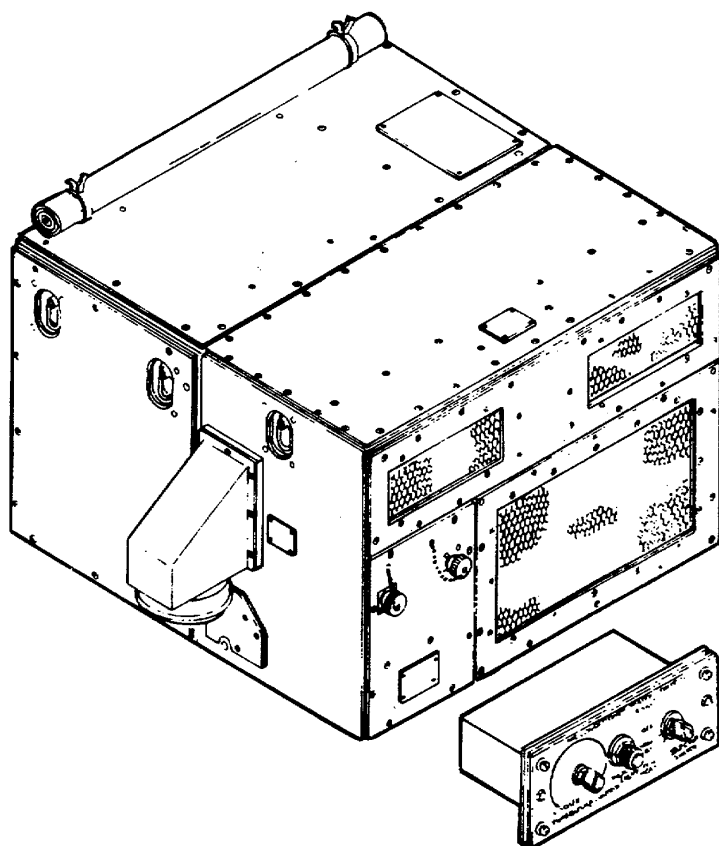


TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT
SUPPORT,

AND GENERAL SUPPORT MAINTENANCE MANUAL

CHAPTER/
APPENDIX



This copy is a reprint which includes
current pages from Changes 1 through 6

AIR CONDITIONER
SPLIT PACKAGE

18,000 BTU/HR COOLING
30,000 BTU/HR HEATING
208 VOLT, 3 PHASE 400 HERTZ

KECO MODEL F18H4-2
(4120-01-069-1321)

INTRODUCTION	1
OPERATING INSTRUCTIONS	2
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS	3
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS	4
GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	5
REFERENCES	A
MAINTENANCE ALLOCATION CHART	B
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST	C
ADDITIONAL AUTHORIZATION LIST	D
EXPENDABLE SUPPLIES MATERIALS LIST	E
INDEX	I

TECHNICAL MANUAL

TM 5-4120-359-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 25 February 1982

OPERATOR'S, ORGANIZATIONAL,
DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL
FOR
AIR CONDITIONER, SPLIT PACKAGE,
18,000 BTU/HR COOLING
30,000 BTU/HR HEATING
208 VOLT, 3 PHASE, 400 HERTZ

KECO MODEL F18H4-2
4120-01-469-1321

AIRTACS MODEL MSP18-4-08
4120-01-266-7597

FERANGE MODEL FAC-MH-18S
4120-01-363-8137

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes 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 Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO, 63120-1798. A reply will be furnished to you.

TABLE OF CONTENTS

			Page
CHAPTER	1.	<u>INTRODUCTION</u>	1-1
Section	I	General Information	1-1
Section	II	Equipment Description	1-2
Section	III	Technical Principles of Operation.....	1-6
CHAPTER	2.	<u>OPERATING INSTRUCTIONS</u>	2-1
Section	I	Description and Use of Operator's Controls and Indicators	2-1
Section	II	Operator Preventive Maintenance Checks and Services (PMCS).....	2-4
Section	III	Operation Under Usual Conditions	2-5
Section	IV	Operation Under Unusual Conditions	2-12
CHAPTER	3.	<u>ORGANIZATIONAL MAINTENANCE INSTRUCTIONS</u>	3-1
Section	I	Repair Parts, Special Tools, TMDE, and Support Equipment	3-1
Section	II	Service Upon Receipt of Equipment.....	3-2
Section	III	Preventive Maintenance Checks and Services (PMCS).....	3-13
Section	IV	Troubleshooting	3-20
Section	V	Maintenance Procedures	3-22
Section	VI	Preparation for Storage or Shipment	3-48

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited

TABLE OF CONTENTS (cont.)

			Page
CHAPTER	4.	<u>DIRECT SUPPORT MAINTENANCE INSTRUCTIONS</u>	4-1
Section	I	Repair Parts, Special Tools, TMDE, and Support Equipment	4-1
Section	II	Troubleshooting	4-2
Section	III	General Maintenance Procedures	4-20
Section	IV	Itemized Maintenance Procedures	4-38
CHAPTER	5.	<u>GENERAL SUPPORT MAINTENANCE INSTRUCTIONS</u>	5-1
Section	I	Repair Parts, Special Tools, TMDE, and Support Equipment	5-1
Section	II	Authorized General Support Maintenance Actions.....	5-1
APPENDIX	A.	<u>REFERENCES</u>	A-1
APPENDIX	B.	<u>MAINTENANCE ALLOCATION CHART</u>	B-1
Section	I	Introduction.....	B-1
Section	II	Maintenance Allocation Chart	B-4
Section	III	Tool and Test Equipment Requirements	B-17
Section	IV	Remarks	B-18
APPENDIX	C.	<u>COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS</u>	C-1
Section	I	Introduction.....	C-1
Section	II	Components of End Item	C-2
Section	III	Basic Issue items.....	C-3
APPENDIX	D.	<u>ADDITIONAL AUTHORIZATION LIST</u>	D-1
Section	I	Introduction.....	D-1
Section	II	Additional Authorization List.....	D-2
APPENDIX	E.	<u>EXPENDABLE SUPPLIES AND MATERIAL LIST</u>	E-1
Section	I	Introduction.....	E-1
Section	II	Expendable Supplies and Material List.....	E-2
	I.	<u>ALPHABETICAL INDEX</u>	I-1

WARNING

Acetone and methylethyl ketone (MEK) are flammable, and their vapors can be explosive. Repeated or prolonged skin contact or inhalation of vapors can be toxic. Use a well-ventilated area, and keep away from sparks or flame. Use goggles, gloves, and apron when appropriate.

WARNING

Do not use steam to clean coil.

WARNING

Do not use seam, open flame, heat gun, or any other high-temperature heat source to thaw an iced coil. Thaw an iced coil with a lamp bulb (75-watt maximum), hair drier, electric fan, or by leaving the unit shut down until ice melts.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI (2.1 kg/cm²). Do not direct compressed air against the skin. Use goggles or full face shield.

WARNING

Avoid inhaling fumes and burns from any acid formed by burnout of oil and refrigerant. Wear gas mask if area is not thoroughly ventilated. Wear protective goggles or glasses to protect eyes. Wear rubber gloves to protect hands. Use care to avoid spilling compressor burnout sludge. If sludge is spilled, clean area thoroughly.

WARNING

Avoid injury by using adequate equipment and personnel to remove compressor from frame. The compressor weighs 75 pounds (34 kg).

WARNING

Clean parts in a well ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property.

Do not use near open flame or excessive heat. Flash point of solvent is 100°F to 138°F (38°C to 59°C).

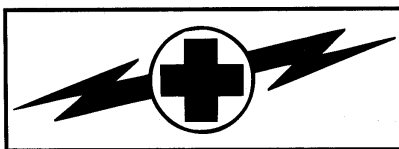
Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm²).

Assure the industrial process has been evaluated by the Medical Service Bioenvironmental Engineer.

Waste treatment/disposal must be approved by the Medical Service Bioenvironmental Engineer and Civil Engineer.

WARNING

Solutions will be disposed of in accordance with local State Water Pollution Control Laws. Consult local Medical Services for guidance.

WARNING**HIGH VOLTAGE**

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions.

Never work on electrical equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the input power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections of 208 volts ac input when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

Do not operate the equipment without all grilles, guards, louvers, and covers in place and tightly secured.

Warning: Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

WARNING

Disconnect input power to the air conditioner before performing any maintenance to the electrical system. Voltages used can be lethal. Shutting the unit off at the control module does not disconnect power to the various components of the air conditioner.

WARNING

Allow heaters to cool before touching. Severe burns can result from touching hot heaters.

WARNING

Do not allow anyone under equipment suspended from a lifting device.

Do not allow the unit to swing while suspended from a lifting device. Failure to observe this warning may result in injury to personnel and damage to the equipment.

WARNING

- The covers, grilles, and screens installed on this unit are there for a purpose.
- Do not operate this unit with them off or open unless the instructions tell you to. When this is necessary, do so with care.

WARNING

The burning of polyurethane foams is dangerous.

Due to the chemical composition of a polyurethane foam, toxic fumes are released when it is burned or heated.

If it is burned or heated indoors, such as during a welding operation nearby, you should take care to ventilate the area thoroughly. An exhaust system like that of a paint spray booth should be used.

Air-supplied respirators, approved by the National Institute for Occupational Safety and Health Administration or the United States Bureau of Mines, should be used for all welding in confined spaces and in places where ventilation is inadequate. Persons who have chronic or recurrent respiratory conditions, including allergies and asthma, should not work in these areas.

WARNING

DANGEROUS CHEMICAL
is used in this equipment

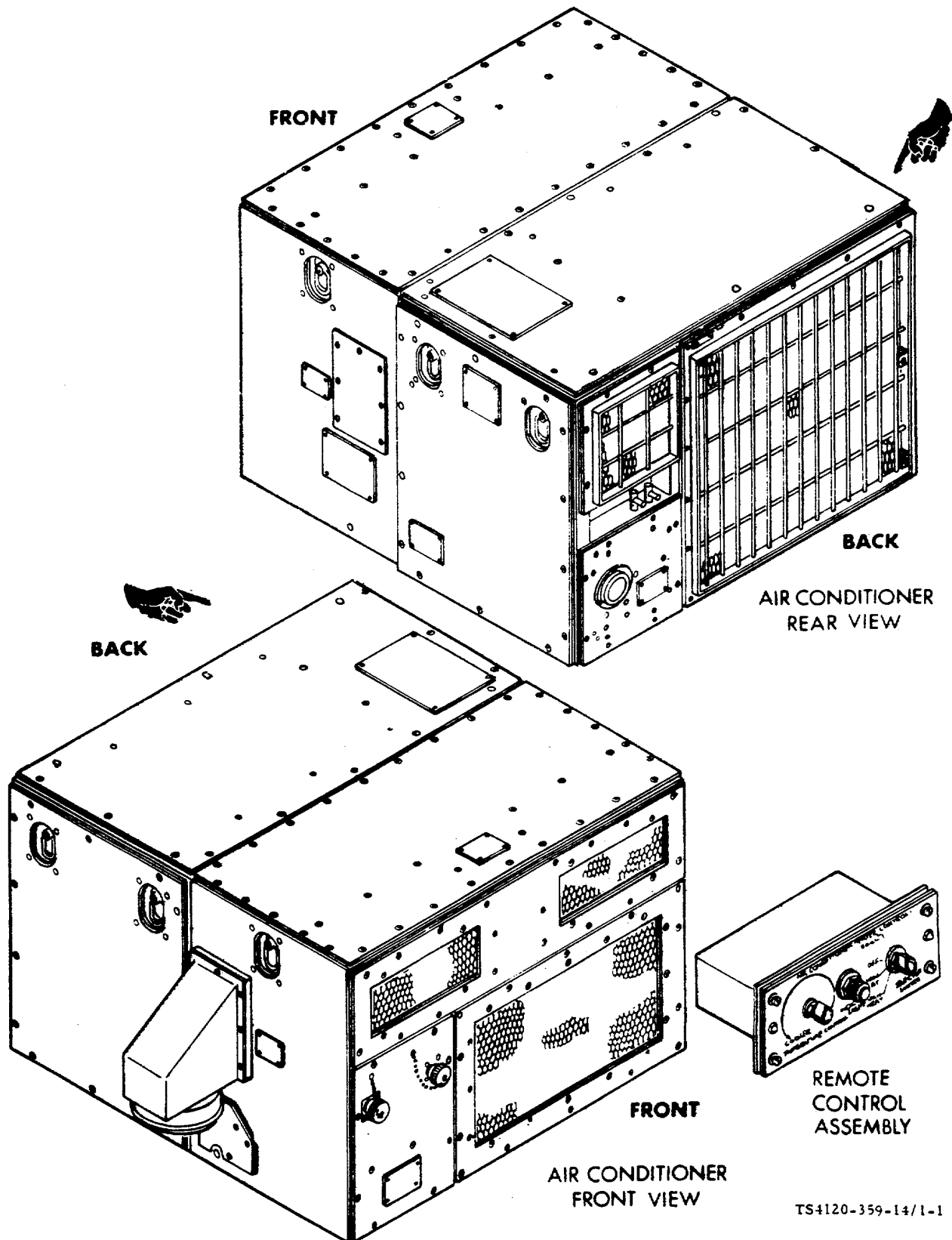
DEATH

or serious injury may result if personnel fail to observe proper safety precautions. Great care must be exercised to prevent contact of liquid refrigerant or refrigerant gas discharged under pressure, with any part of the body. The extremely low temperature resulting from the rapid expansion of liquid refrigerant or refrigerant gas released under pressure, can cause sudden and irreversible tissue damage through freezing. As a minimum, all personnel must wear thermal protective gloves and a face shield or goggles when working in any situation where refrigerant contact with the skin or eyes is possible. Application of excessive heat to any component in a charge system will cause extreme pressure that may result in a rupture, possibly explosive in

nature. Exposure of Refrigerant 22 to an open flame or a very hot surface will cause a chemical reaction in the gas to form carbonyl chloride (phosgene), a highly toxic and corrosive gas. In its natural state, refrigerant 22 is a colorless odorless vapor with no toxic characteristics. It is lighter than air and in a well ventilated area will disperse rapidly. However, in an unventilated area it presents danger as a suffocant.

WARNING

Be sure the refrigeration system is fully discharged and purged and that dry nitrogen is flowing through the system at the rate of less than 1 - 2 cfm (0.028 - 0.057 m³/minute) before all brazing or debrazing operations.



TS4120-359-14/1-1

Figure 1-1. Air Conditioner

CHAPTER 1

INTRODUCTION

Section I GENERAL INFORMATION

1.1 SCOPE

- a. Type of Manual, Operators, Organizational, Direct Support, and General Support Maintenance Manual.
- b. Model Number and Equipment Name. Keco Model F18H4-2 (Airtacs Model MSP18-4-08) (Ferange Model FAC-MH-18S), Split Package, 18,000 BTU/HR Cooling, 30,000 BTU/HR Heating, 208 Volt, 3 Phase, 400 Hertz, Air Conditioner.
- c. Purpose of Equipment. Cools, heats, and ventilates enclosed space (shelter). The unit covered by this manual designed for cooling and heating air to a desired predetermined range and circulating the conditioned air to provide heating and cooling of equipment or personnel within the 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 738-750. The Army Maintenance Management System (TAMMS).

1-3. HAND RECEIPT MANUAL

This manual has a companion document with a TM number followed by -HR (which stands for Hand Receipt). The TM 5-4120-359-14-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 12, AR 25-30.

Commander
U.S. Army Publications Distribution Center
2800 Eastern Boulevard
Baltimore, MD 21220-2896

1-4. 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 don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, Headquarters, U. S. Army Aviation and Troop Command, Attention: AMSAT-I-MDO, 4300 Goodfellow Blvd, St. Louis, Missouri 63120-1798. We will send you a reply.

1-5. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Command decisions, according to tactical situation, will determine when destruction of the air conditioning unit will be accomplished. A destruction plan will be prepared by the using organization, unless one has been prepared by higher authority. For general destruction procedures for this equipment refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.