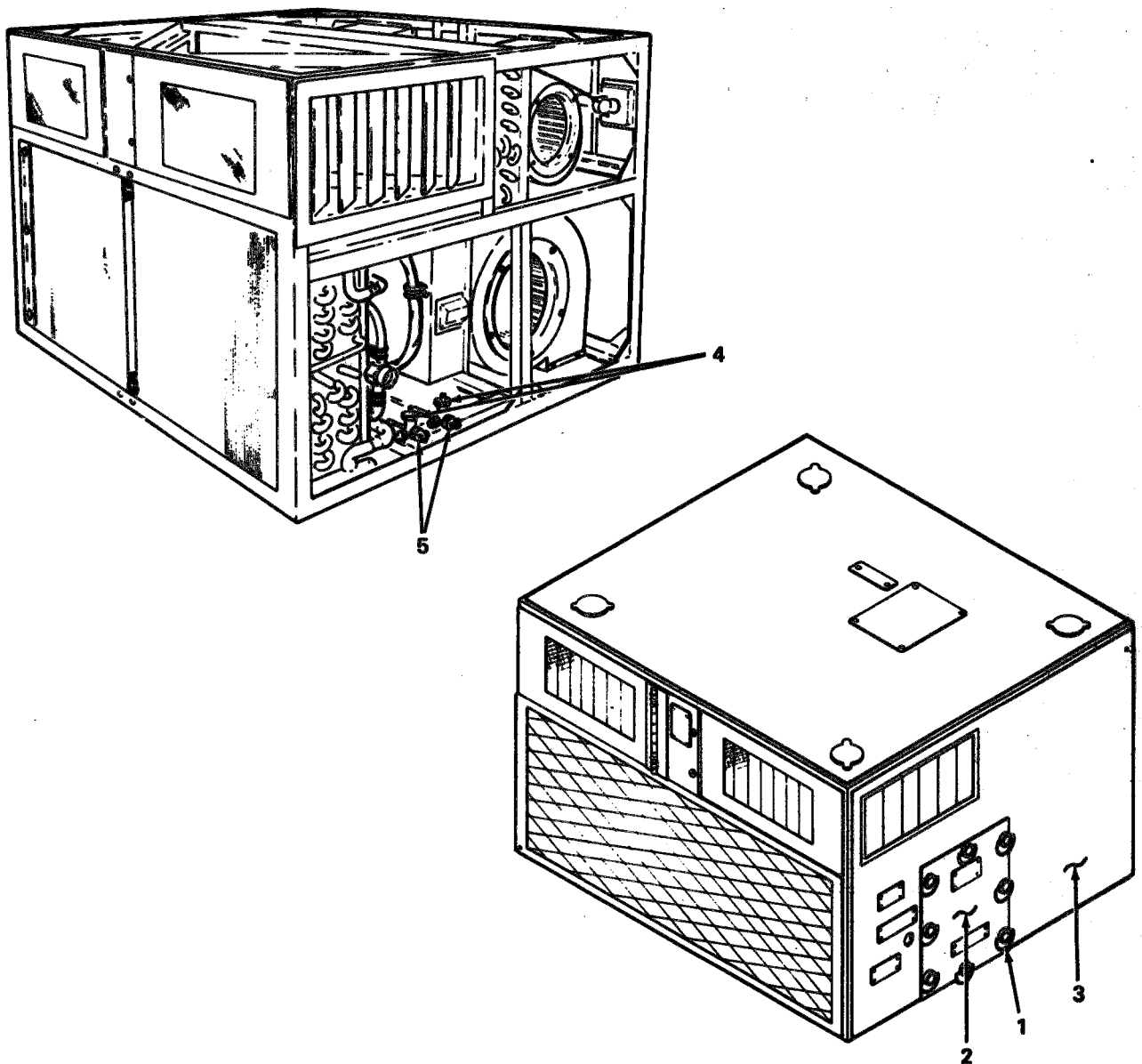
5-23. Analysis of Discrepancies.

If actual pressure-temperature relationships differ from those shown in Table 5-2, consider the following reasons, and take appropriate action.

- a. If pressures are too low: Check for leaks in accordance with paragraph 5-16, repair, recharge the system in accordance with paragraph 5-18 and repeat the pressure test in accordance with paragraphs 5-19 thru 5-24.
- b. If pressures are too high: Close the suction service valve, remove the pressure gauge, and bleed off the appropriate amount of refrigerant. Repeat the pressure test.
- c. If discharge pressure is extremely high and suction pressure is extremely low, blockage may exist in the refrigeration system. Troubleshoot, correct the trouble, recharge if necessary, and repeat the pressure test.

5-24.COMPLETION.

- a. Close both service valves (4).
- b. Remove refrigeration service manifold from the suction and discharge service valves.
- c. Secure service valve caps (5) to service valves.
- d. Maintenance panel
 - (1). Align holes in maintenance panel (2) with holes in left side panel (3) and frame.
 - (2). Secure maintenance panel with eight turnlock fasteners (1).



5-26 PRESSURE SWITCH

This task covers:

- | | |
|--------------------|-----------------|
| a. Removal | c. Adjustment |
| b. Inspection/Test | d. Installation |
-

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

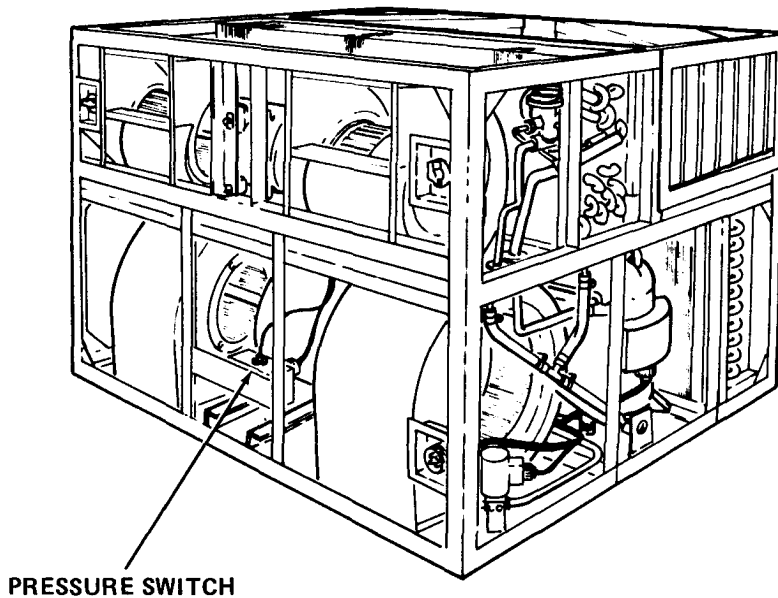
References
NONE

Troubleshooting References
NONE

Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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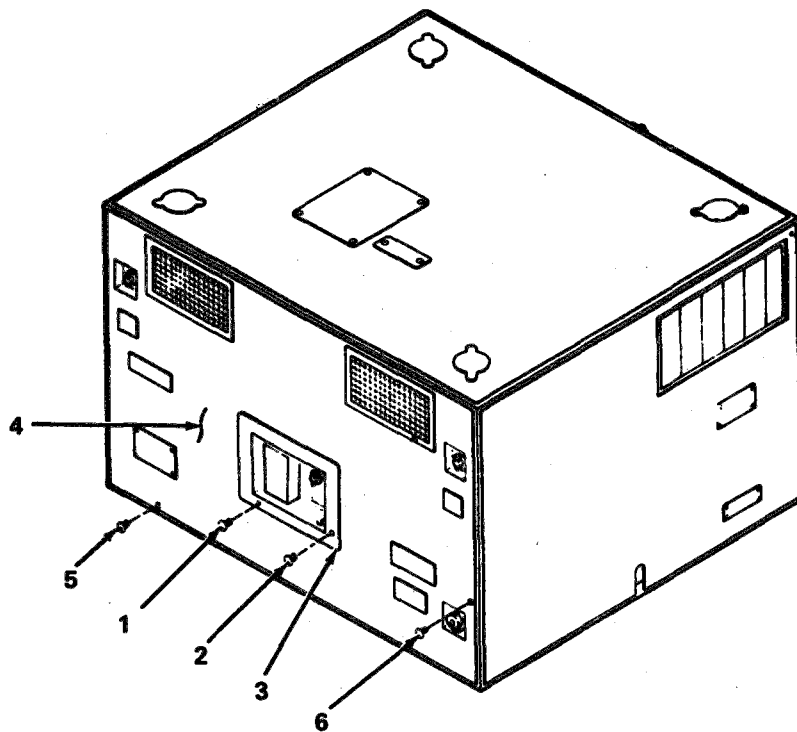


PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|----------------|--|--|
| 1. Control Box | <ul style="list-style-type: none"> a. Remove four screws (1) and four screws (2) securing control box (3) to frame and front panel (4). b. Disconnect electrical connector plug (P-6). c. Remove control box. | |
| 2. Front Panel | <ul style="list-style-type: none"> a. Remove thirty-four screws (5) and two screws (6) securing front panel to frame. b. Remove front panel. | |

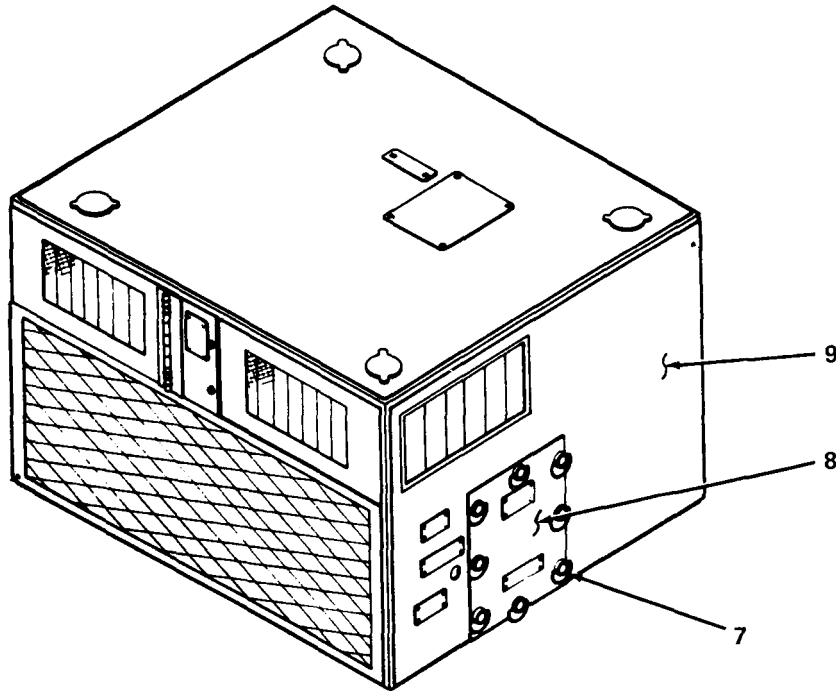


PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- 3. Maintenance Panel a. Loosen eight turnlock fasteners (7) securing maintenance panel (8) to left side panel (9).
- b. Remove maintenance panel.



REMOVAL

- 4. Pressure Switch

WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the pressure switch.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

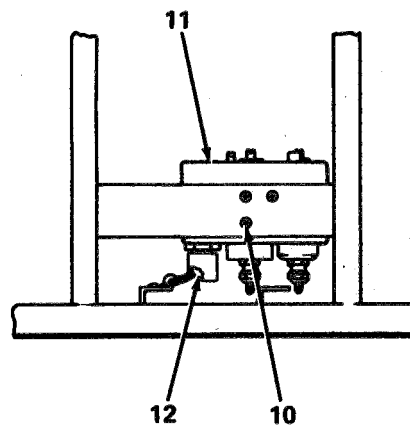
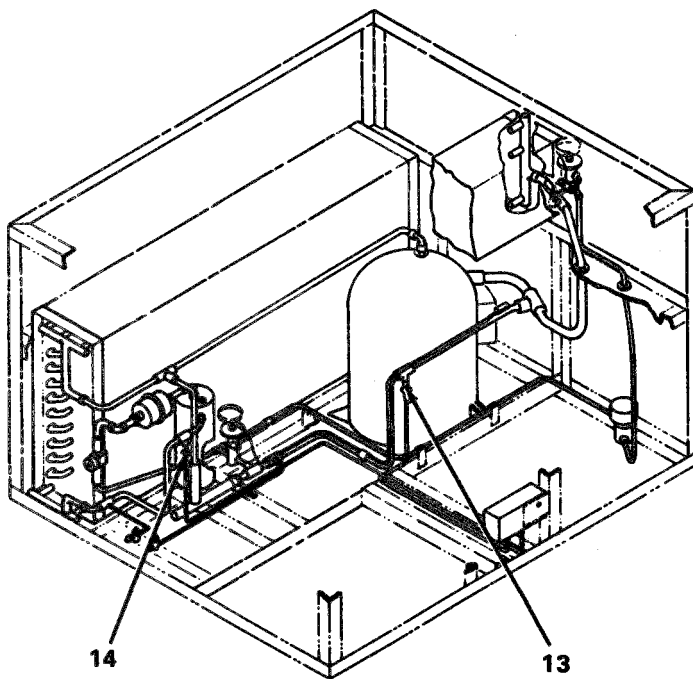
4. Pressure Switch

- a. Remove three screws (10) securing pressure switch (11) to frame.
- b. Disconnect electrical connector P-9 (12).
- c. Discharge unit in accordance with paragraph 5-3.
- d. Tag and disconnect sampling tubing by loosening flare nuts on low pressure (13) and high pressure lines (14).

NOTE

Observe location of sampling tubing for proper reinstallation.

- e. Remove switch.



PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSPECTION</u>		
5. Pressure Switch	a. Inspect for damage. b. Repair or replace if damaged.	
<u>TEST</u>		
6. Pressure Switch	a. Using a multimeter check for continuity between pins, A-B, T1-T2, L1-A and L2-B. b. If continuity does not exist pressure switch is defective. c. Repair or replace if defective.	
<u>ADJUSTMENT</u>		

NOTE

Gauges on pressure switch are not accurate. DO NOT rely on readings.

- 7. Pressure Switch
 - a. Remove one screw securing pressure switch cover to pressure switch .
 - b. Install wires in accordance with Appendix F.
 - c. Connect a pressure gauge to the low pressure sampling tubing and to a cylinder of dry nitrogen (Item 8, table D-1).
 - d. Let nitrogen flow into the low pressure sampling tubing until the pressure gauge indicates 25 psig (1.75 kg/cm2) activating the low pressure switch.

NOTE

Low pressure switch must be activated for testing and adjustment of high pressure switch.

PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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ADJUSTMENT

7. Pressure Switch

- e. Connect a pressure gauge to the high pressure sampling and to a cylinder of dry nitrogen (Item 8, table D-1).
- f. Let nitrogen flow into the high pressure sampling tubing until a click is heard noting the lack of continuity on pins, L and T.
- g. Using a multimeter check for continuity between pins L2 and T2.
- h. Record what pressure the lack of continuity occurred. That is the high pressure cutout, adjust as required.
- i. Remove pressure gauge from the low and high pressure sampling tubing.
- j. Align pressure switch cover with hole in pressure switch.
- k. Secure pressure switch cover to pressure switch with one screw.

PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

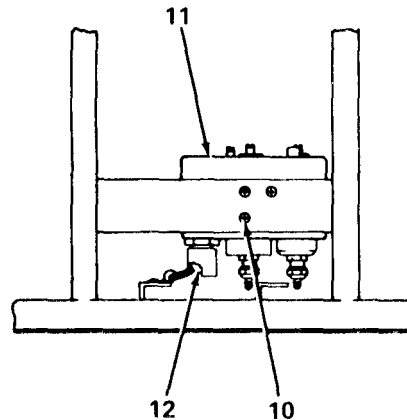
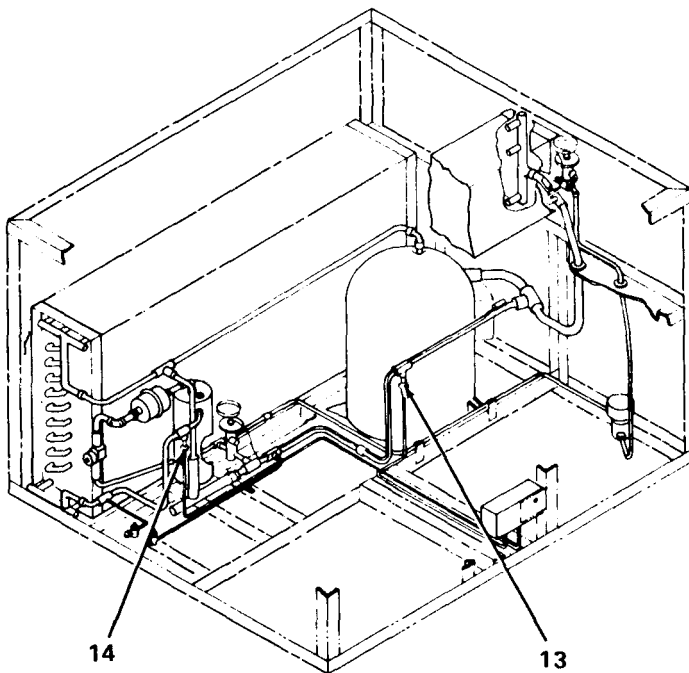
8. Pressure Switch

- a. Connect electrical connector (P-9)(12) to pressure switch.
- b. Align pressure switch (11) with holes in frame.
- c. Secure pressure switch with three screws (10).

CAUTION

Assure sampling tubing is reinstalled in proper location to prevent damaging.

- d. Connect sampling tubing to low pressure (13) and high (14) pressure flare nuts and tighten.
- e. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18.



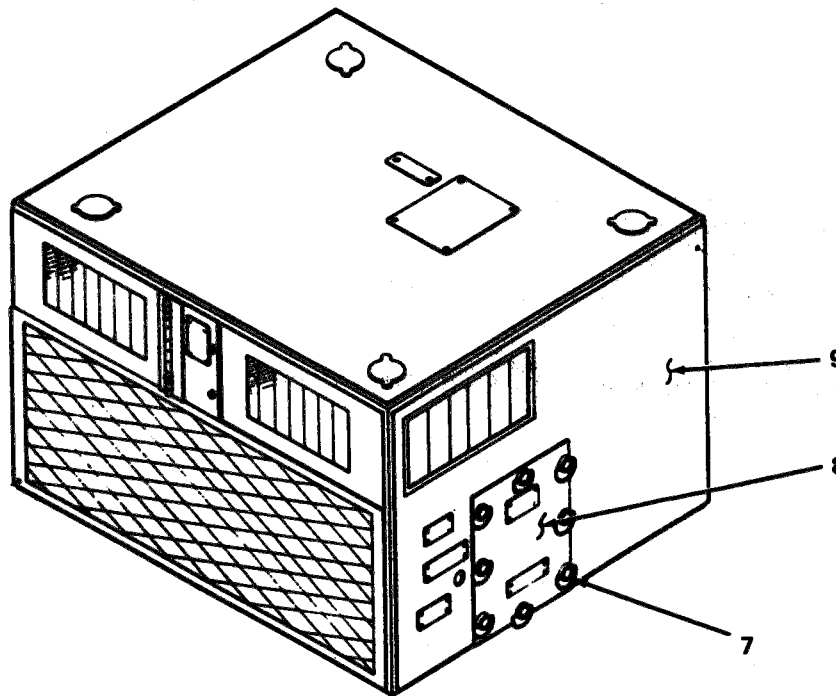
PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

9. Maintenance Panel

- a. Align holes in maintenance panel (8) with holes in left side panel (9) and frame.
- b. Secure maintenance panel with eight turnlock fasteners (7).

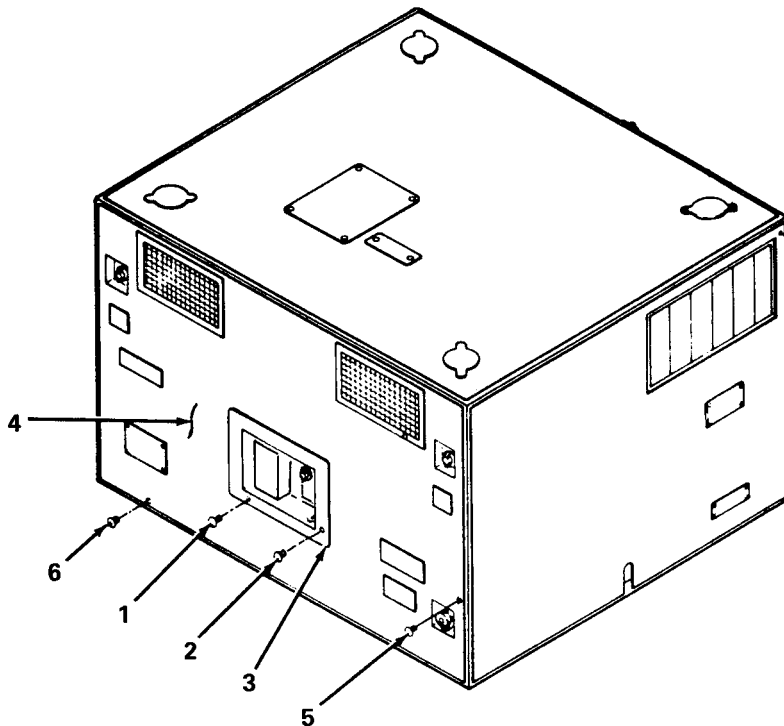


PRESSURE SWITCH (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|-----------------|--|--|
| 10. Front Panel | a. Align holes in front panel with holes in frame.
b. Secure front panel (4) to frame with thirty-four screws (5) and two screws (6). | |
| 11. Control Box | a. Align holes in control box (3) with holes in front panel.
b. Secure control box with four screws (2) and four screws (1). | |



- | | | |
|-------------------|---|--|
| 12. Pressure Test | Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24. | |
|-------------------|---|--|

5-27 REFRIGERANT TUBING

This task covers:

- a. Removal
- b. Inspection
- c. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

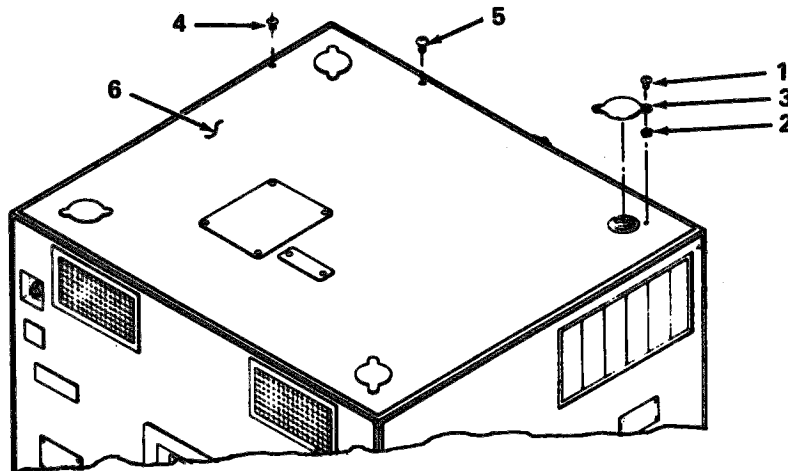
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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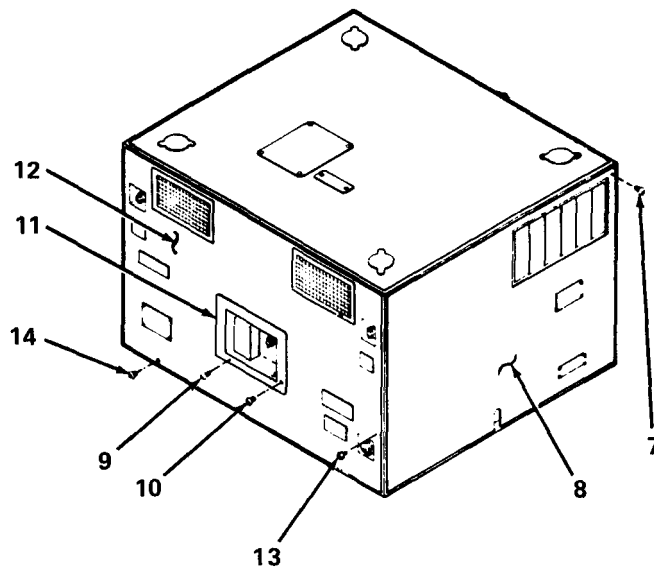
REMOVAL

1. Lifting Ring Covers
 - a. Remove eight screws (1) and eight rubber washers(2) securing lifting ring cover (3) to frame and top panel.
 - b. Remove the four lifting ring covers.
2. Top Panel
 - a. Remove twenty-three screws (4) and eight screws (5) securing top panel (6) to frame.
 - b. Remove top panel.



REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		
39 Right Side Panel	a. Remove thirty-one screws (7) securing right side panel (8) to frame. b. Remove right side panel.	
4. Control Box	a. Remove four screws (9) and four screws (10) securing control box (11) to front panel (12). b. Disconnect electrical connector (P-6). c. Remove control box.	
5. Front Panel	a. Remove thirty-four screws (13) and two screws (14) securing front panel to frame. b. Remove front panel.	

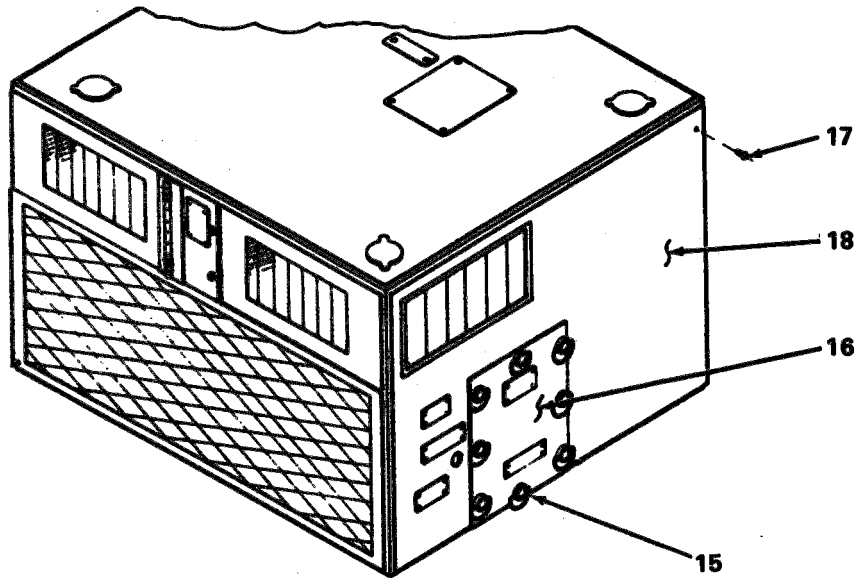


REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|--------------------|--|--|
| 6. Left Side Panel | <p>a. Loosen bottom center turnlock fastener (15) on maintenance panel (16).</p> <p>b. Remove twenty-seven screws (17) securing left side panel (18) to frame.</p> <p>c. Remove left side panel and maintenance panel.</p> | |
|--------------------|--|--|



7. Tubing

WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the tubing.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- 7. Tubing
 - a. Discharge the system in accordance with paragraph 5-12.
 - b. Debraze tubing in accordance with paragraph 5-14.

WARNING

Polyurethane foam insulation breaks down to form toxic gases when heated to brazing temperature.

NOTE

When debrazing refrigerant tubing or fittings near an insulated wall of the air conditioner, fabricate a sheet metal shield to deflect the flame of the torch away from the insulation. Perform the operation in a well ventilated area.

NOTE

When debrazing tubing from expansion valves, solenoid valves or other components that could be warped or damaged by brazing temperature, the component should be disassembled to the extent possible, and the body alone brazed/debrazed. If disassembly is impractical or impossible, the entire component, except for the joints to be heated should be wrapped in wet cloth to act as a heat sink.

INSPECTION

- 8. Tubing
 - a. Inspect tubing and fittings for nicks, cuts, cracks or kinks.
 - b. If damage appears to be minor, leak check in accordance with paragraph 5-16.
 - c. If no leaks are found consider tubing serviceable.

REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

9. Tubing

- a. Braze tubing in accordance with paragraph 5-15.

NOTE

When brazing refrigerant tubing or fittings near an insulated wall of the air conditioner, fabricate a sheet metal shield to deflect the flame of the torch away from the insulation. Perform the operation in a well ventilated area.

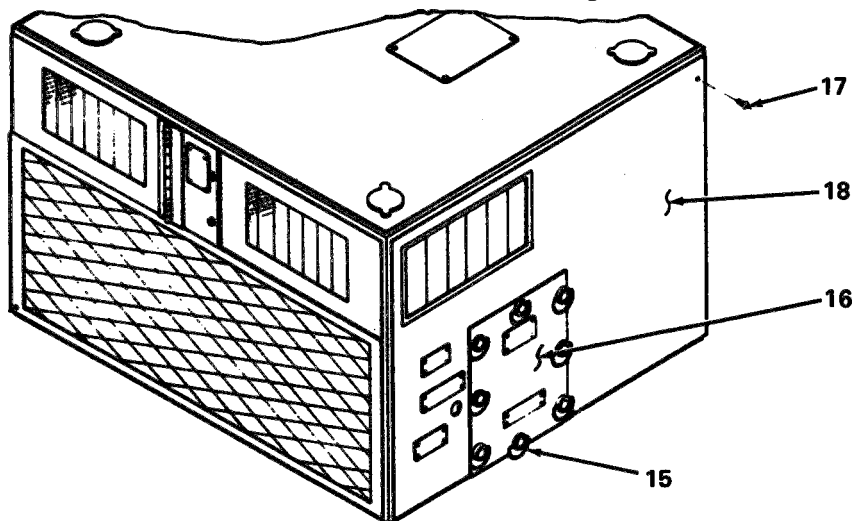
NOTE

When brazing tubing from expansion valves, solenoid valves or other components that could be warped or damaged by brazing temperature. The component should be disassembled. If disassembly is impractical or Impossible, the entire component except for the joints to be heated, should be wrapped in wet cloth to act as a heat sink.

- b. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18.

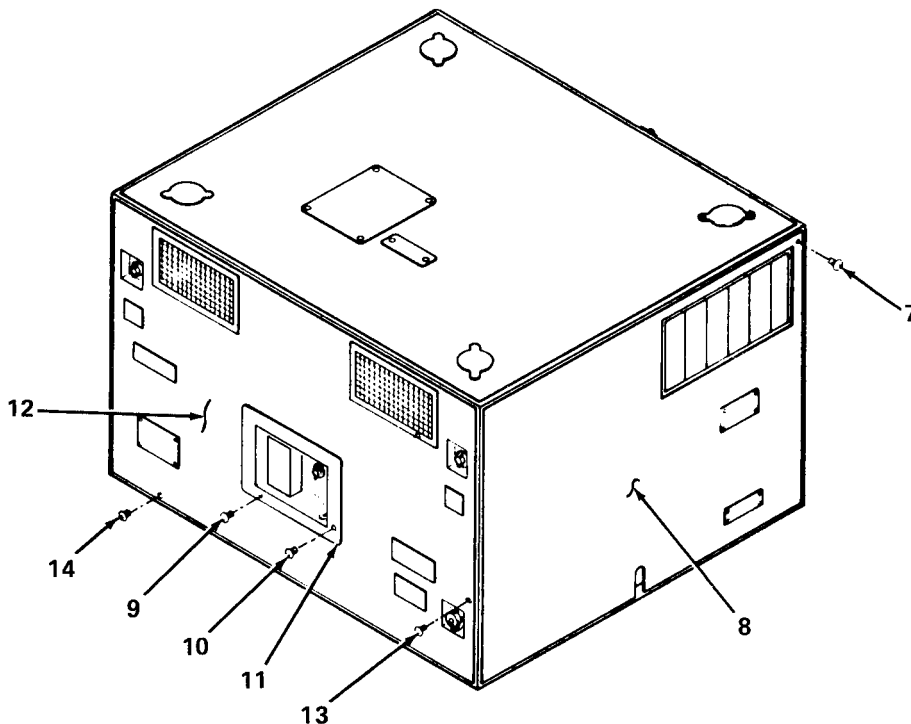
10. Left Side Panel

- a. Align holes in left side panel (18) and maintenance panel (16) with holes in frame.
- b. Secure left side panel with twenty-seven screws (17).
- c. Tighten bottom center turnlock fastener (15) on maintenance panel.



REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
11. Front Panel	a. Align holes in front panel (12) with holes in frame. b. Secure front panel with thirty-four screws (13) and two screws (14).	
12. Control Box	a. Align control box (11) with holes in front Panel. b. Secure control box with four screws (10) and four screws (9).	
13. Right Side Panel	a. Align holes in right side panel (8) with holes in frame. b. Secure right side panel with thirty-one screws (7).	



REFRIGERANT TUBING (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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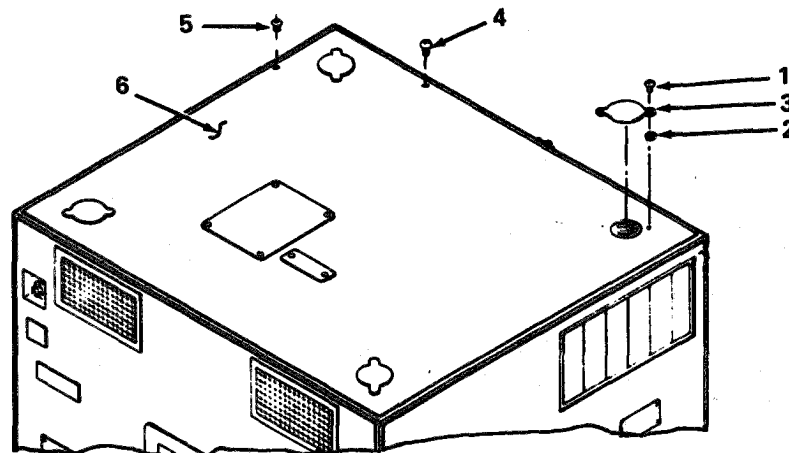
INSTALLATION

- 14. Top Panel
 - a. Align holes in top panel (6) with holes in frame.
 - b. Secure top panel with twenty-three screws (4) and eight screws (5).

- 15. Lifting Ring Covers
 - a. Align holes in lifting ring covers (3) with frame. and top panel.
 - b. Secure lifting ring covers with eight screws (1) and eight rubber washers (2).

- 16. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.



5-28 SERVICE VALVES

This task covers:

- a. Removal
- b. Inspection
- c. Installation

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INITIAL SETUP

Test Equipment
NONE

Tools
NONE

References
NONE

Troubleshooting References
NONE

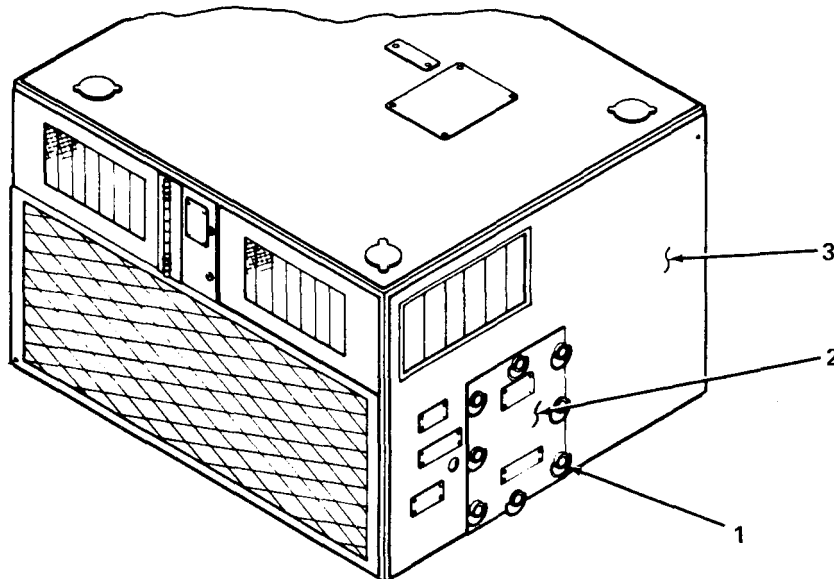
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- 1.. Maintenance Panel a. Remove eight turnlock fasteners (1) securing maintenance panel (2) to frame and left side panel (3).
- b. Remove maintenance panel.



SERVICE VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

2. Service Valve

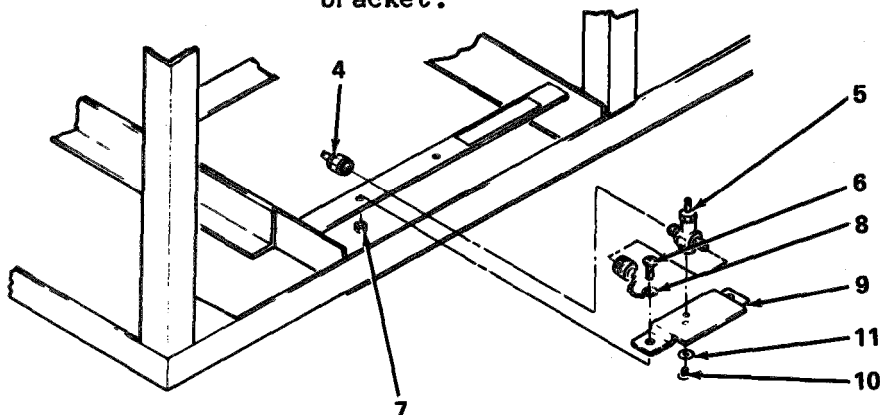
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the service valves.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge the system in accordance with paragraph 5-12.
- b. Remove 1/4 inch flare nuts (4) from service valves (5).
- c. Remove two screws (6), two lock nuts (7) and two flat washers (8) securing service valve mounting bracket (9) to frame.
- d. Remove service valve and service valve mounting bracket.
- e. Remove two screws (10) and two lock washers (11) securing service valves to service valve mounting bracket.
- f. Remove service valve from service valve mounting **bracket.**



SERVICE VALVE (CONT.)

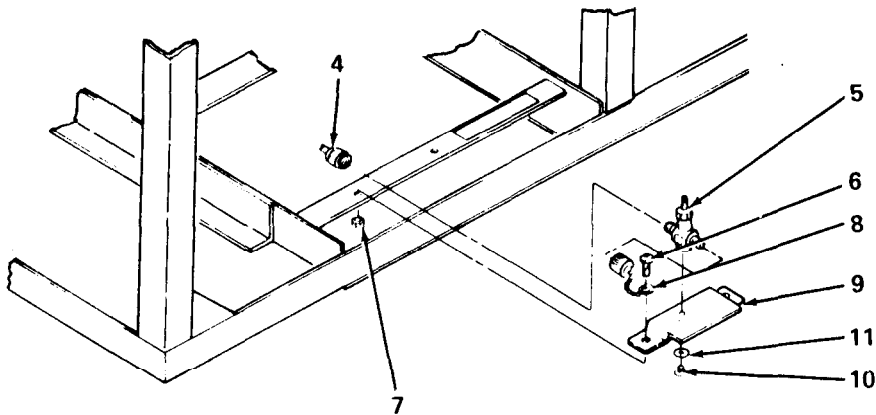
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- | | | |
|------------------|----------------------------------|--|
| 3. Service Valve | a. Inspect for damage. | |
| | b. Repair or replace if damaged. | |

INSTALLATION

- | | | |
|-------------------|--|--|
| 4. Service Valves | a. Align service valves (5) with service valve mounting bracket. | |
| | b. Secure service valves with two screws (10) and two lock washers (11) to service valve mounting bracket. | |
| | c. Align service valve mounting bracket with frame. | |
| | d. Secure service valve mounting bracket with two screws (6), two locknuts (7) and two flat washers (8). | |
| | e. Connect 1/4 inch flare nuts (4) to service valves. | |
| | f. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. | |

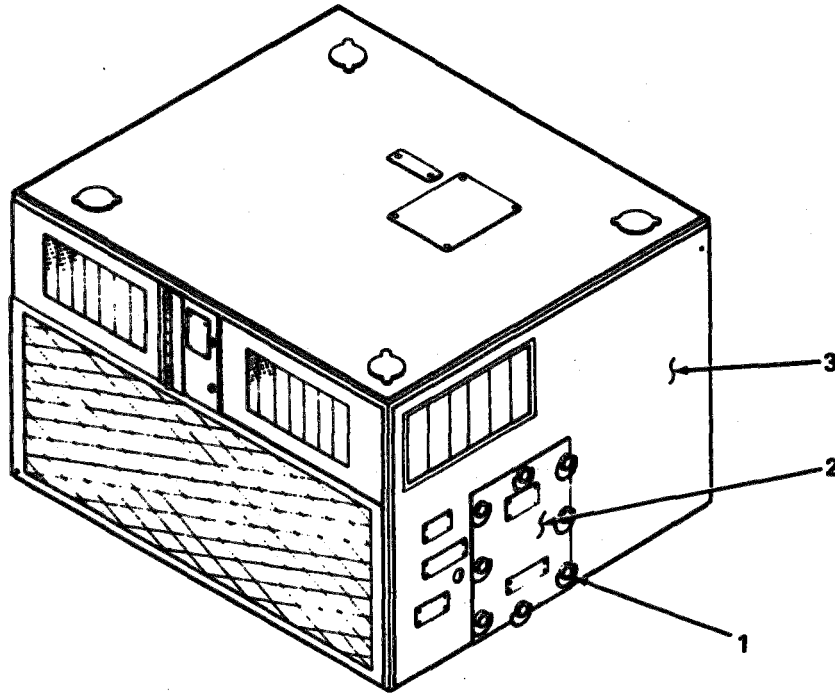


SERVICE VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | |
|----------------------|--|
| 5. Maintenance Panel | <ul style="list-style-type: none"> a. Align holes in maintenance panel (2) with holes in left side panel (3) and frame. b. Secure maintenance panel with eight turnlock fasteners (1). |
|----------------------|--|



6. Pressure Test

Pressure test air conditioner in accordance with paragraph 5-19 thru 5-24.

5-29 DEHYDRATOR (FILTER-DRYER)

This task covers:

- a. Removal
- b. Inspection
- c. Installation**

INITIAL SETUP

Test Equipment
NONE

Tools
(SC 5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

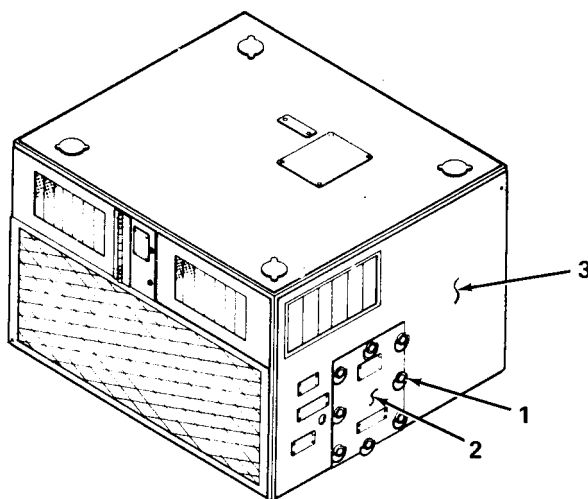
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

1. Maintenance Panel
 - a. Remove eight turnlock fasteners (1) securing maintenance panel (2) to frame and left side panel (3).
 - b. Remove maintenance panel.



DEHYDRATOR (FILTER-DRIER). (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

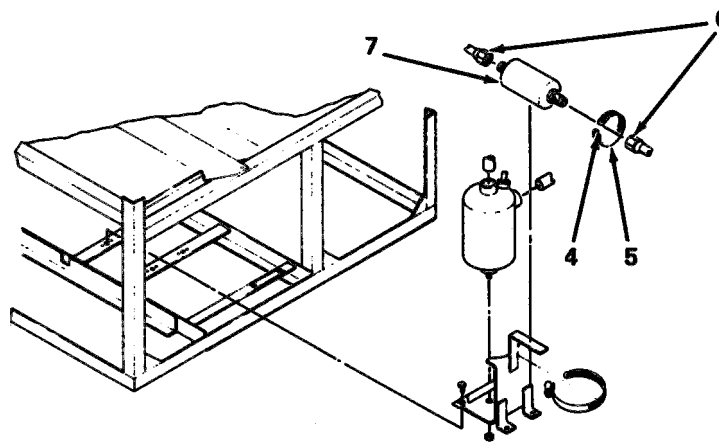
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the dehydrator (filter-drier).

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

2. Dehydrator (Filter-Drier)
 - a. Discharge the system in accordance with paragraph 5-12.
 - b. Loosen screw (4) that secures band clamp (5) to mounting bracket.
 - c. Unscrew the tubing flare nuts (6) from both ends of the dehydrator (filter-drier) (7).
 - d. Remove dehydrator (filter-drier) and band clamp.



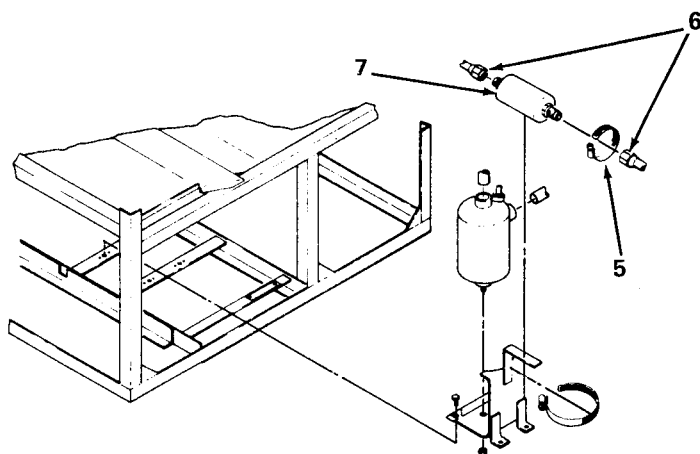
3. Dehydrator (Filter-Drier)
 - a. Inspect for damage.
 - b. If damaged replace.

DEHYDRATOR (CONT.)

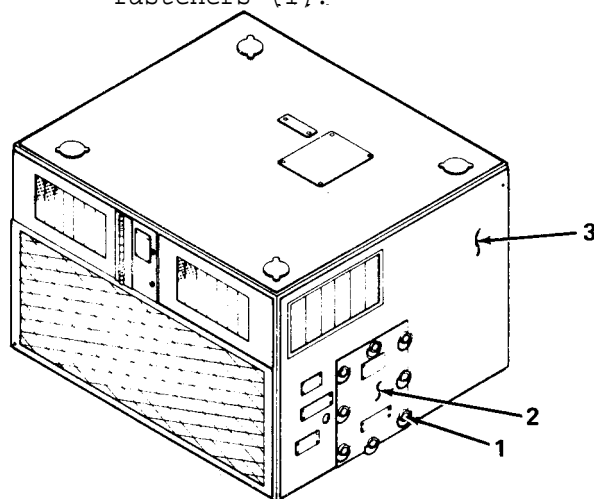
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

4. Dehydrator (Filter-Drier)
 - a. Install new drier (7) with band clamp (5) and tighten screw to mounting bracket.
 - b. Connect refrigeration tubing to flare nuts (6) at each end of the dehydrator (filter-drier) and tighten tubing flare nuts.
 - c. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18.



5. Maintenance Panel
 - a. Align holes in maintenance panel (2) with holes in left side panel (3) and frame.
 - b. Secure maintenance panel with eight turnlock fasteners (1).



6. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-30 THERMAL EXPANSION VALVE

This task covers:

- a. Removal
- b. Testing
- c. Adjustment
- d. Installation

INITIAL SETUP

Test Equipment

NONE

Tools

(SC 5180-90-C-N18)

References

NONE

Troubleshooting References

NONE

Special Environmental Conditions

NONE

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

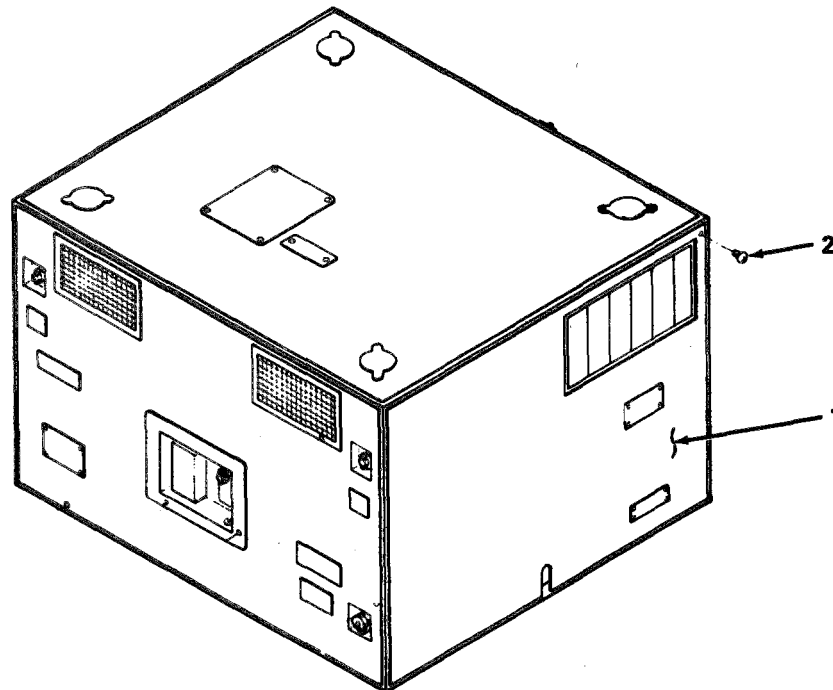
LOCATION/ITEM

ACTION

REMARKS

REMOVAL

1. Right side panel
 - a. Remove thirty-one screws (2) securing right side panel (1) to frame.
 - b. Remove right side panel.



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

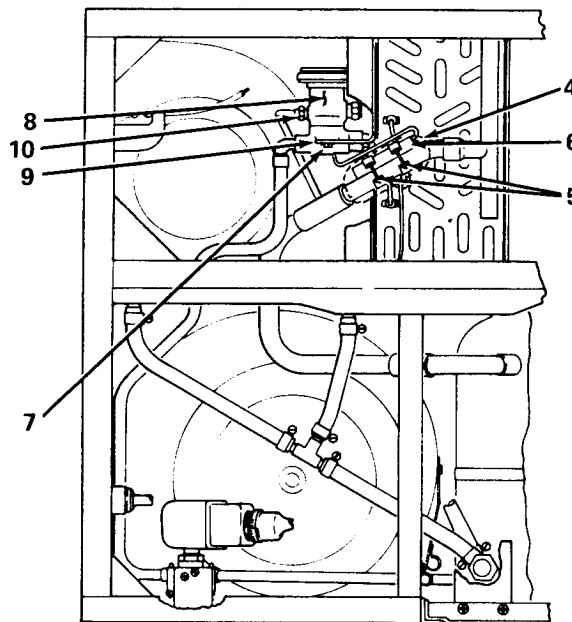
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the thermal expansion valve.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

2. Thermal Expansion Valve
 - a. Discharge the system in accordance with paragraph 5-12.
 - b. Remove insulation (4) and band clamps (5) from sensing bulb (6). Carefully detach bulb and capillary tube.
 - c. Remove two capscrews (7) securing power assembly (8) to the flanged base (9).
 - d. Remove the power assembly, capillary tube and sensing bulb.
 - e. Unscrew equalizer line (10) on thermal expansion valve.



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

2. Thermal Expansion Valve

NOTE

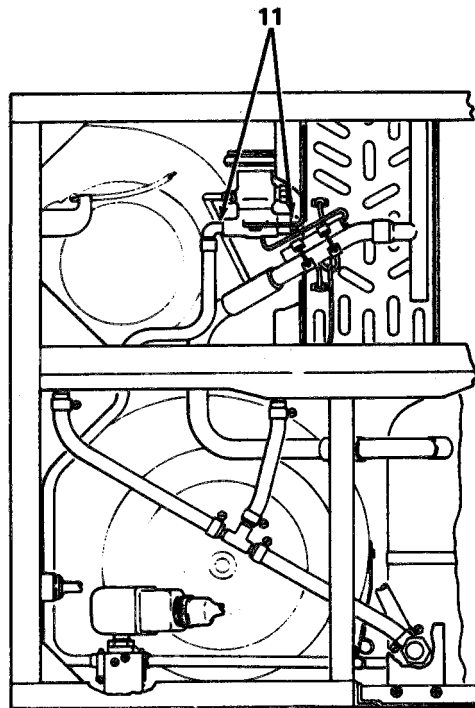
Replace flanged base only if damaged.

- f. Debraze copper tubing at valve joints (11) in accordance with paragraph 5-15.

CAUTION

Maintain a 1-2 cpm (0.1-0.2 M³/Min) flow of dry nitrogen through the refrigeration system to prevent oxidation and scaling when brazing or debrazing components.

- g. Remove power assembly.



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TESTING</u>		

NOTE

Note position of bulb on removal and be sure to replace it in the same position.

3. Thermal Expansion Valve

- a. Cut insulation away from sensing bulb and band clamps. Loosen screw from band clamps, and remove sensing bulb .

NOTE

Testing Thermal Expansion Valve is to be done while air conditioner is operating and supplying cooling air.

- b. With the air conditioner stopped, let the suction line warm up to ambient temperature.
- c. Remove the sensing bulb from its location against the suction line, and place it in a container of ice water or crushed ice (32 F or 0 C).

CAUTION

Do not let liquid refrigerant flood back into the compressor any longer than 1-2 seconds. The expansion valve will be wide open during the following procedure. Excessive flood-back of liquid refrigerant will damage the compressor.

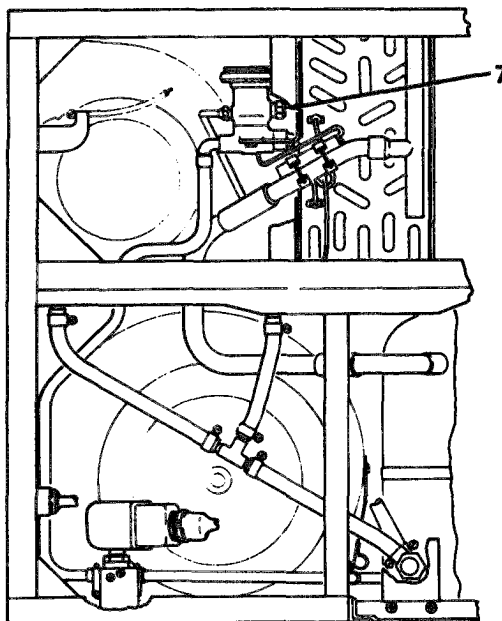
- d. Start the air conditioner by setting the rotary selector switch at COOL, and the temperature control thermostat at maximum DECREASE. Remove the sensing bulb from the ice water, and hold it in one hand to warm it while feeling the suction line. If the suction line temperature drops, the valve is operating properly. stop the air conditioner at once, and re-install the sensing bulb.
- e. If the temperature of the suction line does not drop, stop the air conditioner and replace the expansion valve.

THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

ADJUSTMENT

- | | | |
|--------------------|--|--|
| 4. Expansion Valve | <p>a. A refrigerant gas is said to be superheated when its temperature is higher than the evaporating temperature corresponding to its pressure at saturation. When a thermal expansion valve is set for optimum superheat (in this case 6 degrees F or 3.3 degrees C above the evaporating temperature of the refrigerant at a given pressure) the evaporator coil operates at maximum efficiency. That is, the refrigerant gas does not become warm before reaching the end of the coil, which would reduce the coils cooling capacity, and the refrigerant does not remain in the liquid state after passing completely through the coil, which could result in severe damage to the compressor. The superheat setting of a thermal expansion valve can be adjusted by varying the setting of a compression spring (7) in the power assembly of the valve. This spring tends to hold the valve closed against the pressure in the sensing bulb and capillary tube; therefore, the greater the spring pressure, the higher the superheat. Check superheat and adjust if necessary, in accordance with the following procedure:</p> | |
|--------------------|--|--|



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

ADJUSTMENT

4. Thermal Expansion Valve

- b. Remove insulation from a spot on the suction line near the sensing bulb of the thermal expansion valve to be adjusted.
- c. Install an accurate thermometer or the probe of a thermocouple on the bare spot, using a small gob of thermal mastic, if available, to improve conductivity. Tape the thermometer bulb or thermocouple junction in position, and cover with insulating material.
- d. Connect a suitable pressure gauge to the suction service valve, and open the valve.
- e. Operate the air conditioner in the cooling mode for about 30 minutes, observing the thermometer or thermocouple dial to see that the temperature has stabilized. When the temperature remains unchanged for at least two minutes, record the temperature and pressure.
- f. Compare the recorded temperature and pressure with those in Table 5-3. Each expansion valve should register higher than the values in the Table by the following amount.
 - a. Thermal expansion valve: 6+1.5 F or 3.3 + 0.8C.
 - b. Quench valve: 30.4 + 0.5 F or 16.7 + 0.3 C

THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

ADJUSTMENT

4. Thermal Expansion Valve

- g. If the superheat setting is not within the limits shown above (higher than the values in Table 5-3), adjust the expansion valve as follows:
 - a. Remove the hexagonal seal cap from the side of the power assembly, and loosen the bonnet seal.
 - b. Turn the adjusting stem two complete turns to change superheat of one degree F. Turn clockwise to raise, and counterclockwise to lower, the superheat setting. Do not turn more than two full turns, then wait ten minutes for temperature to stabilize before observing temperature and pressure readings.
 - c. When the proper setting is obtained, replace the screw cap and seal on the valve adjusting stem.
 - d. If the expansion valve cannot be adjusted then stop the air conditioner and replace the expansion valve.
- 7. Remove the thermometer or thermocouple probe from the suction line, and replace the insulating material. Close the suction service valve, remove the gauge, and install the cap on the service valve port.

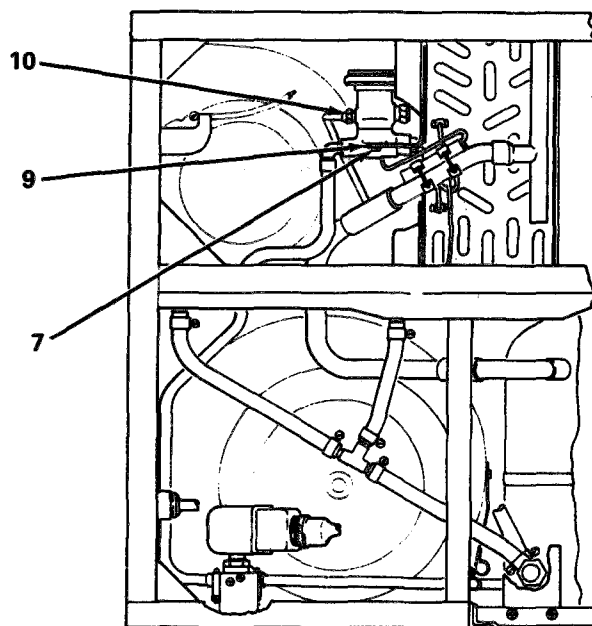
THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLTION

5. Thermal Expansion Valve

- a. Disassemble the new valve by removing two capscrews (7) that secure the power assembly to the flanged base (9) and separate the two.
- b. Braze in accordance with paragraph 5-15.
- c. Install the flanged base in the support bracket.
- d. Install power assembly on flanged base, being careful to fit lugs on the cage assembly into the cavities in the power assembly.
- e. Secure expansion valve with two capscrews.
- f. Connect external equalizer line (10) to power assembly.



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		

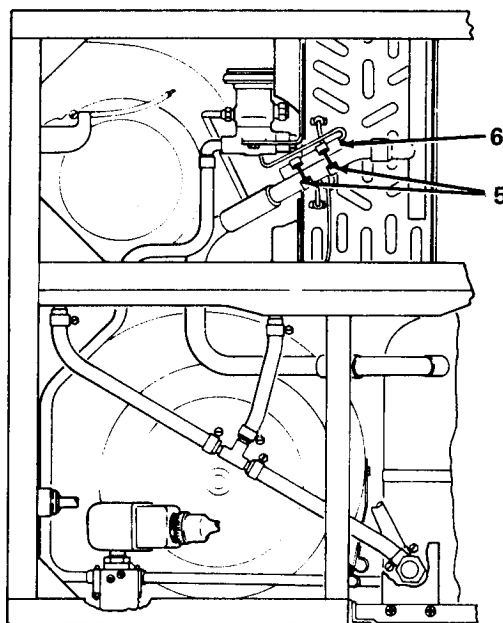
5. Thermal Expansion Valve

- g. Secure sensing bulb to suction line with two band clamps (5).
- h. Wrap the sensing bulb (6) with insulating tape (Item 6, table D-1) being careful to avoid kinking tube.

NOTE

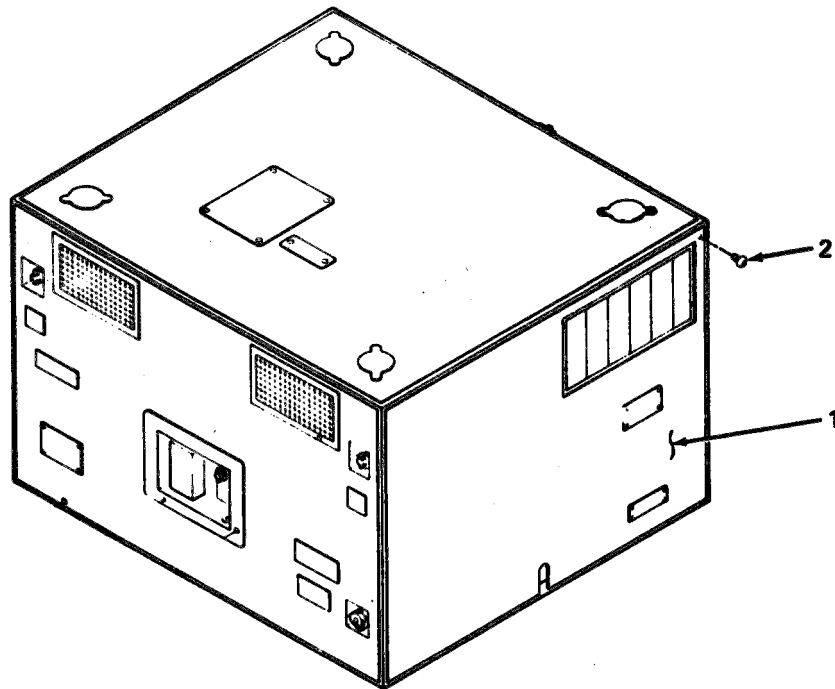
Position bulb in same position as it was removed.

- i. Carefully install the sensing bulb to its position on the suction line. Clamp into position on the suction line. Cover suction line, sensing bulb and clamps with insulating material.
- j. Carefully form the capillary tube along adjacent piping.
- k. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18.



THERMAL EXPANSION VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
6. Right Side Panel	a. Align holes in right side panel with holes in frame. b. Secure right side panel (1) with thirty-one screws (2).	



7. Pressure Test
- Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-31 QUENCH VALVE

This task covers:

- a. Removal
 - b. Adjustment
 - c. Installation
-

INITIAL SETUP

Test Equipment

NONE

Tools

(SC 5180-90-C-N18)

References

NONE

Troubleshooting References

NONE

Special Environmental Conditions

NONE

General Safety Instructions

Turn air conditioner OFF before performing maintenance.

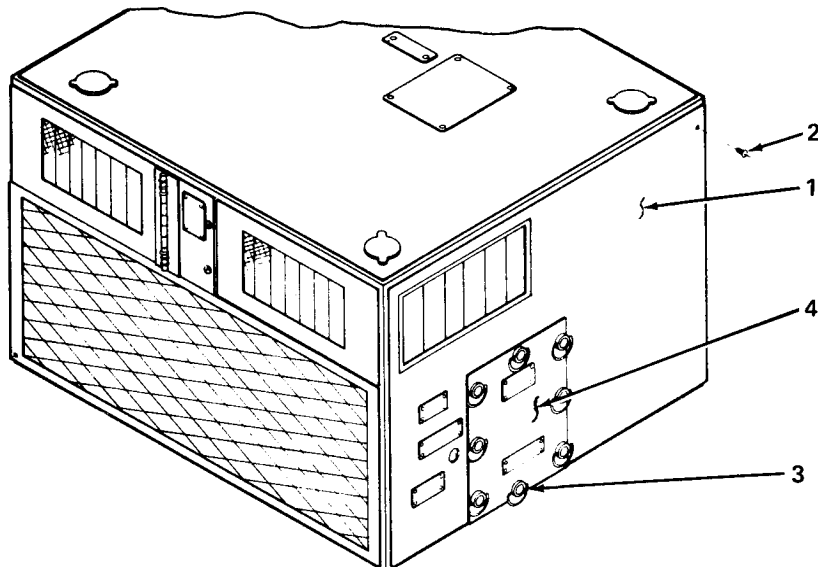
LOCATION/ITEM

ACTION

REMARKS

REMOVAL

1. Left Side Panel
 - a. Remove twenty-nine screws (2) securing left side panel (1) to frame.
 - b. Remove left side panel.
 - c. Loosen bottom center turnlock fastener (3) on maintenance panel (4).

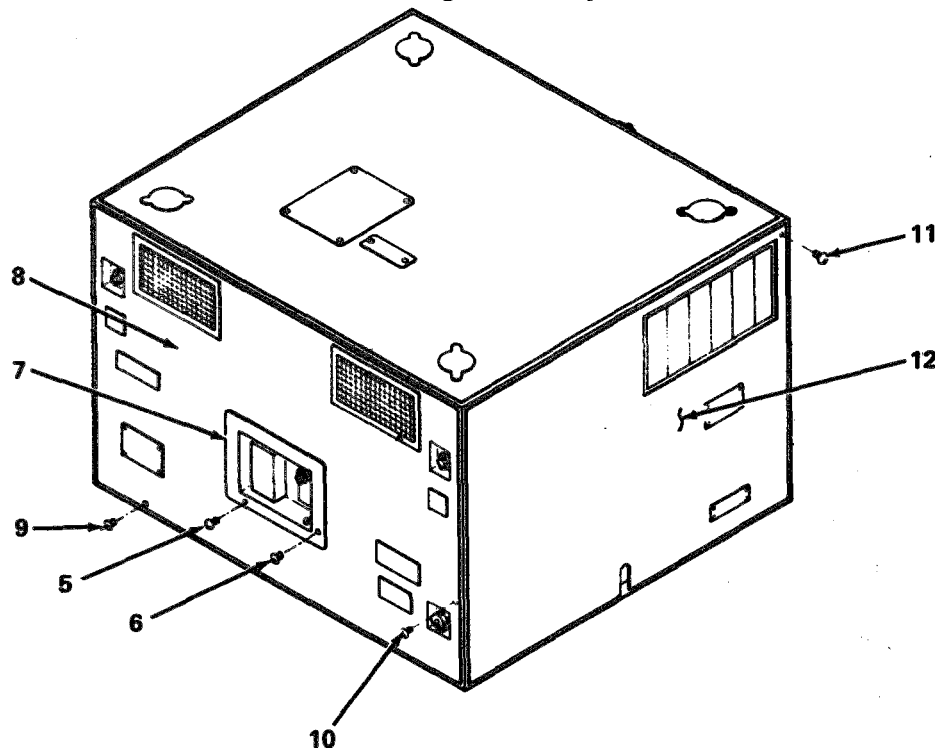


QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|---------------------|---|--|
| 2. Control Box | <ul style="list-style-type: none"> a. Remove four screws (5) and four screws (6) securing control box (7) to front panel (8) and frame. b. Disconnect electrical connector (P-6). c. Remove control box. | |
| 3. Front Panel | <ul style="list-style-type: none"> a. Remove twenty-three screws (9) and two screws (10) securing front panel to frame. b. Remove front panel. | |
| 4. Right Side Panel | <ul style="list-style-type: none"> a. Remove thirty-one screws (11) securing right side panel (12) to frame. b. Remove right side panel. | |



- | | |
|------------------------------------|---|
| 5. Condenser Fan Motor and Housing | Remove in accordance with paragraph 4-20. |
| 6. Junction Box | Remove in accordance with paragraph 4-24. |

QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

7. Quench Valve

WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the quench valve.

NOTE

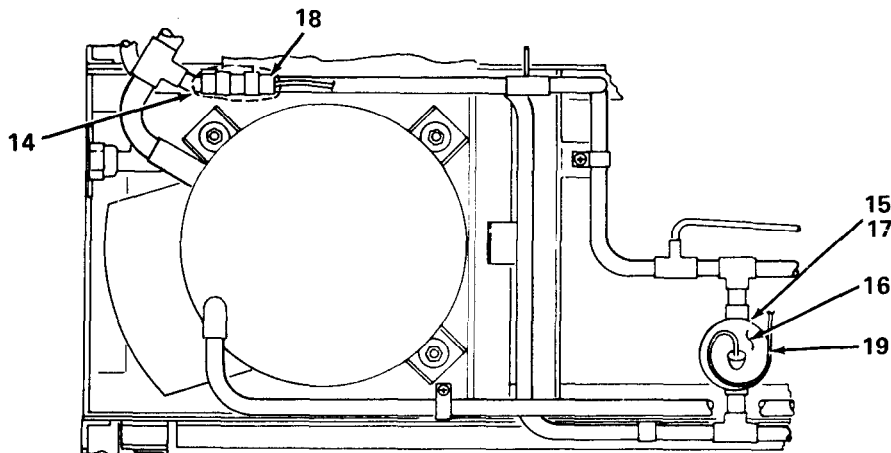
Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge the system in accordance with paragraph 5-12.

NOTE

Note position of bulb on removal and be sure to replace in same position.

- b. Remove insulation (14) and band clamps from sensing bulb (18). Carefully detach bulb and capillary tube.
- c. Remove two cap screws (15) securing the power assembly (16) to the flanged base (17).
- d. Remove the power assembly, capillary tube (19) and sensing bulb (18).



QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

7. Quench Valve

NOTE

Replace flanged base only if damaged.

- e. Debraze copper tubing in accordance with paragraph 5-15 at inlet and outlet.

CAUTION

Maintain a 1-2 cpm (01-0.2M3/MIN) flow of dry nitrogen through the refrigeration system to prevent oxidation and scaling when brazing or debrazing components.

ADJUSTMENT

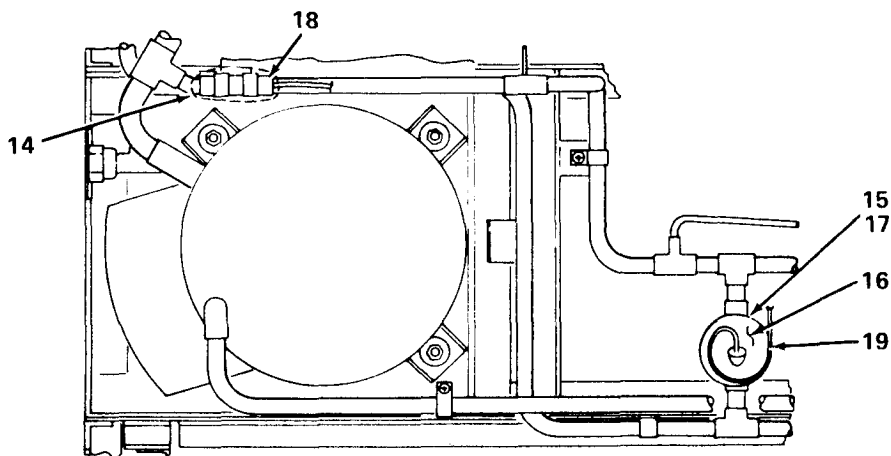
- 8. Quench Valve
 - a. Adjust the valve by removing the cap and turning the slotted adjustment stem. Turn counter-clock wise to increase the flow.

QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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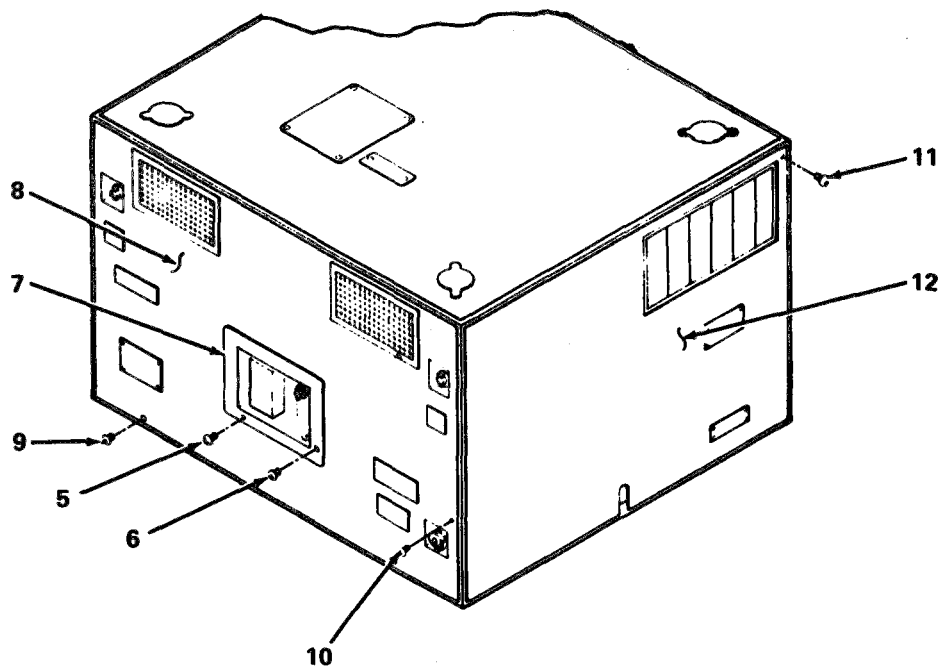
INSTALLATION

- | | | |
|-----------------|---|--|
| 9. Quench Valve | <p>a. Braze in accordance with paragraph 5-15.</p> <p>b. Install power assembly (16) on flanged base, being careful to fit lugs on the cage assembly into the cavities of the power assembly.</p> <p>c. Secure the flanged base (17) to the power with two cap screws (15).</p> <p>d. Wrap the capillary tube (19) with insulating tape (Item 6, table D-1), being careful to avoid kinking the tube.</p> <p>e. Carefully install the sensing tube (18) to its position on the suction line. Clamp in position to suction line. Cover suction line, sensing bulb and clamps with insulating material (Item 20, table D-1)</p> <p>f. Carefully form the capillary tube along adjacent piping.</p> <p>g. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18.</p> | |
|-----------------|---|--|



QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
10. Junction Box	Install in accordance with paragraph 4-24.	
11. Condenser Fan Motor and Housing	Install in accordance with paragraph 4-20.	
12. Right Side Panel	<ul style="list-style-type: none"> a. Align holes in right side panel (12) with holes in frame. b. Secure right side panel with thirty-one screws (11). 	
13. Front Panel	<ul style="list-style-type: none"> a. Align holes in front panel (8) with holes in frame. b. Secure front panel with twenty-three screws (9) and two screws (10). 	
14. Control Box	<ul style="list-style-type: none"> a. Connect electrical connector (P-6). b. Align holes in control box (7) with holes in front panel and frame. c. Secure control box with four screws (5) and four screws (6). 	

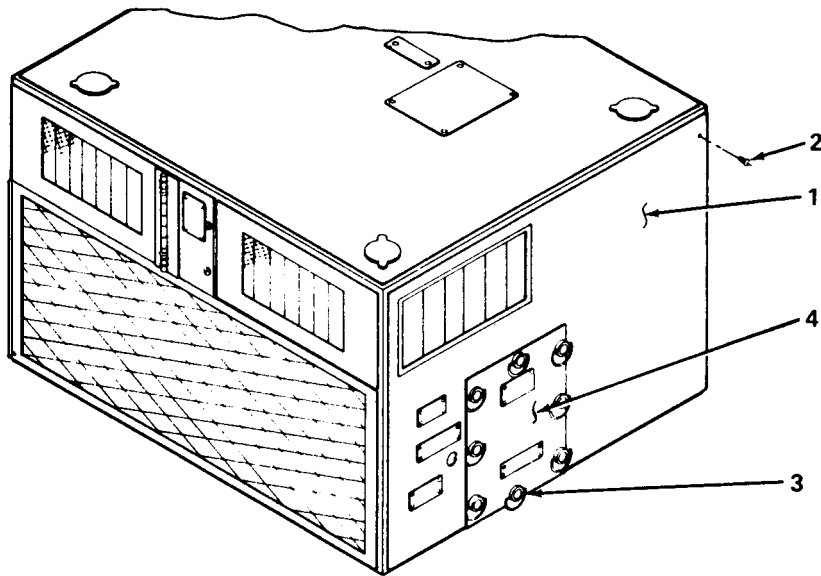


QUENCH VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|---------------------|--|--|
| 15. Left Side Panel | <ul style="list-style-type: none"> a. Align holes in left side panel (1) with holes in frame. b. Secure left side panel with twenty-nine screws (2). c. Tighten bottom center turnlock fastener (3) on maintenance panel (4). | |
|---------------------|--|--|



16. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-32 RECEIVER (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

2. Receiver

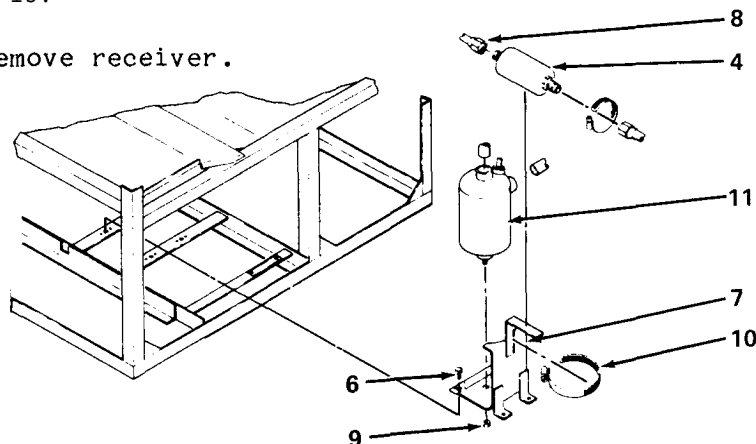
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the receiver.

NOTE

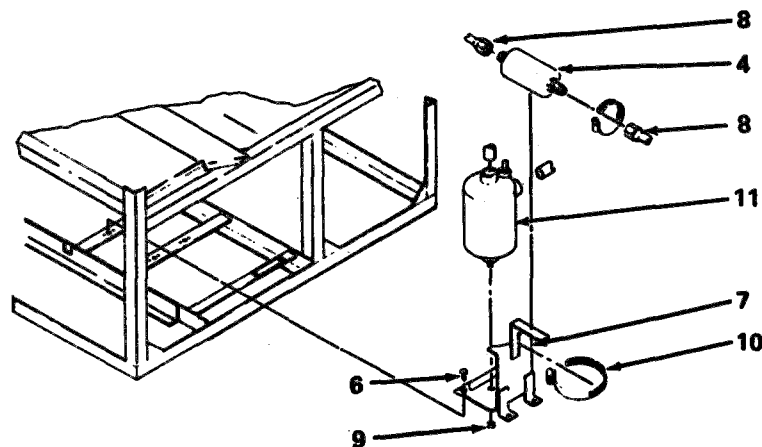
Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge the system in accordance with paragraph 5-12.
- b. Remove flare nut (8) on drier (4).
- c. Remove four screws (6) securing receiver mounting bracket (7) to frame.
- d. Remove drier and receiver assembly.
- e. Remove one nut (9) securing receiver to receiver mounting bracket.
- f. Remove mounting band (10) from receiver (11) and bracket.
- g. Debraze receiver in accordance with paragraph 5-15.
- h. Remove receiver.



5-32 RECEIVER (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
3. Receiver	<ul style="list-style-type: none"> a. Align receiver (11) with receiver mounting bracket (7). b. Secure receiver to receiver mounting bracket with one lock nut (9). c. Braze receiver in accordance with paragraph 5-15. d. Install band clamp (10) around receiver and receiver mounting bracket. e. Tighten band clamp. f. Align receiver and receiver mounting bracket with holes in frame. g. Secure receiver and receiver mounting bracket to frame with four screws (6). h. Braze receiver in accordance with paragraph 5-15. i. Align new drier (4) with flare nuts (8) and tighten both flare nuts and clamp. j. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. 	

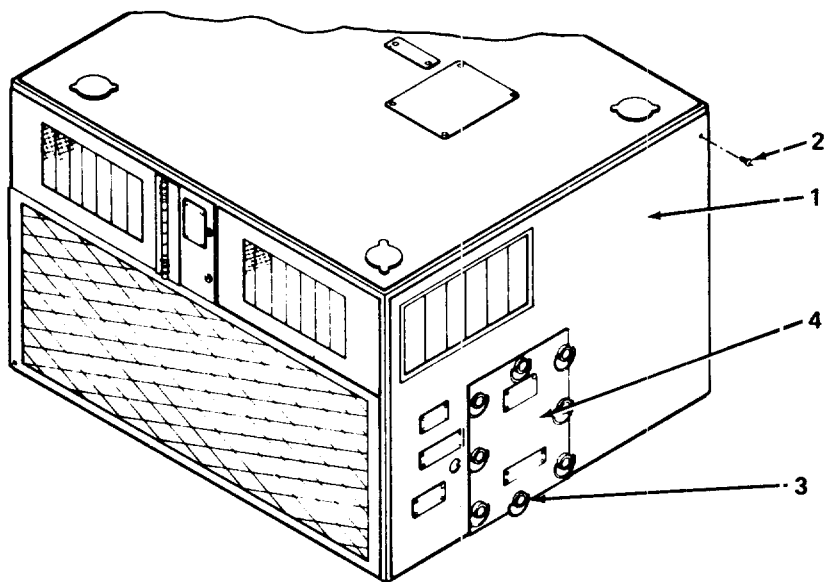


5-32 RECEIVER (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

4. Maintenance Panel
- a. Align holes in maintenance panel (2) with holes in left side panel (3).
 - b. Secure maintenance panel with eight turnlock fasteners (1).



5. Pressure Test
- Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-33 PRESSURE RELIEF VALVE

This task Covers:

- a. Removal
- b. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

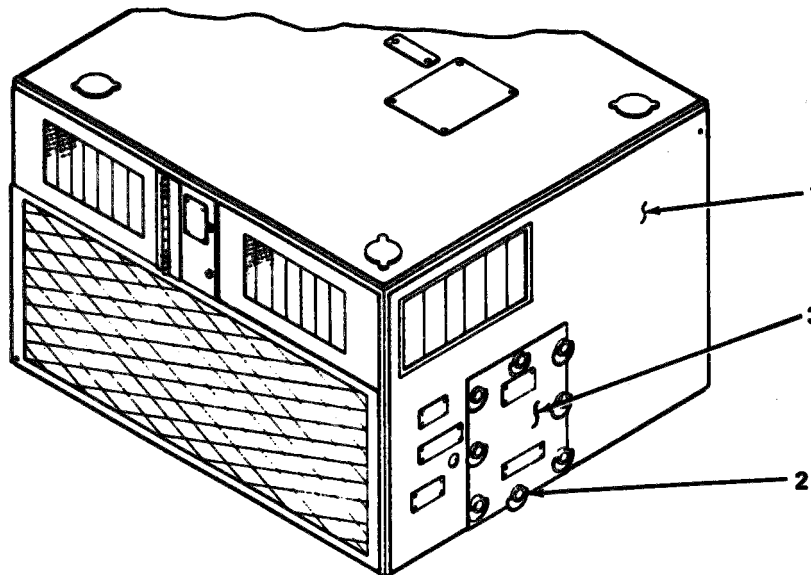
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioners OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|----------------------|---|--|
| 1. Maintenance Panel | <ul style="list-style-type: none"> a. Remove eight turnlock fasteners (2) securing maintenance panel (3) to frame and left side panel (1). b. Remove maintenance panel. | |
|----------------------|---|--|



PRESSURE RELIEF VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

2. Pressure Relief Valve

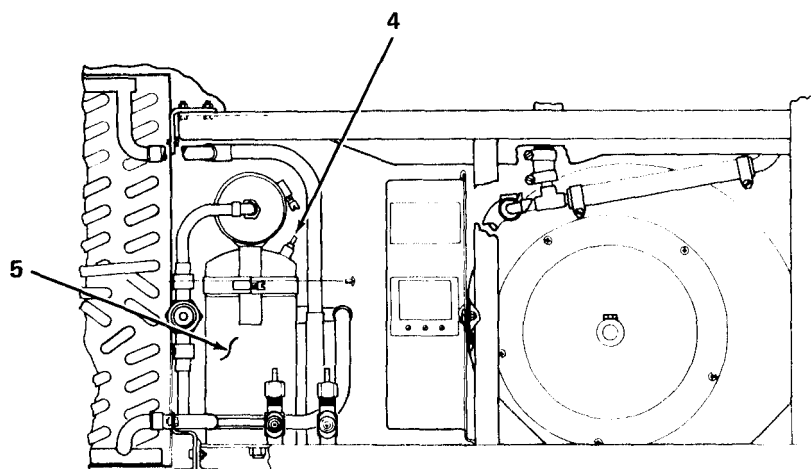
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the pressure relief valve.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge the system in accordance with paragraph 5-12.
- b. Loosen pressure relief valve (4) from receiver (5).
- c. Remove pressure relief valve.

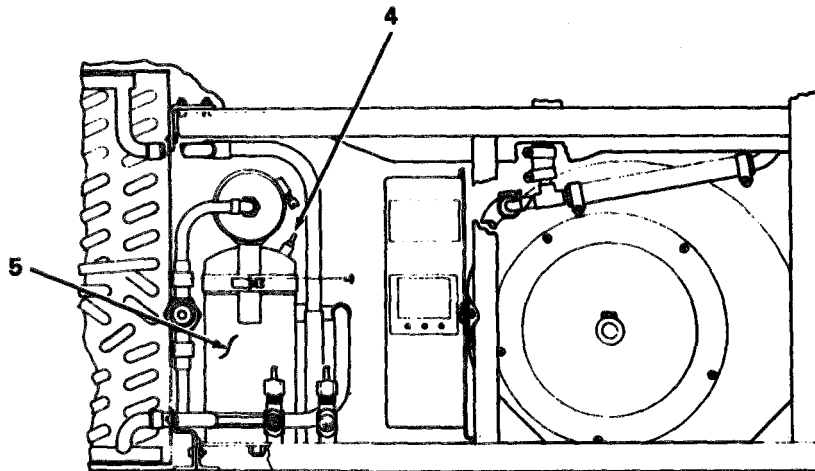


PRESSURE RELIEF VALVE (CONT.)

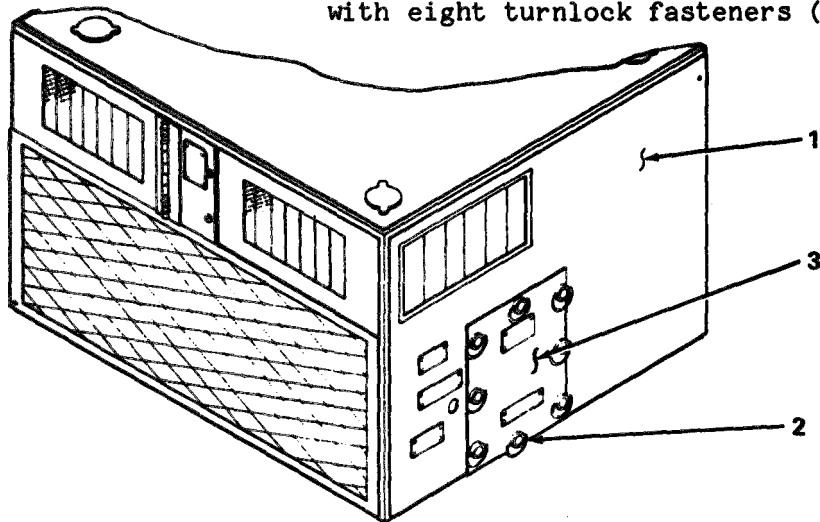
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|--------------------------|--|--|
| 3. Pressure Relief Valve | <ul style="list-style-type: none"> a. Align pressure relief valve (4) with receiver (5). b. Secure pressure relief valve to receiver. c. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. | |
|--------------------------|--|--|



- | | | |
|----------------------|---|--|
| 4. Maintenance Panel | <ul style="list-style-type: none"> a. Align maintenance panel (3) with holes in left side panel (1). b. Secure maintenance panel to left side panel with eight turnlock fasteners (2). | |
|----------------------|---|--|



- | | | |
|------------------|--|--|
| 5. Pressure Test | <p>Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.</p> | |
|------------------|--|--|

5-34 SIGHT GLASS

This task covers:

- a. Removal
- b. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

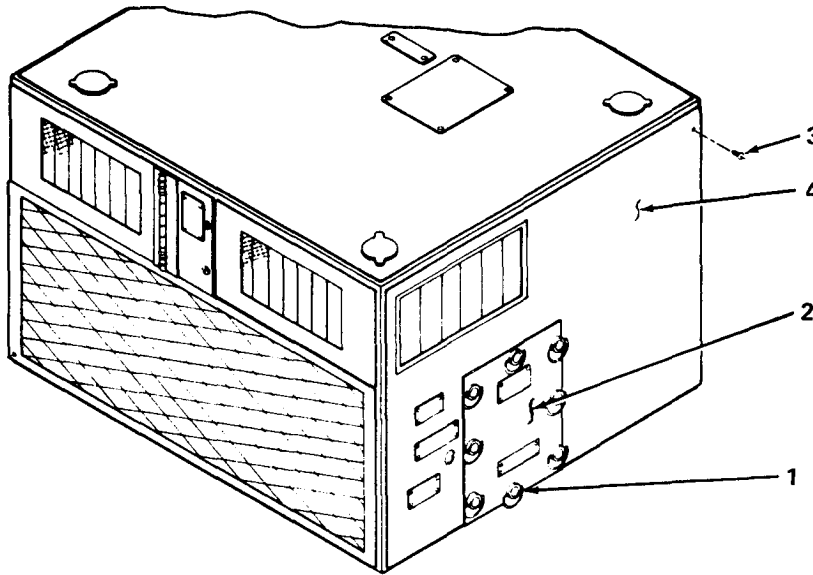
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioners OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

1. Left Side Panel
 - a. Loosen bottom center turnlock fastener (1) on maintenance panel (2).
 - b. Remove twenty-seven screws (3) securing left side panel (4) to frame.
 - c. Remove left side panel and maintenance panel.



SIGHT GLASS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

2. Sight Glass

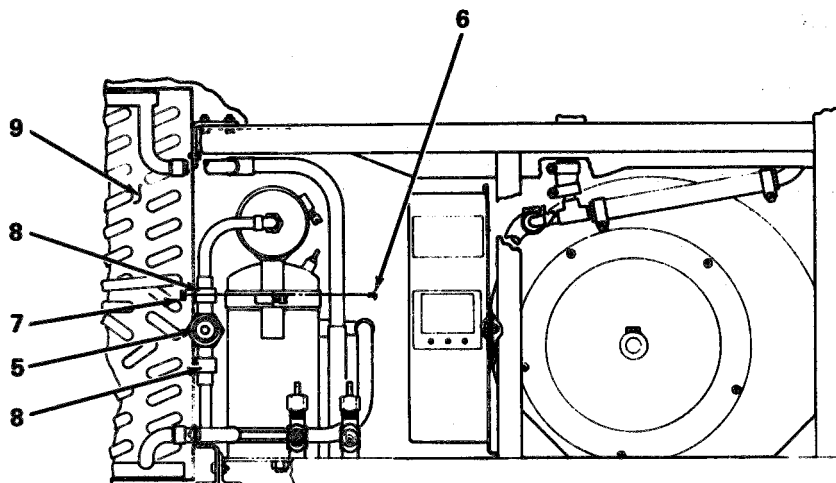
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the sight glass.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Remove two screws (6), two locknuts (7) and two clamps (8) securing sight glass (5) to condenser coil (9).
- b. Remove clamps from sight glass.
- c. Discharge the system in accordance with paragraph 5-12.
- e. Debraze in accordance with paragraph 5-15.
- f. Remove sight glass.

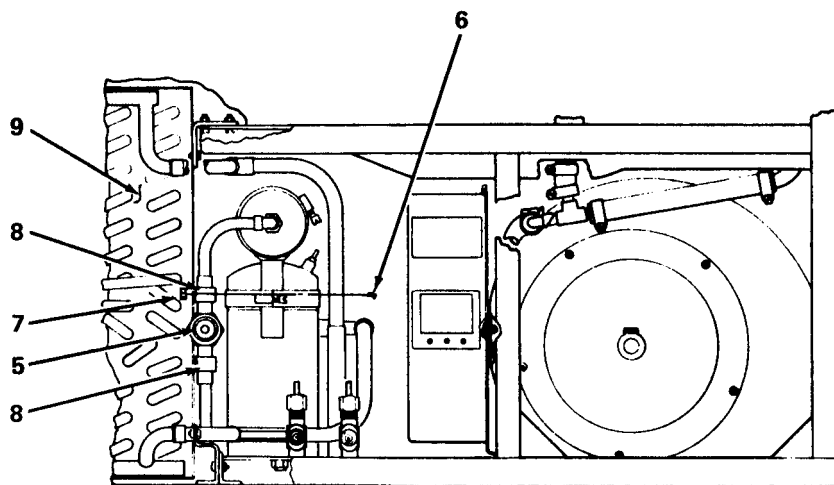


SIGHT GLASS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|----------------|--|--|
| 3. Sight Glass | <ul style="list-style-type: none"> a. Braze sight glass in accordance with paragraph 5-15. b. Align sight glass (5) with condenser coil (9). c. Secure sight glass to condenser coil with two screws (6), two locknuts (7) and two clamps (8). d. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. | |
|----------------|--|--|

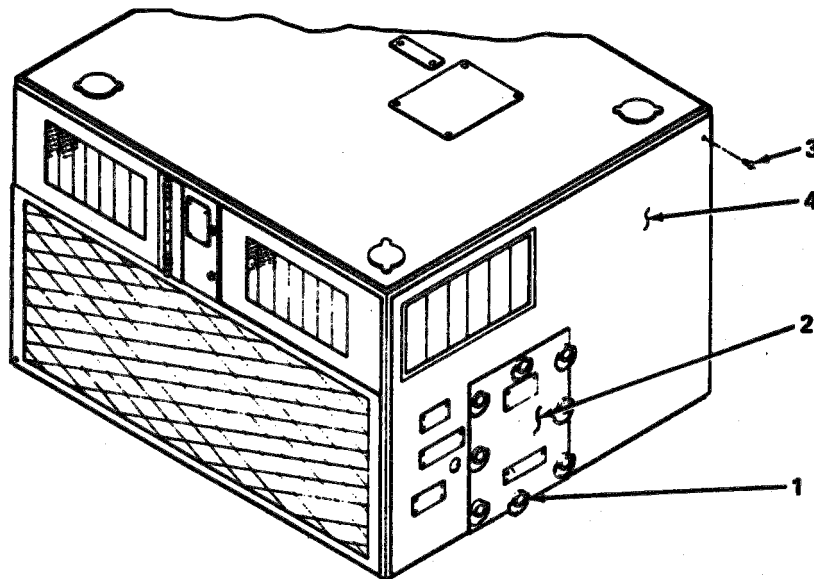


SIGHT GLASS (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|--------------------|---|--|
| 4. Left Side Panel | <p>a. Align left side panel (4) and maintenance panel (2) with frame.</p> <p>b. Secure left side panel to frame with twenty-seven screws (3).</p> <p>c. Tighten bottom center turnlock fastener (1) on maintenance panel.</p> | |
|--------------------|---|--|



5. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-35 SOLENOID VALVE

This task covers:

- Removal
- a. Inspection
- c. Test
- d. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

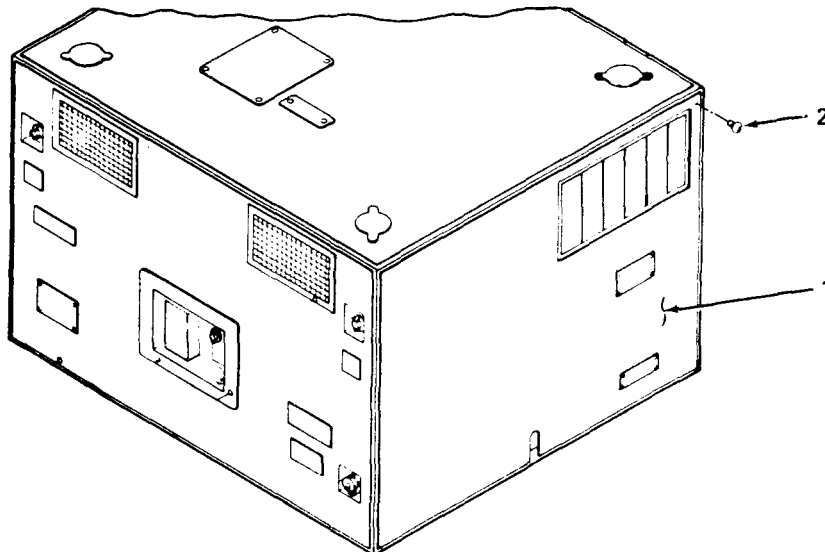
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioners OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Right Side Panel
 - a. Remove thirty-one screws (2) securing right side panel (1) to frame.
 - b. Remove right side panel.



SOLENOID VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

2. Solenoid Valve

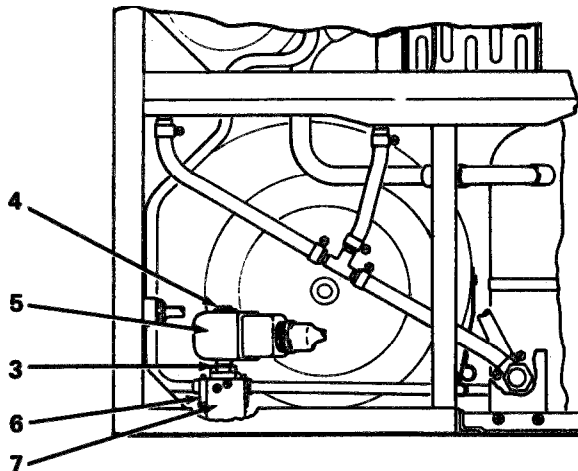
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the solenoid valve.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Disconnect solenoid valve electrical connector (P-8).
- b. Remove retaining nut (4), washer, nameplate and lift over the coil (5) from solenoid body (3).
- c. Remove two U-bolts (6) securing solenoid valve to solenoid valve mounting bracket (7).
- d. Discharge the system in accordance with paragraph 5-12.
- e. Debraze solenoid valve in accordance with paragraph 5-15.
- f. Remove solenoid valve base.



SOLENOID VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

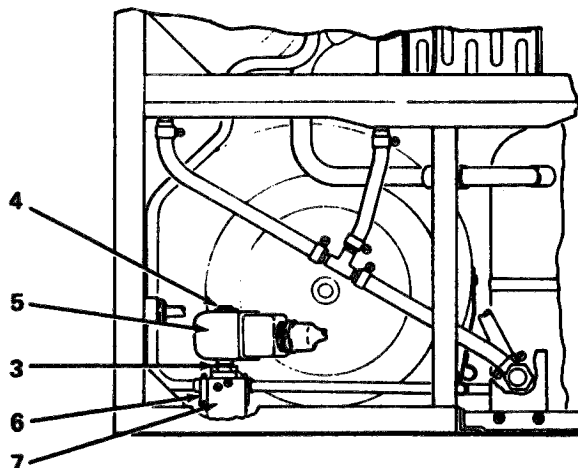
- | | | |
|-------------------|----------------------------------|--|
| 3. Solenoid Valve | a. Inspect for damage. | |
| | b. Repair or replace if damaged. | |

TESTING

- | | | |
|-------------------|--|--|
| 4. Solenoid Valve | a. Using ohmmeter, or other continuity testing device check for continuity between pins A and B on electrical connector J-8. | |
| | b. If continuity is does not exist, solenoid valve is defective. | |
| | c. Replace if defective. | |

SOLENOID VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
5. Solenoid Valve	<ul style="list-style-type: none"> a. Braze in accordance with paragraph 5-15. b. Align solenoid valve (3) with solenoid valve mounting bracket (7). c. Secure solenoid valve to solenoid valve mounting bracket with two U-bolts (6). d. Align coil (5) with solenoid valve. e. Secure coil to solenoid valve with nameplate, washer and retaining nut (4). f. Connect electrical connector (P-8). g. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. 	



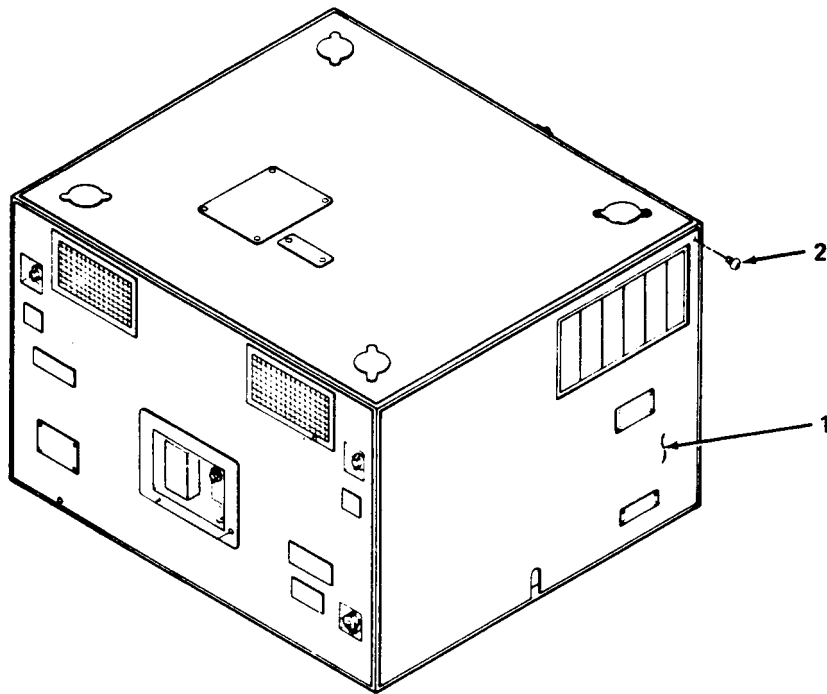
SOLENOID VALVE (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|---------------------|---|--|
| 6. Right Side Panel | a. Align holes in right side panel (1) with holes in frame.

b. Secure right side panel with thirty-one screws (2). | |
|---------------------|---|--|



- | | | |
|------------------|---|--|
| 7. Pressure Test | Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24. | |
|------------------|---|--|

5-36 COMPRESSOR

This task covers:

- a. **Removal**
- b. Test
- c. Repair
- d. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

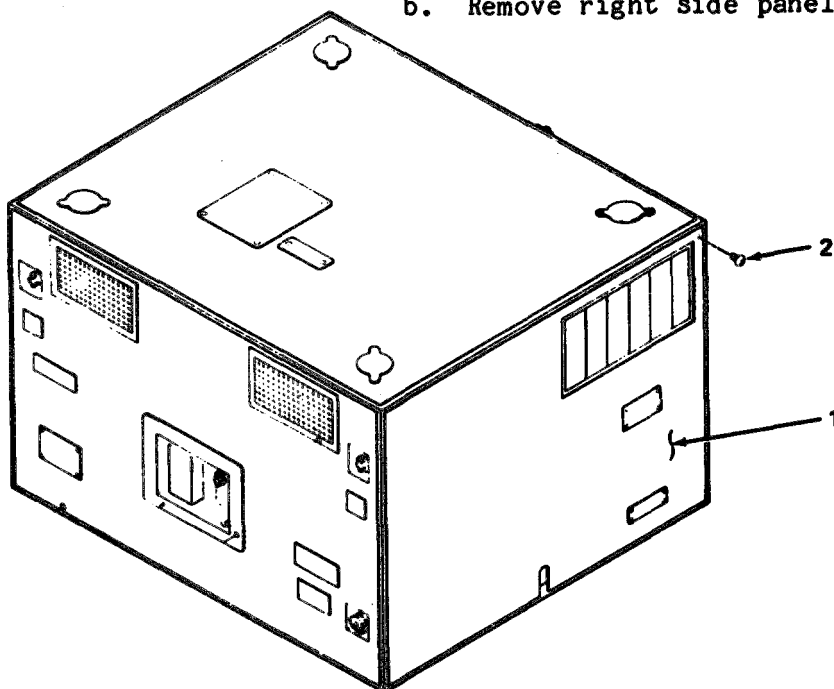
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioners OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|---------------------|---|--|
| 1. Right Side Panel | <ul style="list-style-type: none"> a. Remove thirty-one screws (2) securing right side panel (1) to frame. b. Remove right side panel. | |
|---------------------|---|--|



COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
2. Right Side Condensate Drain Line	Remove in accordance with paragraph 4-21.	
3. Compressor		

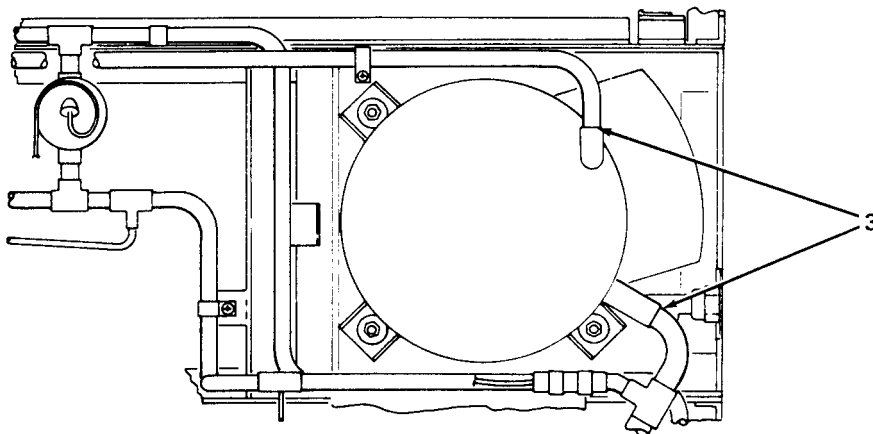
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the compressor.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Disconnect electrical connector (P-1) from compressor.
- b. Remove rubber insulation from suction line.
- c. Discharge system in accordance with paragraph 5-12.
- d. Debraze compressor (3) in accordance with paragraph 5-15.



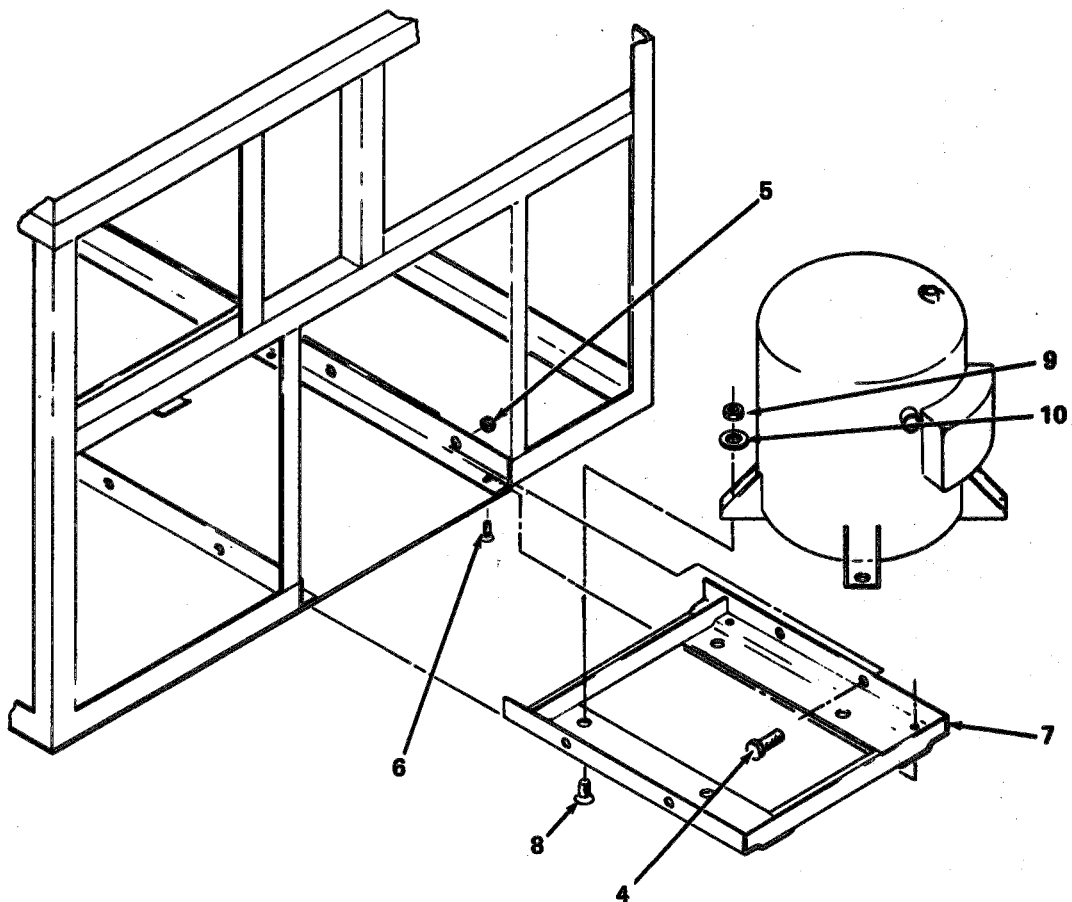
COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

3. Compressor

- e. Remove four bolts (4) and nuts (5) and four counter sunk screws (6) securing compressor tray (7) to frame.
- f. Remove compressor tray and compressor.
- g. Remove four bolts (8) and nuts (9) and shoulder washers(10) securing compressor to compressor tray.
- h. Remove compressor from compressor tray.



COMPRESSOR (CONT.)

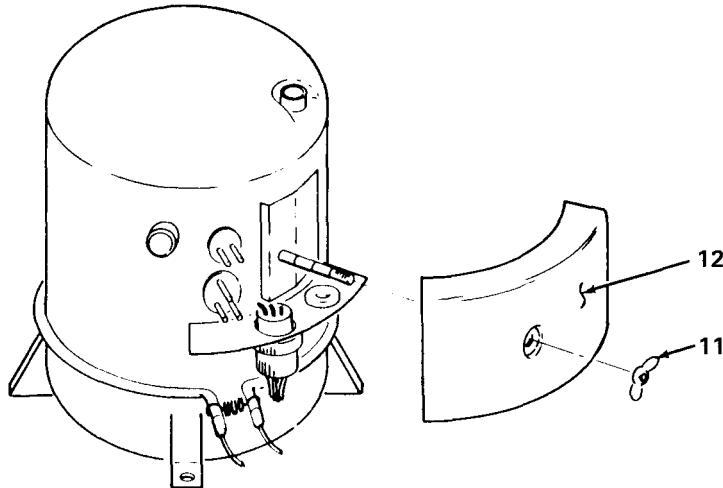
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- | | | |
|---------------|----------------------------------|--|
| 4. Compressor | a. Inspect for damage. | |
| | b. Repair or replace if damaged. | |

TEST

- | | | |
|---------------|--|--|
| 5. Compressor | a. Disconnect plug (P1), from the electrical junction box on the compressor. | |
| | b. Remove wing nut (11) securing compressor junction box cover (12) to compressor. | |
| | c. Remove compressor junction box cover. | |



CAUTION

Schematic is not correct red, white and black wires are yellow wires striped with red, white and black respectively.

- | |
|---|
| d. Using a multimeter check for continuity. |
|---|

1. COMPRESSOR MOTOR

Test compressor receptacle pins A-B, A-C, B-C, and D-E. Continuity should be indicated. Test points A, B and C to compressor casing or common ground. No continuity should be indicated. Replace compressor that does not meet continuity requirements.

COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
	2. THERMAL OVERLOAD (Compressor)	
	a. Check for the lack of continuity between the two compressor thermal overload pins.	
	b. Check for grounding between the two thermal overload pins and compressor housing. If any one of the pins indicates it is grounded to compressor housing, replace thermal overload.	
	3. CRANKCASE HEATER	
	a. Check for the lack of continuity between the two crankcase heater pins.	
	b. Check for grounding between the two crankcase heater pins and compressor housing. If any one of the pins indicates it is grounded to compressor housing, replace crankcase heater.	
	4. THERMAL OVERLOAD (Crankcase heater)	
	a. Check for the lack of continuity between the two crankcase heater thermal overload pins.	
	b. Check for grounding between the two crankcase heater thermal overload pins and compressor housing. If any one of the pins indicates it is grounded to compressor housing, replace crankcase heater thermal overload.	
	e. Install gauges in accordance with paragraph 5-13.	
	f. Check system pressures in accordance with Table 5-2.	
	g. If suction pressure is high and discharge pressure is low replace compressor.	

COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

TEST

6. COMPRESSOR MOTOR BURNOUT

Burnout of a compressor motor is indicated by lack of continuity of the motor windings and the condition of compressor oil, which must be determined after the compressor has been removed from the refrigeration system. Causes of compressor motor burnout include the following:

- a. Low line voltage, which causes motor windings to overheat. Before burning out completely, the overheated windings cause chemical breakdown of the refrigerant and the oil to form sludge and other system contaminate.
- b. Loss of refrigerant. An inadequate charge of refrigerant gas in the system reduces the amount of cooling gas within the compressor, resulting in gradual overheating of the motor and failure of the winding.
- c. High Head Pressure. High head pressures can be caused by clogged or dirty condenser coils or screens, or by an inoperative condenser fan. High head pressure requires the compressor to work harder, creating additional heat which ultimately can result in motor burnout. Poor ventilation around the condenser, and extremely high ambient temperatures can also cause motor failures.
- d. Moisture in system. Leakage of air into the refrigeration system starts a chain reaction which can result in motor burnout. Air contains oxygen and moisture which combine with refrigerant gas to form hydrochloric and hydrofluoric acids. These combine with compressor oil to form an acid sludge which is carried throughout the system, and which attacks the motor windings, causing short circuits and burnout.

COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>TEST</u>		

7. DIAGNOSING COMPRESSOR MOTOR BURNOUT

It is important to diagnose the type of compressor motor failure for two reasons. Simple failure, without motor burnout, does not require the extensive cleaning of the entire refrigeration system that burnout requires. Also, motor burnout indicates other problems that have contributed to the failure, and these problems must be corrected or avoided to prevent repetition of the burnout. After removal of a bad compressor from the refrigeration system, remove all external tubing and tip the compressor towards the discharge port to drain a small quantity of oil into a clear glass container. If the oil is clean and clear, and does not have an acrid smell, the compressor did not fail because of motor burnout. If the oil is black, contains sludge and has an acrid odor, the compressor failed because of motor burnout, and the refrigeration system must be cleaned to prevent residual contaminants from causing repeated burnouts when the compressor is replaced.

8. CLEANING OUT THE REFRIGERATION SYSTEM AFTER BURNOUT

WARNING

Avoid contact with refrigerant. Acid burns could result from contact with refrigerant.

You must clean the entire refrigeration system after a burnout has occurred, since contaminants will have been carried to many corners and restrictions in the piping and fittings. These contaminants will soon mix with new refrigerant gas and compressor oil to cause repeated burnouts. To clean the system thoroughly, act as follows:

- a. Remove the filter-drier in accordance with paragraph 5-29 and blow down each leg of the refrigeration system. To do this, connect a cylinder of dry nitrogen (Item 8, table D-1) to each filter-drier connection, in turn, and open the cylinder shutoff valve for at least 30 seconds at 50 psig (3.5 kg cm²) pressure.
- b. Connect the two filter-drier fittings with a jumper locally manufactured from refrigerant tubing and fittings, and install a pump, reservoir and filter in place of the compressor.
- c. Disassemble expansion valve and quench valve and temporarily remove the valve cages. Re-install shell of power assembly, using a gasket between power assembly and body to prevent leakage. Tag and retain valve cages for use at reassembly.
- d. Disassemble solenoid valve in accordance with paragraph 5-35.

COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

TEST

9. CLEANING OUT THE REFRIGERATION SYSTEM AFTER BURNOUT (CONT.)

NOTE

An unused filter-drier or other suitable medium may be used as the filter.

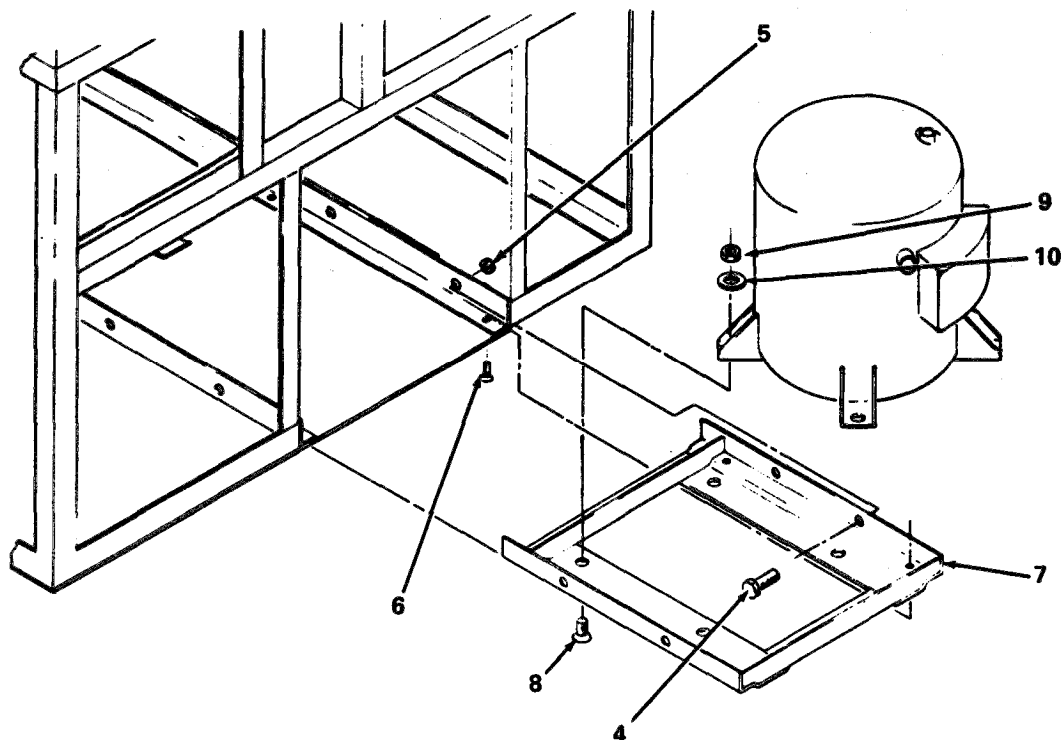
- d. Fill reservoir with fluorocarbon refrigerant, (Item 10, table D-1) and start the pump. Continue filling the reservoir with refrigerant, until it begins to pour out of the return line. Continue flushing for at least 15 minutes.
- e. Reverse the pump connections, replace the filter with a new filtering medium, and back-flush the system for an additional 15 minutes.
- f. Remove the pump, reservoir, filter and filter-drier jumper. Place an empty container below the compressor connection, and connect a cylinder of dry nitrogen (Item 8, table D-1) to each filter-drier connection in turn. Blow down each leg of the system at 50 psig (3.5 kg/cm²) for at least 30 seconds.
- g. Disassemble both expansion valves and re-install the valve cages. Install new gaskets, and assemble the valves, making sure that projections on valve cages fit in notches in valve bodies.
- h. Disconnect the dry nitrogen cylinder, and immediately install a new filter-drier, making sure that the direction of flow arrow points up. Cap or plug compressor connections if compressor is not to be installed immediately.
- i. Replace compressor in accordance with paragraph 5-35.

COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

- | | | |
|----------------|---|--|
| 10. Compressor | <ul style="list-style-type: none"> a. Align compressor (3) with holes in compressor tray (7). b. Secure compressor to compressor tray with four bolts (8), nuts (9) and shoulder washers (10). c. Slide compressor and compressor tray into unit. d. Align compressor tray with holes in frame. e. Secure compressor tray with four bolts (4) and nuts (5), and four counter-sunk screws (6) to frame. f. Braze compressor in accordance with paragraph 5-15. g. Leak check, evacuate and charge system in accordance with paragraphs 5-16 thru 5-18. h. Re-glue rubber insulation around suction line. i. Connect electrical connector (P-1) to compressor. | |
|----------------|---|--|



COMPRESSOR (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

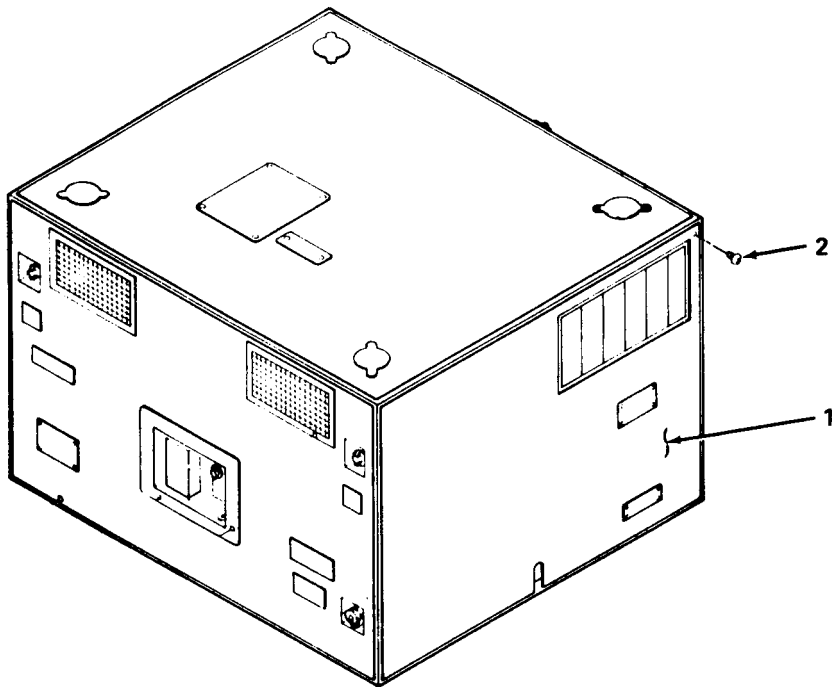
7. Right Side Condensate Drain Line.

Replace in accordance with paragraph 4-21.

8. Right Side Panel

a. Align holes in right side panel (1) with holes in frame.

b. Secure right side panel with thirty-one screws (2).



9. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-37 CONDENSER COIL

This task covers:

- a. Removal
 - b. Inspect
 - c. Installation
-

INITIAL SETUP

Test Equipment
NONE

Tools
(SC 5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

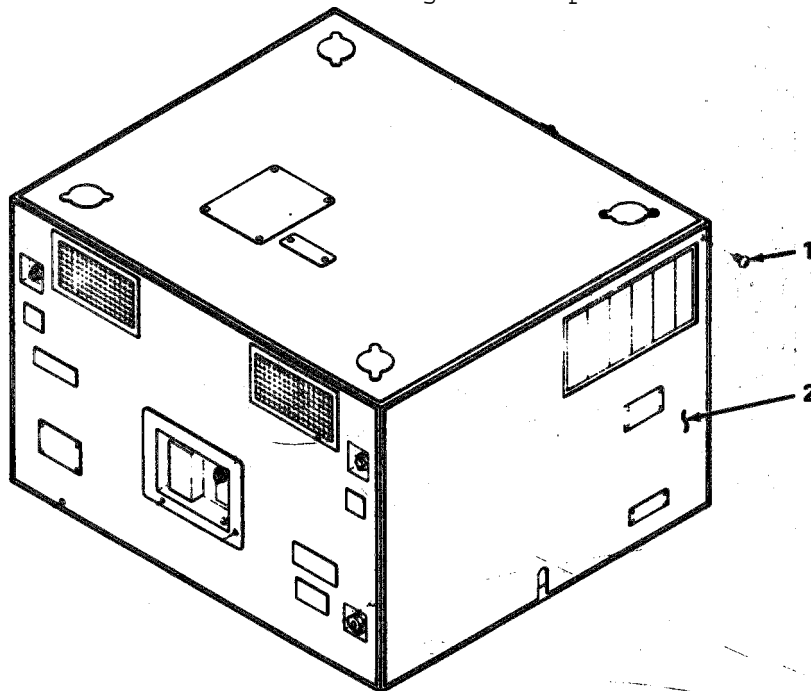
Special Enviromental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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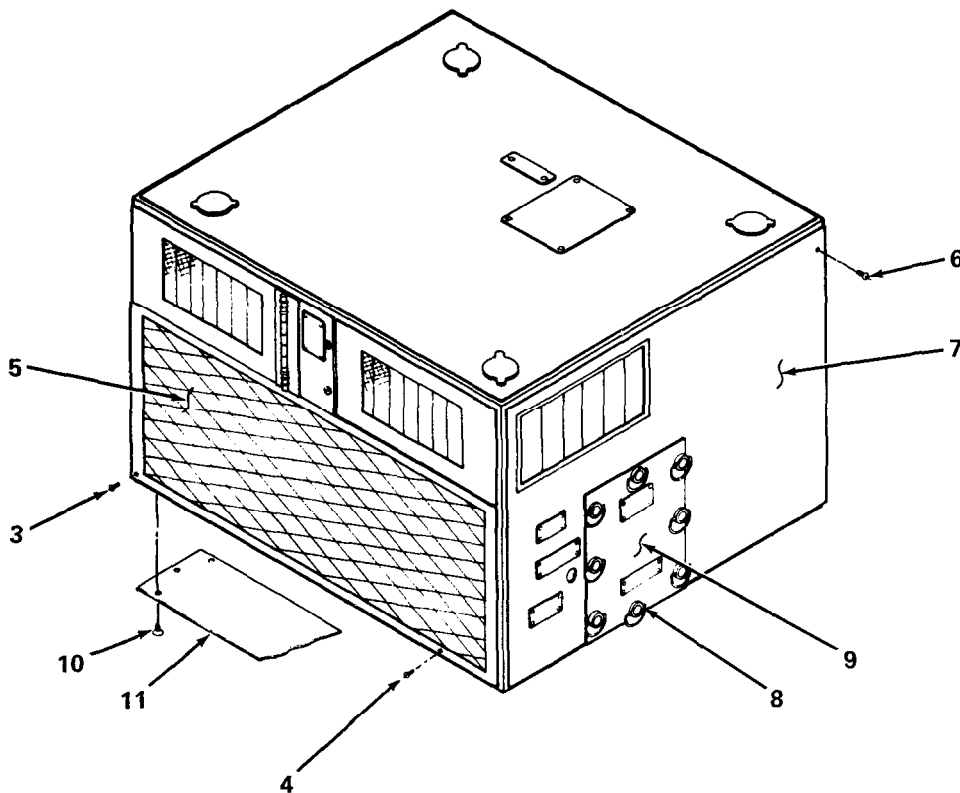
REMOVAL

- | | | |
|---------------------|---|--|
| 1. Right Side Panel | <ul style="list-style-type: none"> a. Remove thirty-one screws (1) securing right side panel (2). b. Remove right side panel. | |
|---------------------|---|--|



CONDENSER. COIL- (CONT..).

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		
2. Condenser Coil Guard	a. Remove sixteen screws (3) and two screws (4) securing condenser coil guard (5) to frame. b. Remove condenser coil guard.	
3. Left Side Panel	a. Remove twenty-seven screws (6) securing left side panel (7) to frame. b. Loosen bottom center turnlock fastener (8) on maintenance panel (9). c. Remove left side panel and maintenance panel.	
4. Condenser Coil Cover	a. Remove five screws (10) securing condenser coil cover (11) to frame. b. Remove condenser coil cover from frame.	



CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

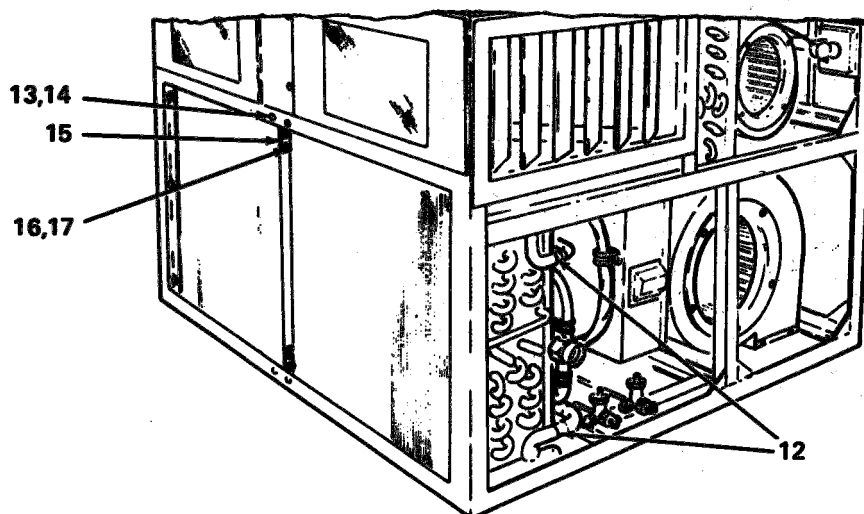
5. Condenser Coil

All refrigerant gas must be discharged from the system before proceeding with the removal of the condenser coil.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge system in accordance with paragraph 5-12.
- b. Debraze condenser coil (12) in accordance with paragraph 5-15.
- c. Remove two countersunk screws (13) and two lock nuts (14) securing outside upper condenser coil bracket (15) to frame.
- d. Remove two screws (16) and two flat washers (17) securing outside upper condenser coil bracket to condenser coil.
- e. Remove outside upper condenser coil bracket.



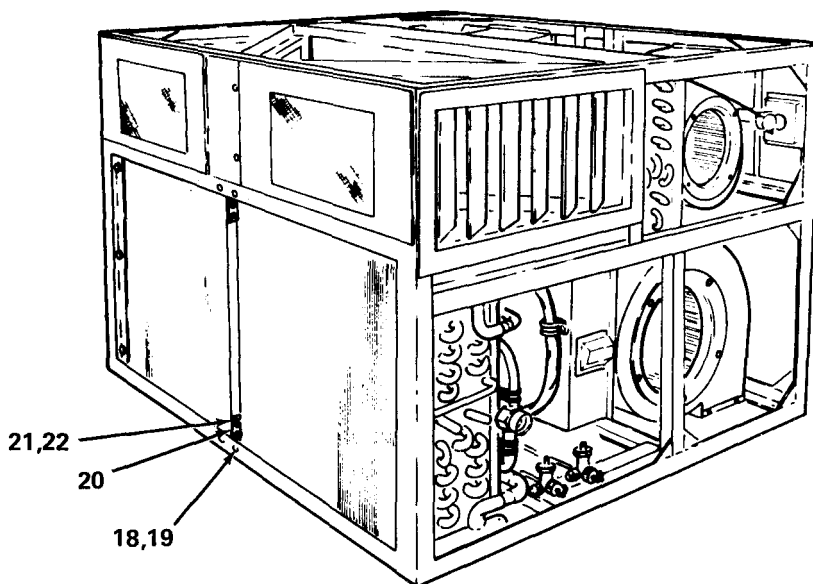
CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

5. Condenser Coil

- f. Remove two countersunk screws (18) and two lock nuts (19) securing outside lower condenser coil bracket (20) to frame.
- g. Remove two screws (21) and two flat washers (22) securing outside lower condenser coil bracket to condenser coil.
- h. Remove outside lower condenser coil bracket.



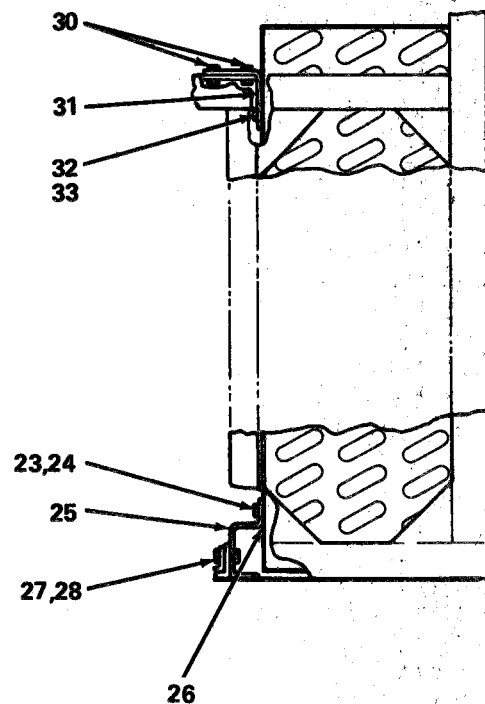
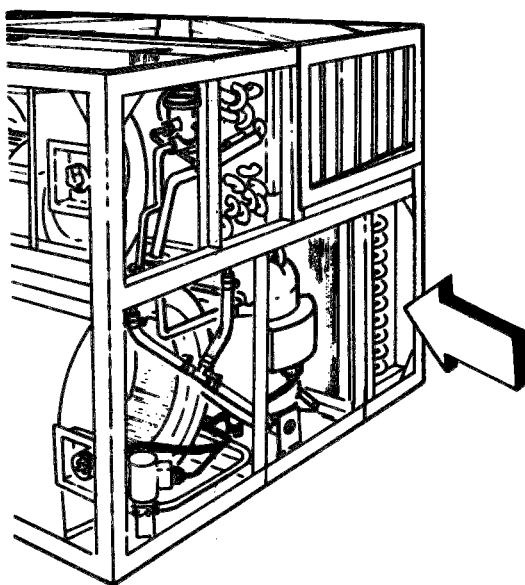
CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

5. Condenser coil

- i. Remove one screw (23) and one flat washer (24) securing right side lower condenser coil bracket (25) to condenser coil .
- j. Remove shims (26).
- k. Remove two countersunk screws (27) and two lock nuts (28) securing right side lower condenser coil bracket to frame.
- l. Remove lower inside right condenser coil bracket.
- m. Remove two screws (30) securing upper inside right condenser coil bracket (31) to frame.
- n. Remove one bolt (32) and one flat washer (33) securing upper inside right condenser coil bracket to condenser coil.
- o. Remove upper inside right condenser coil bracket from unit.



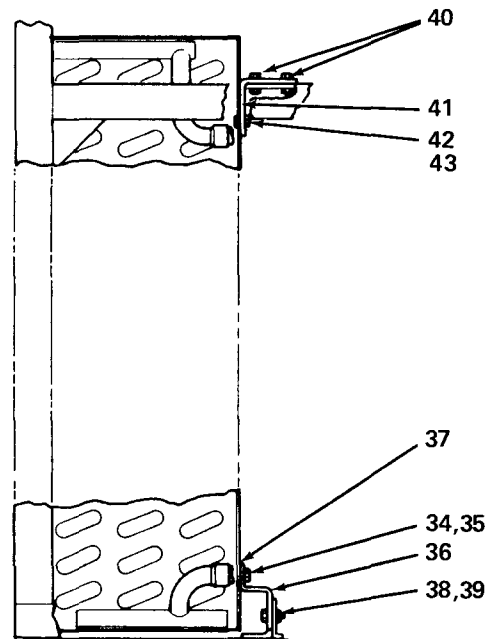
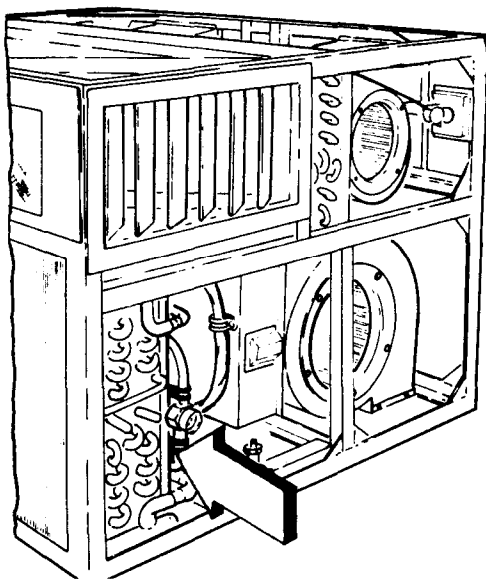
CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

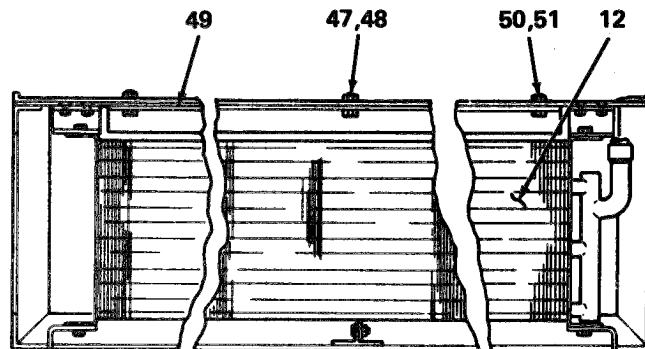
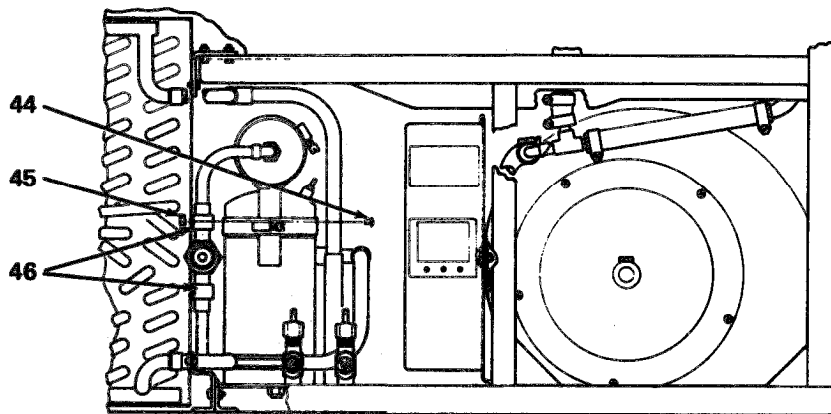
5. Condenser Coil

- p. Remove one screw (34) and one flat washer (35) securing left side lower condenser bracket (36) to condenser coil.
- q. Remove shims (37).
- r. Remove two countersunk screws (38) and two lock nuts (39) securing lower inside left condenser coil bracket to frame.
- s. Remove lower inside left condenser coil bracket.
- t. Remove two screws (40) securing upper inside left condenser coil bracket (41) to frame.
- u. Remove one bolt (42) and one flat washer (43) securing upper inside lower condenser bracket to condenser coil.
- v. Remove upper inside left condenser coil bracket from unit.



CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
5. Condenser Coil	<p>w. Remove two screws (44) and two lock nuts (45) and two clamps (46) securing sight glass to condenser coil.</p> <p>x. Remove two bolts (47) and two lock nuts (48) securing cover support (49) to frame.</p> <p>y. Remove cover support.</p> <p>z. Remove six bolts (50) and six flat washers (51) securing condenser coil (12) to frame.</p> <p>aa. Remove condenser coil from unit.</p>	



CONDENSER COIL (CONT.)

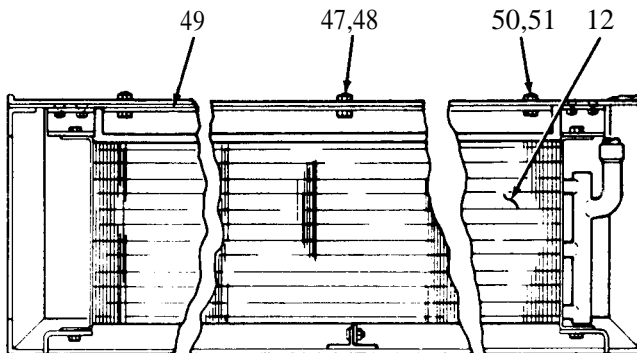
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSPECTION

- | | | |
|-------------------|----------------------------------|--|
| 6. Condenser Coil | a. Inspect for damage. | |
| | b. Repair or replace if damaged. | |

INSTALLATION

- | | | |
|-------------------|--|--|
| 7. Condenser Coil | a. Align condenser coil (12) with frame. | |
| | b. Secure condenser coil with six bolts (50) and six flat washers (51). | |
| | c. Align cover support (49) with frame. | |
| | d. Secure cover support with two bolts (47) and two lock nuts (48) to frame. | |

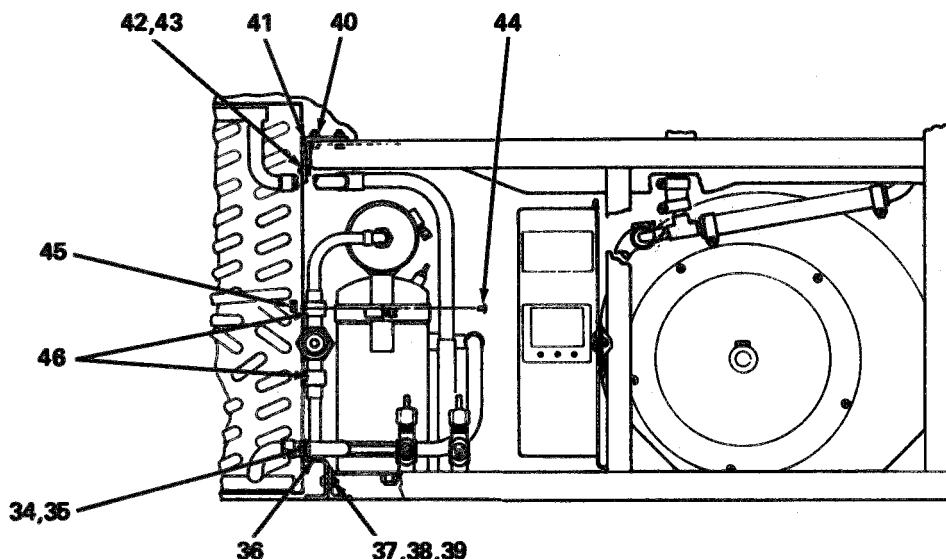


CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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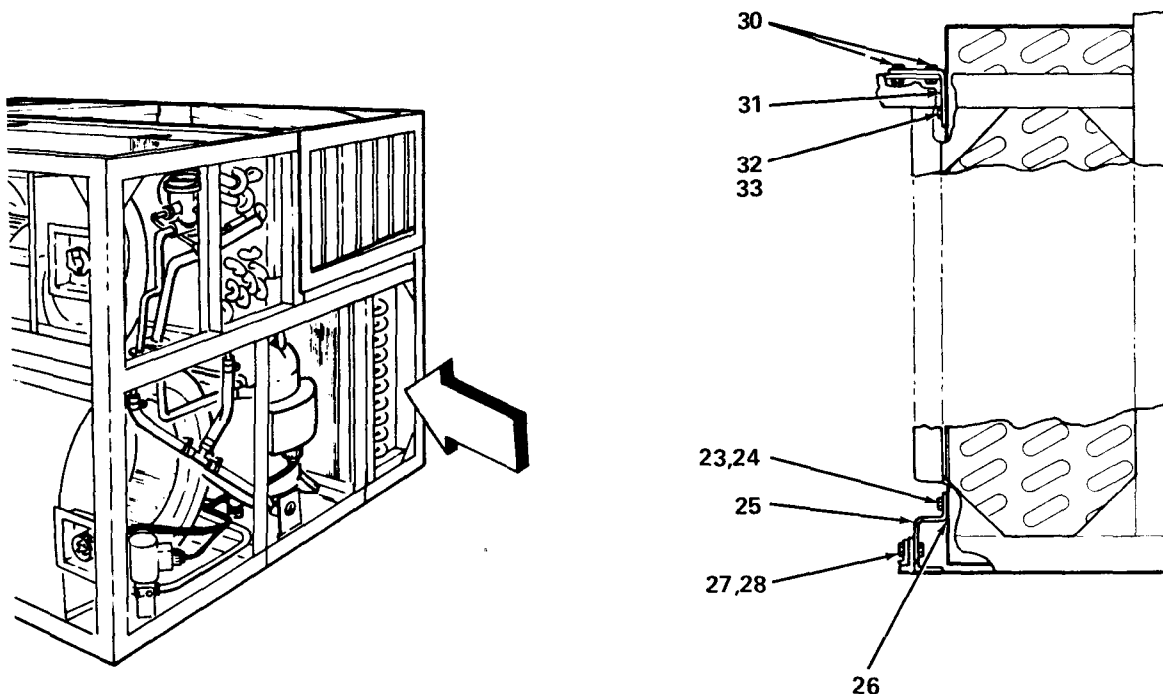
7. Condenser Coil

- e. Align two clamps (46) on sight glass with holes in condenser coil.
- f. Secure two clamps on sight glass to condenser coil with two screws (44) and two lock nuts (45).
- g. Align upper inside left condenser coil bracket (41) with condenser coil and frame.
- h. Secure upper inside left condenser coil bracket with two screws (40) to frame.
- i. Secure upper inside left condenser coil bracket with one bolt (42) and one washer (43) to condenser coil .
- j. Align lower inside left condenser coil bracket (36) with condenser coil and frame.
- k. Secure left side lower condenser coil bracket with two countersunk screws (38) and two lock nuts (39) to frame.
- l. Install shim (37) as required.
- m. Secure left side lower condenser coil bracket with one screw (34) and one flat washer (35) to condenser coil.



CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
7. Condenser Coil		
	n. Align upper inside right condenser coil bracket (31) with condenser coil and frame.	
	o. Secure upper inside right condenser coil bracket with two screws (30) to frame.	
	p. Secure upper inside right condenser coil bracket with one bolt (32) and one washer (33) to condenser coil.	
	q. Align lower inside right condenser coil bracket (25) with condenser coil and frame.	
	r. Secure right side lower condenser coil bracket with two countersunk screws (27) and two lock nuts (28) to frame.	
	s. Install shim (26) as required.	
	t. Secure right side lower condenser coil bracket with one screw (23) and one flat washer (24).	



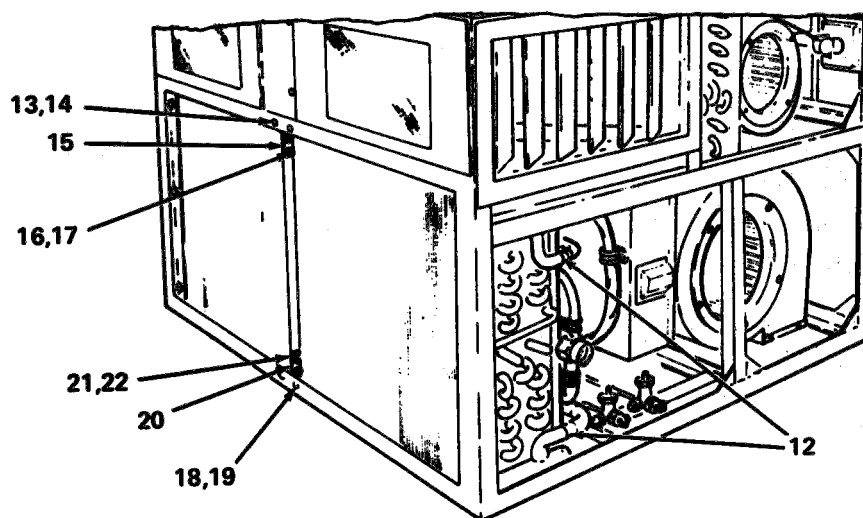
CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

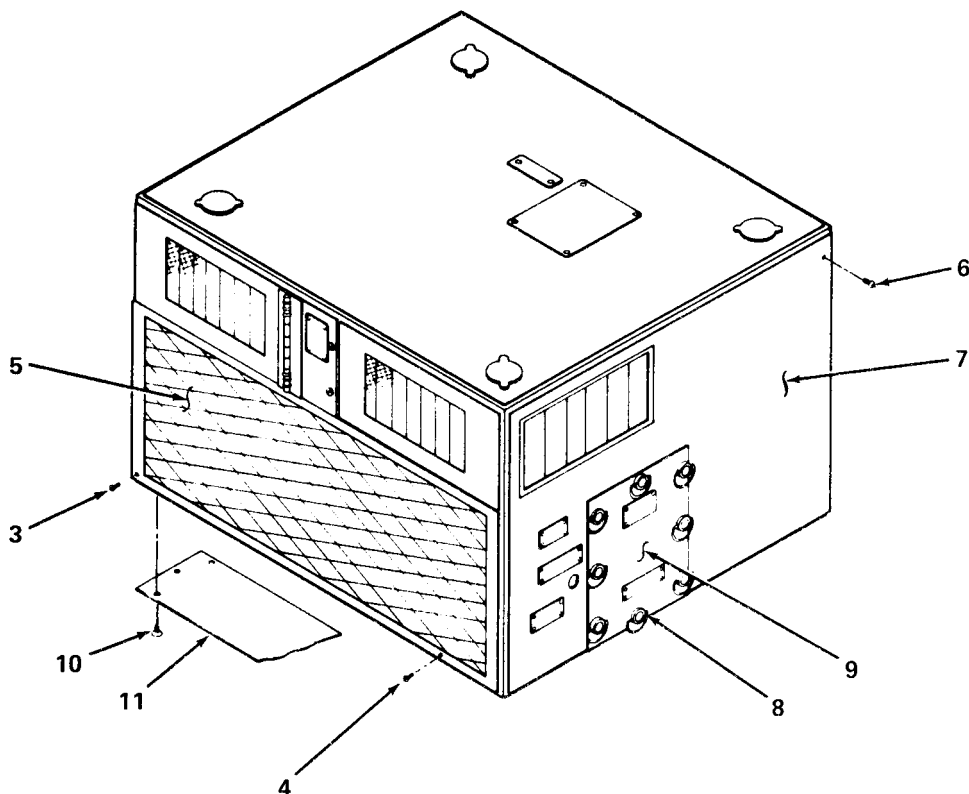
7. Condenser Coil

- u. Align outside lower condenser coil bracket (20) to frame and condenser coil.
- v. Secure outside lower condenser coil bracket to frame with two countersunk screws (18) and two lock nuts (19).
- w. Secure outside lower condenser coil bracket to condenser coil with two screws (21) and two flat washers (22).
- x. Align upper outside condenser coil bracket (15) to frame and condenser coil.
- y. Secure upper outside condenser coil bracket to frame with two countersunk screws (13) and two lock nuts (14).
- z. Secure upper outside condenser coil bracket to condenser coil with two screws (16) and two flat washers (17).
- aa. Braze condenser coil (12) in accordance with paragraph 5-15.
- bb. Leak check, evacuate and charge system in accordance with paragraphs 5-17 thru 5-19.



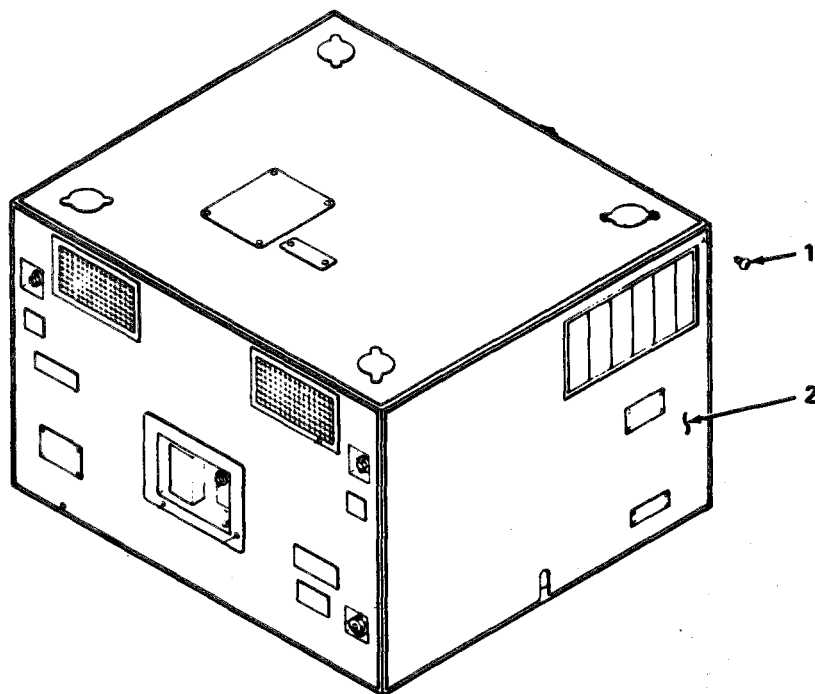
CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
8. Condenser Coil Cover	a. Align condenser coil cover (11) with frame. b. Secure condenser coil cover with five countersunk screws (10).	
9. Left Side Panel	a. Align holes in left side panel (7) with holes in frame. b. Secure left side panel with twenty-seven screws (6). c. Tighten bottom center turnlock fastener (8) on maintenance panel (9).	
10. Condenser Coil Guard	a. Align holes in condenser coil guard (5) with holes in frame. b. Secure condenser coil guard with sixteen screws (3) and two screws (4).	



CONDENSER COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
11. Right Side Panel	a. Align holes in right side panel (1) with holes in frame. b. Secure right side panel with thirty-one screws (2).	



12. Pressure Test

Pressure test air conditioner in accordance with paragraphs 5-19 thru 5-24.

5-38 EVAPORATOR COIL

This task covers:

- a. Removal
 - b. Inspect
 - c. Installation
-

INITIAL SETUP

Test Equipment
NONE

Tools
(SC 5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

Special Environmental Conditions
NONE

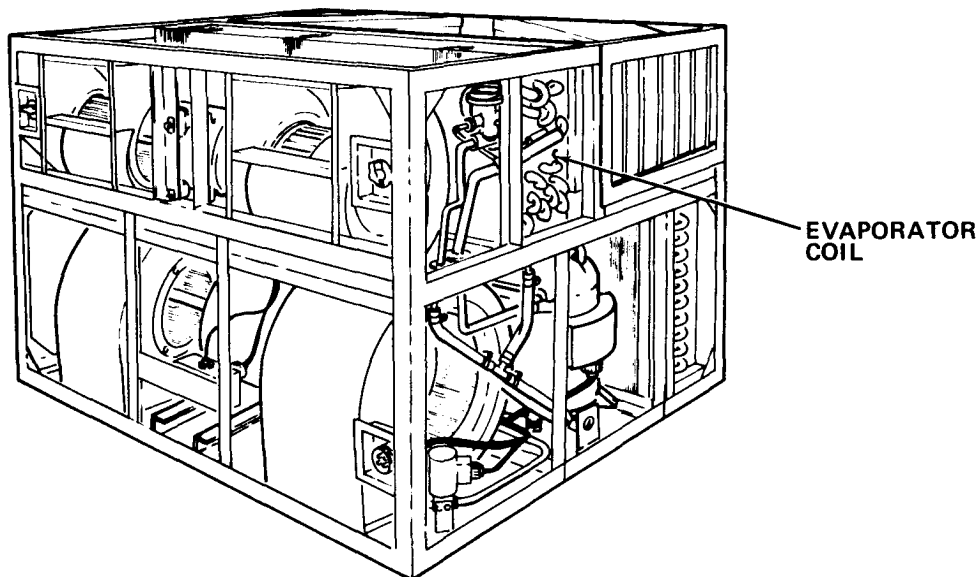
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM

ACTION

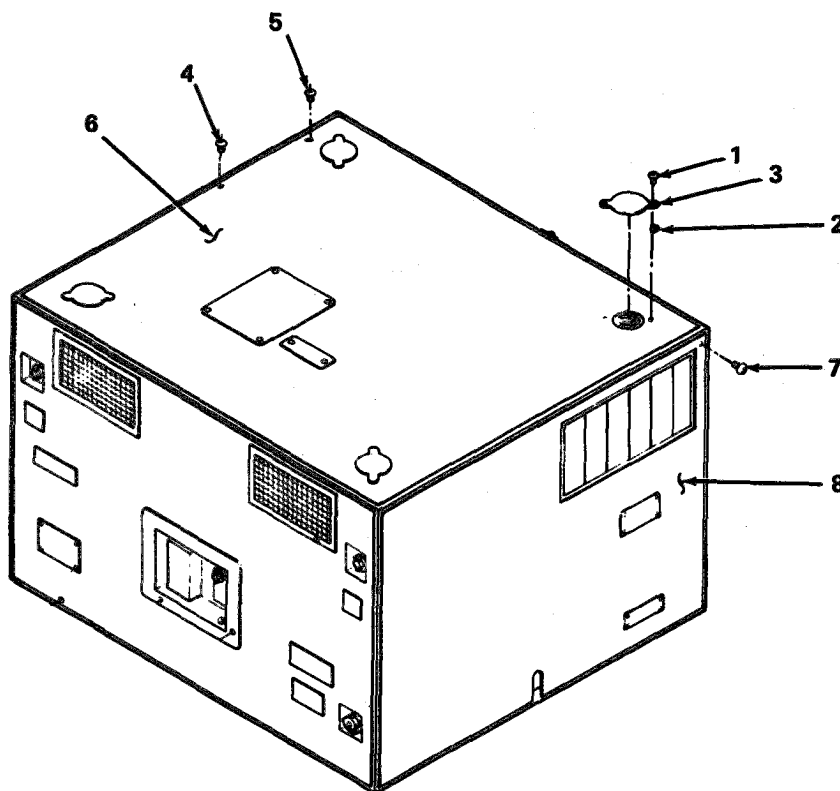
REMARKS

REMOVAL



EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		
1. Lifting Ring Covers	a. Remove eight screws (1) and eight rubber washers (2) securing lifting ring covers (3) to frame. b. Remove the four lifting ring covers.	
2. Top Panel	a. Remove twenty-three screws (4) and eight screws (5) securing top panel (6) to frame. b. Remove top panel.	
3. Right Side Panel	a. Remove thirty-one screws (7) securing right side panel (8) to frame. b. Remove right side panel.	



EVAPORATOR COIL (CONT.)

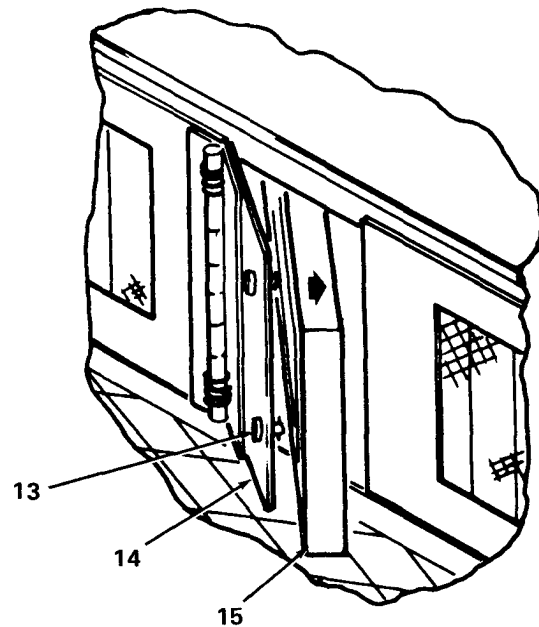
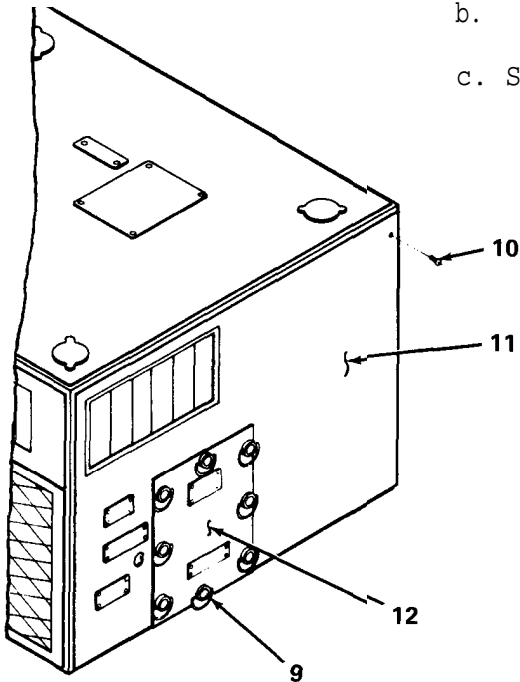
LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

4. Left Side Panel
- Loosen bottom center turnlock fastener (9) on maintenance panel (12).
 - Remove twenty-seven screws (10) securing left side panel (11) to frame.
 - Remove left side panel and maintenance panel.

5. Fresh Air Filters

- Loosen two turnlock fasteners (13) on air filter panel door (14).
- Open filter panel door.
- Slide fresh air filters (15) out of unit.



6. Expansion Valve

Remove in accordance with paragraph 5-30.

EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>REMOVAL</u>		

7. Evaporator Coil

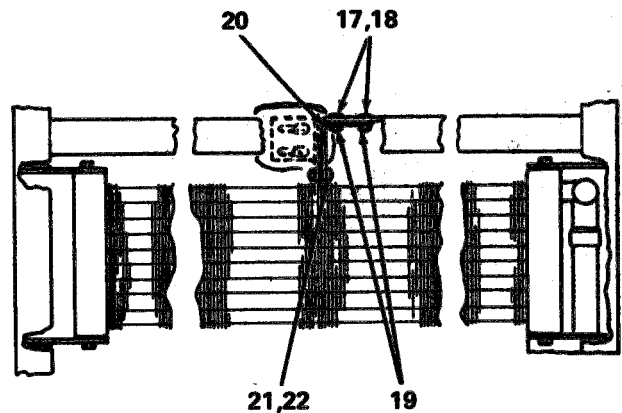
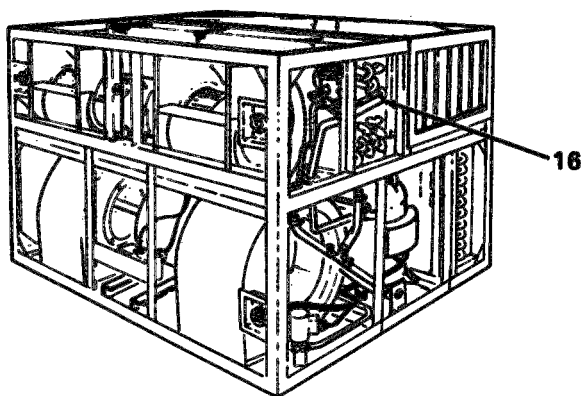
WARNING

All refrigerant gas must be discharged from the system before proceeding with the removal of the evaporator coil.

NOTE

Always perform inspection/test and adjustment before discharging system to remove refrigeration component.

- a. Discharge system in accordance with paragraph 5-12.
- b. Debraze evaporator coil (16) in accordance with paragraph 5-15.
- c. Remove two screws (17), two flat washers (18) and two lock nuts (19) securing upper evaporator coil bracket (20) to frame.
- d. Remove two screws (21) and two flat washers (22) securing upper evaporator coil bracket to evaporator coil.
- e. Remove upper evaporator coil bracket.



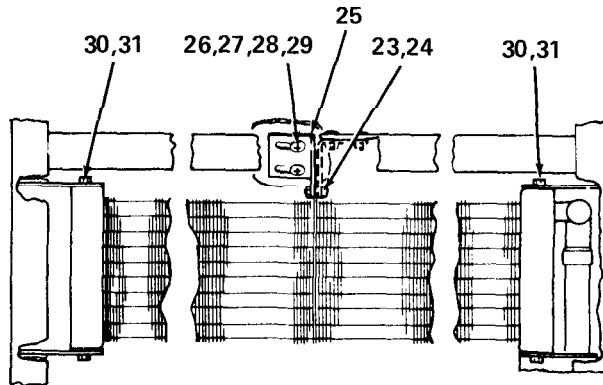
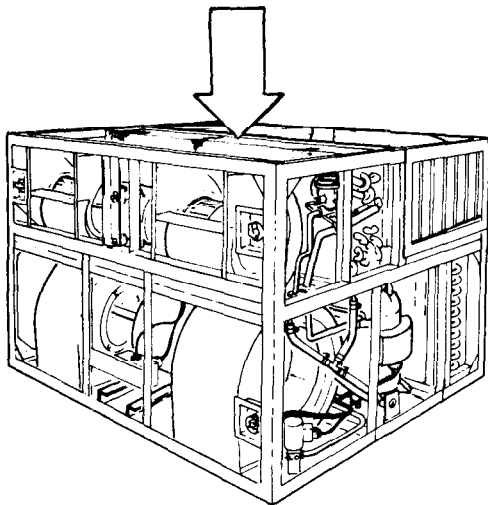
EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

7. Evaporator Coil

- f. Remove two screws (23) and two flat washers (24) securing lower evaporator coil bracket (25) to coil.
- g. Remove two screws (26), two flat washers (27), two lock nuts (28) and one plate washer (29) securing lower evaporator coil bracket to frame.
- h. Remove lower evaporator coil bracket.
- i. Remove twelve bolts (30) and twelve flat washers (31) securing evaporator coil to frame.
- j. Remove evaporator coil.



EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSPECTION

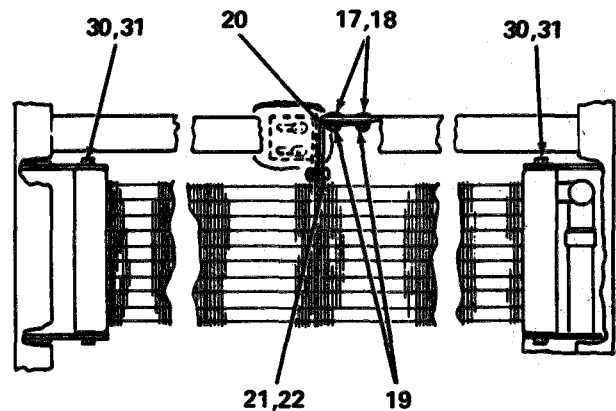
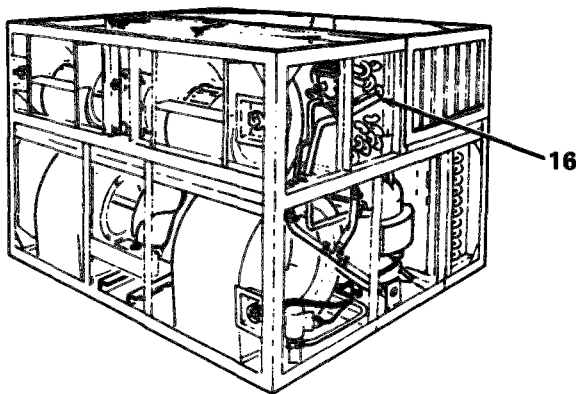
8. Evaporator Coil

- a. Inspect for damage.
- b. Repair or replace if damaged.

INSTALLATION

9. Evaporator Coil

- a. Align evaporator coil (16) with frame.
- b. Secure evaporator coil with twelve bolts (30) and twelve washers (31) to frame.
- c. Align upper evaporator coil bracket (20) with evaporator coil and frame.
- d. Secure upper evaporator coil bracket with two screws (21) and two flat washers (22) to evaporator coil.
- e. Secure upper evaporator coil bracket to frame with two screws (17), two flat washers (18) and two lock nuts (19).



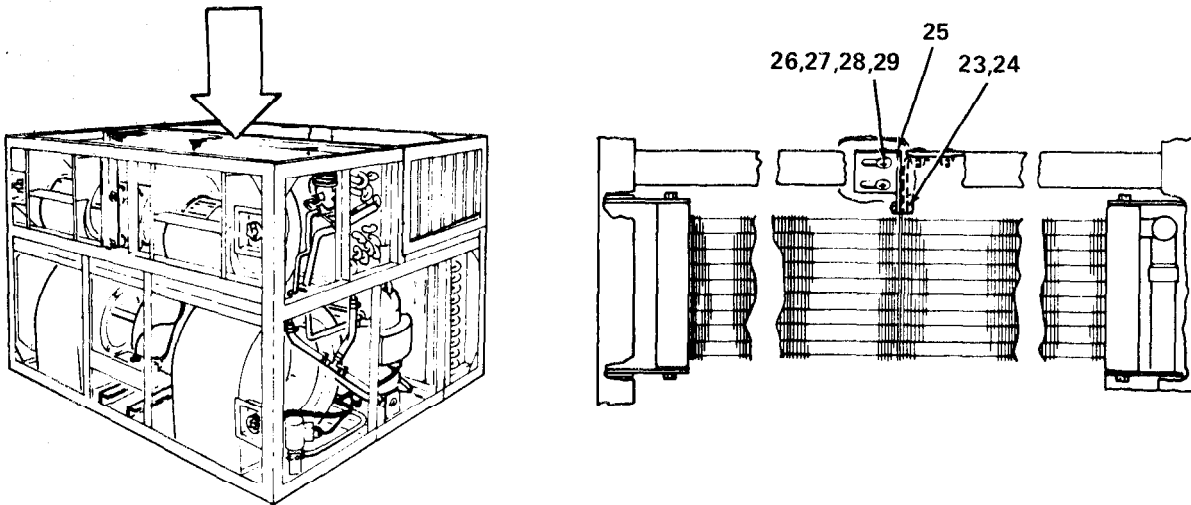
EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

INSTALLATION

9. Evaporator Coil

- f. Align lower evaporator coil bracket (25) with evaporator coil and frame.
- g. Secure lower evaporator bracket coil with two screws (26), two flat washers (27), one plate washer (29) and two lock nuts (28) to frame.
- h. Secure lower evaporator coil bracket to evaporator coil with two screws (23) and two flat washers (24) to coil.
- i. Braze evaporator coil (16) in accordance with paragraph 5-15.
- j. Leak check, evacuate and charge system in accordance with paragraphs 5-17 thru 5-19.



EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

10. Expansion Valve	Install in accordance with paragraph 5-30.	
11. Fresh Air Filters		

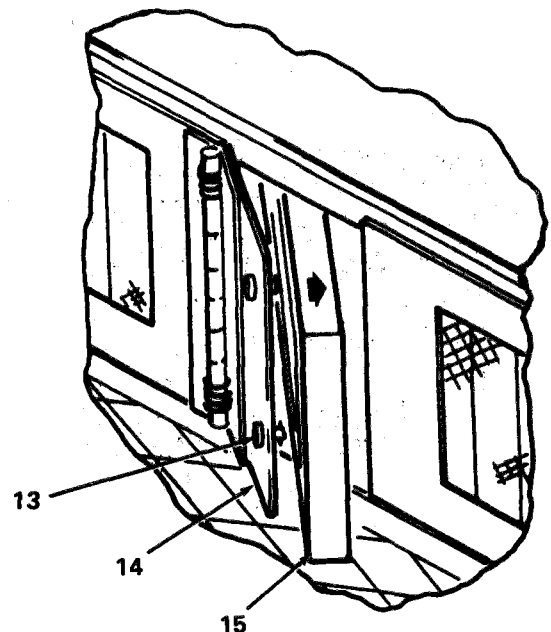
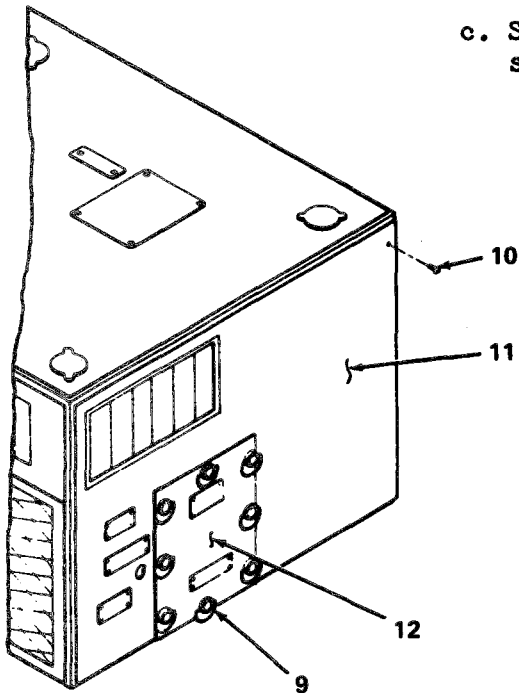
NOTE

Note position arrow on filter frame when installing air filters.
 Arrow must point toward evaporator coil.

- a. Slide fresh air filters (15) into unit.
- b. Secure fresh air filter door with two turnlock fasteners (13) on panel door (14).

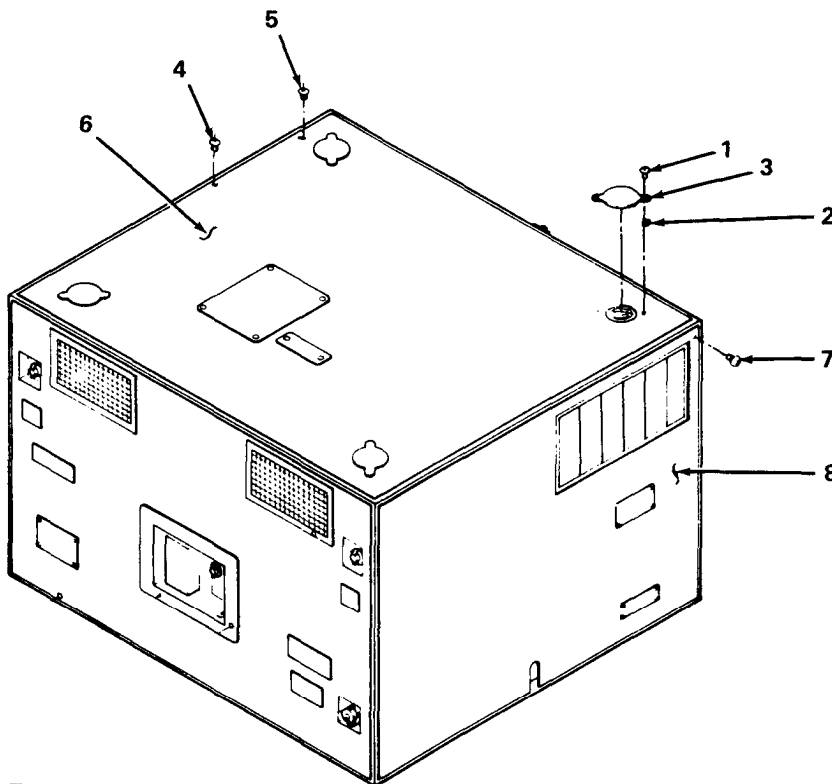
12. Left Side Panel

- a. Tighten bottom center turnlock fastener (9) on maintenance panel (12).
- b. Align holes in left side panel (11) with holes in frame.
- c. Secure left side panel with twenty-seven screws (10).



EVAPORATOR COIL (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
13. Right Side Panel	a. Align holes in right side panel (8) with holes in frame. b. Secure right side panel with thirty-one screws (7).	
14. Top Panel	a. Align holes in top panel (6) with holes in frame. b. Secure top panel with twenty-three screws (4) and eight screws (5).	
15. Lifting Ring Cover	a. Align holes in lifting ring covers (3) with frame. b. Secure lifting ring covers with eight screws (1) and eight rubber washers (2) to frame.	



16. Pressure Test

Pressure test in accordance with paragraphs 5-19 thru 5-24.

5-39 INSTRUCTION PLATES

This task covers:

- a. Removal
- b. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

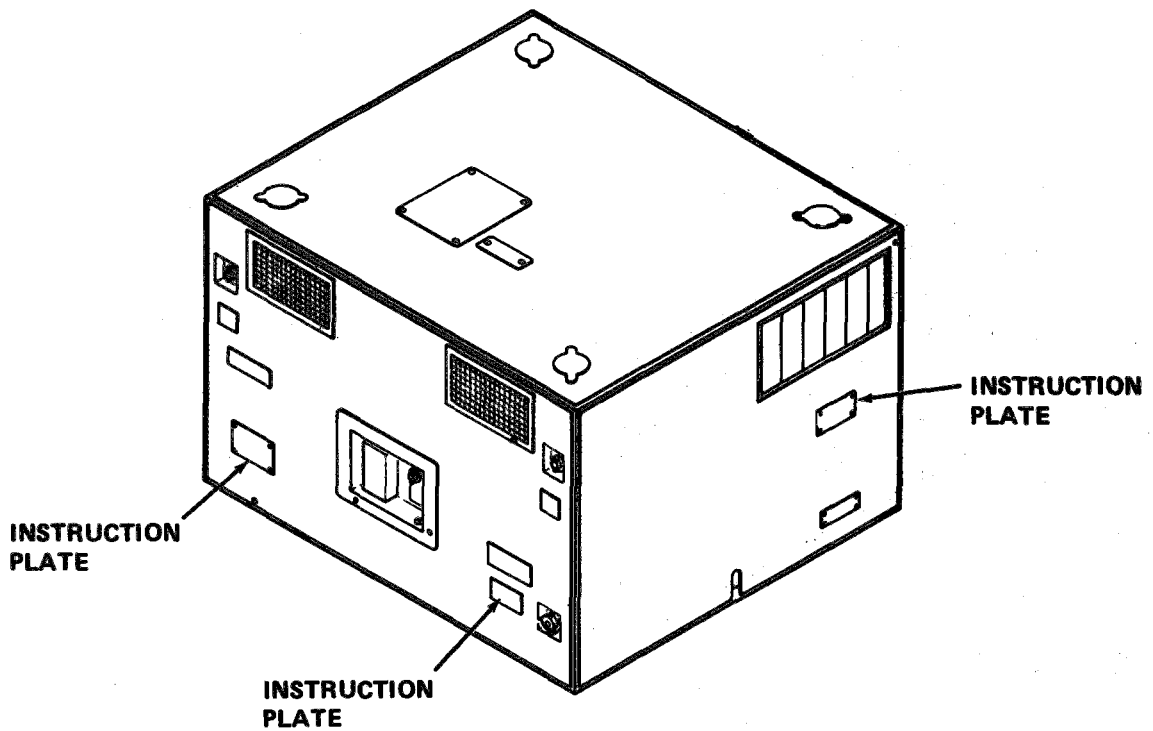
References
NONE

Troubleshooting References
NONE

Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

LOCATION/ITEM	ACTION	REMARKS
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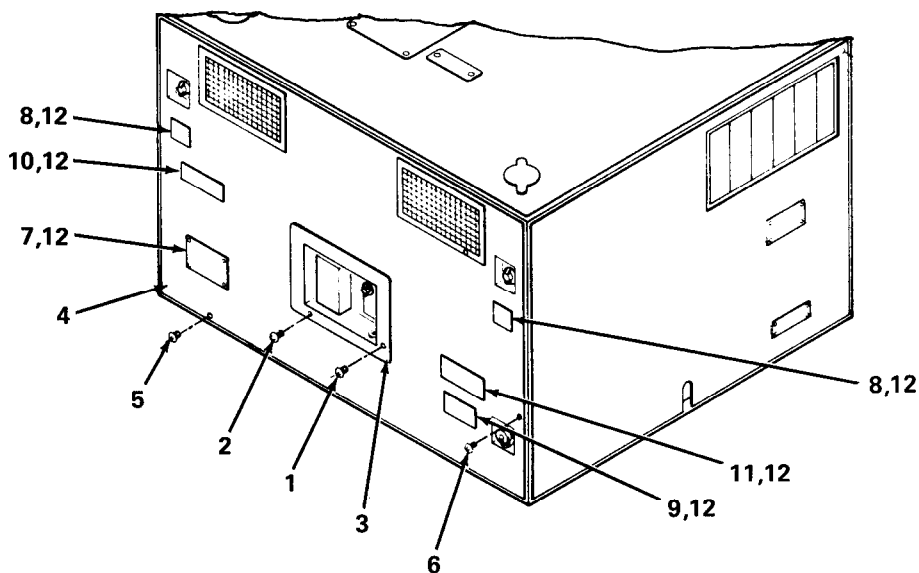
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

1. Control Box
 - a. Remove four screws (1) and four screws (2) securing control box (3) to front panel (4)
 - b. Disconnect electrical connector (P-6).
 - c. Remove control box.

2. Front Panel
 - a. Remove twenty-three screws (5) and two screws (6) securing front panel (4) to frame.
 - b. Remove front panel.
 - (1). Identification Plate (7).
 - (2). Damper Directional Information Plates (8).
 - (3). Main Power Plug Information Plate (9).
 - (4). Operation Information Plate (10).
 - (5). Main Power Information Plate (11).
 - A. Drill out rivets (12) that secure instruction plate to front panel.
 - B. Remove instruction plate.



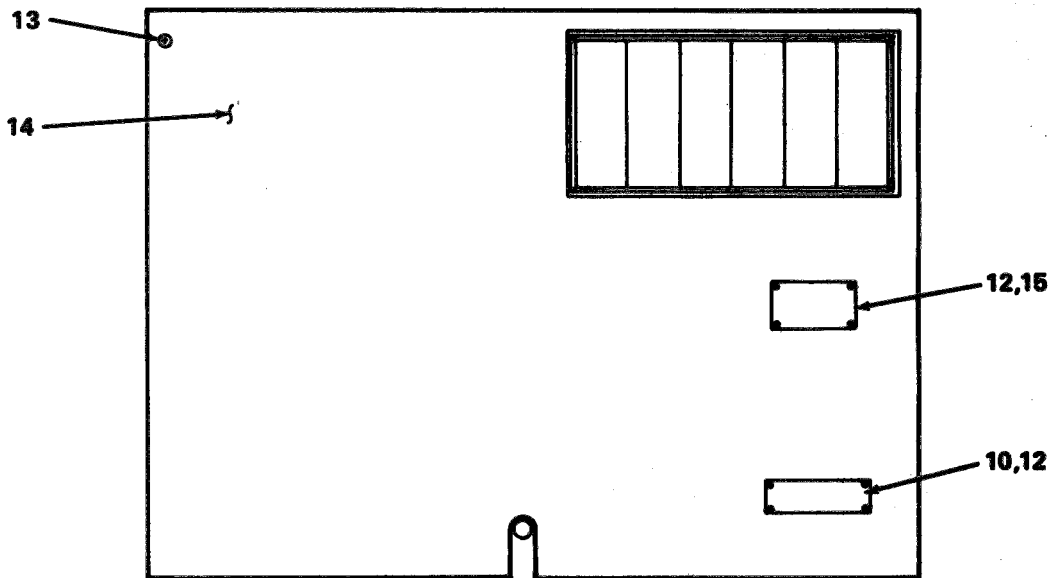
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

3. Right Side Panel

- a. Remove thirty-one (13) screws securing right side panel (14) to main frame.
- b. Remove right side panel.
 - (1). Operation Information Plate (10).
 - (2). Weight Information Plate (15).
 - A. Drill out rivets (12) that secure instruction plate to right side panel.
 - B. Remove instruction plate.



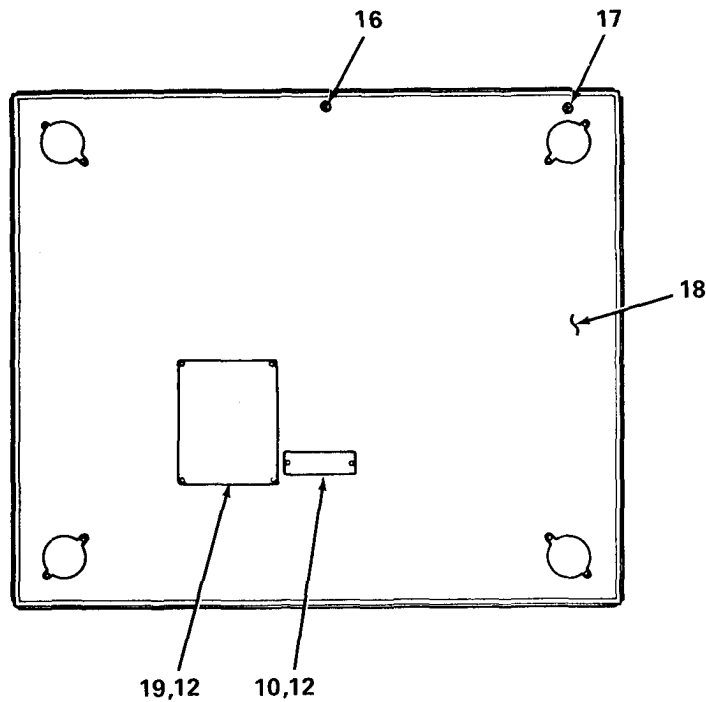
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

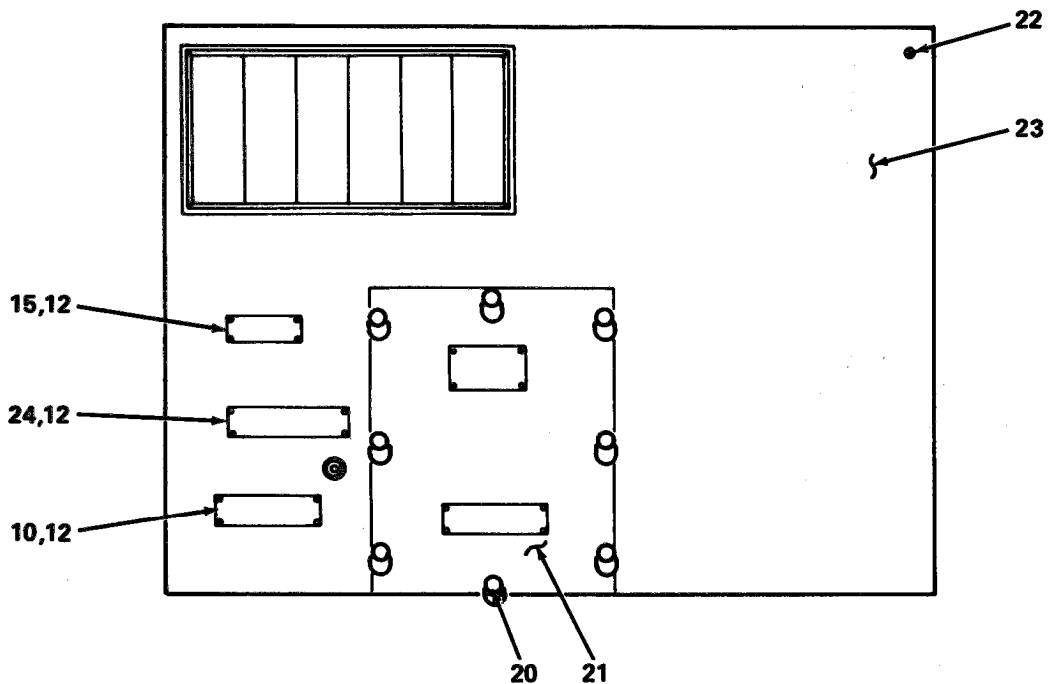
4. Top Panel

- a. Remove twenty-three screws (16) and eight screws (17) securing top panel (18) to main frame.
- b. Remove top panel.
 - (1). Operation Information Plate (10).
 - (2). Warning Information Plate (19).
 - A. Drill out rivets (12) that secure instruction plate to top panel.
 - B. Remove instruction plate.



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
5. Left Side Panel	<ul style="list-style-type: none"> a. Loosen bottom center turnlock fastener (20) on maintenance panel (21). b. Remove twenty-seven screws (22) securing left side panel (23) to main frame. c. Remove left side panel. <ul style="list-style-type: none"> (1). Sight Glass Information Plate (24). (2). Operation Information Plate (10). (3). Weight Information Plate (15). 	
	<ul style="list-style-type: none"> A. Drill out rivets (12) that secure instruction plate to left side panel. 	
	<ul style="list-style-type: none"> B. Remove instruction plate. 	



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

6. Air Filter Panel

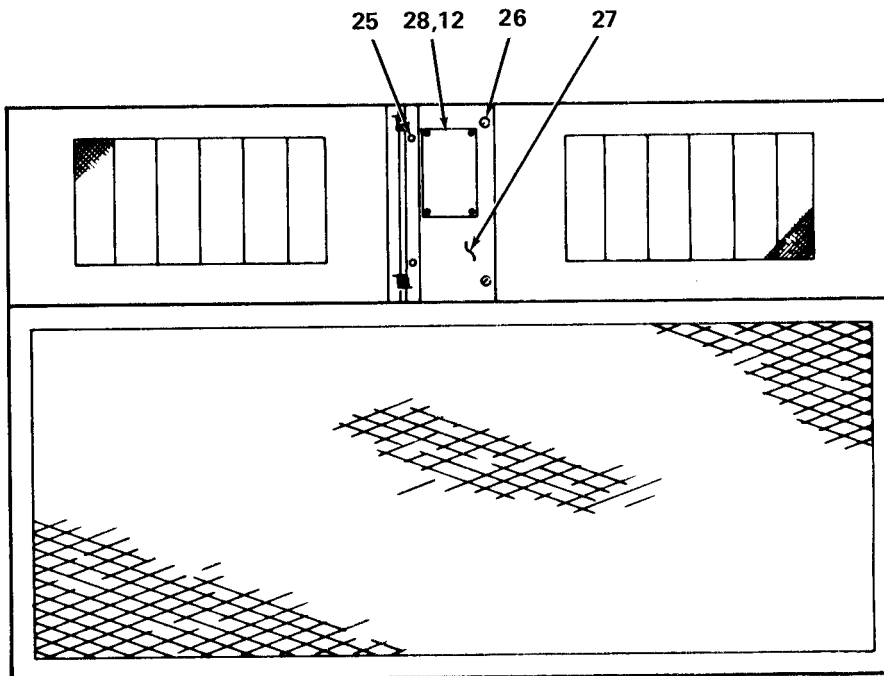
- a. Remove two screws (25) and loosen two turnlock fasteners (26) securing air filter panel (27) to frame.

- b. Remove air filter panel.

Air Filter Panel Information Plate (28).

- A. Drill out rivets (12) that secure instruction plate to air filter panel.

- B. Remove instruction plate.



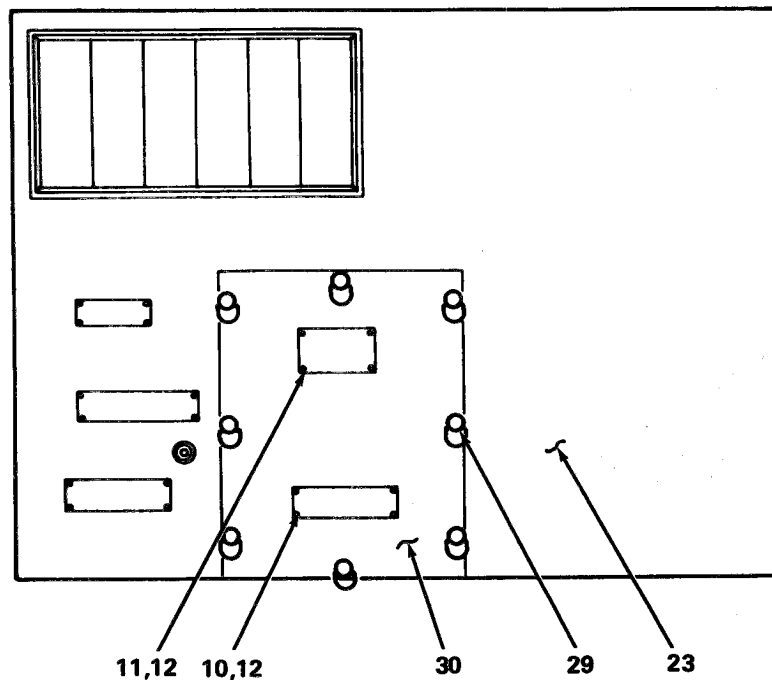
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

7. Maintenance Panel

- a. Loosen eight turnlock fasteners (29) securing maintenance panel (30) to left side panel (23).
- b. Remove maintenance panel.
 - (1). Main Power Information Plate (11).
 - (2). Operational Information Plate (10).
 - (3). Electrical and Refrigeration Schematic Plate (31).
 - A. Drill out rivets (12) that secure instruction plate to maintenance panel.
 - B. Remove instruction plate.



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

8. Control Box

a. Remove four screws (32) and four screws (33) securing control box (34) to front panel.

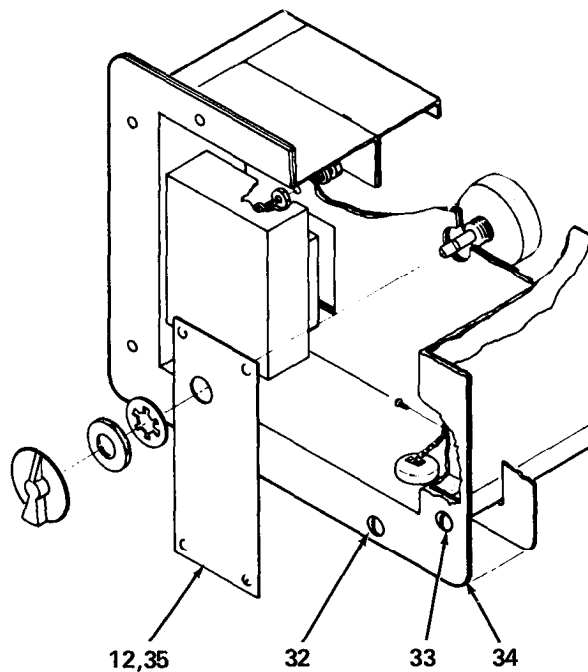
b. Disconnect electrical connector (P-6).

c. Remove control box.

Instruction Plate (35).

A. Drill out rivets (12) that secure instruction plate to control box.

B. Remove instruction plate.



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

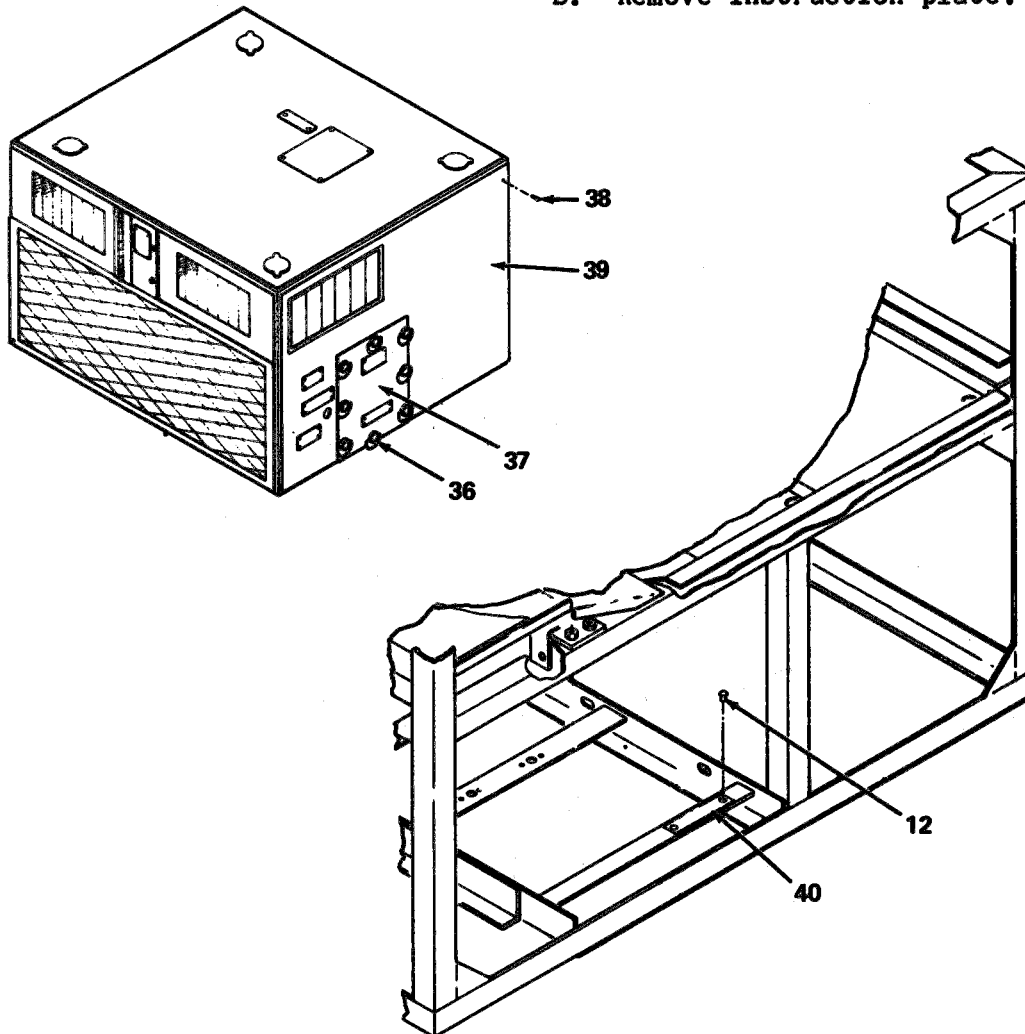
9. Frame

- a. Loosen bottom center turnlock fastener (36) on maintenance' panel (37).
- b. Remove twenty-seven screws (38) securing left side panel (39) to main frame.
- c. Remove left side panel.

Instruction Plate (40).

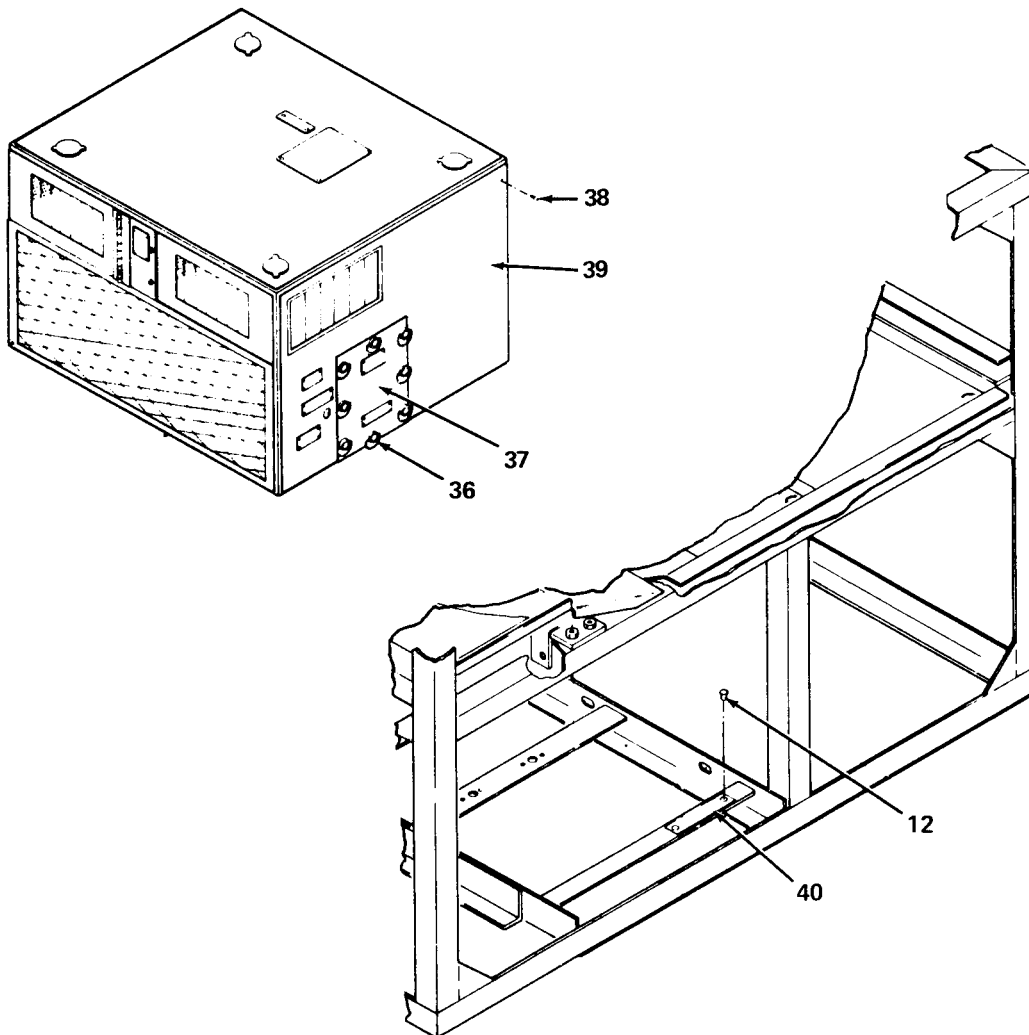
- A. Drill out rivets (12) that secure instruction plate to frame.

B. Remove instruction plate.



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
10. Frame	a. Instruction Plate (36). (1). Align instruction plate with holes in frame. (2). Install instruction plate with blind rivets (12).	
	b. Align holes in left side panel (23) with frame.	
	c. Secure left side panel with twenty-seven screws (22) and tighten bottom center turnlock fastener (20) on maintenance panel.	



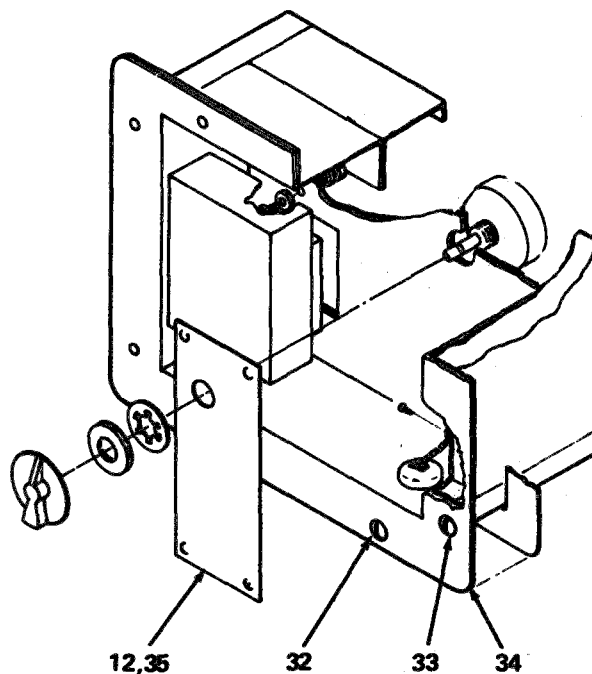
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

11. Control Box

- a. Instruction Plate (35).
 - (1). Align instruction plate with holes in frame.
 - (2). Install instruction plate with blind rivets (12).
- b. Connect electrical connector (P-6).
- c. Align holes in control box (34) with front panel.
- d. Secure control box with four screw (32) and four screws (33).



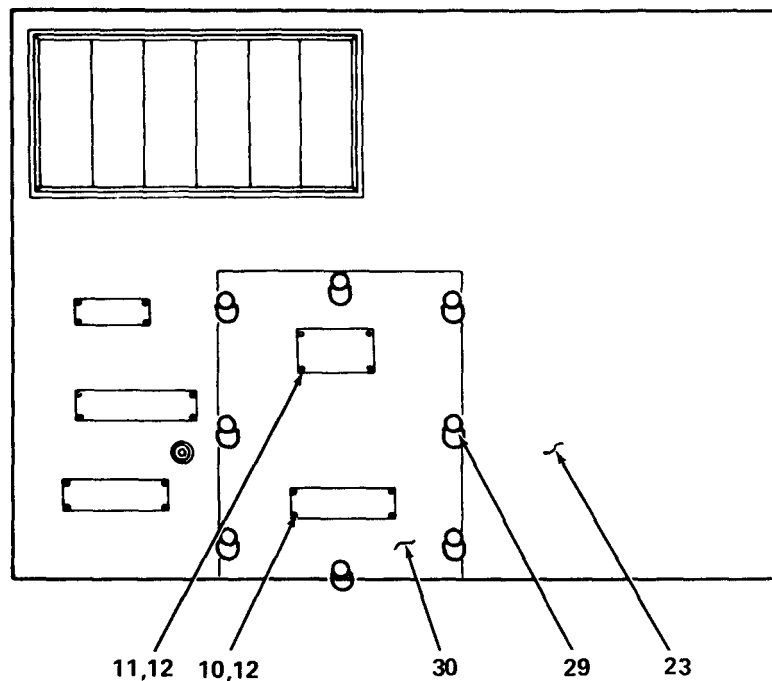
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

12. Maintenance Panel

- a. Main Power Information Plate (11).
- b. Operation Information Plate (10).
- c. Electrical and Refrigeration Schematic Plate (31).
 - (1). Align instruction plate with holes in frame.
 - (2). Install instruction plate with blind rivets (12).
- d. Align maintenance panel (30) with holes in left side panel (23) and frame.
- e. Secure maintenance panel to left side panel with eight turnlock fasteners (29).



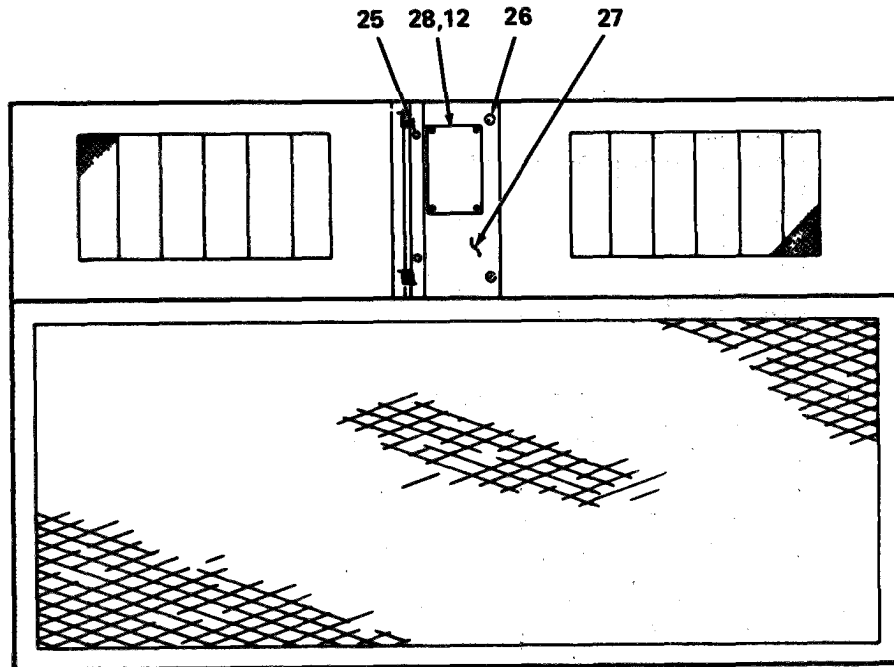
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

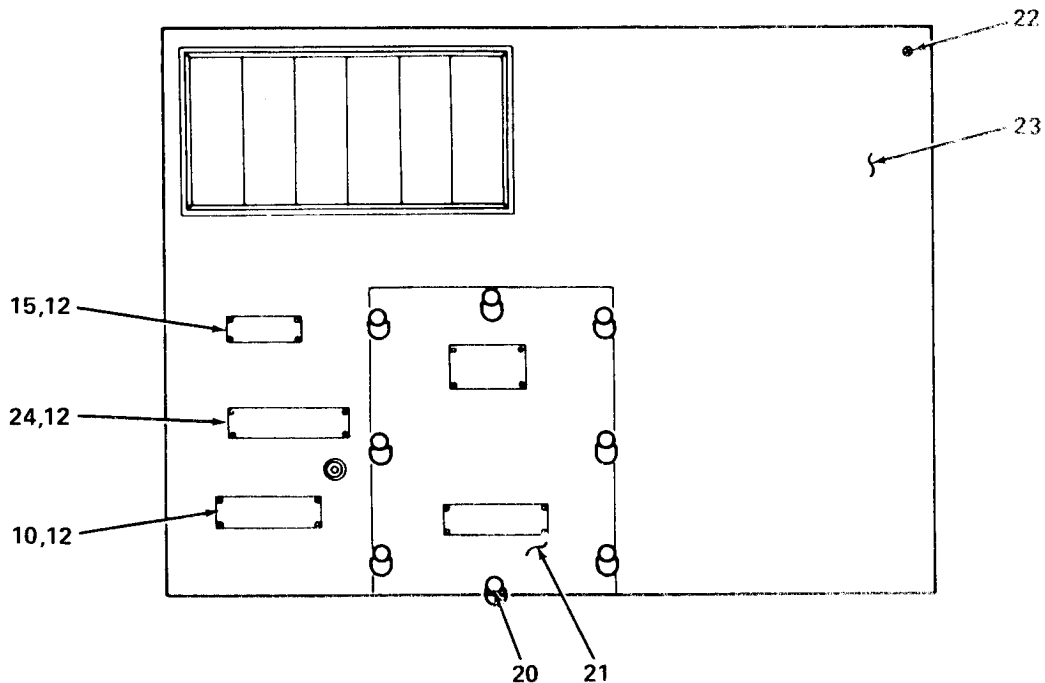
13. Air Filter Panel

- a. Air Filter Panel Information Plate (28).
 - (1). Align instruction plate with holes in frame.
 - (2). Install instruction plate with blind rivets (12).
- b. Align holes in air filter panel (27) with frame.
- c. Secure air filter panel with two screws (25) and two turnlock fasteners (26).



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
14. Left Side Panel		
	a. Sight Glass Information Plate (24).	
	b. Operation Information Plate (10).	
	c. Weight Information Plate (15).	
	(1). Align instruction plate with holes in frame.	
	(2). Install instruction plate with blind rivets (12).	
	d. Align holes in left side panel (23) with frame.	
	e. Secure left side panel with twenty-seven screws (22) and tighten bottom center turnlock fastener (20) on maintenance panel (21).	



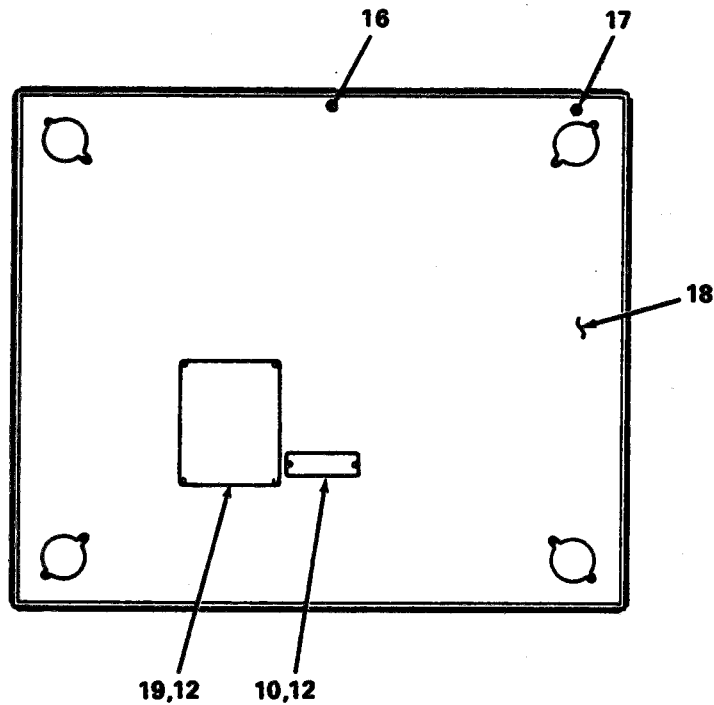
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

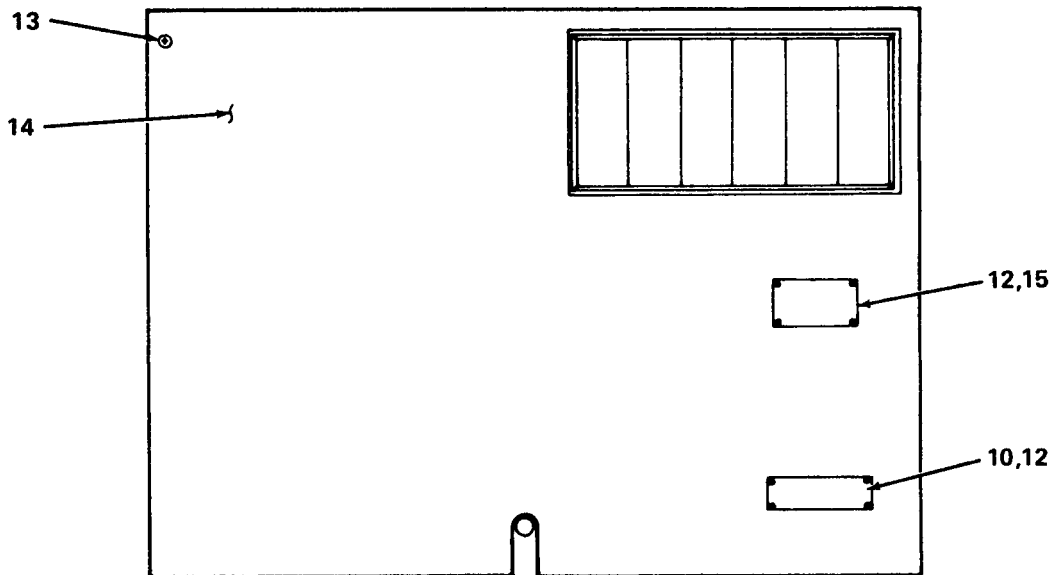
15. Top Panel

- a. Warning Information Plate (19).
- b. Operation Information Plate (10).
 - (1). Align instruction plate with holes in frame.
 - (2). Install instruction plate with blind rivets (12).
- c. Secure top panel (18) with twenty-three screws (16) and eight screws (17).



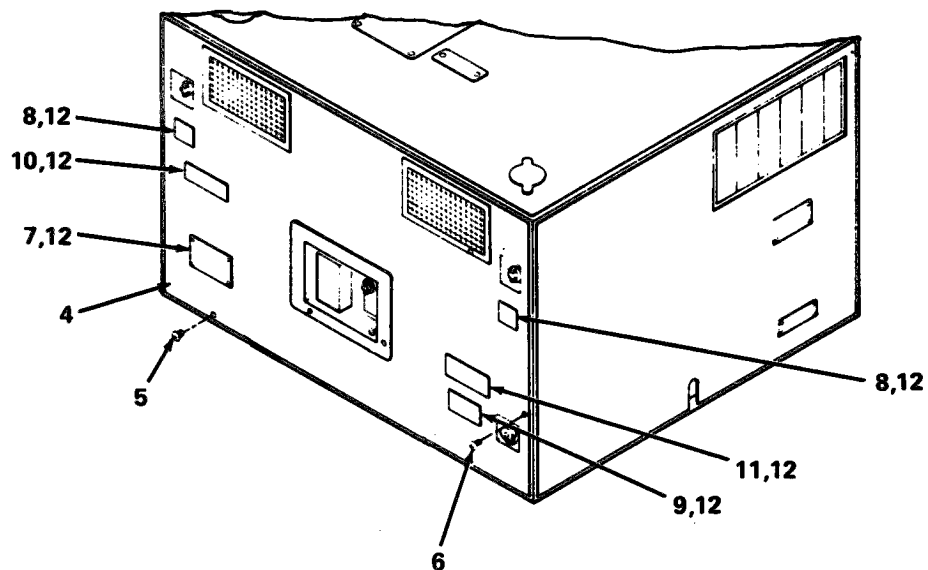
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
16. Right Side Panel	<ul style="list-style-type: none"> a. Weight Information Plate (15). b. Operation Information Plate (10). <ul style="list-style-type: none"> (1). Align instruction plate with holes in frame. (2). Install instruction plate with blind rivets (12). c. Align holes right side panel (14) with frame. d. Secure right side panel with thirty-on screws (13). 	



INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION		
17. Front Panel		
	a. Identification Plate (7).	
	b. Damper Directional Information Plates (8).	
	c. Main Power Plug Information Plate (9).	
	d. Operation Information Plate (10).	
	e. Main Power Information Plate (11).	
	(1). Align instruction plate with holes in frame.	
	(2). Install instruction plate with blind rivets (12).	
	f. Align holes in front panel (4) with frame.	
	g. Secure front panel with thirty-four screws(5) and two screws (6).	



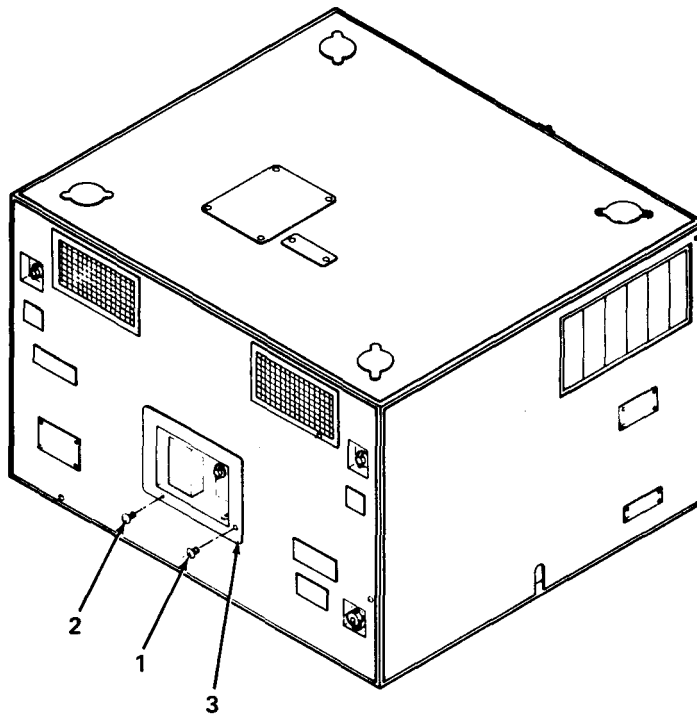
INSTRUCTION PLATES (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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INSTALLATION

18. Control Box

- a. Connect electrical connector (P-6).
- b. Align holes in control box (3) with front panel (4) and frame.
- c. Secure control box to front panel and frame with four screws (2) and four screws (1).



5-40 INSULATION

This task covers:

- a. Removal
- b. Inspection
- c. Repair
- d. Installation

INITIAL SETUP

Test Equipment
NONE

Tools
(SC-5180-90-C-N18)

References
NONE

Troubleshooting References
NONE

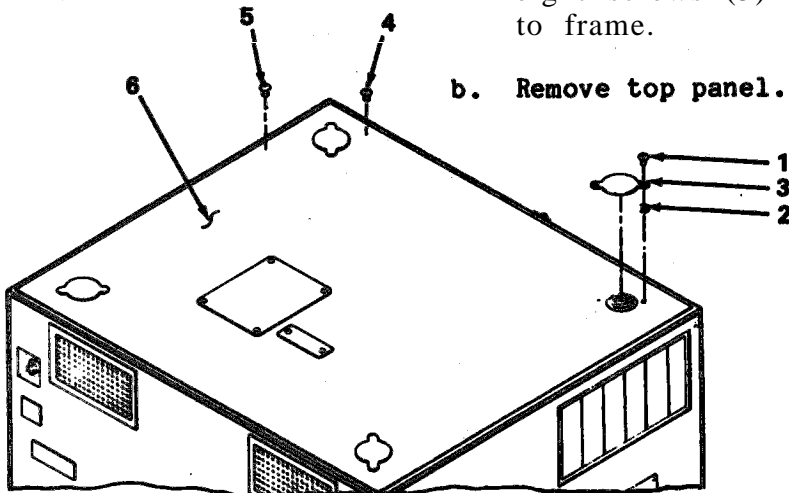
Special Environmental Conditions
NONE

General Safety Instructions
Turn air conditioner OFF before performing maintenance.

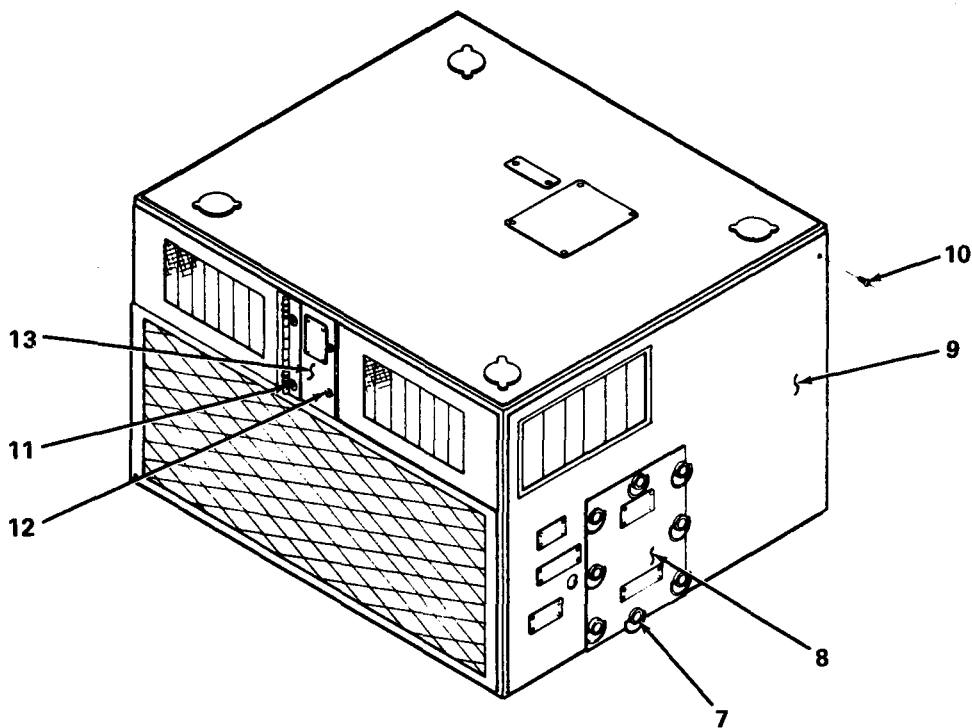
LOCATION/ITEM	ACTION	REMARKS
---------------	--------	---------

REMOVAL

- | | | |
|------------------------|--|--|
| 1. Lifting Ring Covers | <ul style="list-style-type: none"> a. Remove eight screws (1) and eight rubber washers (2) securing lifting ring covers (3) to top panel. b. Remove lifting ring covers. | |
| 2. Top Panel | <ul style="list-style-type: none"> a. Remove twenty-three screws (4) and eight screws (5) securing top panel (6) to frame. b. Remove top panel. | |

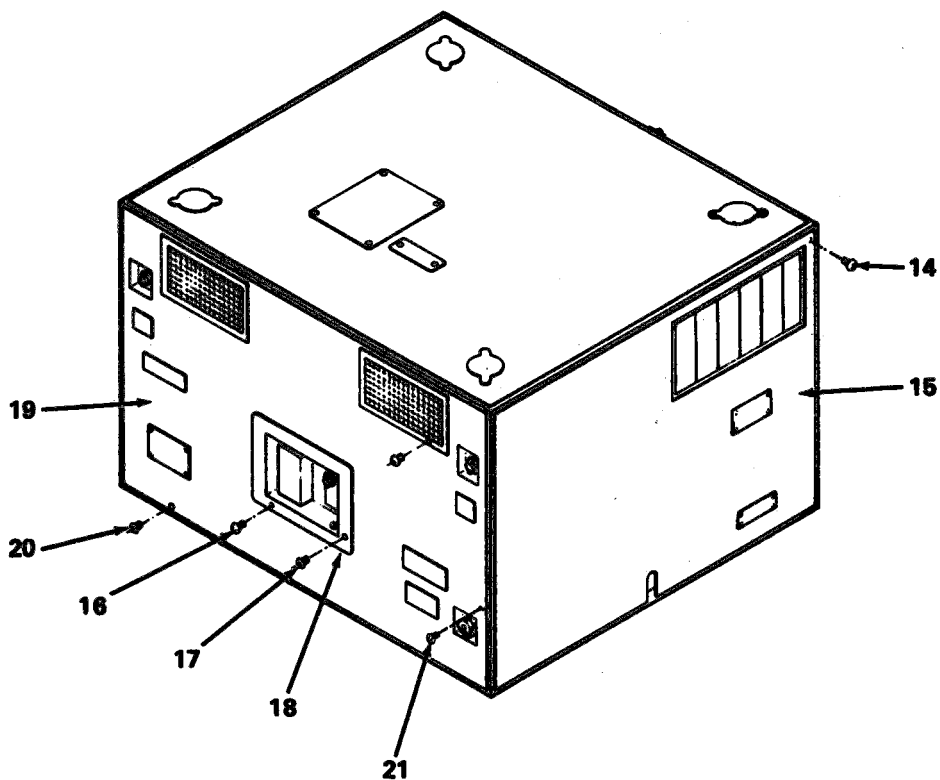


LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
3. Maintenance Panel	<ul style="list-style-type: none"> a. Loosen eight turnlock fasteners (7) securing maintenance panel (8) to left side panel (9) and frame. b. Remove maintenance panel. 	
4. Left Side Panel	<ul style="list-style-type: none"> a. Remove twenty-seven screws (10) securing left side panel. b. Remove left side panel. 	
5. Filter Door Panel	<ul style="list-style-type: none"> a. Remove two screws (11) and loosen two turnlock fasteners (12) securing filter door panel (13) to frame. b. Remove filter door panel. 	



INSULATION (CONT.)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
6. Right Side Panel	a. Remove thirty-one screws (14) securing right side panel (15) to frame. b. Remove right side panel.	
7. Control Box	a. Remove four screws (16) and four screws (17) securing control box (18) to front panel (19) and frame. b. Disconnect electrical connector (P-6). c. Remove control box.	
8. Front Panel	a. Remove thirty-four screws (20) and two screws (21) securing front panel to frame. b. Remove front panel.	



INSULATION (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Acetone and methyl-ethyl ketone are flammable and their vapors are explosive. Prolonged or repeated inhalation of fumes on contact with the skin can be toxic. Use in a well ventilated area, wear gloves and keep away from sparks or flame.

- | | |
|---------------|--|
| 9. Insulation | <ul style="list-style-type: none"> a. Scrape and pull off as much of the damaged insulation as possible. b. Soften the remaining insulation and adhesive with acetone or MEK (Item 1 or 7 ,table D-1). c. Repeat the softening and scraping process as required. d. Clean up metal surface with a cloth moistened in acetone or MEK. |
|---------------|--|

INSPECTION

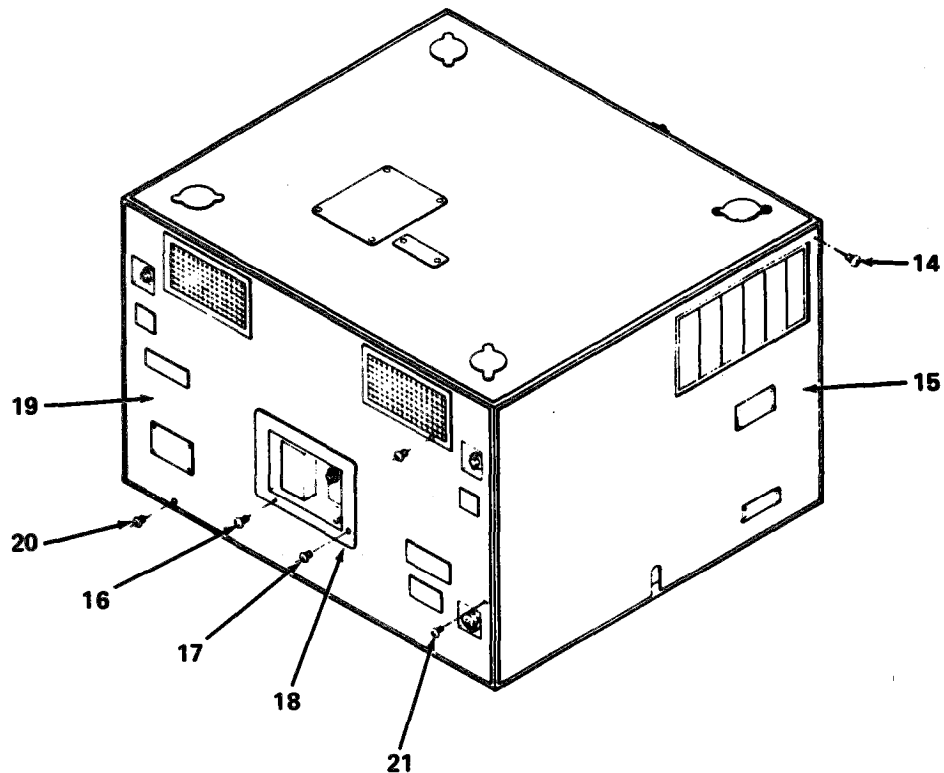
- | | |
|----------------|--|
| 10. Insulation | <ul style="list-style-type: none"> a. Inspect for damage. b. Repair or replace if damaged. |
|----------------|--|

REPAIR

- | | |
|----------------|--|
| 11. Insulation | <ul style="list-style-type: none"> a. Cut a sheet of the proper insulating material to correct shape. b. Coat the attaching side with adhesive (Item 2, table D-1) using a paint brush to ensure complete coverage. c. Coat the metal with adhesive (Item 2 ,table D-1) to which the insulation is to be attached. d. Let both surfaces air-dry until the adhesive becomes tacky but will not stick to the fingers. e. Starting at one corner or at a narrow edge, carefully bring the insulation into full contact with the metal. f. Press into firm contact all over. |
|----------------|--|

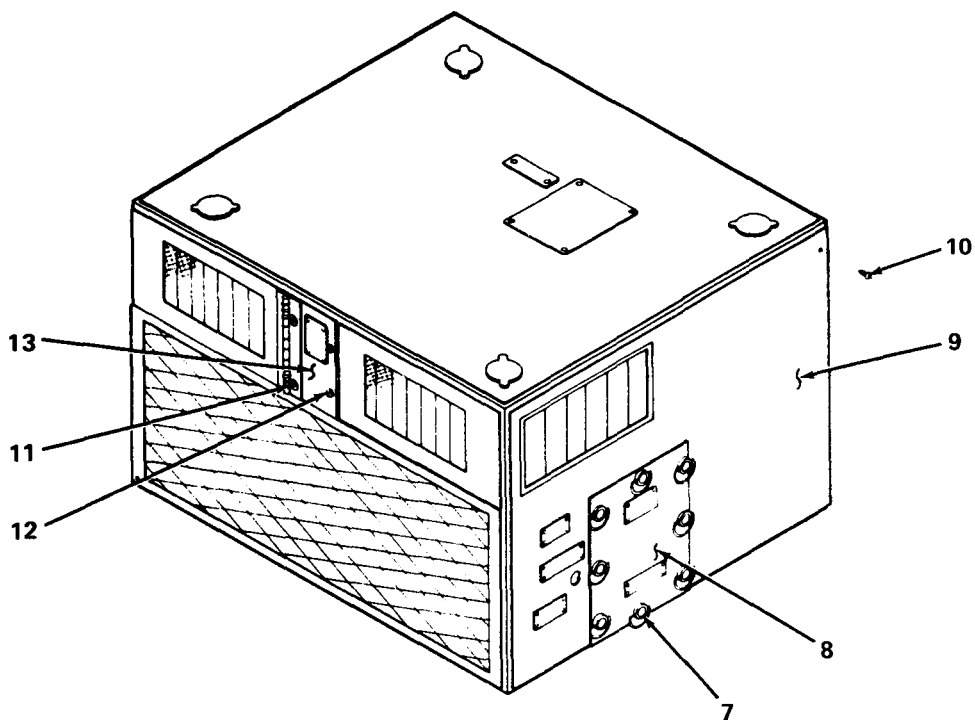
INSULATION (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
12. Front Panel	a. Align holes in front panel (19) with holes in frame. b. Secure front panel with thirty-four screws (20) and two screws (21).	
13. Control Box	a. Connect electrical connector (P-6). b. Align holes in control box (18) with holes in front panel and frame. c. Secure control box with four screws (17) and four screws (16).	
14. Right Side Panel	a. Align holes in right side panel (15) with holes in frame. b. Secure right. side panel with thirty-one screws (14).	



INSULATION (CONT.)

LOCATION/ITEM	ACTION	REMARKS
<u>INSTALLATION</u>		
15. Filter Door Panel	a. Align holes in filter door panel (13) with holes in frame. b. Secure filter door panel to frame with two screws (11) and two turnlock fasteners (12).	
16. Left Side Panel	a. Align holes in left side panel (9) with holes in frame. b. Secure left side panel with twenty-seven screws (10).	
17. Maintenance Panel	a. Align holes in maintenance panel (8) with holes in left side panel and frame. b. Secure maintenance panel with eight turnlock fasteners (7).	



INSULATION (CONT.)

LOCATION/ITEM	ACTION	REMARKS
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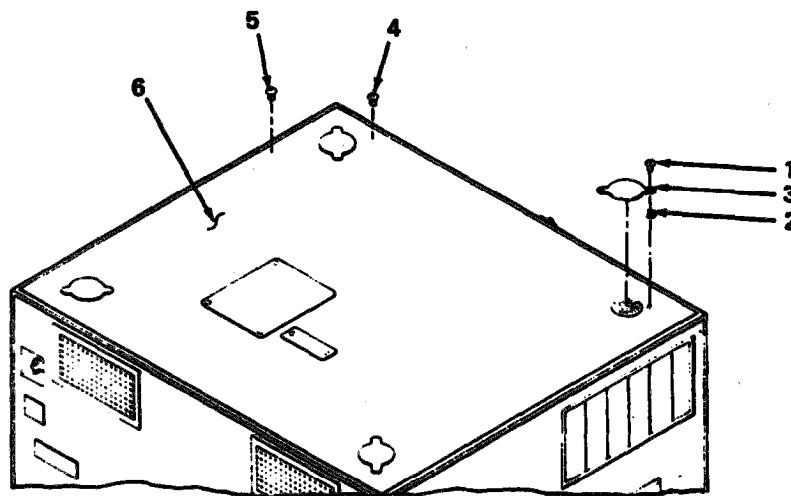
INSTALLATION

18. Top Panel

- a. Align holes in top panel (6) with holes in frame.
- b. Secure top panel with twenty-three screws (4) and eight screws (5).

19. Lifting Ring Covers

- a. Align holes in lifting ring covers (3) with holes in top panel.
- b. Secure lifting ring covers with eight screws (1) and eight rubber washers (2).



CHAPTER 6

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

6-1. GENERAL.

This chapter is for the use of general support maintenance personnel. This chapter contains maintenance procedures for the frame assembly.

SECTION I. DESCRIPTION.

The frame assembly supports or surrounds all functional components of the air conditioner. Therefore, if damage is extensive enough to require replacement of the frame assembly, it is also extensive enough to have caused significant damage to major components. In such a case it is necessary to procure a new frame assembly, and to dismantle the damaged unit completely, test all components, and install service cable components in the new frame. Unserviceable components must be replaced.

6-2. FRAME ASSEMBLY.

This task covers:

- a. Inspection
 - b. Repair
-

INITIAL SETUP

Test Equipment
None

Tools
(SC-5180-90-C-N18)

References
None

Troubleshooting References
None

Special Environmental Conditions
None

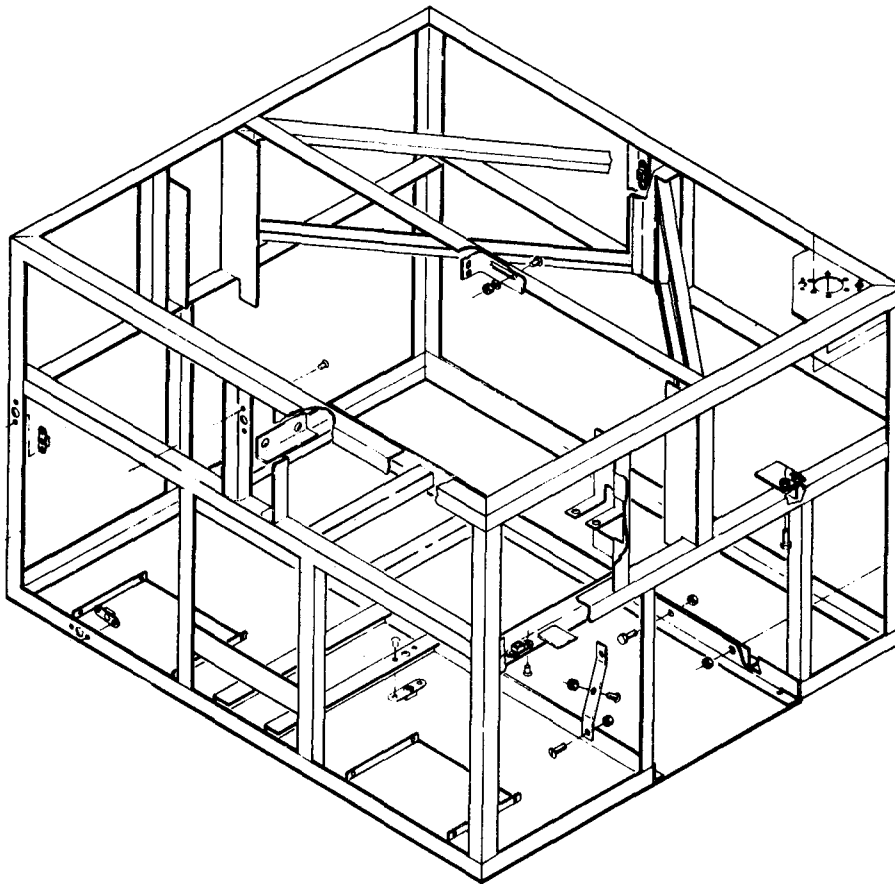
General Safety Instructions
Turn air conditioner OFF before performing maintenance.

6-2. FRAME ASSEMBLY

INSPECTION

1. Frame

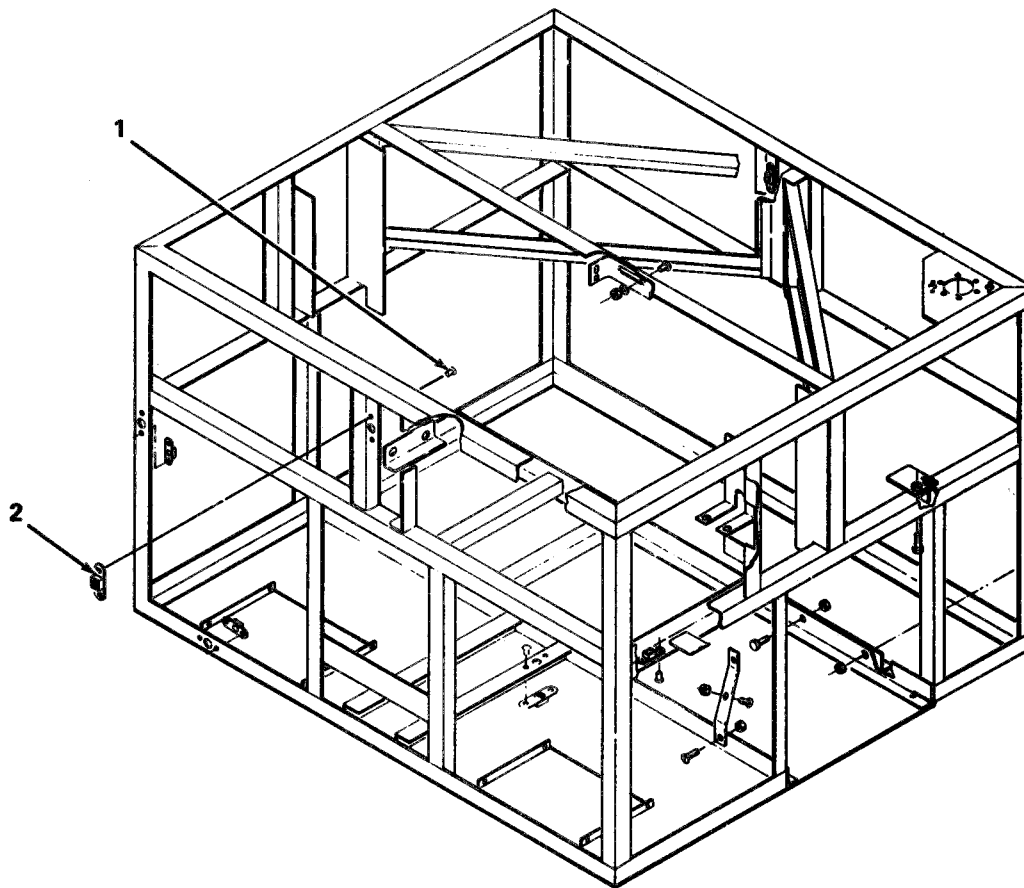
- a. Inspect the frame assembly for dents, gouges, cuts or tears, broken welds, and major deformation. Remove panels as necessary to determine whether internal components such as coils, wiring, piping or other components or sub-assemblies have been damaged. If damage is apparent leak-test all parts of refrigerant system and make an operating check of controls and functional components. If the unit is functionally ok, repair the frame.
- b. Inspect for damaged plate nuts and rivnuts.
- c. Repair or replace if damaged.



6-2. FRAME ASSEMBLY (CONT.)

REPAIR**2. Frame**

- a. Straighten dents by using a sheet-metal hammer and back-up dolly, using care to avoid stretching the metal more than necessary. Fill gouges with body putty, fiberglass-epoxy filler or weld. Weld cuts or tears. Sand paint to a feather edge around the repair, and paint as directed in TM-43-0139.
- b. Drill out rivets (1) securing platenut (2) to frame.
- c. Remove platenut.
- d. Align platenut with holes in frame.
- e. Secure platenut to frame with two rivets.



APPENDIX

REFERENCES

- | | |
|--|---|
| A-1. FIRE PROTECTION
TB 5-4200-200-10 | Hand Portable Fire Extinguishers
approved Army Users |
| A-2. PAINTING
TM 43-0139 | Painting Instructions for Field Use |
| A-3. MAINTENANCE
DA PAM 738-750 | The Army Maintenance Management System
(TAMMS) |
| TM 5-764 | Electric Motor and Generator Repair |
| TM 5-4120-375-24P | Organizational, Direct Support and
General Support Maintenance. Repair
Parts and Special Tools List for Air
Conditioner, Base Mounted, Air Cooled,
208VAC |
| A-4. SHIPMENT AND STORAGE
TM 740-90-1 | Administrative Storage of Equipment |
| A-5. DESTRUCTION OF ARMY EQUIPMENT
TM 750-244-3 | Procedures for Destruction of Equip-
ment to Prevent Enemy Use |

APPENDIX B

MAINTENANCE ALLOCATION CHART (MAC)

SECTION 1. INTRODUCTION

B-1. General.

- a. This Section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.
- b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance function on the identified end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.
- c. Section III lists the tools and equipment required for each maintenance function as referenced from Section II.
- d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance functions. Maintenance functions will be limited to and defined as follows:

- a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, or electrical characteristics with established standards through, examination.
- b. Test. To verify servicability by measuring the mechanical or electrical characteristics of an item, and comparing those characteristics with prescribed standards.
- c. Service. Operations required periodically to keep an item in proper operating condition, i. e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids or gases,
- d. Adjust. To maintain within prescribed limits, by grinding into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

B-2 . Maintenance functions. (cont).

- f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consist of comparison of two instruments, one of which is a certified standard of known accuracy to detect and adjust any discrepancy in the accuracy of the instrument being compared.
- g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions.
- h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.
- i. Repair. The application of maintenance services.
 - (1). Including fault location/troubleshooting.
 - (2). Removal/installation, and disassembly/assembly.
 - (3). Procedures and maintenance actions.
 - (4). To identify troubles and restore serviceability to an item correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
- j. Overhaul. That maintenance effort (service /action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e, DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
- k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc) considered in classifying Army equipment/components.

B-3 . Explanation of Columns in the MAC, Section II.

- a. Services. Inspect, test, service, adjust, align, calibrate, and/or replace.
- b. Fault locate/troubleshoot. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).
- c. Disassemble/assemble-encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.
- d. Actions. Welding, grinding, riveting, straightening, facing, remachinery, and/or resurfacing.
 - (1). Column (1), Group Number. Column 1 lists- Functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".
 - (2). Column (2), Component/Assembly. Column contains the names of components, assemblies, sub-assemblies, and modules for which maintenance is authorized.
 - (3). Column (3), Maintenance Functions. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph 52).
 - (4). Column (4), Maintenance Level. This column is made up of sub- columns for each category of maintenance. Work time figures are listed in these subcolumns for the lowest level of maintenance authorized to perform the function listed in Column 3. These figures indicate the average active time required to perform the maintenance function at the indicated category of maintenance under typical field operating conditions.

- C.....Operator or crew.
- O.....Organizational maintenance
- F.....Direct Support Maintenance
- H.....General Support Maintenance
- D.....Depot maintenance

B-3. Explanation of Columns in the MAC, Section II. (cont).

- e. Column (5), Tools and Equipment. Column 5 specifies, by code those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.
- f. Column (6), remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Section III.

- a. Column (1), Reference Code. The tool and test equipment reference code correlates with a maintenance function on the identified end item or component.
- b. Column (2), Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.
- c. Column (3), Nomenclature. Name or identification of the tool or test equipment.
- d. Column (4), National/NATO Stock Number. The National or NATO stock number of the tool or test equipment.
- e. Column (5), Tool Number. The manufacturer's part number.

B-5. Explanation of Columns in Remarks, SECTION IV.

- a. Column 1, Reference Code. The code recorded in column 6, Section II.
- b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in MAC, Section II.

SECTION II MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level			
			C	O	F	H
01	COVERS, PANELS, GUARDS, SCREENS					
	Lifting Ring Cover	Inspect		.10		
		Service		.25		
		Replace		.15		
	Panels	Inspect		.10		
		Service		.25		
		Repair			1.0	
		Replace			.25	
	Information Plates	Inspect		.10		
		Service		.10		
		Replace			.20	
	Control Panel	Inspect			.10	
		Service		.20		
		Replace			.25	
	Control Switches	Inspect			.10	
		Test			.50	
		Replace			.50	
	Thermostat	Inspect		.10		
		Test			.50	
		Replace			.50	
	Guards	Inspect		.10		
Service			.10			
Replace				.25		
Screens	Inspect		.10			
	Service		.10			
	Replace			.25		

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					
			C	O	F	H	D	H
02	AIR FILTERS, DAMPERS, CONDENSATE DRAINS							
	Air Filters	Inspect			.10			
		Service			.50			
		Replace			.10			
	Dampers and Controls	Inspect			.25			
		Adjust	.25					
		Repair			1.5			
		Replace			.50			
	Condensate Drains and Fittings	Inspect			.10			
		Service			.25			
		Replace			.			
03	JUNCTION BOX AND WIRING HARNESS							
	Junction Box	Inspect			.10			
		Repair			1.5			
		Replace			1.0			
	Relays	Inspect			.10			
		Test			.50			
		Replace			1.0			
	Circuit Breaker	Inspect			.10			
		Test			.50			
		Replace			1.0			
	Electrical Connectors, Wiring Harness and Terminal Board	Inspect			.10			
		Test			.50			
		Replace			.50			
	Wiring Harness (Main)	Inspect			.10			
		Test			.50			
		Repair			1.0			
		Replace			1.5			

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level				
			C	O	F	H	D
04	ELECTRIC MOTORS, FANS AND HOUSING						
	Evaporator Fan	Inspect		.10			
		Service		50			
		Replace		.			
	Evaporator Fan Motor	Inspect		.10			
		Test		.			
		Repair		4.0			
		Replace		2.0			
	Evaporator Fan Housing	Inspect		.10			
		Replace		1.0			
	Condenser Fan	Inspect		.10			
		Service		.10			
		Replace		.			
	Condenser Fan Motor	Inspect		.10			
		Test		.			
		Repair		4.0			
		Replace		3.0			
	Condenser Fan Housing	Inspect		.10			
		Replace		2.0			
05	REFRIGERATION SYSTEM						
	Pressure Switches	Inspect		.10			
		Test		.25			
		Adjust		.50			
		Replace		2.0			
	Valves, Tubing and Dehydrator	Inspect		.25			
		Test		1.0			
		Adjust		1.0			
		Repair		4.0			
		Replace		4.0			
	Compressor	Inspect		.10			
		Test		.25			
		Repair		3.0			
		Replace		6.0			

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level				
			C	O	F	H	D
05	REFRIGERATION SYSTEM (CONT.)						
	Condenser Coil	Inspect				.10	
		Repair				.50	
		Replace				8.0	
	Evaporator Coil	Inspect				.10	
		Repair				.50	
		Replace				8.0	
06	FRAME AND ATTACHING PARTS						
	Frame	Inspect				.50	
		Repair				4.0	
		Replace				50.0	
	Insulation	Inspect				.25	
		Replace				4.0	
	Fittings, Tie Down Lifting Rings	Inspect		.10			
		Replace				2.0	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
	F-H	<p>No special tools and test equipment required. Standard tools and test equipment in the following kits are adequate to accomplish the maintenance functions listed in Section II:</p> <p>Tool kit, service, refrigeration Unit (SC 5 8)</p> <p>Soldering Gun Kit</p> <p>Recovery and Recycling Unit, Refrigerant</p>	<p>5180-00-596- 474</p> <p>3439-00-930- 638</p> <p>4130-01-338-2707</p>	17500B (07295)

SECTION IV. REMARKS

MAINTENANCE ALLOCATION CHART

Reference Code	Remarks
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No supplemental instructions or explanatory remarks are required for the maintenance functions listed in Section II. All functions are sufficiently defined in Section I. Active time listed for maintenance task functions are with the air conditioner in off-equipment position.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION 1. INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the air conditioner to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

- a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.
- b. Section III. Basic Issue Items. These are the minimum essential items required to place the air conditioner in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the air conditioner during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

APPENDIX C

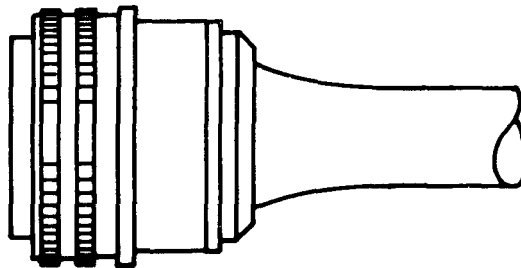
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS (CONT.)

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings.

- a. Column (1)-Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.
- b. Column (2)-National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.
- c. Column (3)-Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.
- d. Column (4)-Unit of Measure (U/M). Indicates the measure used in performing the actual operation/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).
- e. Column (5)-Quantity required (QTY/REQ). Indicates the quantity of the item authorized to be used with/on the equipment.

Illus. Number	National Stock Number	Description FSCM & Part No.	U/M	QTY Req.
1	5935-00-846-2328	Connector, plug Electrical (96906) MS3106R22-22s	EA.	1



APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

D-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the air conditioner.

These items are authorized to you by CTA 50-970, Expendable items (Except Medical, Class V, Repair Parts and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

- a. COLUMN 1, ITEM NUMBER. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, table D-1").
- b. COLUMN 2, LEVEL. This column identifies the lowest level of maintenance that requires the listed item.
 - C- Operator/Crew
 - O- Organizational Maintenance
 - F- Direct Support Maintenance
 - H- General Support Maintenance
- c. COLUMN 3, NATIONAL STOCK NUMBER. This is the National stock number assigned to the item: use it to request or requisition the item.
- d. COLUMN 4, DESCRIPTION. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates Manufacturers (FSCM) in parenthesis, if applicable.
- e. COLUMN 5, UNIT OF MEASURE (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pt). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST

TABLE D-1. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	H		ACETONE	PT
2	F,H	8040-00- 664-4318	ADHESIVE TYPE MM-A-1617 TYPE II	PT
3	O,F		DRY CLEANING SOLUTION (PD-680)	PT
4	F		FIBERGLASS CLOTH	ROLL
5	F	4130-00- 860-0042	FILTER-KOTE	PT
6	F		INSULATING TAPE	ROLL
7	H		METHYL-ETHYL-KETONE (MEK)	PT
8	F		NITROGEN (DRY)	CYL
9	F		OIL (MIL SPEC 0-2104	PT
10	F		REFRIGERANT (R11)	CYL
11	F		REFRIGERANT (R22)	CYL
12	F,H		SOLDER ALLOYS 60 22 SWG	ROLL
13	F		SOLDER SILVER .062 DIA	ROLL
14	F		NOKORODE SOLDERING PASTE	CAN
15	F		STAY-SILV SILVER SOLDER FLUX	CAN
16	F		PLUMBERS ROLL ABRASIVE CLOTH	ROLL
17	C,O,F		GREASE (GAA)	TUBE
18	O,F		RTV 108	TUBE
19	F		THREAD SEAL TAPE (MIL-T-27730A)	ROLL

APPENDIX E

DIAGRAMS

E-1 WIRE LIST

E-2 WIRING DIAGRAM.

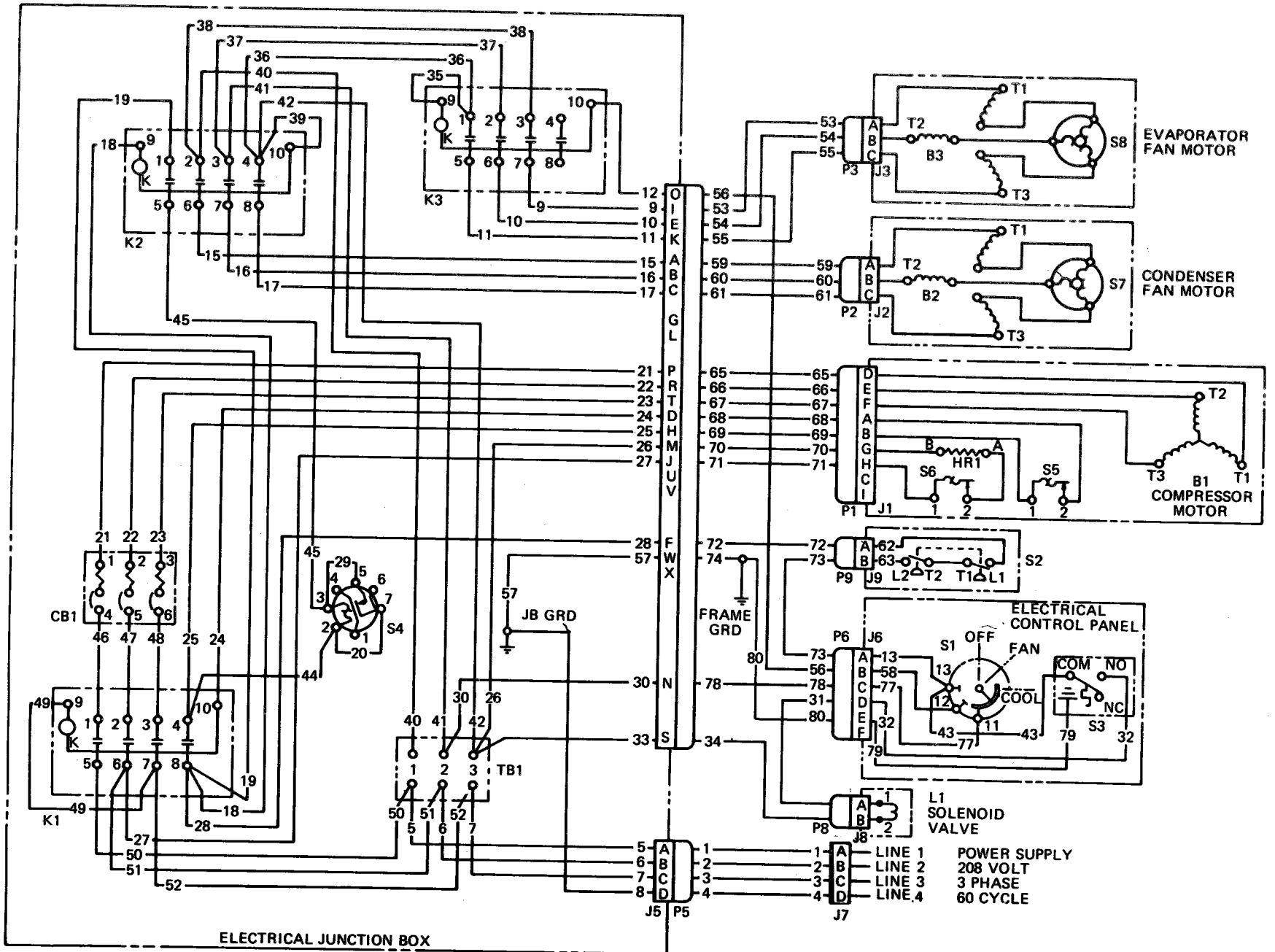
The wiring diagram for the air conditioner is shown in figure E-1.

E-3 REFRIGERANT SYSTEM DIAGRAM

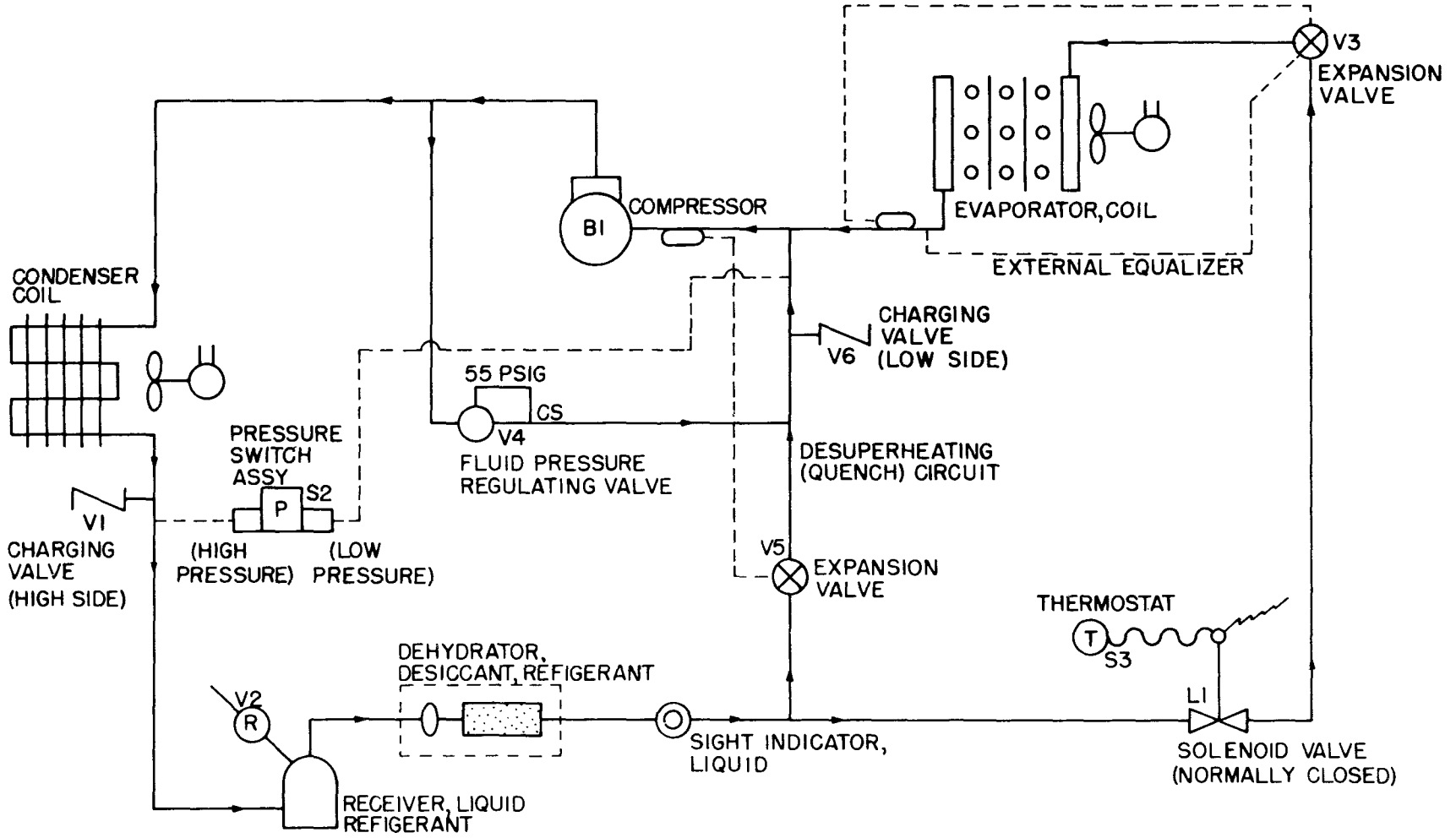
The refrigerant system diagram for the air conditioner is shown in figure E-2.

		FROM		TO			
WIRE I.D.No.	Terminal Type	Term. No.	Terminal Type	Term. No.		Lenght (inches)	Wire Size
WIRING HARNESS---MAIN POWER							
1	MS3106R22-22S	P5-A	MS3100R22-22P	J7-A		71	8
2	MS3106R22-22S	P5-B	MS3100R22-22P	J7-C		71	8
3	MS3106R22-22S	P5-C	MS3100R22-22P	J7-D		71	8
4	MS3106R22-22S	P5-D	MS3100R22-22P	J7-B		71	8
WIRING HARNESS---MAIN							
31	MS3106R12S-3S	P8-A	MS3106R18	P6-D		62	16
34	MS3106R32-6P	P4-S	MS3106R12S-3S	P8-B		85	16
53	MS3106R32-6P	P4-I	MS3106R14S-7SXP3-A			65	16
54	MS3106R32-6P	P4-E	MS3106R14S-7SXP3-B			65	16
55	MS3106R32-6P	P4-K	MS3106R14S-7SXP3-C			75	16
56	MS3106R32-6P	P4-O	MS3106R18-12S	P6-B		65	16
59	MS3106R32-6P	P4-A	MS3106R14-7S	P2-A		60	16
60	MS3106R32-6P	P4-B	MS3106R14-7S	P2-B		60	16
61	MS3106R32-6P	P4-C	MS3106R14-7S	P2-C		60	16
65	MS3106R32-6P	P4-P	MS3106R14-7S	P2-C		75	10
66	MS3106R32-6P	P4-R	MS3106R24-11S	P1-E		75	10
67	MS3106R32-6P	P4-T	MS3106R24-11S	P1-F		75	10
68	MS3106R32-6P	P4-D	MS3106R24-11S	P1-A		75	16
69	MS3106R32-6P	P4-H	MS3106R24-11S	P1-B		75	16
70	MS3106R32-6P	P4-M	MS3106R24-11S	P1-G		75	16
71	MS3106R32-6P	P4-J	MS3106R24-11S	P1-H		75	16
72	MS3106R32-6P	P4-F	MS3106R12S-3S	P9-A		82	6
73	MS3106R12S-3S	P9-B	MS3106R18-12S	P6-A		23	16
74	MS3106R32-6P	P4-W				31	6
78	MS3106R32-6P	P4-N	MS3106R18-12S	P6-C		75	16
80	MS3106R18-12S	P6-E				31	16

FROM		TO			
WIRE I.D.No.	Terminal Type	Term. No.	Terminal Type	Term. No.	Lenght (inches) Wire Size
WIRING HARNESS--CONTROL MODULE					
13	MS3102R18-12P	J6-A	MS25036-106	S1-13	7 16
32	MS3102R18-12P	J6-D	MS25036-153	S3-2	15 16
43	MS25036-106	S1-13	MS25036-153	S3-4	13 16
58	MS3102R18-12P	J6-B	MS25036-106	S1-12	11 16
77	MS3102R18-12P	J6-C	MS25036-106	S1-11	11 16
79	MS3102R18-12P	J6-E	MS25036-152	S3-GRD	15 16
WIRING HARNESS--JUNCTION BOX					
9	MS3102R32-6S	J4-1	MS25036-108	K3-7	10 16
10	MS3102R32-6S	J4-E	MS25036-108	K3-6	9 16
11	MS3102R32-6S	J4-K	MS25036-108	K3-5	8 16
12	MS3102R32-6S	J4-O	MS25036-106	K3-10	15 16
15	MS3102R32-6S	J4-A	MS25036-108	K2-6	10 16
16	MS3102R32-6S	J4-B	MS25036-108	K2-7	9 16
17	MS3102R32-6S	J4-C	MS25036-108	K2-8	8 16
18	MS25036 -106	K2-9	MS25036-108	K1 -8	21 16
19	MS25036 -106	K2-1	MS25036-108	K1 -8	19 16
21	MS3102R32-6S	J4-P	MS25036-112	CB1-1	8 16
22	MS3102R32-6S	J4-R	MS25036-112	CB 1-2	8 16
23	MS3102R32-6S	J4-T	MS25036-112	CB1-3	8 16
24	MS3102R32-6S	J4-D	MS25036-106	K1-10	7 16
25	MS3102R32-6S	J4-H	MS25036-108	K1-4	6 16
26	MS3102R32-6S	J4-M	MS25036-108	TB1-3	13 16
27	MS3102R32-6S	J4-J	MS25036-108	K1 -6	13 16
28	MS3102R32-6S	J4-F	MS25036-108	K1 -8	11 16
30	MS3102R32-6S	J4-N	MS25036-108	TB1-2	12 16
33	MS3102R32-6S	J4-S	MS25036-108	TB1-3	13 16
36	MS25036 -108	K2-4	MS25036-108	K3-1	4 16
37	MS25036 -108	K2-3	MS25036-108	K3-2	6 16
38	MS25036 -108	K2-2	MS25036-108	K3-3	8 16
40	MS25036 -108	K2-2	MS25036-108	TB1-1	20 16
41	MS25036 -108	K2-3	MS25036-108	TB1-2	19 16
42	MS25036 -108	K2-4	MS25036-108	TB1-3	13 16
46	MS25036 -112	CB1-4	MS25036-112	K1-1	8 16
47	MS25036 -112	CB1-5	MS25036-112	K1 -2	7 16
48	MS25036 -112	CB1-6	MS25036-112	K1 -3	6 16
49	MS25036 -108	K1-9	MS25036-108	K1 -7	12 16
50	MS25036 -112	K1-5	MS25036-112	TB1-1	8 16
51	MS25036 -112	K1-6	MS25036-112	TB 1-2	7 16
52	MS25036 -112	K1-7	MS25036-112	TB1-3	7 16
57	MS3102R32-6S	J4-W	MS25036-119	Ground	7 16



WIRING DIAGRAM



REFRIGERANT SYSTEM DIAGRAM

APPENDIX F

GLOSSARY

COMPRESSOR- Compresses low pressure refrigerant vapor from the evaporator into high pressure, high temperature vapor.

CONDENSER- Cools the hot, high pressure refrigerant gas causing it to condense into high pressure liquid refrigerant.

CRANKCASE HEATER- Prevents migration of liquid refrigerant into the compressor in cold weather.

EVAPORATOR- Cools and dehumidifies the air before it enters the room.

FILTER-DIRER-Removes any traces of moisture from the refrigerant system.

HIGH PRESSURE CUTOFF- Interrupts power to the compressor when the refrigerant system pressure becomes too high.

LIQUID LINE SOLENOID- Opens or closes the liquid refrigerant line from the condenser coil to the evaporator coil expansion valve.

LOW PRESSURE CUTOFF- Interrupts power to the compressor when the refrigerant system pressure becomes too low.

LIQUID THERMAL EXPANSION VALVE- Meters liquid refrigerant into the evaporator coil distributor.

QUENCH THERMAL EXPANSION VALVE- Injects liquid refrigerant into the recirculating gas in the bypass circuit to maintain the temperature of the gas below its extreme limit.

RECEIVER- A reservoir for liquid refrigerant which tends to stabilize operation of the refrigeration system.

SERVICE VALVES- Valves for suction and discharge when air conditioner refrigerant is being tested and serviced.

SIGHT GLASS- A diagnostic tool to observe refrigerant flow and refrigerant level.

INDEX

A	Paragraph
Air Damper Control, Fresh	4-25
Air Filter	4-19
B	
Box, Junction	4-22
Box, Control	4-16
Brazing	5-15
C	
Capabilities and Features	1-7
Cable, Damper Control	4-20
Charging the System	5-18
Checking Unpacked Equipment	4-5
Circuit Breaker	4-22
Coil Replacement, Evaporator	5-41
Common Tools and Equipment	4-1
Compressor	5-36
Compressor Motor Burnout	5-36
Compressor Test	5-36
Connectors, Electrical	4-22
Condensate Drainage System	4-21
Condensate Drain Connector	4-21
Condenser Coil (Gurard)	4-18
Condenser Coil Replacement	5-40
Condenser Fan Assembly	4-26
Control Box	4-16
Control Box Wiring Harness	4-16
Cooling	1-13
Crankcase Heater	5-36
Cutting Copper Tubing	5-15
D	
Damper Control, Fresh Air	4-20
Damper Control, Return Air	4-20
Debrazing	5-14
Destruction of Army Material to Prevent Enemy Use	1-3
Diagnosing Compressor Motor Burnout	5-38
Direct Support Troubleshooting	5-4
Discharge, System	5-12
Dehydrator (Filter-Drier)	5-29

E

Electrical Connector	4-22
Equipment Data	1-10
Evacuating the System	5-17
Evaporator Coil	5-41
Evaporator Fan	4-25
Evaporator Van guard	4-17
Expansion Valve, Thermal	5-30
Expansion Valve, Quench	5-31

F

Fan, Condenser Assembly	4-26
Fan, Evaporator	4-25
Filter, Air	4-19
Filter-Drier (Dehydrator)	5-29
Fresh Air Damper Control	4-20
Fresh Air Screen	4-20
Front Panel	4-15

G

General	
Description and Use of Operator's Controls and Indicators	1-11
Direct Support Maintenance Instructions	5-11
General Support Maintenance Instructions	6-1
Maintenance Procedures	6-2
Operation Under Usual Conditions	2-6
Operation Under Unusual Conditions	2-9
Guard, Condenser Coil	4-18
Guard, Evaporator Outlet	4-17

H

Heater, Crankcase	5-36
Hi/Lo Pressure Switch	5-33

I

Inspecting and Servicing Equipment 4 - 6
 Installation Instructions..... 4 - 8
 Instruction Plates..... 5-42
 Insulation 5-43

J

Junction Box..... 4-22

L

Leak Checking 5-16
 Left Side Panel..... 4-15
 Lifting Ring Covers 4-14
 List of Abbreviations
 Location and Description of Major Components 1-8

M

Maintenance Forms, Records and Reports 1-2
 Motor Burnout, Compressor 5-37
 Motor, Fan Condenser 4-26
 Motor, Fan Evaporator 4-25
 Maintenance Panel..... 4-15

O

Operation in High Altitudes..... 2-14
 Operation in Dusty or Sandy Areas 2-11
 Operation in Extreme Cold 2-9
 Operation in Extreme Heat 2-10
 Operation Under Rainy or Humid Conditions 2-12
 Operation in Saltwater Area 2-13
 Operational Instruction Warning Plates 2-8
 Organizational (PMCS)..... 4-9
 Organizational Troubleshooting..... 4-11

P

Panel Assembly, Fresh Air Filter..... 4-15
 Panel Assembly, Front..... 4-15
 Panel Assembly, Left Side..... 4-15
 Panel Assembly, Maintenance 4-15
 Panel Assembly, Right Side 4-15
 Panel Assembly, Top..... 4-15
 Power Wiring Harness 4-24
 Preparation for Storage 4-25
 Preparation for Shipment 4-26
 Preparation for Use 2-4
 Pressure Switch Hi/Lo..... 5-26
 Pressure Testing..... 5-19
 Pressure Relief Valve 5-33

Q

Quench Valve 5-31

R

Receiver 5-32
 Refrigerant Tubing 5-27
 Relay, K1,K2,K3 4-22
 Relief Valve, Pressure 5-32
 Repair Parts 4-3
 Reporting Equipment Improvement Recommendations 1-5
 Return Air Damper 4-20
 Right Side Panel 4-16
 Rotary Selector Switch (S1) 4-15

S

Scope 1-1
 Screen, Fresh Air 4-19
 Selector Switch, Rotary (S1) 4-16
 Service Upon Receipt 4-7
 Service Valves 5-28
 Shipment 4-26
 Sight Glass 5-34
 Special Tools ,MTDE and Support Equipment 4-2
 Solenoid Valve 5-35
 Starting the Equipment 2-6
 Stopping the Equipment 2-7
 Switches
 Hi/Lo Pressure 5-33
 Systems
 Charging the System 5-18
 Evacuating the System 5-19
 System Discharge 5-12

T

Temperature Control and Thermostat (S2)	4-22
Terminal Boards (TB1 and TB2)	4-22
Thermal Expansion Valve	5-30
Thermal Expansion Valve Quench	5-31
Thermal Relay Assy. (S4)	4-22

U

Unpacking	4-5
---------------------	-----

V

Valves	
Pressure Relief	5-32
	5-28
Solenoid	5-35
Thermal Expansion	5-30
Quench	5-31
Ventilation	1-12

W

Wiring Harness Control	4-16
Wiring Harness Main	4-24

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, *United States Army*
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25C, Operator Maintenance requirements for 36,000 BTU, Truck or Van Mtg Air Conditioners.



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PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEANWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER

TM 5-4120-375-14

PUBLICATION DATE

21 Oct 83

PUBLICATION TITLE

Air Conditioner, Base Mounted, Air Cooled, 208VAC

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO.

6

PARA-GRAPH

2-1
a

FIGURE NO.

4-3

TABLE NO.

B1

125

line 20

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim. Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2 910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigram = .035 ounce
 1 dekagram = 10 grams = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	.11375			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
----	------------------------	----------------------------	---------------------	----

