

TB 9-2320-360-13&P-1

TECHNICAL BULLETIN

OPERATOR'S AND FIELD MAINTENANCE BULLETIN,
INSTALLATION INSTRUCTIONS, AND
REPAIR PARTS AND SPECIAL TOOLS LISTS (RPSTL)

FOR

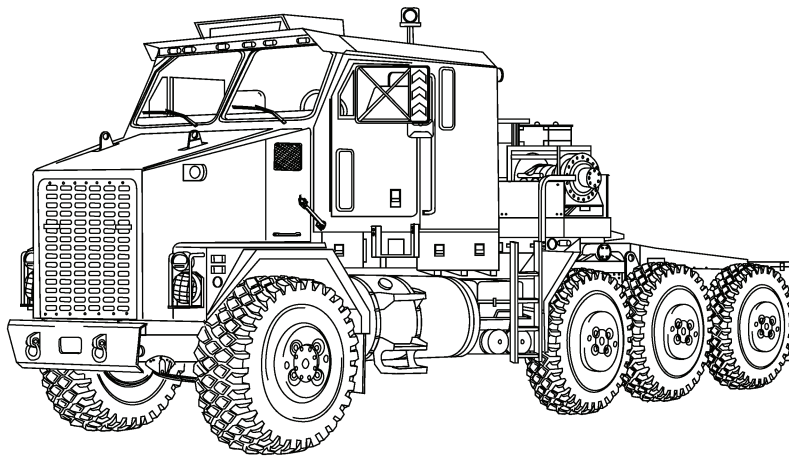
AIR CONDITIONER

AND

STOWAGE BOX KIT
MODEL 7336
(NSN 4120-01-505-4149)
(P/N 3439127)

FOR

HEAVY EQUIPMENT TRANSPORTER (HET)
MODEL 1070, 8X8



DISTRIBUTION STATEMENT A - Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY 2008

This list summarizes critical warnings in this technical bulletin. They are repeated here to let you know how important they are. Study these warnings carefully. They can save your life and the lives of personnel you work with. If there is any doubt about handling tools, materials, equipment, and procedures, see TB 43-0216, Safety and Hazard Warnings for Operation and Maintenance of equipment.

WARNING

Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

WARNING

Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

WARNING

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep away from open fire and keep fire extinguisher within easy reach when working with fuel.

WARNING

Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to follow this warning may cause serious injury or death to personnel.

WARNING

Keep out from under radiator while supported by lifting device to prevent serious injury.

WARNING

Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention. Keep away from open flames and other sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- The flashpoint for type II solvent cleaning compound is 141-198°F (61-92°C) and type III is 200-241°F (93-116°C).
- Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
- Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death to personnel.
- Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury to personnel.
- Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particle may cause injury to personnel.

WARNING

Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissue. Use care to prevent refrigerant from touching your skin or eyes. Serious injury or blindness may result if you come in contact with liquid refrigerant.

WARNING

Ensure engine is cool before performing maintenance. Failure to follow this warning may result in severe burns.

WARNING

Engine and radiator assembly are very hot during truck operation. Use extreme caution when working around hot engine and radiator assembly. Failure to follow this warning may result in severe burns.

WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

WARNING

A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

WARNING

Ensure engine is cool before performing visual inspection. Failure to follow this warning may result in severe burns.

WARNING

Ensure A/C hoses are cool before performing visual inspection. Failure to follow this warning may result in severe burns.

WARNING

Do not work in an area where refrigerant may contact an open flame or any burning material, such as a cigarette. When it contacts extreme heat, refrigerant breaks down into poisonous phosgene gas which, if breathed, causes severe respiratory irritation. Do not breathe the fumes from an open flame leak detector.

WARNING

Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

WARNING

Always use caution when approaching a hot engine. Failure to do so may result in serious burns.

WARNING

Use caution when inspecting A/C hose at output of A/C condenser. A/C hose may be hot. Failure to do so may result in serious injury to personnel.

WARNING

Ensure engine is cool before removing A/C compressor. Failure to follow this warning may result in severe burns.

WARNING

Wear protective goggles and nonleather gloves when purging or injury may result.

WARNING

Ensure engine is cool before installing A/C compressor. Failure to follow this warning may result in severe burns.

WARNING

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may result in injury to personnel.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

Date of issue for original manual is:

Original 29 February 2008

Total number of work packages is 63 consisting of the following:

Page/WP No.	Change No.	Page/WP No.	Change No.
Front Cover (2 pgs.)	0	WP 0030 00 (2 pgs.)	0
TOC (4 pgs.)	0	WP 0031 00 (2 pgs.)	0
How to Use This Technical Bulletin(2 pgs.) . 0		WP 0032 00 (2 pgs.)	0
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No. 9-2320-360-13&P-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 29 February 2008

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (*Recommended Changes to Equipment Technical Publications*), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeaps.ria.army.mil>. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter, DA Form 2028 directly to: AMSTA-LC-LMPP/TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is: ROCK-TACOM-TECH-PUBS@conus.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE TECHNICAL BULLETIN

NOTE

If at any time you are unsure how to use this bulletin or you cannot locate the information you need, notify your supervisor.

INTRODUCTION

1. This bulletin is designed to help you operate and maintain the A/C and stowage box kit for the HET. It also provides installation instructions for the A/C and stowage box kit and the Repair Parts and Special Tools Lists (RPSTL).
2. This bulletin is written in work package format:
 - a. Chapters divide the bulletin into major categories of information (e.g., *General Information and Theory of Operation*, *Initial Installation*, *Operator's Instructions*, *Operator's Troubleshooting*, *Unit PMCS*, *Unit Troubleshooting*, *Unit Maintenance*, *Direct Support Troubleshooting*, *Direct Support Maintenance*, and *Supporting Information*).
 - b. Each Chapter is divided into work packages, which are identified by a 6-digit number (e.g., 0001 00, 0002 00) located on the upper right-hand corner of each page. The work package page number (e.g., 0001 00-1, 0001 00-2) is located centered at the bottom of each page.
 - c. If a Change Package is issued to this bulletin, added work packages use the 5th and 6th digits of their number to indicate new material. For instance, work packages inserted between WP 0001 00 and WP 0002 00 are numbered WP 0001 01, WP 0001 02, etc.
3. Read through this bulletin to become familiar with its organization and contents before attempting to install, operate, or maintain the A/C and stowage box kit.

CONTENTS OF THIS BULLETIN

1. A *Warning Summary* is located at the beginning of this bulletin. Become familiar with these warnings before installing, operating, or performing maintenance on the A/C and stowage box kit.
2. A *Table of Contents*, located in the front of the bulletin, lists all chapters and work packages in the publication.
 - a. The *Table of Contents* also provides *Reporting Errors and Recommending Improvements* information and DA Form 2028 addresses, for the submittal of corrections to this bulletin.
 - b. If you cannot find what you are looking for in the *Table of Contents*, refer to the alphabetical *Index* at the back of the bulletin.
3. Chapter 1, *General Information and Theory of Operation*. Provides general information on the bulletin, the A/C system, and stowage box kit.
4. Chapter 2, *Initial Installation*. This chapter contains step-by-step procedures for installation of the A/C and stowage box kit.
5. Chapter 3, *Operator's Instructions*. This chapter includes *Operator's Controls and Indicators*, *Operator's Preventive Maintenance Checks and Services (PMCS) Introduction*, *Operator's Preventive Maintenance Checks and Services (PMCS)*, and *System Operation*.
6. Chapter 4, *Operator's Troubleshooting*. Provides information for diagnosing and correcting malfunctions serviceable by operator.
7. Chapter 5, *Unit PMCS*. This chapter includes *Unit Preventive Maintenance Checks and Services (PMCS) Introduction* and *Unit Preventive Maintenance Checks and Services (PMCS)*.
8. Chapter 6, *Unit Troubleshooting*. Provides information for diagnosing and correcting malfunctions serviceable by Unit Maintenance.
9. Chapter 7, *Unit Maintenance*. This chapter includes necessary steps for repairing A/C system malfunctions serviceable by Unit Maintenance and replacing stowage box and fuel line extensions.
10. Chapter 8, *Direct Support Troubleshooting*. Provides information for diagnosing and correcting malfunctions serviceable by Direct Support Maintenance.

CONTENTS OF THIS BULLETIN - CONTINUED

11. Chapter 9, *Direct Support Maintenance*. This chapter includes necessary steps for repairing A/C system malfunction serviceable by Direct Support Maintenance.
12. Chapter 10, *Supporting Information. Installation Drawings and Schematics, References, Maintenance Allocation Chart (MAC) Introduction, Maintenance Allocation Chart (MAC), Expendable and Durable Supplies and Materials List, and Illustrated Parts List (RPSTL)*.

FEATURES OF THIS BULLETIN

1. WARNINGS, CAUTIONS, NOTES, subject headings, and other important information are highlighted in **BOLD** print as a visual aid.

WARNING

A WARNING indicates a hazard which may cause injury or death to personnel.

CAUTION

A CAUTION is a reminder of safety practices or directs attention to usage practices that may cause damage to equipment.

NOTE

A NOTE is a statement containing information that will make the procedures easier to perform.

2. Statements and words of particular interest may be printed in CAPITAL LETTERS to create emphasis.
3. Within a procedural step, reference may be made to another work package in this bulletin or to another bulletin. These references indicate where you should look for more complete information.
 - a. If you are told: "Refer to *Operator's Controls and Indicators* (WP 0005 00)", go to WP 0005 00 in this bulletin for instructions on this procedure.
 - b. If you are told: "For complete information on HET PMCS, refer to TM 9-2320-360-10", or go to *References* in WP 0058 00 for complete information on the cited reference.
4. Illustrations are placed after, and as close to, the procedural steps to which they apply. Callouts placed on the art are text or numbers.
5. Numbers located at the lower right corner of the art (e.g. 449-001; HETF001) are art control numbers and are used for tracking purposes only.
6. Technical instructions include metric units as well as standard units. For your reference, a *Metric Conversion Chart* is located on the inside back cover of the bulletin.

CHAPTER 1
GENERAL INFORMATION AND
THEORY OF OPERATION

GENERAL INFORMATION**0001 00****SCOPE**

- a. **Type of Manual.** This Technical Bulletin provides instructions for the installation, operation, and maintenance of the A/C and Stowage Box Kit for the HET Tractor.
- b. **Name.** HET A/C and Stowage Box Kit.
- c. **Purpose of Equipment.** The HET A/C kit is a direct support maintenance-installed A/C kit for the HET Tractor. Under the new regulations, shops not having the required recovery and recycling equipment (and properly trained and certified personnel) will not be allowed to do any of this service work. Once installed, the A/C system provides cooled air for the HET cab compartment during normal operations. The Stowage Box replaces personnel stowage space, which is used for the HET A/C kit installation.

MAINTENANCE FORMS AND PROCEDURES

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8 (The Army Maintenance Management System (TAMMS)) (Maintenance Management UPDATE).

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your HET Tractor needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-automotive and Armament Command, ATTN: AMSTA-TR-E\MPA, Warren, MI 48397-5000, DOD AAC:W81D19. We will send you a reply.

MATERIAL AND WORKMANSHIP WARRANTY

Regardless of Government inspections and product acceptance, the contractor shall warrant the supplies and services are free from defects in material and workmanship, and conform to the specifications and other requirements of the contract. The contractor shall be liable for the costs of correction of all defects resulting from breach of this warranty as set forth below:

- a. The basic warranty shall be effective for 13 months from the date of shipment. The date of shipment shall be as shown on the Requisition and Invoice/Shipping Document (DD Form 1149). The contractor shall provide greater warranty coverage on components, to the extent that the contractor's suppliers customarily provide such greater coverage to their commercial customers.
- b. If new A/C and Stowage Box kits are placed in storage at the contractor's facility, before being put in service, the warranty period shall not start until each such kit is withdrawn from that storage, or until nine months from the date shown on the Material Inspection and Receiving Report (DD Form 250); whichever occurs first. The date the kit is withdrawn from storage shall be as shown on the Requisition and Invoice/Shipping Document (DD Form 1149).
- c. If placed in contractor storage, the contractor shall maintain and exercise such stored kits per the Maintenance Procedures for Storage of Government Vehicles and Trailers (OTCGP004 A and B). Upon removal from storage, and before delivering the vehicle to the Government, the contractor shall perform the checks and procedures described in the Traffic Procedure (Form QCP-276) or equivalent.
- d. If a safety recall defect occurs during or after the warranty period, the contractor shall extend the warranty period until the necessary corrections are made.

NOMENCLATURE CROSS-REFERENCE LIST**COMMON NAME****OFFICIAL NOMENCLATURE**

AC	A/C
Engine Coolant	Antifreeze, Ethylene Glycol Mixture
HET Tractor	Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter (HET)
R-134a	A/C Refrigerant

GENERAL INFORMATION - CONTINUED**0001 00****LIST OF ABBREVIATIONS**

A/C	Air Conditioning
AAL	Additional Authorization List
amp	Amperes
BII	Basic Issue Item
°C	Degree Celsius
cm	Centimeter
DA	Department of the Army
EIR	Equipment Improvement Recommendation
°F	Degree Fahrenheit
ft	Foot
ft. lb	Foot Pound
HET	Heavy Equipment Transporter
HETS	Heavy Equipment Transport System
in.	Inch
JTA	Joint Tables of Allowances
kPa	Kilopascal
lb	Pound
lbf	Pound-Force
lb-in.	Pound-Inch
m	Meter
mm	Millimeter
MTOE	Modification Table of Organization and Equipment
N-m	Newton Meter
PMCS	Preventive Maintenance Checks and Services
psi	Pound-Force Per Square Inch
STE/ICE-R	Simplified Test Equipment/Internal Combustion Engine Reprogrammable
TAMMS	The Army Maintenance Management System
TB	Technical Bulletin
TDA	Tables of Distribution and Allowance
TM	Technical Manual
vdc	Volts Direct Current

THEORY OF OPERATION

The HET A/C kit is a Direct Support Maintenance installed cab A/C system for the HET Tractor. The kit consists of an engine driven A/C compressor, A/C condenser, A/C receiver/dryer, A/C evaporator, A/C blower, AC control valves and switches, A/C hoses, and A/C shutoff/disconnect valves.

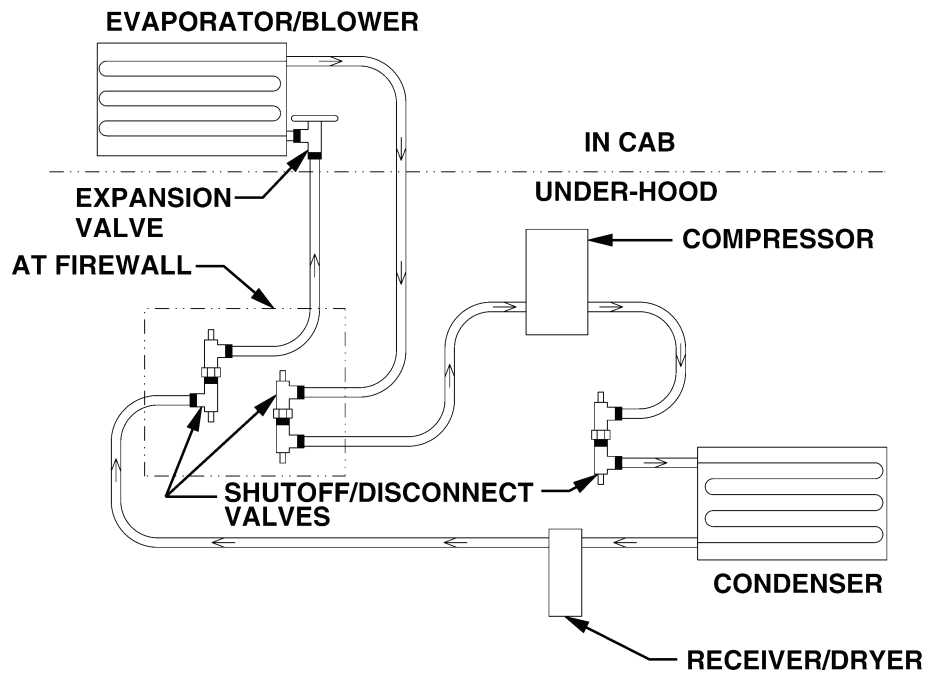
In the HET A/C system, the engine driven A/C compressor pressurizes R-134a refrigerant gas. The pressurized R-134a gas is then passed through the A/C condenser, where it is cooled and converted to a high-pressure liquid. The liquid R-134a is then passed through the A/C receiver/dryer, where moisture is removed and the liquid R-134a is stored until it is required by the system. When cooling is required, the high-pressure R-134a liquid is passed through the A/C expansion valve and A/C evaporator, where it is converted to a low-pressure gas. This process cools the R-134a refrigerant and A/C evaporator coil. Cab air is then passed across the cooled A/C evaporator coil by the A/C blower, which cools and dehumidifies the air. The cooled air is then passed back into the cab, cooling the cab. The R-134a gas from the A/C evaporator is then passed back to the A/C compressor, to complete the refrigerant cycle.

GENERAL INFORMATION - CONTINUED**0001 00****THEORY OF OPERATION - CONTINUED**

A four position control switch controls the A/C system. The four position control switch turns the system on and off, and controls the A/C blower speed. Cab temperature is maintained by controlling the air flow through the A/C evaporator and A/C air ducts. The A/C compressor and R-134a refrigerant flow is automatically controlled by the system. Refer to WP 0005 00 for location of controls.

The shutoff/disconnect valves are provided to allow for the separation of the A/C system in three sections for routine maintenance and repair, without evacuating the R-134a refrigerant.

Also provided with the A/C kit, is a Stowage Box Kit. The Stowage Box Kit replaces personnel stowage space, which is used for the HET A/C kit installation.

**HET AC SYSTEM SCHEMATIC****END OF WORK PACKAGE**

CHAPTER 2
INITIAL INSTALLATION

INITIAL INSTALLATION INTRODUCTION

0002 00

This chapter contains step-by-step procedures for installing the HET Tractor A/C and stowage box kits.

INSTALLATION PROCEDURE

The initial installation procedure for the A/C system is divided into *A/C Kit Installation* (WP 0003 00) and *Stowage Box Installation* (WP 0004 00). These work packages can be performed in any order without affecting the other. Both kits must be installed to complete the A/C system installation.

END OF WORK PACKAGE

A/C KIT INSTALLATION**0003 00****THIS WORK PACKAGE COVERS**

Under-Hood Components, In-Cab Components, Final Component Assembly

INITIAL SETUP**Maintenance Level**

Direct Support

Personnel Required

Two

Tools and Special Tools

Blade, Kit, Hole Saw (Item 1, WP 0060 00)

Tool Kit, General Mechanic (Item 12, WP 0060 00)

References

TM 9-2320-360-34

TM 9-2320-360-24P

Materials/Parts

Kit, Retro, A/C (Item 1, WP 0063 00)

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Paper, Emery (Item 7, WP 0061 00)

Sealant, Loctite (Item 11, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Ties, Plastic (Item 15, WP 0061 00)

Lockwasher

Equipment Conditions

Air system drained (TM 9-2320-360-20-2)

Coolant drained (TM 9-2320-360-20-2)

Radiator removed (TM 9-2320-360-20-2)

Right front fender removed (TM 9-2320-360-20-2)

Wheels chocked (TM 9-2320-360-10)

Hood removed (TM 9-2320-360-20-2)

Batteries disconnected (TM 9-2320-360-20-2)

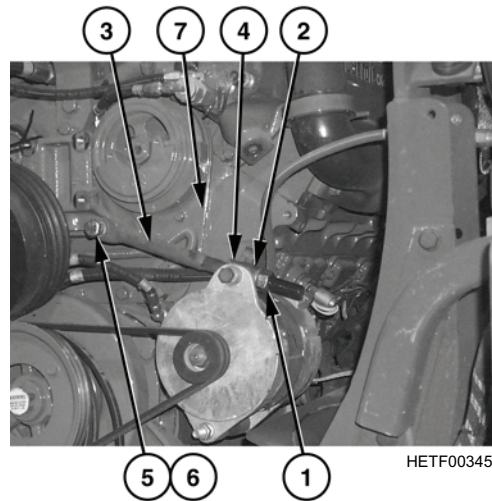
Engine cooling fan removed (TM 9-2320-360-20-2)

WARNING

- Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.
- Refrigerant R-134a is odorless. As a result, all of it may leak away and not be noticed until system stops cooling. All vehicle refrigerant systems lose some refrigerant depending on condition of system. Higher loss rates signal a need to locate and repair leaks.
- Leaks are most often found at compressor hose connections and at various fittings and joints in system. If unapproved replacement hoses are installed, refrigerant can be lost through hose permeation.

A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS****1. Alternator Modification.**

- a. Remove fan clutch (TM 9-2320-360-20).
- b. Remove original alternator belt tensioning arm.
 - (1) Remove alternator belts (TM 9-2320-360-20).
 - (2) Remove nut (1) and lockwasher (2) from alternator belt tensioning arm (3). Discard lockwasher.
 - (3) Remove adjusting nut (4) from alternator belt tensioning arm (3).
 - (4) Remove screw (5), lockwasher (6), and alternator belt tensioning arm (3) from engine block (7). Discard lockwasher and alternator belt tensioning arm.



UNDER-HOOD COMPONENTS - CONTINUED**WARNING**

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electric shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

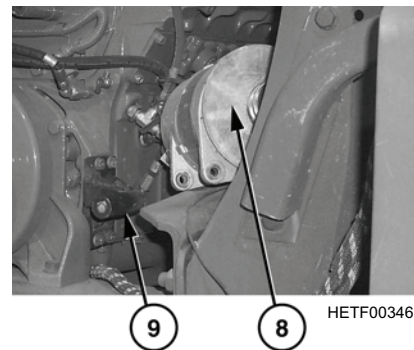
CAUTION

Support alternator during bracket removal. Failure to support alternator may result in damage to equipment.

NOTE

Alternator is removed from the bracket only. Do not disconnect the wires when removing the alternator from the bracket.

- c. Remove alternator (8) from the original alternator bracket (9) (TM 9-2320-360-20).

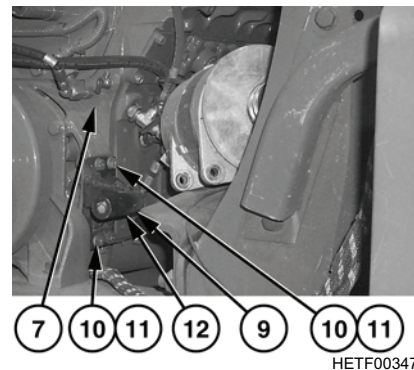


- d. Replace alternator bracket.

CAUTION

Support alternator during bracket removal. Failure to support alternator may result in damage to equipment.

- (1) Remove four screws (10), lockwashers (11), and original alternator bracket (9) from engine block (7). Discard lockwashers and original alternator bracket.
- (2) Install new alternator bracket (12) on engine block (7) with four new lockwashers (11) and screws (10).



A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS - CONTINUED**

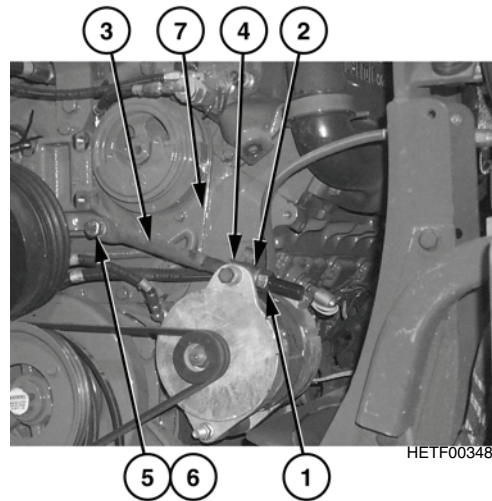
- e. Install alternator.

CAUTION

Ensure wires to alternator are loose enough to allow for alternator belt adjustment. Failure to follow this caution may result in damage to wiring harnesses.

Install alternator on new bracket (TM 9-2320-360-20).

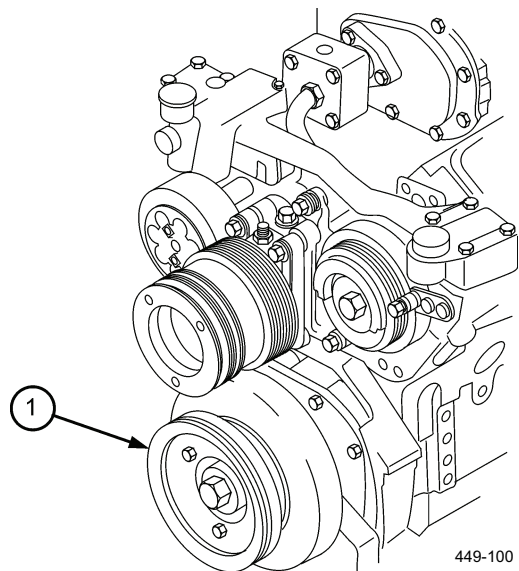
- f. Install alternator belt tensioning arm.
- (1) Install new alternator belt tensioning arm (3) to engine block (7) using new lock-washer (6) and screw (5).
 - (2) Install adjusting nut (4) on new alternator belt tensioning arm (3).
 - (3) Install new alternator belt tensioning arm (3) using new lockwasher (2) and nut (1).
- g. Install fan clutch (TM 9-2320-360-20).



2. **Compressor Pulley Installation.**

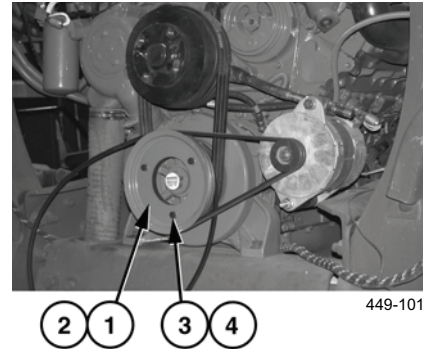
- a. Remove alternator drive pulley.

Remove the alternator drive pulley (1) (TM 9-2320-360-20). Discard original mounting hardware.



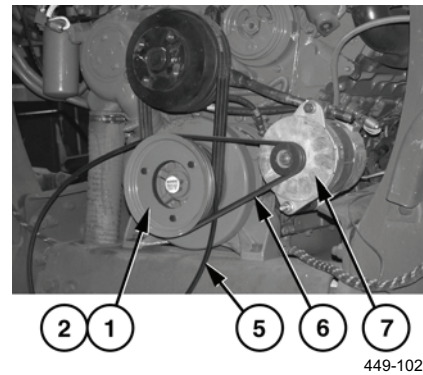
A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS - CONTINUED**

- b. Install compressor and alternator drive pulleys.
- (1) Install the compressor drive pulley (2), provided with the kit, and the alternator drive pulley (1) using three lockwashers (3), screws (4) provided with the kit.

**NOTE**

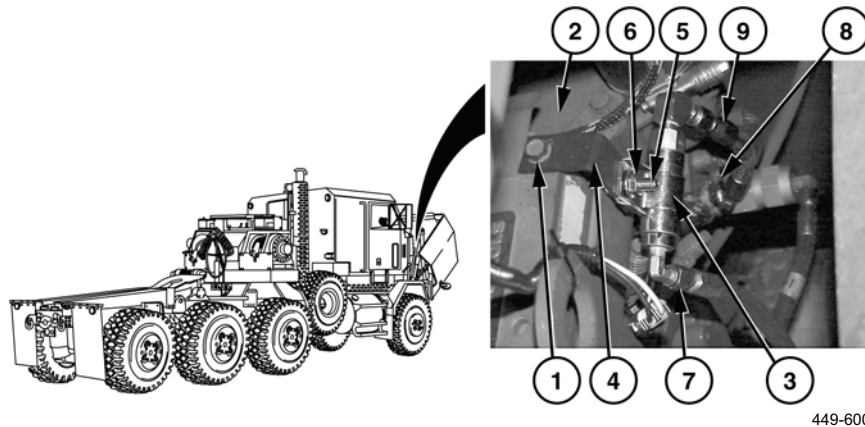
The compressor drive belt will be installed on the compressor after compressor installation.

- (2) Install compressor drive belt (5), provided with the kit, on compressor drive pulley (2).
- (3) Install two alternator belts (6) on alternator drive pulley (1) and alternator (7) (TM 9-2320-360-20).
- (4) Adjust alternator belts (TM 9-2320-360-20).



UNDER-HOOD COMPONENTS - CONTINUED**3. Fan Control Solenoid Switch Assembly Installation.**

- a. Remove screw (1) from electronic control module (ECM) (2).
- b. Install A/C fan control solenoid switch assembly (3) on A/C fan control solenoid switch assembly mounting bracket (4) with screw (5) and locknut (6).
- c. Install A/C fan control solenoid switch assembly mounting bracket (4) on ECM (2) with screw (1).
- d. Remove supply air line (7) from thermostatic switch inlet elbow (8).
- e. Install supply air line (7) on A/C fan control solenoid switch assembly (3).
- f. Install air line (9), provided with the kit, on thermostatic switch inlet elbow (8).
- g. Install air line (9) on A/C fan control solenoid switch assembly (3).



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4. Water Connections Modification.**CAUTION**

Ensure hoses are routed so hoses do not kink or rest on hot surfaces after installation. Failure to follow this caution may result in damage to hoses.

NOTE

Make sure all coolant is drained from system.

- a. Disconnect lower radiator hose (7) from engine water pump (2).
- b. Remove hose and elbow (1) from engine water pump (2). Remove and retain clamp. Discard hose and elbow.

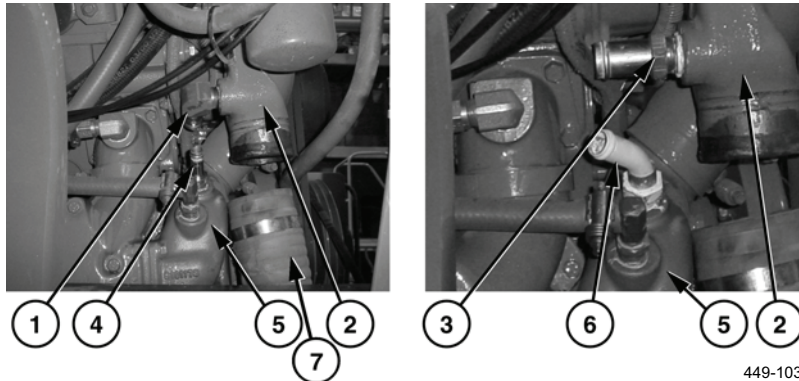
WARNING

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

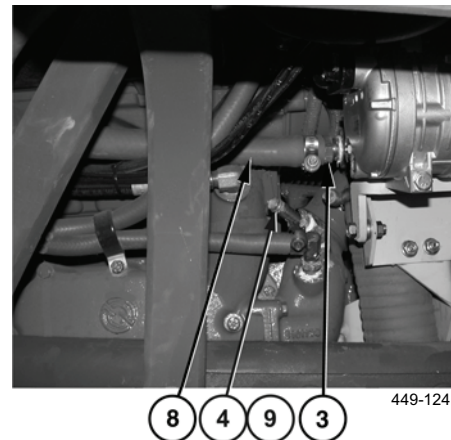
- c. Apply thread tape on threads of straight hose adapter (3), provided with the kit.
- d. Install straight hose adapter (3) on engine water pump (2).
- e. Remove hose and straight hose adapter (4) from engine block (5). Remove and retain adapter and clamp. Discard hose.

A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS - CONTINUED**

- f. Apply thread tape on threads of elbow (6) provided with the kit.
- g. Install elbow (6) on the engine block (5).
- h. Install straight hose adapter (4) on elbow (6).



- i. Connect 1" diameter silicone hose (8) to straight hose adapter (3) using existing clamps.
- j. Route 1" diameter silicone hose (8) along engine block toward rear of truck, and then gently curve upward along the hard-lift bracket angled support toward the top radiator tank.
- k. Connect 3/4" diameter silicone hose (9) to straight hose adapter (4) using existing clamps. Position hose aside to be connected later.



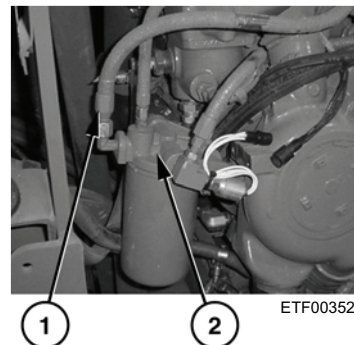
A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS - CONTINUED****5. Secondary Fuel Filter Extension Installation.****WARNING**

- Fuel is very flammable and can explode easily. To avoid serious injury or death, keep away from open fire and keep fire extinguisher within easy reach when working with fuel.
 - Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to follow this warning may cause serious injury or death to personnel.
 - Wear safety goggles when working with fuel. Failure to follow this warning may cause serious injury to personnel.
- a. Install fuel line extension.

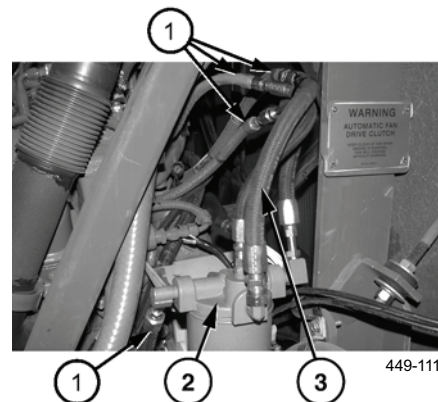
NOTE

Location of plastic cable ties should be marked before removal. Tag and mark fuel lines before removal.

- (1) Remove clips and plastic ties from four fuel lines (1).
- (2) Remove fuel line (1) from secondary fuel filter assembly (2).

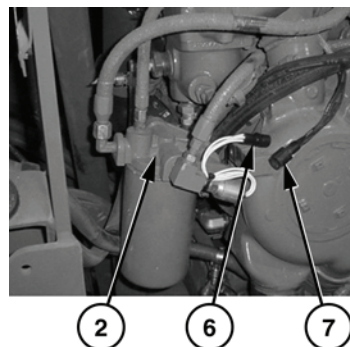


- (3) Install fuel line extension (3) on fuel line (1) and secondary fuel filter assembly (2).
- (4) Repeat previous steps for remaining three fuel lines (1).
- (5) Prime fuel pump and check for leaks (TM 9-2320-360-20).
- (6) Install clips and plastic ties on four fuel lines (1).



UNDER-HOOD COMPONENTS - CONTINUED

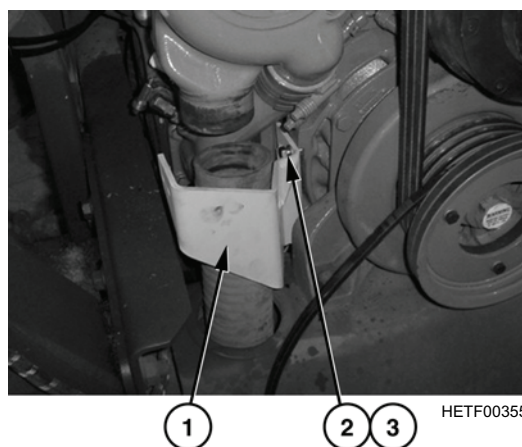
- b. Install STE-ICE harness extension.
 - (1) Disconnect STE-ICE fuel pressure transducer harness connections (6 and 7) on secondary fuel filter assembly (2).
 - (2) Install STE-ICE fuel pressure transducer harness extension to STE-ICE fuel pressure transducer harness connections (6 and 7).
 - (3) Install plastic cable ties to secure connections (6 and 7) as necessary.



HETF00354

6. Compressor Installation.**NOTE**

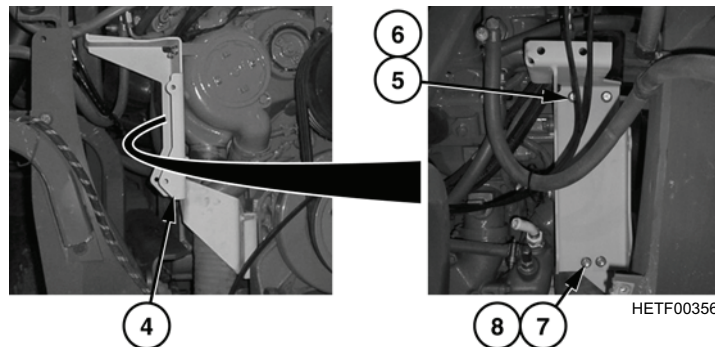
- Do not remove the fuel filter and bracket assembly from the truck. Fuel filter and bracket assembly will be installed on the new mounting hardware, provided with the kit.
 - Support the fuel filter assembly until compressor/fuel filter bracket, provided with the kit, has been installed.
- a. Remove fuel filter from filter housing (TM 9-2320-360-34).
 - b. Remove secondary fuel filter assembly.
 - c. Remove secondary fuel filter and bracket assembly (TM 9-2320-360-34).
 - d. Install compressor/fuel filter supports, lower and upper bracket extension.
 - (1) Install lower compressor/fuel filter support (1) with three screws (2) and lockwashers (3), provided with the kit.



HETF00355

A/C KIT INSTALLATION - CONTINUED**0003 00****UNDER-HOOD COMPONENTS - CONTINUED**

- (2) Install upper compressor/fuel filter support (4) with two screws (5), lockwashers (6), screws (7), and locknuts (8), provided in kit.

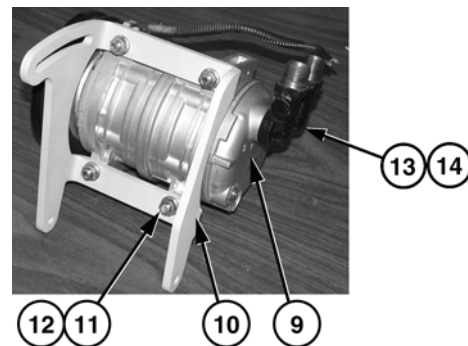


- e. Install compressor on swing bracket.

NOTE

The compressor intake/exhaust ports are rotated during shipping to minimize damage.

- (1) Loosen screw (13) and rotate compressor intake/exhaust ports (14) 180°.
- (2) Install compressor (9) on swing bracket (10) with four screws (11) and locknuts (12), provided with the kit.



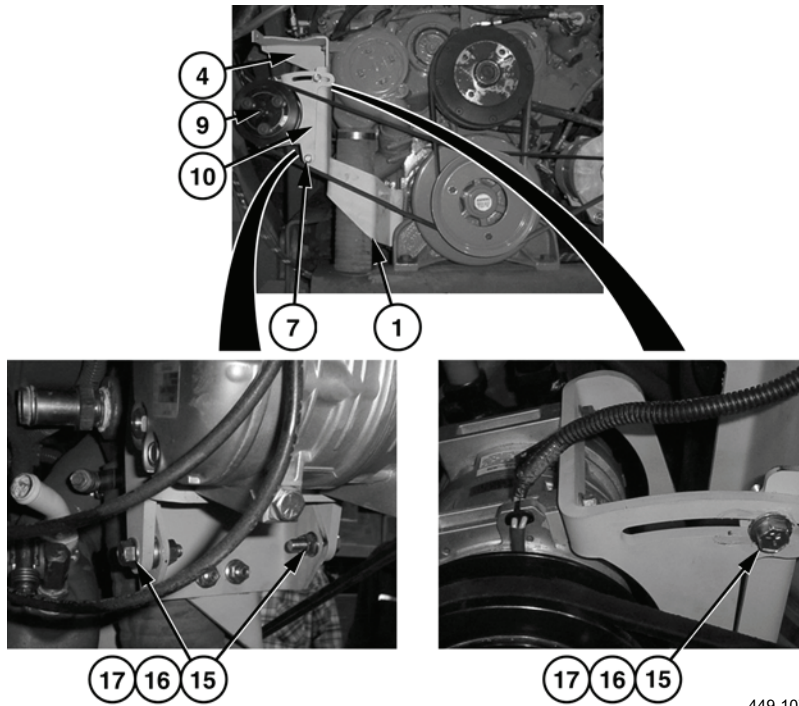
449-106

NOTE

Do not tighten swing bracket screws until drive belt is adjusted.

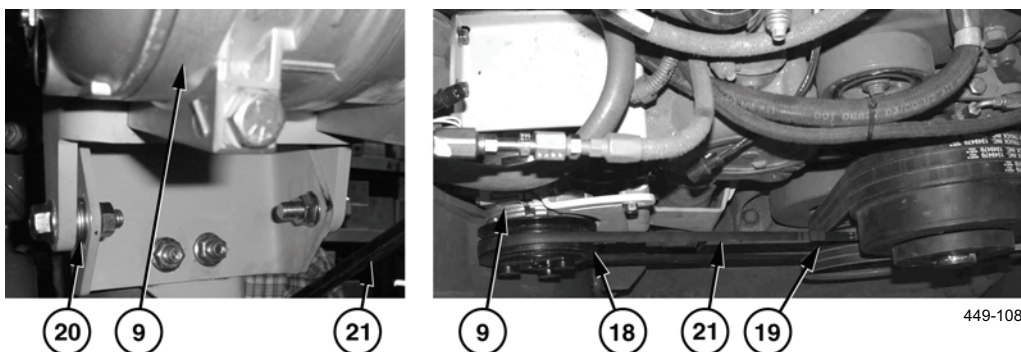
- f. Install compressor and swing bracket.
- (1) Install compressor (9) and swing bracket (10) to upper compressor/fuel filter support (4) with three screws (13), washers (14), and locknuts (15), provided with the kit. Do not tighten locknuts.

UNDER-HOOD COMPONENTS - CONTINUED

**NOTE**

Alignment of the compressor clutch pulley and compressor drive pulley can be checked by using a straight-edge placed on both pulleys. If necessary for alignment, shim the compressor with shims provided, to align the pulleys.

- (2) Align compressor clutch pulley (16) and compressor drive pulley (17).
- (3) If necessary, use shims (18) on compressor (9) to align pulleys (16 and 17).
- (4) Using a belt-tightening gage, tighten the compressor drive belt (19) to 98 lb (133 N).
- (5) Tighten swing bracket screws (13).
- (6) Tighten screw (7) on upper and lower compressor/fuel filter supports (1 and 4).



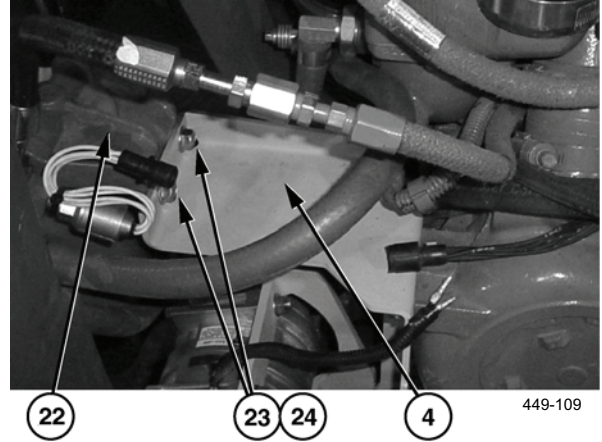
A/C KIT INSTALLATION - CONTINUED

0003 00

UNDER-HOOD COMPONENTS - CONTINUED

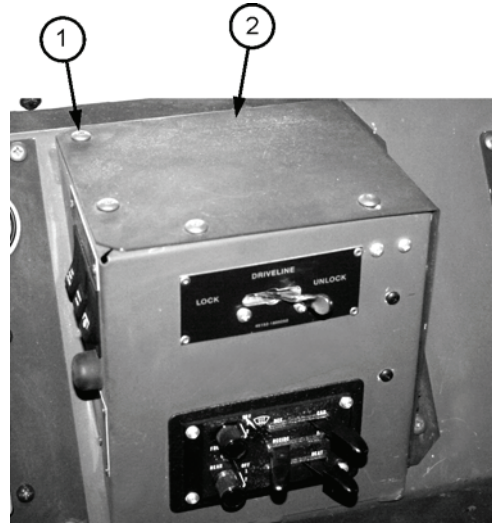
- g. Install secondary fuel filter assembly.

Install secondary fuel filter and bracket assembly (20) on upper compressor/fuel filter support (4), with two screws (21) and locknuts (22), provided with the kit.

**IN-CAB COMPONENTS**

1. **A/C Control Switch Installation.**

- a. Remove nine screws (1) and cover (2) from dash.



IN-CAB COMPONENTS - CONTINUED**WARNING**

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may result in injury to personnel.

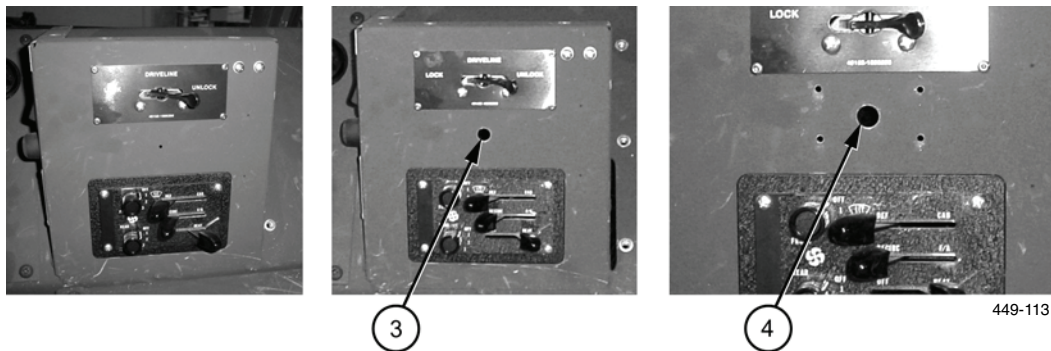
CAUTION

Before drilling holes, ensure all electrical wires are out of the way. Failure to follow this caution may result in damage to equipment.

NOTE

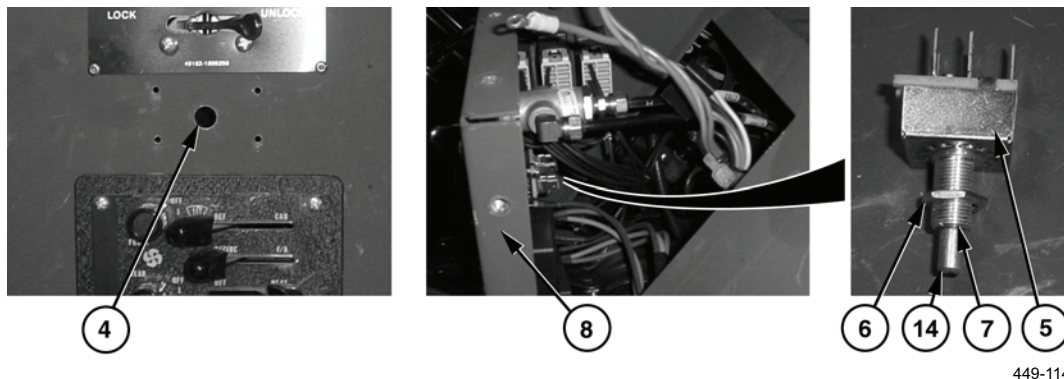
Refer to WP 0057 00 for template of A/C control switch mounting location.

- a. Drill a pilot hole (3) in location shown to ensure no components will be damaged when drilling mounting hole.
- b. Drill a 7/16-inch diameter hole (4) in location shown on template.

**NOTE**

Ensure threaded shaft extends out of dash panel far enough to allow for the installation of the switch plate and outside retaining nut.

- c. Install switch (5) in hole (4) with retaining nut (6) on threaded shaft (7) behind dash panel (8).
- d. Position flat side of switch facing to the right.



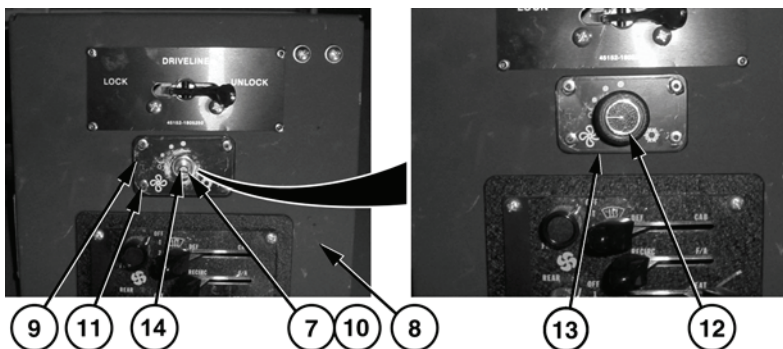
A/C KIT INSTALLATION - CONTINUED**0003 00****IN-CAB COMPONENTS - CONTINUED**

- e. Install decal (13) on switch plate (9).
- f. Install switch plate (9) and retaining nut (10) on threaded shaft (7) on front of dash panel (8).
- g. Tighten retaining nut (10) to hold switch (5) firmly to dash panel (8) and align switch plate (9) parallel to controls above and below.

WARNING

Always wear gloves and goggles when drilling. Failure to follow this warning may result in injury to personnel.

- h. Drill four 1/8-inch diameter holes in dash panel (8) using the four holes in the corners of the switch plate (9) as a template.
- i. Install switch plate (9) with four rivets (11) using rivet tool.
- j. Re-tighten retaining nut (10).
- k. Install knob (12) on end of threaded shaft (7), aligning the "D" on knob with the shape of switch shank (14).



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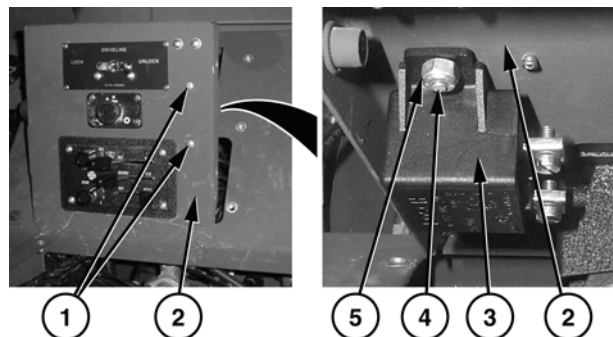
2. **A/C Relay Installation.****WARNING**

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may result in injury to personnel.

NOTE

Refer to WP 0057 00 for template of A/C relay mounting location.

- a. Drill two 9/32-inch-diameter holes (1) in the dash panel (2) as shown on template.
- b. Install relay (3) on back of dash panel (2) with two screws (4) and locknuts (5), provided with the kit.



HETF00367

IN-CAB COMPONENTS - CONTINUED**3. Doghouse Insulation, Mat, and Engine Access Panels Modification.**

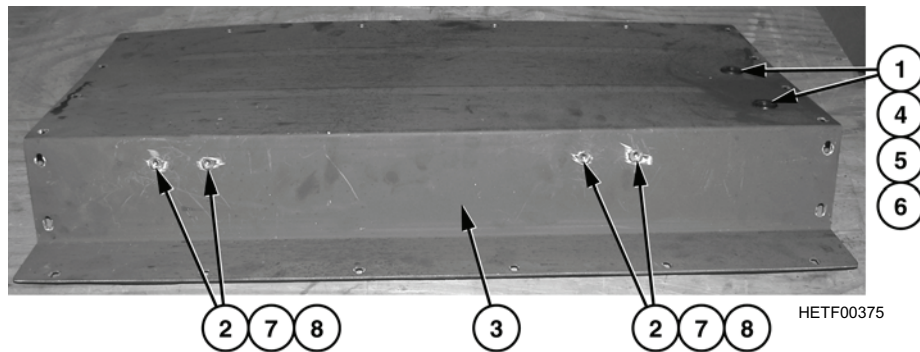
- a. Tilt rear bench seat cushion up against rear of cab to provide clearance for evaporator housing installation (TM 9-2320-360-20).
- b. Remove and discard transmission shift cable cover panel located in doghouse from the interior left side of doghouse (TM 9-2320-360-20).
- c. Remove and discard original doghouse door panel (TM 9-2320-360-20).
- d. Remove doghouse floor mat (TM 9-2320-360-20).
- e. Remove doghouse floor engine access panel from the vehicle (TM 9-2320-360-20).
- f. Remove forward doghouse top insulation, retaining angle, and screws (TM 9-2320-360-20).
- g. Remove rear doghouse top insulation, retaining angle, and screws (TM 9-2320-360-20). Discard screws (to be replaced by screws during installation).
- h. Remove doghouse top insulation (TM 9-2320-360-20).
- i. Remove doghouse front engine access panel (TM 9-2320-360-20).
- j. Modify doghouse floor engine access panel.

WARNING

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may result in injury to personnel.

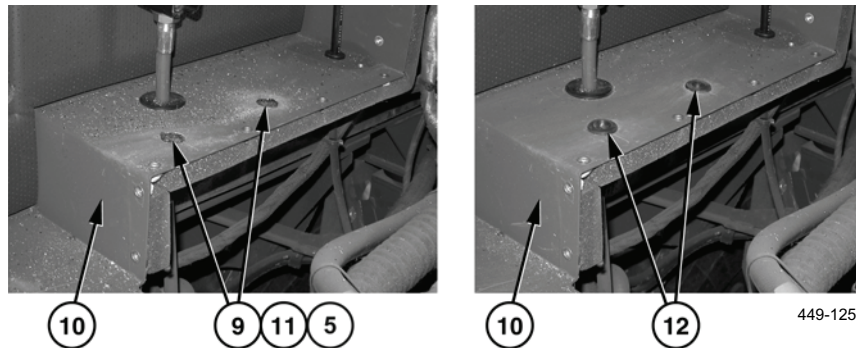
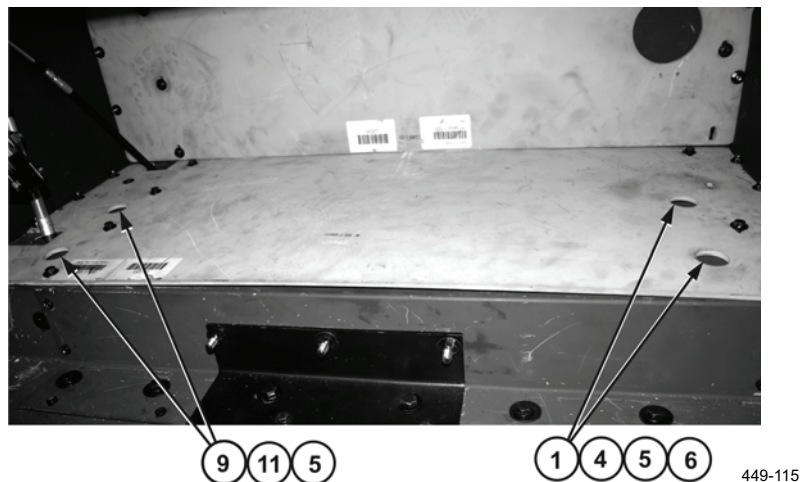
NOTE

- When doghouse floor engine access panel is modified, the step portion is removed. This portion is saved and installed on doghouse after evaporator is installed.
- On an armored vehicle the engine access panel does not need to be removed.
 - (1) Using template (WP 0057 00), locate and mark six holes (1 and 2) on doghouse floor engine access panel (3).
 - (2) Drill six 1/16-inch diameter pilot holes at locations (1 and 2) marked in previous step.
 - (3) Drill two 7/8-inch diameter holes (4) in doghouse floor engine access panel (3) for evaporator drain holes (5).
 - (4) Install two grommets (6), provided with the kit, in two 7/8-inch diameter holes (4) on doghouse floor engine access panel (3).
 - (5) Drill four 25/64-inch diameter holes (7) in doghouse floor engine access panel (3), as noted in template, for evaporator mounting.
 - (6) Install and set four 1/4-20 rivet nuts (8) in 25/64-inch diameter holes (7) (TM 9-2320-360-20).

IN-CAB COMPONENTS - CONTINUED

k. Modify doghouse floor.

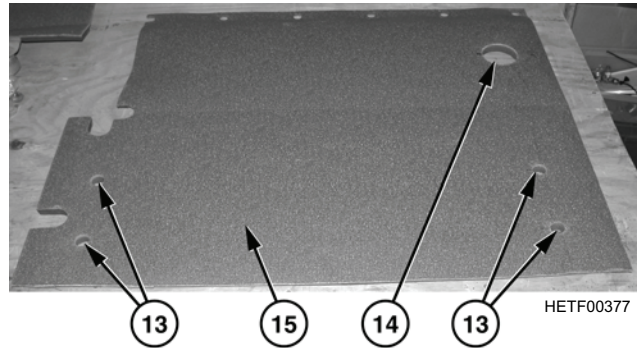
- (1) Using template (WP 0057 00), locate and mark two holes (9) on doghouse floor (10).
- (2) Drill two 1/16-inch diameter pilot holes at location marked in previous step.
- (3) Drill two 7/8-inch diameter holes (11) in doghouse floor (10) for evaporator drain holes (5).
- (4) Install two grommets (12), provided with the kit, in two 7/8-inch diameter holes (11) on doghouse floor (10).

UNARMORED**ARMORED**

IN-CAB COMPONENTS - CONTINUED**WARNING**

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

1. Modify doghouse floor mat.
 - (1) Using template (WP 0057 00, Doghouse Floor Mat Template), locate and mark four 7/8-inch holes (13) and one 3-inch hole (14) on doghouse floor mat (15).
 - (2) Drill five 1/16-inch pilot holes at locations marked.
 - (3) Drill four 7/8-inch diameter holes (13) for evaporator drain holes.
 - (4) Drill one 3-inch hole (14) at location marked.
 - (5) Cut doghouse floor mat (15) as shown on template.

**NOTE**

Do not remove front engine access panel on an armored vehicle.

- m. Modify doghouse front engine access panel.

CAUTION

Use caution when drilling and check for components behind panel. Failure to follow this caution may cause damage to vehicle.

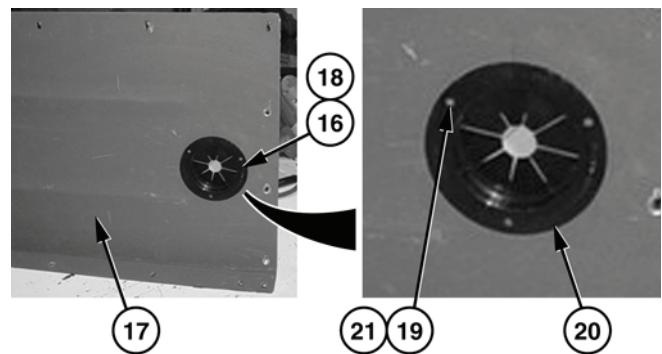
A/C KIT INSTALLATION - CONTINUED**0003 00****IN-CAB COMPONENTS - CONTINUED**

- (1) Using template (WP 0057 00, Doghouse Front Engine Access Panel Template), cut 3-inch hole (16) in doghouse front engine access panel (17) using 3-inch hole saw.
- (2) Install grommet (18) in 3-inch hole (16) on doghouse front engine access panel (17).
- (3) Drill three 9/32-inch holes in doghouse front engine access panel (17) using mounting holes (19) on grommet flange (20) as a template.

WARNING

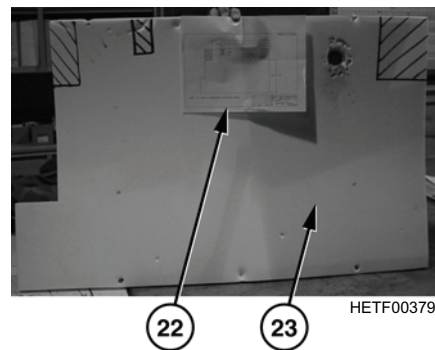
Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (4) Apply sealant to grommet (18) provided with the kit.
- (5) Secure grommet (18) on doghouse front engine access panel (17) with three screws (21), provided with the kit.



- n. Modify doghouse top insulation.

Using template (22) (WP 0057 00, Doghouse Top Insulation Template), cut doghouse top insulation (23).



A/C KIT INSTALLATION - CONTINUED

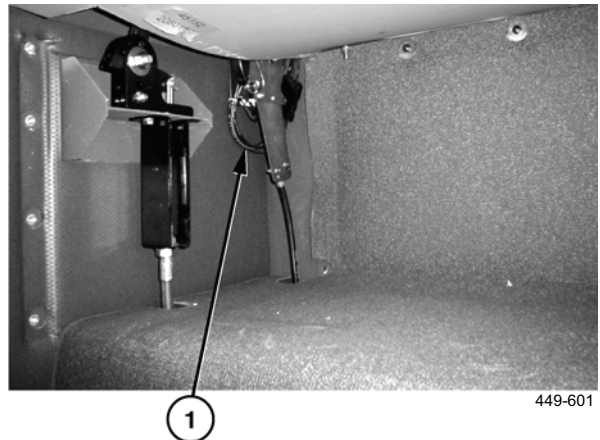
0003 00**IN-CAB COMPONENTS - CONTINUED****4. Driver and Passenger Side Louvers Installation.**

- a. Install driver side louver.

CAUTION

The driver side and passenger side louvers are installed in a similar manner. When installing the driver side louver, be sure to disconnect the shift-lever harness and secure away from the cutting area. Failure to move the harness out of the cutting area may cause damage to equipment.

- (1) Disconnect shift-lever harness (1) at connection plug and move ends away from the cutting area.

**CAUTION**

Ensure vehicle wheels are chocked before moving transmission selector switch.

NOTE

The driver side and passenger side louvers are installed in a similar manner. Be sure to use driver side template, provided with the kit, when installing louver on driver side.

- (2) Move transmission selector switch (2) to "1" position.
- (3) Mark location of driver side outlet louver on left side of doghouse using the driver side metal template (3), provided with the kit.
- (4) Remove the driver side metal template (3) and connect marks (4) on doghouse to locate the opening to be cut for driver side louver.
- (5) Using a sharp box-cutter, or similar instrument, cut diagonally from each corner (5) toward centerline (6) of louver opening approximately 1.50 inches from each end.
- (6) Connect two triangle shapes created by these cuts with a cut from point-to-point.

NOTE

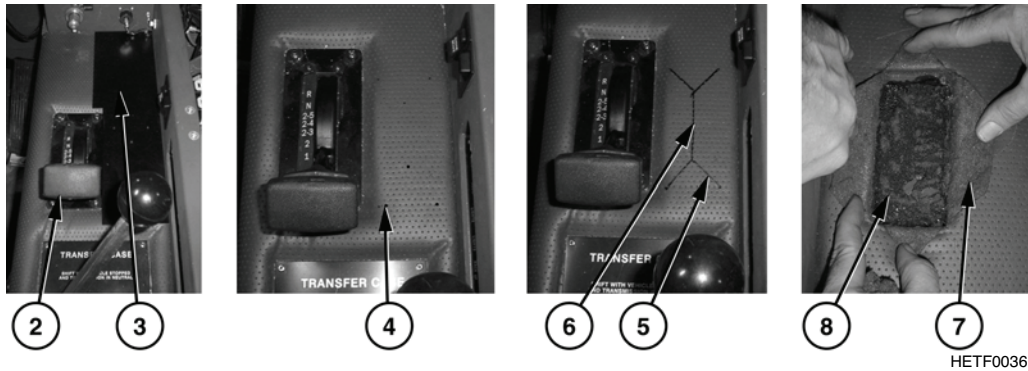
Perforated covering will be used to surround the louver when completely installed.

- (7) Peel back perforated covering (7) from insulating material (8), keeping perforated covering (7) as intact as possible.
- (8) Remove insulating material (8) beneath perforated covering (7) and discard.

A/C KIT INSTALLATION - CONTINUED

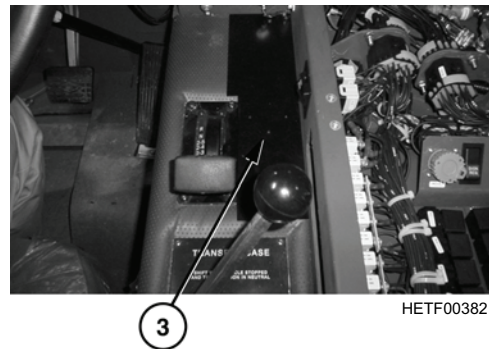
0003 00

IN-CAB COMPONENTS - CONTINUED

**WARNING**

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

- (9) Using metal template (3), mark metal surface of doghouse with scribe to locate opening to be cut for louver installation.
- (10) Using a saber saw, die grinder, or similar tool, cut rectangular opening in doghouse.
- (11) Smooth edges of opening with a file and trial-fit louver.



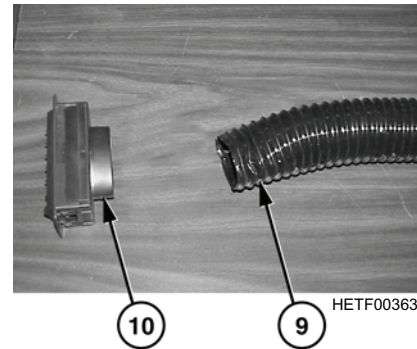
- (12) When louver fits snugly in opening, without excessive force, fold perforated covering (7) in opening.



IN-CAB COMPONENTS - CONTINUED**NOTE**

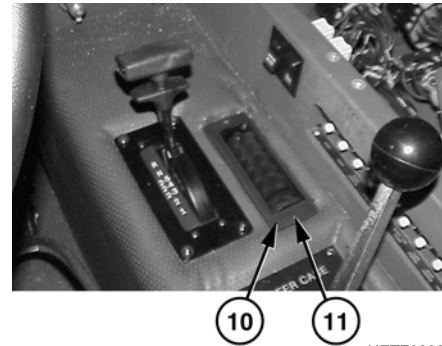
The louver directional thumb-control is located at forward end of installation. This is to maximize output air for driver and passenger.

- (13) Attach 28-inch length, of 2.50-inch diameter flexible duct (9), provided with the kit, to hose collar on louver (10).
- (14) Install plastic tie on flexible duct (9) to secure to flexible duct collar on louver (10).
- (15) Install louver in opening.

**WARNING**

Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

- (16) Drill two 1/8-inch holes in doghouse using mounting holes on louver (10) as a template.
- (17) Install louver (10) with two sheet metal screws (11) provided with the kit.



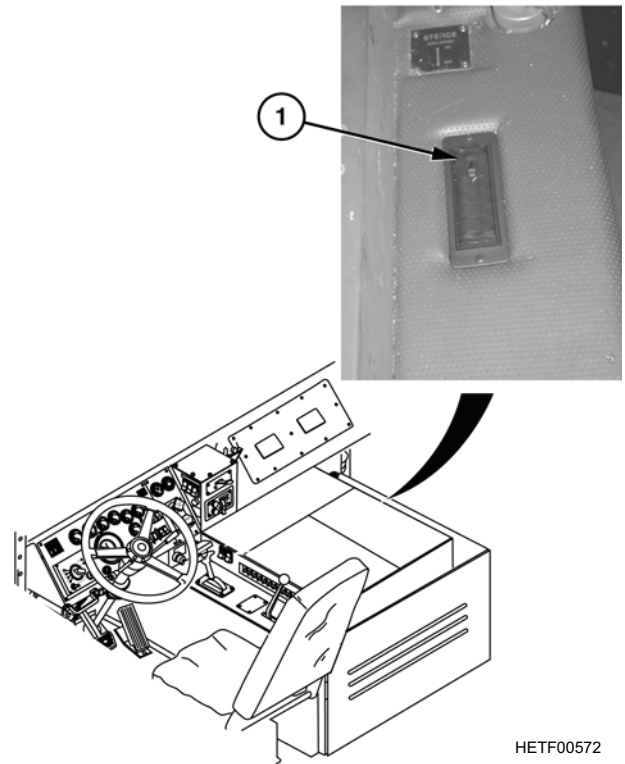
IN-CAB COMPONENTS - CONTINUED

- b. Install passenger side louver.

NOTE

The driver side and passenger side louvers are installed in a similar manner. Be sure to use passenger side template, provided with the kit, when installing louver on passenger side.

Repeat steps (3) thru (17) of a. **Install driver side louver** for passenger side louver (1) installation.



HETF00572

IN-CAB COMPONENTS - CONTINUED**5. Modified Doghouse Panels, Insulation, and Mat Installation.**

- a. Install modified doghouse floor and front engine access panels.
If removed, install doghouse floor engine access panel (TM 9-2320-360-20).
- b. Install modified doghouse top insulation.

CAUTION

If insulation is not secured to engine access panel, insulation may fall on evaporator coil. Failure to follow this caution may cause damage to equipment.

NOTE

- It may be necessary to cut forward doghouse top insulation mounting bracket to clear louvers. A 1-inch cut, on either end (driver side or passenger side), may be required to ensure forward doghouse top insulation mounting brackets clear louvers. Cut bracket as required.
- Use original mounting screws to install rear doghouse top insulation mounting bracket and screws, provided with the kit, to install front doghouse top insulation mounting bracket.

**TOP INSULATION
MOUNTING BRACKET**



449-116

- c. Install doghouse top insulation with two brackets (TM 9-2320-360-20).
- d. Install modified doghouse floor mat.

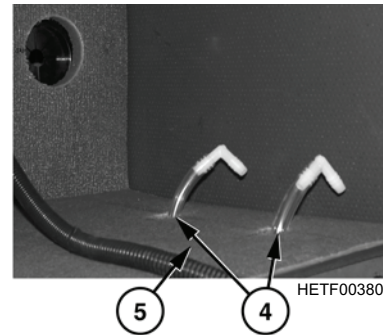
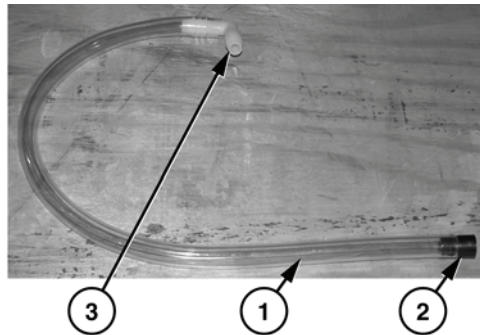
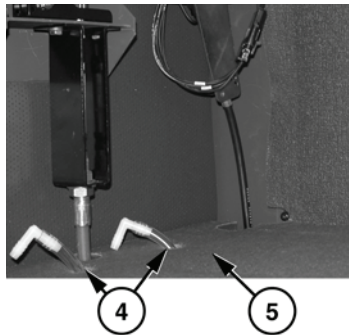
NOTE

Adjust doghouse floor mat to properly align holes in insulation with grommets in floor.

- e. Install doghouse floor mat with six washers and original screws (TM 9-2320-360-20).

A/C KIT INSTALLATION - CONTINUED**0003 00*****IN-CAB COMPONENTS - CONTINUED*****6. Evaporator Drain Hoses Installation.**

- a. Cut four 18-inch pieces of drain hose (1).
- b. Install air restrictor (2), provided with the kit, on one end of each drain hose (1).
- c. Install elbow (3), provided with the kit, on other end of each drain hose (1).
- d. Install drain hoses (1) through doghouse drain holes (4), air restrictor (2) ends first, leaving elbows (3) in doghouse (5).

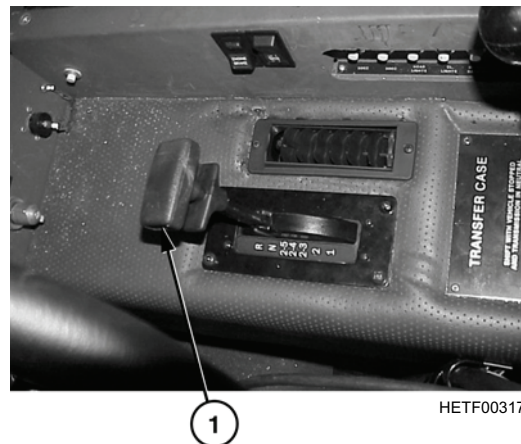


HETF00380

7. A/C and A/C Engine Fan Control Solenoid Circuit Breakers Installation.**CAUTION**

Ensure vehicle wheels are chocked before moving transmission selector switch.

- a. Move transmission selector switch (1) to "1" position.



HETF00317

- b. Remove doghouse top panels (TM 9-2320-360-20).

IN-CAB COMPONENTS - CONTINUED**WARNING**

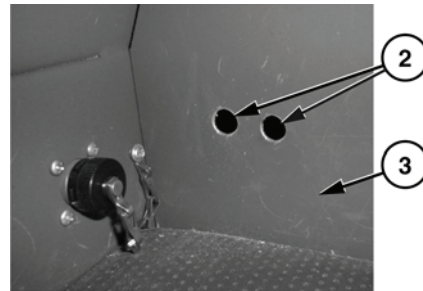
Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

CAUTION

Use caution when drilling and check for components behind panel. Failure to follow this caution may cause damage to vehicle.

NOTE

- The A/C and A/C engine fan control solenoid circuit breakers are installed in a similar manner. A/C circuit breaker installation is shown.
 - Refer to WP 0057 00, for template of A/C and A/C fan control solenoid circuit breakers mounting location.
- c. Drill two 1/16-inch diameter pilot holes in location shown on template.
 - d. Drill two 7/16-inch diameter holes (2) in side of electrical enclosure (3) as shown on template.

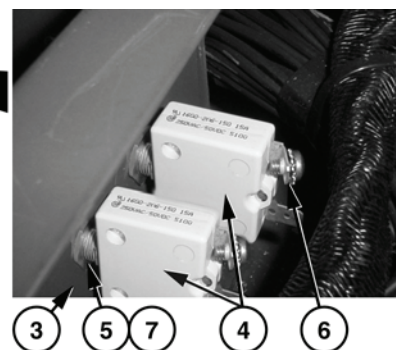
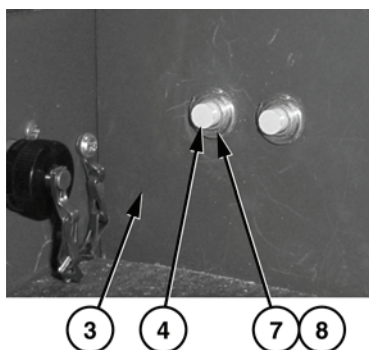


HETF00318

NOTE

20 amp circuit breaker is installed in forward hole and 5 amp circuit breaker is installed in rear hole.

- e. Install two circuit breakers (4) on electrical enclosure (3) with retaining nuts (5), ensuring screw terminals (6) are pointing up.
- f. Install two knurled retaining nuts (7) on threaded shafts (8) of circuit breakers (4) outside electrical enclosure (3) until flush with end of threaded shaft (8).
- g. Tighten two retaining nuts (5) to secure circuit breakers (4) to electrical enclosure (3).



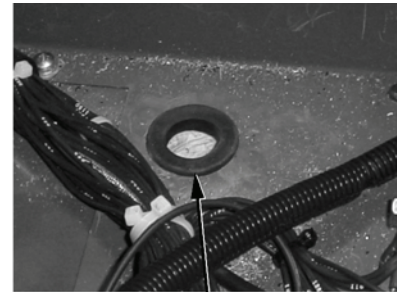
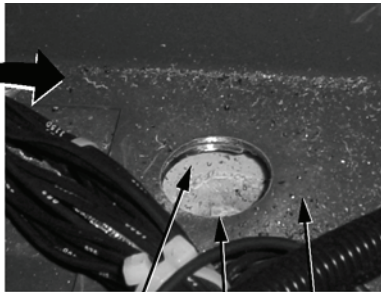
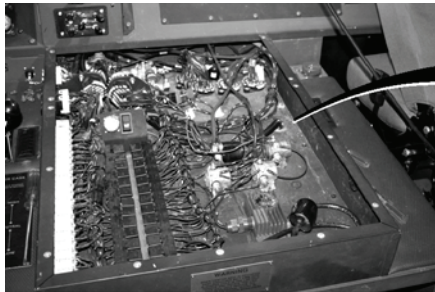
HETF00319

IN-CAB COMPONENTS - CONTINUED8. **A/C Switch Harness Installation.****CAUTION**

Use caution when drilling and check for components behind panel. Failure to follow this caution may cause damage to vehicle.

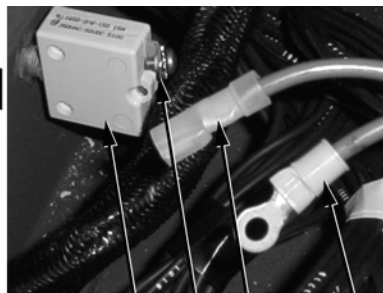
NOTE

- Refer to WP 0057 00, Electronic Control Box Template and A/C Electrical and Diagram Schematic.
 - When drilling in doghouse, drill from bottom up and centered in hole in insulation.
 - Fan switch (black 5 terminal) connector goes first.
- a. Drill 1/16-inch diameter pilot hole in location shown on template.
 - b. Drill a 1 1/2-inch diameter hole (1) through doghouse casing (2) and insulation (3).
 - c. Install grommet (4), provided with the kit, in doghouse casing (2).



449-117

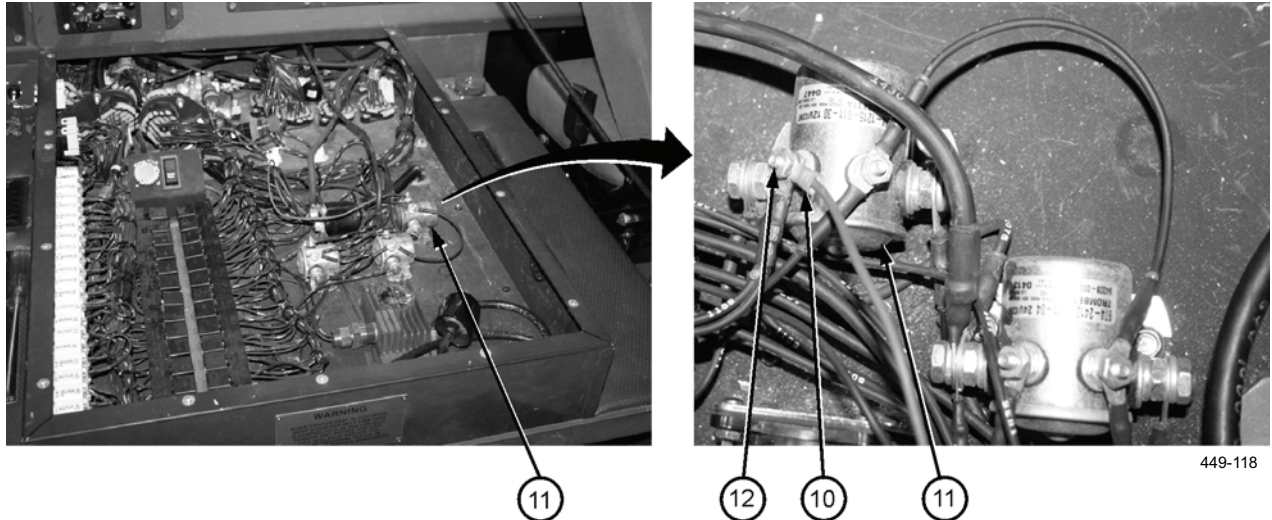
- d. Connect harness to A/C circuit breaker.
 - (1) Run wiring harness through grommet (4).
 - (2) Run wiring harness under air lines to 20 amp circuit breaker (5).
 - (3) Connect red power lead (6) to screw terminal (7) on 20 amp circuit breaker (5).
 - (4) Connect red power lead (8) to slip-on terminal (9) on 20 amp circuit breaker (5).



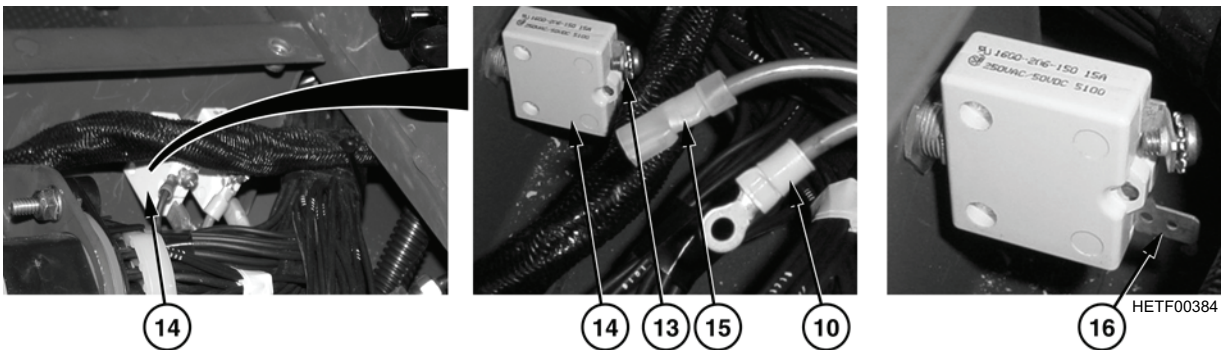
A/C KIT INSTALLATION - CONTINUED**0003 00****IN-CAB COMPONENTS - CONTINUED**

e. Connect harness to A/C fan solenoid circuit breaker.

- (1) Connect A/C switch harness 12-vdc power wire (10) to 12-vdc magnetic switch (R31) (11) at wire terminal 1075A (12).



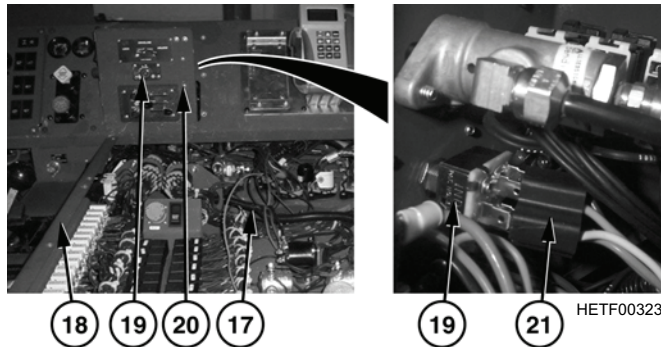
- (2) Install other end of the A/C switch harness 12-vdc blue power wire (10) to screw terminal (13) at 5 amp circuit breaker (14).
- (3) Connect A/C switch harness blue wire (15) to slip-on terminal (16) on 5 amp circuit breaker (14).



A/C KIT INSTALLATION - CONTINUED**0003 00****IN-CAB COMPONENTS - CONTINUED**

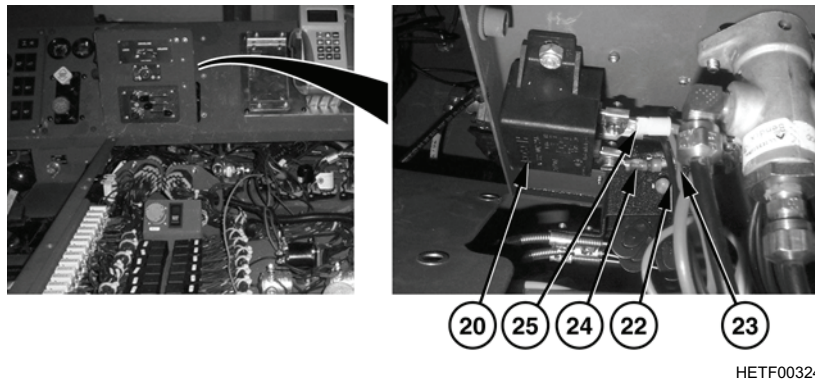
f. Connect harness to A/C fan control switch.

- (1) Route A/C wiring harness (17) through front section of electrical enclosure (18) and up into area containing A/C fan control switch (19) and relay (20).
- (2) Connect 5-connection wiring harness plug (21) to A/C fan control switch (19).



g. Connect harness to A/C relay.

- (1) Connect black wire (22) to relay (20).
- (2) Connect red #2 wire (23) to relay (20).
- (3) Connect orange wire (24) to relay (20).
- (4) Connect red #4 wire (25) to relay (20).



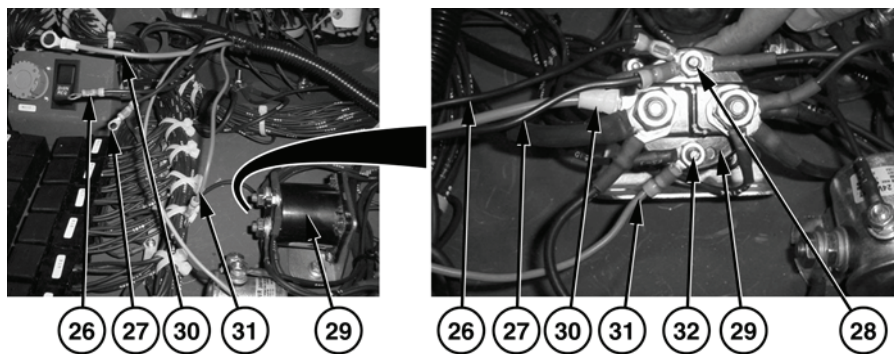
IN-CAB COMPONENTS - CONTINUED

- h. Connect harness to 24-vdc magnetic switch (R22).

NOTE

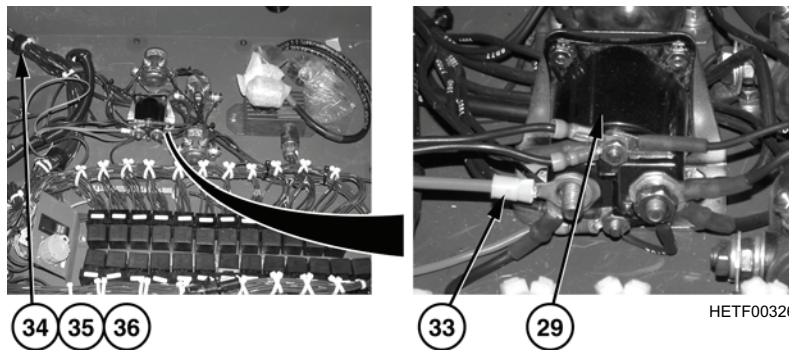
Ground terminal is identified by wire #1435.

- (1) Connect two black ground wires (26 and 27) to ground terminal (28) of 24-vdc magnetic switch (29).
- (2) Remove existing wire 1280, install one end of new wire 1280, and red wire (30) to 24-vdc magnetic switch (29).
- (3) Connect red wire (31) to bottom terminal (32) of 24-vdc magnetic switch (29).



HETF00325

- i. Replace wire 1280 from alternator to 24-vdc magnetic switch (R22).
- (1) Remove screw (34), washer (35), and cushion clip (36).



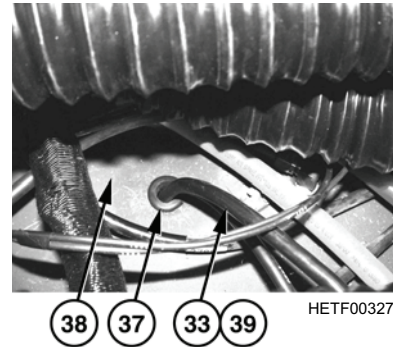
HETF00326

IN-CAB COMPONENTS - CONTINUED

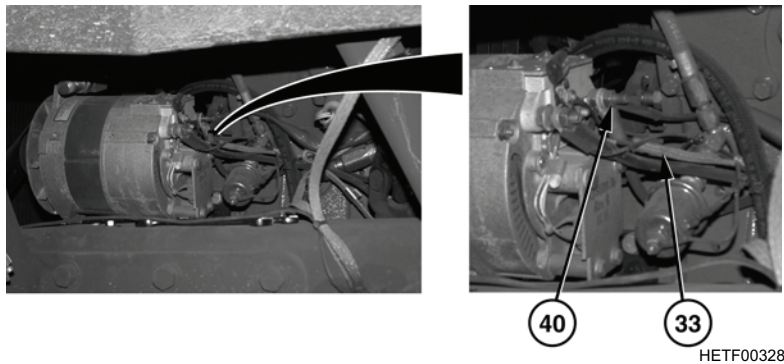
NOTE

If required, remove dash panel/C4ISR mount panel to gain access to wire 1280.

- (2) Route original wire 1280 (33) back through grommet (37) in bottom of electronic control box assembly (38).
- (3) Route new wire 1280 (39), provided with the kit, through grommet (37) in bottom of electronic control box assembly (38).
- (4) Route new wire 1280 (39) to positive (+) terminal of alternator (40), along same path used by original wire 1280 (33).

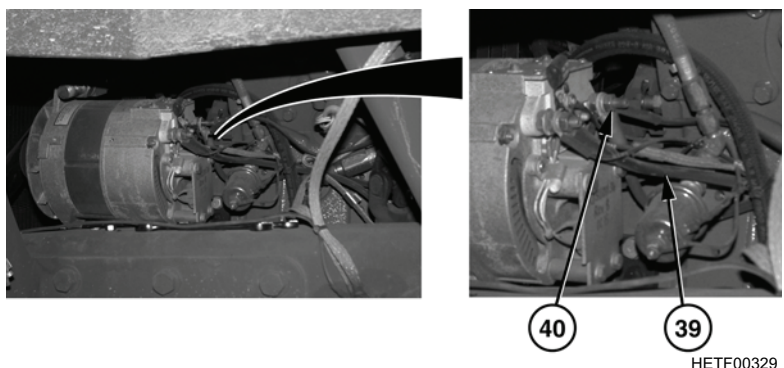


- (5) Remove original wire 1280 (33) from alternator positive (+) terminal of alternator (40).

**CAUTION**

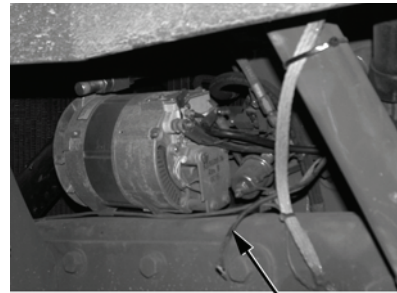
Ensure new wire 1280 to alternator is loose enough to allow for alternator belt adjustment. Failure to follow this caution may result in damage to equipment.

- (6) Connect new wire 1280 (39) to alternator positive (+) terminal (40).



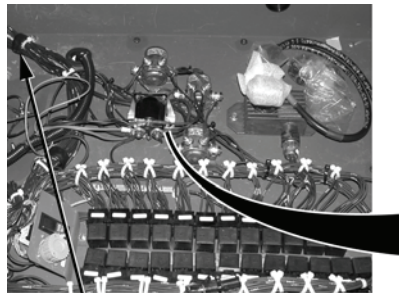
IN-CAB COMPONENTS - CONTINUED**NOTE**

- Note location of plastic ties when removing original wire 1280. Install plastic ties at same location when securing new wire 1280, provided with the kit.
 - Cut plastic ties as required.
- (7) Remove original wire 1280 (33).

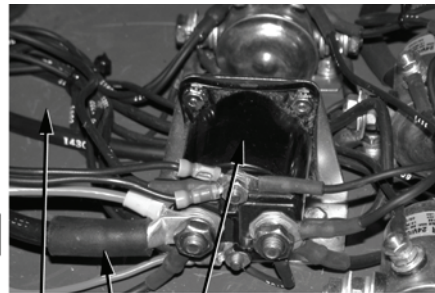


HETF00330

- (8) Connect new wire 1280 (39) to 24-vdc magnetic switch (29).
- (9) Install cushion clip (36) in bottom of electronic control box assembly (38) with screw (34) and washer (35).
- (a) Thread remaining portion of wiring harness through grommet on doghouse ceiling in interior of doghouse.
- (b) Route wiring harness along forward wall to right side of vehicle and place end of wiring harness near rear of doghouse where it will be installed on evaporator.



34 35 36



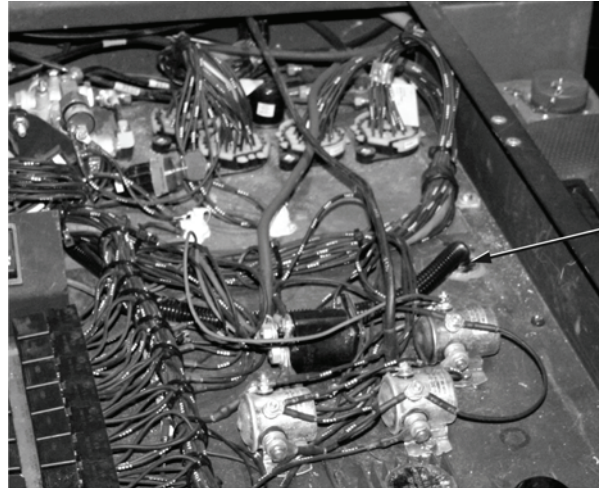
38 39 29

HETF00331

IN-CAB COMPONENTS - CONTINUED**WARNING**

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (c) Apply sealant to grommet (40) in interior of doghouse.



HETF00331

FINAL COMPONENT ASSEMBLY

1. Route A/C Compressor - Receiver/Dryer Harness Through Doghouse.

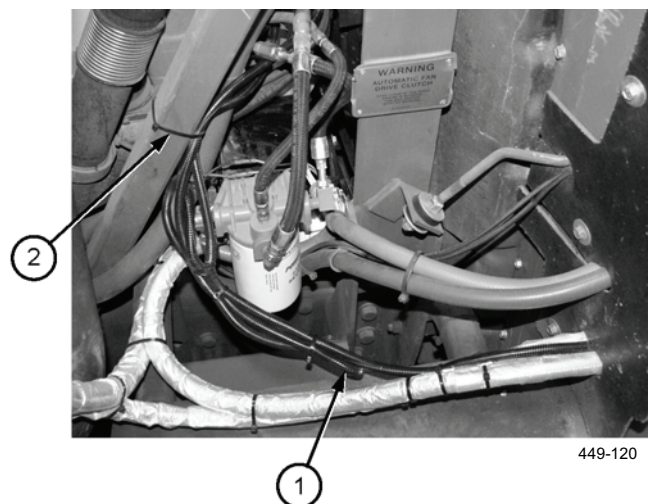
CAUTION

- Make sure wire harness is routed away from moving parts of engine. Failure to follow this caution may cause damage to vehicle.

NOTE

The A/C compressor receiver/dryer harness connector is routed into the doghouse before the evaporator is installed. Once the evaporator is installed, you do not have access to the back of the doghouse. The harness is then secured to the A/C hoses in the engine compartment, which are installed from the evaporator back toward the front of the truck.

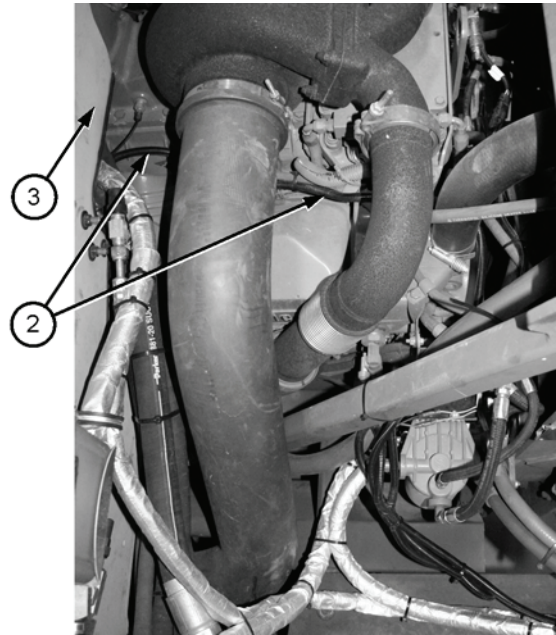
- Route receiver/dryer harness (1) along right side of engine compartment.
- Install plastic ties (2) as required.



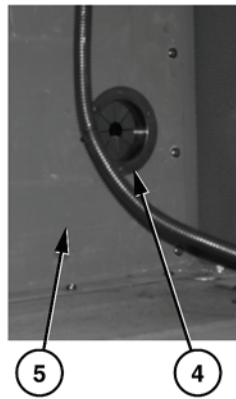
449-120

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- c. Route receiver/dryer harness (1) on top of engine towards firewall (3).
- d. Install plastic ties (2) as required.

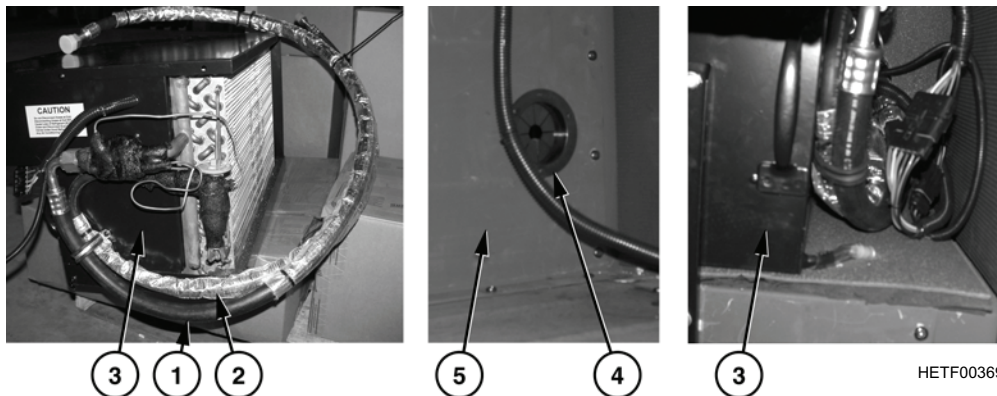


- e. Route receiver/dryer harness (1) through hole (4) in front wall of doghouse (5).



FINAL COMPONENT ASSEMBLY - CONTINUED**2. Evaporator Installation.****NOTE**

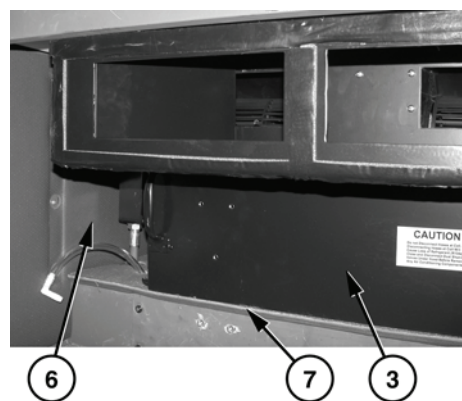
- Keep all disconnected A/C hoses, and ports on shutoff valves, compressor, condenser, and receiver/dryer clean and capped during installation.
 - The plastic elbows must be oriented with open end toward floor. A 3-inch piece of hose attaches elbow to evaporator drain fittings.
 - A/C evaporator assembly will be shipped with A/C hoses attached and expansion valve installed.
 - Cork tape is used on expansion valve only.
 - The alternator access panel is removed to help route A/C lines through grommet on doghouse front engine access panel.
- a. Remove alternator access panel from doghouse (TM 9-2320-360-20).
 - b. Place evaporator assembly on cab floor prior to position for installation.
 - c. If necessary, loosen three screws in rear of doghouse to allow access for evaporator to slide in.
 - d. Install two A/C hoses (1 and 2) attached to evaporator assembly (3), through 3-inch grommet (4) on doghouse front engine access panel (5).



FINAL COMPONENT ASSEMBLY - CONTINUED**NOTE**

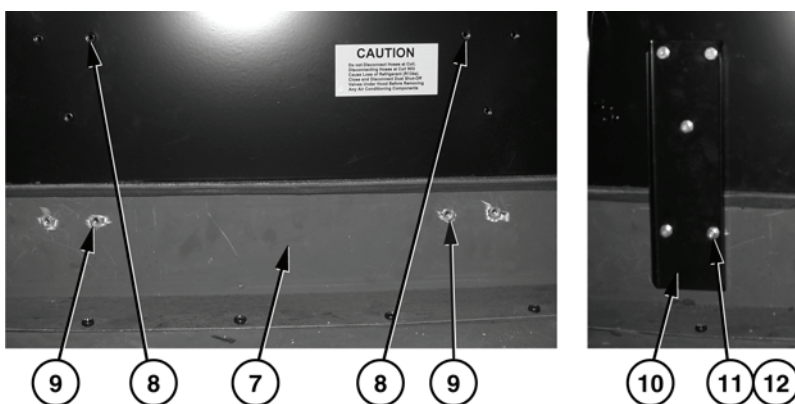
While sliding evaporator assembly in doghouse, have assistant pull two A/C hoses forward through grommet hole on doghouse front engine access panel at intervals during installation. This will prevent A/C hoses from becoming lodged in doghouse and damaging evaporator connections. This can be done by accessing A/C hoses through alternator access opening.

- e. Tilt evaporator assembly (3) back slightly and slide evaporator assembly (3) in doghouse (6) until base is even with edge of step (7) in floor of doghouse (6).



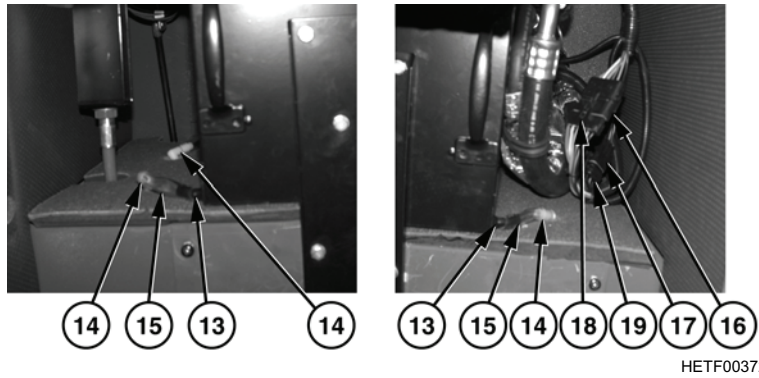
HETF00370

- f. Align evaporator assembly bracket mounting holes (8) with rivet nuts (9).
- g. Install two mounting brackets (10) with 10 screws (11) and washers (12). Tighten securely, but do not overtighten.



HETF00371

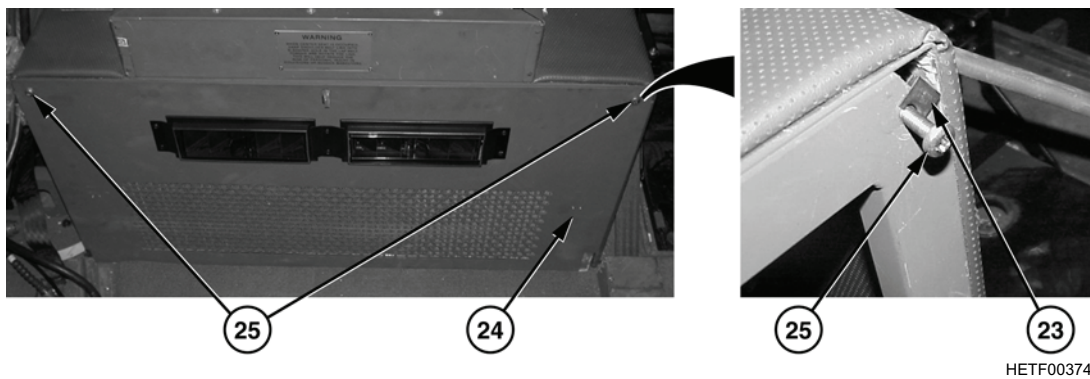
- h. Connect four evaporator assembly drain fittings (13) to drain hose elbows (14) using four 3/8-inch diameter x 3-inch long drain tubes (15), provided with the kit.
- i. Connect A/C compressor-receiver/dryer harness connector (16) and A/C switch harness connector (17) to evaporator assembly connectors (18 and 19).

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- j. Connect two A/C louver ducts (20) to evaporator exhaust port (21) with hose clamps (22), provided with the kit.



- k. Remove two screw clip-nut inserts from doghouse and install two cage-nut inserts (23).
- l. Install doghouse door (24) with two screws (25), provided with the kit.
- m. If loosened, tighten three screws in top of doghouse.



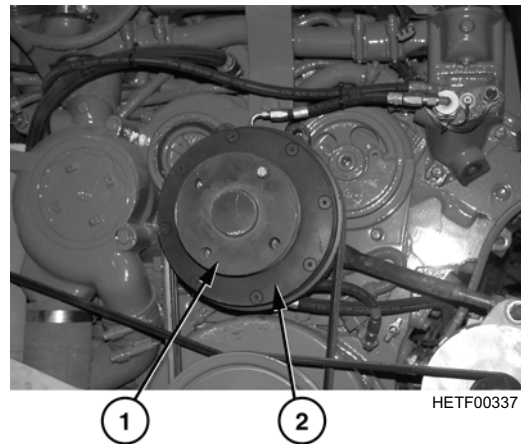
FINAL COMPONENT ASSEMBLY - CONTINUED3. **Engine Cooling Fan, Spacer, and Radiator Installation.****NOTE**

Use emery cloth to remove paint from spacer as required.

- a. Remove old fan spacer from fan clutch assembly (TM 9-2360-360-20).

NOTE

- The fan spacer should fit snugly, but be easy to install.
 - Use guide pin in fan clutch assembly and fan spacer to line up holes in fan spacer.
- b. Install thicker fan spacer (1) on fan and fan clutch assembly (2).
 - c. Assemble fan spacer (1) and fan clutch assembly (2) without screws to ensure proper fit.



- d. Install lower radiator hose on water pump (TM 9-2320-360-20).
- e. If removed, reinstall hood spring bracket (TM 9-2320-360-20).

WARNING

Keep out from under radiator while supported by lifting device to prevent serious injury.

CAUTION

- Radiator weighs approximately 375 lbs. (170 kg). Use suitable lifting device to support radiator.
- Ensure radiator is not bumped during installation. Failure to follow this caution may cause damage to equipment.

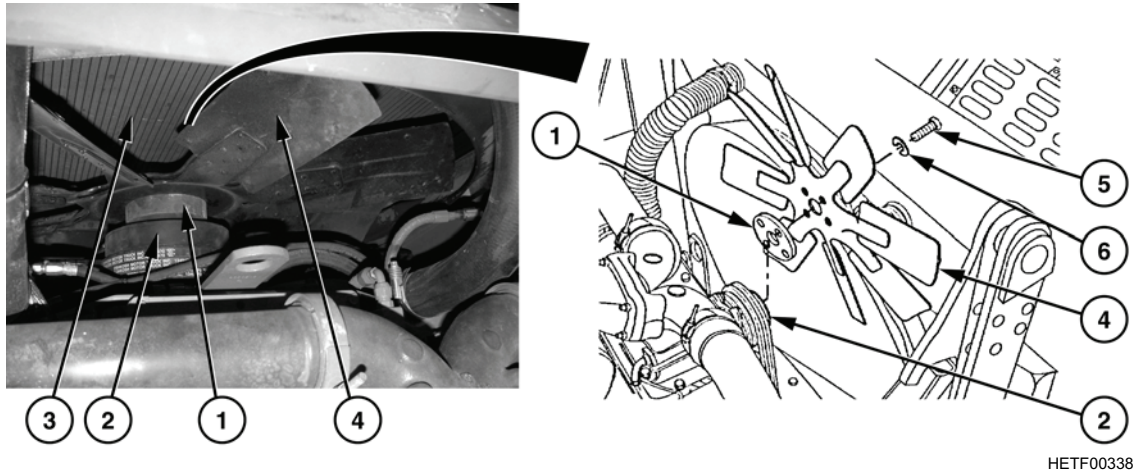
NOTE

Do not tighten radiator assembly mounting bolts until engine-cooling fan has been installed.

- f. Position the radiator with aid of assistant (TM 9-2320-360-20).
- g. Set radiator guide pins in radiator guide holes on frame of truck (TM 9-2320-360-20).

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- h. Tilt radiator (3) forward, as much as possible, to gain access to install fan (4).
- i. Install fan (4) on fan spacer (1) and fan clutch assembly (2) with four screws (5) and four lockwashers (6) provided with the kit (TM 9-2320-360-20).



- j. Remove guide pins (TM 9-2320-360-20).
- k. Tighten fan screws to required torque (TM 9-2320-360-20).
- l. Install side mounting braces in mounting holes on frame of truck (TM 9-2320-360-20).
- m. Install nuts (TM 9-2320-360-20). Do not tighten mounting brackets.

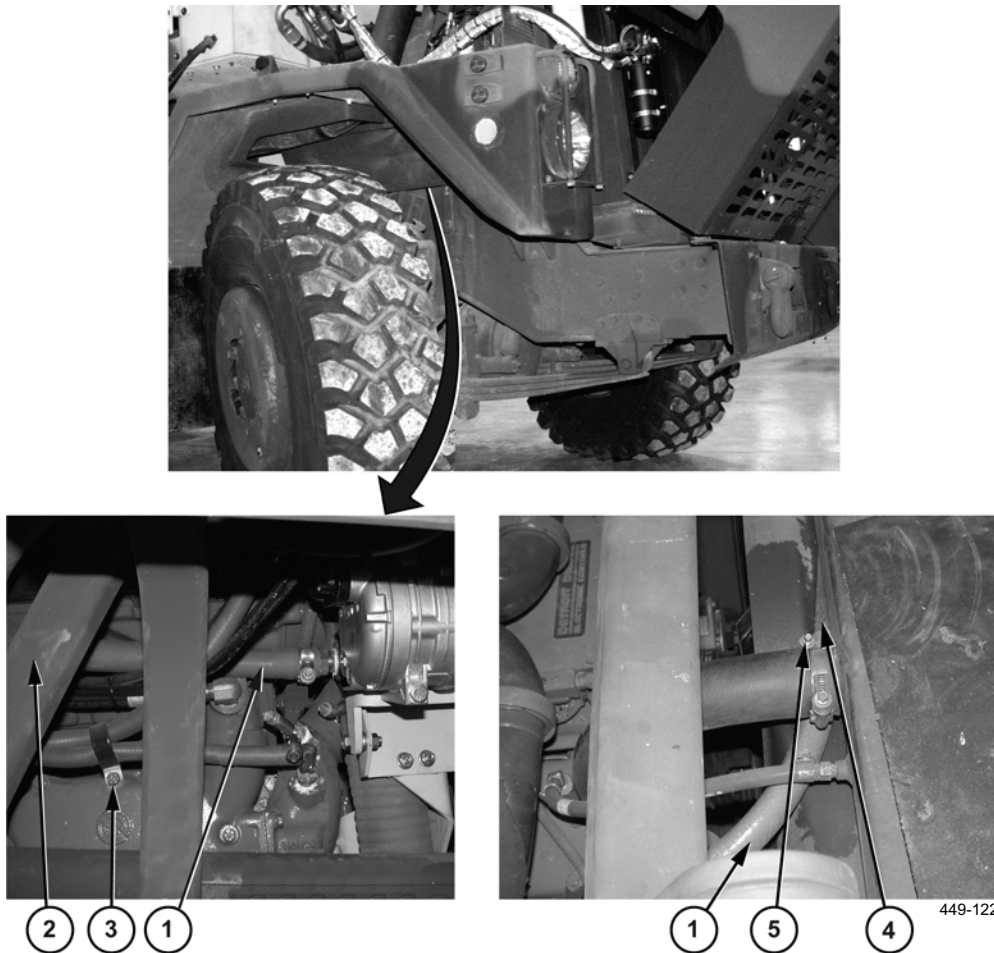
NOTE

The radiator should sit at correct angle (approximately 5° toward rear of vehicle) and fan should clear fan shroud (TM 9-2320-360-20).

- n. Completely install radiator hardware (TM 9-2320-360-20-2).
- o. Install bottom coolant hose and clamp (TM 9-2320-360-20-2).
- p. Install transmission cooler hoses (TM 9-2320-360-20-2).
- q. Install air horns, if removed (TM 9-2320-360-20-2).
- r. Connect two air lines to air horns (TM 9-2320-360-20-2).
- s. Install two top radiator hoses (TM 9-2320-360-20-2).

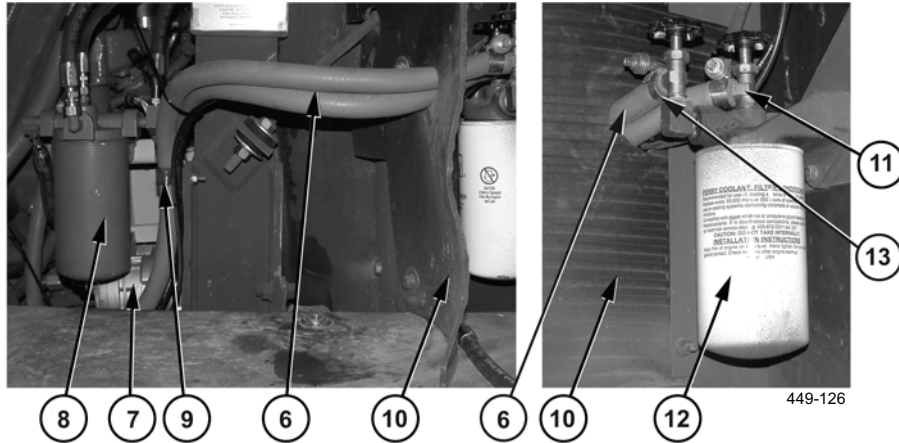
FINAL COMPONENT ASSEMBLY - CONTINUED4. A/C Engine Coolant Hoses Installation.**NOTE**

- Cut hoses to size as required.
 - Ensure hoses do not kink or rest on hot surfaces.
 - Adjust cushion clamp as required for proper hose routing.
- a. Route engine coolant hose (1) toward back of engine around lifting frame (2) through cushion clamp (3) and up to top of radiator (4).
 - b. Install engine coolant hose (1) to fitting at center of radiator (4), with hose clamp (5).

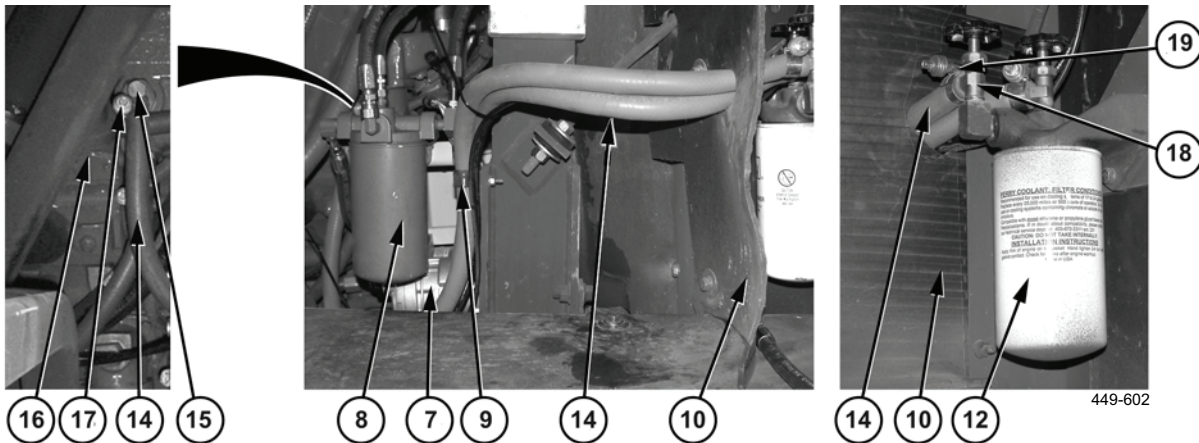


A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- c. Route 3/4" diameter silicone hose (6) around A/C compressor (7) and secondary fuel filter (8) through cushion clamp (9) and hole in radiator curtain (10).
- d. Install 3/4" diameter silicone hose (6) to outside shutoff valve (11), on engine coolant filter canister (12), with original hose clamp (13).



- e. Install 3/4" diameter silicone hose (14), from adapter (15) on engine block (16), with hose clamp (17).
- f. Route 3/4" diameter silicone hose (14) around A/C compressor (7) and secondary fuel filter (8) through cushion clamp (9) and hole in radiator curtain (10).
- g. Install 3/4" diameter silicone hose (14) to inside shutoff valve (18), on engine coolant filter canister (12), with hose clamp (19).

**5. Fill Coolant System.**

Fill coolant system to proper operating level (TM 9-2320-360-20-2).

FINAL COMPONENT ASSEMBLY - CONTINUED**6. Condenser Assembly Installation.****WARNING**

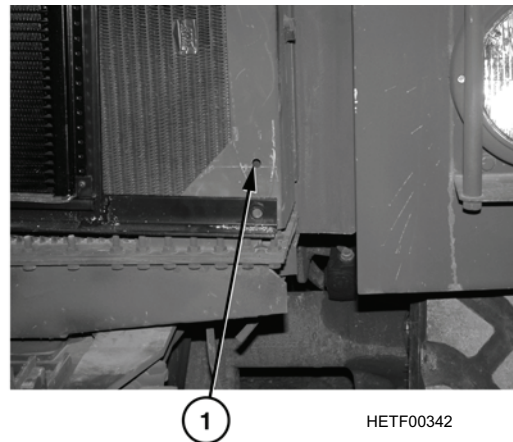
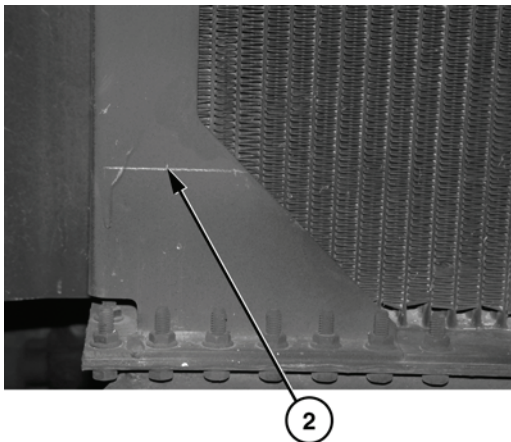
Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

CAUTION

Use caution when drilling and make sure there are not any components behind drilling surface. Failure to follow this caution may result in damage to machine.

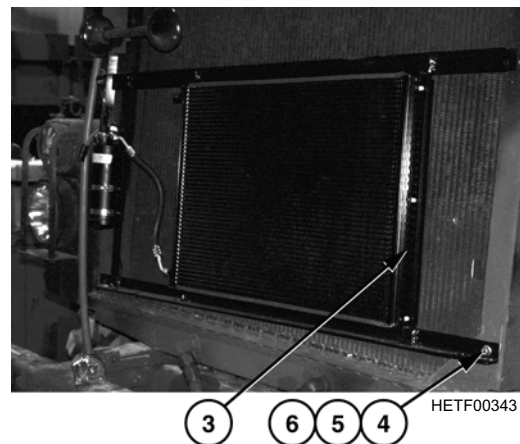
NOTE

- Refer to WP 0057 00, Figure i., for A/C Condenser Assembly Installation Template.
- Carefully place a block of wood between radiator and frame to protect radiator during drilling.
- a. Mark and drill a 13/32-inch diameter hole (1) for lower driver side condenser assembly mounting screw as shown on template.
- b. Mark center lines (2) for lower passenger side condenser assembly mounting hole.



HETF00342

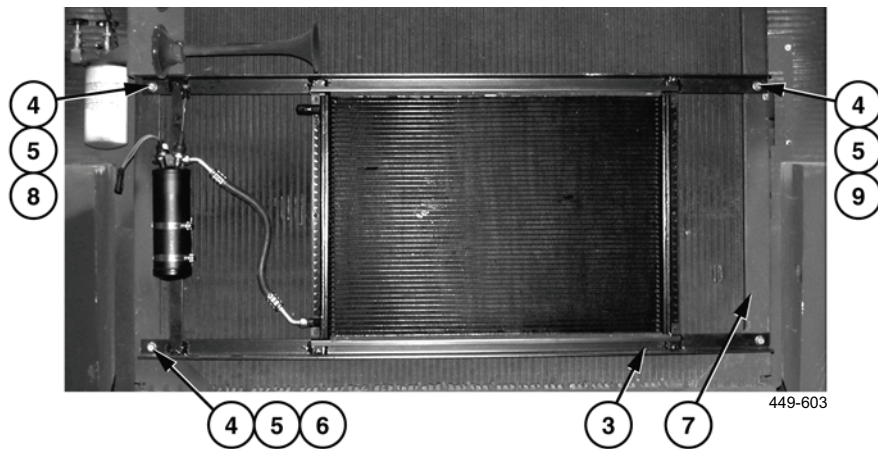
- c. Place condenser assembly (3) in position and insert screw (4) in mounting hole (6).
- d. Lightly secure screw (4) with locknut (5).



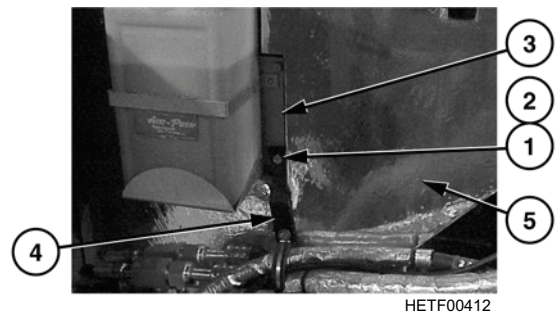
HETF00343

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- e. Pivot condenser assembly (3) until passenger side mounting hole (6) lines up with center lines.
- f. Clamp condenser assembly (3) securely to radiator frame (7).
- g. Using a 13/32-inch drill bit, mark center of three mounting holes (6, 8, and 9).
- h. Drill each mounting hole (6, 8, and 9) using a 5/16-inch drill bit first, then complete drilling mounting holes with a 13/32-inch drill bit.
- i. Insert screws (4) in mounting holes (6, 8, and 9).
- j. Lightly secure screws (4) with three locknuts (5).
- k. Tighten four screws (4) and locknuts (5).

**7. A/C Hoses, Shutoff Valves, and A/C Compressor - Receiver/Dryer Harness Installation.**

- a. Install A/C hose bracket.
 - (1) Remove driver side lower screw (1) and washer (2) of windshield-washer bottle mount (3).
 - (2) Install A/C hose bracket (4) on firewall (5) with original washer (2) and screw (1).



FINAL COMPONENT ASSEMBLY - CONTINUED**WARNING**

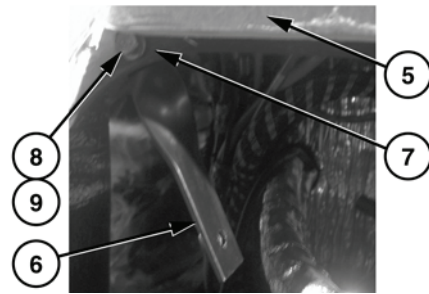
Always wear gloves and goggles when drilling and grinding. Failure to follow this warning may cause injury to personnel.

NOTE

- The following step does not apply to armored vehicles.
- Cut firewall insulation to allow enough clearance for a 5/16-inch diameter mounting hole.

(3) Install twist bracket (6) on firewall (5) at upper corner of tunnel (7).

- Drill a 5/16-inch diameter hole in firewall (5).
- Install twist bracket (6) on firewall (5) with screw (8) and nut (9), provided with the kit.



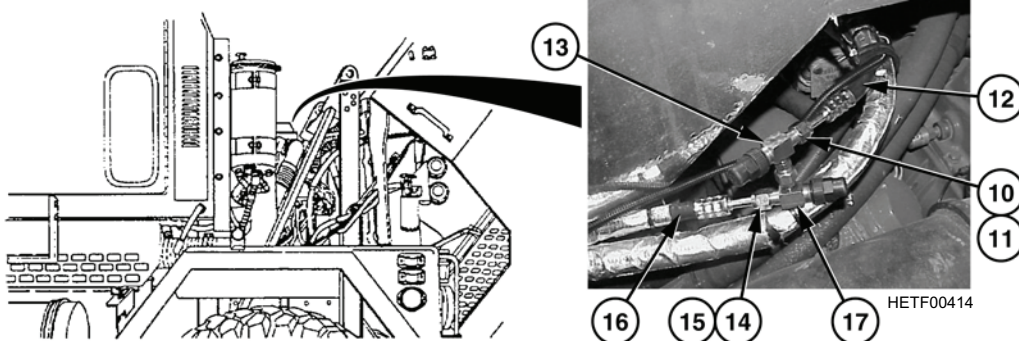
HETF00413

- b. For all vehicles: Install A/C hoses, shutoff valves, and cushion clamps.

NOTE

Refer to WP 0057 00 for A/C Refrigerant Schematic.

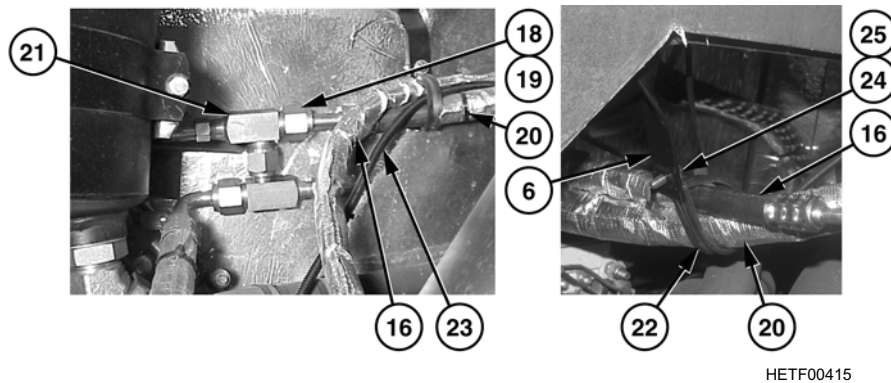
- Install #6 O-ring (10) in hose connector (11) of #6 A/C hose (12) from A/C evaporator.
- Install #6 male shutoff valve (13) on #6 A/C hose (12) from A/C evaporator.
- Install #6 O-ring (14) in hose connector (15) of #6 A/C hose (16) to receiver/dryer.
- Install #6 female shutoff valve (17) on #6 A/C hose (16) to receiver/dryer.
- Connect #6 shutoff valves (13 and 17).



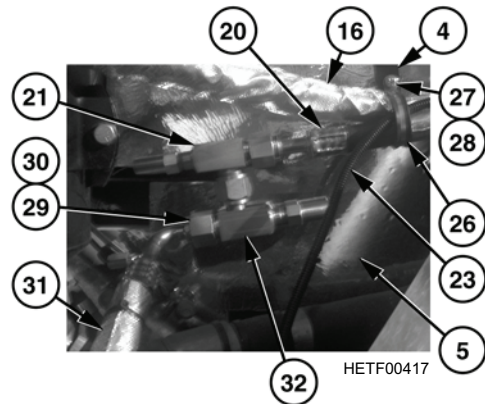
HETF00414

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- (6) Install #12 O-ring (18) in hose connector (19) of #12 A/C hose (20) from A/C evaporator.
- (7) Install #12 male shutoff valve (21) on #12 A/C hose (20) from A/C evaporator.
- c. For un-armored vehicles:
 - (8) Position cushion clamp (22) on two A/C hoses (16 and 20) and A/C compressor receiver/dryer harness (23).
 - (9) Install cushion clamp (22) to twist bracket (6) with washer (24) and screw (25), provided with the kit.
 - (10) Position cushion clamp (26) on two A/C hoses (16 and 20) and A/C compressor receiver/dryer harness (23).
 - (11) Install cushion clamp (26) to A/C hose bracket (4) on firewall (5) with washer (27) and screw (28), provided with the kit.
- d. For armored vehicles:
 - Install plastic ties as necessary to secure A/C hoses (16 and 20).

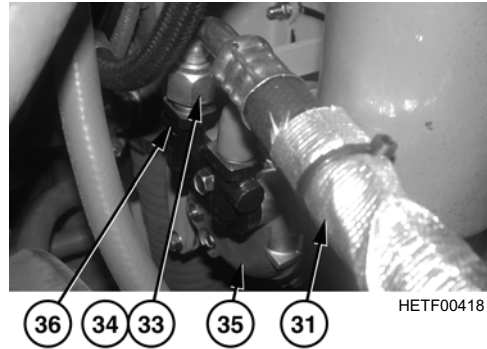


- e. For all vehicles:
 - (1) Install #12 O-ring (29) in hose connector (30) of A/C hose (31).
 - (2) Install #12 female shutoff valve (32) on #12 A/C hose (20).
 - (3) Connect #12 shutoff valves (21 and 32).



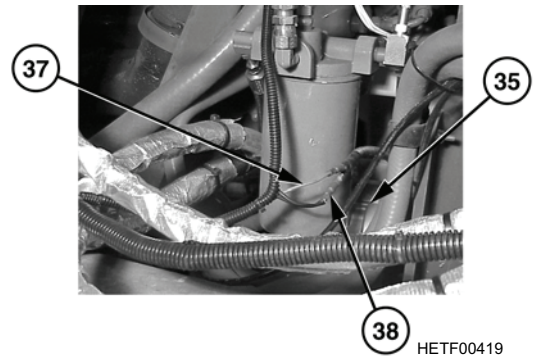
A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- (4) Install #10 O-ring (33) in hose connector (34) of A/C hose (31).
- (5) Route A/C hose (31) to A/C compressor (35).
- (6) Install A/C hose (31) to suction port (36) of A/C compressor (35).

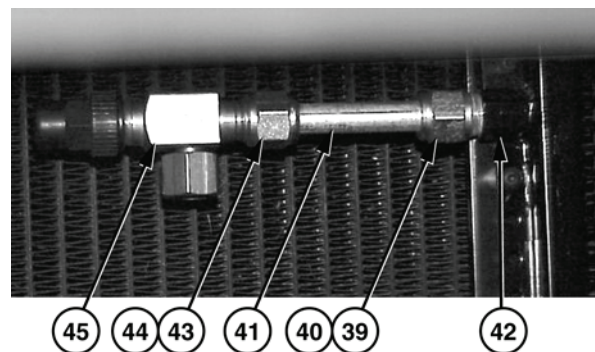
**NOTE**

- Red receiver/dryer wire is connected to pink/black clutch wire.
- Black receiver/dryer wire is connected to green clutch wire.

- (7) Connect A/C compressor receiver/dryer harness connectors (37 and 38) to A/C compressor (35) clutch.



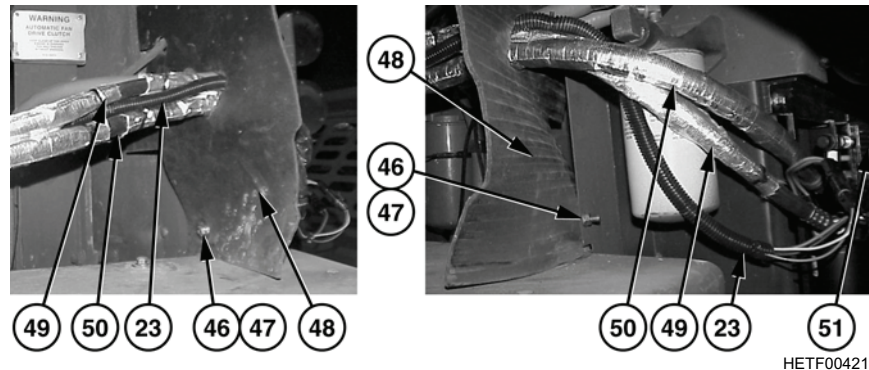
- (8) Install #8 O-ring (39) in straight adapter connector (40).
- (9) Install straight adapter (41) on A/C condenser inlet port (42).
- (10) Install #8 O-ring (43) in straight adapter connector (44).
- (11) Install #8 female shutoff valve (45) on straight adapter (41).



- (12) Remove two bottom screws (46) and locknuts (47) from right-hand baffle (48). Discard locknuts.
- (13) Enlarge coolant hose hole in right-hand baffle (48) for A/C hoses (49 and 50) and A/C compressor receiver/dryer harness (23).

A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- (14) Route #6 A/C hose (49) from shutoff valve, #8 A/C hose (50) from A/C compressor, and A/C compressor receiver/dryer harness (23) through right-hand baffle (48) to A/C condenser assembly (51).

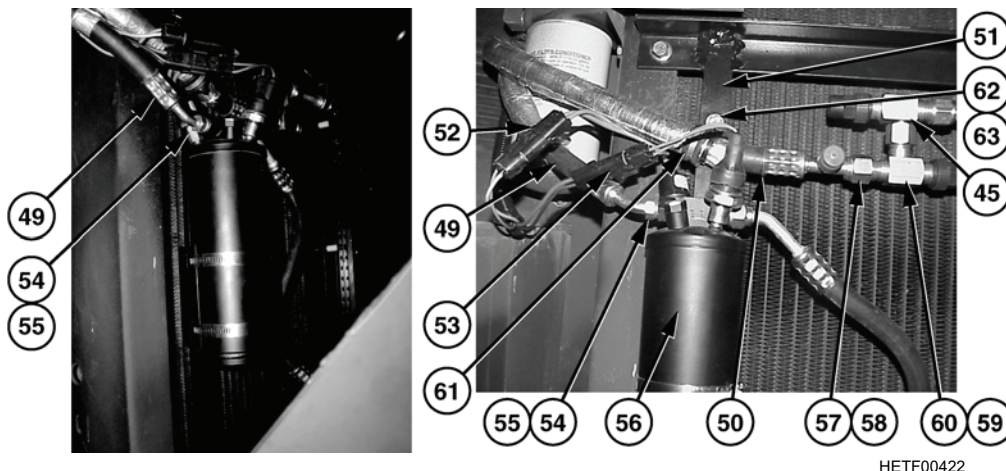


- (15) Connect A/C compressor receiver/dryer harness high-pressure switch (52) connector and binary switch (53) connector.
- (16) Coat #6 O-ring (54) and #8 O-ring (57) with refrigerant compressor oil.
- (17) Install #6 O-ring (54) in hose connector (55) of #6 A/C hose (49).

NOTE

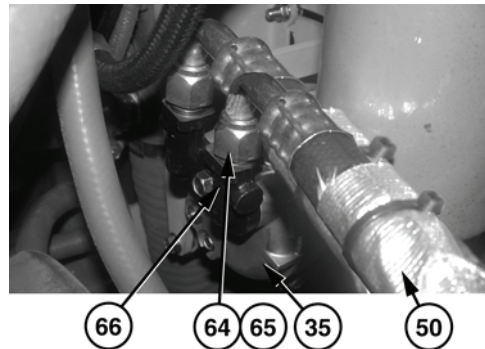
Ensure #6 A/C hose is installed in eleven o'clock position.

- (18) Install #6 A/C hose (49) to compressor receiver/dryer (56).
- (19) Install #8 O-ring (57) in hose connector (58) of #8 A/C hose (50).
- (20) Install #8 male shutoff valve (59) to #8 A/C hose (50).
- (21) Coat #8 O-ring (60) with refrigerant compressor oil.
- (22) Install #8 O-ring (60) in #8 male shutoff valve (59).
- (23) Connect #8 shutoff valves (45 and 59).
- (24) Install cushion clamp (61) on #8 A/C hose (50) and secure to condenser assembly (51) with screw (62) and locknut (63), provided with the kit.



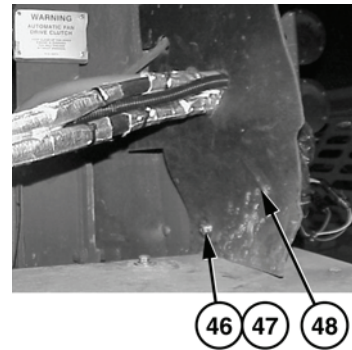
A/C KIT INSTALLATION - CONTINUED**0003 00****FINAL COMPONENT ASSEMBLY - CONTINUED**

- (25) Coat #8 O-ring (64) with refrigerant compressor oil.
- (26) Install #8 O-ring (64) in hose connector (65) of #8 A/C hose (50).
- (27) Install #8 A/C hose (50) to discharge port (66) of A/C compressor (35).



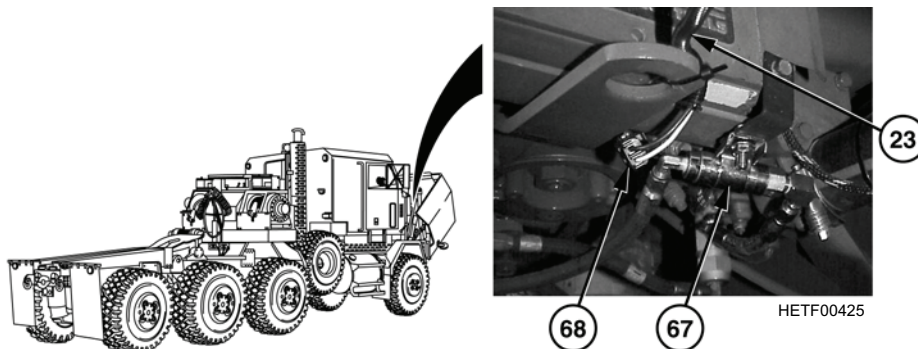
HETF00423

- (28) Install bottom of right-hand baffle (48) with two original screws (46) and new locknuts (47).



HETF00424

- (29) Route A/C compressor receiver/dryer harness (23) to A/C fan control solenoid (67).
- (30) Connect A/C compressor receiver/dryer harness (23) to A/C fan control solenoid connector (68).
- (31) Secure A/C hoses and A/C compressor receiver/dryer harness with plastic ties, as required.



HETF00425

A/C KIT INSTALLATION - CONTINUED

0003 00

FINAL COMPONENT ASSEMBLY - CONTINUED

- (32) Install A/C line disconnection warning labels near shutoff valves on firewall and lift frame.



HETF00416

8. **Charging and Inspecting System.**

NOTE

Cab air temperature will vary with ambient temperature. Test specifications call for cab air temperature to achieve an average rating of 85°F within two hours with a 120°F ambient temperature.

- a. Connect batteries (TM 9-2320-360-20).
- b. Change A/C system. Refer to WP 0056 00.
- c. Inspect for compressor belt slippage.
- d. Ensure compressor clutch engagement.
- e. Ensure evaporator blower operation and production of cool air.
- f. Install engine hood (TM 9-2320-360-20-2).
- g. Install right front fender (TM 9-2320-360-20-2).

END OF WORK PACKAGE

STOWAGE BOX KIT INSTALLATION0004 00

THIS WORK PACKAGE COVERS

Ladder Bracket Installation, Winch Supports and Brackets, Stowage Box Installation

INITIAL SETUP

Maintenance Level

Direct Support

Personnel Required

Two

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

References

TM 9-2320-360-20

Materials/Parts

Locknut (TM 9-2320-360-24P)

Lockwasher (TM 9-2320-360-24P)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Personnel ladder removed (TM9-2320-360-10)

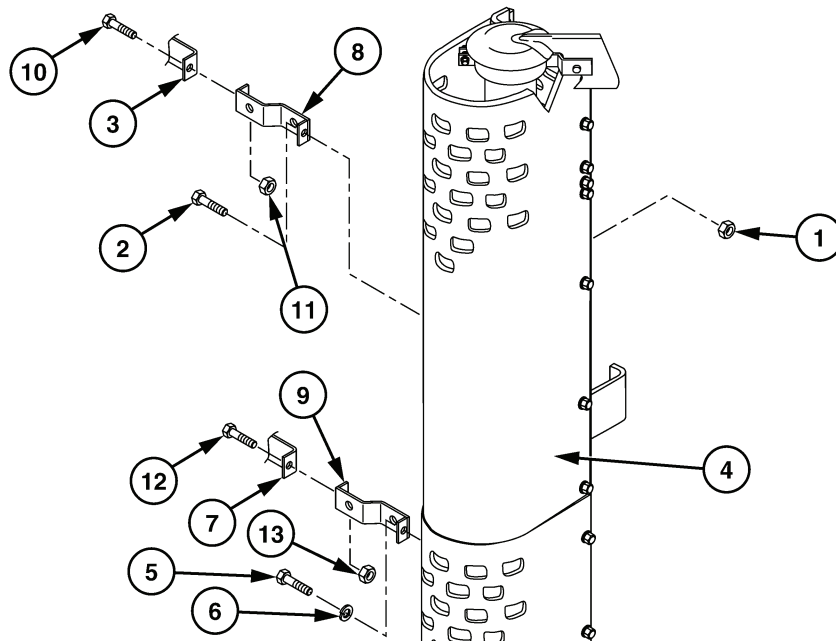
STOWAGE BOX KIT INSTALLATION - CONTINUED**0004 00****LADDER BRACKET INSTALLATION**

1. Remove locknut (1), screw (2), and top ladder support (3) from tail pipe support (4) (TM 9-2320-360-20). Discard locknut.
2. Remove screw (5), lockwasher (6), and bottom ladder support (7) from tail pipe support (4) (TM 9-2320-360-20). Discard lockwasher.
3. Install top ladder extension support (8) on tail pipe support (4) with screw (2) and new locknut (1).

NOTE

Bottom ladder extension support (9) is installed on next higher screw on tail pipe support. Put screw back in hole from previous support.

4. Install bottom ladder extension support (9) on tail pipe support (4) with screw (5) and new lockwasher (6).
5. Install top ladder support (3) on top ladder extension support (8) with screw (10) and locknut (11).
6. Install bottom ladder support (7) on bottom ladder extension support (9) with screw (12) and locknut (13).



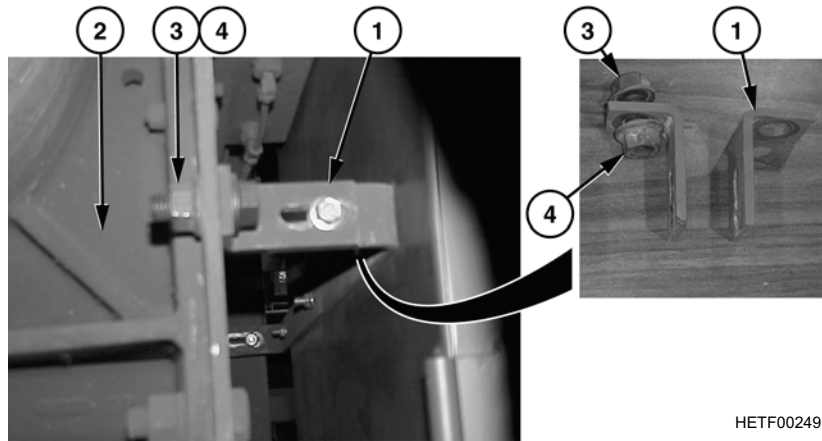
HETF00248

STOWAGE BOX KIT INSTALLATION - CONTINUED

0004 00

WINCH SUPPORTS AND BRACKETS**NOTE**

Driver's side and passenger's side winch support brackets are installed the same way. Passenger's side shown. Install winch support bracket (1) on winch assembly (2) with screw (3) and locknut (4). Do not tighten.



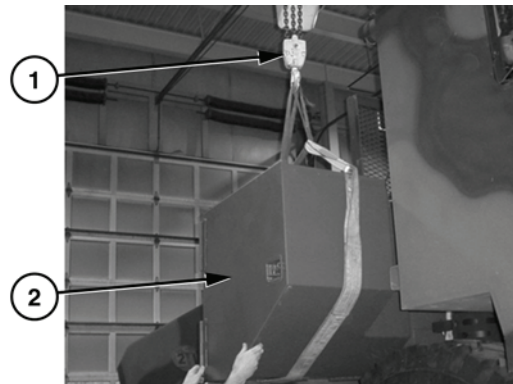
HETF00249

STOWAGE BOX INSTALLATION

1. Using suitable lifting device (1), place stowage box (2) on HET.

NOTE

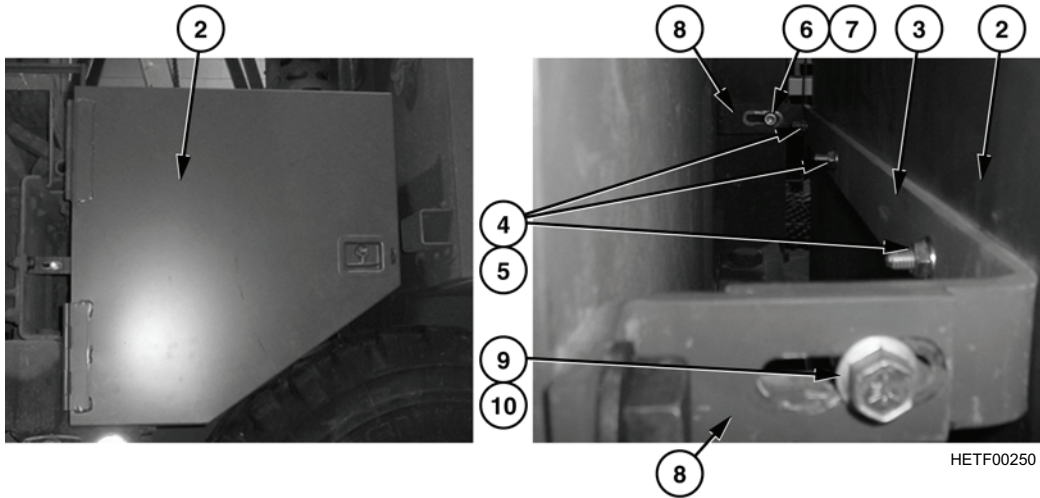
A block of wood can be placed between tire and stowage box for support.



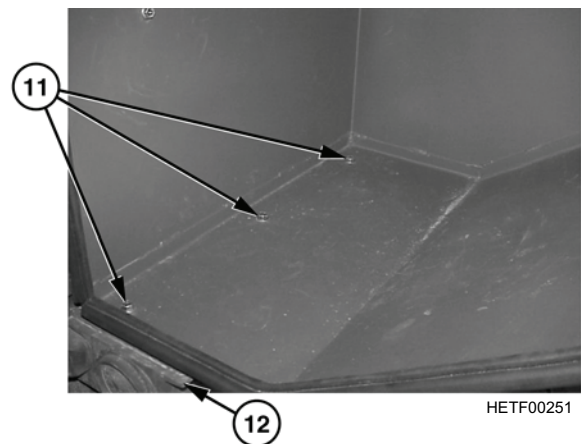
HETF00276

STOWAGE BOX KIT INSTALLATION - CONTINUED**0004 00****STOWAGE BOX INSTALLATION - CONTINUED**

2. Remove straps.
3. Install support bar (3) on stowage box (2) with three screws (4) and locknuts (5), provided with the kit. Do not tighten locknuts.
4. Install support bar (3) on winch support bracket (8) screws (6) and locknut (7).
5. Install support bar (3) on winch support bracket (8) with screw (9) and locknut (10).



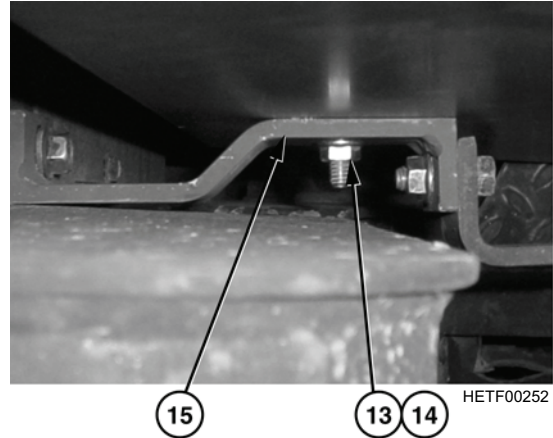
6. Install three floor mounting screws and locknuts into existing holes (11) on winch support (12) and secure stowage box (2) to winch. Do not tighten locknuts.



STOWAGE BOX KIT INSTALLATION - CONTINUED**0004 00****STOWAGE BOX INSTALLATION - CONTINUED****NOTE**

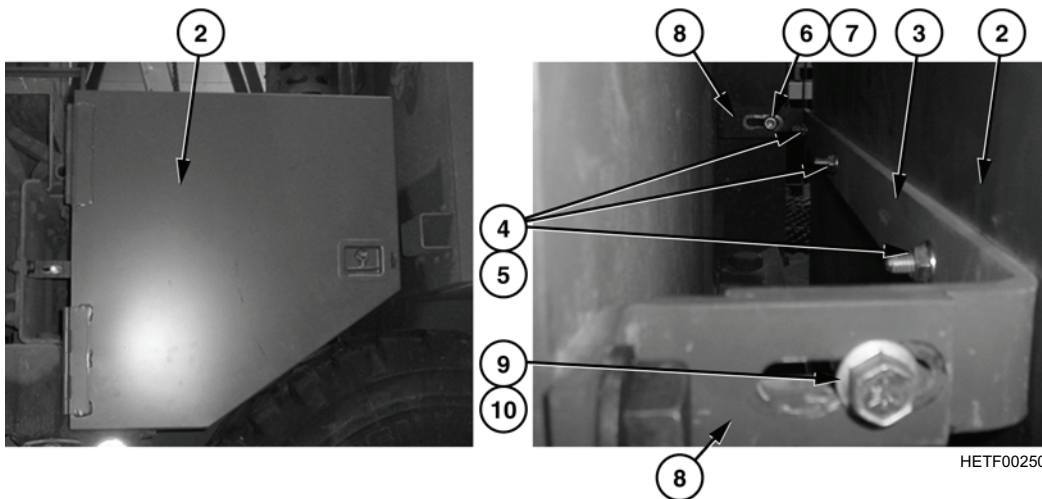
In the following step, use lockwasher if locknut is not provided in A/C kit.

7. Install screw (13) and locknut (14), provided with the kit, to secure stowage box (2) to ladder extension (15). Do not tighten locknut.
8. Tighten three floor locknuts installed during Step 6.

**NOTE**

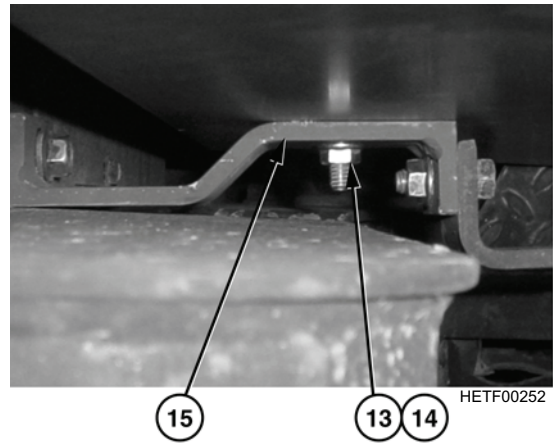
Ensure that winch cable tensioner clears rear of stowage box before tightening locknuts.

9. Tighten locknuts (5) on support bar (3).
10. Tighten locknuts (7 and 10) on winch support bracket (8).



STOWAGE BOX KIT INSTALLATION - CONTINUED**0004 00*****STOWAGE BOX INSTALLATION - CONTINUED***

11. Tighten locknut (14) on ladder extension (15).



12. Install personnel ladder (TM 9-2320-360-10).
13. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

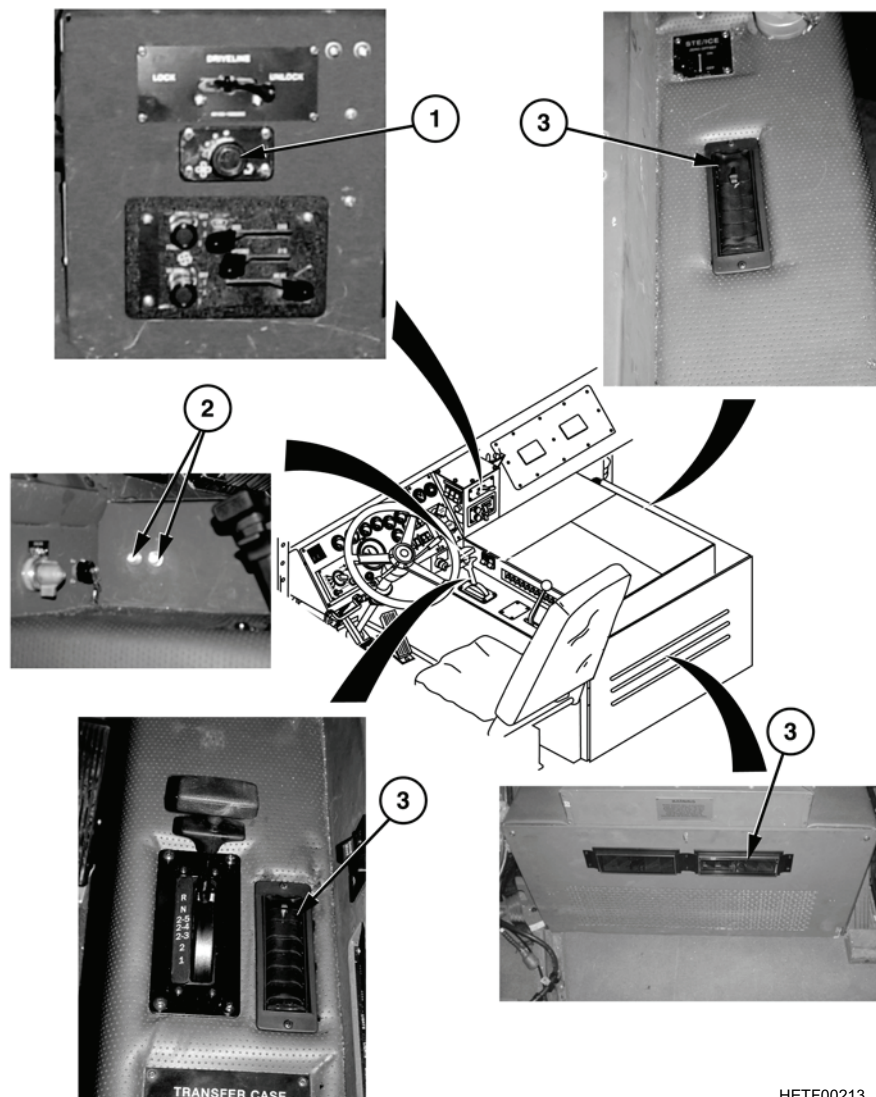
CHAPTER 3
OPERATOR'S INSTRUCTIONS

OPERATOR'S CONTROLS AND INDICATORS**0005 00**

This work package shows location and describes use of controls and indicators used to operate the HET Tractor A/C system. Operator/crew must become thoroughly familiar with contents of this work package, before attempting to operate the HET Tractor A/C system.

Know the location and proper use of every control and indicator before operating the HET Tractor A/C system.

1. **A/C Control Switch.** Four-position switch used to turn the A/C system ON and OFF, and control the A/C blower speed. When switch is in the fully counter-clockwise position, the A/C system is turned OFF. As the switch is rotated clockwise, the A/C system is turned ON, and the A/C blower speed increases.
2. **A/C Circuit Breakers.** Breakers open automatically to protect HET Tractor from electrical overload. Push circuit breaker buttons to reset.
3. **A/C Louvers.** Louvers are used to direct A/C airflow. Adjust louvers for desired airflow.



HETF00213

END OF WORK PACKAGE

OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION 0006 00

This work package contains Operator's PMCS requirements for the HET Tractor A/C system. The PMCS table in this work package contain checks and services necessary to ensure that the truck is ready for operation. Using PMCS tables, perform maintenance at specified intervals. Perform PMCS listed in TM 9-2320-360-10, before performing these PMCS checks.

GENERAL MAINTENANCE PROCEDURES**WARNING**

Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention. Keep away from open flames and other sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- The flashpoint for type II solvent cleaning compound is 141-198°F (61-92°C) and type III is 200-241°F (93-116°C).
 - Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
 - Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death to personnel.
 - Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury to personnel.
 - Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particle may cause injury to personnel.
- a. **Cleanliness.** Dirt, grease, oil, and debris may cause or cover a serious problem. Clean all metal surfaces.
 - b. **Bolts, nuts, and screws.** Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition. Look for chipped paint, bare metal, or rust around boltheads. If any part seems loose, tighten it, or have the part repaired or replaced.
 - c. **Welds.** Look for loose or chipped paint, rust, or gaps on welds. If a bad weld is found, notify Unit Maintenance.
 - d. **Electrical wires and connectors.** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure wires are in good shape. If a wire or connector is bad, notify Unit Maintenance.
 - e. **A/C system leaks.** Look for A/C lubrication leakage and corrosion, and damage to fittings, hoses, and other components. Inspect lowest points of fittings, and hoses for indication of lubrication leakage. If lubrication leakage is found, notify Unit Maintenance.

NOTE

Always observe the warnings and cautions appearing in your PMCS table. Warnings and cautions appear before applicable procedures. You must observe these warnings and cautions to prevent serious injury to yourself and others or prevent equipment from being damaged.

EXPLANATION OF TABLE ENTRIES

- a. **"Item No." Column.** Items in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do the checks and services for the intervals listed.

OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION - CONTINUED

0006 00

EXPLANATION OF TABLE ENTRIES - CONTINUED

- b. **"Interval" Column.** This column describes when, and how often, the check is to be made. Thus, if a given check is performed before operation, the word Before is opposite the check in the Interval column.
- (1) Perform the (Before) CHECKS before operating truck.
 - (2) Perform the (During) CHECKS while operating truck. During operation means to monitor truck and its related components while being operated.
 - (3) Perform the (After) CHECKS right after operating this truck.
 - (4) Perform the (Weekly) CHECKS once a week.
- c. **"Item To Be Inspected" Column.** The items listed in this column are divided into groups indicating the portion of the equipment of which they are a part, i.e. front, left, engine. Under these groupings, a few common words are used to identify the specific item being checked.
- d. **"Procedures" Column.** This column contains a brief description of the procedure by which the check is performed.
- e. **"Not Fully Mission Capable If:" Column.** This column contains the criteria that causes the equipment to be classified as NOT READY/NOT AVAILABLE because of inability to perform its primary mission. An entry in this column will:

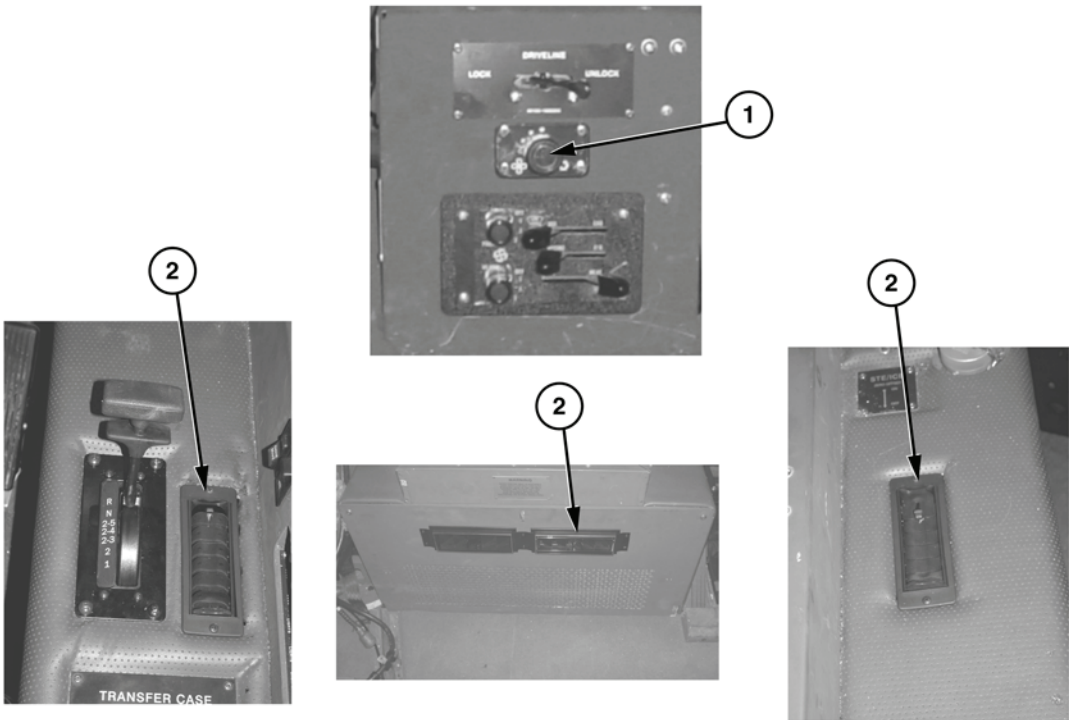
Identify conditions that will make the equipment not ready/available for readiness reporting purposes.

Refer to WP 0007 00, Tables 1, 2, and 3 for *Operator's Preventive Maintenance Checks and Services (PMCS)* for the HET Tractor A/C system.

END OF WORK PACKAGE

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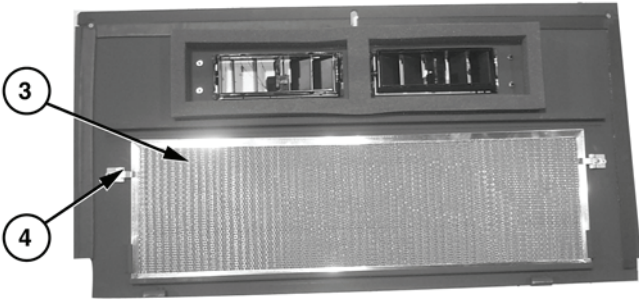
Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/ Service		
2	During	A/C System	<p>Perform the following inspection only if A/C is required due to climatic conditions.</p> <p>Turn A/C control switch (1) to high blower speed position. Wait 5 minutes to allow temperature to stabilize. Check A/C output louvers (2) for cool air. Notify Unit Maintenance if cool air is not present.</p>	



HETF00489

OPERATOR’S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED 0007 00

Table 3. Operator’s Preventive Maintenance Checks and Services (Weekly).

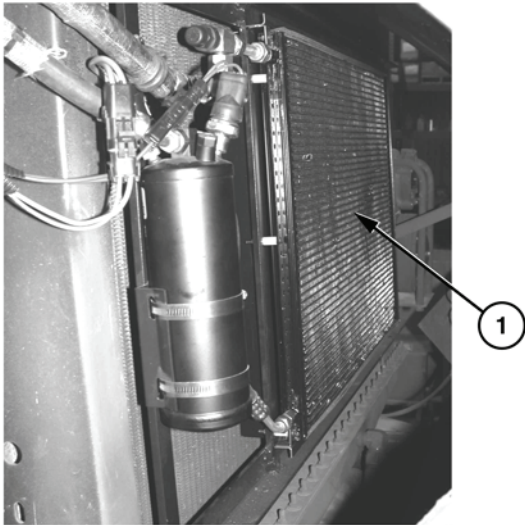
Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
3	Weekly	A/C intake filter and A/C evaporator condensation drain	<p>a. Ensure A/C control switch is in OFF position (WP 0007 00).</p> <p>b. Remove two screws (1) and open dog-house door (2).</p> <p>c. Check A/C intake filter (3). Perform steps d. through f. if filter is dirty or clogged.</p> <p>d. Release spring loaded clips (4) and remove A/C intake filter (3).</p> <p>e. Wash A/C intake filter (3) with fresh water, or vacuum, or blow dust from filter.</p> <p>f. Install A/C intake filter (3) and close spring loaded clips (4).</p>	
<div> <p>HETACF00207</p></div>				

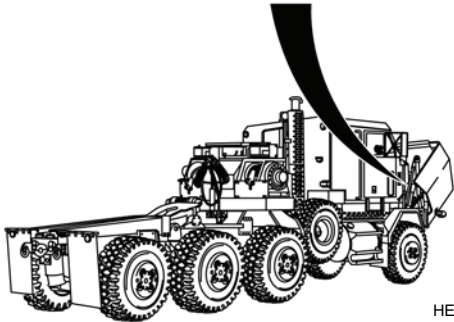
Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
3 (Con't)	Weekly	A/C intake filter and A/C evaporator condensation drain	<p>g. Check condensation drain hoses (5) at base of A/C evaporator assembly. Notify Unit Maintenance if drain hoses are clogged or kinked.</p> <p>h. Install doghouse door with two screws.</p>	

The top photograph shows a close-up of a condensation drain hose with a white plastic connector. An arrow points from a circled '5' to this connector. The bottom photograph shows two similar hoses with white connectors, both labeled with arrows from a circled '5'.

HETF00208

Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
4	Weekly	A/C Condenser	a. Open hood (TM 9-2320-360-10). b. Check A/C condenser coil (1) for debris, dirt, and damage. Clean any debris or dirt from A/C condenser coil.	





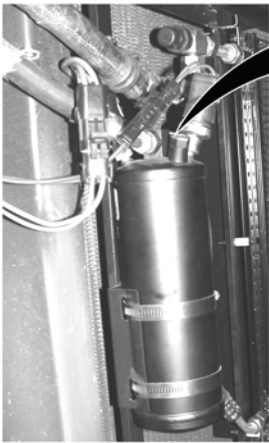
HETF00209

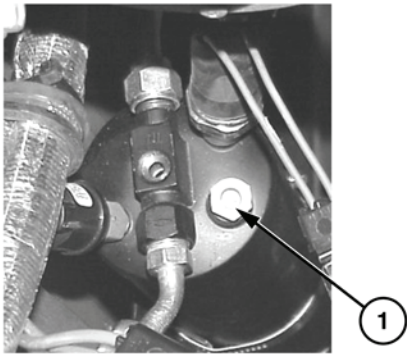
Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
5	Weekly	A/C Compressor Belt	a. Open hood (TM 9-2320-360-10). b. Check A/C compressor belt (1) for cracking, fraying, and breaks. c. Check A/C compressor drive belt for tightness. There should be approximately 1/2-inch (1.25 cm) of play when pushing on belt in center (2) between pulleys. If tightness appears incorrect, notify Unit Maintenance.	

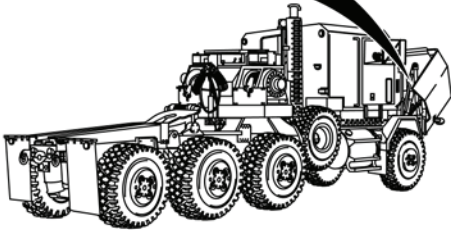
The diagram illustrates the inspection process for the A/C compressor belt. It features a close-up photograph of the belt and pulleys, with a callout (1) pointing to the belt. Below this, a schematic diagram shows the belt's position relative to the pulleys, with a callout (2) indicating the point of application of pressure. A side view of the vehicle chassis is also shown, with a callout (1) pointing to the engine compartment.

HETF00210

Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
7	Weekly	A/C receiver/dryer moisture indication	<p>a. Open hood (TM 9-2320-360-10).</p> <p>Moisture is present when moisture indicator is not blue.</p> <p>b. Check A/C receiver/dryer moisture indicator (1). Notify Unit Maintenance if indicator is not blue.</p>	







HETF00212

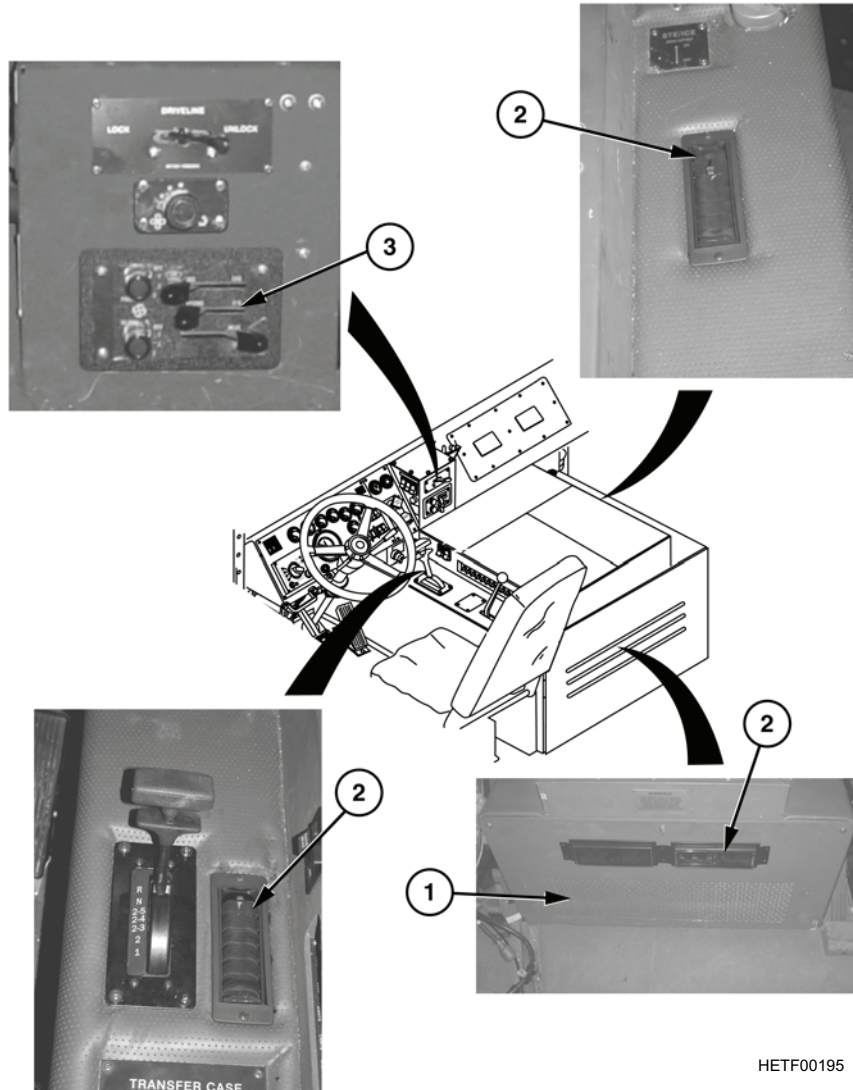
0007 00-8

SYSTEM OPERATION**0008 00**

This work package provides all instructions necessary to operate the HET Tractor A/C system.

TO TURN A/C ON

- a. Ensure A/C filter intake (1) and louvers (2) are free from obstructions.
- b. If cab is hot inside, open all cab windows and recirculating/fresh air vents (TM 9-2320-360-10).
- c. Ensure personnel heater and exhaust fan (3) are off (TM 9-2320-360-10).



HETF00195

- d. Start engine (TM 9-2320-360-10).

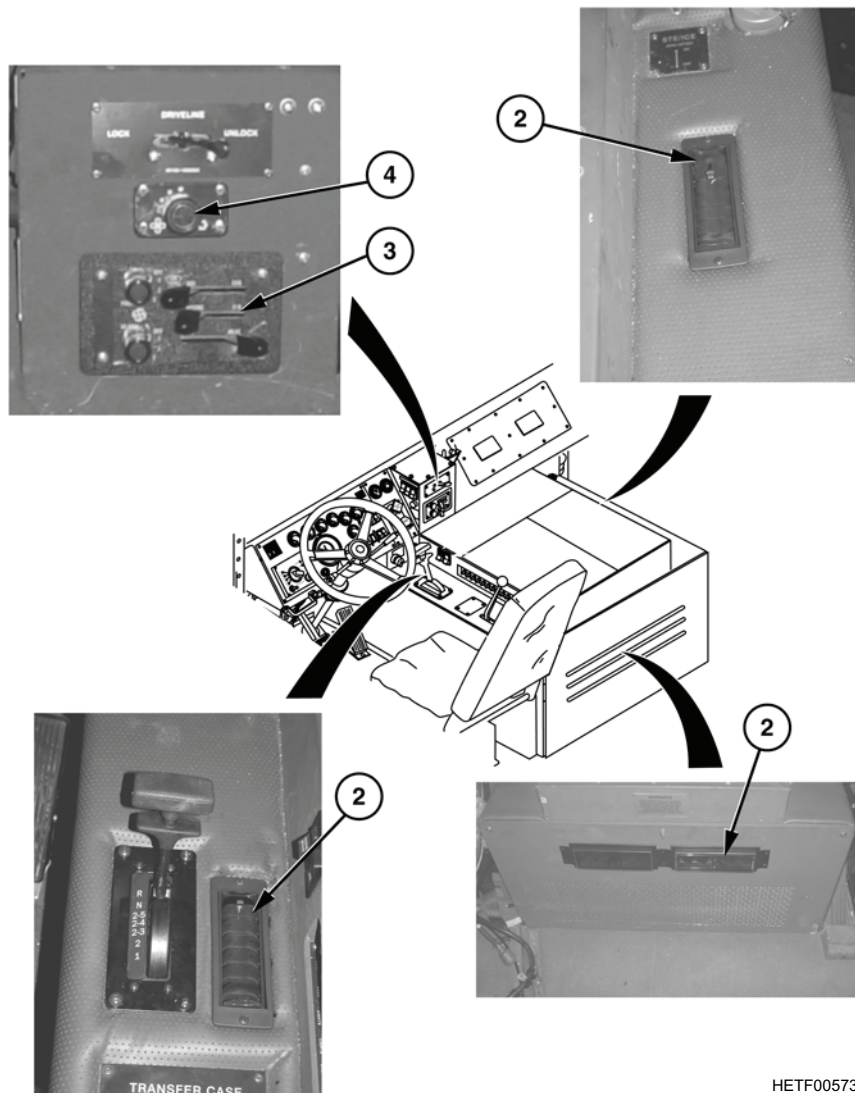
SYSTEM OPERATION - CONTINUED

0008 00

TO TURN A/C ON - CONTINUED

NOTE

- A/C is controlled by the position of A/C control switch. When A/C control switch is in the OFF position (fully counter-clockwise), the A/C blower and A/C compressor is off. The A/C compressor is turned ON, and the A/C blower speed is increased when the A/C control switch is moved clockwise. The A/C control switch controls the A/C compressor and A/C blower speed only. It does not control A/C temperature.
 - Doghouse door must be closed at all times during A/C operation.
- e. Turn A/C control switch (4) clockwise to desired blower speed position (low, medium, or high).
 - f. Adjust A/C louvers (2) to desired airflow.
 - g. As soon as cool air is flowing from louvers, close all cab windows and recirculating/fresh air vents (TM 9-2320-360-10).



HETF00573

SYSTEM OPERATION - CONTINUED

0008 00

TO TURN A/C OFF

Turn A/C control switch (4) to OFF (fully counter-clockwise) position.

END OF WORK PACKAGE

CHAPTER 4
OPERATOR'S TROUBLESHOOTING

OPERATOR'S TROUBLESHOOTING INTRODUCTION**0009 00**

This chapter lists common malfunctions that you may find with the HET Tractor A/C system. Perform the tests, inspections, and corrective actions in the order they appear in the table. This chapter cannot list all malfunctions that may occur, all tests or inspections needed to find the fault, or all corrective actions needed to correct the fault. If a malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

TROUBLESHOOTING SYMPTOMS

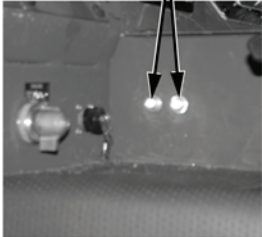
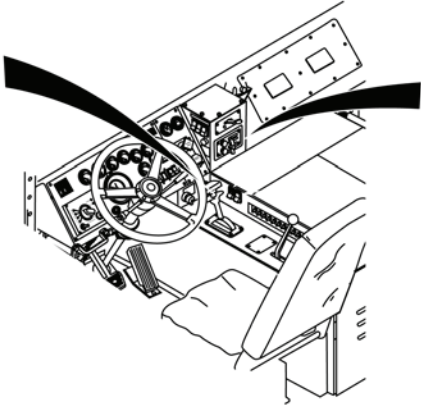
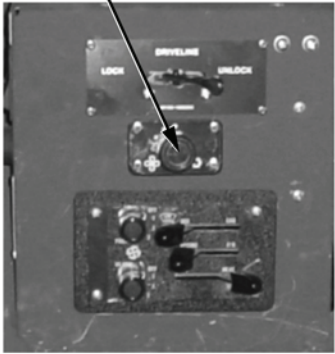
To quickly find a troubleshooting procedure, use the Malfunction Index. Work packages 0010 00 and 0011 00 contain the operator's troubleshooting steps.

MALFUNCTION INDEX

TROUBLESHOOTING PROCEDURE	WP PAGE NO.
1. A/C Does Not Operate.	0010 00-1
2. A/C Blower Operates But No Cold Air From A/C Ducts.	0011 00-1

END OF WORK PACKAGE

Table 1. Operator’s Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
A/C DOES NOT OPERATE.		
	Step 1. Check if engine switch is positioned to ON.	Position engine switch to ON.
	Step 2. Check if A/C circuit breakers have been tripped.	Reset A/C circuit breaker, if tripped.
	Step 3. Check if A/C control switch is set to the correct operating position (WP 0008 00).	Place A/C control switch in the correct operating position. If A/C control switch is in the correct operating position and A/C does not operate, notify Unit Maintenance.
<div><div><p>A/C CIRCUIT BREAKERS</p></div><div></div><div><p>A/C CONTROL SWITCH</p></div></div>		
HETF00225		

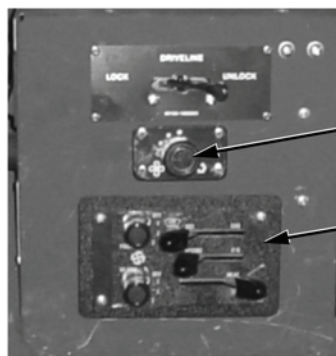
END OF WORK PACKAGE

**OPERATOR'S TROUBLESHOOTING - A/C BLOWER OPERATES
BUT NO COLD AIR FROM A/C DUCTS**

0011 00

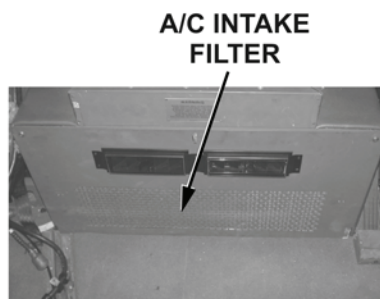
Table 1. Operator's Troubleshooting.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS.		
Step 1. Check A/C intake filter for dust and debris that may restrict air flow.	Clear dust and debris from A/C intake filter (WP 0007 00).	
Step 2. Check if A/C control switch is set to the correct operating position (WP 0008 00).	Place A/C control switch to correct operating position.	
Step 3. Ensure personnel heater is off and all cab windows and recirculating/fresh air vents are closed.	Turn personnel heater off and close all cab windows and recirculating/fresh air vents (TM 9-2320-360-10).	
Step 4. Check if A/C engine fan control solenoid circuit breaker has been tripped.	Reset tripped A/C engine fan control solenoid circuit breaker.	



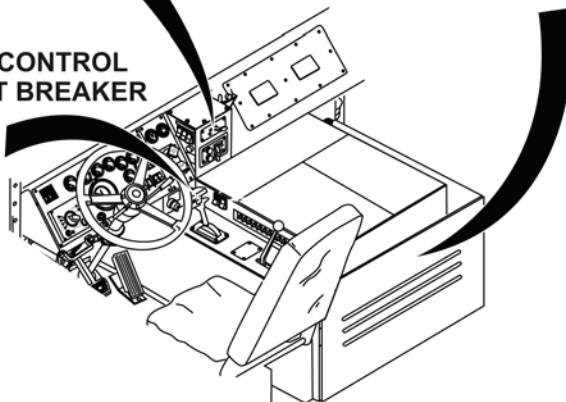
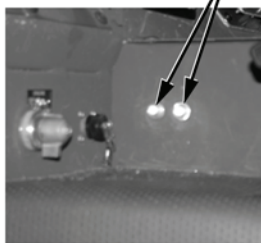
A/C CONTROL SWITCH

PERSONNEL HEATER CONTROLS



A/C INTAKE FILTER

A/C ENGINE FAN CONTROL SOLENOID CIRCUIT BREAKER

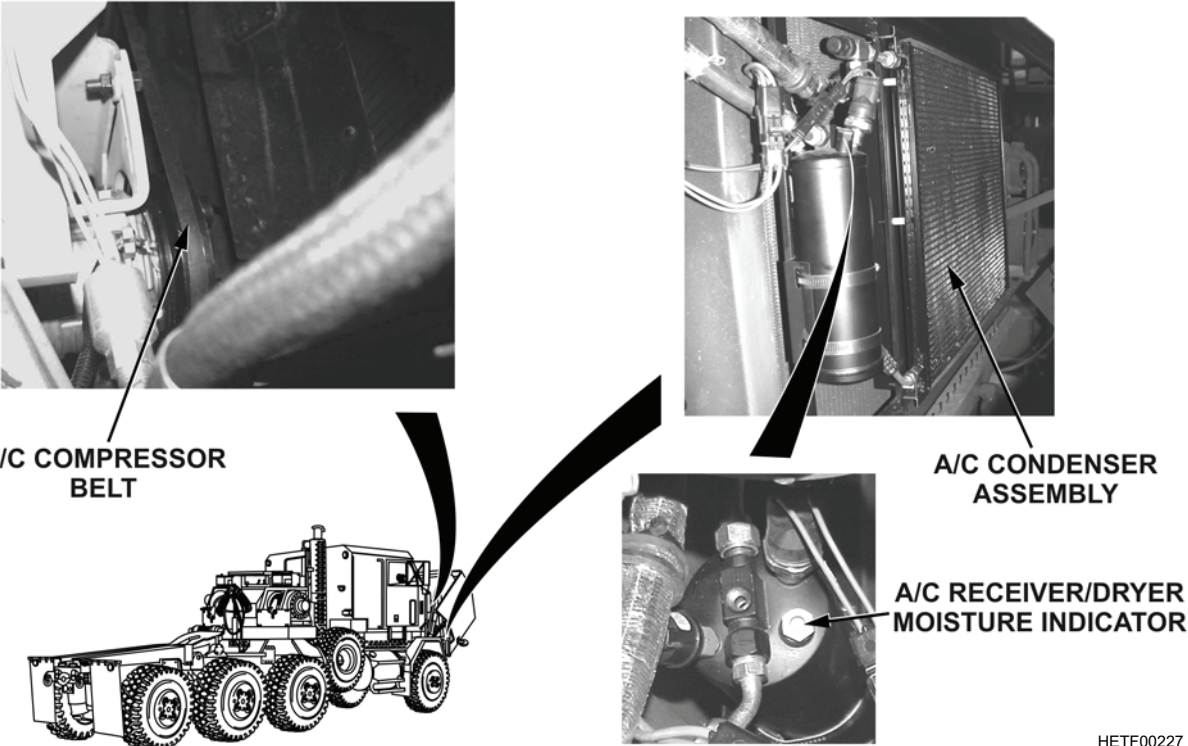


HETF00226

**OPERATOR'S TROUBLESHOOTING - A/C BLOWER OPERATES
BUT NO COLD AIR FROM A/C DUCTS - CONTINUED**

0011 00

Table 1. Operator's Troubleshooting - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 5. Turn engine off (TM 9-2320-360-10).	
	Step 6. Open hood (TM 9-2320-360-10).	
	WARNING	
	Engine and radiator assembly are very hot during truck operation. Use extreme caution when working around hot engine and radiator assembly. Failure to follow this warning may result in severe burns.	
	Step 7. Check A/C condenser assembly for debris and damage.	Clean debris from A/C condenser assembly. If A/C condenser is damaged, notify Unit Maintenance.
		
	Step 8. Check A/C compressor belt.	If A/C compressor belt is loose, damaged, or missing, notify Unit Maintenance.

HETF00227

**OPERATOR'S TROUBLESHOOTING - A/C BLOWER OPERATES
BUT NO COLD AIR FROM A/C DUCTS - CONTINUED**

0011 00**Table 1. Operator's Troubleshooting - Continued.**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
Step 9. Check A/C receiver/dryer moisture indicator. If A/C receiver/dryer moisture indicator is not blue, notify Unit Maintenance.
Step 10. Close hood (TM 9-2320-360-10).
Step 11. Start engine and operate A/C system (WP 0008 00). If A/C system fails to provide cold air, or stops providing cold air during normal operations, notify Unit Maintenance.

END OF WORK PACKAGE

CHAPTER 5
UNIT PMCS

UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION**0012 00**

This work package contains Unit Maintenance PMCS requirements for the HET Tractor A/C system. These PMCS requirements are in addition to those listed in TM 9-2320-360-20. The PMCS tables contain checks and services necessary to ensure that the truck is ready for operation. Using PMCS listed tables, perform maintenance at specified intervals. Perform PMCS listed in TM 9-2320-360-10, TM 9-2320-360-20, and chapter 3 before performing these PMCS checks.

GENERAL MAINTENANCE PROCEDURES**WARNING**

Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in well-ventilated areas. Use respirator as needed. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention. Keep away from open flames and other sources of ignition. Failure to follow this warning may result in injury or death to personnel.

- The flashpoint for type II solvent cleaning compound is 141-198°F (61-92°C) and type III is 200-241°F (93-116°C).
 - Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.
 - Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death to personnel.
 - Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury to personnel.
 - Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particle may cause injury to personnel.
 - Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissue. Use care to prevent refrigerant from touching your skin or eyes. Serious injury or blindness may result if you come in contact with liquid refrigerant.
 - Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in fire or explosion, which could cause personnel injury or death.
- a. **Cleanliness.** Dirt, grease, oil, and debris may cause or cover a serious problem. Use drycleaning solvent (Item 13, WP 0061 00) on metal surfaces and soapy water on rubber items.
 - b. **Bolts, nuts, and screws.** Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition and tighten or replace as necessary. If they cannot be checked with a tool, look for chipped paint, bare metal, or rust around bolt heads.
 - c. **Welds.** Look for loose or chipped paint, rust, or gaps on welds. If a bad weld is found, notify the supervisor.
 - d. **Electrical wires and connectors.** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and ensure wires are in good shape.
 - e. **A/C system leaks.** Look for A/C lubrication leakage and corrosion, and damage to fittings, hoses, and other components. Inspect lowest points of fittings and hoses for indication of lubrication leakage.
 - f. **Damage.** Damage is defined as any condition that affects safety or would make the truck unserviceable for mission requirements.

**UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES
(PMCS) INTRODUCTION - CONTINUED**

0012 00**EXPLANATION OF TABLES ENTRIES****NOTE**

- If the vehicle must be kept in continuous operation, do only the procedures that can be done without disturbing operation. Make complete checks and services when the vehicle is shut down.
- Perform procedures within doghouse assembly during routine doghouse maintenance.
- a. Do the SEMI-ANNUAL PREVENTIVE MAINTENANCE (WP 0013 00) once every 6 months and/or every 3,000 miles (4,828 km) whichever comes first.
- b. If anything looks wrong and is not fixed, write a DA Form 2404 and notify supervisor.
- c. The following is a breakdown of the PMCS table:
 - (1) **“Item No.” Column.** Checks and services are numbered in a logical order for moving around the truck. The item number column is used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording results of the PMCS.
 - (2) **“Interval” Column.** The column identifies when the PMCS should be performed.
 - (3) **“Item To Be Inspected” Column.** This column identifies the item to be inspected.
 - (4) **“Procedure” Column.** This column contains all the information required to do the check/inspection. Art is integrated into the column to aid the user in identifying items. Whenever replacement or repair is recommended, reference is made to the applicable maintenance instructions.
 - (5) **“Not Mission Capable If:” Column.** This column contains a brief statement of the condition (e.g., malfunction, shortage) that would cause the vehicle to be less than fully ready to perform its assigned mission.

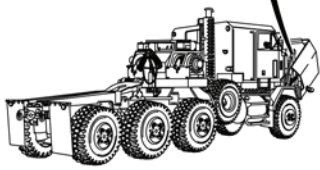
END OF WORK PACKAGE

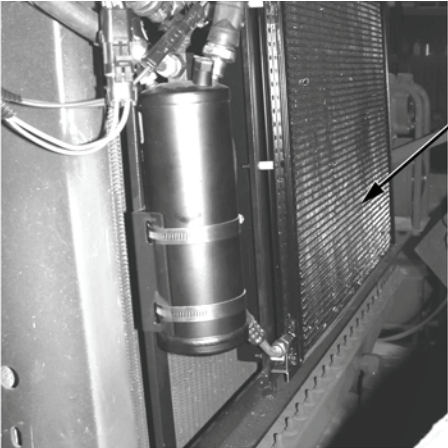
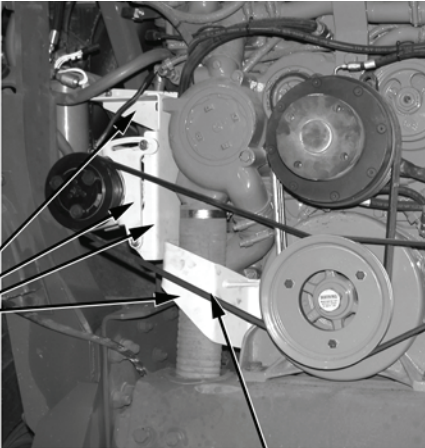
UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

0013 00

Table 1. Unit Preventive Maintenance Checks and Services (PMCS).

Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
1	Semi-Annual	A/C System (Engine Compartment)	<p>WARNING</p> <p>Ensure engine is cool before performing maintenance. Failure to follow this warning may result in severe burns.</p> <p>NOTE</p> <p>Ensure Operator/Crew has performed Operator's PMCS, listed in Chapter 3 of this technical bulletin, before continuing.</p> <p>a. Open hood (TM 9-2320-360-10).</p> <p>b. Check A/C condenser assembly (1) and A/C compressor assembly (2) for damage and missing or loose hardware.</p> <p>c. Check A/C compressor drive belt (3) for damage and proper tension. Belt tension gage reading should be 85 lb (378 N) for a used belt and 98 lb (436 N) for a new belt. If gage reading is not correct, adjust belt tension (WP 0037 00).</p>	



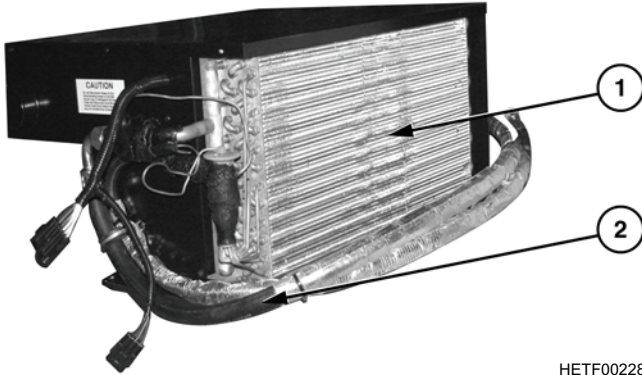
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HETF00215

UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

0013 00

Table 1. Unit Preventive Maintenance Checks and Services (PMCS) - Continued.

Item No.	Interval	Location	Procedure	Not Fully Mission Capable if:
		Item to Check/ Service		
2	Semi-annual	A/C System (Dog-house Components)	<p>NOTE</p> <p>Perform the following during routine doghouse maintenance.</p> <p>a. Remove evaporator subsystem (WP 0036 00).</p> <p>b. Clean evaporator coil (1); check for damage.</p> <p>c. Check A/C system hoses (2) for cracks and damage.</p>	
			 <p>HETF00228</p> <p>d. Perform A/C system leak test (WP 0038 00).</p> <p>e. Install evaporator subsystem (WP 0036 00).</p>	

END OF WORK PACKAGE

CHAPTER 6
UNIT TROUBLESHOOTING

UNIT TROUBLESHOOTING INTRODUCTION**0014 00**

This chapter contains step-by-step procedures for identifying, locating, isolating, and repairing the HET Tractor A/C system equipment malfunctions.

This technical bulletin cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify the supervisor.

a. **Page Layout.** Troubleshooting procedures are divided into logic tree pages and test pages.

- (1) A logic tree page is always a left-hand page, facing the test page on the right. The logic tree page provides the sequence of steps required to isolate a fault to a failed component. All critical information for decision making is on the left-hand page. Each logic tree page contains the following information:
 - (a) **INITIAL SETUP** – This box is located only on the first logic tree page of a fault. INITIAL SETUP lists tools, materials, references, personnel, and equipment needed to troubleshoot the fault.
 - (b) **KNOWN INFO** – This box is located in the top left-hand column. KNOWN INFO lists conditions and information that will eliminate specific components as the cause of the fault.
 - (c) **POSSIBLE PROBLEMS** – This box is located directly below KNOWN INFO. All of the system components that could cause a fault are listed in the POSSIBLE PROBLEMS box. The first component listed in the POSSIBLE PROBLEMS box is the one that will be tested at that step in the logic sequence. When one of the components is tested and found to be operational, it is entered at the bottom of the KNOWN INFO box as OK.
 - (d) **QUESTION** – Each question, located in the middle column, refers to the first possible problem listed in POSSIBLE PROBLEMS. If the answer to the question is YES, proceed to the next step. If the answer is NO, follow the NO arrow to obtain directions for correcting the problem. If the step contains a WARNING or CAUTION message, a small shadow box is printed above the question. Text for WARNINGS and CAUTIONS is on the following right-hand page.
 - (e) **TEST OPTIONS** – This box is located in the top right-hand column. TEST OPTIONS lists tests available for testing parts suspected of failing.
 - (f) **REASON FOR QUESTION** – This box is located directly below TEST OPTIONS. It explains the purpose for the question in the middle column.
- (2) A test page is always a right-hand page, facing the logic tree page on the left. The test provides detailed instructions for testing the first component listed in the POSSIBLE PROBLEMS box. This test will also provide an answer for the question in the middle column. Note the arrow connecting the test on the right-hand page to the REASON FOR QUESTION. When possible, illustrations are included to provide visual details. Warnings, cautions, and notes contain additional information for testing.

b. **How to Begin Troubleshooting.**

- (1) Determine the symptom or condition that indicates a problem or failure. Troubleshooting is divided into symptoms peculiar to a component, for example: A/C blower or A/C compressor. Refer to the Troubleshooting Fault Index in this work package.
- (2) Go to the referenced page to begin troubleshooting. Open the technical bulletin flat so both the left-hand and right-hand pages are displayed before you. The information on both pages is important to resolve the problem or failure. However, the experienced technician can follow the left-hand page instructions and refer to the right-hand page when necessary.
- (3) Follow the diagnostic procedure. Answer question No. 1 on the left-hand page and follow the YES or NO path to either the remedy or the next question. If necessary, look on the right-hand page for test instructions and illustrations.

- (4) Observe warnings, cautions, and notes. The formatting and symbols used in this manual for warnings, cautions, and notes are as follows:

WARNING

This is the symbol for a warning statement. If you see the word WARNING above a question on the left-hand page, look on the right-hand page for the text of the message. WARNINGS describe a situation which could cause severe injury or death to personnel.

CAUTION

This is the symbol for a caution statement. If you see the word CAUTION above a question on the left-hand page, look on the right-hand page for the text of the message. CAUTIONs describe a situation which could cause damage to equipment.

NOTE

This is the symbol for a note. Notes are located directly above the test to which they refer. Notes provide additional information for performing a test.

- c. **Measurements Required for Troubleshooting.**

CAUTION

Use proper-sized multimeter test leads and ensure care is used when checking for resistance, continuity, or voltage at connectors or damage to equipment may result.

- (1) **Resistance measurements.**
- (a) Connect red test lead to volt-ohm input connector and black lead to COM input connector on meter.
 - (b) Set the function/range switch to the desired ohm position. If the magnitude of the resistance is not known, set the switch to the highest range, then reduce until a satisfactory reading is obtained.
 - (c) If the resistance being measured is connected to a circuit, turn ENGINE switch OFF.
 - (d) Connect test leads to the circuit being measured. When measuring high resistance, be careful not to contact adjacent points, even if they are insulated. Some insulators have a relatively low insulation resistance which can affect the resulting measurement.
 - (e) Read the resistance value on the digital display.
 - (f) Continuity checks.
 - (g) Place the function/range switch in any ohm range.
 - (h) Some meters show "l+m", or simply "l" when functioning/range switch is in any ohm position.
 - (i) Connect the red test lead to the volt-ohm connector and black lead to COM input connector on the meter. When the test leads are separated or measuring an out-of-range resistance, the digital display will indicate "OL" (Over Limit).
 - (j) Put one test probe at one end of the wire or circuit to be tested. Use the other test lead to trace the circuit. When continuity is established, an ohm symbol will appear in the upper left corner of the digital display. If contact in the wire is maintained long enough (about 1/4 of a second), the OL will disappear and the resistance value of the wire or circuit will appear next to the symbol.
 - (k) If your multimeter does not work in this manner, learn how it operates before performing troubleshooting.

UNIT TROUBLESHOOTING INTRODUCTION - CONTINUED

0014 00

- (2) **Voltage measurements.** The HET truck is equipped with both 12 vdc and 24 vdc circuits. Troubleshooting procedures will reference 12 vdc and 24 vdc measurements, however, these values can vary. When the batteries are fully charged, 12.6 vdc can be measured on an open 12 volt circuit and 14.5 vdc can be measured when the engine is running at 1000 rpm. When the batteries are fully charged, 25.2 vdc can be measured on an open 24 volt circuit and 29 vdc can be measured when the engine is running at 1000 rpm.
 - (a) Connect the red test lead to the volt-ohm input connector and the black lead to the COM input on the meter. If a DC-AC switch is present, make sure it is set to the DC position.
 - (b) Set the function/range switch to the desired volts position. If the magnitude of the voltage is not known, set the switch to a range which will be able to read most voltages seen on the truck (typically, a 200V range will do). Then reduce the range until a satisfactory reading is obtained.
 - (c) Connect the test leads to the circuit being measured. Following the voltage measurement point, the color test lead tube used is given in parenthesis (red is volt-ohm connection and black is the COM connection).
- (3) **A/C system performance checks.** Troubleshooting procedure for the HET tractor includes system performance checks. A properly functioning A/C system will have the following characteristics.
 - (a) The A/C control switch is set to the desired A/C blower speed position (low, medium, or high).
 - (b) The A/C compressor clutch engages and cycles with A/C evaporator temperature.
 - (c) The A/C compressor suction line is cool.
 - (d) The A/C compressor discharge line is hot.
 - (e) The A/C condenser is hot/warm.
 - (f) The A/C hose between the A/C condenser and A/C receiver dryer is warm.
 - (g) The A/C receiver/dryer is at outside temperature.
 - (h) The A/C binary switch is closed.
 - (i) The inlet to the A/C expansion valve is warm.
 - (j) The A/C evaporator is cold.
 - (k) Condensation water may drain from the A/C evaporator.
 - (l) The A/C discharge air temperature is approximately 20°F cooler than the ambient air temperature.
 - (m) The A/C high pressure switch closes and activates the A/C engine fan control solenoid when system high side pressure reaches 300 psi.
- d. **Wire repair.** Refer to TM 9-2320-360-20 for the repair of wire harness connectors. Refer to TM 43-0158 for detailed instructions concerning electrical wiring repairs. Wire harness repair is limited to splicing and taping of wires at Unit Maintenance. If a wire harness cannot be repaired, notify DS Maintenance.
- e. **Abbreviations and Commonly Used Terms.**
 - (1) A/C - Air Conditioner: either component, subsystem, or system.
 - (2) ACC - Accessory.
 - (3) BAT - Battery.
 - (4) CKT - Circuit.
 - (5) COM - Common.
 - (6) ECB - Electronic Control Box Assembly.
 - (7) Erratic - Intermittent.
 - (8) mag - Magnetic

UNIT TROUBLESHOOTING INTRODUCTION - CONTINUED**0014 00**

- (9) System - A collection of devices which are all related to each other because they depend on each other to do some function or job.
- (10) Test Chain - A series of tests to be followed in a particular order or sequence (numbered).
- (11) Troubleshooting - The process of making measurements and observing the operation of the vehicle to find out if and where any problems exist.

FAULT NUMBER	TROUBLESHOOTING PROCEDURE	WP PAGE NO.
1.	A/C Does Not Operate.	0015 00-1
2.	A/C Blower Does Not Operate (Low, Medium, and/or High).	0016 00-1
3.	A/C Blower Operates But No Cold Air From A/C Ducts.	0017 00-1
4.	A/C Compressor Excessively Noisy.	0018 00-1
5.	A/C Compressor Does Not Shut Off or Cycles Constantly.	0019 00-1

END OF WORK PACKAGE

A/C DOES NOT OPERATE

0015 00

INITIAL SETUP:

Maintenance Level

Unit Maintenance

References

TM 9-2320-360-20

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

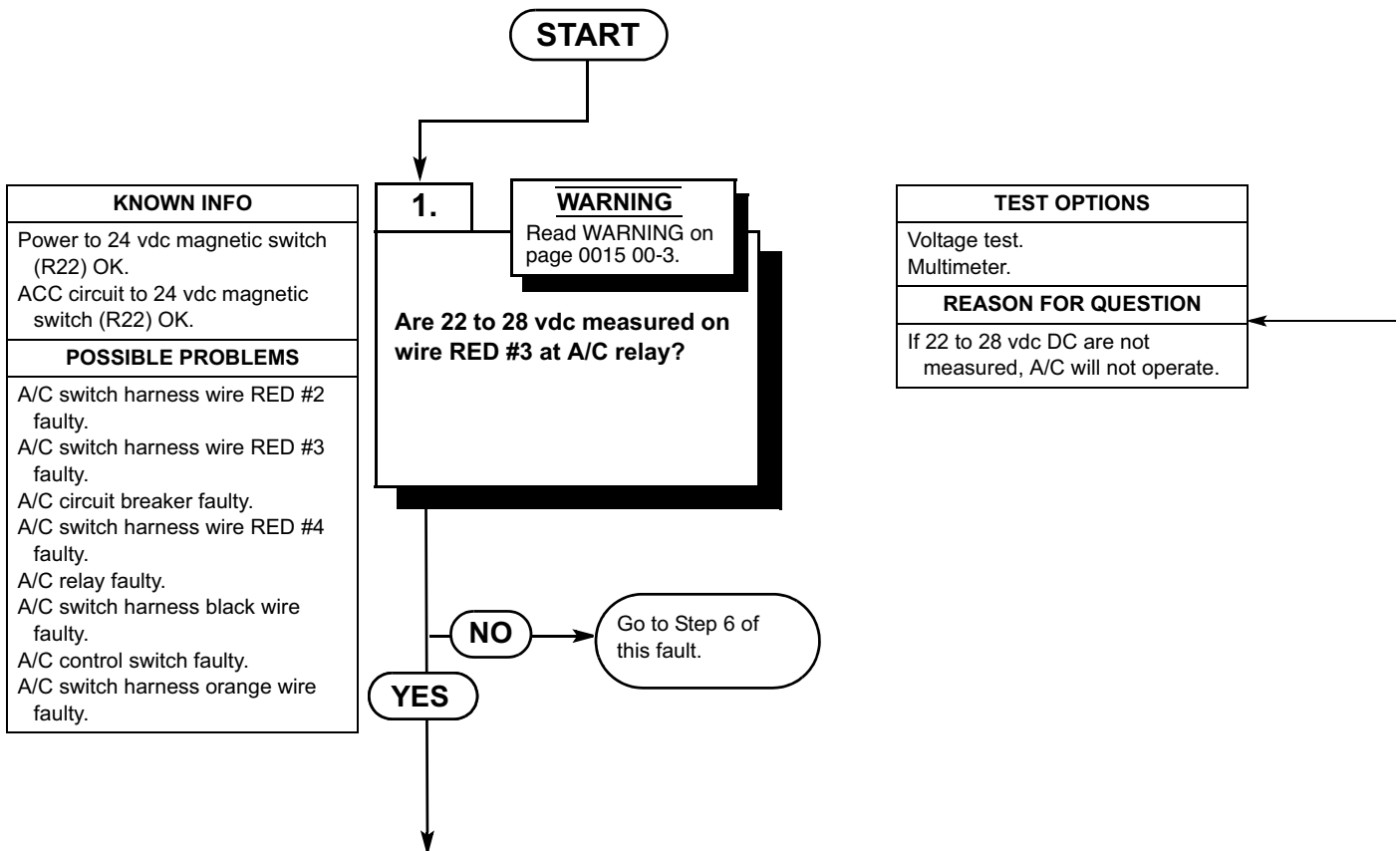
Multimeter (Item 6, WP 0060 00)

Equipment Conditions

Engine off (TM 9-2320-360-10)

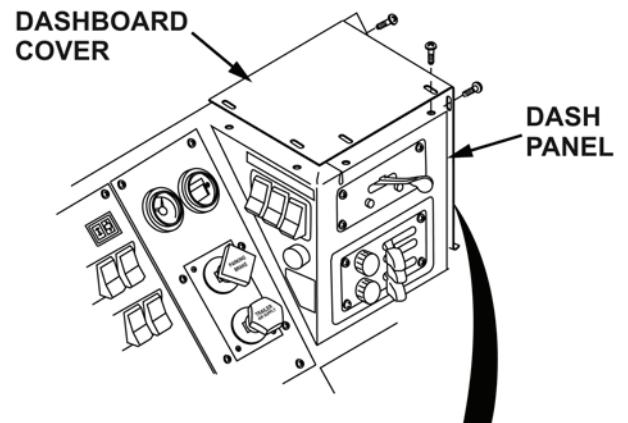
Parking brake applied (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)

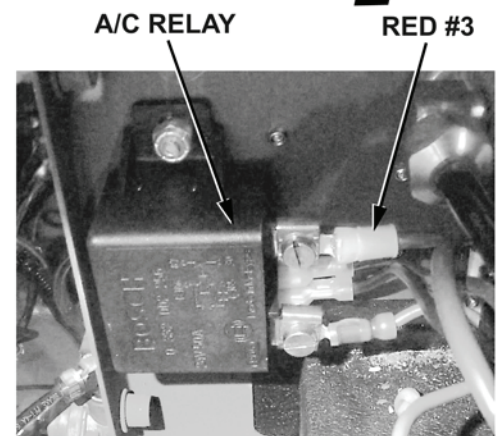
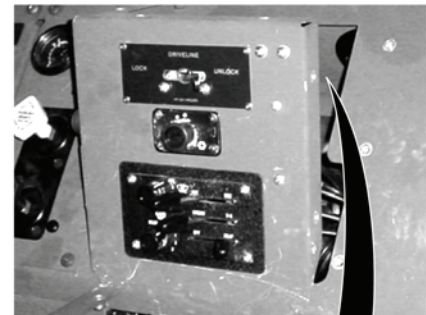


WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.



VOLTAGE TEST
<ol style="list-style-type: none"> (1) Remove dashboard cover (TM 9-2320-360-20). (2) Place positive (+) probe of multimeter on wire RED #3 at A/C relay terminal. (3) Place negative (-) probe of multimeter on ground. <ol style="list-style-type: none"> (a) If 22 to 24 vdc are not present, go to Step 6 of this fault. (b) If 22 to 24 vdc are present, go to Step 2 of this fault.



HETF00274

A/C DOES NOT OPERATE - CONTINUED.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #3 OK. A/C circuit breaker OK.
POSSIBLE PROBLEMS
A/C switch harness wire RED #4 faulty. A/C relay faulty. A/C switch harness black wire faulty. A/C control switch faulty. A/C switch harness orange wire faulty.

2.

WARNING
Read WARNING on page 0015 00-5.

Are 22 to 28 vdc measured on orange wire at A/C relay when engine switch is set to ON position?

NO

Go to Step 4 of this fault.

YES

TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is not present A/C relay is not energized.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #3 OK. A/C circuit breaker OK. A/C switch harness wire RED #4 OK. A/C relay OK. A/C switch harness black wire OK.
POSSIBLE PROBLEMS
A/C control switch faulty. A/C switch harness orange wire faulty.

3.

WARNING
Read WARNING on page 0015 00-5.

Are 22 to 28 vdc measured on orange wire at A/C control switch when engine switch is set to ON position?

NO

Repair orange wire (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 8 of this fault.

YES

Replace A/C control switch (WP 0021 00). Verify repair, go to Step 8 of this fault.

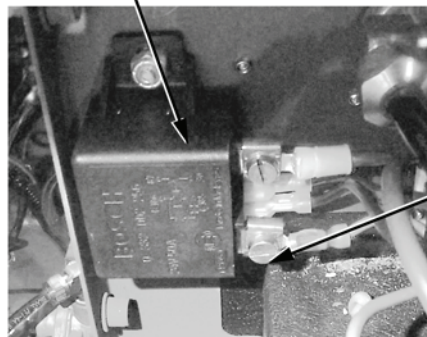
TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc are measured, A/C control switch is faulty. If not, orange wire is faulty.

WARNING

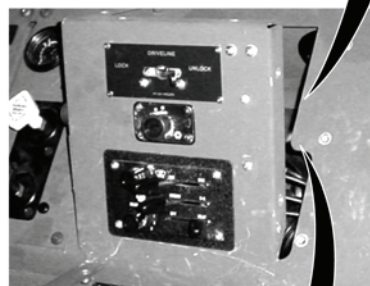
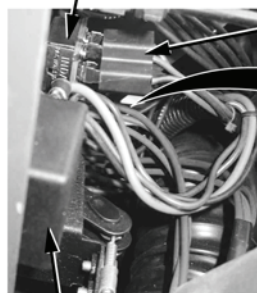
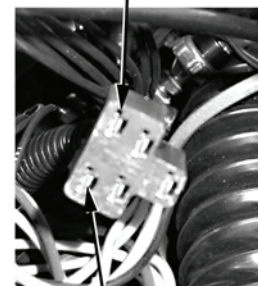
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

- (1) Turn engine switch to ON position (TM 9-2320-360-10).
- (2) Place positive (+) probe of multimeter on orange wire at A/C relay terminal.
- (3) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, turn engine switch to OFF position, and go to Step 4 of this fault.
 - (b) If 22 to 28 vdc are measured, turn engine switch to OFF position, and go to Step 3 of this fault.

A/C RELAY**ORANGE WIRE****VOLTAGE TEST**

- (1) Remove A/C switch harness connector from A/C control switch.
- (2) Turn engine switch to ON position (TM 9-2320-360-10).
- (3) Place positive (+) probe of multimeter on orange wire from A/C relay at A/C switch harness connector.
- (4) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, turn engine switch to OFF position, and repair orange wire (see WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 8 of this fault.
 - (b) If 22 to 28 vdc are measured, replace A/C control switch (WP 0021 00). Verify repair, go to Step 8 of this fault.

**A/C CONTROL SWITCH****A/C CONTROL SWITCH CONNECTOR****A/C RELAY****ORANGE WIRE FROM A/C RELAY**

HETF00275

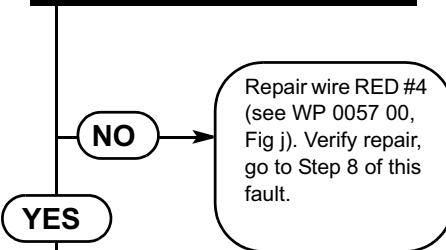
A/C DOES NOT OPERATE - CONTINUED.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #3 OK. A/C circuit breaker OK. A/C control switch OK. A/C switch harness orange wire OK.
POSSIBLE PROBLEMS
A/C switch harness wire RED #4 faulty. A/C relay faulty. A/C switch harness black wire faulty.

4.

WARNING
Read WARNING on page 0015 00-7.

Is continuity measured on wire RED #4 from 24 vdc magnetic switch (R22) to A/C relay?



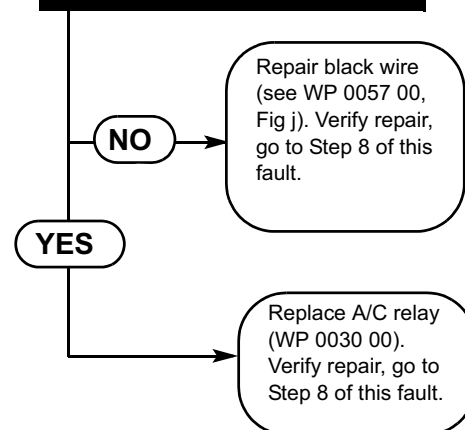
TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is not measured, wire RED #4 is faulty.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #3 OK. A/C circuit breaker OK. A/C control switch OK. A/C switch harness orange wire OK. A/C switch harness wire RED #4 OK.
POSSIBLE PROBLEMS
A/C relay faulty. A/C switch harness black wire faulty.

5.

WARNING
Read WARNING on page 0015 00-7.

Is continuity measured on black wire from A/C relay to ground?



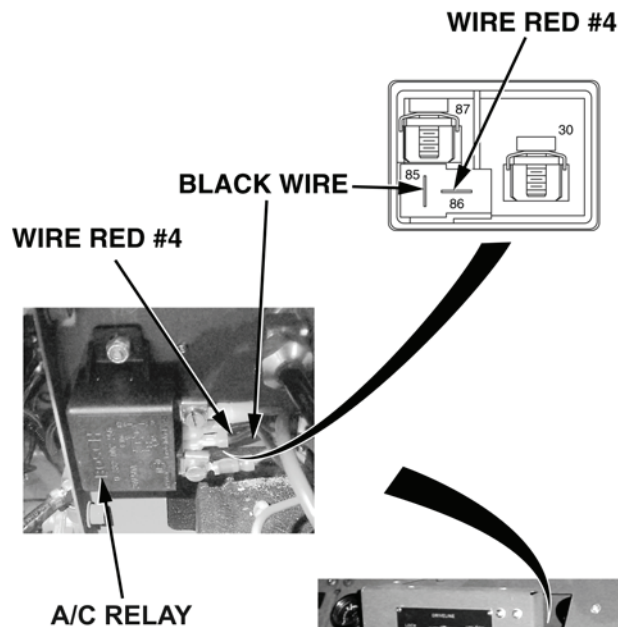
TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is not measured, A/C relay ground is faulty. If there is continuity, A/C relay is faulty.

WARNING

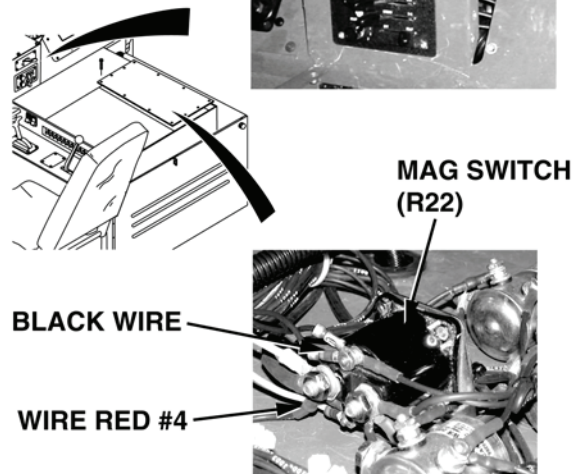
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

CONTINUITY TEST

- (1) Disconnect battery (TM 9-2320-360-20).
- (2) Disconnect wire RED #4 from A/C relay.
- (3) Remove electronic control box assembly covers (TM 9-2320-360-20).
- (4) Set multimeter switch to ohms.
- (5) Is there continuity measured on wire RED #4 from magnetic switch (R22) to A/C relay connector?
 - (a) If there is no continuity, repair wire RED #4 (see WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 8 of this fault.
 - (b) If there is continuity, connect wire RED #4 to A/C relay and go to Step 5 of this fault.

**CONTINUITY TEST**

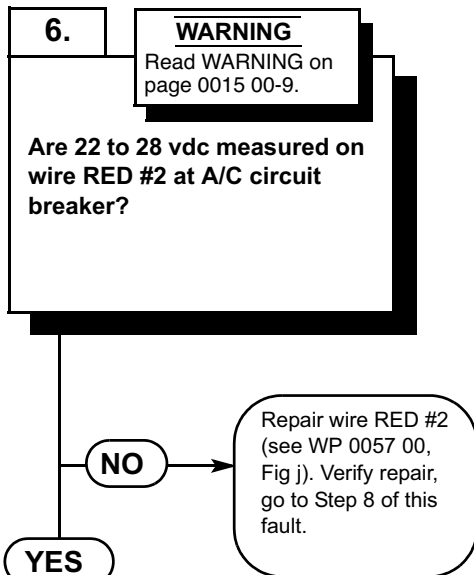
- (1) Disconnect black wire from A/C relay.
- (2) Set multimeter switch to ohms.
- (3) Is there continuity measured on black wire from A/C relay to magnetic switch (R22)?
 - (a) If there is no continuity, repair black wire (see WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 8 of this fault.
 - (b) If there is continuity, replace A/C relay (WP 0030 00). Verify repair, go to Step 8 of this fault.



HETF00191

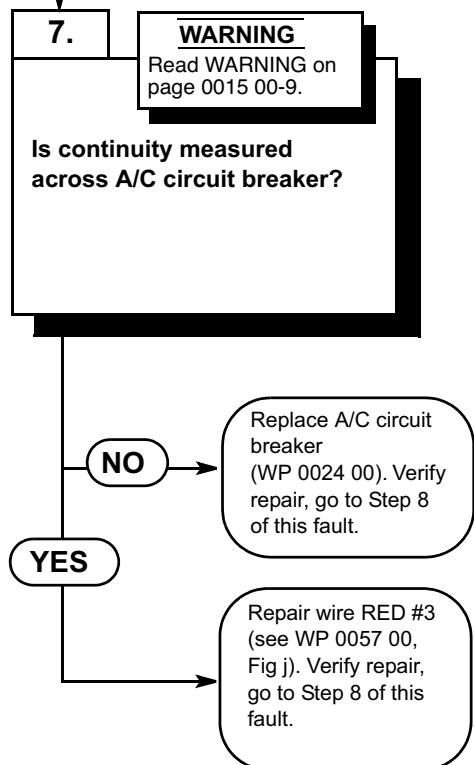
A/C DOES NOT OPERATE - CONTINUED.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #4 OK. A/C relay OK. A/C switch harness black wire OK. A/C switch harness orange wire OK. A/C control switch OK.
POSSIBLE PROBLEMS
A/C switch harness wire RED #2 faulty. A/C switch harness wire RED #3 faulty. A/C circuit breaker faulty.



TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc are not measured, wire RED #2 is faulty.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #4 OK. A/C relay ground OK. A/C relay OK. A/C switch harness orange wire OK. A/C control switch OK.
POSSIBLE PROBLEMS
A/C switch harness wire RED #3 faulty. A/C circuit breaker faulty.



TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is measured, wire RED #3 is faulty. If not, A/C circuit breaker is faulty.

WARNING

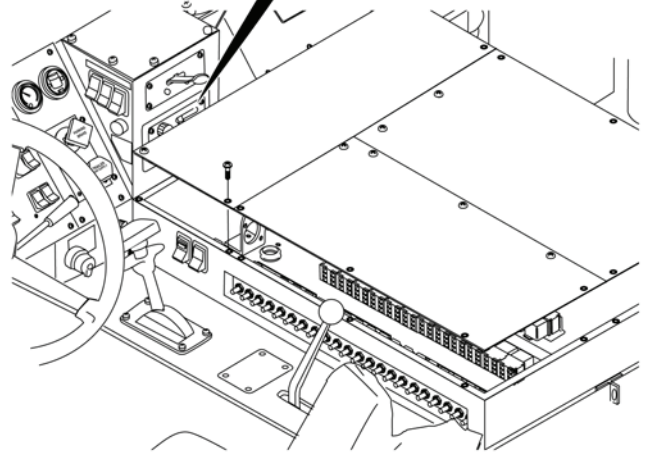
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

- (1) Remove three electronic control box assembly covers (TM 9-2320-360-20).
- (2) Place positive (+) probe of multimeter on top wire RED #2 at A/C circuit breaker.
- (3) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, disconnect batteries (TM 9-2320-360-20) and repair wire RED #2 (see WP 0057 00, Fig j), or notify DS Maintenance. Verify repair, go to Step 8 of this fault.
 - (b) If 22 to 28 vdc are measured, go to Step 7 of this fault.

A/C CIRCUIT BREAKER**WIRE RED #3****WIRE RED #2****CONTINUITY TEST**

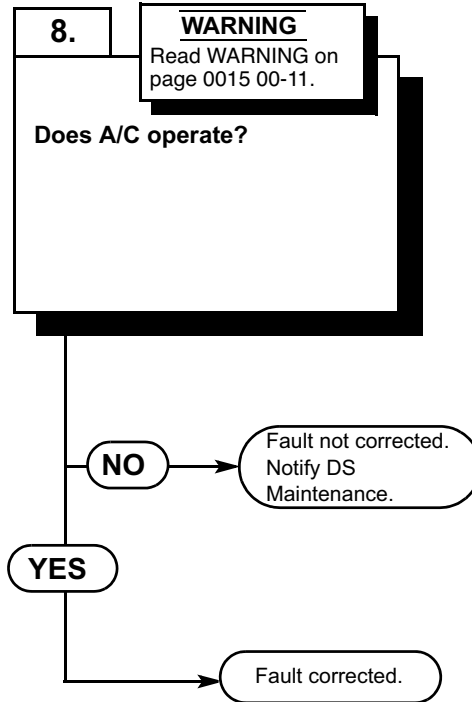
- (1) Disconnect batteries (TM 9-2320-360-20).
- (2) Disconnect bottom wire RED #3 from A/C circuit breaker.
- (3) Set multimeter switch to Ohms.
- (4) Is there continuity measured across A/C circuit breaker terminals?
 - (a) If there is no continuity, replace A/C circuit breaker (WP 0024 00). Verify repair, go to Step 8 of this fault.
 - (b) If there is continuity, repair wire RED #3 (see WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 8 of this fault.



HETF00192

A/C DOES NOT OPERATE - CONTINUED.

KNOWN INFO
Power to 24 vdc magnetic switch (R22) OK. ACC circuit to 24 vdc magnetic switch (R22) OK. A/C switch harness wire RED #4 OK. A/C relay OK. A/C switch harness black wire OK. A/C switch harness orange wire OK. A/C control switch OK. A/C switch harness wire RED #2 OK. A/C switch harness wire RED #3 OK. A/C circuit breaker OK.
POSSIBLE PROBLEMS
NONE



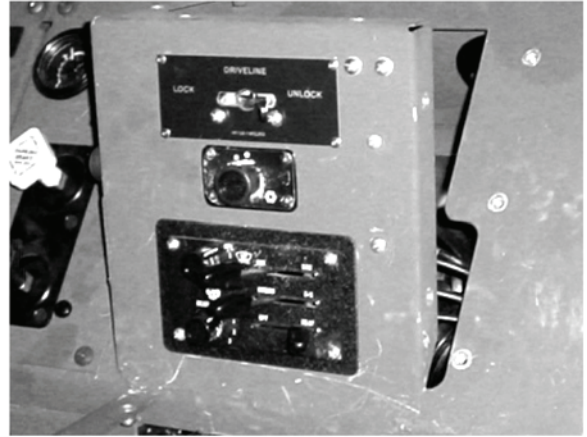
TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If A/C operates, fault has been corrected.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VERIFY REPAIR

- (1) If removed, install covers on dash panel and electronic control box assembly (TM 9-2320-360-20).
- (2) If disconnected, connect batteries (TM 9-2320-360-20).
- (3) Start engine (TM 9-2320-360-10).
- (4) Operate A/C (WP 0008 00).
 - (a) If A/C does not operate, fault has not been corrected. Turn engine switch and A/C control switch to OFF position and notify DS Maintenance.
 - (b) If A/C operates, fault has been corrected.



HETF00193

END OF WORK PACKAGE

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH)

0016 00

INITIAL SETUP

Maintenance Level

Unit Maintenance

References

TM 9-2320-360-20

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

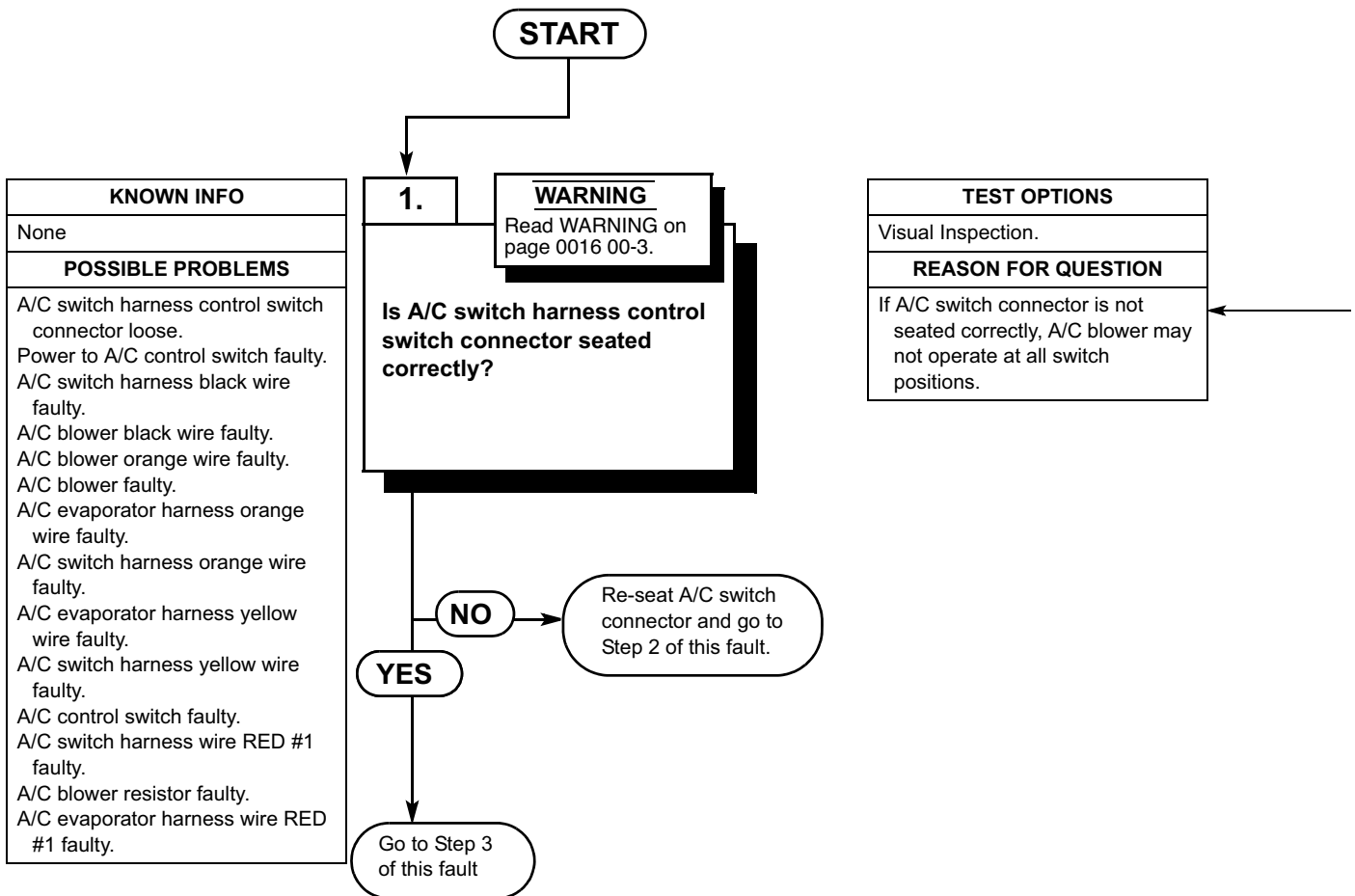
Multimeter (Item 6, WP 0060 00)

Equipment Conditions

Engine off (TM 9-2320-360-10)

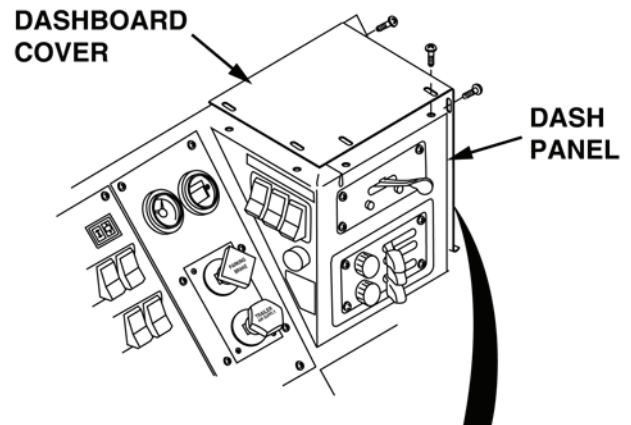
Parking brake applied (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)

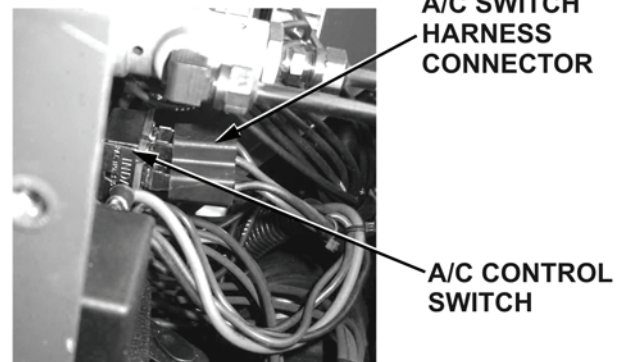
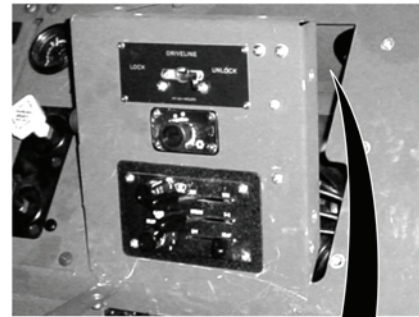


WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

**VISUAL INSPECTION**

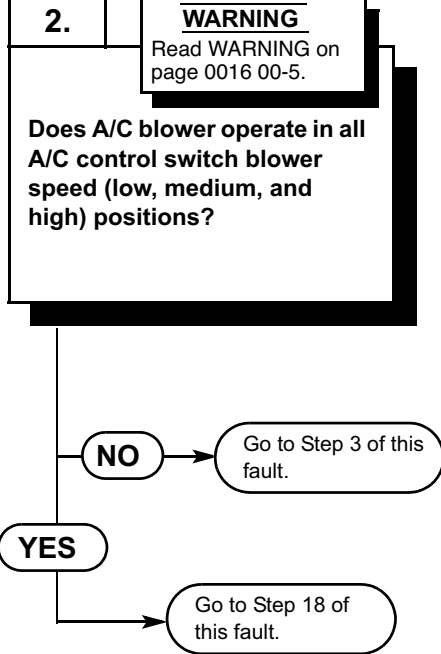
- (1) Remove dashboard cover (TM 9-2320-360-20).
- (2) Check A/C switch harness connector at A/C control switch.
 - (a) If connector is not seated correctly, re-seat connector and go to Step 2 of this fault.
 - (b) If connector is seated correctly, go to Step 3 of this fault.



HETF00217

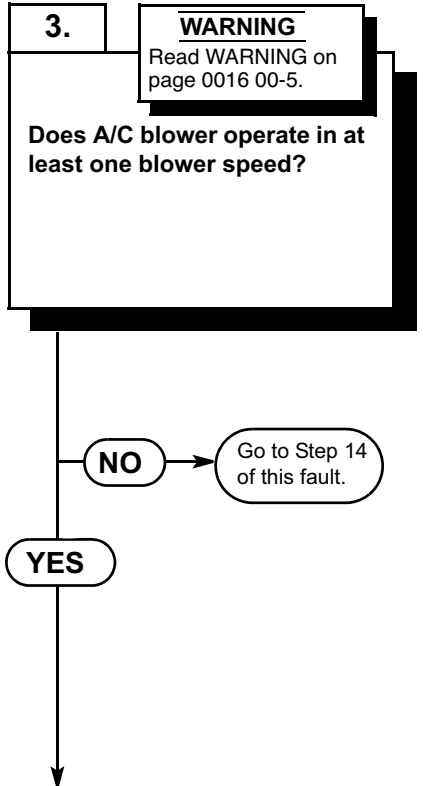
A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK.
POSSIBLE PROBLEMS
Power to A/C control switch faulty. A/C switch harness black wire faulty. A/C blower black wire faulty. A/C blower orange wire faulty. A/C blower faulty. A/C evaporator harness orange wire faulty. A/C switch harness orange wire faulty. A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty. A/C switch harness wire RED #1 faulty. A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C blower operates in all blower speed switch positions, problem has been corrected.

KNOWN INFO
A/C switch harness control switch connector OK.
POSSIBLE PROBLEMS
Power to A/C control switch faulty. A/C switch harness black wire faulty. A/C blower black wire faulty. A/C blower faulty. A/C blower orange wire faulty. A/C evaporator harness orange wire faulty. A/C switch harness orange wire faulty. A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty. A/C switch harness wire RED #1 faulty. A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.



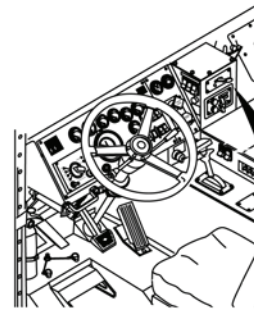
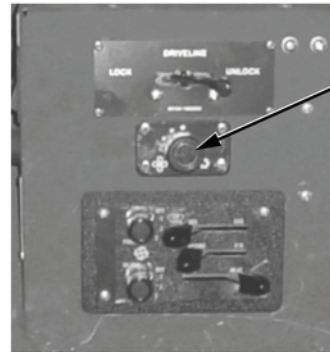
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C blower operates in at least one speed, power to A/C control switch and A/C blower circuit is OK.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VISUAL INSPECTION

- (1) Turn engine switch to ON position (TM 9-2320-360-10).
- (2) Turn A/C control switch to low, medium, and high blower speed positions (WP 0008 00).
 - (a) If A/C blower does not operate in all blower speed switch positions, turn engine switch to OFF position and go to Step 3 of this fault.
 - (b) If A/C blower operates in all blower speed switch positions, turn engine switch to OFF position and go to Step 18 of this fault.

**A/C CONTROL SWITCH**

HETF00218

VISUAL INSPECTION

- (1) Turn engine switch to ON position (TM 9-2320-360-10).
- (2) Turn A/C control switch to low, medium, and high blower speed positions (WP 0008 00).
 - (a) If A/C blower does not operate in all blower speed switch positions, turn engine switch to OFF position and go to Step 14 of this fault.
 - (b) If A/C blower operates in at least one blower speed switch position, go to Step 4 of this fault.

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK.
POSSIBLE PROBLEMS
A/C evaporator harness orange wire faulty. A/C switch harness orange wire faulty. A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty. A/C switch harness wire RED #1 faulty. A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.

4.

WARNING
Read WARNING on page 0016 00-7.

Does A/C blower operate when A/C control switch is set to high blower speed position?

NO

Go to Step 12 of this fault.

YES

TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C blower operates at high speed, high speed blower circuit is OK.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK.
POSSIBLE PROBLEMS
A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty. A/C switch harness wire RED #1 faulty. A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.

5.

WARNING
Read WARNING on page 0016 00-7.

Does A/C blower operate when A/C control switch is set to medium blower speed position?

NO

Go to Step 9 of this fault.

YES

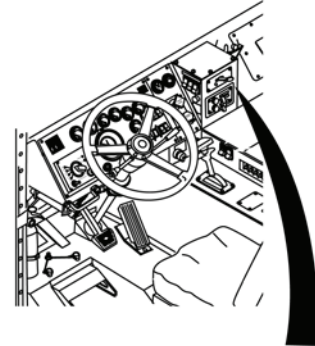
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C blower operates at medium speed, medium speed blower setting circuit is OK.

WARNING

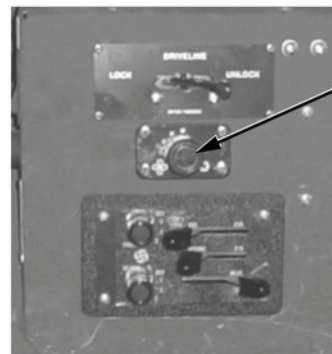
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VISUAL INSPECTION

- (1) Ensure engine switch is in the ON position (TM 9-2320-360-10).
- (2) Turn A/C control switch to high blower speed (clockwise) position (WP 0008 00).
 - (a) If A/C blower does not operate, turn engine switch to OFF position and go to Step 12 of this fault.
 - (b) If A/C blower operates, go to Step 5 of this fault.



A/C CONTROL SWITCH



HETF00218

VISUAL INSPECTION

- (1) Ensure engine switch is in the ON position (TM 9-2320-360-10).
- (2) Turn A/C control switch to medium blower speed (center) position (WP 0008 00).
 - (a) If A/C blower does not operate, go to Step 9 of this fault.
 - (b) If A/C blower operates, turn engine switch to OFF position and go to Step 6 of this fault.

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C evaporator harness yellow wire OK. A/C switch harness yellow wire OK.
POSSIBLE PROBLEMS
A/C control switch faulty. A/C switch harness wire RED #1 faulty. A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.

6.

WARNING
Read WARNING on page 0016 00-9.

Are 22 to 28 vdc measured on wire RED #1 at A/C switch harness evaporator connector when A/C control switch is set to low blower speed position?

NO

Go to Step 8 of this fault.

YES

TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is not measured, A/C blower will not operate at low speed.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C evaporator harness yellow wire OK. A/C switch harness yellow wire OK. A/C control switch OK. A/C switch harness wire RED #1 OK.
POSSIBLE PROBLEMS
A/C blower resistor faulty. A/C evaporator harness wire RED #1 faulty.

7.

WARNING
Read WARNING on page 0016 00-9.

Is continuity measured on wire RED #1 from A/C evaporator harness switch harness connector to A/C blower resistor?

NO

Repair A/C evaporator harness wire RED #1 (See WP 0057 00, Fig j) or replace evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.

YES

Replace A/C blower resistor (WP 0023 00). Verify repair, go to Step 18 of this fault.

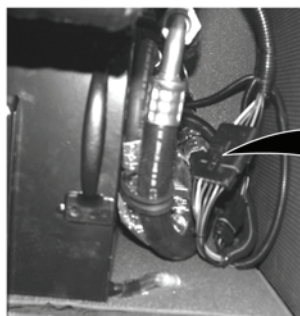
TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C blower resistor is faulty. If not, A/C evaporator harness wire RED #1 is faulty.

WARNING

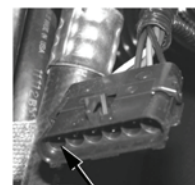
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

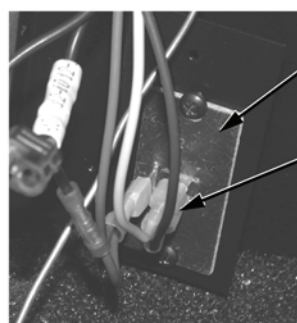
- (1) Remove two screws and doghouse door (WP 0028 00).
- (2) Disconnect A/C switch harness evaporator connector.
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Turn A/C control switch to low blower speed (counter-clockwise) position (WP 0008 00).
- (5) Place positive (+) probe of multimeter on wire RED #1 at A/C switch harness connector.
- (6) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28vdc are not measured, turn engine switch to OFF position and go to Step 8 of this fault.
 - (b) If 22 to 28vdc are measured, turn engine switch to OFF position and go to Step 7 of this fault.



**A/C SWITCH
HARNESS
WIRE
RED #1**



**A/C EVAPORATOR
HARNESS
WIRE
RED #1**



**A/C BLOWER
RESISTOR**

**WIRE
RED #1**

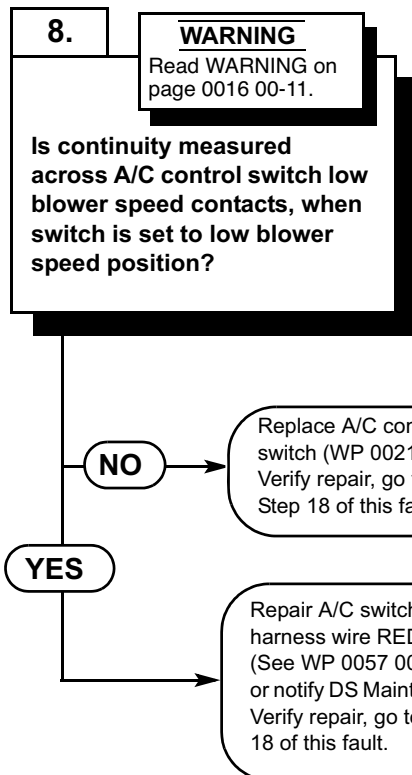
CONTINUITY TEST

- (1) Remove A/C evaporator subsystem (WP 0036 00).
- (2) Remove A/C blower from evaporator assembly (WP 0022 00).
- (3) Set multimeter switch to Ohms.
- (4) Is continuity measured on wire RED #1 from A/C evaporator harness switch harness connector to A/C blower resistor?
 - (a) If there is no continuity, repair A/C evaporator harness wire RED #1 (See WP 0057 00, Fig j) or replace A/C evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity, replace A/C blower resistor (WP 0023 00). Verify repair, go to Step 18 of this fault.

HETF00219

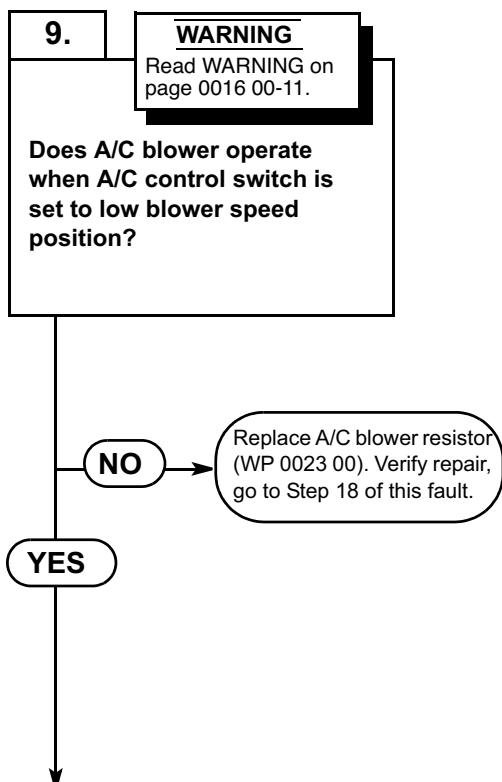
A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C evaporator harness yellow wire OK. A/C switch harness yellow wire OK. A/C blower resistor OK. A/C evaporator harness wire RED #1 OK.
POSSIBLE PROBLEMS
A/C switch harness wire RED #1 faulty. A/C control switch faulty.



TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C switch harness wire RED #1 is faulty. If not, A/C control switch is faulty.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C switch harness wire RED #1 OK. A/C evaporator harness wire RED #1 OK.
POSSIBLE PROBLEMS
A/C blower resistor faulty. A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty.



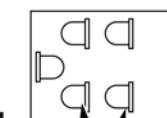
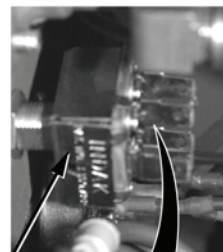
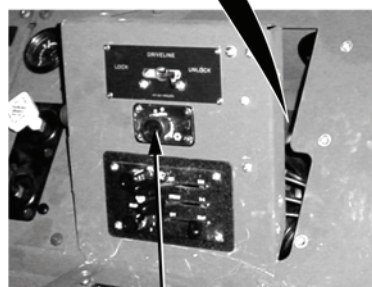
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C blower does not operate in medium and low blower speed switch positions, A/C blower resistor is faulty.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

CONTINUITY TEST

- (1) Disconnect A/C switch harness connector from A/C control switch.
- (2) Set A/C control switch to low blower speed (counter-clockwise) position (WP 0008 00).
- (3) Set multimeter switch to ohms.
- (4) Is there continuity measured across A/C control switch low blower speed contacts?
 - (a) If there is no continuity, replace A/C control switch (WP 0021 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity repair A/C switch harness wire RED #1 (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 18 of this fault.

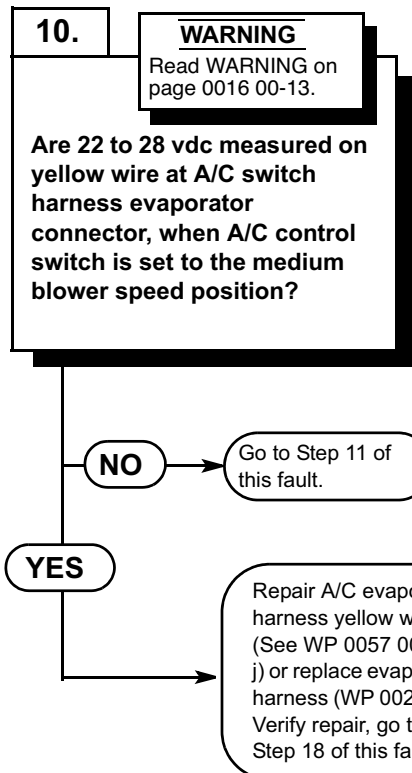
A/C SWITCH HARNESS CONNECTOR**A/C RELAY****A/C CONTROL SWITCH****LOW BLOWER SPEED CONTACTS****A/C CONTROL SWITCH****VISUAL INSPECTION**

- (1) Ensure engine switch is in the ON position (TM 9-2320-360-10).
- (2) Turn A/C control switch to low blower speed (counter-clockwise) position (WP 0008 00).
 - (a) If A/C blower does not operate, turn engine switch to OFF position and replace A/C blower resistor (WP 0023 00). Verify repair, go to Step 18 of this fault.
 - (b) If A/C blower operates, turn engine switch to OFF position and go to Step 10 of this fault.

HETF00220

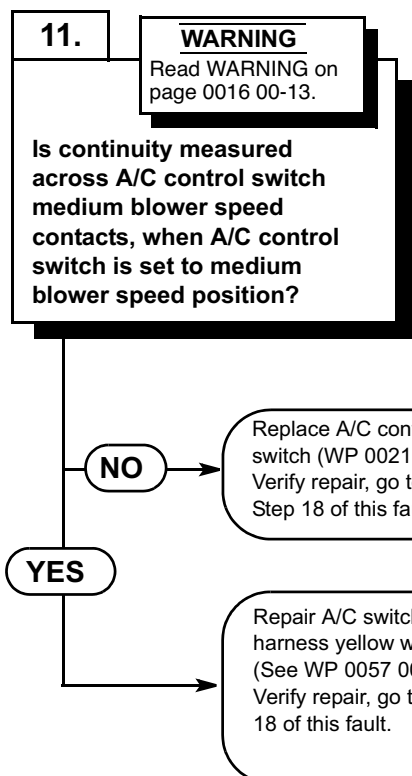
A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C switch harness wire RED #1 OK. A/C evaporator harness wire RED #1 OK. A/C blower resistor OK.
POSSIBLE PROBLEMS
A/C evaporator harness yellow wire faulty. A/C switch harness yellow wire faulty. A/C control switch faulty.



TEST OPTIONS
Voltage Test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is measured, A/C evaporator harness yellow wire is faulty.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower OK. A/C blower orange wire OK. A/C evaporator harness orange wire OK. A/C switch harness orange wire OK. A/C switch harness wire RED #1 OK. A/C evaporator harness wire RED #1 OK. A/C blower resistor OK. A/C evaporator harness yellow wire OK.
POSSIBLE PROBLEMS
A/C switch harness yellow wire faulty. A/C control switch faulty.



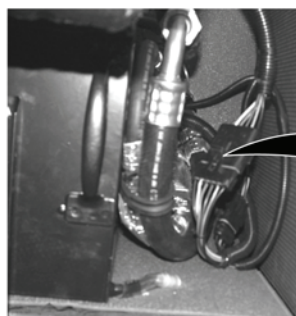
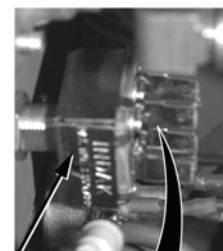
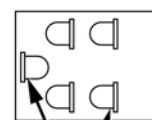
TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C switch harness yellow wire is faulty. If not, A/C control switch is faulty.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

- (1) Remove two screws and doghouse door (WP 0028 00).
- (2) Disconnect A/C switch harness evaporator connector.
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Turn A/C control switch to medium blower speed (center) position (WP 0008 00).
- (5) Place positive (+) probe of multimeter on yellow wire at A/C switch harness connector.
- (6) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, turn engine switch to OFF position and go to Step 11 of this fault.
 - (b) If 22 to 28 vdc are measured, turn engine switch to OFF position and repair A/C evaporator harness yellow wire (See WP 0057 00, Fig j) or replace evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.

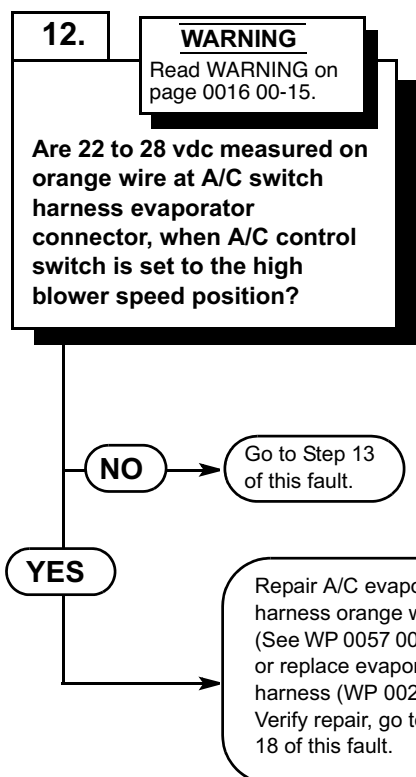
**YELLOW WIRE****A/C SWITCH HARNESS EVAPORATOR CONNECTOR****A/C SWITCH HARNESS CONNECTOR****A/C RELAY****A/C CONTROL SWITCH****MEDIUM BLOWER SPEED CONTACTS****A/C CONTROL SWITCH****CONTINUITY TEST**

- (1) Disconnect A/C switch harness connector from A/C control switch.
- (2) Set A/C control switch to medium blower speed (center) position (WP 0008 00).
- (3) Set multimeter switch ohms.
- (4) Is there continuity measured across A/C control switch medium blower speed contacts?
 - (a) If there is no continuity, replace A/C control switch (WP 0021 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity repair A/C switch harness yellow wire (See WP 0057 00, Fig j). Verify repair, go to Step 18 of this fault.

HETF00221

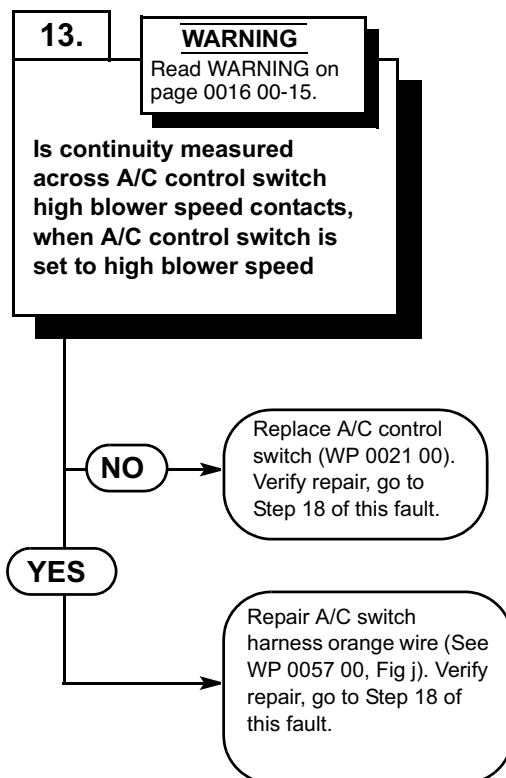
A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower orange wire OK. A/C blower OK. A/C evaporator harness yellow wire OK. A/C switch harness yellow wire OK. A/C switch harness wire RED #1 OK. A/C blower resistor OK. A/C evaporator harness wire RED #1 OK.
POSSIBLE PROBLEMS
A/C evaporator harness orange wire faulty. A/C switch harness orange wire faulty. A/C control switch faulty.



TEST OPTIONS
Voltage Test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is measured, A/C evaporator harness orange wire is faulty.

KNOWN INFO
A/C switch harness control switch connector OK. Power to A/C control switch OK. A/C switch harness black wire OK. A/C blower black wire OK. A/C blower orange wire OK. A/C blower OK. A/C evaporator harness yellow wire OK. A/C switch harness yellow wire OK. A/C switch harness wire RED #1 OK. A/C blower resistor OK. A/C evaporator harness wire RED #1 OK. A/C evaporator harness orange wire OK.
POSSIBLE PROBLEMS
A/C switch harness orange wire faulty. A/C control switch faulty.



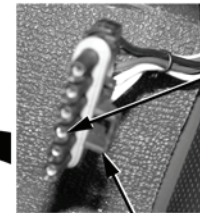
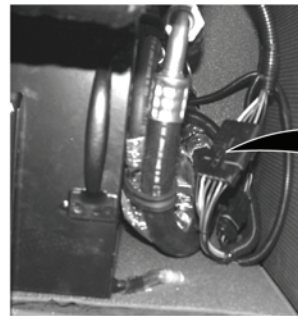
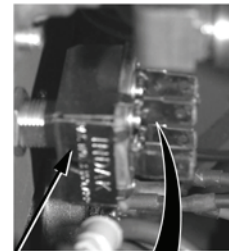
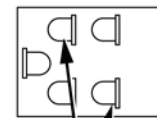
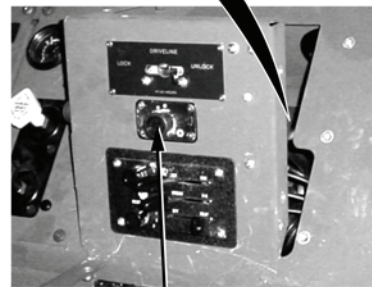
TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C switch harness orange wire is faulty. If not, A/C control switch is faulty.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

- (1) Remove two screws and doghouse door (WP 0028 00).
- (2) Disconnect A/C switch harness evaporator connector.
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Turn A/C control switch to high blower speed (clockwise) position (WP 0008 00).
- (5) Place positive (+) probe of multimeter on orange wire at A/C switch harness connector.
- (6) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, turn engine switch to OFF position and go to Step 13 of this fault.
 - (b) If 22 to 28 vdc are measured, turn engine switch to OFF position and repair A/C evaporator harness orange wire (See WP 0057 00, Fig j) or replace evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.

**ORANGE WIRE****A/C SWITCH HARNESS EVAPORATOR CONNECTOR****A/C SWITCH HARNESS CONNECTOR****A/C RELAY****A/C CONTROL SWITCH****HIGH BLOWER SPEED CONTACTS****A/C CONTROL SWITCH****CONTINUITY TEST**

- (1) Disconnect A/C switch harness connector from A/C control switch.
- (2) Set A/C control switch to high blower speed (clockwise) position (WP 0008 00).
- (3) Set multimeter switch to ohms.
- (4) Is there continuity measured across A/C control switch high blower speed contacts?
 - (a) If there is no continuity, replace A/C control switch (WP 0021 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity, repair A/C switch harness orange wire (See WP 0057 00, Fig j). Verify repair, go to Step 18 of this fault.

HETF00222

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK.
A/C evaporator harness orange wire OK.
A/C switch harness orange wire OK.
A/C evaporator harness yellow wire OK.
A/C switch harness yellow wire OK.
A/C control switch OK.
A/C switch harness wire RED #1 OK.
A/C blower resistor OK.
A/C evaporator harness wire RED #1 OK.
POSSIBLE PROBLEMS
Power to A/C control switch faulty.
A/C switch harness black wire faulty.
A/C blower black wire faulty.
A/C blower faulty.
A/C blower orange wire faulty.

14.**WARNING**

Read WARNING on page 0016 00-17.

Are 22 to 28 vdc measured on orange wire from A/C relay, at A/C control switch?

NO

Go to work package WP 0015 00 (A/C does not operate)

YES**TEST OPTIONS**

Voltage Test.
Multimeter.

REASON FOR QUESTION

If 22 to 28 vdc are not measured, input voltage is faulty.

KNOWN INFO
A/C switch harness control switch connector OK.
A/C evaporator harness orange wire OK.
A/C switch harness orange wire OK.
A/C evaporator harness yellow wire OK.
A/C switch harness yellow wire OK.
A/C control switch OK.
A/C switch harness wire RED #1 OK.
A/C blower resistor OK.
A/C evaporator harness wire RED #1 OK.
Power to A/C control switch OK.
POSSIBLE PROBLEMS
A/C switch harness black wire faulty.
A/C blower black wire faulty.
A/C blower faulty.
A/C blower orange wire faulty.

15.**WARNING**

Read WARNING on page 0016 00-17.

Is continuity measured on black wire from A/C evaporator connection to 24 vdc magnetic switch (R22)?

NO

Repair A/C switch harness black wire (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 18 of this fault.

YES**TEST OPTIONS**

Continuity Test.
Multimeter.

REASON FOR QUESTION

If continuity is not measured, A/C switch harness black wire is faulty.

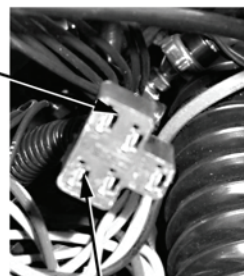
WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VOLTAGE TEST

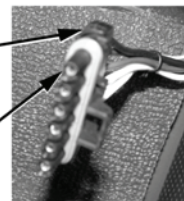
- (1) Remove A/C switch harness connector from A/C control switch.
- (2) Turn engine switch to ON position (TM 9-2320-360-10).
- (3) Place positive (+) probe of multimeter on orange wire from A/C relay, at A/C switch harness connector.
- (4) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc are not measured, turn engine switch to OFF position and go to work package 0015 00 (A/C does not operate).
 - (b) If 22 to 28 vdc are measured, turn engine switch to OFF position and go to Step 15 of this fault.

A/C SWITCH
HARNESS
CONNECTOR

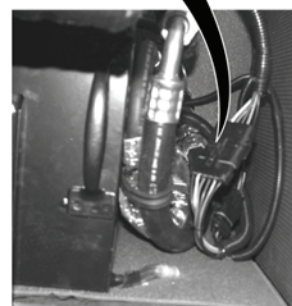


A/C RELAY

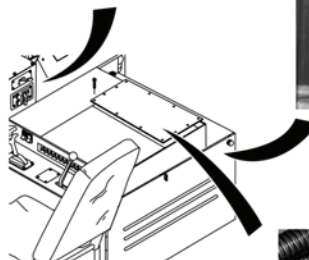
A/C SWITCH
HARNESS
EVAPORATOR
CONNECTOR



BLACK
WIRE

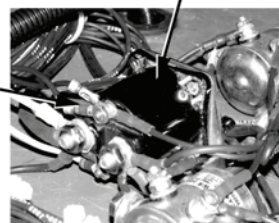
**CONTINUITY TEST**

- (1) Remove two screws and doghouse cover (WP 0028 00).
- (2) Disconnect A/C switch harness evaporator connector.
- (3) Remove electronic control box assembly cover (TM 9-2320-360-20).
- (4) Set multimeter switch to ohms.
- (5) Is there continuity measured on black wire between A/C evaporator connector and 24 vdc magnetic switch (R22)?
 - (a) If there is no continuity, repair A/C switch harness black wire (See WP 0057 00, Fig j). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity, go to Step 16 of this fault.



MAG SWITCH
(R22)

BLACK WIRE



HETF00223

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK.
A/C evaporator harness orange wire OK.
A/C switch harness orange wire OK.
A/C evaporator harness yellow wire OK.
A/C switch harness yellow wire OK.
A/C control switch OK.
A/C switch harness wire RED #1 OK.
A/C blower resistor OK.
A/C evaporator harness wire RED #1 OK.
Power to A/C control switch OK.
A/C switch harness black wire OK.
POSSIBLE PROBLEMS
A/C blower black wire faulty.
A/C blower faulty.
A/C blower orange wire faulty.

16.

WARNING
Read WARNING on page 0016 00-19.

Is continuity measured on black wire from A/C blower connector to A/C switch harness connector?

NO

Repair A/C blower black wire (See WP 0057 00, Fig j) or replace A/C evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.

YES

TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is not measured, A/C evaporator harness black blower wire is faulty.

KNOWN INFO
A/C switch harness control switch connector OK.
A/C evaporator harness orange wire OK.
A/C switch harness orange wire OK.
A/C evaporator harness yellow wire OK.
A/C switch harness yellow wire OK.
A/C control switch OK.
A/C switch harness wire RED #1 OK.
A/C blower resistor OK.
A/C evaporator harness wire RED #1 OK.
Power to A/C control switch OK.
A/C switch harness black wire OK.
A/C blower black wire OK.
POSSIBLE PROBLEMS
A/C blower faulty.
A/C blower orange wire faulty.

17.

WARNING
Read WARNING on page 0016 00-19.

Is continuity measured on orange wire from A/C blower resistor to A/C blower connector?

NO

Repair A/C blower orange wire (See WP 0057 00, Fig j) or replace A/C evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.

YES

Replace A/C blower (WP 0022 00). Verify repair, go to Step 18 of this fault.

TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C blower is faulty. If not, A/C evaporator harness orange blower wire is faulty.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

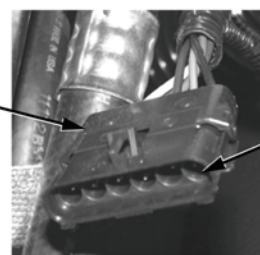
NOTE

A/C evaporator harness wire colors identified at AC. Wire color may be reversed at A/C blower connector.

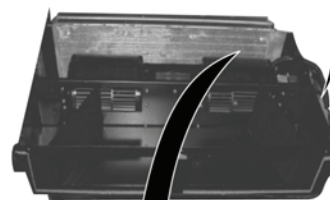
CONTINUITY TEST

- (1) Remove A/C evaporator subsystem from doghouse (WP 0036 00).
- (2) Remove A/C blower from evaporator assembly (WP 0022 00).
- (3) Is continuity measured on orange wire from A/C blower connector male terminal to A/C evaporator switch harness connector black wire?
 - (a) If there is no continuity, repair A/C blower black wire (See WP 0057 00, Fig j) or replace A/C evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity, go to Step 17 of this fault.

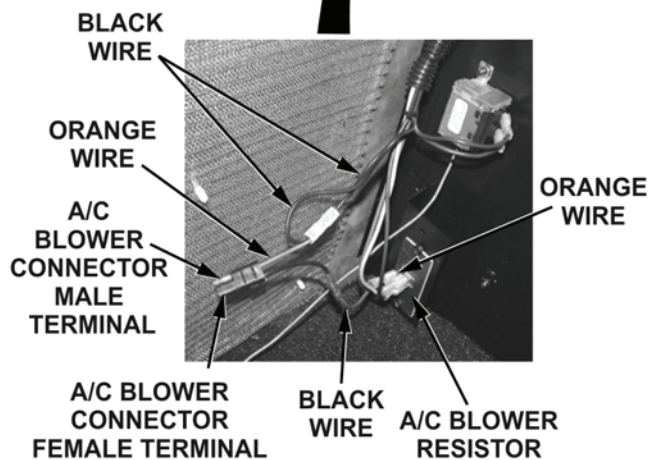
**A/C
EVAPORATOR
SWITCH
HARNESS
CONNECTOR**



**BLACK
WIRE**

**CONTINUITY TEST**

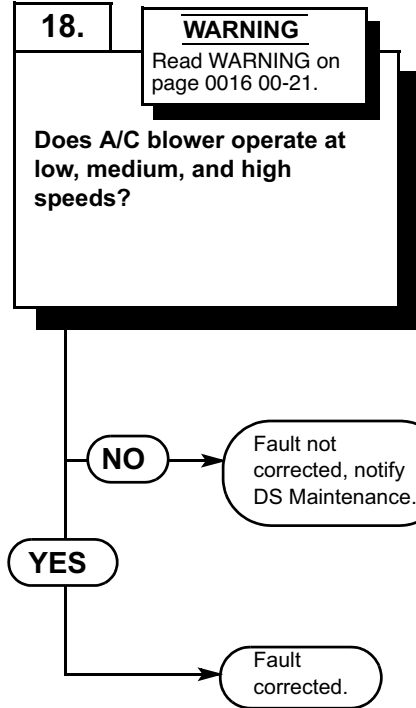
- (1) Is continuity measured on orange wire from A/C blower resistor to A/C blower connector male terminal?
 - (a) If there is no continuity, repair A/C blower female terminal wire (See WP 0057 00, Fig j) or replace A/C evaporator harness (WP 0027 00). Verify repair, go to Step 18 of this fault.
 - (b) If there is continuity, replace A/C blower (WP 0022 00). Verify repair, go to Step 18 of this fault.



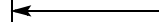
HETF00224

A/C BLOWER DOES NOT OPERATE (LOW, MEDIUM, AND/OR HIGH) - CONTINUED.

KNOWN INFO
A/C switch harness control switch connector OK.
A/C evaporator harness orange wire OK.
A/C switch harness orange wire OK.
A/C evaporator harness yellow wire OK.
A/C control switch OK.
A/C switch harness wire RED #1 OK.
A/C blower resistor OK.
A/C evaporator harness wire RED #1 OK.
Power to A/C control switch OK.
A/C switch harness black wire OK.
A/C blower black wire OK.
A/C blower OK.
A/C blower orange wire OK.
POSSIBLE PROBLEMS
None



TEST OPTIONS
Verify Repair.
REASON FOR QUESTION
If A/C blower operates at low, medium, and high speeds, fault has been corrected.

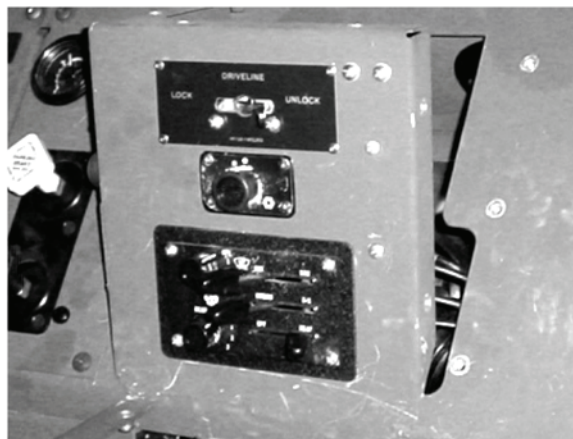


WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24 vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

VERIFY REPAIR

- (1) If removed, install covers on dash panel and electronic control box assembly (TM 9-2320-360-20).
- (2) Install doghouse door (WP 0028 00).
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Turn A/C control switch to low, medium, and high blower speed positions (WP 0008 00).
 - (a) If blower does not operate in all (low, medium, and high) blower speed positions, fault has not been corrected. Turn engine switch and A/C control switch to OFF position and notify DS Maintenance.
 - (b) If blower operates in all (low, medium, and high) blower speed positions, fault has been corrected.



HETF00193

END OF WORK PACKAGE

A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS

0017 00

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Multimeter (Item 6, WP 0060 00)

References

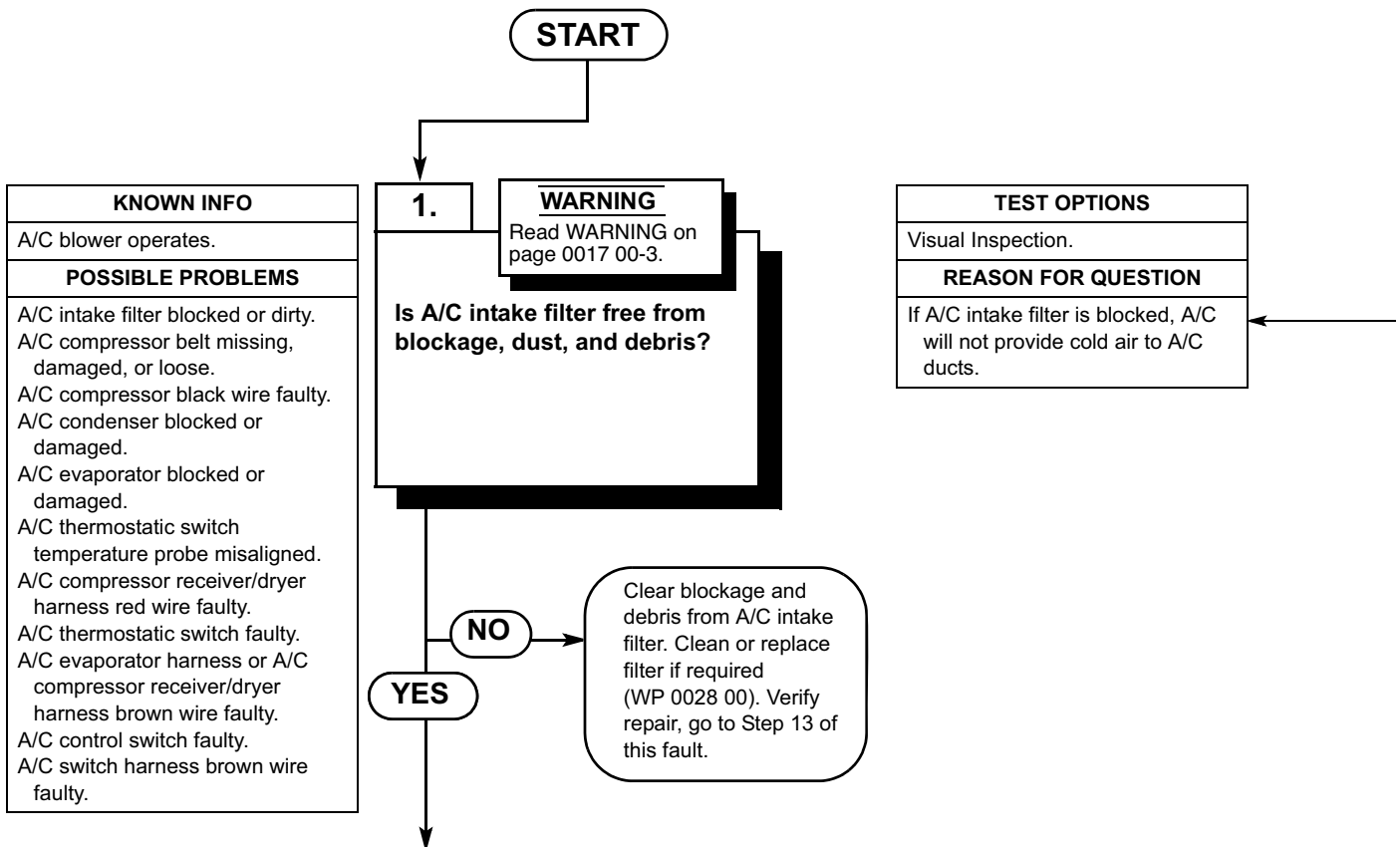
TM 9-2320-360-20

Equipment Conditions

Engine off (TM 9-2320-360-10)

Parking brakes applied (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)

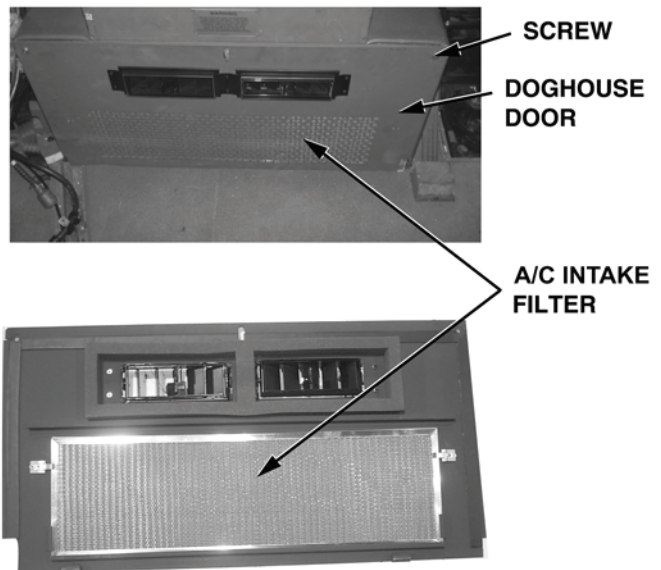


WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VISUAL INSPECTION

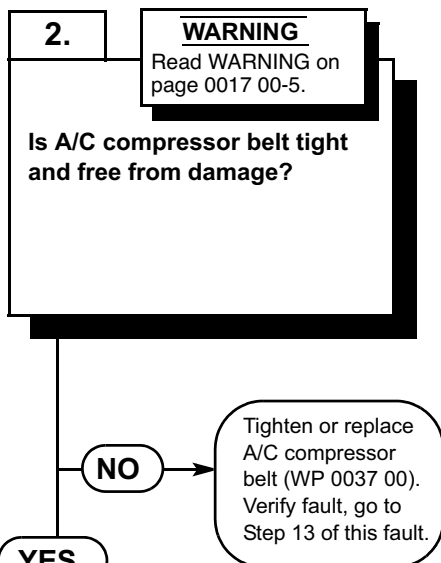
- (1) Inspect area around A/C intake filter.
 - (a) If A/C intake filter is blocked with debris, clear debris. Verify repair, go to Step 13 of this fault.
- (2) Remove two screws and doghouse door (WP 0028 00).
- (3) Inspect A/C intake filter for blockage, dust, and debris.
 - (a) If A/C intake filter is blocked with dust or debris, remove A/C filter (WP 0028 00) and clean or replace as required. Verify repair, go to Step 13 of this fault.
 - (b) If A/C intake filter is free from blockage and debris, go to Step 2 of this fault.



HETF00444

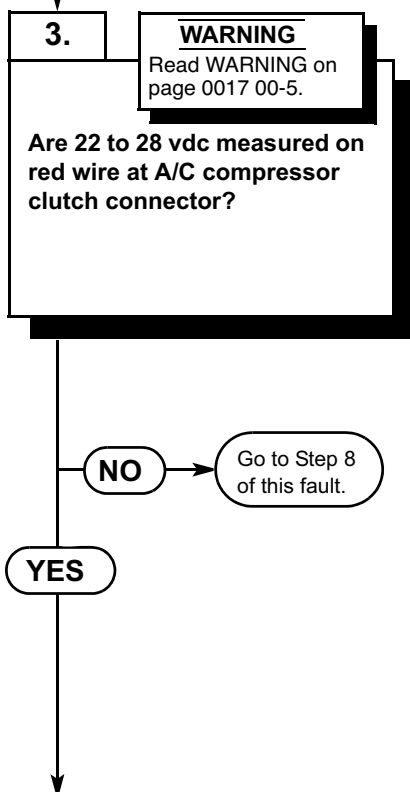
A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

KNOWN INFO
A/C blower operates. A/C intake filter OK.
POSSIBLE PROBLEMS
A/C compressor belt missing, damaged, or loose. A/C compressor black wire faulty. A/C condenser blocked or damaged. A/C evaporator blocked or damaged. A/C thermostatic switch temperature probe misaligned. A/C compressor receiver/dryer harness red wire faulty. A/C thermostatic switch faulty. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty. A/C control switch faulty. A/C switch harness brown wire faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C compressor belt is missing, loose, or damaged, A/C compressor will not operate correctly.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK.
POSSIBLE PROBLEMS
A/C compressor receiver/dryer harness red wire faulty. A/C compressor black wire faulty. A/C condenser blocked or damaged. A/C evaporator blocked or damaged. A/C thermostatic switch temperature probe misaligned. A/C thermostatic switch faulty. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty. A/C control switch faulty. A/C switch harness brown wire faulty.



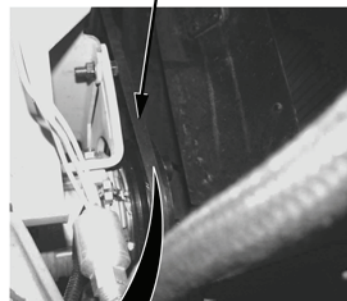
TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is not measured, A/C compressor clutch will not engage.

WARNING

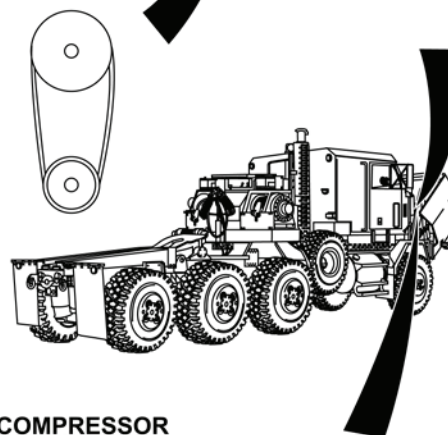
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VISUAL INSPECTION

- (1) Open hood (TM 9-232-360-10).
- (2) Check A/C compressor belt for damage and proper tension (WP 0037 00).
 - (a) If A/C compressor belt is missing, damaged, or loose, replace or tighten belt as required (WP 0037 00). Verify repair, go to Step 13 of this fault.
 - (b) If A/C compressor belt is tight and free from damage, go to Step 3 of this fault.

A/C COMPRESSOR BELT**VOLTAGE TEST**

- (1) Disconnect A/C compressor receiver/dryer harness red wire from A/C compressor clutch harness.
- (2) Turn engine switch to ON position (TM 9-2320-360-10).
- (3) Turn A/C control switch to ON (low, medium, or high blower speed) position (WP 0008 00).
- (4) Place positive (+) probe of multimeter on red wire at A/C compressor receiver/dryer harness A/C compressor clutch connector.
- (5) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc is not measured, turn engine switch to OFF position, connect red wire to A/C compressor clutch harness, and go to Step 8 of this fault.
 - (b) If 22 to 28 vdc is measured, turn engine switch to OFF position, connect red wire to A/C compressor clutch harness, and go to Step 4 of this fault.

**A/C COMPRESSOR CLUTCH HARNESS****A/C COMPRESSOR RECEIVER/DRYER HARNESS RED WIRE**

HETF00445

A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

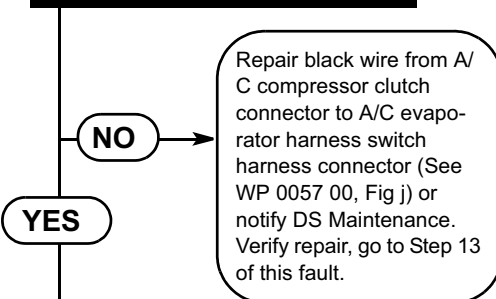
KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor receiver/dryer harness red wire OK. A/C thermostatic switch OK. A/C evaporator harness and A/C compressor receiver/dryer harness brown wire OK. A/C control switch OK. A/C switch harness brown wire OK.
POSSIBLE PROBLEMS
A/C compressor black wire faulty. A/C condenser blocked or damaged. A/C evaporator blocked or damaged. A/C thermostatic switch temperature probe misaligned.

4.

WARNING
Read WARNING on page 0017 00-7.

Is continuity measured on black wire from A/C compressor clutch connector to ground?

TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is not measured, A/C compressor black wire is faulty.



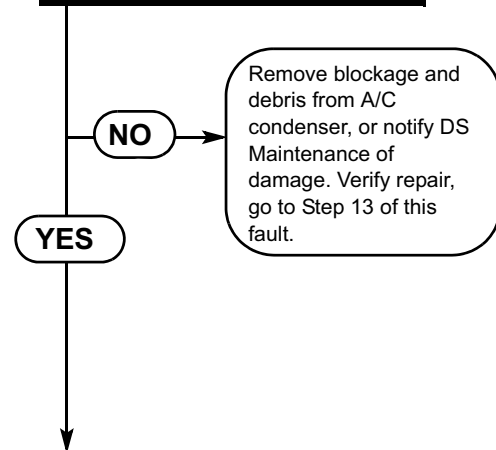
KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor receiver/dryer harness red wire OK. A/C thermostatic switch OK. A/C evaporator harness and A/C compressor receiver/dryer harness brown wire OK. A/C control switch OK. A/C switch harness brown wire OK. A/C compressor black wire OK.
POSSIBLE PROBLEMS
A/C condenser blocked or damaged. A/C evaporator blocked or damaged. A/C thermostatic switch temperature probe misaligned.

5.

WARNING
Read WARNING on page 0017 00-7.

Is A/C condenser free from blockage, debris, and damage?

TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C condenser is blocked or damaged, A/C system may not operate correctly.

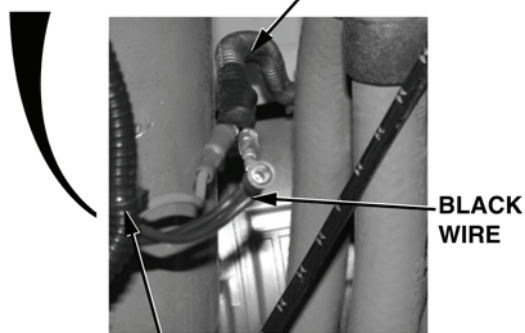
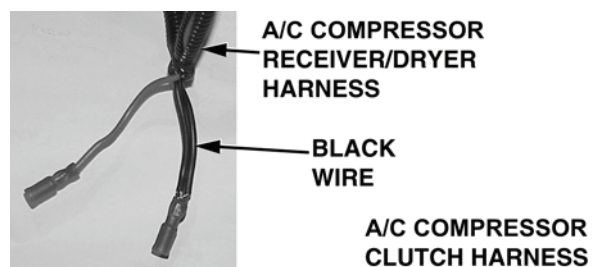


WARNING

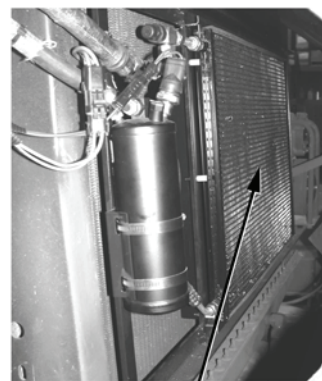
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

CONTINUITY TEST

- (1) Disconnect A/C compressor receiver/dryer harness black wire from A/C compressor clutch harness.
- (2) Set multimeter switch to ohms.
- (3) Is there continuity measured on black wire from A/C compressor clutch connector to ground?
 - (a) If there is no continuity, repair black wire from A/C compressor clutch connector to A/C evaporator harness switch harness connector, (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 13 of this fault.
 - (b) If there is continuity, connect black wire to A/C compressor clutch harness and go to Step 5 of this fault.

**VISUAL INSPECTION**

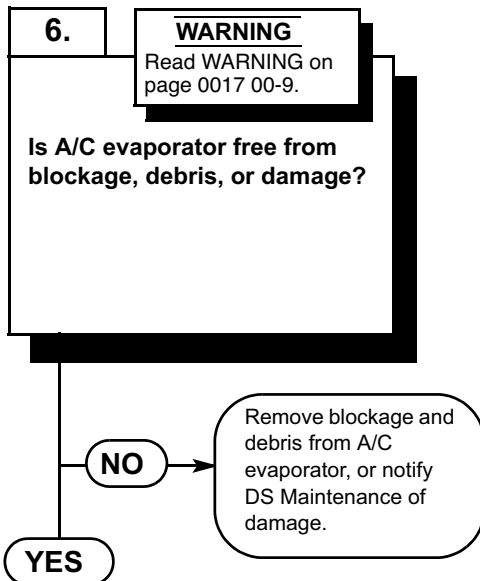
- (1) Inspect A/C condenser for blockage, debris, or damage.
 - (a) If A/C condenser is blocked, remove blockage and debris. Verify repair, go to Step 13 of this fault.
 - (b) If A/C condenser is damaged, notify DS Maintenance.
 - (c) If A/C condenser is free from blockage, debris, and damage, go to Step 6 of this fault.



HETF00446

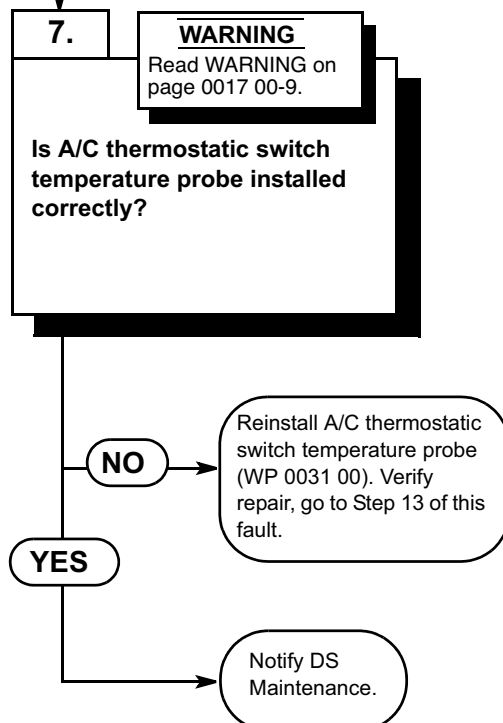
A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor receiver/dryer harness red wire OK. A/C thermostatic switch OK. A/C evaporator harness and A/C compressor receiver/dryer harness brown wire OK. A/C control switch OK. A/C switch harness brown wire OK. A/C compressor black wire OK. A/C condenser OK.
POSSIBLE PROBLEMS
A/C evaporator blocked or damaged. A/C thermostatic switch temperature probe misaligned.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C evaporator is blocked or damaged, A/C system may not operate correctly.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor receiver/dryer harness red wire OK. A/C thermostatic switch OK. A/C evaporator harness and A/C compressor receiver/dryer harness brown wire OK. A/C control switch OK. A/C switch harness brown wire OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK.
POSSIBLE PROBLEMS
A/C thermostatic switch temperature probe misaligned.



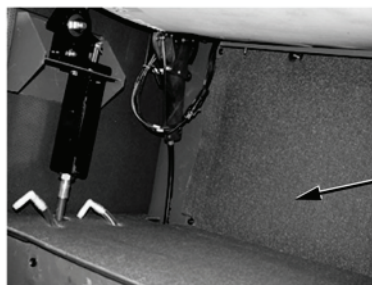
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C thermostatic switch temperature probe is not installed properly, A/C may not operate correctly.

WARNING

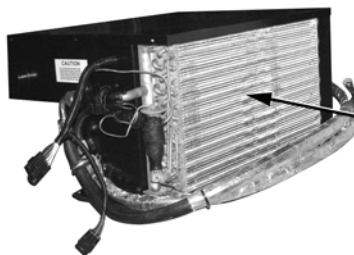
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VISUAL INSPECTION

- (1) Remove A/C evaporator subsystem (WP 0036 00).
- NOTE: If doghouse floor mat is not secure, it may interfere with proper A/C operation.
- (2) Inspect doghouse floor mat.
 - (a) If doghouse floor mat is not secured to the back of the doghouse, secure doghouse floor mat (TM 9-2320-360-20).
 - (3) Inspect A/C evaporator for blockage, debris, and damage.
 - (a) If A/C evaporator is blocked, remove blockage and debris. Verify repair, go to Step 13 of this fault.
 - (b) If A/C evaporator is damaged, install A/C evaporator subsystem (WP 0036 00) and notify DS Maintenance.
 - (c) If A/C evaporator is free from blockage, debris, and damage, go to Step 7 of this fault.



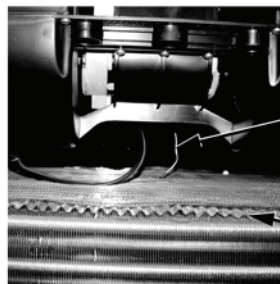
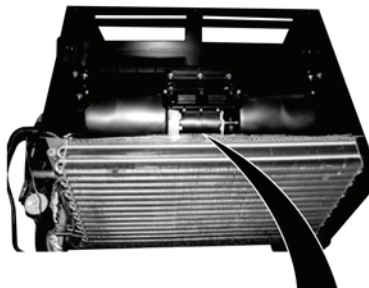
**DOGHOUSE
FLOOR
MAT**



A/C EVAPORATOR

VISUAL INSPECTION

- (1) Remove eight screws and A/C evaporator assembly cover (WP 0022 00).
- NOTE: A/C thermostatic switch temperature probe is installed by inserting it into the center of the A/C evaporator approximately two inches.
- (2) Inspect A/C thermostatic switch temperature probe for proper installation (WP 0031 00).
 - (a) If A/C thermostatic switch temperature probe is not installed correctly, reinstall temperature probe (WP 0031 00). Verify repair, go to Step 13 of this fault.
 - (b) If A/C thermostatic switch temperature probe is installed correctly, install evaporator assembly cover and eight screws (WP 0022 00), install A/C evaporator subsystem (WP 0036 00), and notify DS Maintenance.



**A/C THERMOSTATIC
SWITCH
TEMPERATURE
PROBE**

A/C EVAPORATOR

HETF00447

A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

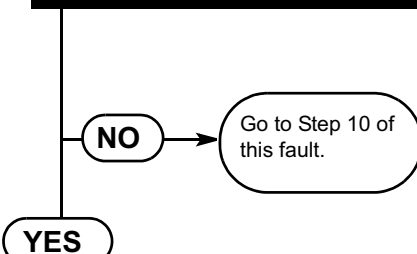
KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK.
POSSIBLE PROBLEMS
A/C compressor receiver/dryer harness red wire faulty. A/C thermostatic switch faulty. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty. A/C control switch faulty. A/C switch harness brown wire faulty.

8.

WARNING
Read WARNING on page 0017 00-11.

Are 22 to 28 vdc measured on brown wire at A/C binary switch connector?

TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 22 to 28 vdc is not measured, A/C will not operate correctly.



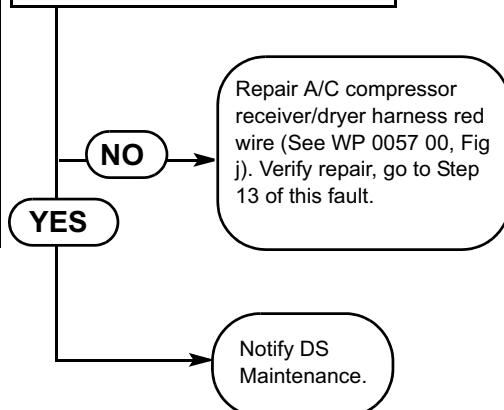
KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK. A/C thermostatic switch OK. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire OK. A/C control switch OK. A/C switch harness brown wire OK.
POSSIBLE PROBLEMS
A/C compressor receiver/dryer harness red wire faulty.

9.

WARNING
Read WARNING on page 0017 00-11.

Is continuity measured on red wire from A/C binary switch connector to A/C compressor clutch connector?

TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is not measured, red wire is faulty.

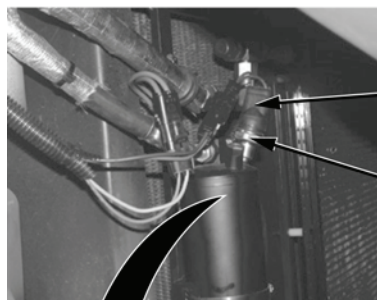


WARNING

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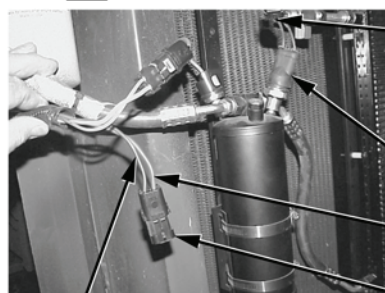
VOLTAGE TEST

- (1) Disconnect A/C binary switch connector from A/C binary switch.
- (2) Turn engine switch to ON position (TM 9-2320-360-10).
- (3) Turn A/C control switch to ON (low, medium, or high blower speed) position (WP 0008 00).
- (4) Place positive (+) probe of multimeter on A/C compressor receiver/dryer harness brown wire at A/C binary switch connector.
- (5) Place negative (-) probe of multimeter on ground.
 - (a) If 22 or 28 vdc is not measured, turn engine switch to OFF position, connect A/C binary switch connector, and go to Step 10 of this fault.
 - (b) If 22 to 28 vdc is measured, turn engine switch to OFF position and go to Step 9 of this fault.



A/C BINARY SWITCH CONNECTOR

A/C BINARY SWITCH



A/C COMPRESSOR RECEIVER/DRYER HARNESS CONNECTOR

BINARY SWITCH CONNECTOR

RED WIRE

A/C COMPRESSOR RECEIVER/DRYER HARNESS

BROWN WIRE

**CONTINUITY TEST**

- (1) Disconnect A/C compressor receiver/dryer harness red wire from A/C compressor clutch harness.
- (2) Is there continuity measured on red wire from A/C binary switch connector to A/C compressor clutch connector?
 - (a) If there is no continuity, repair A/C compressor receiver/dryer harness red wire (See WP 0057 00, Fig j). Verify repair, go to Step 13 of this fault.
 - (b) If there is continuity, connect A/C binary switch connector, connect red wire to A/C compressor clutch harness, and notify DS Maintenance.



A/C COMPRESSOR CLUTCH HARNESS

RED WIRE

A/C COMPRESSOR RECEIVER/DRYER HARNESS

HETF00448

A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK. A/C compressor receiver/dryer harness red wire OK.
POSSIBLE PROBLEMS
A/C thermostatic switch faulty. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty. A/C control switch faulty. A/C switch harness brown wire faulty.

10.**WARNING**

Read WARNING on page 0017 00-13.

Are 22 to 28 vdc measured on brown wire at A/C switch harness evaporator harness connector?

NO

Go to Step 12 of this fault.

YES**TEST OPTIONS**Voltage Test.
Multimeter.**REASON FOR QUESTION**

If 22 to 28 vdc is not measured, A/C will not operate correctly.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK. A/C compressor receiver/dryer harness red wire OK. A/C control switch OK. A/C switch harness brown wire OK.
POSSIBLE PROBLEMS
A/C thermostatic switch faulty. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty.

11.**WARNING**

Read WARNING on page 0017 00-13.

Is continuity measured across A/C thermostatic switch terminals, when ambient temperature is above 35°F (2°C)?

NO

Replace A/C thermostatic switch (WP 0031 00). Verify repair, go to Step 13 of this fault.

YES

Repair brown wire from A/C evaporator harness switch harness connector to A/C binary switch (See WP 0057 00, Fig j), or notify DS Maintenance.

TEST OPTIONSContinuity test.
Multimeter.**REASON FOR QUESTION**

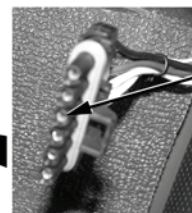
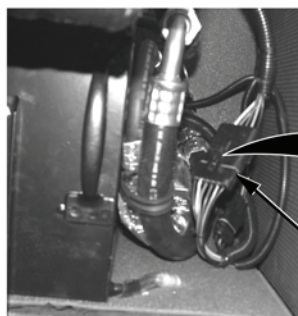
If continuity is measured, brown wire is faulty. If not, A/C thermostatic switch is faulty.

WARNING

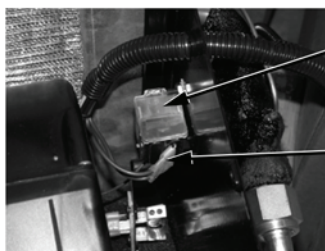
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VOLTAGE TEST

- (1) Disconnect A/C switch harness connector from A/C evaporator harness.
- (2) Turn engine switch to ON position (TM 9-2320-360-10).
- (3) Turn A/C control switch to ON (low, medium, or high blower speed) position (WP 0008 00).
- (4) Place positive (+) probe of multimeter on brown wire at A/C switch harness evaporator harness connector.
- (5) Place negative (-) probe of multimeter on ground.
 - (a) If 22 to 28 vdc is not measured, turn engine switch to OFF position and go to Step 12 of this fault.
 - (b) If 22 to 28 vdc is measured, turn engine switch to OFF position and go to Step 11 of this fault.

**BROWN WIRE****A/C SWITCH HARNESS EVAPORATOR HARNESS CONNECTOR****CONTINUITY TEST**

- (1) Remove evaporator subsystem (WP 0036 00).
 - (2) Remove eight screws and cover from evaporator assembly (WP 0022 00).
 - (3) Remove wires from thermostatic switch terminals.
- NOTE: A/C thermostatic switch contacts are closed when ambient temperature is above 35°F (2°C).
- (4) Is continuity measured across A/C thermostatic switch terminals, when ambient temperature is above 35°F (2°C)?
 - (a) If there is no continuity, replace thermostatic switch (WP 0031 00). Verify repair, go to Step 13 of this fault.
 - (b) If there is continuity, repair brown wire from A/C evaporator harness switch harness connector to A/C binary switch (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 13 of this fault.

**A/C THERMOSTATIC SWITCH****A/C THERMOSTATIC SWITCH TERMINALS**

HETF00449

A/C BLOWER OPERATES BUT NO COLD AIR FROM A/C DUCTS - CONTINUED.

KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK. A/C compressor receiver/dryer harness red wire OK. A/C thermostatic switch OK. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire faulty.
POSSIBLE PROBLEMS
A/C control switch faulty. A/C switch harness brown wire faulty.

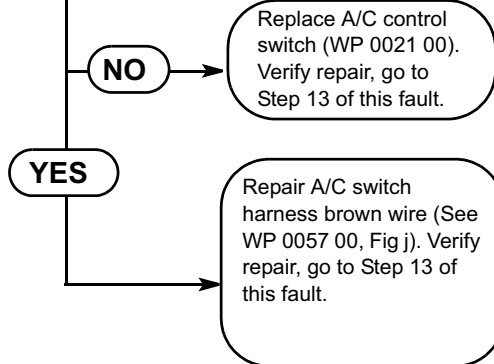
12.

WARNING

Read WARNING on page 0017 00-15.

Is continuity measured across A/C control switch compressor contacts, when switch is set to the ON (low, medium, or high blower speed) position?

TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C switch harness brown wire is faulty. If not, A/C control switch is faulty.



KNOWN INFO
A/C blower operates. A/C intake filter OK. A/C compressor belt OK. A/C compressor black wire OK. A/C condenser OK. A/C evaporator OK. A/C thermostatic switch temperature probe alignment OK. A/C compressor receiver/dryer harness red wire OK. A/C control switch OK. A/C switch harness brown wire OK. A/C thermostatic switch OK. A/C evaporator harness or A/C compressor receiver/dryer harness brown wire OK.
POSSIBLE PROBLEMS
None

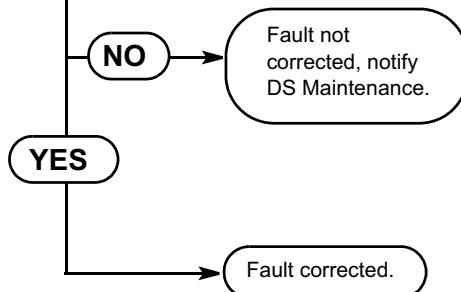
13.

WARNING

Read WARNING on page 0017 00-15.

Does A/C provide cold air at A/C ducts?

TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If A/C does not provide cold air, fault has not been corrected.

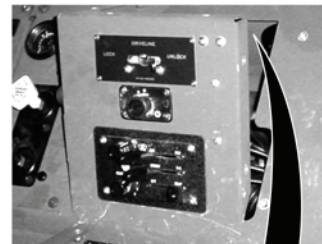
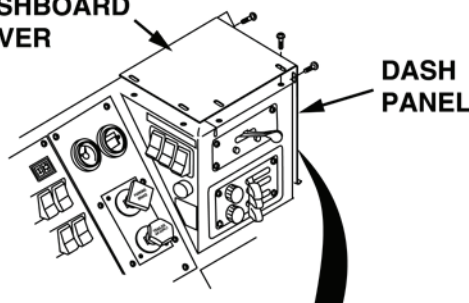


WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

CONTINUITY TEST

- (1) Remove dashboard cover (TM 9-2320-360-20).
- (2) Disconnect A/C switch harness from A/C control switch.
- (3) Set A/C control switch to ON position (low, medium, or high blower speed) position (WP 0008 00).
- (4) Set multimeter switch to ohms.
- (5) Is there continuity measured across A/C control switch compressor contacts?
 - (a) If there is no continuity, replace A/C control switch (WP 0021 00). Verify repair, go to Step 13 of this fault.
 - (b) If there is continuity, repair A/C switch harness brown wire (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 13 of this fault.

DASHBOARD COVER**DASH PANEL****VERIFY REPAIR**

- (1) If removed, install A/C evaporator subsystem (WP 0036 00).
- (2) If removed, install dashboard cover (TM 9-2320-360-20).
- (3) Install doghouse door (WP 0028 00).
- (4) Start engine (TM 9-2320-360-10).
- (5) Operate A/C for 10 minute, at high A/C blower speed (WP 0008 00).
 - (a) If A/C does not provide cold air to A/C ducts, turn engine switch and A/C control switch to OFF position and notify DS Maintenance.
 - (b) If A/C provides cold air to A/C ducts, fault has been corrected.

A/C CONTROL SWITCH CONNECTOR**A/C CONTROL SWITCH****COMPRESSOR CONTACTS****END OF WORK PACKAGE**

HETF00450

A/C COMPRESSOR EXCESSIVELY NOISY**0018 00****INITIAL SETUP****Maintenance Level**

Unit Maintenance

References

TM 9-2320-360-20

Tools and Special Tools

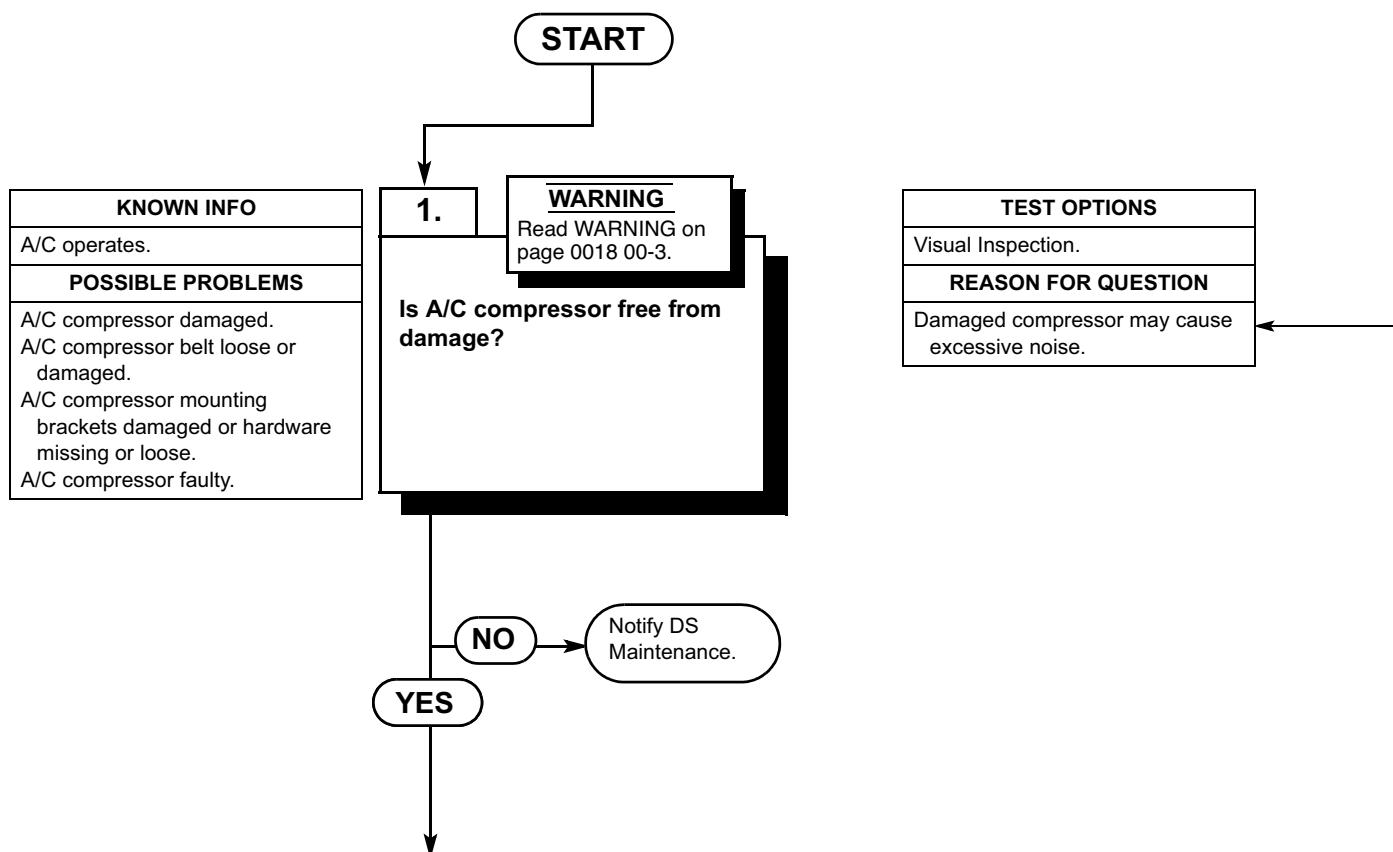
Tool Kit, General Mechanic (Item 12, WP 0060 00)

Equipment Conditions

Engine off (TM 9-2320-360-10)

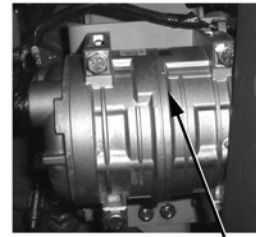
Parking brakes applied (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)

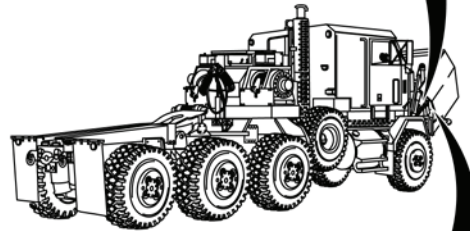


WARNING

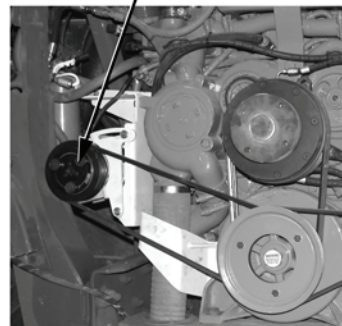
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.



(SHOWN WITH
SECONDARY FUEL
FILTER REMOVED
FOR CLARITY)



A/C COMPRESSOR
CLUTCH



(SHOWN WITH
RADIATOR AND
FAN REMOVED
FOR CLARITY)

VISUAL INSPECTION

- (1) Open hood (TM 9-2320-360-10).
- (2) Inspect A/C compressor and A/C compressor clutch assembly for damage.
 - (a) If A/C compressor or A/C compressor clutch assembly is damaged, notify DS Maintenance.
 - (b) If A/C compressor and A/C compressor clutch assembly are not damaged, go to Step 2 of this fault.

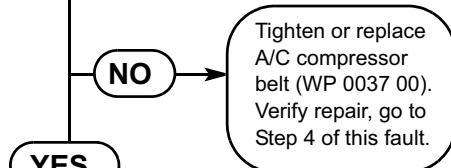
HETF00451

A/C COMPRESSOR EXCESSIVELY NOISY - CONTINUED.

KNOWN INFO
A/C operates. A/C compressor not damaged.
POSSIBLE PROBLEMS
A/C compressor belt loose or damaged. A/C compressor mounting brackets damaged or hardware missing or loose. A/C compressor faulty.

2.	WARNING Read WARNING on page 0018 00-5.
Is A/C compressor belt tight and free from damage?	

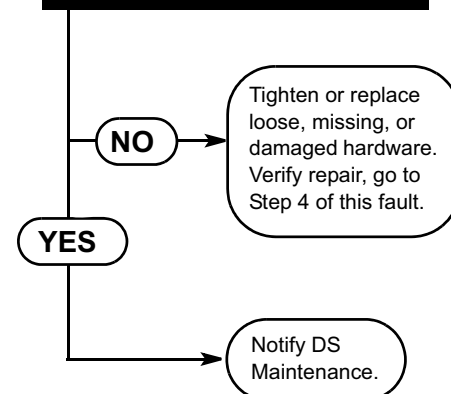
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C compressor belt is loose or damaged, A/C compressor may be excessively noisy.



KNOWN INFO
A/C operates. A/C compressor not damaged. A/C compressor belt OK.
POSSIBLE PROBLEMS
A/C compressor mounting bracket damaged or hardware missing or loose. A/C compressor faulty.

3.	WARNING Read WARNING on page 0018 00-5.
Is A/C compressor mounting bracket hardware secure and free from damage?	

TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
Loose or missing A/C compressor mounting hardware may cause A/C compressor to be excessively noisy.

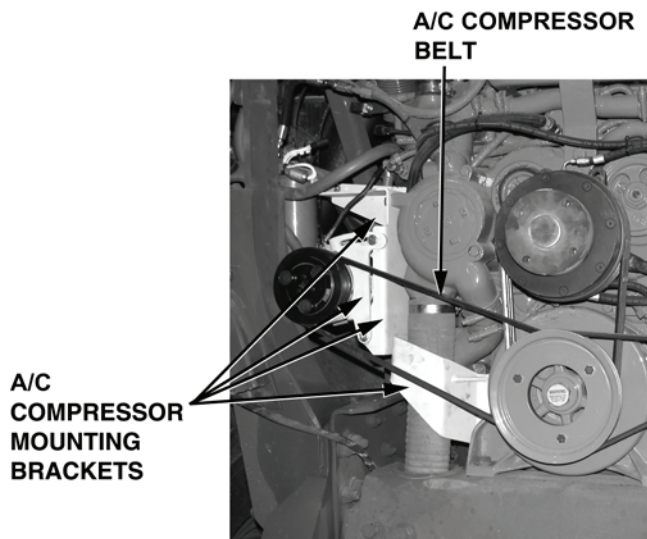


WARNING

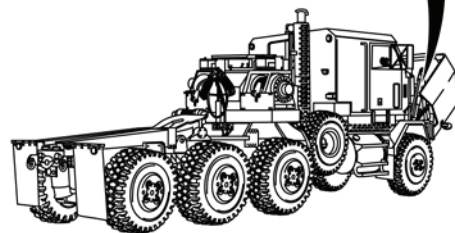
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VISUAL INSPECTION

- (1) Inspect A/C compressor belt for cracking, fraying, and breaks.
 - (a) If A/C compressor belt is cracked, frayed, or broken, replace belt (WP 0037 00). Verify repair, go to Step 4 of this fault.
- (2) Check A/C compressor belt for proper tension (WP 0037 00).
 - (a) If A/C compressor belt is loose, tighten to correct tension (WP 0037 00). Verify repair, go to Step 4 of this fault.
- (3) Go to Step 3 of this fault.



(SHOWN WITH
RADIATOR AND
FAN REMOVED
FOR CLARITY)



HETF00452

VISUAL INSPECTION

- (1) Inspect A/C compressor mounting brackets for damage and missing or loose hardware.
 - (a) If A/C compressor mounting brackets are damaged or hardware is missing or loose, perform the following:
 - 1 Remove A/C compressor subsystem (WP 0034 00).
 - 2 Replace damaged or missing A/C compressor mounting hardware. Tighten loose mounting hardware as required.
 - 3 Install A/C compressor subsystem (WP 0034 00).
 - 4 Verify repair, go to Step 4 of this fault.
 - (b) If A/C compressor or mounting bracket hardware is secure and free from damage, notify DS Maintenance.

A/C COMPRESSOR EXCESSIVELY NOISY - CONTINUED.

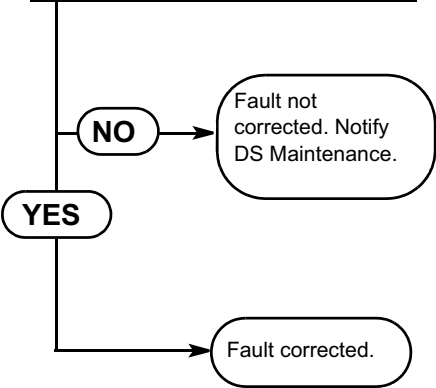
KNOWN INFO
A/C operates. A/C compressor not damaged. A/C compressor belt OK. A/C compressor mounting brackets OK. A/C compressor OK.
POSSIBLE PROBLEMS
None

4.

WARNING

Read WARNING on page 0018 00-7.

Is A/C compressor free from excessive noise?



TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If A/C compressor is excessively noisy, fault was not corrected.



WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VERIFY REPAIR

- (1) Start engine (TM 9-2320-360-10).
- (2) Turn A/C control switch to ON (high blower speed) position (WP 0008 00).
- (3) Inspect A/C compressor for excessive noise.
 - (a) If A/C compressor is excessively noisy, fault has not been corrected. Turn engine switch and A/C control switch to OFF position and notify DS Maintenance.
 - (b) If A/C compressor is free from excessive noise, fault has been corrected.
- (4) Close hood (TM 9-2320-360-10).

END OF WORK PACKAGE



HETF00453

A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY

0019 00

INITIAL SETUP

Maintenance Level

Unit Maintenance

References

TM 9-2320-360-20

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

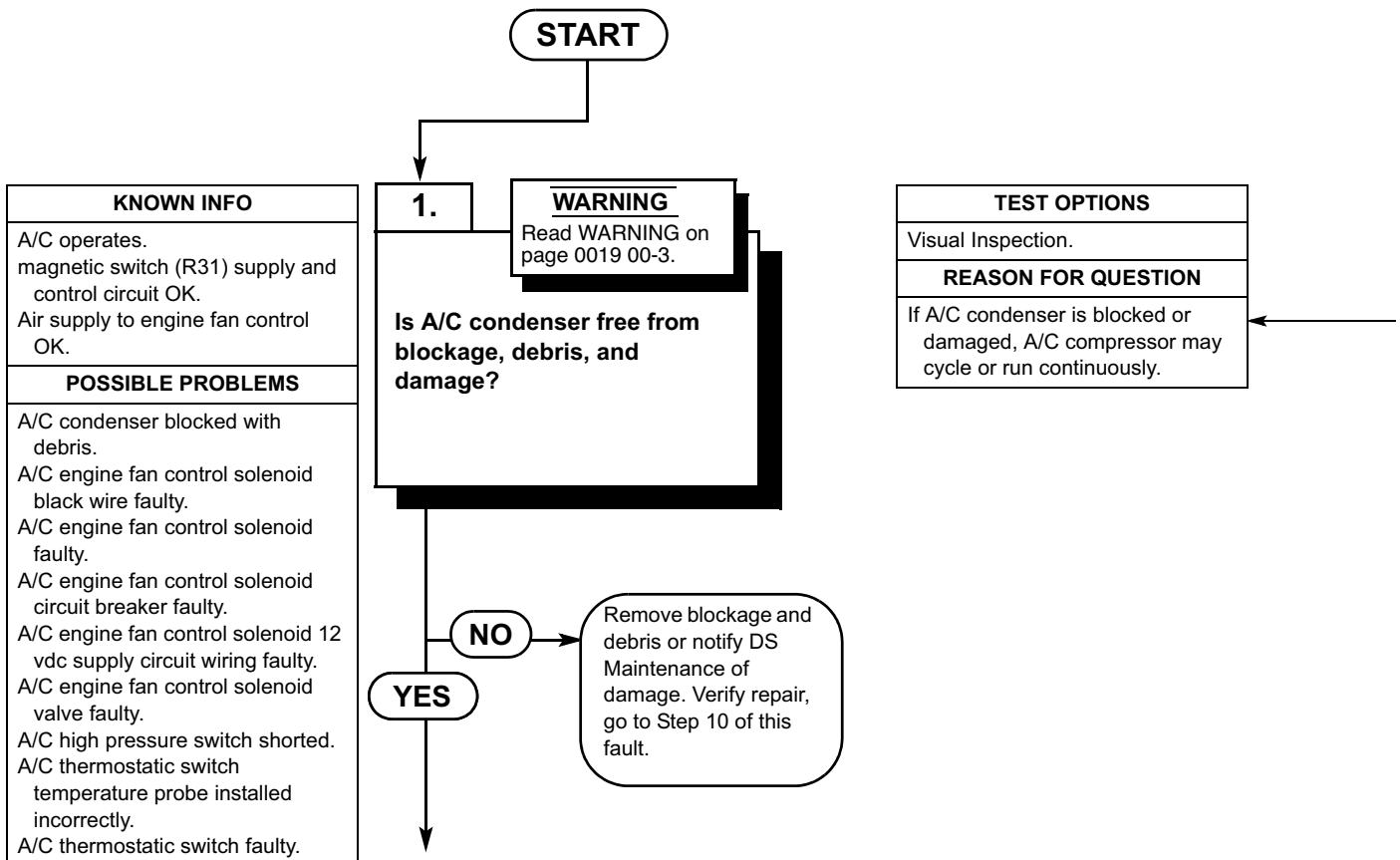
Multimeter (Item 6, WP 0060 00)

Equipment Conditions

Engine off (TM 9-2320-360-10)

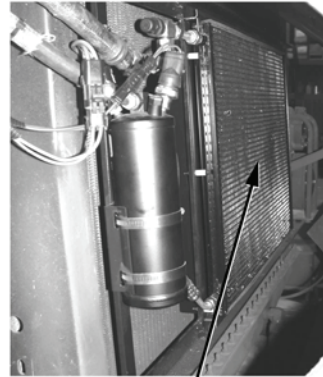
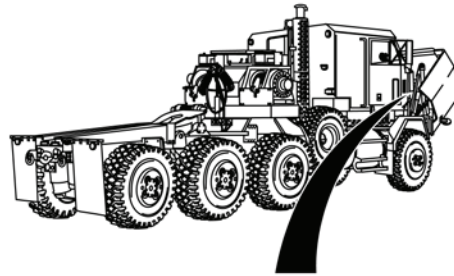
Parking brakes applied (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)



WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.



A/C CONDENSER

HETF00454

VISUAL INSPECTION

- (1) Open hood (TM 9-2320-360-10).
- (2) Inspect A/C condenser assembly for blockage, debris, and damage.
 - (a) If A/C condenser is blocked, remove blockage and debris. Verify repair, go to Step 10 of this fault.
 - (b) If A/C condenser is damaged, notify DS Maintenance.
 - (c) If A/C condenser is free from blockage, debris, and damage, go to Step 2 of this fault.

A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY - CONTINUED.

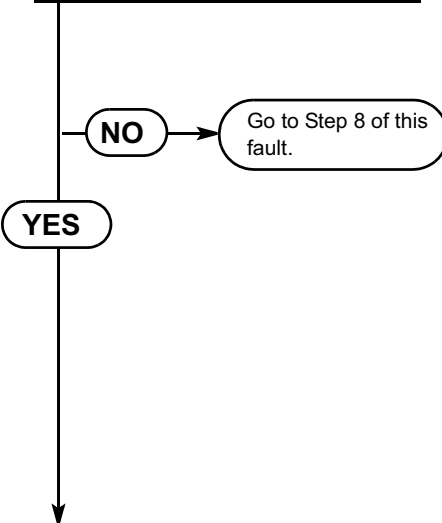
KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris.
POSSIBLE PROBLEMS
A/C engine fan control solenoid black wire faulty. A/C engine fan control solenoid faulty. A/C engine fan control solenoid circuit breaker faulty. A/C engine fan control solenoid 12 vdc supply circuit wiring faulty. A/C engine fan control solenoid valve faulty. A/C high pressure switch shorted. A/C thermostatic switch temperature probe installed incorrectly. A/C thermostatic switch faulty.

2.

WARNING
Read WARNING on page 0019 00-5.

Does A/C hose at output of A/C condenser get hot during system operation?

TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
To isolate system fault.



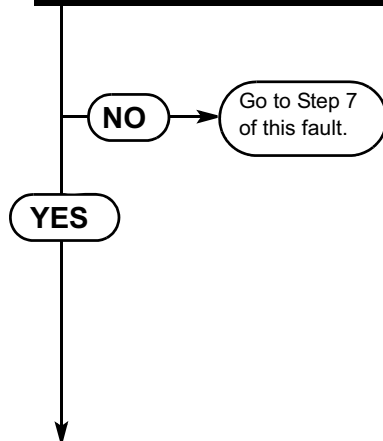
KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C high pressure switch not shorted. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK.
POSSIBLE PROBLEMS
A/C engine fan control solenoid black wire faulty. A/C engine fan control solenoid faulty. A/C engine fan control solenoid circuit breaker faulty. A/C engine fan control solenoid 12 vdc supply circuit wiring faulty. A/C engine fan control solenoid valve faulty.

3.

WARNING
Read WARNING on page 0019 00-5.

Is air pressure present at A/C engine fan control solenoid valve, when A/C compressor receiver/dryer harness connector terminals at A/C high pressure switch are jumped?

TEST OPTIONS
Audible Inspection.
REASON FOR QUESTION
If air pressure is present when A/C engine fan control solenoid is closed, engine fan may not engage.



WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- Ensure engine is cool before performing visual inspection; be sure to wear protective goggles to prevent personal injury.
- Ensure A/C hoses are cool before performing visual inspection. Failure to follow this warning may result in severe burns.

VISUAL INSPECTION

NOTE: Perform Steps (1) through (4) only if system is not at operating temperature.

- (1) Start engine (TM 9-2320-360-10).
- (2) Turn A/C control switch to ON (high blower speed) position (WP 0008 00).
- (3) Operate system for 5 to 10 minutes.
- (4) Turn engine switch to OFF position.
- (5) Inspect A/C hose at output of A/C condenser.
 - (a) If A/C hose is not hot, go to Step 8 of this fault.
 - (b) If A/C hose is hot, go to Step 3 of this fault.

**A/C CONDENSER****CONDENSER
OUTPUT A/C HOSE****A/C HIGH
PRESSURE
SWITCH****OUTPUT
AIR LINE****A/C ENGINE
FAN CONTROL
SOLENOID
VALVE****A/C COMPRESSOR
RECEIVER/DRYER
CONNECTOR****AUDIBLE INSPECTION**

NOTE: Allow system to cool before continuing.

- (1) Disconnect A/C compressor receiver/dryer harness connector from A/C high pressure switch.
- (2) Install jumper across A/C compressor receiver/dryer harness, A/C high pressure switch connector terminals.
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Loosen air line at output of A/C engine fan control solenoid valve (WP 0026 00).
 - (a) If air pressure is not present at the A/C engine fan control solenoid valve, go to Step 7 of this fault.
 - (b) If air pressure is present at the A/C engine fan control solenoid valve, turn engine switch to OFF position, tighten air line, and go to Step 4 of this fault.

HETF00457

A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY - CONTINUED.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C high pressure switch not shorted. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK. A/C engine fan control solenoid valve OK.
POSSIBLE PROBLEMS
A/C engine fan control solenoid black wire faulty. A/C engine fan control solenoid faulty. A/C engine fan control solenoid circuit breaker faulty. A/C engine fan control solenoid 12 vdc supply circuit wiring faulty.

4.

WARNING
Read WARNING on page 0019 00-7.

Are 12 to 14 vdc measured on yellow wire at A/C engine fan control solenoid, when A/C compressor receiver/dryer harness connector terminals at A/C high pressure switch are jumped?

NO

Go to Step 6 of this fault.

YES

TEST OPTIONS
Voltage test. Multimeter.
REASON FOR QUESTION
If 12 to 14 vdc is not measured, A/C engine fan control solenoid will not energize.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C high pressure switch not shorted. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK. A/C engine fan control solenoid valve OK. A/C engine fan control solenoid circuit breaker OK. A/C engine fan control solenoid 12 vdc supply circuit wiring OK.
POSSIBLE PROBLEMS
A/C engine fan control solenoid black wire faulty. A/C engine fan control solenoid faulty.

5.

WARNING
Read WARNING on page 0019 00-7.

Is continuity measured on black wire from A/C engine fan control solenoid to ground?

NO

Repair black wire from A/C engine fan control solenoid connector to A/C evaporator harness connector (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 10 of this fault.

YES

Replace A/C engine fan control solenoid (WP 0026 00). Verify repair, go to Step 10 of this fault.

TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is measure, A/C engine fan control solenoid is faulty. If not, ground circuit is faulty.

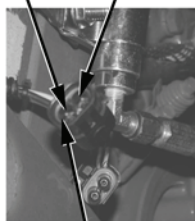
WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

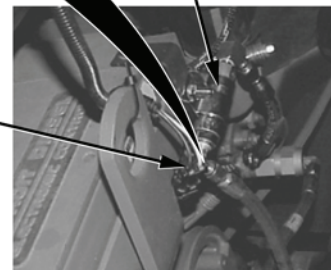
VOLTAGE TEST

- (1) Disconnect A/C compressor receiver/dryer harness connector from A/C engine fan control solenoid.
- (2) Connect jumper wire across A/C compressor receiver/dryer harness A/C high pressure switch connector terminals.
- (3) Turn engine switch to ON position (TM 9-2320-360-10).
- (4) Place positive (+) probe of multimeter on yellow wire at A/C compressor receiver/dryer harness A/C engine fan control solenoid connector.
- (5) Place negative (-) probe of multimeter on ground.
 - (a) If 12 to 14 vdc is not measured, turn engine switch to OFF position and go to Step 6 of this fault.
 - (b) If 12 to 14 vdc is measured, turn engine switch to OFF position and go to Step 5 of this fault.

BLACK WIRE **YELLOW WIRE**



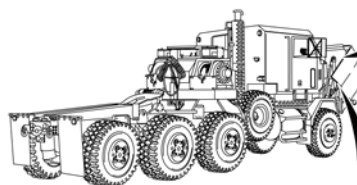
A/C ENGINE FAN CONTROL SOLENOID



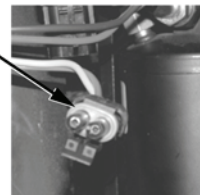
A/C COMPRESSOR RECEIVER/DRYER HARNESS A/C ENGINE FAN CONTROL SOLENOID CONNECTOR

CONTINUITY TEST

- (1) Set multimeter switch to ohms.
- (2) Is there continuity measured on black wire from A/C compressor receiver/dryer harness A/C engine fan control solenoid connector to ground.
 - (a) If continuity is not measured, repair black wire from A/C engine fan control solenoid connector to A/C evaporator harness connector (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 10 of this fault.
 - (b) If continuity is measured, replace A/C engine fan control solenoid (WP 0026 00). Verify repair, go to Step 10 of this fault.



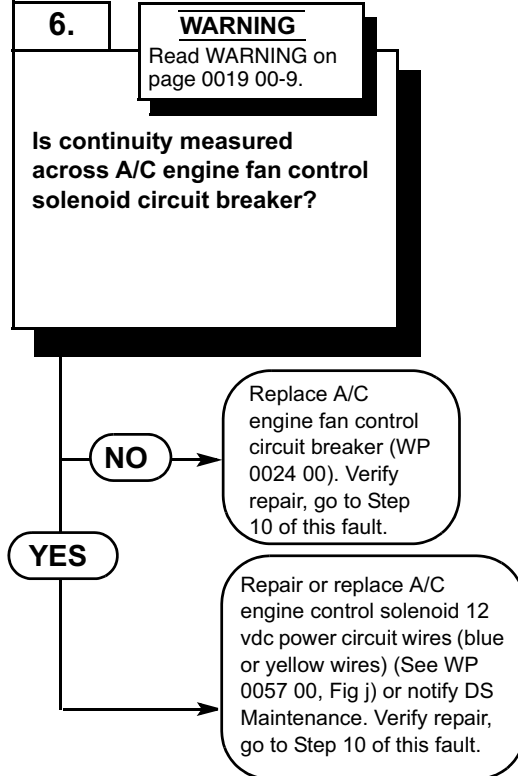
A/C COMPRESSOR RECEIVER/DRYER HARNESS A/C HIGH PRESSURE SWITCH CONNECTOR



HETF00456

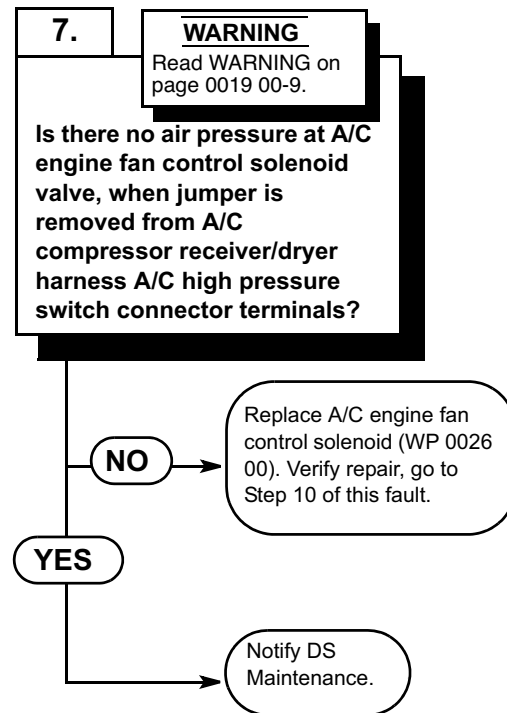
A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY - CONTINUED.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C high pressure switch not shorted. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK. A/C engine fan control solenoid valve OK. A/C engine fan control solenoid black wire OK. A/C engine fan control solenoid OK.
POSSIBLE PROBLEMS
A/C engine fan control solenoid circuit breaker faulty. A/C engine fan control solenoid 12 vdc supply circuit wiring faulty.



TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C engine control solenoid power circuit wiring is faulty. If not, circuit breaker is faulty.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C high pressure switch not shorted. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK. A/C engine fan control solenoid black wire OK. A/C engine fan control solenoid OK. A/C engine fan solenoid circuit breaker OK. A/C engine fan control solenoid 12 vdc supply circuit wiring OK.
POSSIBLE PROBLEMS
A/C engine fan control solenoid valve faulty.



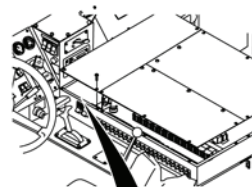
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If no air pressure is present, A/C engine fan control circuit is OK.

WARNING

- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- A/C circuit breaker, A/C relay, and 24vdc magnetic switch (R22) are always electrically hot and can cause severe injury to personnel. Care must be exercised when working around these components.

CONTINUITY TEST.

- (1) Remove three electronic control box assembly covers (TM 9-2320-360-20).
- (2) Disconnect wire to A/C high pressure switch from A/C engine fan control solenoid circuit breaker.
- (3) Is there continuity measured across A/C engine fan control solenoid circuit breaker terminals?
 - (a) If there is no continuity, replace A/C engine fan control solenoid circuit breaker (WP 0024 00). Verify repair, go to Step 10 of this fault.
 - (b) If there is continuity, repair A/C engine control solenoid 12 vdc supply circuit wires (blue or yellow wires) (See WP 0057 00, Fig j) or notify DS Maintenance. Verify repair, go to Step 10 of this fault.



**A/C ENGINE FAN
CONTROL SOLENOID
CIRCUIT BREAKER**

**A/C ENGINE FAN
CONTROL SOLENOID
CIRCUIT BREAKER
TERMINALS**

**VISUAL INSPECTION**

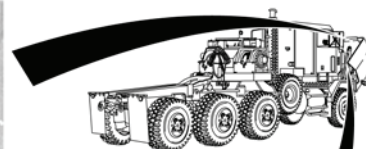
- (1) Ensure air line on output of A/C engine control solenoid valve is loose.
- (2) Remove jumper from A/C compressor receiver/dryer harness A/C high pressure switch connector terminals.
 - (a) If air pressure is present, replace A/C engine fan control solenoid (WP 0026 00). Verify repair, go to Step 10 of this fault.
 - (b) If air pressure is not present, turn engine switch and A/C control switch to OFF position, connect A/C compressor receiver/dryer harness connector to A/C high pressure switch (WP 0029 00), tighten air line on output of A/C engine control solenoid valve (WP 0026 00) and notify DS Maintenance.

**OUTPUT
AIR LINE**



**A/C ENGINE
FAN CONTROL
SOLENOID
VALVE**

**WIRE TO A/C
HIGH PRESSURE SWITCH**



**A/C COMPRESSOR
RECEIVER/DRYER
HARNESS A/C HIGH
PRESSURE SWITCH
CONNECTOR**



HETF00455

A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY - CONTINUED.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C engine fan control solenoid black wire OK. A/C engine fan control solenoid OK. A/C engine fan control solenoid circuit breaker OK. A/C engine fan control solenoid 12 vdc supply circuit wiring OK. A/C engine fan control solenoid valve OK.
POSSIBLE PROBLEMS
A/C high pressure switch shorted. A/C thermostatic switch temperature probe installed incorrectly. A/C thermostatic switch faulty.

8.

WARNING
Read WARNING on page 0019 00-11.

Is an open measured across A/C high pressure switch, when switch is removed from system?

TEST OPTIONS
Continuity test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C high pressure switch is faulty.

NO

Replace A/C high pressure switch (WP 0029 00). Verify repair, go to Step 10 of this fault.

YES

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C engine fan control solenoid black wire OK. A/C engine fan control solenoid OK. A/C engine fan control solenoid circuit breaker OK. A/C engine fan control solenoid 12 vdc supply circuit wiring OK. A/C engine fan control solenoid valve OK. A/C high pressure switch OK.
POSSIBLE PROBLEMS
A/C thermostatic switch temperature probe installed incorrectly. A/C thermostatic switch faulty.

9.

WARNING
Read WARNING on page 0019 00-11.

Is A/C thermostatic switch temperature probe installed correctly?

TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C thermostatic switch temperature probe is installed incorrectly or is faulty, A/C compressor may not shut off or may cycle constantly.

NO

Reinstall A/C thermostatic switch temperature probe (WP 0031 00). Verify repair, go to Step 10 of this fault.

YES

Replace A/C thermostatic switch temperature probe (WP 0031 00). Verify repair, go to Step 10 of this fault.

WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

CONTINUITY TEST

- (1) Remove A/C high pressure switch from A/C receiver/dryer (WP 0029 00).
- (2) Set multimeter switch to ohms.
- (3) Is an open measured across A/C high pressure switch terminals?
 - (a) If an open is not measured, replace A/C high pressure switch (WP 0029 00). Verify repair, go to Step 10 of this fault.
 - (b) If an open is measured, install A/C high pressure switch (WP 0029 00) and go to Step 9 of this fault.



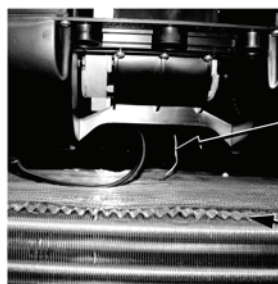
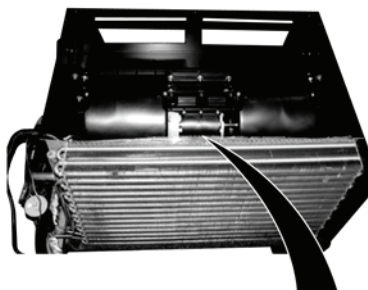
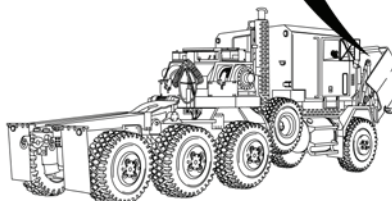
**A/C HIGH
PRESSURE
SWITCH**



**A/C HIGH
PRESSURE
SWITCH**

VISUAL INSPECTION

- (1) Remove A/C evaporator subsystem (WP 0036 00).
 - (2) Remove eight screws and evaporator assembly cover (WP 0022 00).
- NOTE: A/C thermostatic switch temperature probe is installed by inserting it into the center of the evaporator approximately two inches.
- (3) Inspect A/C thermostatic switch temperature probe for proper installation (WP 0031 00).
 - (a) If A/C thermostatic switch temperature probe is not installed correctly, reinstall temperature probe (WP 0031 00). Verify repair, go to Step 10 of this fault.
 - (b) If A/C thermostatic switch temperature probe is installed correctly, replace A/C thermostatic switch (WP 0031 00). Verify repair, go to Step 10 of this fault.



**A/C THERMOSTATIC
SWITCH
TEMPERATURE
PROBE**

A/C EVAPORATOR

HETF00458

A/C COMPRESSOR DOES NOT SHUT OFF OR CYCLES CONSTANTLY - CONTINUED.

KNOWN INFO
A/C operates. magnetic switch (R31) supply and control circuit OK. Air supply to engine fan control OK. A/C condenser not blocked with debris. A/C engine fan control solenoid black wire OK. A/C engine fan control solenoid OK. A/C engine fan control solenoid circuit breaker OK. A/C engine fan control solenoid 12 vdc supply circuit wiring OK. A/C engine fan control solenoid valve OK. A/C high pressure switch OK. A/C thermostatic switch temperature probe installed correctly. A/C thermostatic switch OK.
POSSIBLE PROBLEMS
None

10.**WARNING**

Read WARNING on page 0019 00-13.

Does A/C compressor operate correctly?**NO**

Fault not corrected. Notify DS Maintenance.

YES

Fault corrected.

TEST OPTIONS

Verify repair.

REASON FOR QUESTION

If A/C compressor does not shut off or is cycling constantly, fault has not been corrected.

WARNING

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.

VERIFY REPAIR

- (1) If removed, install A/C evaporator subsystem (WP 0036 00).
- (2) If disconnected, remove jumper and connect A/C compressor receiver/dryer harness to A/C high pressure switch (WP 0029 00).
- (3) Start engine (TM 9-2320-360-10).
- (4) Operate A/C for 10 minutes at high blower speed (WP 0008 00).
 - (a) If A/C compressor does not shut off or cycles constantly, turn engine switch and A/C control switch to OFF position and notify DS Maintenance.
 - (b) If A/C compressor operates correctly, fault has been corrected.

END OF WORK PACKAGE



HETF00453

CHAPTER 7
UNIT MAINTENANCE

UNIT MAINTENANCE INTRODUCTION

0020 00

This chapter contains instructions for replacement and repair of A/C components at the Unit Maintenance level. Some subassemblies and parts must be removed before A/C components can be accessed. They are referenced to other paragraphs of this manual or other technical manuals.

END OF WORK PACKAGE

A/C BLOWER CONTROL SWITCH REPLACEMENT

0021 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Equipment Conditions

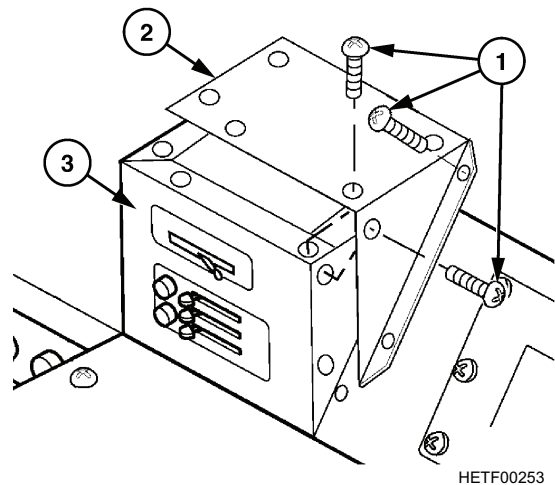
Wheels chocked (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20)

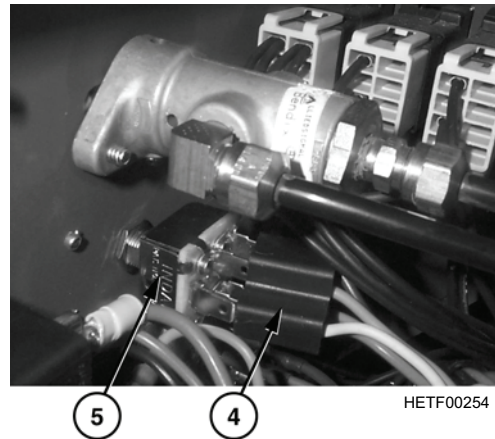
REMOVAL

1. Remove nine screws (1) and panel cover (2) from dash (3).

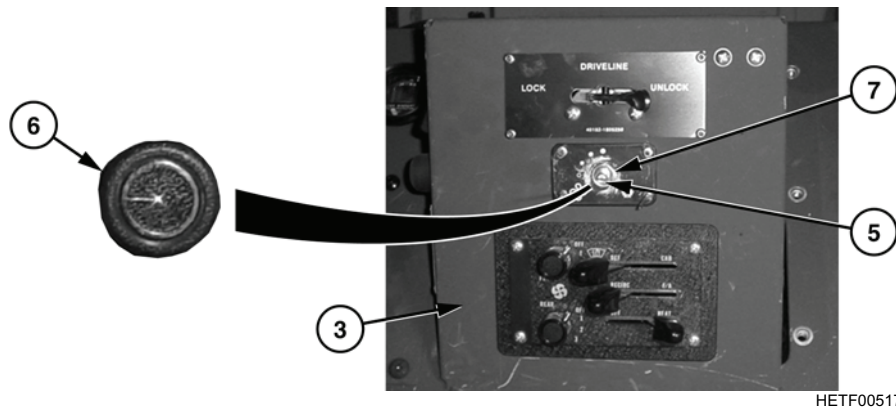


A/C BLOWER CONTROL SWITCH REPLACEMENT - CONTINUED**0021 00****REMOVAL - CONTINUED**

2. Disconnect connector (4) from switch (5).



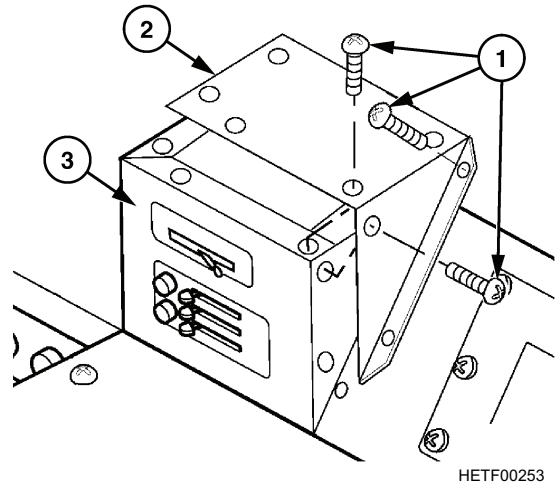
3. Remove switch knob (6) by pulling switch knob (6) straight out.
4. Remove nut (7) from switch (5).
5. Remove switch (5) from dash (3).

**INSTALLATION**

1. Install switch (5) on dash (3).
2. Install nut (7) on switch (5) and tighten.
3. Install switch knob (6) on switch (5) and press firmly until switch knob (6) is seated.
4. Connect connector (4) to switch (5).

A/C BLOWER CONTROL SWITCH REPLACEMENT - CONTINUED**0021 00****INSTALLATION - CONTINUED**

5. Install panel cover (2) on dash (3) with nine screws (1).



HETF00253

6. Connect batteries (TM 9-2320-360-20).
7. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C BLOWER REPLACEMENT

0022 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tape, Foam Insulation (Item 4, Figure Bulk, WP 0062 00)

Materials/Parts - Continued

Lockwashers (4) (Item 83, Figure 1, WP 0062 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

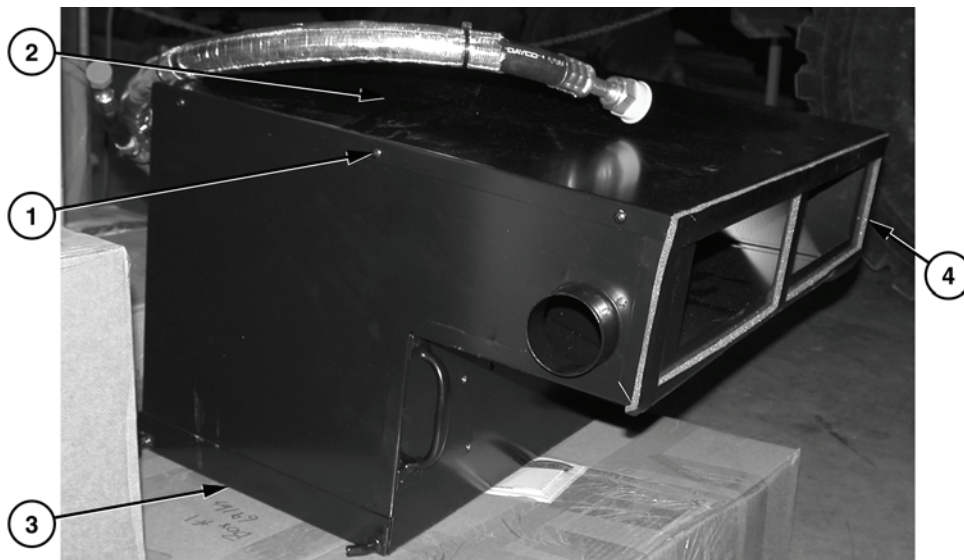
Engine off (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

A/C evaporator subsystem removed (WP 0036 00)

REMOVAL

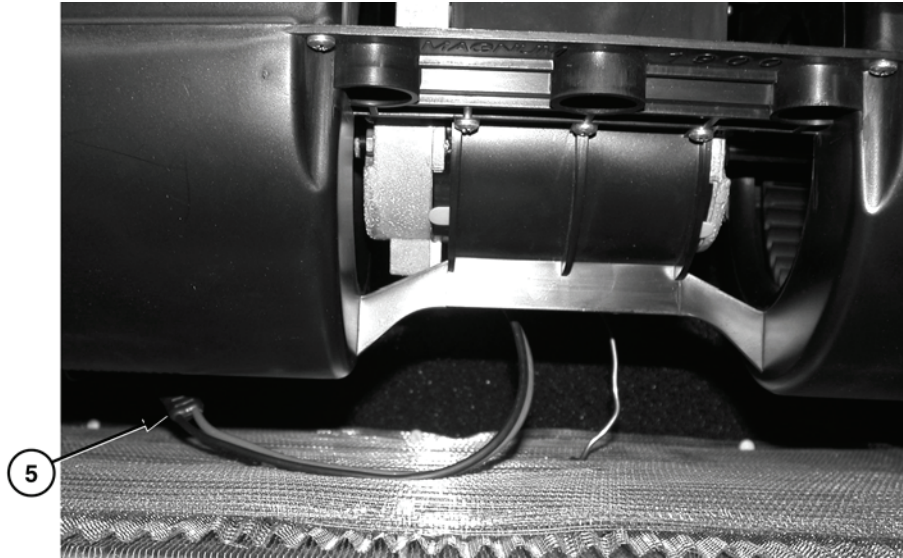
1. Remove eight screws (1) and cover (2) from A/C evaporator (3).
2. Remove insulation tape (4) from outlet of A/C evaporator (3).



HETF00229

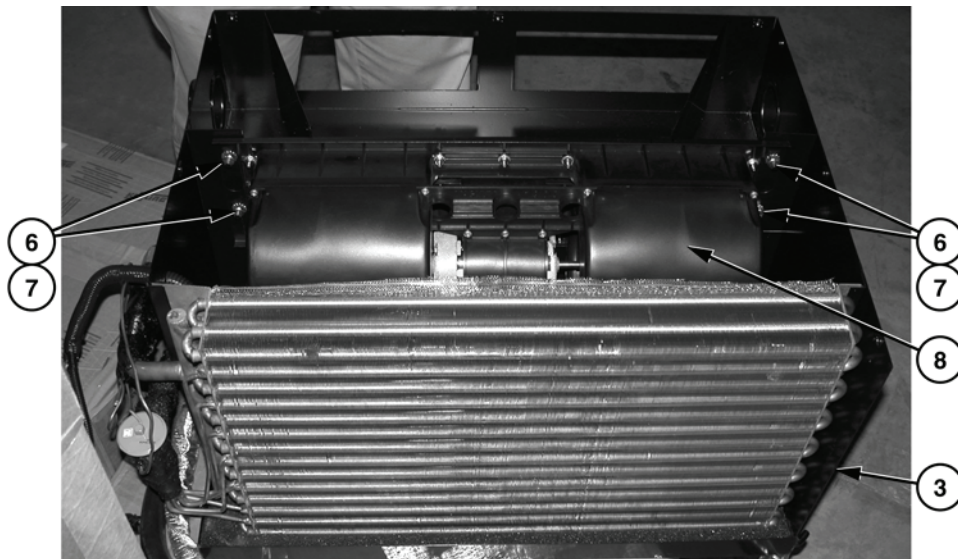
A/C BLOWER REPLACEMENT - CONTINUED**0022 00****REMOVAL - CONTINUED**

3. Disconnect connector (5).



HETF00230

4. Remove four nuts (6), lockwashers (7), and A/C blower (8) from A/C evaporator (3). Discard lockwashers.



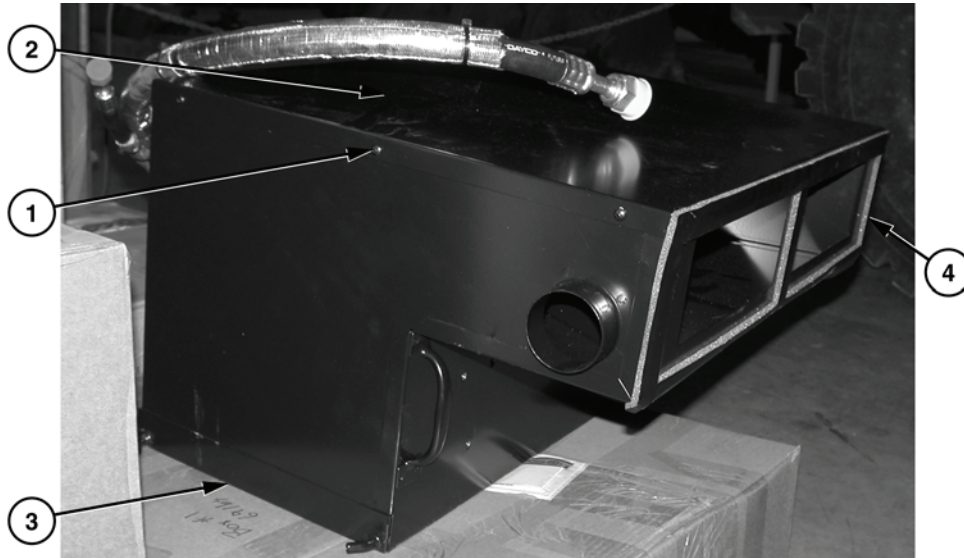
HETF00231

INSTALLATION

1. Install A/C blower (8) on A/C evaporator (3) with four lockwashers (7) and nuts (6).
2. Connect connector (5).

A/C BLOWER REPLACEMENT - CONTINUED**0022 00****INSTALLATION - CONTINUED**

3. Install cover (2) on A/C evaporator (3) with eight screws (1).
4. Install insulation tape (4) on outlet of A/C evaporator (3).



HETF00229

5. Install A/C evaporator subsystem (WP 0036 00).
6. Connect batteries (TM 9-2320-360-20).
7. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C BLOWER RESISTOR REPLACEMENT

0023 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

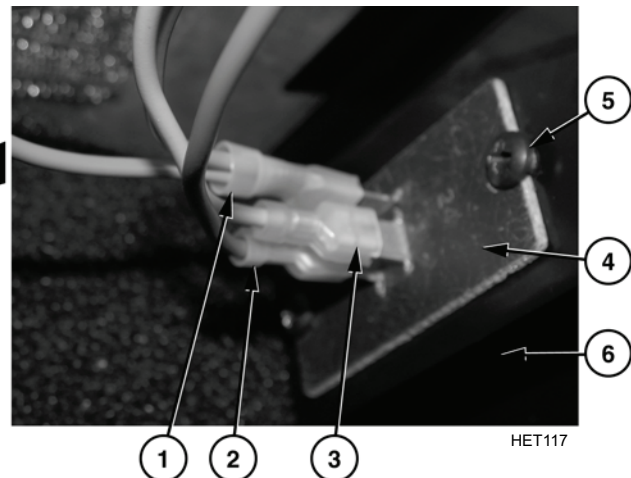
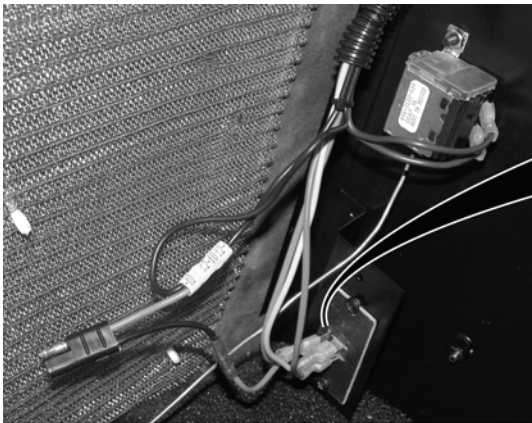
Batteries disconnected (TM 9-2320-360-20)

A/C blower removed from A/C evaporator sub-system (WP 0022 00).

REMOVAL**NOTE**

Tag and mark all wires prior to removal.

1. Remove two orange wires (1), one red wire (2), and one yellow wire (3) from A/C blower resistor (4).
2. Remove two screws (5) and resistor (4) from A/C evaporator (6).

**INSTALLATION**

1. Install A/C blower resistor (4) on A/C evaporator (6) with two screws (5).
2. Install two orange wires (1), one red wire (2), and one yellow wire (3) on A/C blower resistor (4).

A/C BLOWER RESISTOR REPLACEMENT - CONTINUED

0023 00

INSTALLATION - CONTINUED

3. Install A/C blower (WP 0022 00).
4. Install A/C evaporator subsystem (WP 0036 00).
5. Connect batteries (TM 9-2320-360-20).
6. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C CIRCUIT BREAKER REPLACEMENT

0024 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20)

NOTE

- Two circuit breakers are used with A/C system. Replacement procedures for both are the same.
- 20 amp circuit breaker is installed in forward hole and 5 amp circuit breaker is installed in rear hole.
- Tag and mark wires prior to removal.

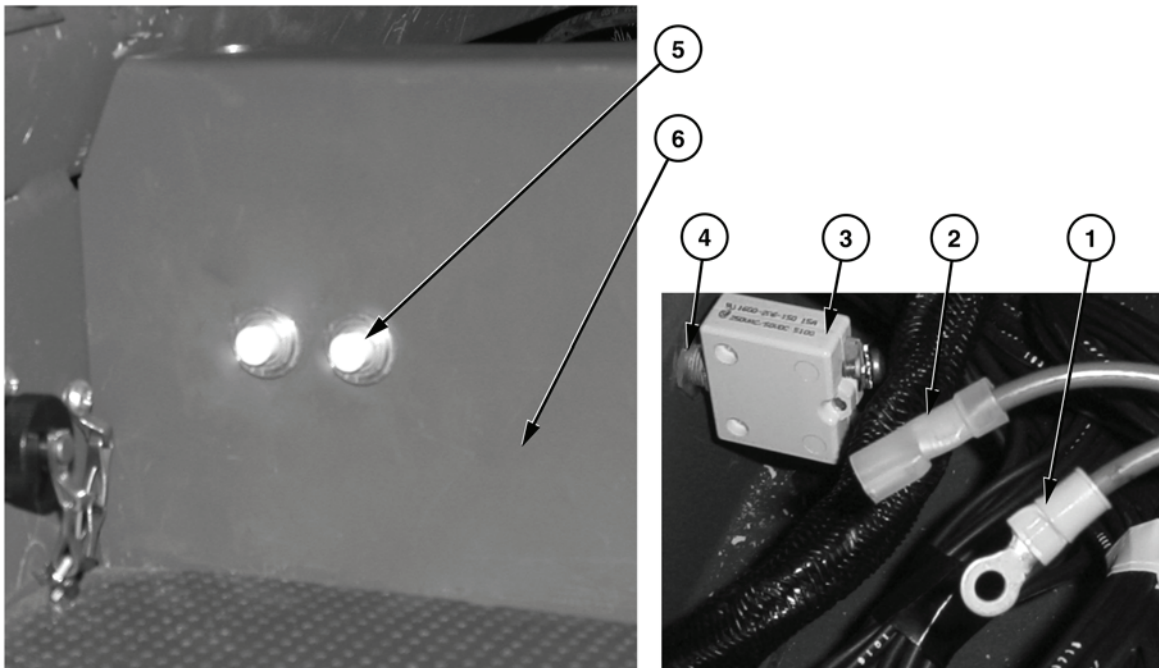
A/C CIRCUIT BREAKER REPLACEMENT - CONTINUED**0024 00****REMOVAL**

1. Remove three access panels from top of doghouse (TM 9-2320-360-20).
2. Remove two connectors (1 and 2) from circuit breaker (3).
3. Loosen nut (4) on the threaded shaft of circuit breaker (3).
4. Remove knurled nut (5) from circuit breaker (3).

NOTE

Note orientation of circuit breaker prior to removal.

5. Remove circuit breaker (3) from doghouse (6).



HETF00287

INSTALLATION

1. Install nut (4) on threaded shaft of circuit breaker (3).
2. Install circuit breaker (3) on doghouse (6).
3. Install knurled nut (5) on circuit breaker (3).
4. Tighten nut (4) to secure circuit breaker (3) to doghouse (6).
5. Install two connectors (1 and 2) on circuit breaker (3).
6. Install three access panels on doghouse (TM 9-2320-360-20).
7. Connect batteries (TM 9-2320-360-20).
8. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C DUCT AND LOUVER REPLACEMENT

0025 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10).

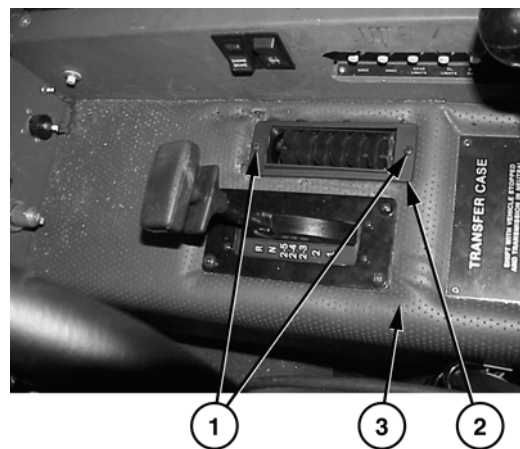
Engine off (TM 9-2320-360-10).

Doghouse Door removed (WP 0028 00).

REMOVAL**NOTE**

Both vent louvers are removed the same way. Driver side is shown.

1. Remove doghouse access panel (WP 0028 00).
2. Remove two screws (1) and A/C louver (2) from doghouse (3).

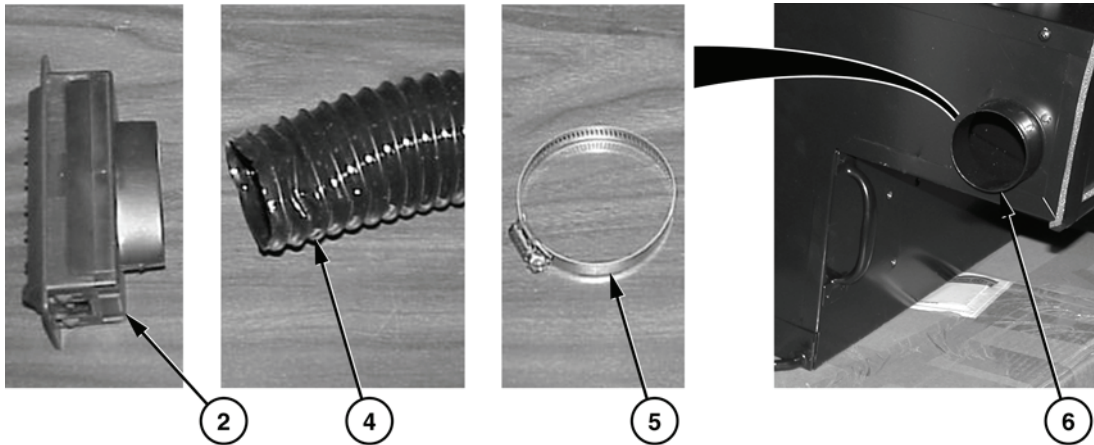


HETTF00301

A/C DUCT AND LOUVER REPLACEMENT - CONTINUED**0025 00****REMOVAL - CONTINUED****NOTE**

Evaporator shown removed from doghouse for clarity.

3. Remove A/C louver (2) from A/C duct (4).
4. Remove clamp (5) and A/C duct (4) from A/C evaporator (6).



HETF00302

INSTALLATION**NOTE**

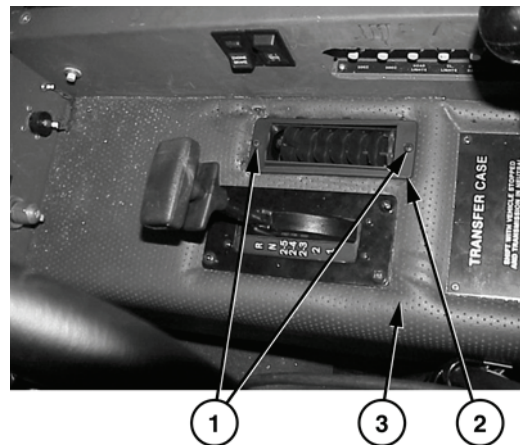
A/C evaporator shown removed from doghouse for clarity.

1. Install A/C louver (2) on A/C duct (4) through doghouse (3).
2. Install A/C duct (4) on A/C evaporator (6) with clamp (5).

NOTE

Both A/C louvers are installed the same way. Driver side is shown.

3. Install A/C louver (2) on doghouse (3) with two screws (1).
4. Install doghouse access panel (WP 0028 00).



HETF00301

5. Install doghouse door (WP 0028 00).
6. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C ENGINE FAN CONTROL SOLENOID REPLACEMENT

0026 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Set, Cap and Plug (Item 2, WP 0060 00)

Materials/Parts

Sealing Compound (Item 2, WP 0061 00)

Materials/Parts - Continued

Nut, Self-Locking (Item 7, Figure 1, WP 0062 00)

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

Air system drained (TM 9-2320-360-10)

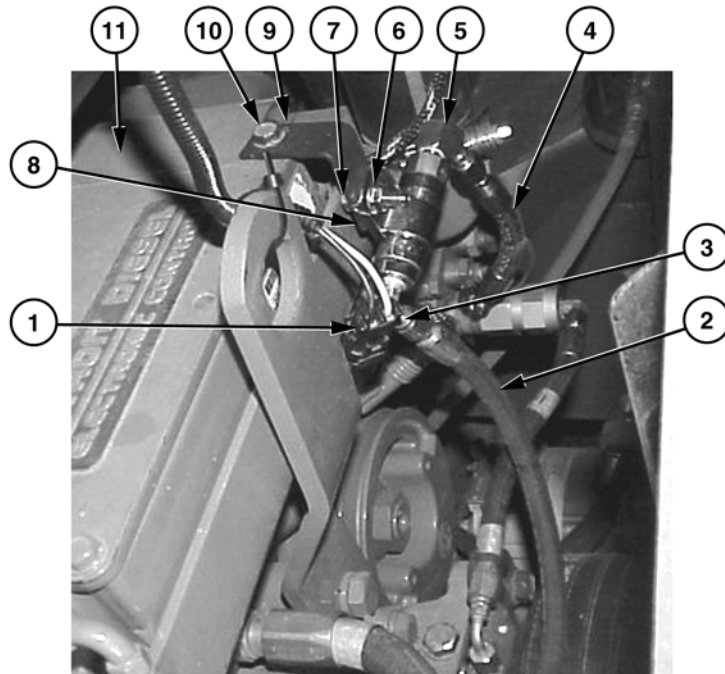
REMOVAL**CAUTION**

Cap and plug all lines and fittings or damage to equipment may result.

NOTE

- Tag and mark wires, hoses, and fittings prior to removal.
- Install caps and plugs on hoses and fittings, as required, to prevent contamination.

1. Disconnect connector (1).
2. Remove supply air line (2) from elbow (3).
3. Remove thermostatic switch inlet air line (4) from elbow (5).
4. Remove locknut (6), screw (7), and fan control solenoid assembly (8) from bracket (9). Discard locknut.
5. Remove two elbows (3 and 5) from fan control solenoid assembly (8).
6. Remove screw (10) and bracket (9) from ECM (11).



HETF00295

INSTALLATION**WARNING**

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Keep caps and plugs on hoses and fittings until just prior to installation to prevent contamination.

1. Install bracket (9) on ECM (11) with screw (10).
2. Apply sealing compound to fan control solenoid end of two elbows (3 and 5).
3. Install two elbows (3 and 5) on fan control solenoid assembly (8).

NOTE

Air lines are attached to fan control solenoid assembly loosely to allow flexibility in mounting assembly on bracket.

4. Install supply air line (2) on elbow (3).
5. Install thermostatic switch inlet air line (4) on elbow (5).
6. Install fan control solenoid assembly (8) on bracket (9) with screw (7) and new locknut (6).
7. Connect connector (1).
8. Tighten supply air line (2) on elbow (3).
9. Tighten thermostatic switch inlet air line (4) on elbow (5).
10. Start engine and pressurize system (TM 9-2320-360-10).
11. Shut off engine (TM 9-2320-360-10).
12. Check for leaks.
13. Close hood (TM 9-2320-360-10).
14. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C EVAPORATOR/BLOWER HARNESS REPLACEMENT	0027 00
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THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

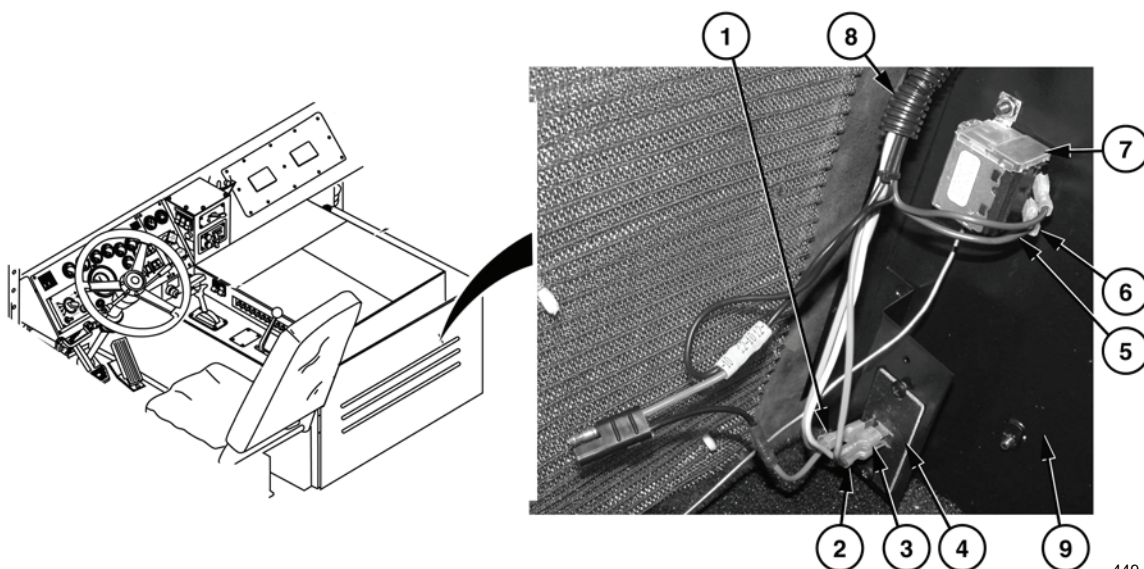
A/C evaporator subsystem removed (WP 0036 00)

A/C blower removed from A/C evaporator sub-system (WP 0022 00)

A/C EVAPORATOR/BLOWER HARNESS REPLACEMENT - CONTINUED**0027 00****REMOVAL****NOTE**

Tag and mark all wires prior to removal.

1. Remove two orange wires (1), one red wire (2), and one yellow wire (3) from A/C blower resistor (4).
2. Remove two brown wires (5 and 6) from thermostatic switch (7).
3. Remove A/C evaporator/blower harness (8) from A/C evaporator (9).



449--605

INSTALLATION

1. Install A/C evaporator/blower harness (8) through hole in A/C evaporator (9).
2. Install two brown wires (5 and 6) on thermostatic switch (7).
3. Install two orange wires (1), one red wire (2), and one yellow wire (3) on A/C blower resistor (4).
4. Install A/C blower in A/C evaporator subsystem (WP 0022 00).
5. Install A/C evaporator subsystem (WP 0036 00).
6. Connect batteries (TM 9-2320-360-20-2).
7. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C AIR INTAKE FILTER REPLACEMENT

0028 00**THIS WORK PACKAGE COVERS**

Removal, Cleaning, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Equipment Conditions

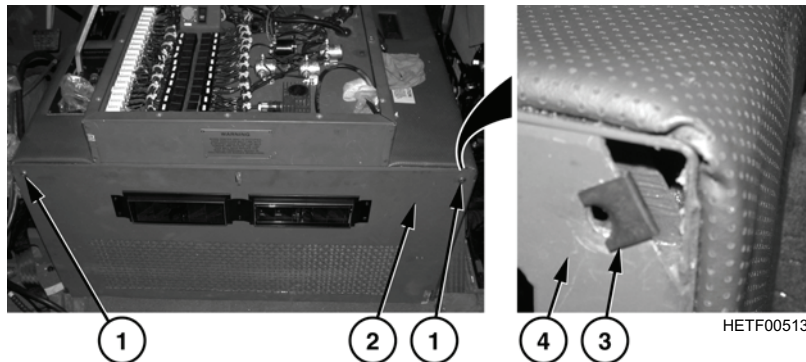
Wheels chocked (TM 9-2320-360-10)

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

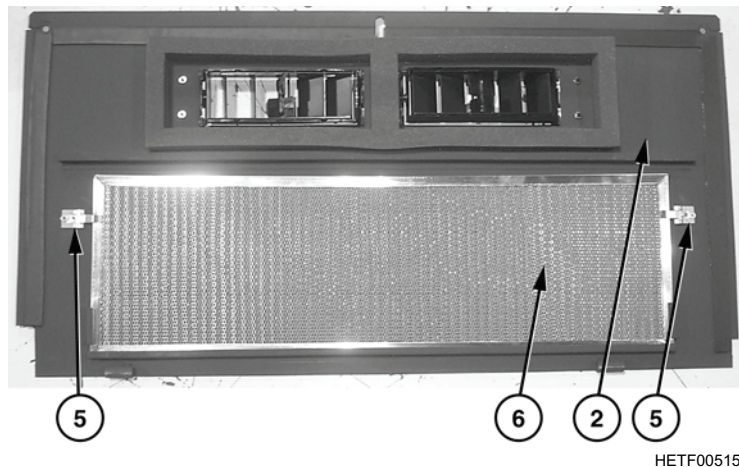
REMOVAL

1. Remove two screws (1) from doghouse door (2) and cage nuts (3) in doghouse (4).
2. Tilt upper portion of doghouse door (2) toward rear of cab.
3. Slide doghouse door (2) to passenger's side of vehicle and remove from doghouse (4).



A/C AIR INTAKE FILTER REPLACEMENT - CONTINUED**0028 00****REMOVAL - CONTINUED**

4. Lift two air intake filter retainer clips (5) and remove air intake filter (6) from doghouse door (2).

**CLEANING**

Clean air intake filter using soap and water or vacuum cleaner. Allow to air dry before installation.

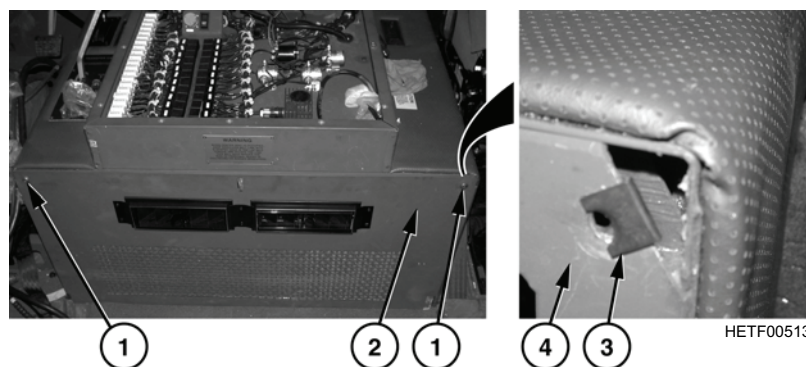
INSTALLATION

1. Install air intake filter (6) on doghouse door (2) with two air intake filter retainer clips (5).
2. Position doghouse door (2) on doghouse (4).

NOTE

Ensure A/C evaporator blower outlets are aligned with vents on doghouse door before securing doghouse door.

3. Lift upper portion of doghouse door (2) and secure in place with two screws (1) and cage nuts (3).



4. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C PRESSURE SWITCH REPLACEMENT

0029 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Sealing Compound (Item 2, WP 0061 00)

Materials/Parts - Continued

Switch, Pressure (Item 39, Figure 1, WP 0062 00)

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

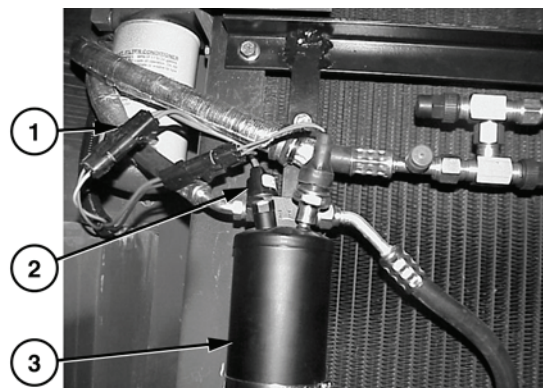
REMOVAL**WARNING**

- Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

NOTE

Tag and mark all wires prior to removal.

1. Disconnect pressure switch connector (1) from wiring harness.
2. Remove pressure switch (2) from receiver/dryer (3).



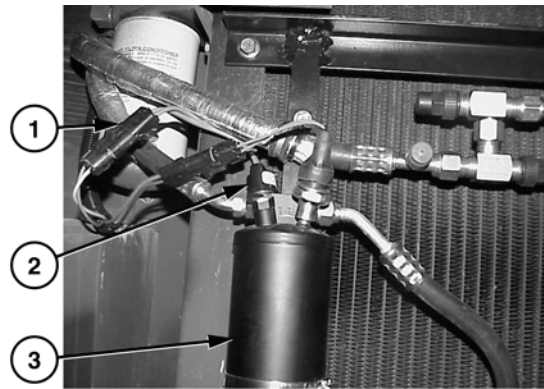
HETF00315

A/C PRESSURE SWITCH REPLACEMENT - CONTINUED

0029 00**INSTALLATION****WARNING**

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

1. Apply sealing compound to threads of pressure switch (2).
2. Install pressure switch (2) on receiver/dryer (3).
3. Connect pressure switch connector (1) to wiring harness.



HETF00315

4. Connect batteries (TM 9-2320-360-20-2).
5. Close hood (TM 9-2320-360-10).
6. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C RELAY REPLACEMENT

0030 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Locknuts (2) (Item 95, Figure 1, WP 0062 00)

Materials/Parts - Continued

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

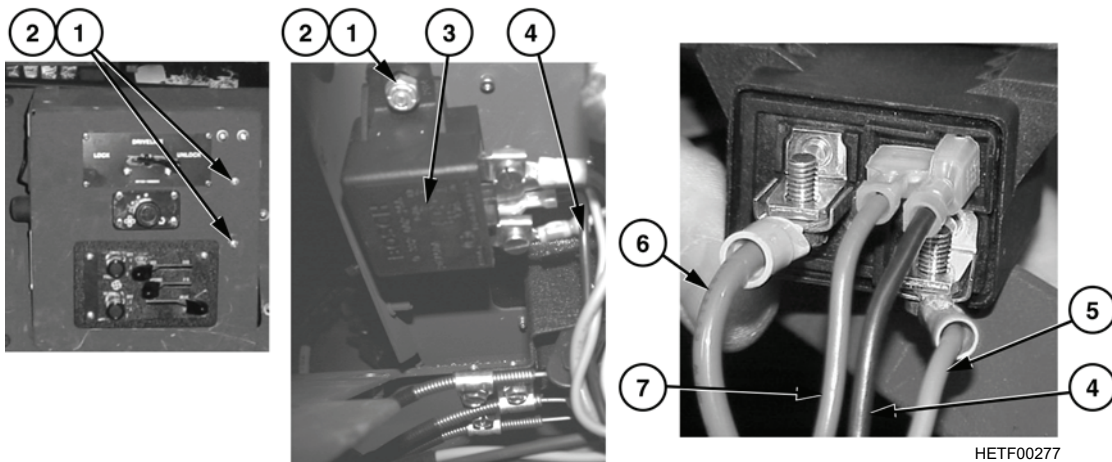
Batteries disconnected (TM 9-2320-360-20-2)

Dashboard panel removed (TM 9-2320-360-20)

REMOVAL**NOTE**

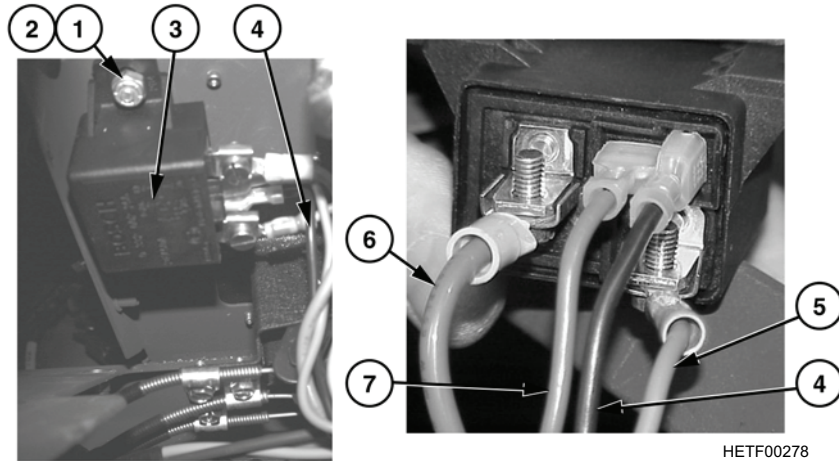
Tag and mark all wires prior to removal.

1. Remove two screws (1) and locknuts (2) from relay (3). Discard locknuts.
2. Remove black wire (4), orange wire (5), red wire (6), and red wire (7) from relay (3).

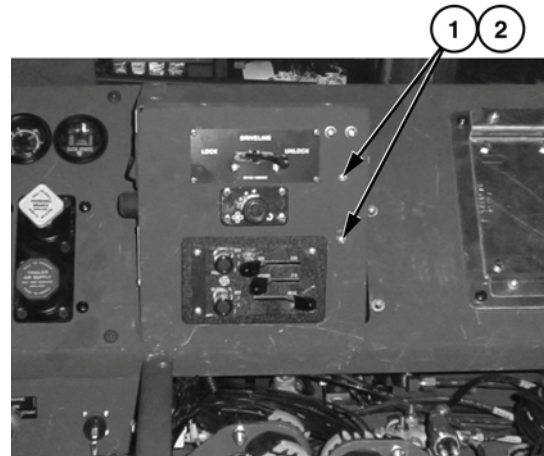


A/C RELAY REPLACEMENT - CONTINUED**0030 00****INSTALLATION**

1. Install red wire (7), red wire (6), orange wire (5), and black wire (4) on relay (3).



2. Install relay (3) with two screws (1) and new locknuts (2).



3. Install dashboard panel (TM 9-2320-360-20).
4. Connect batteries (TM 9-2320-360-20-2).
5. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C THERMOSTATIC SWITCH REPLACEMENT

0031 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

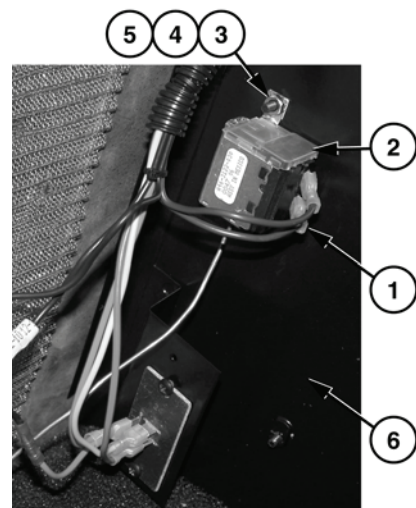
A/C evaporator subsystem removed (WP 0036 00)

A/C blower removed from A/C evaporator sub-system (WP 0022 00)

REMOVAL**NOTE**

- Tag and mark all wires prior to removal.
- Note position of thermostatic switch sensor prior to removal to ensure proper installation.

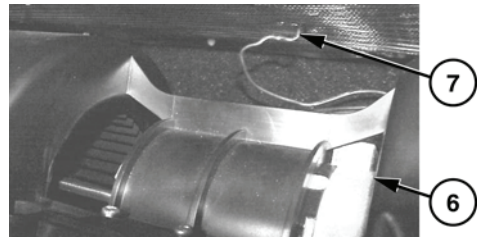
1. Disconnect two brown wires (1) from thermostatic switch (2).
2. Remove two screws (3), lockwashers (4), nuts (5), and thermostatic switch (2) from A/C evaporator (6).



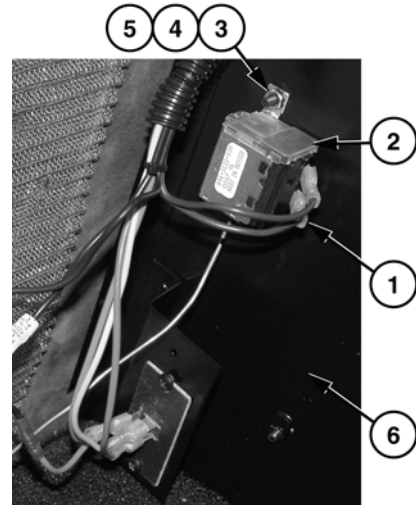
HETF00541

A/C THERMOSTATIC SWITCH REPLACEMENT - CONTINUED**0031 00****REMOVAL - CONTINUED**

3. Remove thermostatic switch sensor (7) from A/C evaporator (6).

**INSTALLATION**

1. Install thermostatic switch sensor (7) in A/C evaporator (6) as noted.
2. Install thermostatic switch (2) on A/C evaporator (6) with two screws (3), lockwashers (4), and nuts (5).
3. Install two brown wires (1) on thermostatic switch (2).



4. Install A/C blower in A/C evaporator subsystem (WP 0022 00).
5. Install A/C evaporator subsystem (WP 0036 00).
6. Connect batteries (TM 9-2320-360-20-2).
7. Close hood (TM 9-2320-360-10).
8. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C ALTERNATOR BRACKET REPLACEMENT

0032 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Wrench, Torque, 0-200 lb-in. (Item 16, WP 0060 00)

Materials/Parts

Adhesive, No. 4500 (Item 1, WP 0061 00)

Detergent, Painted Surface (Item 3, WP 0061 00)

Gloves, Rubber (Item 4, WP 0061 00)

Materials/Parts - Continued

Lockwasher (5) (TM 9-2320-360-24P)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Engine off (TM 9-2320-360-10)

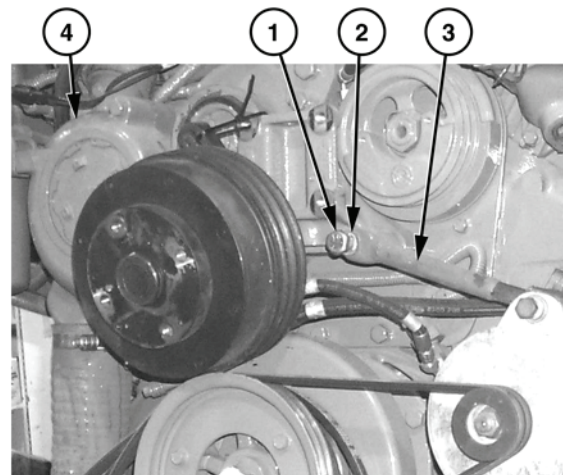
Batteries disconnected (TM 9-2320-360-20-2)

Fan clutch removed (TM 9-2320-360-20-2)

Alternator removed (TM 9-2320-360-20-2)

REMOVAL

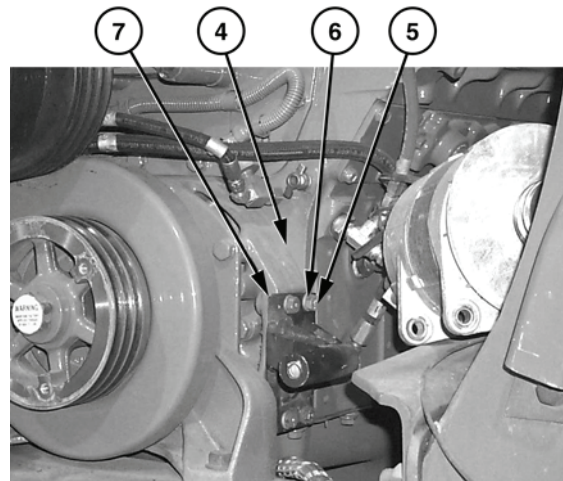
1. Remove screw (1), lockwasher (2), and adjusting bar (3) from engine (4). Discard lockwasher.



HETF00297

A/C ALTERNATOR BRACKET REPLACEMENT - CONTINUED**0032 00****REMOVAL - CONTINUED**

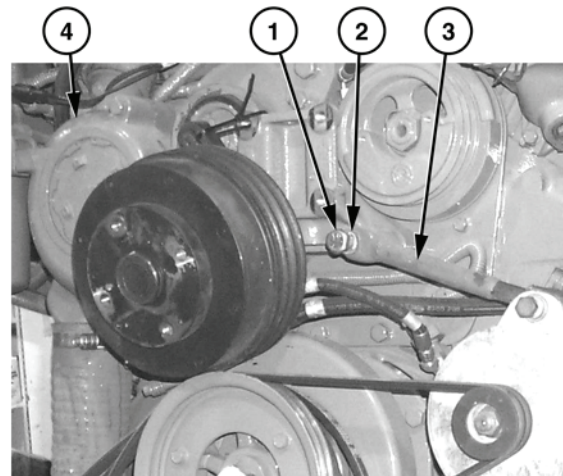
2. Remove four screws (5), lockwashers (6), and bracket (7) from engine (4). Discard lockwashers.



HETF00298

INSTALLATION

1. Install bracket (7) on engine (4) with four screws (5) and new lockwashers (6).
2. Install adjusting bar (3) on engine (4) with screw (1) and new lockwasher (2).



HETF00297

3. Install alternator (TM 9-2320-360-20-2).
4. Install fan clutch (TM 9-2320-360-20-2).
5. Connect batteries (TM 9-2320-360-20-2).
6. Close hood (TM 9-2320-360-10).
7. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C COOLANT HOSE REPLACEMENT	0033 00
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THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Sealing Compound (Item 2, WP 0061 00)

Ties, Plastic (Item 15, WP 0061 00)

Materials/Parts - Continued

Tags, Identification (Item 14, WP 0061 00)

Locknut (2) (TM 9-2320-360-24P)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Right fender removed (TM 9-2320-360-20-2)

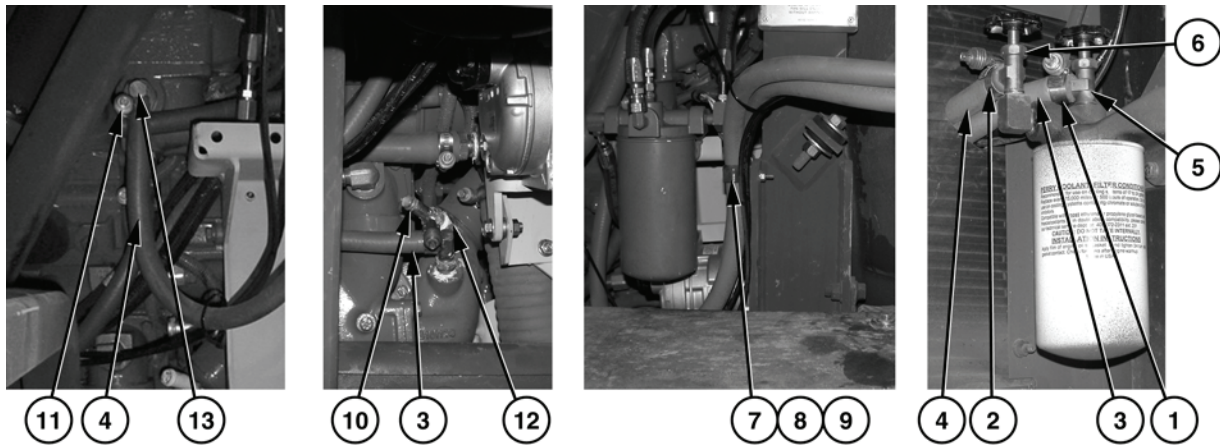
Cooling system drained (TM 9-2320-360-20-2)

NOTE

- Tag and mark all hoses and clamps prior to removal to aid in installation.
- Note location of cable ties before removal.

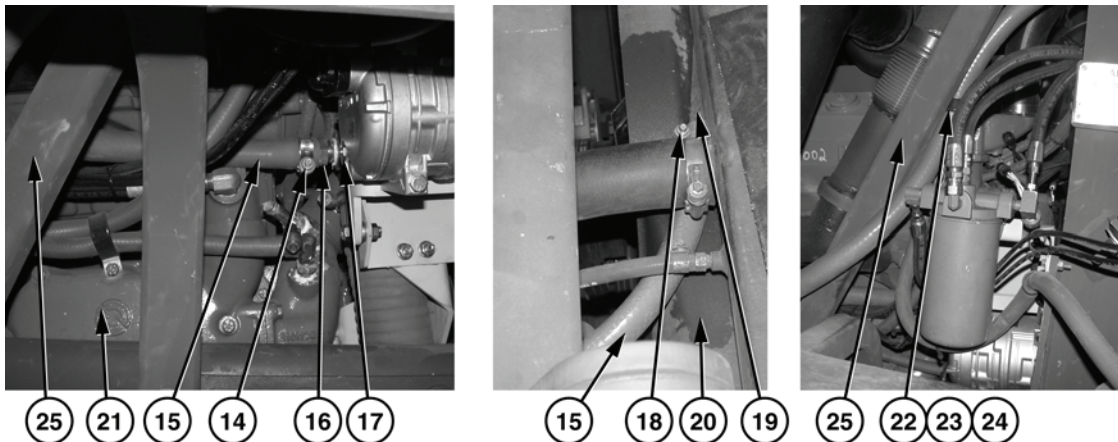
A/C COOLANT HOSE REPLACEMENT - CONTINUED**0033 00****REMOVAL**

1. Remove two hose clamps (1 and 2) from coolant hoses (3 and 4).
2. Remove two coolant hoses (3 and 4) from filter fittings (5 and 6).
3. Remove locknut (7), screw (8), and two cushion clamps (9) from hoses (3 and 4). Discard locknut.
4. Remove two hose clamps (10 and 11) from coolant hoses (3 and 4).
5. Remove two coolant hoses (3 and 4) from fittings (12 and 13).



HETF00518

6. Remove hose clamp (14) and engine coolant hose (15) from straight adapter (16) on oil cooler connection (17).
7. Remove hose clamp (18) and engine coolant hose (15) from fitting (19) at center of radiator (20).
8. Remove straight adapter (16) and fitting (12) from engine (21).
9. Remove locknut (22), screw (23), and cushion clamp (24) from engine coolant hose (15) and frame (25). Discard locknut.
10. Remove engine coolant hose (15) from back of engine (21) around frame (25) and from top of radiator (20).



HETF00520

INSTALLATION**WARNING**

Ensure hoses do not kink or rest on hot surfaces. Failure to follow this warning may cause damage to equipment.

NOTE

- Cut hoses to size as required.
 - Adjust cushion clamp as required for proper hose routing.
1. Position engine coolant hose (15) from back of engine (21) around frame (25) and to top of radiator (20).
 2. Install cushion clamp (24) on engine coolant hose (15) and frame (25) with screw (23) and new locknut (22).

WARNING

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

3. Apply sealing compound to straight adapter (16) and fitting (12).
4. Install straight adapter (16) and fitting (12) on engine (21).
5. Install engine coolant hose (15) on straight adapter (16) of oil cooler connection (17) with hose clamp (14).
6. Install engine coolant hose (15) on fitting (19) at center of radiator (20) with hose clamp (18).
7. Position two coolant hoses (3 and 4) on fittings (12 and 13).
8. Install two hose clamps (10 and 11) on coolant hoses (3 and 4).
9. Install two coolant hoses (3 and 4) on filter fittings (5 and 6).
10. Install two cushion clamps (9) on hoses (3 and 4) with screw (8) and new locknut (7).
11. Install two hose clamps (1 and 2) on coolant hoses (3 and 4).
12. Fill cooling system (TM 9-2320-360-20-2).
13. Install right fender (TM 9-2320-360-20-2).
14. Close hood (TM 9-2320-360-10).
15. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C COMPRESSOR SUBSYSTEM REPLACEMENT

0034 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Cap and Plug Set (Item 2, WP 0060 00)

Materials/Parts

Ties, Plastic (Item 15, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Locknuts (2) (Item 42, Figure 1, WP 0062 00)

Locknuts (2) (Item 58, Figure 1, WP 0062 00)

Locknut (TM 9-2320-360-24P)

Materials/Parts - Continued

#8 O-ring (Item 37, Figure 1, WP 0062 00)

#12 O-ring (Item 115, Figure 1, WP 0062 00)

Personnel Required

Two

Equipment Conditions

Batteries disconnected (TM 9-2320-360-20-2)

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Right fender removed (TM 9-2320-360-20-2)

Secondary fuel filter removed
(TM 9-2320-360-20-2)

WARNING

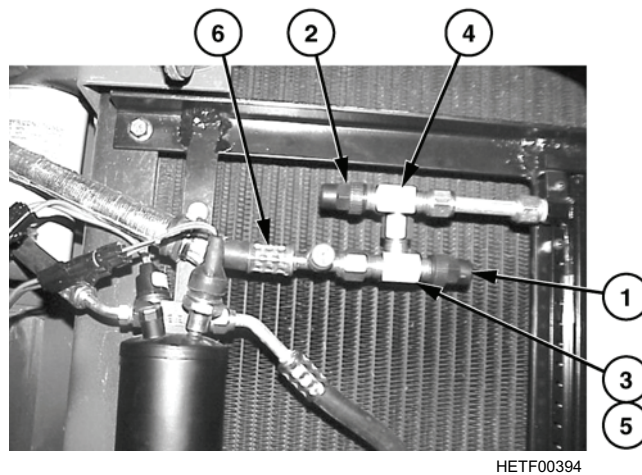
Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Be sure to wear proper eye protection to prevent personal injury. Injury or blindness may result if you come in contact with liquid refrigerant.

CAUTION

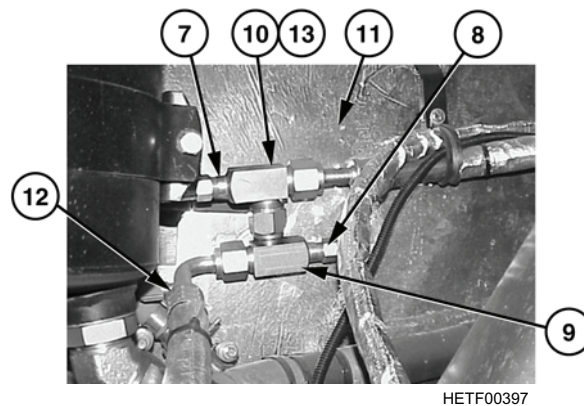
- Do not disconnect hose at receiver/dryer or compressor. Disconnecting hose at receiver/dryer or compressor will cause loss of refrigerant (R-134a). Close and disconnect shut off valves under hood before removing any A/C components.
- System will be charged when removed from vehicle.

REMOVAL**NOTE**

- Disconnect valves are closed by turning handle clockwise.
 - Mark locations and remove cushion clamps and screws, as required.
 - Mark location and cut plastic ties as required.
 - Cap and plug all lines and fittings.
1. Remove two caps (1 and 2) and close two shutoff valves (3 and 4).
 2. Remove shutoff valve (3), #8 O-ring (5), and hose (6) from shutoff valve (4). Discard O-ring.



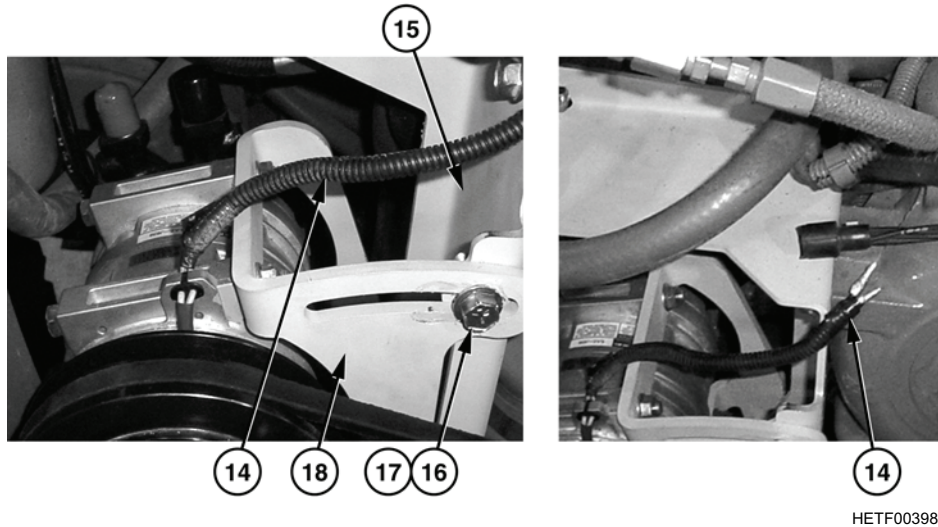
3. Remove two caps (7 and 8) and close two shutoff valves (9 and 10) on firewall (11).
4. Remove shutoff valve (9) and hose (12) from shutoff valve (10) and #12 O-ring (13). Discard O-ring.



REMOVAL - CONTINUED**NOTE**

Tag and mark all wires prior to removal.

5. Disconnect wiring harness (14) from engine (15).
6. Remove locknut (16) and screw (17) from upper support bracket (18). Discard locknut.

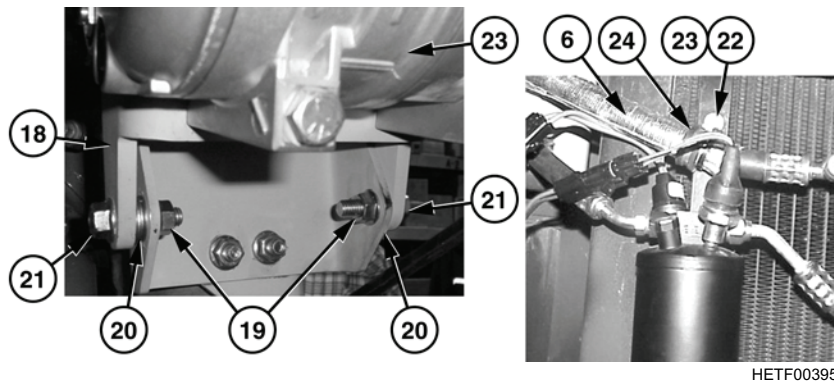
**CAUTION**

Use care not to drop compressor when removing support bracket screws or damage to equipment may result.

NOTE

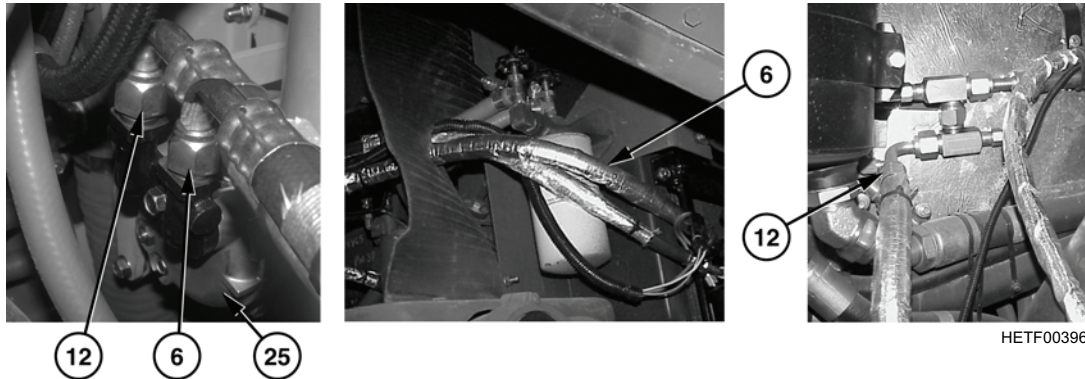
Note quantity and position of shim washers prior to removal to ease installation. Shim washers may be used during installation.

7. Remove two locknuts (19), shim washers (20), and screws (21) from upper support bracket (18). Discard locknuts.
8. Remove locknut (22), screw (23), and cushion clip (24) from hose (6). Discard locknut.



REMOVAL - CONTINUED

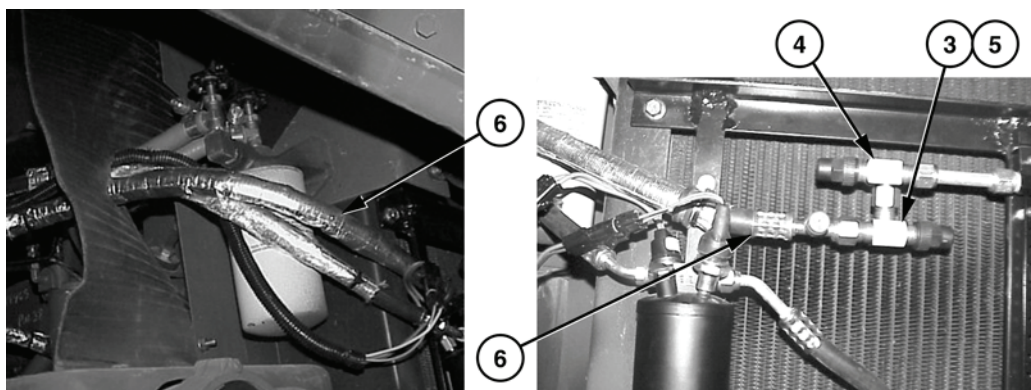
9. Remove compressor (25) and two hoses (6 and 12) from vehicle as an assembly.

**INSTALLATION****CAUTION**

- Do not disconnect hose at receiver/dryer or compressor. Disconnecting hose at receiver/dryer or compressor will cause loss of refrigerant (R-134a). Close and disconnect shut off valves under hood before removing any A/C components.
- System will be charged before installation in vehicle.

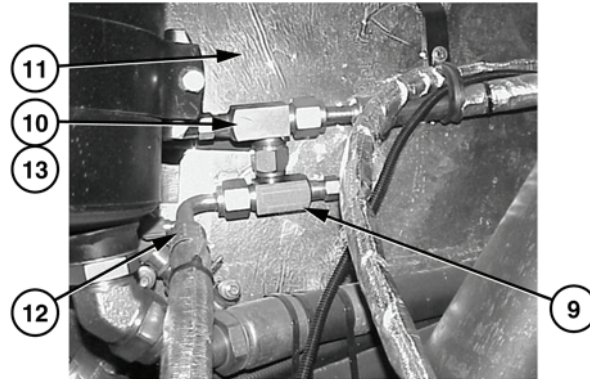
NOTE

- Install cushion clamps and screws as marked during REMOVAL.
 - Install plastic ties as required.
1. Route hose (6) and shutoff valve (3) from compressor to shutoff valve (4).
 2. Lightly coat new #8 O-ring (5) with refrigerant compressor oil.
 3. Install #8 O-ring (5) and shutoff valve (3) to shutoff valve (4).



A/C COMPRESSOR SUBSYSTEM REPLACEMENT - CONTINUED**0034 00****INSTALLATION - CONTINUED**

4. Route hose (12) from compressor to firewall (11).
5. Lightly coat new #12 O-ring (13) with refrigerant compressor oil.
6. Install shutoff valve (9) to shutoff valve (10) and #12 O-ring (13).



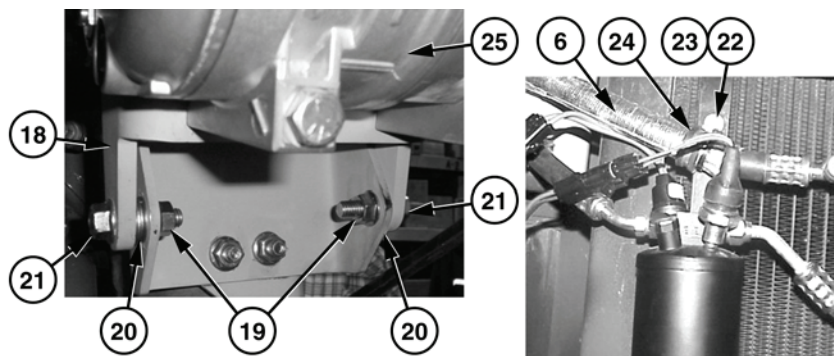
HETF00400

CAUTION

Use care not to drop compressor when installing support bracket screws or damage to equipment may result.

NOTE

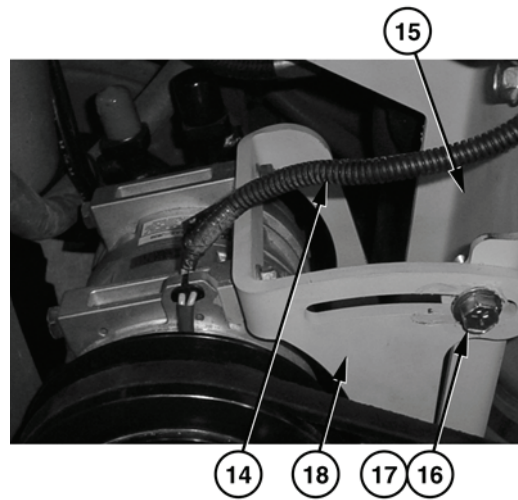
- Hoses shown removed for clarity.
 - Position shims as noted during removal procedure.
7. Install compressor (25) and upper support bracket (18) with two screws (21), shim washers (20), and new locknuts (19).
 8. Install cushion clip (24) on hose (6) with screw (23) and new locknut (22).



HETF00401

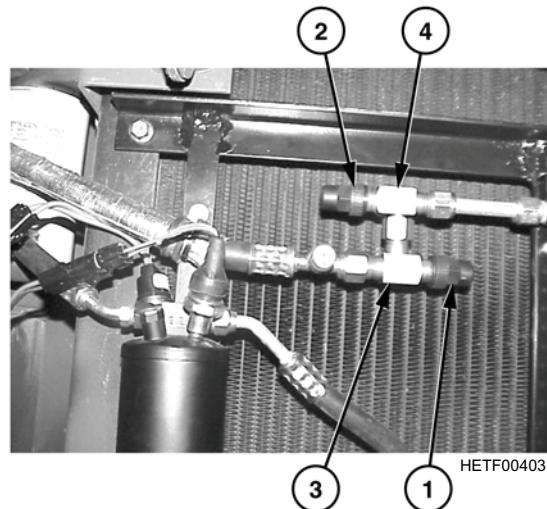
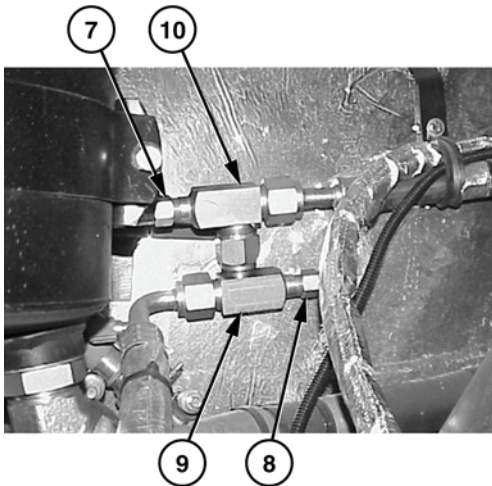
A/C COMPRESSOR SUBSYSTEM REPLACEMENT - CONTINUED**0034 00****INSTALLATION - CONTINUED**

9. Install screw (17) and new locknut (16) on upper support bracket (18).
10. Install wiring harness (14) on engine (15).



HETF00402

11. Open two shutoff valves (3 and 4).
12. Install two caps (1 and 2).
13. Open two shutoff valves (10 and 9).
14. Install two caps (7 and 8).



HETF00403

15. Adjust compressor belt (WP 0037 00).
16. Install secondary fuel filter (TM 9-2320-360-20-2).
17. Leak test system (WP 0038 00).
18. Install right fender (TM 9-2320-360-20-2).
19. Close hood (TM 9-2320-360-10).
20. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C CONDENSER SUBSYSTEM REPLACEMENT	0035 00
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THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Cap and Plug Set (Item 2, WP 0060 00)

Materials/Parts

Locknut (4) (Item 16, Figure 1, WP 0062 00)

Locknut (Item 42, Figure 1, WP 0062 00)

#8 O-ring (Item 37, Figure 1, WP 0062 00)

Materials/Parts - Continued

#6 O-ring (Item 27, Figure 1, WP 0062 00)

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10).

Hood opened (TM 9-2320-360-10).

Right fender removed (TM 9-2320-360-20-2).

A/C CONDENSER SUBSYSTEM REPLACEMENT - CONTINUED**0035 00****REMOVAL****CAUTION**

- Do not disconnect hoses at receiver/dryer. Disconnecting hose at receiver/dryer will cause loss of refrigerant (R-134a). Close and disconnect shutoff valves under hood before removing any A/C components.
- System will be charged when removed from vehicle.

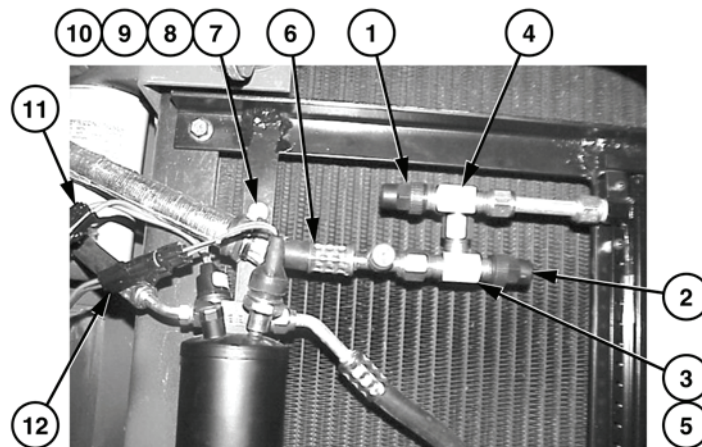
NOTE

- Mark location and cut plastic ties as required.
 - Cap and plug all lines and fittings.
1. Remove two caps (1 and 2) and close two shutoff valves (3 and 4).
 2. Remove shutoff valve (3), #8 O-ring (5), and hose (6) from shutoff valve (4). Discard O-ring.
 3. Remove screw (7), washer (8), locknut (9), and cushion clamp (10). Discard locknut.

NOTE

Tag and mark all wires prior to removal.

4. Disconnect A/C binary switch connector (11).
5. Disconnect A/C high pressure switch connector (12).



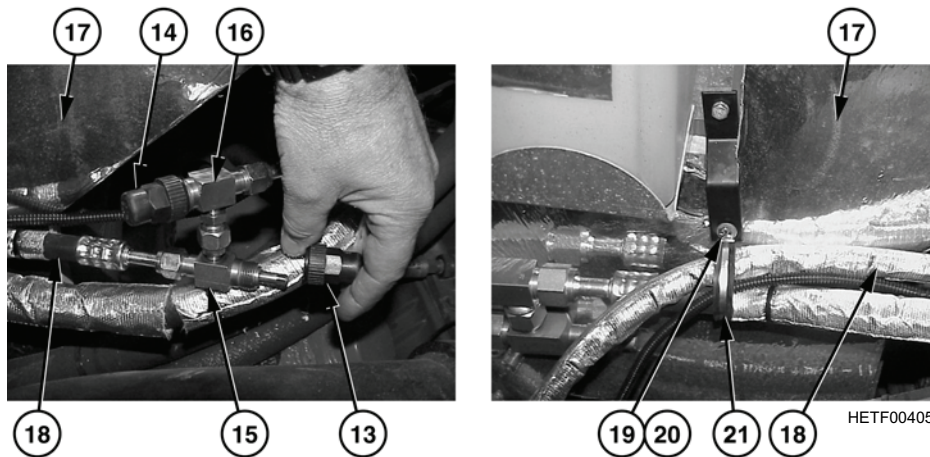
HETF00404

A/C CONDENSER SUBSYSTEM REPLACEMENT - CONTINUED**0035 00****REMOVAL - CONTINUED**

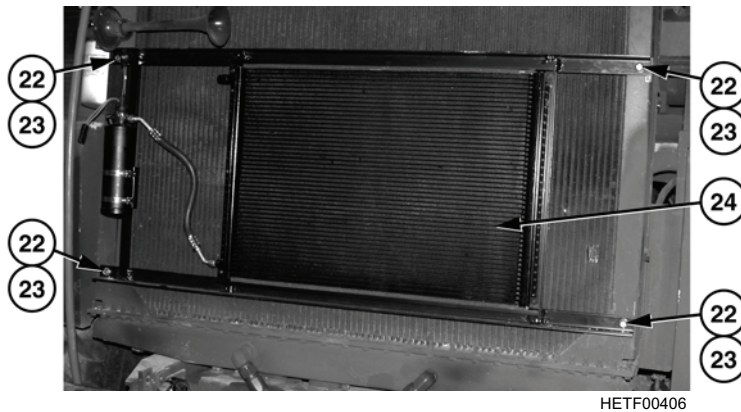
6. Remove two caps (13 and 14) and close two shutoff valves (15 and 16) on firewall (17).
7. Remove shutoff valve (15), #6 O-ring (18), and hose (19) from shutoff valve (16). Discard O-ring.
8. Remove screw (19), washer (20), and cushion clamp (21) from firewall (17).

NOTE

Hood shown removed for clarity.

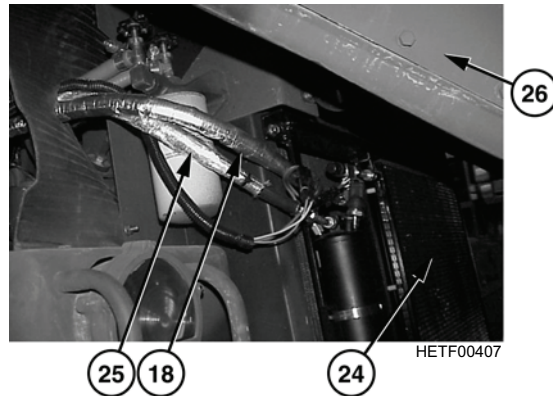


9. Remove four screws (22) and locknuts (23) from condenser assembly (24). Discard locknuts.



A/C CONDENSER SUBSYSTEM REPLACEMENT - CONTINUED**0035 00****REMOVAL - CONTINUED**

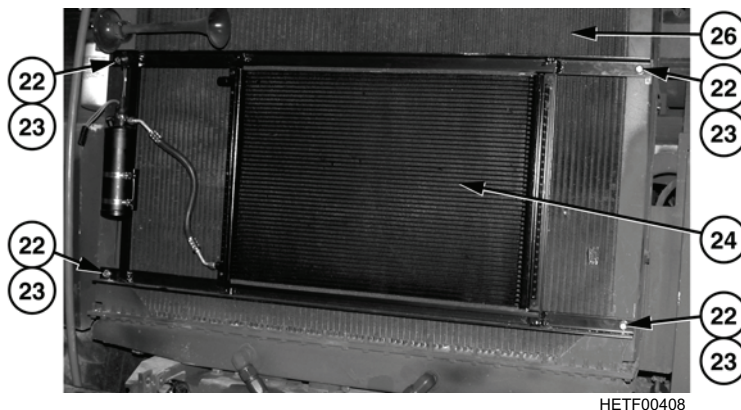
10. Remove hose (18) from condenser assembly (24).
11. Remove hose (25) and condenser assembly (24) from vehicle (26).

**INSTALLATION****CAUTION**

- Do not disconnect hoses at receiver/dryer. Disconnecting hose at receiver/dryer will cause loss of refrigerant (R-134a). Close and disconnect shutoff valves under hood before removing any A/C components.
- System will be charged when installed on vehicle.

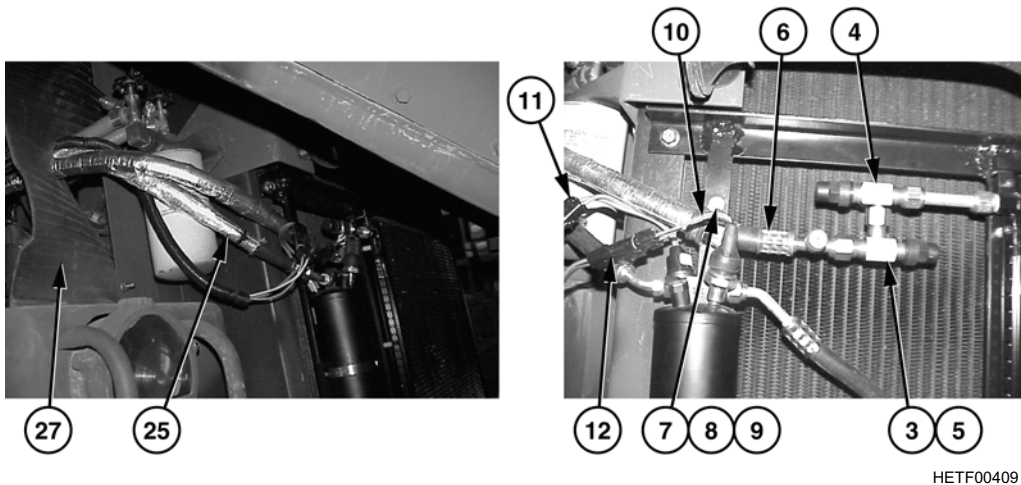
NOTE

- Hood shown removed for clarity.
 - Install plastic cable as required.
1. Install condenser assembly (24) on vehicle (26) with four screws (22) and new locknuts (23).

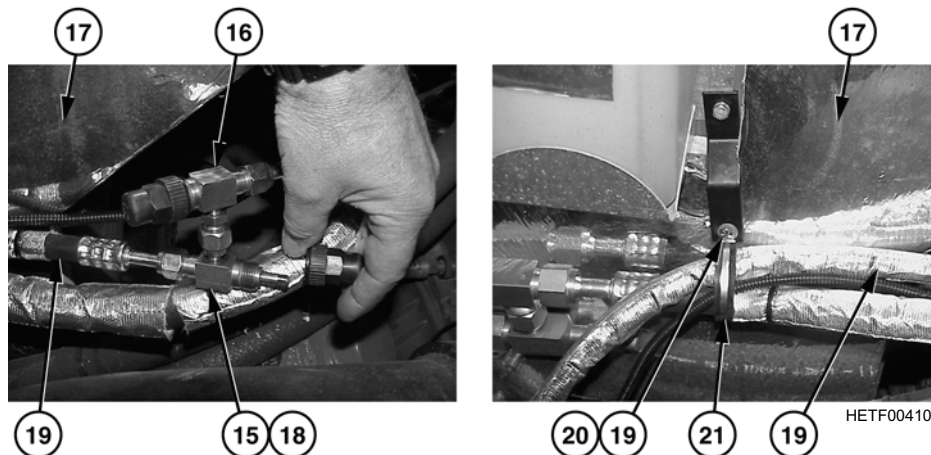


A/C CONDENSER SUBSYSTEM REPLACEMENT - CONTINUED**0035 00****INSTALLATION - CONTINUED**

2. Route hose (25) through radiator baffle (27).
3. Lightly coat new #8 O-ring (5) with refrigerant compressor oil.
4. Install shutoff valve (3) and #8 O-ring (5) to shutoff valve (4).
5. Install cushion clamp (10) with screw (7), washer (8), and new locknut (9) on hose (6).
6. Connect A/C binary switch connector (11).
7. Connect A/C high pressure switch connector (12).
8. Lightly coat new #6 O-ring (18) with refrigerant compressor oil.

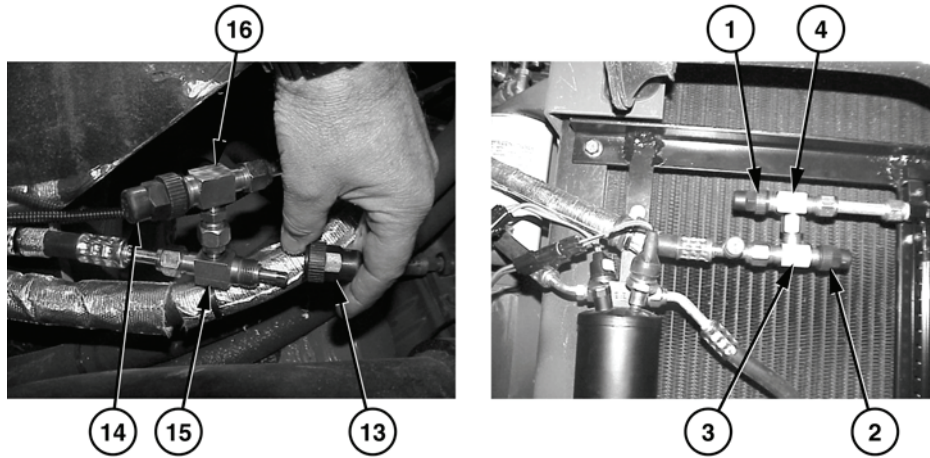


9. Install shutoff valve (15) and #6 O-ring (18) to shutoff valve (16).
10. Install cushion clamp (21) on firewall (17) with screw (19) and washer (20).



A/C CONDENSER SUBSYSTEM REPLACEMENT - CONTINUED**0035 00****INSTALLATION - CONTINUED**

11. Open four shutoff valves (3, 4, 15, and 16).
12. Install four caps (1, 2, 13, and 14) to four shutoff valves (3, 4, 15, and 16).



HETF00411

13. Perform leak test inspection (WP 0038 00).
14. Install right fender (TM 9-2320-360-20-2).
15. Close hood (TM 9-2320-360-10).
16. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C EVAPORATOR SUBSYSTEM REPLACEMENT

0036 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Personnel Required

Two

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Cap and Plug Set (Item 2, WP 0060 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

Hood opened (TM 9-2320-360-10)

Doghouse door removed (WP 0028 00)

Alternator access panel removed (TM 9-2320-360-20-2)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

#6 O-ring (Item 27, Figure 1, WP 0062 00)

#12 O-ring (Item 115, Figure 1, WP 0062 00)

REMOVAL**WARNING**

Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Be sure to wear proper eye protection to prevent personal injury. Injury or blindness may result if you come in contact with liquid refrigerant.

CAUTION

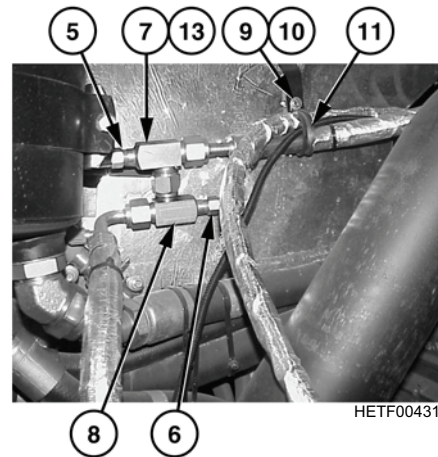
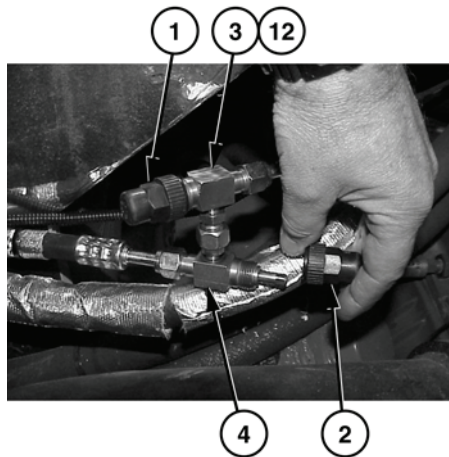
Do not disconnect hoses at evaporator coil. Disconnecting hoses at evaporator coil will cause loss of refrigerant (R-134a). Close and disconnect shutoff valves under hood before removing any A/C components.

NOTE

- Shutoff valves are closed by turning clockwise.
- Cap and plug all lines and fittings.

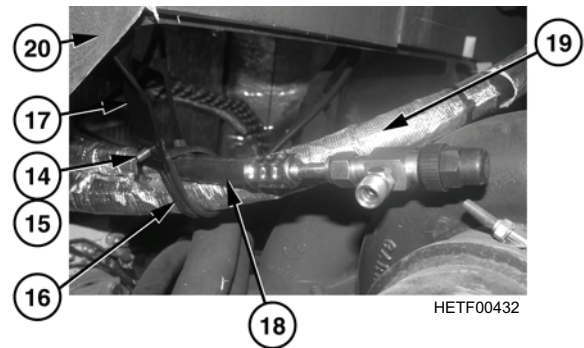
A/C EVAPORATOR SUBSYSTEM REPLACEMENT - CONTINUED**0036 00****REMOVAL - CONTINUED**

1. Remove two caps (1 and 2) and close shutoff valves (3 and 4).
2. Remove two caps (5 and 6) and close shutoff valves (7 and 8).
3. Remove screw (9), washer (10) and cushion clamp (11).
4. Remove shutoff valve (3) and #6 O-ring (12) from shutoff valve (4). Discard O-rings.
5. Remove shutoff valve (7) and #12 O-ring (13) from shutoff valve (8). Discard O-rings.



HETF00431

6. Remove screw (14), washer (15), and cushion clamp (16) from firewall bracket (17).
7. Remove two hoses (18 and 19) from firewall (20).



HETF00432

REMOVAL - CONTINUED**CAUTION**

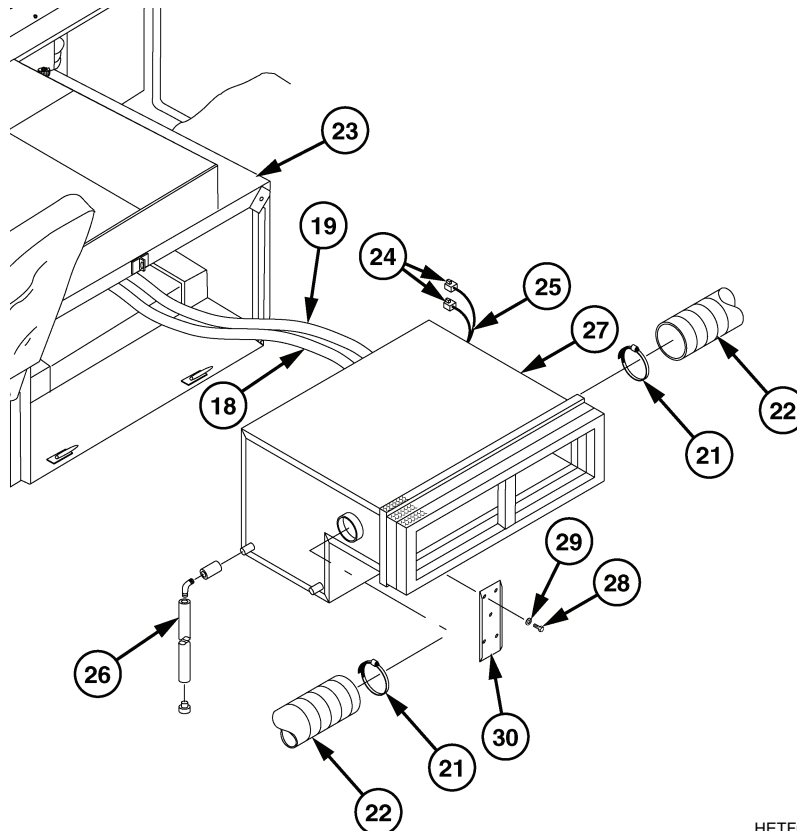
Keep all non-connected ports on valves clean and capped during removal, or damage to equipment may result.

8. Loosen two clamps (21) from A/C louver ducts (22) and place to side of doghouse compartment (23).
9. Disconnect two plugs (24) from A/C evaporator wiring harness (25).
10. Disconnect four drain tubes (26) from A/C evaporator (27).
11. Remove 10 screws (28), washers (29) and two mounting brackets (30) from A/C evaporator (27) and doghouse compartment (23).

CAUTION

When removing the evaporator, pull the hoses through the grommet at intervals. Use the alternator access opening during the removal process to prevent the hoses from becoming lodged in doghouse and damaging evaporator connections.

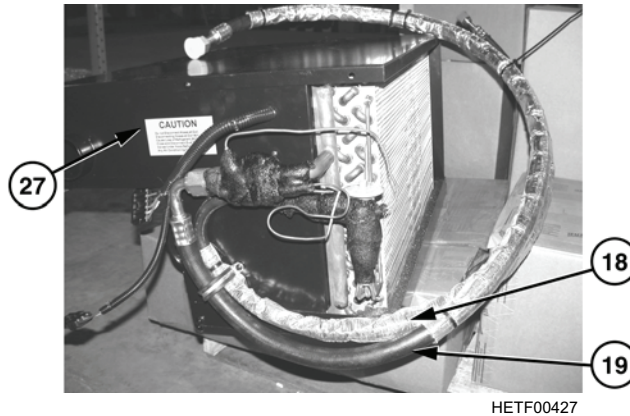
12. With the aid of an assistant, remove two hoses (18 and 19) backwards through right-side alternator access hole.



HETF00426

A/C EVAPORATOR SUBSYSTEM REPLACEMENT - CONTINUED**0036 00****REMOVAL - CONTINUED**

13. Remove A/C evaporator (27) and two hoses (18 and 19) from doghouse compartment (23).
14. Place A/C evaporator (27) on rear seat frame of the truck.
15. Remove A/C evaporator (27) from cab with the aid of an assistant.

**INSTALLATION****CAUTION**

Do not disconnect hoses at evaporator coil. Disconnecting hoses at evaporator coil will cause loss of refrigerant (R-134a). Close and disconnect shutoff valves under hood before removing any A/C components.

NOTE

- Keep all nonconnected ports on valves clean and capped during installation.
 - The plastic elbows must be oriented to have the open end toward the floor.
1. Position A/C evaporator (27) in cab with the aid of an assistant.

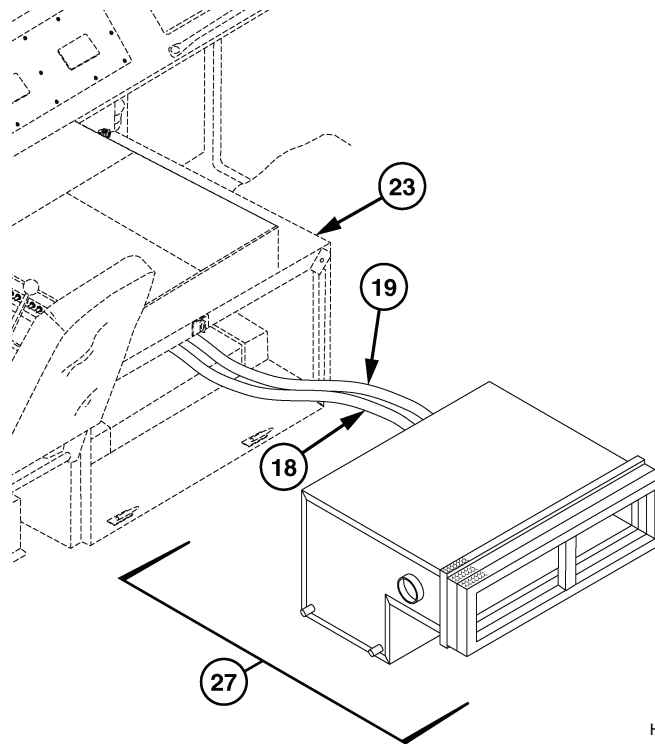
A/C EVAPORATOR SUBSYSTEM REPLACEMENT - CONTINUED**0036 00****INSTALLATION - CONTINUED**

2. Position A/C evaporator (27) and two hoses (18 and 19) on rear seat frame of truck.

CAUTION

When installing evaporator, pull hoses through the grommet at intervals. Use alternator access opening during installation process to prevent hoses from becoming lodged in doghouse and damaging evaporator connections.

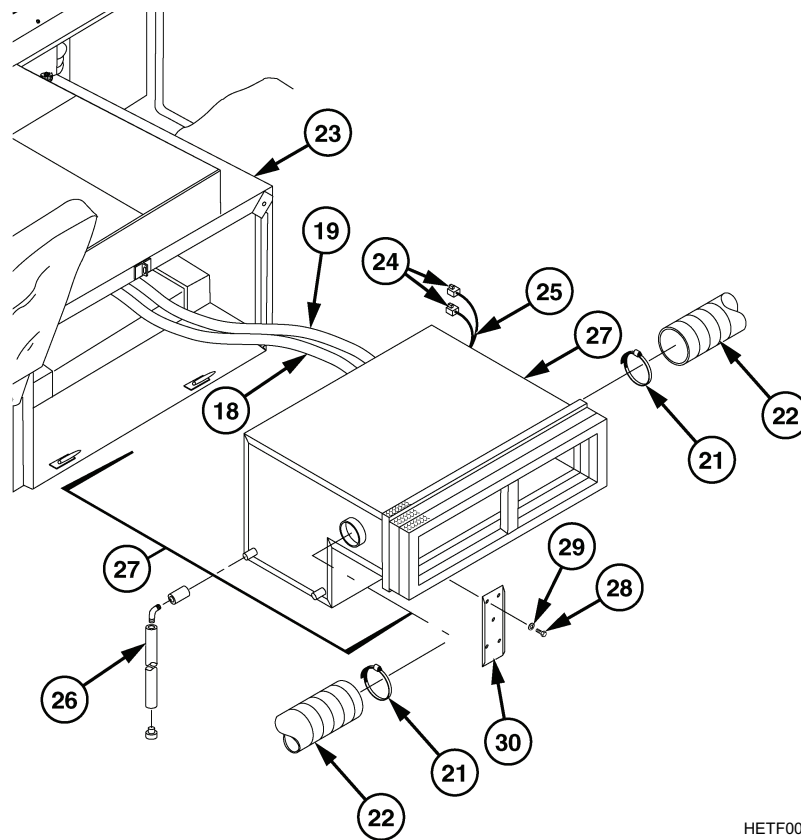
3. Insert hoses (18 and 19) through grommet in forward doghouse panel.
4. Tilt A/C evaporator (27) back slightly and slide assembly in doghouse compartment (23) until base is even with the edge of step in floor of doghouse compartment (23).
5. Pull two hoses (18 and 19) forward through grommet.
6. Pull two hoses (18 and 19) to firewall.



HETF00473

A/C EVAPORATOR SUBSYSTEM REPLACEMENT - CONTINUED**0036 00****INSTALLATION - CONTINUED**

7. Position A/C evaporator (27) in doghouse compartment (23).
8. Install four drain tubes (26).
9. Connect two plugs (24) of A/C evaporator wiring harness (25).
10. Align two mounting brackets (30) on A/C evaporator (27) with four screws (28) and washers (29).
11. Install six screws (28) and washers (29) to secure A/C evaporator (27) to floor of doghouse compartment (23). Tighten 10 screws (28).
12. Connect two louver ducts (22) to A/C evaporator (27) with two clamps (21).
13. Install alternator access panel (TM 9-2320-360-20-2).



HETF00428

A/C COMPRESSOR BELT ADJUSTMENT/REPLACEMENT

0037 00

THIS WORK PACKAGE COVERS

Removal, Installation, Adjustment

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

- Tool Kit, General Mechanic (Item 12, WP 0060 00)
- Gage, Belt Tension (Item 3, WP 0060 00)
- Mirror, Inspection (Item 5, WP 0060 00)

References

TM 9-2320-360-24P

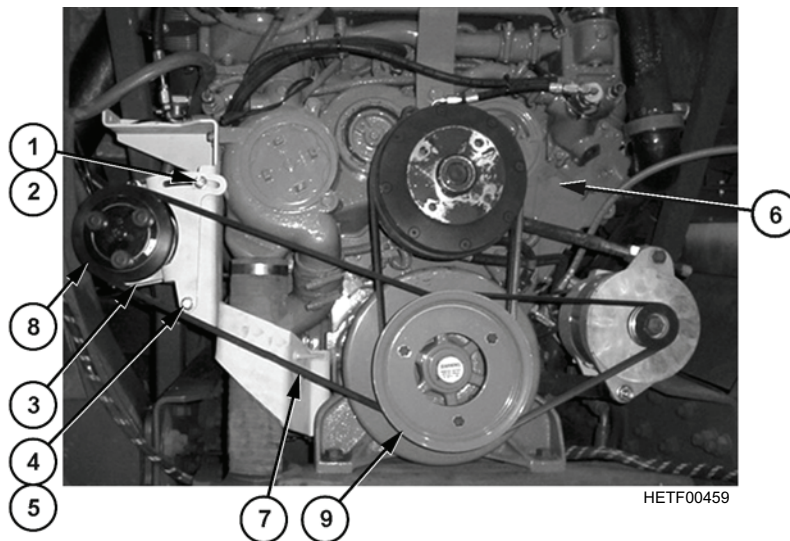
Equipment Conditions

- Front wheels turned in full right position (TM 9-2320-360-10).
- Wheels chocked (TM 9-2320-360-10).
- Hood opened (TM 9-2320-360-10).
- Engine off (TM 9-2320-360-10).
- Alternator belts removed (TM 9-2320-360-20-2).

REMOVAL**NOTE**

Radiator and fan shown removed for clarity.

1. Loosen screw (1) and locknut (2) on top of compressor (3).
2. Loosen two locknuts (4) and screws (5) to pivot compressor (3) toward engine (6).
3. Remove belt (7) from compressor pulley (8) and engine pulley (9).

**INSTALLATION**

1. Position belt (7) on compressor pulley (8) and engine pulley (9).
2. Pivot compressor (3) away from engine (6).

ADJUSTMENT**NOTE**

- New compressor belt will be tightened to 98 lb (436 N).
- Used compressor belt will be tightened to 85 lb (378 N).

1. Position belt tension gage on belt (7) midway between compressor pulley (8) and engine pulley (9).
2. Adjust tension on belt, and tighten screw (1) and locknut (2).
3. Tighten two locknuts (4) and screws (5) under compressor (3).
4. Remove belt tension gage from belt (7).
5. Install alternator belts (TM 9-2320-360-20-2).
6. Close hood (TM 9-2320-360-10).
7. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C LEAK TEST

0038 00**THIS WORK PACKAGE COVERS**Inspection, Test

INITIAL SETUP**Maintenance Level**

Unit Maintenance

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Detector, Leak (Item 8, WP 0060 00)

INSPECTION**WARNING**

- Use care to prevent refrigerant from touching your skin or eyes; wear protective goggles and nonleather gloves when servicing Air Conditioning systems. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

NOTE

- Refrigerant is odorless. As a result, all of it may leak away and not be noticed until system stops cooling. All vehicle refrigerant systems lose some refrigerant depending on condition of system. Higher loss rates signal a need to locate and repair leaks.
 - Leaks are most often found at compressor hose connections and at various fittings and joints in system. If unapproved replacement hoses are installed, refrigerant can be lost through hose permeation.
1. Visually inspect refrigerant system for A/C lubricant leakage and corrosion and damage to lines, hoses, and other components.
 2. Visually inspect lowest points of fittings, hoses, and lines for indication of lubricant leakage.

TEST

Use a leak detector in accordance with manufacturer's instruction manual and check for refrigerant leakage at hose connections, fittings, and areas where leakage might occur. If leaks are indicated, notify Direct Support Maintenance of leak in A/C system.

END OF WORK PACKAGE

STOWAGE BOX REPLACEMENT	0039 00
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THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Locknut (9) (Item 140, Figure 1, WP 0062 00)

Locknut (3) (Item 142, Figure 1, WP 0062 00)

Materials/Parts - Continued

Lockwasher (Item 150, Figure 1, WP 0062 00)

Lockwasher (2) (Item 149, Figure 1, WP 0062 00)

Personnel Required

Two

Equipment Conditions

Personnel ladder removed (TM 9-2320-360-10)

Wheels chocked (TM 9-2320-360-10)

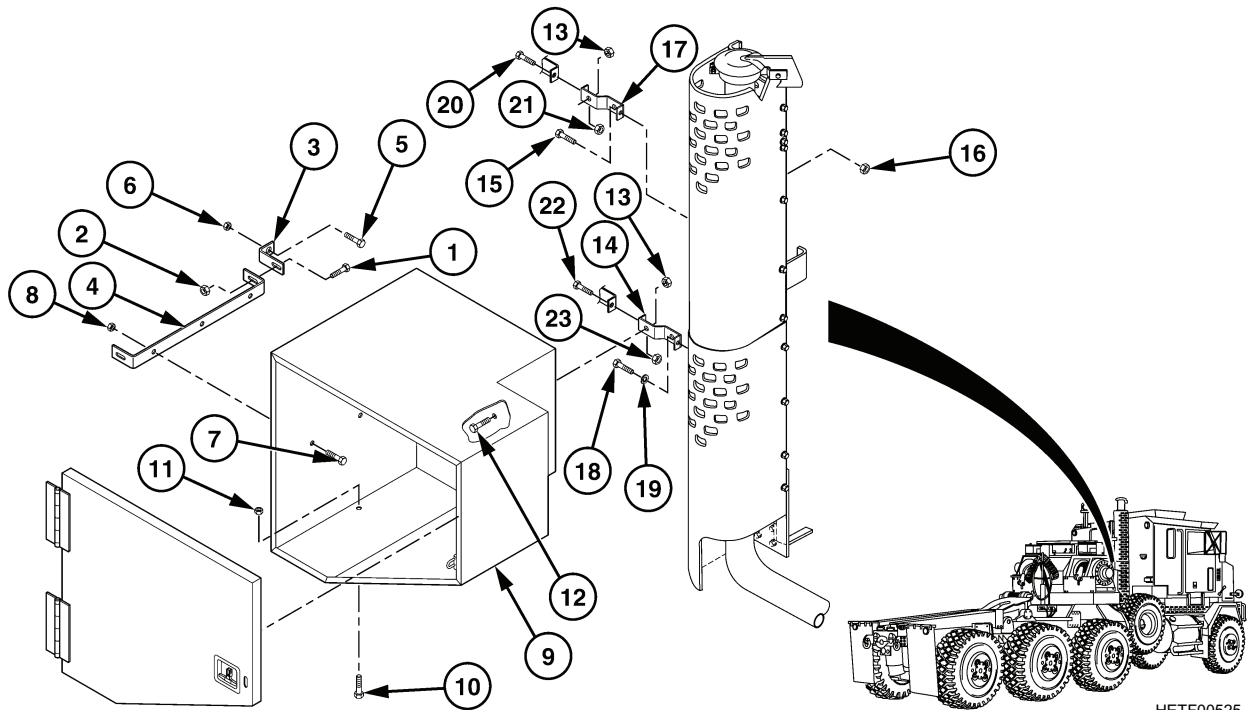
STOWAGE BOX REPLACEMENT - CONTINUED**0039 00****REMOVAL**

1. Remove two screws (1) and locknuts (2) from two winch brackets (3) and support bracket (4). Discard locknuts.
2. Remove two screws (5) and locknuts (6) from two winch brackets (3) and winch. Discard locknuts.
3. Remove three screws (7) and locknuts (8) from support bracket (4) and stowage box (9). Discard locknuts.
4. Remove three screws (10) and locknuts (11) from floor. Discard locknuts.

NOTE

In the following step, use lockwashers if locknuts are not provided in A/C kit.

5. Remove screw (12) and locknut (13) from bottom ladder extension (14). Discard locknut.
6. Using suitable lifting device, remove stowage box (9).
7. Remove screw (15) and locknut (16) from top ladder extension (17). Discard locknut.
8. Remove screw (18) and lockwasher (19) from bottom ladder extension (14). Discard lockwasher.
9. Remove screw (20) and locknut (21) from top ladder extension (17). Discard locknut.
10. Remove screw (22) and locknut (23) from bottom ladder extension (14). Discard locknut.



HETF00525

INSTALLATION

1. Install screw (18) and new lockwasher (19) into bottom ladder extension (14).
2. Install screw (15) and new locknut (16) into top ladder extension (17).
3. Install screw (22) and new locknut (23) into bottom ladder extension (14).
4. Install screw (20) and new locknut (21) into top ladder extension (17).
5. Use a suitable lifting device to place stowage box (9) in position.

STOWAGE BOX REPLACEMENT - CONTINUED

0039 00**INSTALLATION - CONTINUED**

6. Install screw (12) and new locknut (13) into bottom ladder extension (14). Do not tighten.
7. Install three screws (10) and three new locknuts (11) into floor. Do not tighten.
8. Install three screws (7) and three new locknuts (8) into support bracket (4) and stowage box (9). Do not tighten.

NOTE

Winch not shown.

9. Install two screws (5) and new locknuts (6) in two winch brackets (3) and winch. Do not tighten.
10. Install two screws (1) and new locknuts (2) in two winch brackets (3). Do not tighten.
11. Align stowage box (9) and tighten locknuts (6 and 2).
12. Install personnel ladder (TM 9-2320-360-10).
13. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

FUEL LINE EXTENSIONS REPLACEMENT

0040 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Unit Maintenance

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Ties, Plastic (Item 15, WP 0061 00)

Materials/Parts - Continued

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

Hood opened (TM 9-2320-360-10)

REMOVAL

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

NOTE

- Cut plastic ties as required.
- Tag and mark all fuel lines prior to removal.

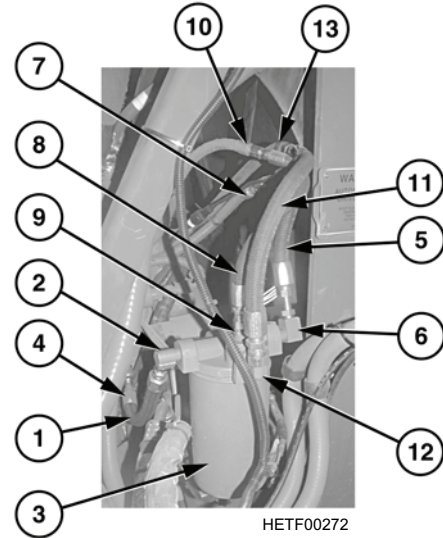
FUEL LINE EXTENSIONS REPLACEMENT - CONTINUED**0040 00****REMOVAL - CONTINUED**

1. Remove fuel line extension (1) from fitting (2) on secondary fuel filter (3) and fuel line (4).
2. Remove fuel line extension (5) from fitting (6) on secondary fuel filter (3) and fuel line (7).
3. Remove fuel line extension (8) from fitting (9) on secondary fuel filter (3) and fuel line (10).

NOTE

If replacing ECM fuel line extension on DDEC II engines, do not discard fuel line extension. Fitting to secondary fuel filter ECM port will be used during fuel line extensions replacement installation.

4. Remove fuel line extension (11) from fitting (12) on secondary fuel filter (3) and fuel line (13).

**INSTALLATION**

1. Install fuel line extension (1) on fitting (2) on secondary fuel filter (3) and fuel line (4).
2. Install fuel line extension (5) on fitting (6) on secondary fuel filter (3) and fuel line (4).
3. Install fuel line extension (8) on fitting (9) on secondary fuel filter (3) and fuel line (10).

NOTE

If replacing ECM fuel line extension on DDEC II engines, hose fitting to secondary fuel filter ECM port must be replaced with one from original fuel line extension.

4. Install fuel line extension (11) on fitting (12) on secondary fuel filter (3) and fuel line (13).
5. Connect batteries (TM 9-2320-360-20-2).
6. Start engine (TM 9-2320-360-10).
7. Check fuel lines for leaks.
8. Shut off engine (TM 9-2320-360-10).
9. Close hood (TM 9-2320-360-10).
10. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

CHAPTER 8
DIRECT SUPPORT TROUBLESHOOTING

DIRECT SUPPORT TROUBLESHOOTING INTRODUCTION**0041 00**

This chapter contains step-by-step procedures for identifying, locating, isolating, and repairing the HET Tractor A/C system equipment malfunctions.

This technical bulletin 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 the supervisor.

a. **Page Layout.** Troubleshooting procedures are divided into logic tree pages and test pages.

- (1) A logic tree page is always a left-hand page, facing the test page on the right. The logic tree page provides the sequence of steps required to isolate a fault to a failed component. All critical information for decision making is on the left-hand page. Each logic tree page contains the following information:
 - (a) **INITIAL SETUP** – This box is located only on the first logic tree page of a fault. INITIAL SETUP lists tools, materials, references, personnel, and equipment needed to troubleshoot the fault.
 - (b) **KNOWN INFO** – This box is located in the top left-hand column. KNOWN INFO lists conditions and information that will eliminate specific components as the cause of the fault.
 - (c) **POSSIBLE PROBLEMS** – This box is located directly below KNOWN INFO. All of the system components that could cause a fault are listed in the POSSIBLE PROBLEMS box. The first component listed in the POSSIBLE PROBLEMS box is the one that will be tested at that step in the logic sequence. When one of the components is tested and found to be operational, it is entered at the bottom of the KNOWN INFO box as OK.
 - (d) **QUESTION** – Each question, located in the middle column, refers to the first possible problem listed in POSSIBLE PROBLEMS. If the answer to the question is YES, proceed to the next step. If the answer is NO, follow the NO arrow to obtain directions for correcting the problem. If the step contains a warning or caution message, a small shadow box is printed above the question. Text for warnings and cautions is on the following right-hand page.
 - (e) **TEST OPTIONS** – This box is located in the top right-hand column. TEST OPTIONS lists tests available for testing parts suspected of failing.
 - (f) **REASON FOR QUESTION** – This box is located directly below TEST OPTIONS. It explains the purpose for the question in the middle column.
- (2) A test page is always a right-hand page, facing the logic tree page on the left. The test provides detailed instructions for testing the first component listed in the POSSIBLE PROBLEMS box. This test will also provide an answer for the question in the middle column. Note the arrow connecting the test on the right-hand page to the REASON FOR QUESTION. When possible, illustrations are included to provide visual details. Warnings, cautions, and notes contain additional information for testing.

b. **How to Begin Troubleshooting.**

- (1) Determine the symptom or condition that indicates a problem or failure. Troubleshooting is divided into symptoms peculiar to a component, for example: A/C compressor or A/C condenser.
- (2) Open the technical bulletin flat so both the left-hand and right-hand pages are displayed before you. The information on both pages is important to resolve the problem or failure. However, the experienced technician can follow the left-hand page instructions and refer to the right-hand page when necessary.
- (3) Follow the Diagnostic Procedure. Answer question no. 1 on the left-hand page and follow the YES or NO path to either the remedy or the next question. If necessary, look on the right-hand page for test instructions and illustrations.
- (4) Observe warnings, cautions, and notes. The formatting and symbols used in this manual for warnings, cautions, and notes are as follows:

WARNING

This is the symbol for a warning statement. If you see the word WARNING above a question on the left-hand page, look on the right-hand page for the text of the message. WARNINGS describe a situation which could cause severe injury or death to personnel.

CAUTION

This is the symbol for a caution statement. If you see the word CAUTION above a question on the left-hand page, look on the right-hand page for the text of the message. CAUTIONS describe a situation which could cause damage to equipment.

NOTE

This is the symbol for a note. Notes are located directly above the test to which they refer. NOTES provide additional information for performing a test.

c. **Measurements Required for Troubleshooting.**

CAUTION

Use proper sized multimeter test leads and ensure care is used when checking for resistance, continuity, or voltage at connectors or damage to equipment can result.

- (1) Resistance measurements.
 - (a) Connect red test lead to Volt-Ohm input connector and black lead to COM input connector on meter.
 - (b) Set the function/range switch to the desired ohm position. If the magnitude of the resistance is not known, set the switch to the highest range, then reduce until a satisfactory reading is obtained.
 - (c) If the resistance being measured is connected to a circuit, turn ENGINE switch OFF.
 - (d) Connect test leads to the circuit being measured. When measuring high resistance, be careful not to contact adjacent points, even if they are insulated. Some insulators have a relatively low insulation resistance which can affect the resulting measurement.
 - (e) Read the resistance value on the digital display.
- (2) Continuity checks.
 - (a) Place the function/range switch in any ohm range.

NOTE

Some meters show "l+m", or simply "l" when function/range switch is in any ohm position.

- (b) Connect the red test lead to the Volt-Ohm input connector and black lead to COM input connector on the meter. When the test leads are separated or measuring an out-of-range resistance, the digital display will indicate "OL" (Over Limit).
- (c) Put one test probe at one end of the wire or circuit to be tested. Use the other test lead to trace the circuit. When continuity is established, an ohm symbol will appear in the upper left corner of the digital display. If contact in the wire is maintained long enough (about 1/4 of a second), the OL will disappear and the resistance value of the wire or circuit will appear next to the symbol.
- (d) IF your multimeter does not work in this manner, learn how it operates before performing troubleshooting.

- (3) Voltage measurements. The HET Tractor is equipped with both 12 vdc and 24 vdc circuits. Troubleshooting procedures will reference 12 vdc and 24 vdc measurements, however these values can vary. When the batteries are fully charged, 12.6 vdc can be measured on an open 12 volt circuit and 14.5 vdc can be measured when the engine is running at 1000 rpm. When the batteries are fully charged, 25.2 vdc can be measured on an open 24 volt circuit and 29 vdc can be measured when the engine is running at 1000 rpm.
 - (a) Connect the red test lead to the Volt-Ohm input connector and the black lead to the COM input on the meter. If a DC-AC switch is present, make sure it is set to the DC position.
 - (b) Set the function/range switch to the desired volts position. If the magnitude of the voltage is not known, set the switch to a range which will be able to read most voltages seen on the truck (typically, a 200-volt range will do). Then reduce the range until a satisfactory reading is obtained.
 - (c) Connect the test leads to the circuit being measured. Following the voltage measurement point, the color test lead tube used is given in parentheses (red is Volt-Ohm connection and black is the COM connection).
- (4) A/C system performance checks. Troubleshooting procedure for the HET Tractor includes system performance checks. A properly functioning A/C system will have the following characteristics:
 - (a) The A/C control switch is set to the desired A/C blower speed position (low, medium, or high).
 - (b) The A/C compressor clutch engages and cycles with A/C evaporator temperature.
 - (c) The A/C compressor suction line is cool.
 - (d) The A/C compressor discharge line is hot.
 - (e) The A/C condenser is hot/warm.
 - (f) The A/C hose between the A/C condenser and A/C receiver/dryer is warm.
 - (g) The A/C receiver/dryer is warm.
 - (h) The A/C binary switch is closed.
 - (i) The inlet to the A/C expansion valve is warm.
 - (j) The A/C evaporator is cold.
 - (k) Condensation water may drain from the A/C evaporator.
 - (l) The A/C discharge air temperature is approximately 20°F cooler than the ambient air temperature.
 - (m) The A/C high pressure switch closes and activates the A/C engine fan control solenoid when system high side pressure reaches 300 psi.
- (5) The following is a brief description of some of the symptoms or conditions that may exist if a component fails in the refrigerant circuit of the A/C system:
 - (a) If the A/C receiver/dryer moisture indicator is pink or white, the A/C receiver/dryer is saturated with moisture and must be replaced.
 - (b) A/C compressor failures will show up as abnormal noise, seizure, leakage, or low suction and discharge pressures.
 - (c) A faulty or improperly installed A/C thermostatic switch may cause quick or delayed A/C compressor cycling.
 - (d) A blockage in the A/C condenser coil will cause high system high side pressure. Frost may form at the location of the blockage.
 - (e) The A/C receiver/dryer is normally at outside temperature. If the A/C receiver/dryer is cool or cool spots form, a blockage has formed in the A/C receiver/dryer.
 - (f) A blockage at the inlet of the A/C receiver/dryer will cause high system high side pressure.

- (g) A blockage at the outlet of the A/C receiver/dryer will cause low system high side pressure and little or no cooling.
- (h) If the A/C expansion valve is stuck closed, the A/C expansion valve and A/C evaporator coil will be at outside temperature.
- (i) If the A/C expansion valve is stuck open, the A/C expansion valve and A/C evaporator coil will be extremely cold and frost or ice buildup may occur.
- (j) If ice is forming in the A/C expansion valve, the system may stop cooling when the ice forms, and start cooling when the expansion valve warms up enough to melt the ice formed in the A/C expansion valve, causing the system to appear to cycle ON and OFF.
- (k) A blockage in the A/C evaporator coil will cause low system low side pressure and little or no cooling.
- (l) A leak in the A/C evaporator or A/C expansion valve fittings may not be detectable with leak detector.
- (m) A restriction in a low system side A/C hose will cause low system low side pressure and little or no cooling. Cool spots and frost may form at location of restriction.
- (n) A restriction in a high system side A/C hose will cause high system high side and low system low side pressure and insufficient cooling. Cool spots and frost may form at location of restriction.
- (6) A/C system pressure checks. In addition to the performance checks noted above, the troubleshooting procedures for the HET Tractor A/C system will also include system pressure checks, using a standard A/C manifold gage set. Before using the manifold gage set to measure A/C system pressure. Ensure that the system is fully charged and stabilized. Stabilize the system by ensuring that all cab windows and vents are closed, personnel heater is OFF, and running the system at high A/C blower speed for 5 to 10 minutes.
- d. **Wire Repair.** Refer to TM 9-2320-360-20 for the repair of wire harness connectors. Refer to TM 43-0158 for detailed instructions concerning electrical wiring repairs. If a wire harness cannot be repaired, replace the defective wire harness.
- e. **A/C System Leak Repair.** The majority of all A/C services will consist of locating and repairing A/C system leaks. Many leaks will be located at points of connections, and are caused by vibration. Occasionally an A/C hose will rub on a structural part or deteriorate, creating a leak. Or an A/C system component will develop a leak. These leaks can be repaired in the following manner.
 - (1) Minor leaks at connectors. Most minor leaks at connectors can be repaired by tightening the connectors or replacing the O-ring. Use two wrenches when loosening or tightening connectors to avoid strain on A/C hoses. Recover refrigerant before tightening connectors or replacing O-ring. See work package WP 0056 00 for refrigerant recovery.
 - (2) Defective A/C hoses. Damaged or deteriorated A/C hoses must be replaced. See work package WP 0052 00 for A/C hose replacement.
 - (3) A/C component leaks. If an A/C component develops a leak, which can not be repaired by tightening fittings or replacing O-ring, the component may have to be replaced. See the associated work package for component replacement.
- f. **Safety Precautions.**
 - (1) Whenever repairs are made to any A/C part that holds refrigerant, you must recover, purge or flush (if contaminated), evacuate, charge, and leak test the system. In a good system, refrigerant lines are always under pressure and you should disconnect them only after the refrigerant has been recovered with refrigerant recovery unit through service valves (WP 0056 00).

WARNING

Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to the air, quickly evaporates and will freeze skin or eye tissue. Serious injury or blindness may result if you come in contact with liquid refrigerant.

DIRECT SUPPORT TROUBLESHOOTING INTRODUCTION - CONTINUED

0041 00

- (2) Refrigerants are safe when used under the right conditions. Always wear safety goggles and nonleather gloves while discharging, purging, flushing, evacuating, charging, and leak testing the system. Do not wear leather gloves; when refrigerant gas or liquid contacts leather, the leather will stick to your skin.
- (3) Refrigerant splashed in the eyes should first be treated with a few drops of sterile mineral oil in the eyes, then rinsed with a weak boric acid solution. Do not rub the eyes. Call a doctor right away.
- (4) Refrigerant splashed on the skin should be treated the same as for frostbite: gently pour cool water on the area, but do not rub the skin. Keep the skin warm with layers of soft, sterile cloth. Call a doctor right away.

WARNING

Do not work in an area where refrigerant may contact an open flame or any burning material, such as a cigarette. When it contacts extreme heat, refrigerant breaks down into poisonous phosgene gas which, if breathed, causes severe respiratory irritation. Do not breathe the fumes from an open flame leak detector.

- (5) Even though refrigerant does not burn, when it contacts extreme heat or flame, poisonous phosgene gas is created. This gas is also produced when an open flame leak detector is used. Phosgene fumes have an acrid (bitter) smell.
- (6) You must work in an area where there is a constant flow of fresh air when the system is discharged, flushed, charged, and leak tested using an open flame leak detector.
- (7) Under current federal laws, refrigerant must be recovered and recycled by all users to protect the environment, and not released into the atmosphere. Many service operations not directly involving the A/C system require the release of the refrigerant charge. Under the new regulations, shops not having the required recovery and recycling equipment (and properly trained and certified personnel) will not be allowed to do any of this service work.
- (8) Because of its very low boiling point, refrigerant must be stored under pressure. To prevent the refrigerant cans from exploding, never expose them to temperatures higher than 125°F (52°C). Never leave refrigerant cans in the sun, and do not store them in sun-exposed areas where heat can build up, such as in gloveboxes, automobile trunks, etc.

END OF WORK PACKAGE

A/C DOES NOT OPERATE**0042 00****INITIAL SETUP:****Personnel**

Two

Maintenance Level

Direct Support

References

TM 9-2320-360-20

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Goggles (Item 4, WP 0060 00)

A/C Test Set Subassembly (Item 11, WP 0060 00)

Detector, Leak (Item 8, WP 0060 00)

Equipment Conditions

Engine off (TM 9-2320-360-10)

Parking brake applied (TM 9-2320-360-10)

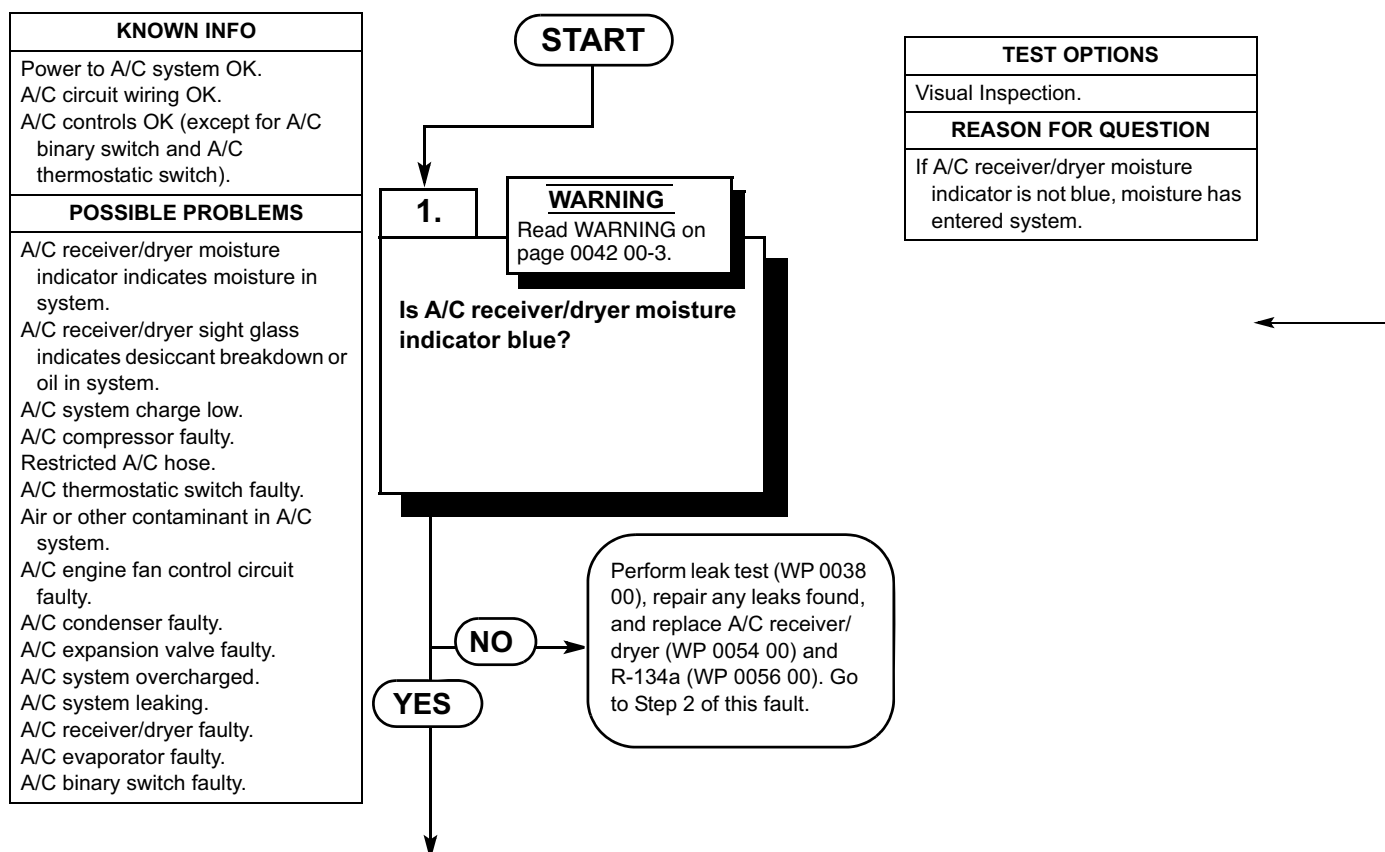
Wheels chocked (TM 9-2320-360-10)

Materials/Parts

Gloves, Rubber (Item 4, WP 0061 00)

NOTE

- Technician must be certified in mobile A/C to work on refrigeration system of A/C.
- Connect A/C test set recovery/recycling manifold gages to A/C service valves as indicated in Step 1, before performing this work package.
- A/C receiver/dryer must be replaced whenever system is recovered.

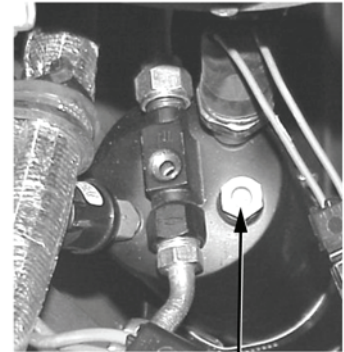


WARNING

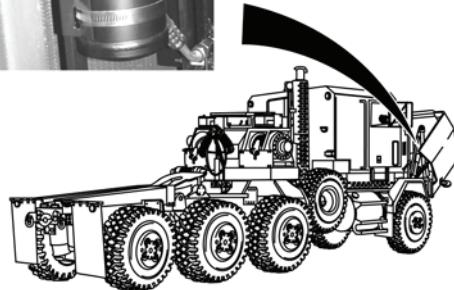
Wear protective goggles and non leather gloves when servicing A/C or injury may result.

VISUAL INSPECTION

- (1) Open hood (TM 9-2320-360-10).
- (2) Connect A/C test set recovery/recycling manifold gages to A/C service valves (WP 0056 00). Ensure test set valves are closed.
- (3) Check A/C receiver/dryer moisture indicator.
 - (a) If A/C receiver/dryer moisture indicator is not blue,
 - 1 Perform leak test (WP 0038 00).
 - 2 Recover R-134a (WP 0056 00).
 - 3 Repair any leaks found.
 - 4 Replace A/C receiver/dryer (WP 0054 00).
 - 5 Evacuate and charge system (WP 0056 00).
 - 6 Go to Step 2 of this fault.
 - (b) If A/C receiver/dryer moisture indicator is blue, go to Step 2 of this fault.



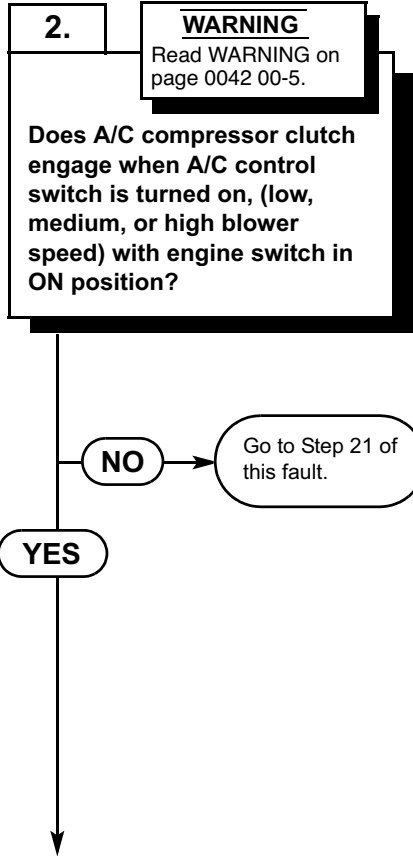
**A/C RECEIVER/DRYER
MOISTURE
INDICATOR**



HETF00474

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system.
POSSIBLE PROBLEMS
A/C receiver/dryer sight glass indicates desiccant breakdown or oil in system. A/C system charge low. A/C compressor faulty. Restricted A/C hose. A/C thermostatic switch faulty. Air or other contaminant in A/C system. A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged. A/C system leaking. A/C receiver/dryer faulty. A/C evaporator faulty. A/C binary switch faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C compressor clutch does not engage, A/C will not operate.

WARNING

Always use caution when approaching a hot engine. Failure to do so may result in serious burns.

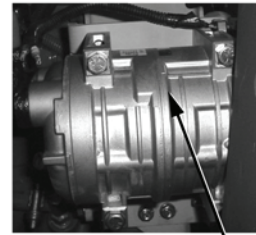
VISUAL INSPECTION

NOTE: Do not start engine.

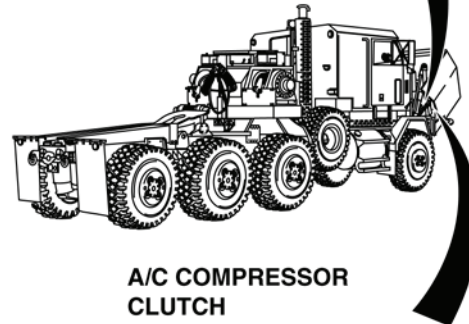
- (1) Turn engine switch to ON position (TM 9-2320-360-10).

NOTE: A/C compressor clutch will make a clicking sound when it engages.

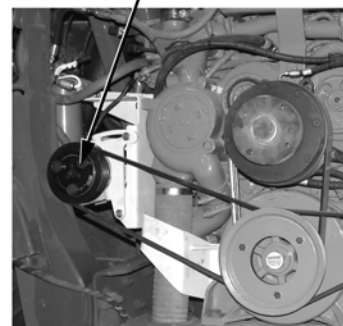
- (2) While assistant turns A/C control switch ON (low, medium, or high blower speed) and OFF (WP 0008 00), observe A/C compressor clutch operation.
 - (a) If A/C compressor clutch does not engage (no clicking sound heard), go to Step 21 of this fault.
 - (b) If A/C compressor clutch engages, go to Step 3 of this fault.



(SHOWN WITH
SECONDARY FUEL
FILTER REMOVED
FOR CLARITY)



A/C COMPRESSOR
CLUTCH



(SHOWN WITH
RADIATOR AND
FAN REMOVED
FOR CLARITY)

HETF00475

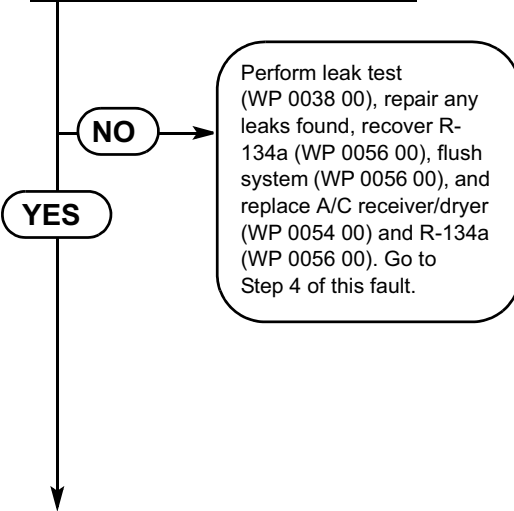
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK.
POSSIBLE PROBLEMS
A/C receiver/dryer sight glass indicates desiccant breakdown or oil in system. A/C system charge low. A/C compressor faulty. Restricted A/C hose. A/C thermostatic switch faulty. Air or other contaminant in A/C system. A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged. A/C system leaking. A/C receiver/dryer faulty. A/C evaporator faulty.

3.

WARNING
 Read WARNING on page 0042 00-7.

Does A/C receiver/dryer sight glass indicate system is free from desiccant breakdown and oil?



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C receiver/dryer sight glass indicates desiccant breakdown or oil in system, system must be flushed.



WARNING

- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and non leather gloves when servicing A/C or injury may result.

VISUAL INSPECTION

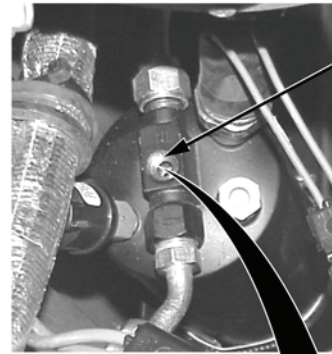
- (1) Start engine (TM 9-2320-360-10).
- (2) Turn A/C control switch ON (high blower speed position) (WP 0008 00).
- (3) Allow system to run for 5 to 10 minutes.

NOTE: A cover may be placed over A/C receiver/dryer sight glass during manufacturing. Remove cover from sight glass as required.

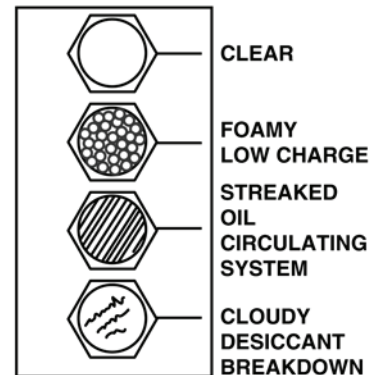
- (4) Inspect A/C receiver/dryer sight glass.
 - (a) If A/C receiver/dryer sight glass indicates desiccant breakdown or oil in system,
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Perform leak test (WP 0038 00).
 - 3 Recover R-134a (WP 0056 00).
 - 4 Repair any leaks found.

CAUTION: Do not flush A/C receiver/dryer, A/C compressor, or A/C expansion valve. After flushing system, add required refrigerant oil or damage to equipment may result.

- 5 Flush system (WP 0056 00).
- 6 Replace A/C receiver/dryer (WP 0054 00).
- 7 Evacuate and charge system (WP 0056 00).
- 8 Start engine (TM 9-2320-360-10).
- 9 Turn A/C control switch ON (high blower speed position) (WP 0008 00).
- 10 Allow system to run for 5 to 10 minutes.
- 11 Go to Step 4 of this fault.
- (b) If A/C receiver/dryer sight glass indicates system is free from desiccant breakdown and oil, go to Step 4 of this fault.



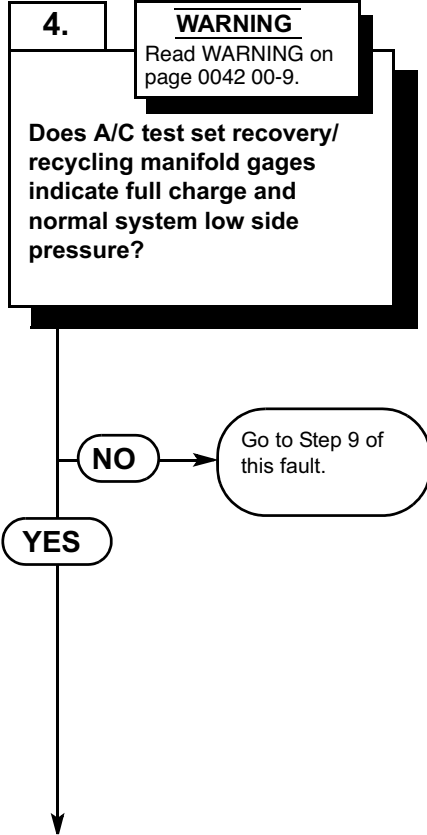
**A/C RECEIVER/DRYER
SIGHT GLASS**



HETF00476

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system.
POSSIBLE PROBLEMS
A/C system charge is low. A/C compressor faulty. Restricted A/C hose. A/C thermostatic switch faulty. Air or other contaminant in A/C system. A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged. A/C system leaking. A/C receiver/dryer faulty. A/C evaporator faulty.



TEST OPTIONS
Pressure Test. A/C Test Set Manifold Gages.
REASON FOR QUESTION
To check for full charge and isolate system fault.

WARNING

- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

Pressure Temperature Chart

°F	°C	HFC-134a (psi)	°F	°C	HFC-134a (psi)
0	-17.8	6.5	85	29.4	94.9
5	-15.0	9.0	90	32.2	103.9
10	-12.2	12.0	95	35.0	113.5
15	-9.4	15.0	100	37.8	123.6
20	-6.7	18.4	105	40.6	134.3
25	-3.9	22.1	110	43.3	145.3
30	-1.1	26.1	115	46.1	157.6
35	1.7	30.4	120	48.9	170.3
40	4.4	35.0	125	51.7	183.6
45	7.2	40.0	130	54.4	197.6
50	10.0	45.3	135	57.2	212.4
55	12.8	51.1	140	60.0	227.9
60	15.6	57.3	145	62.8	244.3
65	18.3	63.9	150	65.6	261.4
70	21.1	70.9	155	68.3	279.5
75	23.8	78.4	160	71.1	298.4
80	26.7	88.4	165	73.9	318.3

NOTE

- System low side pressure is determined by the temperature of the R-134a refrigerant at the low side service valve.
- System high side pressure is determined by the ambient temperature of the air surrounding the A/C condenser. The ambient temperature is determined by measuring the temperature 2 in. in front of the A/C condenser.

PRESSURE TEST

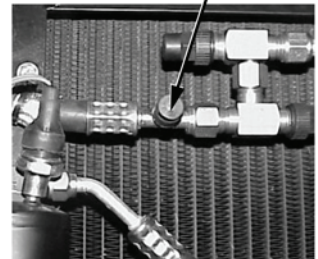
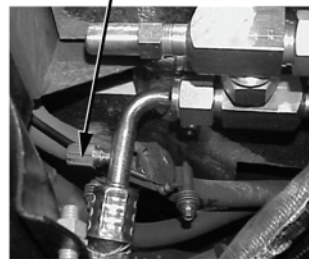
- (1) Inspect A/C test set recover/recycling manifold low side gage reading.
 - (a) If gage reading is not within the range indicated in the chart shown above, for normal low side pressure (approximately 23 to 30 psi), go to Step 9 of this fault.
 - (b) If gage reading is within the range indicated in the chart shown above, for normal low side pressure, (approximately 23 to 30 psi), go to Step 5 of this fault.

**NORMAL
SYSTEM LOW
SIDE PRESSURE**

**SYSTEM HIGH
SIDE PRESSURE**

**TO LOW SIDE
A/C SERVICE VALVE**

**TO HIGH SIDE
A/C SERVICE VALVE**



HETF00477

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system charge is not low. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK.
POSSIBLE PROBLEMS
A/C compressor faulty. Restricted A/C hose. A/C thermostatic switch faulty. Air or other contaminant in A/C system. A/C system leaking.

5.

WARNING

Read WARNING on page 0042 00-11.

Does A/C test set recover/recycling manifold gage indicate low system high side pressure?

NO

Go to Step 7 of this fault.

YES

TEST OPTIONS

Pressure Test.
A/C Test Set Manifold Gages.

REASON FOR QUESTION

To isolate system fault.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK. A/C thermostatic switch OK. No contaminants in A/C system.
POSSIBLE PROBLEMS
A/C compressor faulty. Restricted A/C hose.

6.

WARNING

Read WARNING on page 0042 00-11.

Are A/C hoses from A/C low side service valve to high side service valve free from frost and cool spots?

NO

Replace restricted A/C hose (WP 0052 00), A/C receiver/dryer (WP 0054 00), and R-134a (WP 0056 00). Verify repair, go to Step 23 of this fault.

YES

Replace A/C compressor (WP 0045 00), A/C receiver/dryer (WP 0054 00) and R-134a (WP 0056 00). Verify repair, go to Step 23 of this fault.

TEST OPTIONS

Visual Inspection.

REASON FOR QUESTION

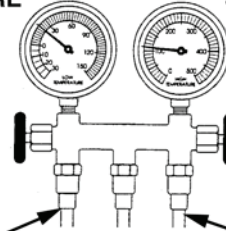
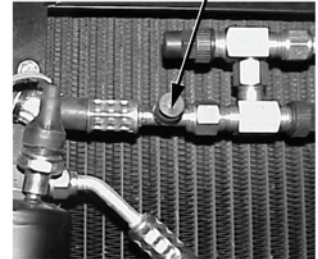
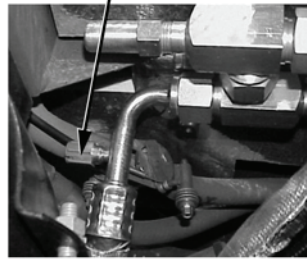
If frost or cool spots are forming on A/C hoses, A/C hoses are restricting R-134a flow. If not, A/C compressor is faulty.

WARNING

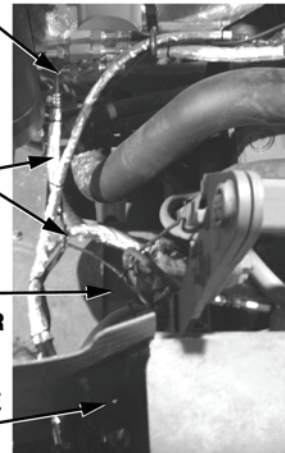
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

PRESSURE TEST

- (1) Inspect A/C test set recover/recycling manifold high side gage reading.
 - (a) If gage reading is not lower than the range for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 7 of this fault.
 - (b) If gage reading is lower than the range for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 8 of this fault.

**NORMAL
SYSTEM LOW
SIDE PRESSURE****LOW
SYSTEM HIGH
SIDE PRESSURE****TO LOW SIDE
A/C SERVICE VALVE****TO HIGH SIDE
A/C SERVICE VALVE****VISUAL INSPECTION**

- (1) Inspect A/C hoses from system low side service valve to system high side service valve. Note if frost or cool spots are forming on A/C hoses.
- (2) Turn engine switch to OFF position (TM 9-2320-360-10).
- (3) Recover R-134a (WP 0056 00).
- (4) If A/C hoses were not free from frost and cool spots in Step 1 above, replace restricted A/C hose (WP 0052 00).
- (5) If A/C hoses were free from frost and cool spots in Step 1 above, replace A/C compressor (WP 0045 00).
- (6) Replace A/C receiver/dryer (WP 0054 00).
- (7) Evacuate and charge system (WP 0056 00).
- (8) Verify repair, go to Step 23 of this fault.

**A/C LOW SIDE
SERVICE
VALVE****A/C HOSES****A/C
COMPRESSOR
(HIDDEN)****A/C HIGH SIDE
SERVICE
VALVE
(HIDDEN)**

HETF00478

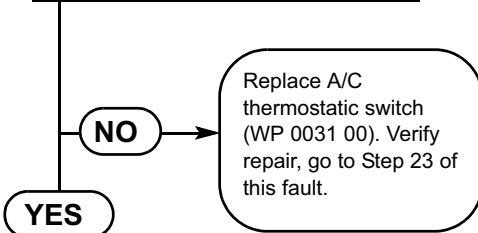
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system charge is not low. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK. A/C compressor OK. A/C hoses are not restricted.
POSSIBLE PROBLEMS
A/C thermostatic switch faulty. Air or other contamination in A/C system. A/C system leaking.

7.

WARNING
 Read WARNING on page 0042 00-13.

Is system low-side pressure cycling between 23 and 30 psi when A/C compressor cycles?



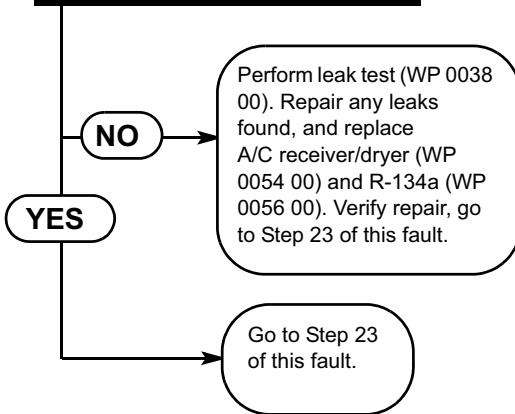
TEST OPTIONS
Pressure Test.
REASON FOR QUESTION
If system low side pressure does not cycle between 23 and 30 psi, A/C thermostatic switch is faulty.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system charge is not low. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK. A/C compressor OK. A/C hoses are not restricted. A/C thermostatic switch OK.
POSSIBLE PROBLEMS
Air or other contaminant in A/C system. A/C system leaking.

8.

WARNING
 Read WARNING on page 0042 00-13.

Does A/C system provide adequate cooling?



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C system does not cool adequately, air or other contaminant may have entered system.

WARNING

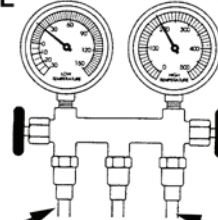
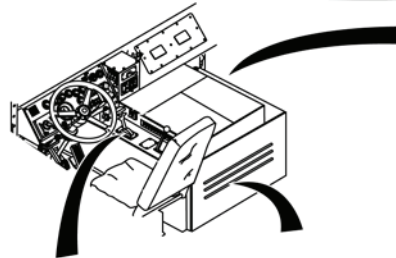
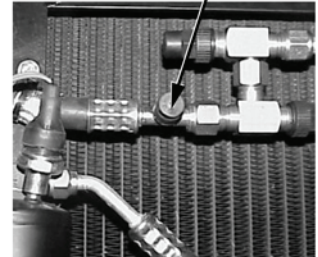
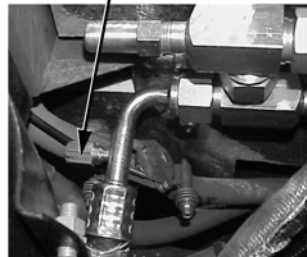
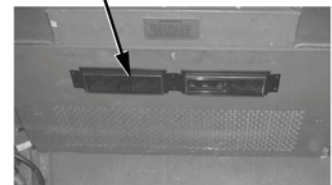
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

PRESSURE TEST

- (1) Inspect A/C test set recovery/recycling manifold low side gage reading.
 - (a) If gage reading is not cycling between 23 and 30 psi, when A/C compressor clutch cycles, turn engine switch to OFF position (TM 9-2320-360-10) and replace A/C thermostatic switch (WP 0031 00).
 - (b) If gage reading cycles between 23 and 30 psi, when the A/C compressor clutch cycles, go to Step 8 of this fault.

VISUAL INSPECTION

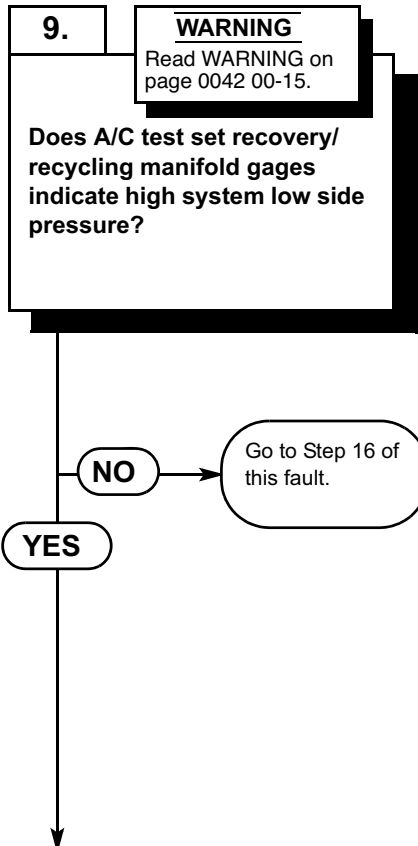
- (1) Inspect A/C system operations.
 - (a) If system is not providing adequate cooling at A/C louvers (output should be 20°F (6°C) cooler than ambient temperature in cab),
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Perform leak test (WP 0038 00).
 - 3 Recover R-134a (WP 0056 00).
 - 4 Repair any leaks found.
 - 5 Replace A/C receiver/dryer (WP 0054 00).
 - 6 Evacuate and charge system (WP 0056 00).
 - 7 Verify repair, go to Step 23 of this fault.
 - (b) If system is providing adequate cooling at A/C louvers, go to Step 23 of this fault.

**NORMAL
SYSTEM LOW
SIDE PRESSURE****NORMAL
SYSTEM HIGH
SIDE PRESSURE****TO LOW SIDE
A/C SERVICE VALVE****TO HIGH SIDE
A/C SERVICE VALVE****A/C LOUVERS**

HETF00479

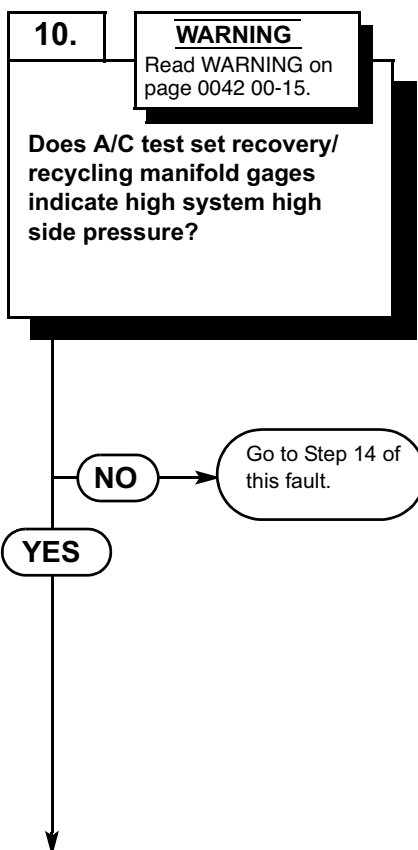
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system.
POSSIBLE PROBLEMS
A/C compressor faulty. Restricted A/C hose. A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged. A/C receiver/dryer faulty. A/C evaporator faulty.



TEST OPTIONS
Pressure Test. A/C Test Set Manifold Gage.
REASON FOR QUESTION
To isolate system fault.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C control OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C receiver/dryer OK. A/C evaporator OK.
POSSIBLE PROBLEMS
A/C compressor faulty. Restricted A/C hose. A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged.



TEST OPTIONS
Pressure Test. A/C Test Set Manifold Gage.
REASON FOR QUESTION
To isolate system fault.

WARNING

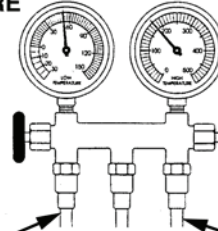
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

PRESSURE TEST

- (1) Inspect A/C test set recovery/recycling manifold low side gage reading.
 - (a) If gage reading is not indicating a high system low side pressure as indicated on the chart on page 0042 00-9 (Less than 30 psi), go to Step 16 of this fault.
 - (b) If gage reading is indicating a high system low side pressure as indicated on the chart on page 0042 00-9 (Greater than 30 psi), go to Step 10 of this fault.

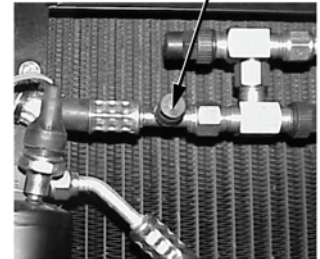
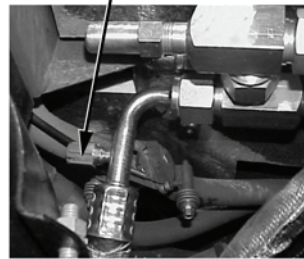
**HIGH
SYSTEM LOW
SIDE PRESSURE**

**SYSTEM HIGH
SIDE PRESSURE**



**TO LOW SIDE
A/C SERVICE VALVE**

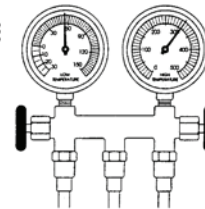
**TO HIGH SIDE
A/C SERVICE VALVE**

**PRESSURE TEST**

- (1) Inspect A/C test set recovery/recycling manifold high side gage reading.
 - (a) If gage reading is not indicating a high system high side pressure for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 14 of this fault.
 - (b) If gage reading is indicating a high system high side pressure for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 11 of this fault.

**HIGH
SYSTEM LOW
SIDE PRESSURE**

**HIGH
SYSTEM HIGH
SIDE PRESSURE**



HETF00480

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C hoses are not restricted. A/C receiver/dryer OK. A/C evaporator OK.
POSSIBLE PROBLEMS
A/C engine fan control circuit faulty. A/C condenser faulty. A/C expansion valve faulty. A/C system overcharged.

11.

WARNING

Read WARNING on page 0042 00-17.

Is A/C condenser output hose hot?

NO

Go to Step 13 of this fault.

YES

TEST OPTIONS

Visual Inspection.

REASON FOR QUESTION

If A/C condenser output hose is hot A/C condenser is not working.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contamination in A/C system. A/C compressor OK. A/C hoses are not restricted. A/C receiver/dryer OK. A/C evaporator OK. A/C expansion valve OK. A/C system is not overcharged.
POSSIBLE PROBLEMS
A/C engine fan control circuit faulty. A/C condenser faulty.

12.

WARNING

Read WARNING on page 0042 00-17.

Does A/C test set gages indicate high system low side and system high side pressures after performing work package WP 0017 00?

NO

Verify repair, go to Step 23 of this fault.

YES

Replace A/C condenser (WP 0048 00), A/C receiver/dryer (WP 0054 00), and R-134a (WP 0056 00).
 Verify repair, go to Step 23 of this fault.

TEST OPTIONS
 Pressure Test.
 A/C Test Set Manifold Gage.
REASON FOR QUESTION

If system low side and high side pressures are high, A/C condenser is faulty.

WARNING

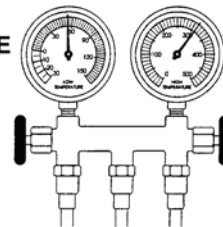
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.
- Use caution when inspecting A/C hose at output of A/C condenser. A/C hose may be hot. Failure to do so may result in serious injury.

VISUAL INSPECTION

- (1) Inspect A/C hose at output of A/C condenser.
 - (a) If A/C hose is not hot, go to Step 13 of this fault.
 - (b) If A/C hose is hot, go to Step 12 of this fault.

**A/C CONDENSER****CONDENSER
OUTPUT A/C HOSE****PRESSURE TEST**

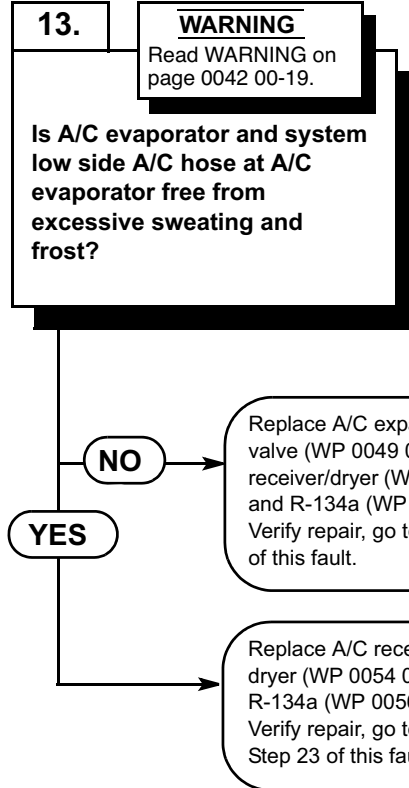
- (1) Perform work package WP 0019 00 (A/C compressor does not shut off or cycles constantly) and return.
- (2) If engine is shut down, start engine (TM 9-2320-360-10).
- (3) Turn A/C control switch ON (high blower speed position) (WP 0008 00).
- (4) Allow system to run for 5 to 10 minutes.
- (5) Inspect A/C test set recovery/recycling manifold gage readings.
 - (a) If gage readings do not indicate high system low side and system high side pressures as indicated on the chart on page 0042 00-9, verify repair and go to Step 23 of this fault.
 - (b) If gage reading indicates high system low side and system high side pressures as indicated on the chart on page 0042 00-9,
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Recover R134a (WP 0056 00).
 - 3 Replace A/C condenser (WP 0048 00).
 - 4 Replace A/C receiver/dryer (WP 0054 00).
 - 5 Evacuate and charge system (WP 0056 00).
 - 6 Verify repair and go to Step 23 of this fault.

**HIGH
SYSTEM LOW
SIDE PRESSURE****HIGH
SYSTEM HIGH
SIDE PRESSURE**

HETF00481

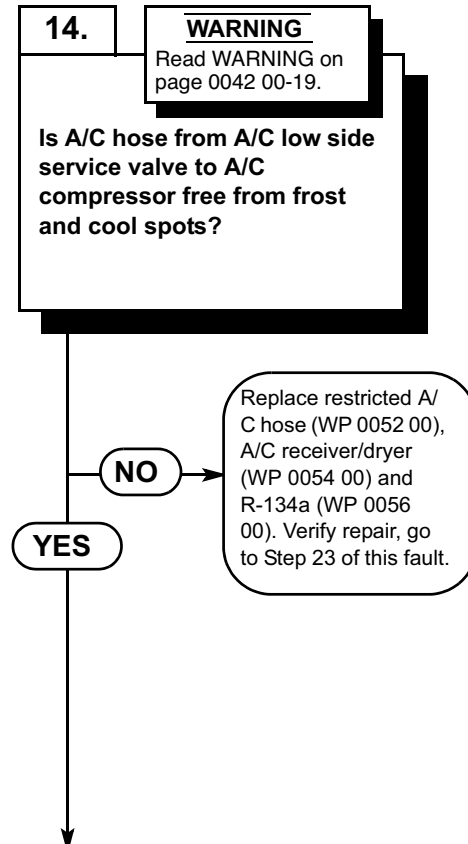
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C hoses are not restricted. A/C receiver/dryer OK. A/C evaporator OK. A/C engine fan control circuit OK. A/C condenser OK.
POSSIBLE PROBLEMS
A/C expansion valve faulty. A/C system overcharged.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If evaporator and system low side A/C hose at evaporator are free from excessive sweating and frost, A/C system may be overcharged, if not, A/C expansion valve may be faulty.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C receiver/dryer OK. A/C evaporator OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged.
POSSIBLE PROBLEMS
A/C compressor faulty. Restricted A/C hose. A/C expansion valve faulty.



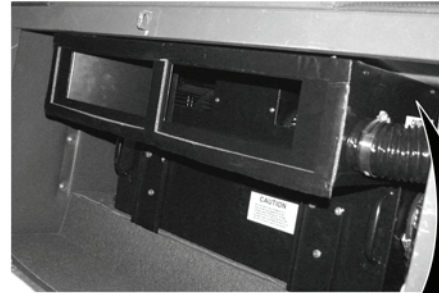
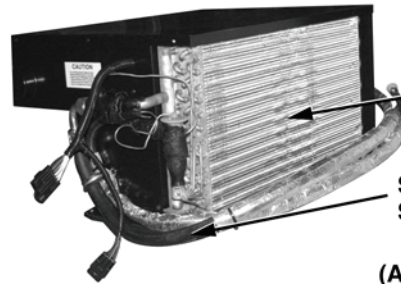
TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If frost or cool spots are forming on A/C hoses, A/C hoses are restricting R-134a flow.

WARNING

- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

VISUAL INSPECTION

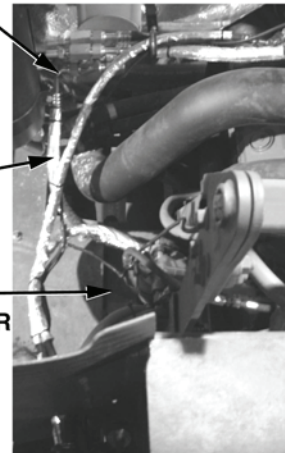
- (1) Turn engine switch to OFF position (TM 9-2320-360-10).
- (2) Remove two screws and doghouse door (WP 0028 00).
- (3) Inspect A/C evaporator and system low side A/C hose at A/C evaporator. Note if A/C evaporator and A/C hose at A/C evaporator are free from excessive sweating and frost.
- (4) Recover R-134a (WP 0056 00).
- (5) If A/C evaporator and A/C hose at A/C evaporator was not free of excessive sweating and frost in Step 3 above, replace A/C expansion valve (WP 0049 00).
- (6) Replace A/C receiver/dryer (WP 0054 00).
- (7) Evacuate and charge system (WP 0056 00).
- (8) Verify repair, go to Step 23 of this fault.

**A/C EVAPORATOR****SYSTEM LOW SIDE A/C HOSE**

(A/C EVAPORATOR ASSEMBLY SHOWN REMOVED FOR CLARITY)

VISUAL INSPECTION

- (1) Inspect A/C hose from system low side service valve to A/C compressor.
 - (a) If A/C hose is not free from frost and cool spots,
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Recover R-134a (WP 0056 00).
 - 3 Replace restricted A/C hose (WP 0052 00).
 - 4 Replace A/C receiver/dryer (WP 0054 00).
 - 5 Evacuate and charge system (WP 0056 00).
 - 6 Verify repair, go to Step 23 of this fault.
 - (b) If A/C hose is free from frost and cool spots, go to Step 15 of this fault.

A/C LOW SIDE SERVICE VALVE**A/C HOSE****A/C COMPRESSOR (HIDDEN)**

HETF00482

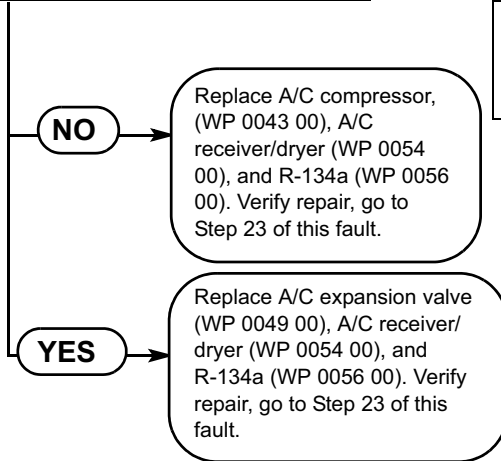
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C receiver/dryer OK. A/C evaporator OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged. A/C hoses are not restricted.
POSSIBLE PROBLEMS
A/C compressor faulty. A/C expansion valve faulty.

15.

WARNING
 Read WARNING on page 0042 00-21.

Does system high side pressure vary with engine RPM?



TEST OPTIONS
Pressure Test. A/C Test Set Manifold Gage.
REASON FOR QUESTION
If system high side pressure varies with RPM, A/C expansion valve is faulty. If not, A/C compressor is faulty.

WARNING

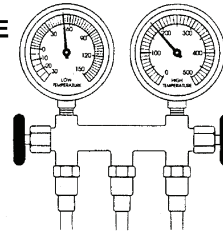
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

PRESSURE TEST

NOTE: System high side pressure should vary as engine RPM varies.

- (1) While assistant varies engine RPM with accelerator pedal (TM 9-2320-360-10), monitor A/C test set, recovery/recycling manifold high system side pressure gage. Note whether system high side pressure varies with engine RPM.
- (2) Turn engine start switch to OFF position (TM 9-2320-360-10).
- (3) Recover R-134a (WP 0056 00).
- (4) If system high side pressure did not vary with engine RPM in Step 1 above, replace A/C compressor (WP 0045 00). Verify repair, go to Step 23 of this fault.
- (5) If system high side pressure varied with engine RPM in Step 1 above, replace A/C expansion valve (WP 0049 00).
- (6) Replace A/C receiver/dryer (WP 0054 00).
- (7) Evacuate and charge system (WP 0056 00).
- (8) Verify repair, go to Step 23 of this fault.

**HIGH
SYSTEM LOW
SIDE PRESSURE**



**NORMAL LOW
SYSTEM HIGH
SIDE PRESSURE**

HETF00488

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged.
POSSIBLE PROBLEMS
Restricted A/C hose. A/C expansion valve faulty. A/C receiver/dryer faulty. A/C evaporator faulty.

16.

WARNING

Read WARNING on page 0042 00-23.

Does A/C test set recovery/recycling manifold gages indicate high system high side pressure?

NO

Go to Step 19 of this fault.

YES

TEST OPTIONS

Pressure Test.
A/C Test Set Manifold Gage.

REASON FOR QUESTION

To isolate system fault.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged. A/C evaporator OK.
POSSIBLE PROBLEMS
Restricted A/C hose. A/C expansion valve faulty. A/C receiver/dryer faulty.

17.

WARNING

Read WARNING on page 0042 00-23.

Are A/C hoses from A/C compressor output to A/C expansion valve free from frost and cool spots?

NO

Replace restricted A/C hose (WP 0052 00), A/C receiver/dryer (WP 0054 00), and R-134a (WP 0056 00). Verify repair, go to Step 23 of this fault.

YES

TEST OPTIONS

Visual Inspection.

REASON FOR QUESTION

If frost or cool spots are forming on A/C hoses, A/C hoses are restricting R-134a flow.

WARNING

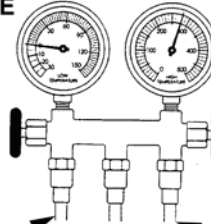
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

PRESSURE TEST

- (1) Inspect A/C test set recover/recycling manifold high side gage reading.
 - (a) If gage reading is not indicating a high system high side pressure for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 19 of this fault.
 - (b) If gage reading is indicating a high system high side pressure for the ambient temperature indicated on the chart on page 0042 00-9, go to Step 17 of this fault.

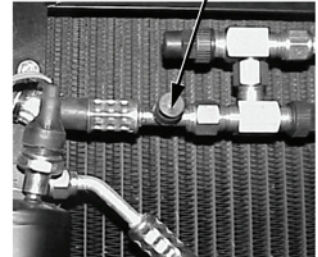
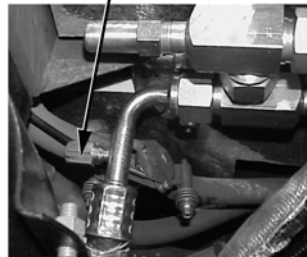
**LOW
SYSTEM LOW
SIDE PRESSURE**

**HIGH
SYSTEM HIGH
SIDE PRESSURE**



**TO LOW SIDE
A/C SERVICE VALVE**

**TO HIGH SIDE
A/C SERVICE VALVE**

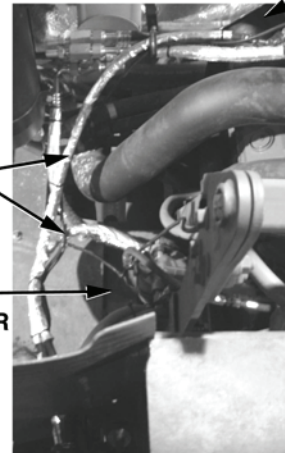
**VISUAL INSPECTION**

- (1) Inspect A/C hoses from A/C compressor output to A/C expansion valve.
 - (a) If A/C hoses are not free from frost and cool spots,
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Recover R-134a (WP 0056 00).
 - 3 Replace restricted A/C hose (WP 0052 00).
 - 4 Replace A/C receiver/dryer (WP 0054 00).
 - 5 Evacuate and charge system (WP 0056 00).
 - 6 Verify repair, go to Step 23 of this fault.
 - (b) If A/C hoses are free from frost and cool spots, go to Step 18 of this fault.

**A/C
EXPANSION
VALVE (HIDDEN)**

A/C HOSES

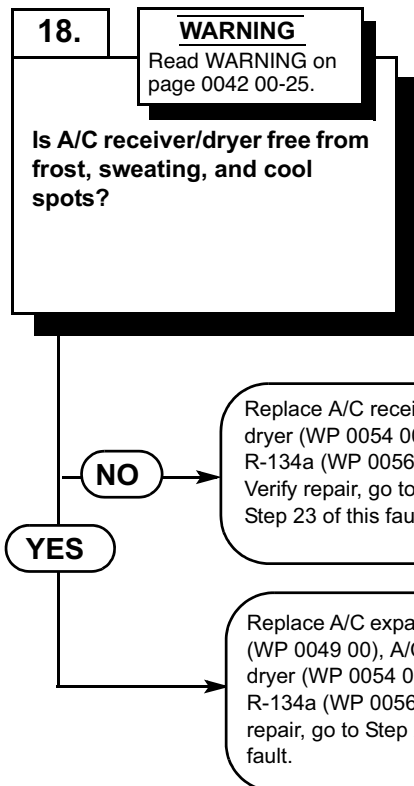
**A/C
COMPRESSOR
(HIDDEN)**



HETTF00483

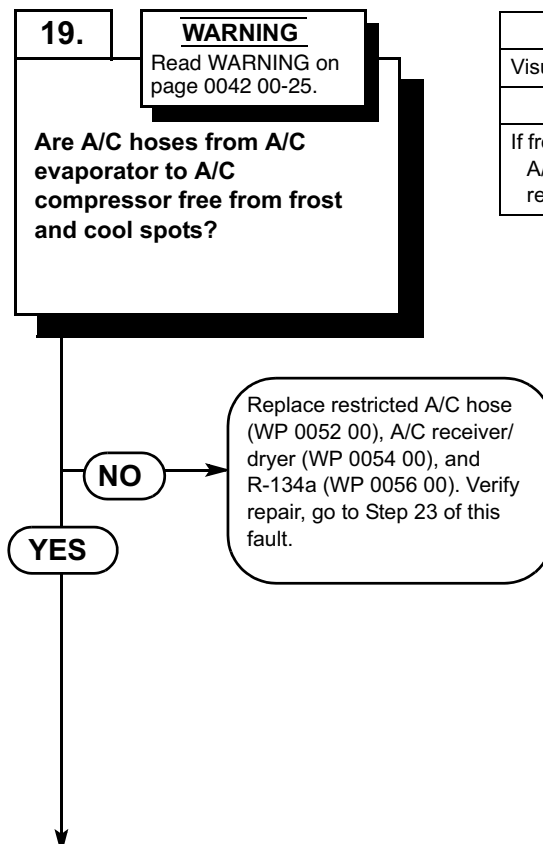
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged. A/C evaporator OK. A/C hose are not restricted.
POSSIBLE PROBLEMS
A/C expansion valve faulty. A/C receiver/dryer faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C receiver/dryer is free from frost and cool spots, A/C expansion valve is faulty; if not, A/C receiver/dryer is faulty.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leading. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged. A/C receiver/dryer OK.
POSSIBLE PROBLEMS
Restricted A/C hose. A/C expansion valve faulty. A/C evaporated faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If frost or cool spots are forming on A/C hoses, R-134a flow is being restricted.

WARNING

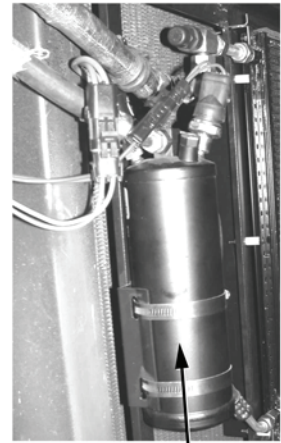
- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

VISUAL INSPECTION

- (1) Inspect A/C receiver/dryer. Note if frost or cool spots are forming on A/C receiver/dryer.
- (2) Turn engine switch to OFF position (TM 9-2320-360-10).
- (3) Recover R-134a (WP 0056 00).
- (4) If A/C receiver/dryer was free from frost and cool spots in Step 1 above, replace A/C expansion valve (WP 0049 00).
- (5) Replace A/C receiver/dryer (WP 0054 00).
- (6) Evacuate and charge system (WP 0056 00).
- (7) Verify repair, go to Step 23 of this fault.

VISUAL INSPECTION

- (1) Inspect A/C hoses from A/C evaporator to A/C compressor.
 - (a) If A/C hoses are not free from frost and cool spots,
 - 1 Turn engine switch to OFF position (TM 9-2320-360-10).
 - 2 Recover R-134a (WP 0056 00).
 - 3 Replace restricted A/C hose (WP 0052 00).
 - 4 Replace A/C receiver/dryer (WP 0054 00).
 - 5 Evacuate and charge system (WP 0056 00).
 - 6 Verify repair, go to Step 23 of this fault.
 - (b) If A/C hoses are free from frost and cool spots, go to Step 20 of this fault.

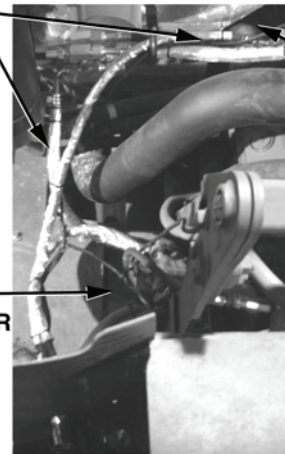


A/C RECEIVER/DRYER

A/C HOSES

A/C COMPRESSOR (HIDDEN)

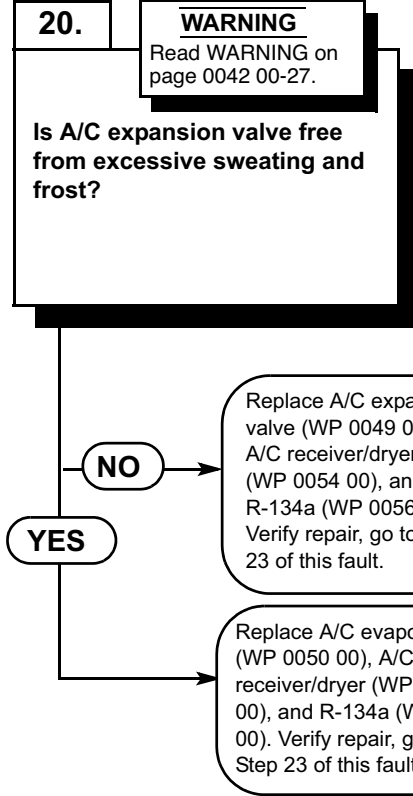
A/C EVAPORATOR (HIDDEN)



HETF00484

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C binary switch OK. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. A/C system is not leaking. A/C system charge is not low. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C compressor OK. A/C engine fan control circuit OK. A/C condenser OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C hoses are not restricted.
POSSIBLE PROBLEMS
A/C expansion valve faulty. A/C evaporator faulty.



TEST OPTIONS
Visual Inspection.
REASON FOR QUESTION
If A/C expansion valve is free from excessive sweating and frost, A/C evaporator is faulty; if not, A/C expansion valve is faulty.

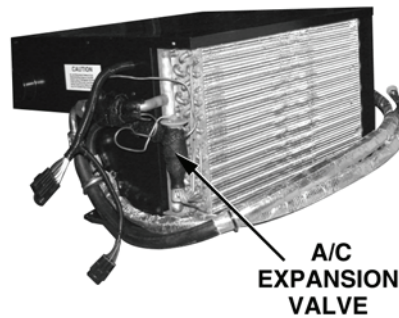
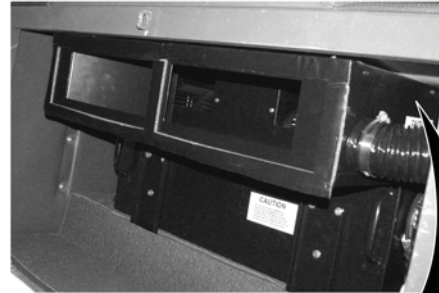


WARNING

- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

VISUAL INSPECTION

- (1) Turn engine switch to OFF position (TM 9-2320-360-10).
- (2) Remove two screws and doghouse door (WP 0028 00).
- (3) Inspect A/C expansion valve. Note if A/C expansion valve is free from excessive sweating and frost.
- (4) Recover R-134a (WP 0056 00).
- (5) If A/C expansion valve was not free from excessive sweating and frost in Step 3 above, replace A/C expansion valve (WP 0049 00). Verify repair, go to Step 23 of this fault.
- (6) If A/C expansion valve was free from excessive sweating and frost in Step 3 above, replace A/C evaporator (WP 0050 00). Verify repair, go to Step 23 of this fault.
- (7) Replace A/C receiver/dryer (WP 0054 00).
- (8) Evacuate and charge system (WP 0056 00).
- (9) Verify repair, go to Step 23 of this fault.

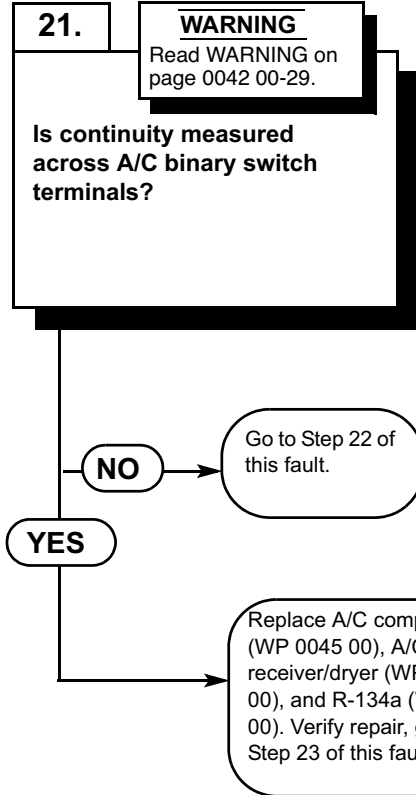


(A/C EVAPORATOR
ASSEMBLY
SHOWN REMOVED
FOR CLARITY)

HETF00485

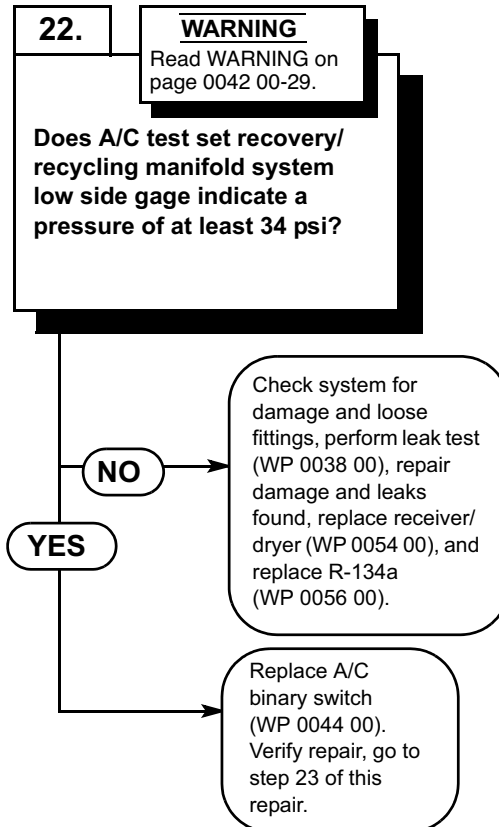
A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. Restricted A/C hose. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK.
POSSIBLE PROBLEMS
A/C compressor faulty. A/C system charge low. A/C system leaking. A/C binary switch faulty.



TEST OPTIONS
Continuity Test. Multimeter.
REASON FOR QUESTION
If continuity is measured, A/C compressor is faulty.

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C controls OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. Restricted A/C hose. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C engine fan control circuit OK. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK. A/C compressor OK.
POSSIBLE PROBLEMS
A/C system charge low. A/C system leaking. A/C binary switch faulty.



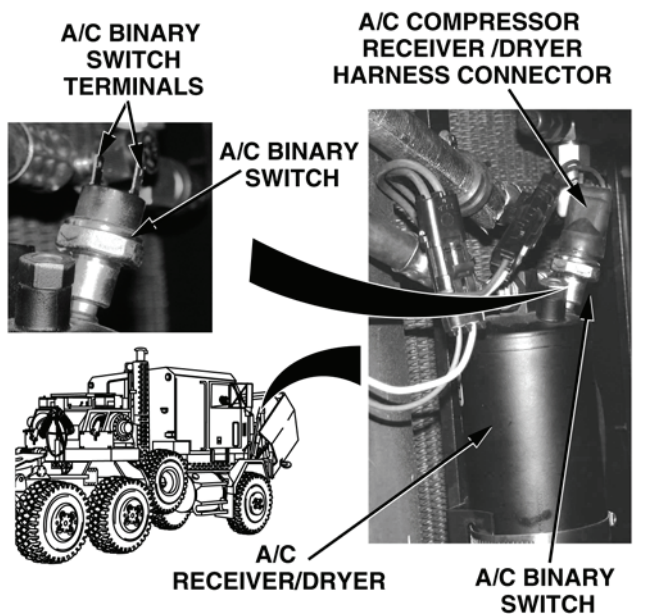
TEST OPTIONS
Pressure Test. A/C Test Set Manifold Gage.
REASON FOR QUESTION
If 34 psi pressure is measured, A/C binary switch is faulty. If not, system charge is low.

WARNING

- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.
- Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Remove rings, bracelets, watches, necklaces, and any other jewelry before working around HET Tractor.
- Always use caution when approaching a hot engine. Failure to follow this warning may cause injury to personnel.

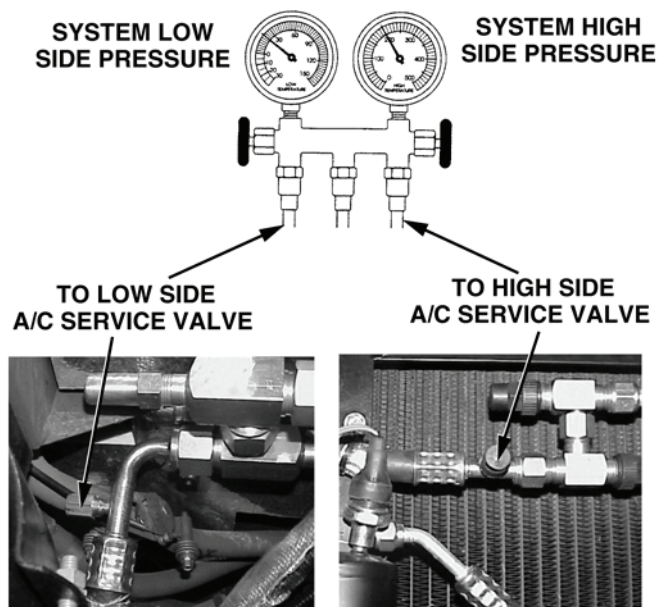
CONTINUITY TEST

- (1) Turn engine switch to OFF position (TM 9-2320-360-10).
- (2) Disconnect A/C compressor receiver/dryer harness connector from A/C binary switch.
- (3) Set multimeter to ohms setting.
- (4) Is there continuity measured across A/C binary switch terminals?
 - (a) If continuity is not measured across terminals, go to Step 22 of this fault.
 - (b) If continuity is measured across A/C binary switch terminals,
 - 1 Recover R-134a (WP 0056 00).
 - 2 Replace A/C compressor (WP 0045 00).
 - 3 Replace A/C receiver/dryer (WP 0054 00).
 - 4 Evacuate and charge system (WP 0056 00).
 - 5 Verify repair, go to Step 23 of this fault.



PRESSURE TEST

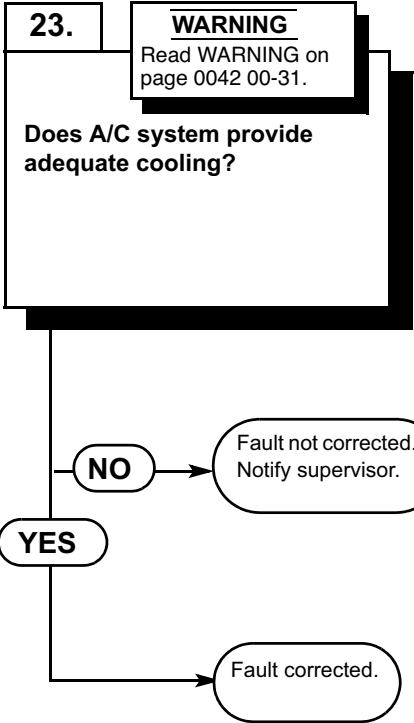
- (1) Inspect A/C test set recover/recycling manifold low side gage reading.
 - (a) If gage reading does not indicate at least 34 psi pressure,
 - 1 Check system for damage, repair damage as required.
 - 2 Check system for loose fittings, tighten as required.
 - 3 Perform leak test (WP 0038 00).
 - 4 Recover R-134a (WP 0056 00).
 - 5 Repair any leaks found.
 - 6 Replace receiver/dryer (WP 0054 00).
 - 7 Evacuate and charge system (WP 0056 00).
 - 8 Verify repair, go to Step 23 of this fault.
 - (b) If gage indicates at least 34 psi pressure, replace A/C binary switch (WP 0044 00). Verify repair, go to Step 23 of this fault.



HETF00486

A/C DOES NOT OPERATE

KNOWN INFO
Power to A/C system OK. A/C circuit wiring OK. A/C control OK (except for A/C binary switch and A/C thermostatic switch). A/C receiver/dryer moisture indicator indicates no moisture in system. A/C receiver/dryer sight glass indicates no desiccant breakdown or oil in system. Restricted A/C hose. A/C thermostatic switch OK. No air or other contaminant in A/C system. A/C engine fan control circuit OK. A/C condenser OK. A/C expansion valve OK. A/C system is not overcharged. A/C receiver/dryer OK. A/C evaporator OK. A/C compressor OK. A/C system charge is not low. A/C system is not leaking. A/C binary switch OK.
POSSIBLE PROBLEMS
None



TEST OPTIONS
Verify Repair.
REASON FOR QUESTION
If A/C system provides adequate cooling, fault has been corrected.

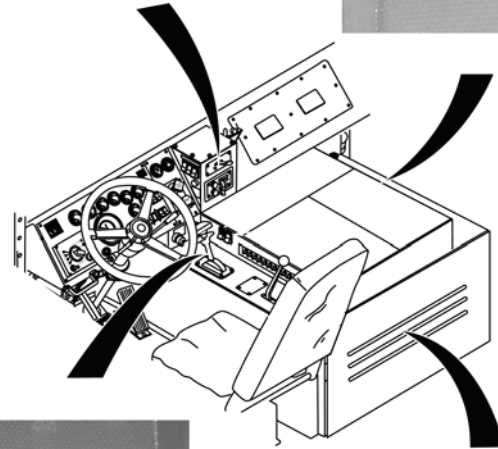
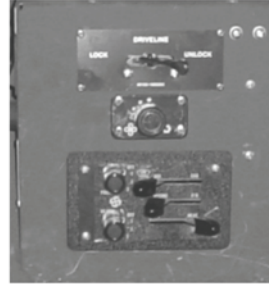


WARNING

- Always use caution when approaching a hot engine. Failure to do so may result in serious burns.
- Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

VERIFY REPAIR

- (1) If ON, turn engine switch OFF (TM 9-2320-360-10).
- (2) If removed, install doghouse door (WP 0028 00).
- (3) Remove A/C test set recovery/recycling manifold gages (WP 0056 00).
- (4) Perform leak test (WP 0038 00). Concentrate on A/C system service valves.
- (5) Repair any leaks found.
- (6) Install protective caps on A/C system service valves.
- (7) Close hood (TM 9-2320-360-10).
- (8) Start engine (TM 9-2320-360-10).
- (9) Operate A/C at high blower speed for 5 to 10 minutes (WP 0008 00).
- (10) Monitor A/C system output at louvers.
 - (a) If A/C system is not providing adequate cooling (output should be 20°F (6°C) cooler than ambient temperature in cab), turn engine and A/C control switch to OFF position and notify supervisor.
 - (b) If A/C system is providing adequate cooling, fault has been corrected.



HETF00487

CHAPTER 9
DIRECT SUPPORT MAINTENANCE

DIRECT SUPPORT MAINTENANCE INTRODUCTION

0043 00

This chapter contains instructions for replacement and repair of A/C components at the Direct Support Maintenance level. Some subassemblies and parts must be removed before A/C components can be accessed. They are referenced to other work packages in this manual or other technical manuals.

END OF WORK PACKAGE

A/C BINARY SWITCH REPLACEMENT

0044 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Sealing Compound (Item 2, WP 0061 00)

Materials/Parts - Continued

Tags, Identification (Item 14, WP 0061 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

REMOVAL

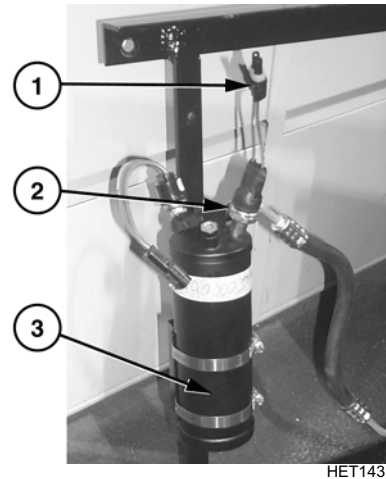
WARNING

- Use care to prevent refrigerant from touching your skin or eyes. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Be sure to wear proper protective goggles and nonleather gloves when servicing Air Conditioning systems to prevent personal injury. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

A/C BINARY SWITCH REPLACEMENT - CONTINUED**0044 00****REMOVAL - CONTINUED****NOTE**

Tag and mark all wires prior to removal.

1. Disconnect A/C binary switch connector (1) from wiring harness and A/C binary switch (2).
2. Remove A/C binary switch (2) from A/C receiver/dryer (3).

**INSTALLATION****WARNING**

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

1. Apply sealing compound to threads of A/C binary switch (2).
2. Install A/C binary switch (2) on A/C receiver/dryer (3).
3. Connect A/C binary switch connector (1) to wiring harness and A/C binary switch (2).
4. Close hood (TM 9-2320-360-10).
5. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C COMPRESSOR REPLACEMENT

0045 00**THIS WORK PACKAGE COVERS**Removal, Installation

INITIAL SETUP**Maintenance Level**

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Cap and Plug Set (Item 2, WP 0060 00)

Gage, Belt Tension (Item 3, WP 0060 00)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

#8 O-ring (Item 37, Figure 1, WP 0062 00)

Locknut (9) (Item 58, Figure 1, WP 0062 00)

Lockwasher (2) (Item 65, Figure 1, WP 0062 00)

Materials/Parts - Continued

Lockwasher (3) (Item 59, Figure 1, WP 0062 00)

#10 O-ring (Item 113, Figure 1, WP 0062 00)

Personnel Required

Two

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Secondary fuel filter removed
(TM 9-2320-360-20-2)

Refrigerant recovered (WP 0056 00)

Battery disconnected (TM 9-2320-360-20-2)

REMOVAL**WARNING**

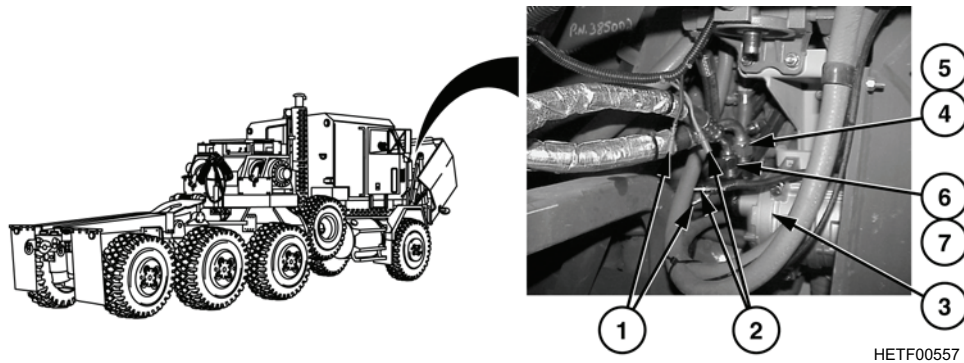
- Ensure engine is cool before removing A/C compressor. Failure to follow this warning may result in severe burns.
- Use care to prevent refrigerant from touching your skin or eyes. Be sure to wear protective goggles and non-leather gloves when servicing Air Conditioning systems to prevent personal injury. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues.

NOTE

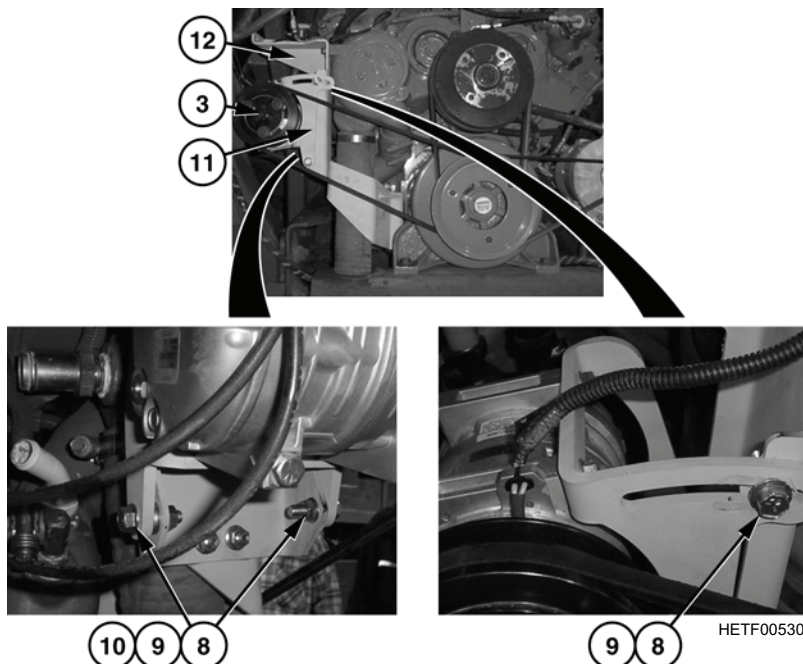
- Tag and mark all wires and hoses prior to removal.
- Cap and plug all lines and fittings during removal.

A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****REMOVAL - CONTINUED**

1. Disconnect A/C compressor receiver/dryer harness connectors (1 and 2) from A/C compressor (3).
2. Remove A/C hose (4) and #10 O-ring (5) from A/C compressor (3). Discard O-ring.
3. Remove #8 A/C hose (6) and #8 O-ring (7) from A/C compressor (3). Discard O-ring.

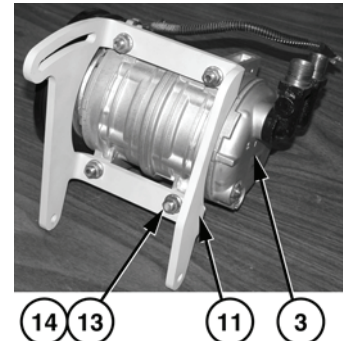
**NOTE**

- Radiator and fan shown removed for clarity.
 - Compressor belt will remain on engine pulley during compressor removal.
4. Remove three locknuts (8), screws (9), shims (10), A/C compressor (3), and swing bracket (11) from upper compressor/fuel filter support (12). Discard locknuts.



A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****REMOVAL - CONTINUED**

5. Remove four locknuts (13), screws (14), and A/C compressor (3) from swing bracket (11). Discard locknuts.

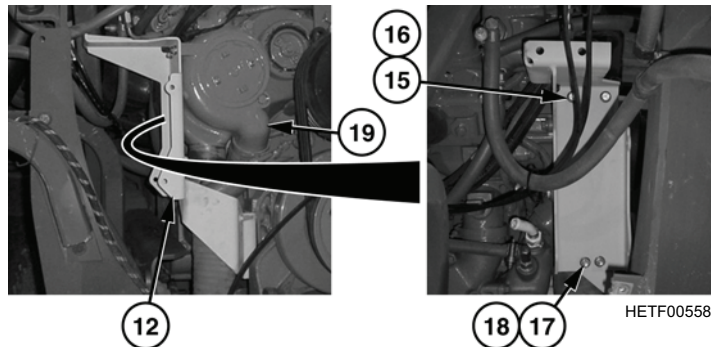


HETF00532

NOTE

Perform Steps 6 through 8 only when required to remove upper and lower compressor/fuel filter support brackets.

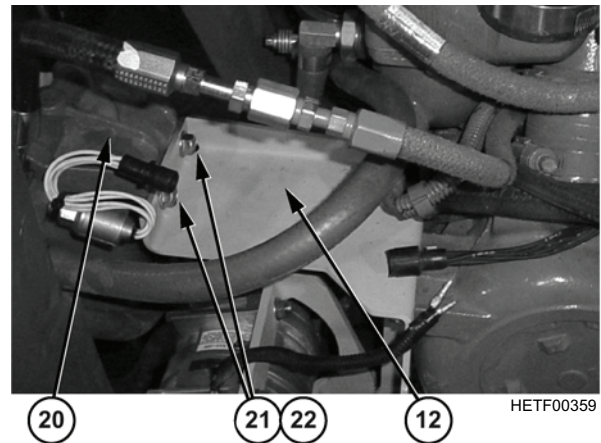
6. Remove radiator (TM 9-2320-360-20-2).
7. Remove two screws (15), lockwashers (16), screws (17), locknuts (18), and upper compressor/fuel filter support (12) from engine (19) and lower compressor/fuel filter support (20). Discard lockwashers and locknuts.



HETF00558

A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****REMOVAL - CONTINUED**

8. Remove three screws (21), lockwashers (22), and lower compressor/fuel filter support (20) from engine (19). Discard lockwashers.

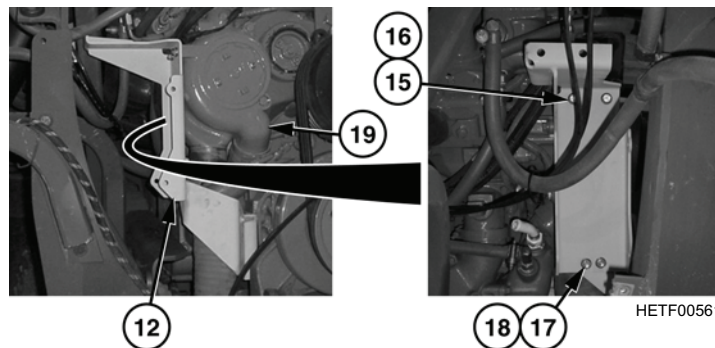
**INSTALLATION****WARNING**

Ensure engine is cool before installing A/C compressor. Failure to follow this warning may result in severe burns.

NOTE

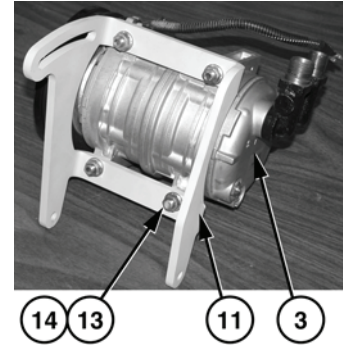
- Perform Steps 1 through 3 only when upper and lower compressor/fuel filter support brackets have been removed. If not required, proceed to Step 4.
- The upper and lower compressor/fuel filter supports are installed at this time, but are not tightened until the compressor, belt, and drive pulley are aligned.

1. Install lower compressor/fuel filter support (20) on engine (19) with three screws (21) and new lockwashers (22).
2. Install upper compressor/fuel filter support (12) on engine (19) and lower compressor/fuel filter support (20) with two screws (15), new lockwashers (16), screws (17), and new locknuts (18).



A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****INSTALLATION - CONTINUED**

3. Install radiator (TM 9-2320-360-20-2).
4. Install A/C compressor (3) on the swing bracket (11) with four screws (14) and new locknuts (13).

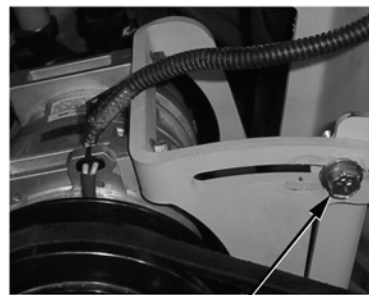
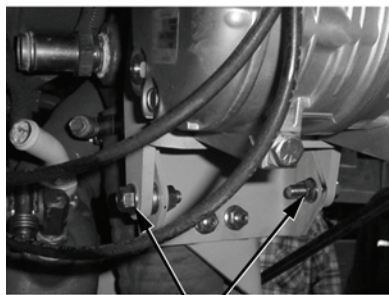
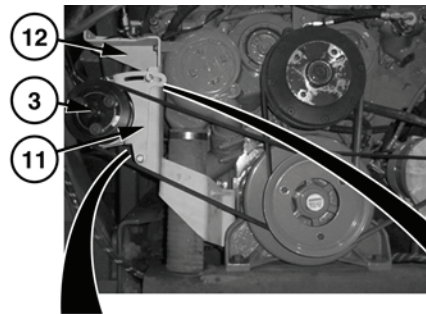


HETF00533

NOTE

Radiator and fan shown removed for clarity.

5. Position A/C compressor (3) and swing bracket (11) on upper compressor/fuel filter support (12) with three screws (9), shims (10), and new locknuts (8). Do not tighten.

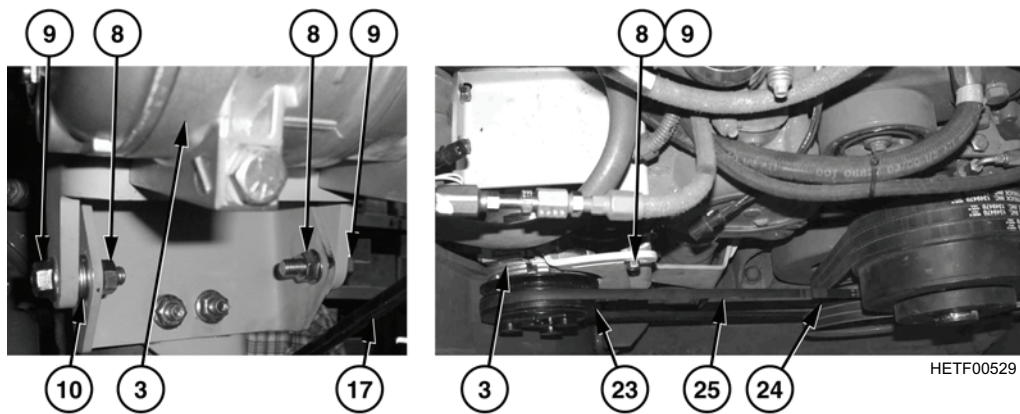


HETF00531

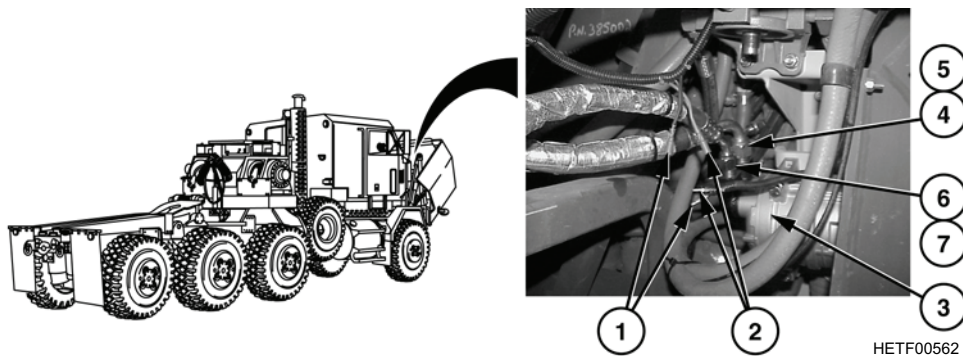
A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****INSTALLATION - CONTINUED****NOTE**

Alignment of the compressor clutch pulley and compressor drive pulley must be checked by using a straight-edge placed on both pulleys. If necessary for alignment, shim the compressor with shims provided, to align the pulleys.

6. Align the compressor clutch pulley (23), and compressor drive pulley (24).
7. If necessary, adjust number of shims (10) on A/C compressor (3) to align pulleys (23 and 24).
8. Using a belt tension gage, tighten A/C compressor drive belt (25) to 98 lb (436 N).
9. Tighten three locknuts (8) when belt tension is correct.

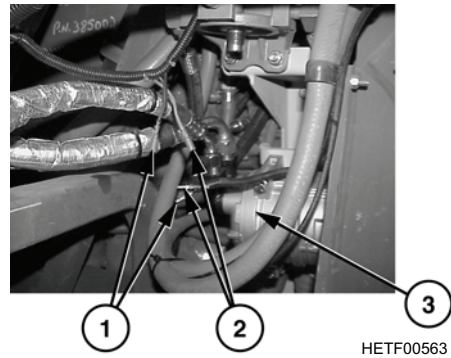


10. Lightly coat new #8 O-ring (7) with refrigerant compressor oil.
11. Install #8 A/C hose (6) and new #8 O-ring (7) on A/C compressor (3).
12. Lightly coat new #10 O-ring (5) with refrigerant compressor oil.
13. Install A/C hose (4) and new #10 O-ring (5) on A/C compressor (3).



A/C COMPRESSOR REPLACEMENT - CONTINUED**0045 00****INSTALLATION - CONTINUED**

14. Connect A/C compressor receiver/dryer harness connectors (1 and 2) to A/C compressor (3).



15. Install secondary fuel filter (TM 9-2320-360-20-2).
16. Connect batteries (TM 9-2320-360-20-2).
17. Charge A/C system (WP 0056 00).
18. Perform leak test inspection (WP 0038 00).
19. Close hood (TM 9-2320-360-10).
20. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C COMPRESSOR PULLEY REPLACEMENT**0046 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Wrench, Torque, 0-175 ft. lb (Item 17, WP 0060 00)

Materials/Parts

Lockwashers (TM 9-2320-360-24P)

Personnel Required

Two

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Engine hood removed (TM 9-2320-360-20-2)

A/C condenser subsystem removed (WP 0035 00)

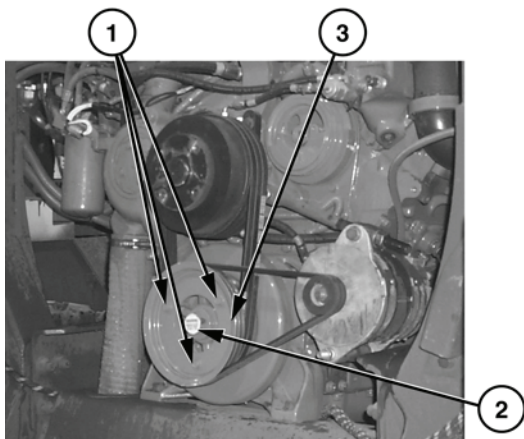
Radiator removed (TM 9-2320-360-20-2)

Alternator belts removed (TM 9-2320-360-20-2)

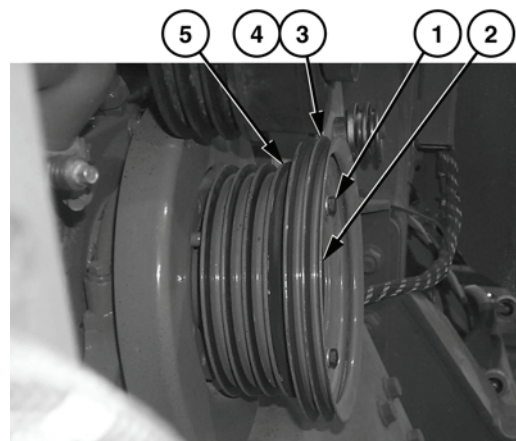
A/C compressor belt removed (WP 0037 00)

REMOVAL

1. Remove three screws (1) from crankshaft (2).
2. Remove alternator drive pulley (3) and spacer (4) from crankshaft (2).
3. Remove A/C compressor drive pulley (5) from crankshaft (2).



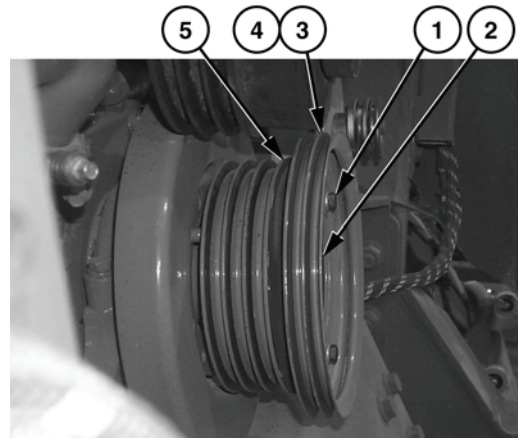
HETF00242



HETF00243

A/C COMPRESSOR PULLEY REPLACEMENT - CONTINUED**0046 00****INSTALLATION**

1. Install A/C compressor drive pulley (5) on crankshaft (2).
2. Install alternator drive pulley (3) and spacer (4) on crankshaft (2).
3. Install three screws (1) on crankshaft (2). Tighten screws to 45 ft. lb (61 Nm).



HETF00244

4. Install A/C compressor belt (WP 0037 00).
5. Install alternator belts (TM 9-2320-360-20-2).
6. Install radiator (TM 9-2320-360-20-2).
7. Install A/C condenser subsystem (WP 0035 00).
8. Install engine hood (TM 9-2320-360-20-2).
9. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C COMPRESSOR - RECEIVER/DRYER WIRING HARNESS REPLACEMENT

0047 00**THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Ties, Plastic (Item 15, WP 0061 00)

References

WP 0026

WP 0057

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

Alternator access panel removed (TM 9-2320-360-20-2)

REMOVAL**NOTE**

- Refer to WP 0057 00, Figure j., for electrical schematic.
 - Tag and mark all wires and cushion clamps prior removal.
 - Cut plastic ties as required.
1. Open doghouse door (WP 0028 00).
 2. Disconnect A/C compressor – receiver/dryer harness connector (1) from A/C evaporator connector (2).

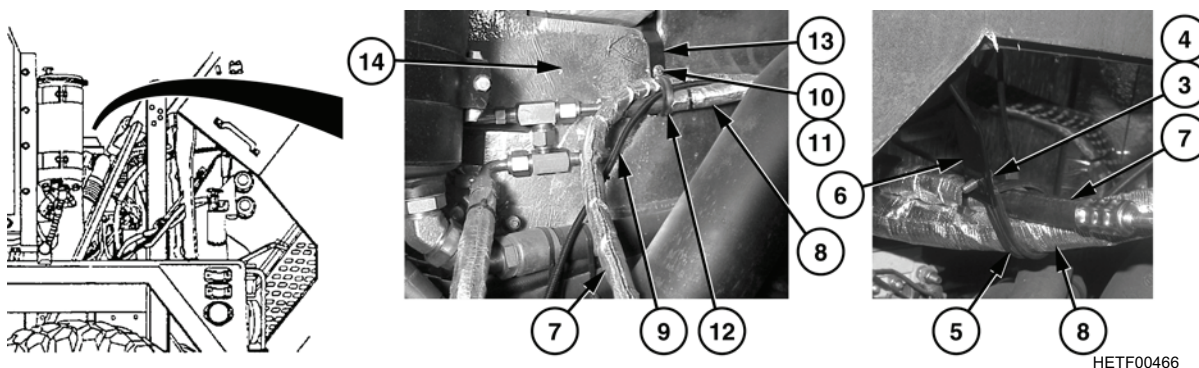


HETF00461

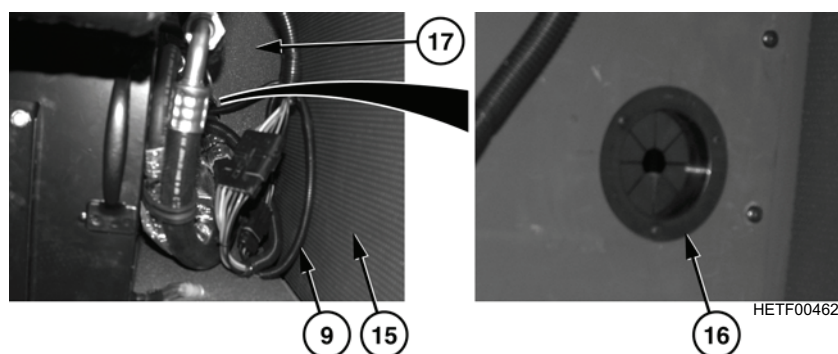
REMOVAL - CONTINUED**NOTE**

Cushion clamps not used on armored vehicles. Remove plastic ties as necessary to remove wiring harness.

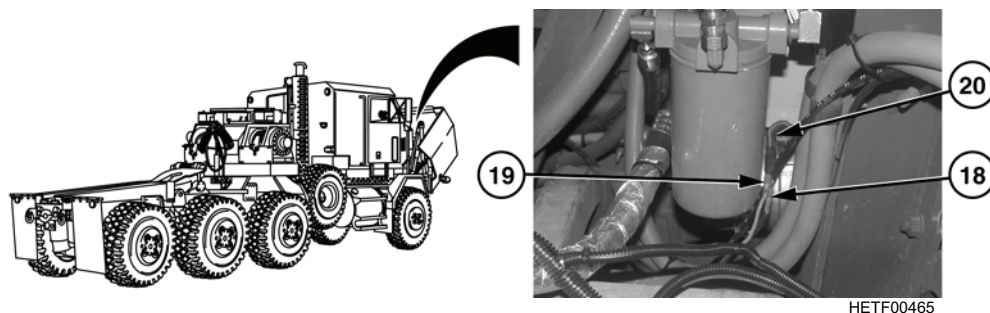
3. Remove screw (3), washer (4), and cushion clamp (5) from twist bracket (6), two A/C hoses (7 and 8), and A/C compressor – receiver/dryer harness (9).
4. Remove screw (10), washer (11), and cushion clamp (12) from A/C cushion clamp bracket (13) on firewall (14), two A/C hoses (7 and 8), and A/C compressor – receiver/dryer harness (9).



5. Remove A/C compressor-receiver/dryer harness (9) from doghouse (15) and grommet (16) on rear engine access panel of doghouse (17).

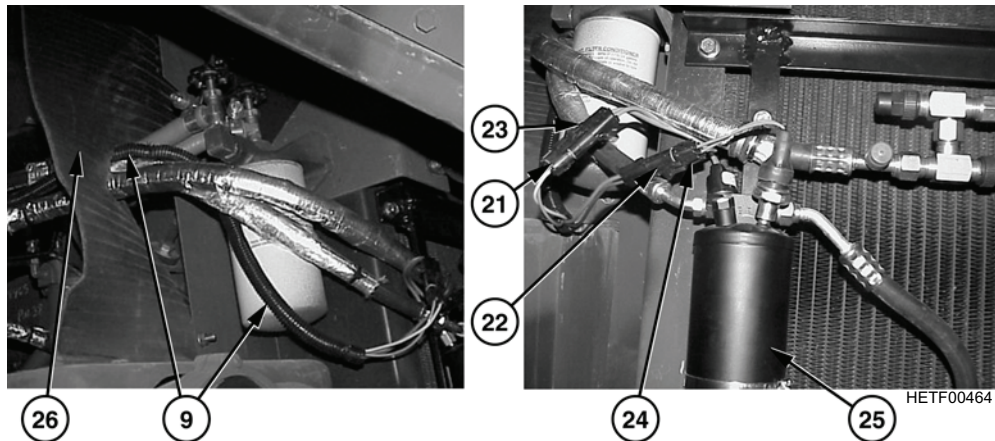


6. Disconnect two A/C compressor-receiver/dryer harness connectors (18 and 19) from A/C compressor harness (20).

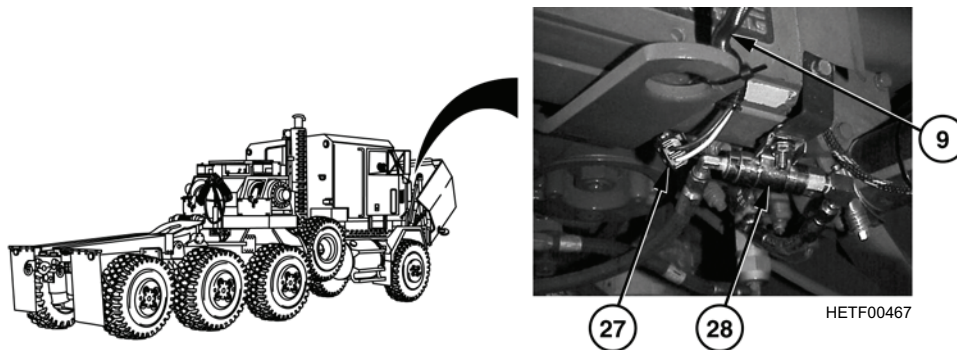


A/C COMPRESSOR - RECEIVER/DRYER WIRING HARNESS REPLACEMENT - CONTINUED**0047 00****REMOVAL - CONTINUED**

7. Disconnect two A/C compressor-receiver/dryer harness connectors (21 and 22) from A/C high pressure switch (23) and A/C binary switch (24) on receiver/dryer (25).
8. Remove A/C compressor-receiver/dryer harness (9) from right-hand baffle (26).

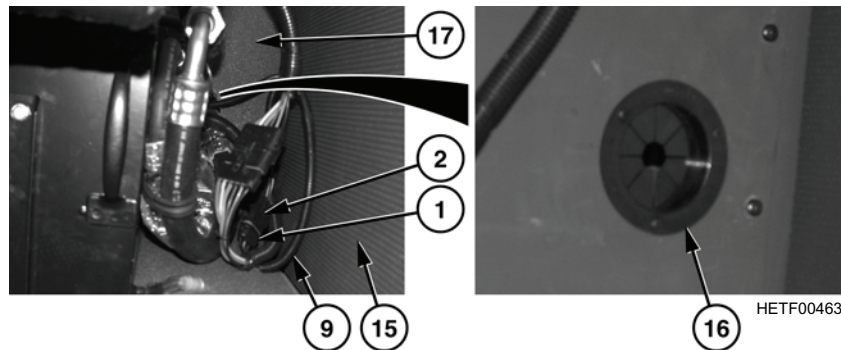


9. Disconnect A/C compressor-receiver/dryer harness (9) from A/C fan control solenoid connector (27) on A/C fan control solenoid (28).
10. Remove A/C compressor-receiver/dryer harness (9).



INSTALLATION**NOTE**

- Refer to WP 0057 00, Figure j., for electrical schematic.
 - A/C compressor-receiver/dryer harness can be fed through grommet in doghouse by accessing the harness through the removed alternator access panel.
 - Install plastic ties as required.
1. Route A/C compressor-receiver/dryer harness (9) through doghouse (15) and grommet (16) on rear engine access panel of doghouse (17).
 2. Connect A/C compressor-receiver/dryer harness connector (1) to A/C evaporator connector (2).

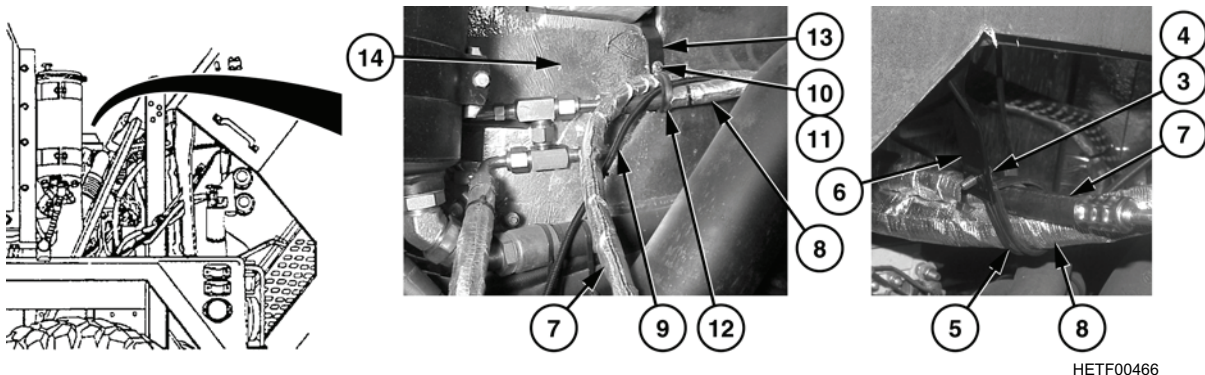


3. Close doghouse door (WP 0028 00).

NOTE

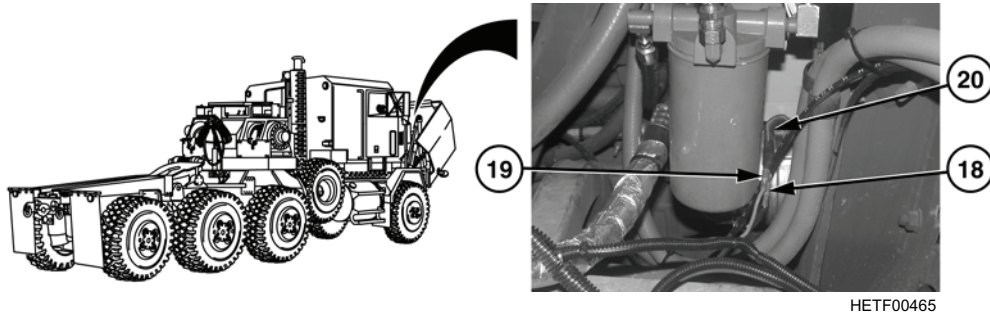
Cushion clamps not used on armored vehicles. Install plastic ties as necessary to remove wiring harness.

4. Install cushion clamp (5) on two A/C hoses (7 and 8) and A/C compressor-receiver/dryer harness (9).
5. Install cushion clamp (5) on twist bracket (6) with washer (4) and screw (3).
6. Install cushion clamp (12) on two A/C hoses (7 and 8) and A/C compressor-receiver/dryer harness (9).
7. Install cushion clamp (12) on A/C cushion clamp bracket (13) and firewall (14) with washer (11) and screw (10).

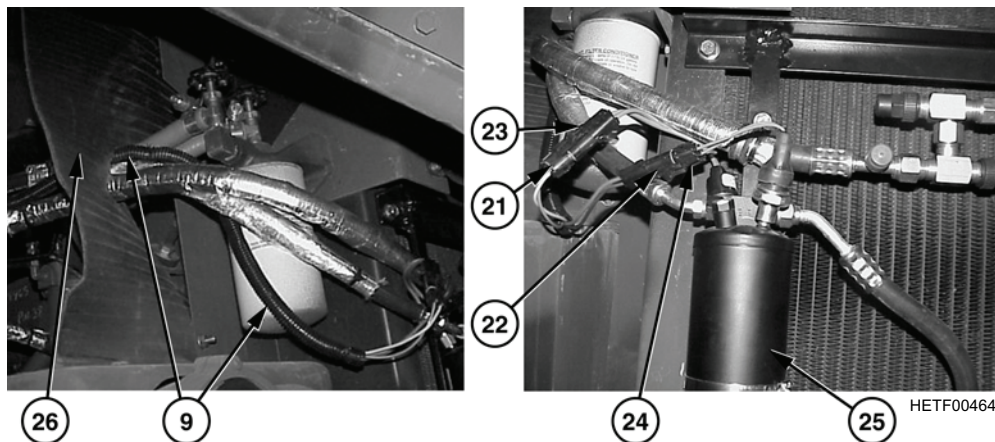


INSTALLATION - CONTINUED

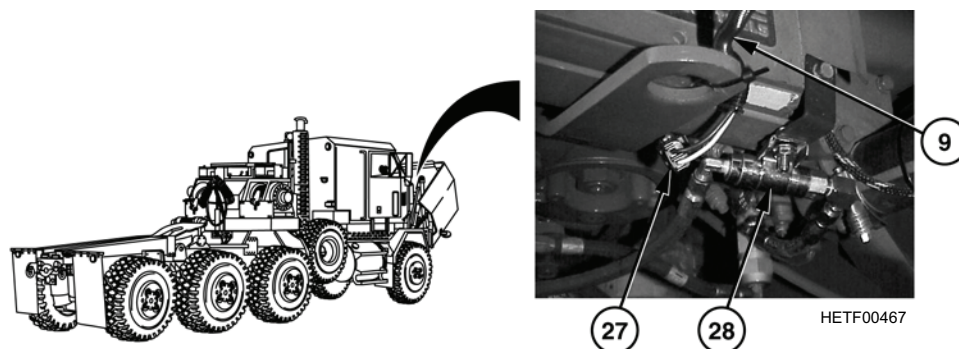
8. Connect two A/C compressor-receiver/dryer harness connectors (18 and 19) to A/C compressor harness (20).



9. Route A/C compressor-receiver/dryer harness (9) through right-hand baffle (26) to receiver/dryer (25).
10. Connect two A/C compressor-receiver/dryer harness connectors (21 and 22) to A/C high pressure switch (23) and A/C binary switch (24).



11. Route A/C compressor-receiver/dryer harness (9) to A/C fan control solenoid (28).
12. Connect A/C compressor-receiver/dryer harness (9) to A/C fan control solenoid connector (27).



A/C COMPRESSOR - RECEIVER/DRYER WIRING HARNESS REPLACEMENT - CONTINUED

0047 00

INSTALLATION - CONTINUED

13. Connect batteries (TM 9-2620-360-20-2).
14. Close hood (TM 9-2620-360-10).
15. Install alternator access panel (TM 9-2620-360-20-2).

END OF WORK PACKAGE

A/C CONDENSER COIL REPLACEMENT**0048 00****THIS WORK PACKAGE COVERS**

Removal, Installation

INITIAL SETUP**Maintenance Level**

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 10, WP 0060 00)

Materials/Parts

Sealant, Loctite (Item 8, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Locknut (8) (Item 15, Figure 1, WP 0062 00)

Locknut (4) (Item 16, Figure 1, WP 0062 00)

Materials/Parts - Continued

#6 O-Ring (Item 27, Figure 1, WP 0062 00)

#8 O-Ring (Item 37, Figure 1, WP 0062 00)

References

WP 0054 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Refrigerant recovered (WP 0056 00)

REMOVAL**WARNING**

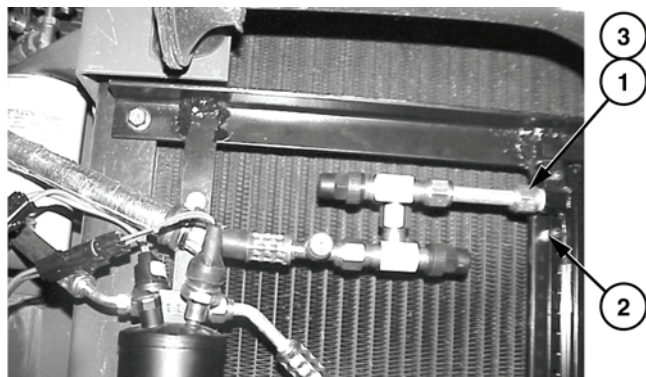
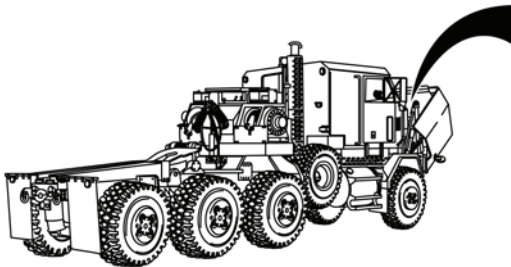
Use care to prevent refrigerant from touching your skin or eyes. Be sure to wear proper protective goggles and non-leather gloves when servicing Air Conditioning systems to prevent injury. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

CAUTION

Cap and plug all lines and fittings or damage to equipment may result.

NOTE

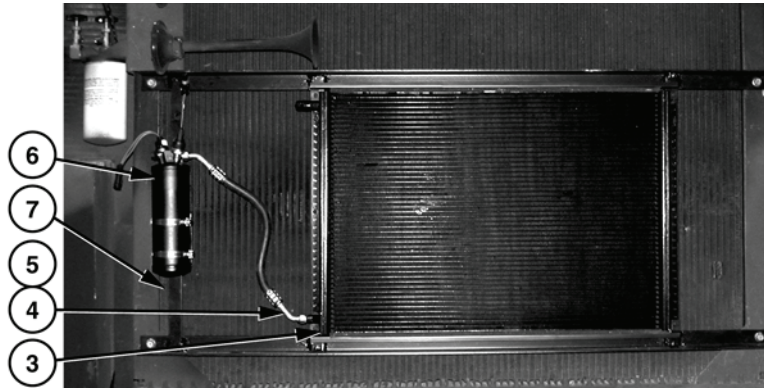
- Tag and mark all wires prior to removal.
 - Tag and mark lines prior to removal.
1. Remove shutoff valve straight adapter (1) and #8 O-ring (2) from A/C condenser coil assembly (3). Discard O-ring.



HETF00565

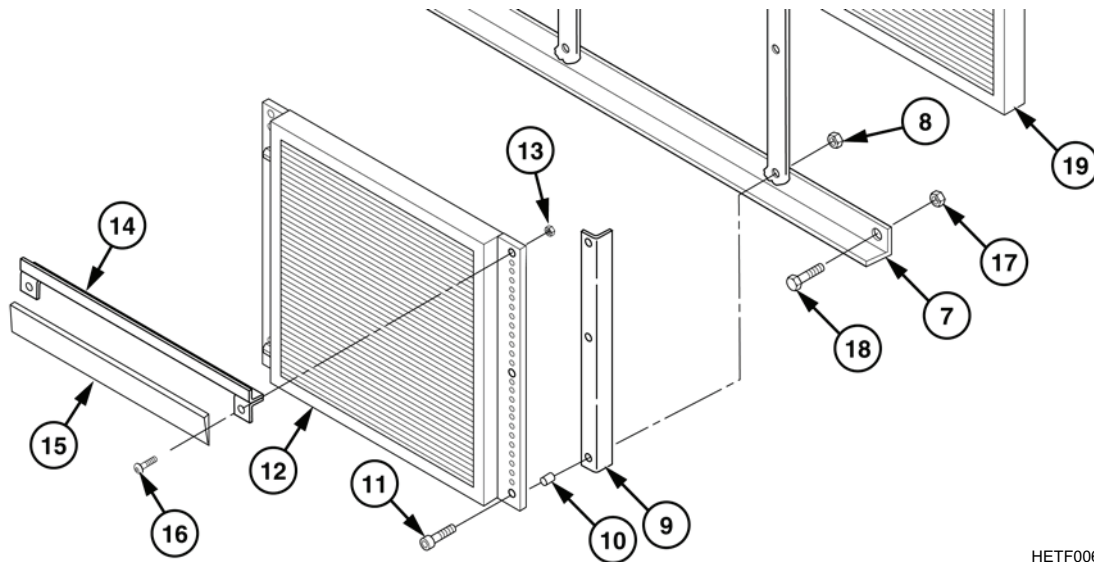
A/C CONDENSER COIL REPLACEMENT - CONTINUED**0048 00****REMOVAL - CONTINUED**

2. Remove #6 A/C hose (4) and #6 O-ring (5) from A/C condenser coil assembly (3). Discard O-ring.
3. Remove A/C receiver/dryer (6) from assembly mount (7) (WP 0054 00).



449-606

4. Remove four locknuts (8), two side shrouds (9), spacers (10), four screws (11), and A/C condenser coil (12) from assembly mount (7). Discard locknuts.
5. Remove four locknuts (13), two shrouds (14) and gaskets (15), and four screws (16) from A/C condenser coil (12). Discard locknuts.
6. Remove four locknuts (17), screws (18), and assembly mount (7) from radiator (19). Discard locknuts.



HETF00661

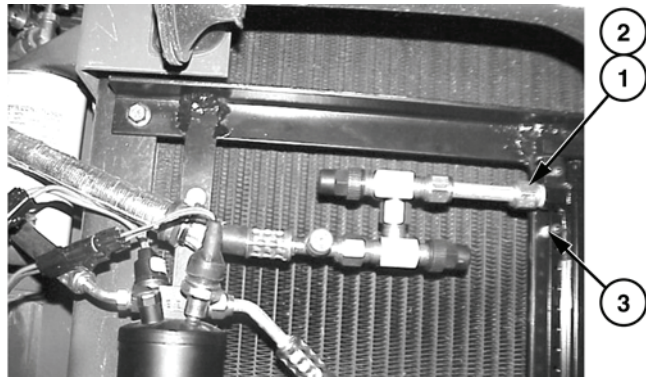
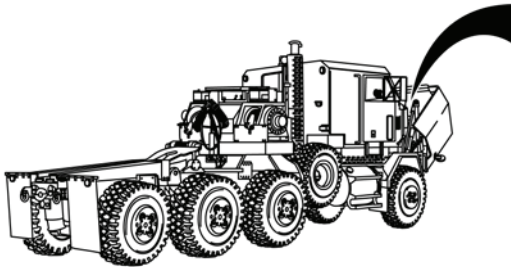
A/C CONDENSER COIL REPLACEMENT - CONTINUED**0048 00****INSTALLATION**

1. Install assembly mount (7) on radiator (19) with four screws (18) and new locknuts (17).
2. Install two shrouds (14) and gaskets (15) with four screws (16) and new locknuts (13).
3. Install A/C condenser coil (12) on assembly mount (7) with four screws (11), spacers (10), two side shrouds (9) and four new locknuts (8).
4. Install A/C receiver/dryer (6) on assembly mount (7) (WP 0054 00).

WARNING

Adhesives and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

5. Apply sealant to hose (4).
6. Install #6 A/C hose (4) and new #6 O-ring (5) on A/C condenser coil assembly (3).
7. Install shutoff valve straight adapter (1) and new #8 O-ring (2) on A/C condenser coil assembly (3).



HETTF00569

8. Install A/C receiver/dryer (WP 0054 00).
9. Close hood (TM 9-2320-360-10).
10. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C EXPANSION VALVE REPLACEMENT

0049 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

- Oil, Refrigerant Compressor (Item 6, WP 0061 00)
- #6 O-Ring (Item 27, Figure 1, WP 0062 00)
- Tape, Insulation (Item 85, Figure 1, WP 0062 00)

Materials/Parts - Continued

#12 O-Ring (Item 115, Figure 1, WP 0062 00)

Equipment Conditions

- Wheels chocked (TM 9-2320-360-10)
 - Hood opened (TM 9-2320-360-10)
 - Refrigerant recovered (WP 0056 00)
 - A/C evaporator subsystem removed from doghouse (WP 0036 00)
-

REMOVAL

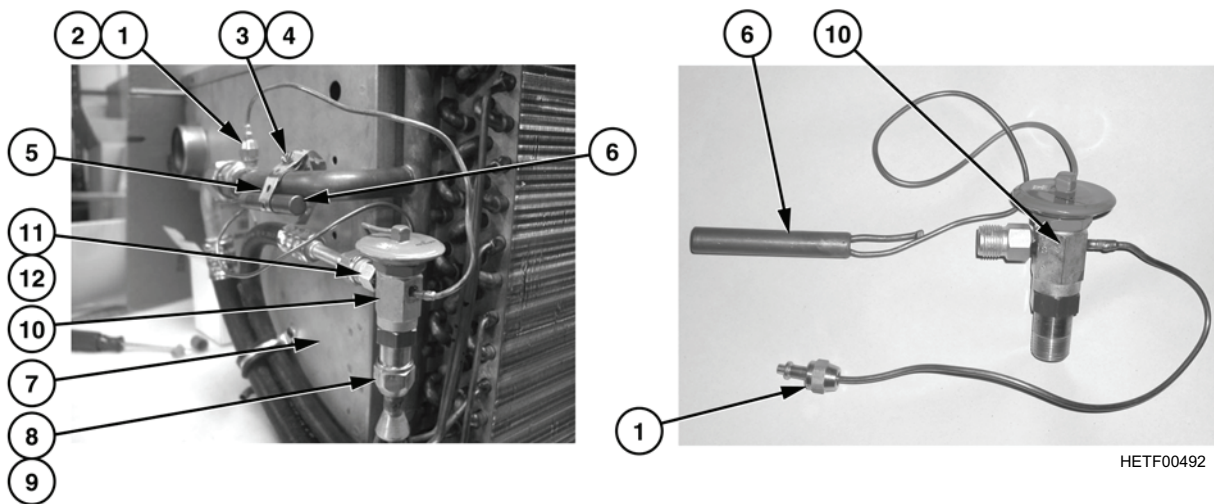
WARNING

Use care to prevent refrigerant from touching your skin or eyes. Be sure to wear proper protective goggles and non-leather gloves when servicing Air Conditioning systems tp prevent personal injury. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

A/C EXPANSION VALVE REPLACEMENT - CONTINUED**0049 00****REMOVAL - CONTINUED****NOTE**

Remove cork tape as required.

1. Remove hose fitting (1) from fitting (2).
2. Remove screw (3), nut (4), clamp (5), and thermocouple (6) from A/C evaporator (7).
3. Remove fitting (8) and #12 O-ring (9) from A/C expansion valve (10). Discard O-ring.
4. Remove #6 A/C hose (11) and #6 O-ring (12) from A/C expansion valve (10). Discard O-ring.

**INSTALLATION****NOTE**

Install cork tape as required.

1. Lightly coat new #6 O-ring (12) and new #12 O-ring (9) with refrigerant compressor oil.
2. Install #6 A/C hose (11) and #6 O-ring (12) on A/C expansion valve (10).
3. Install fitting (8) and #12 O-ring (9) on A/C expansion valve (10).
4. Install thermocouple (6) to A/C evaporator (7) with clamp (5), screw (3), and nut (4).
5. Install hose fitting (1) to fitting (2).
6. Install A/C evaporator subsystem (WP 0036 00).
7. Charge A/C system (WP 0056 00).
8. Perform leak test inspection (WP 0038 00).
9. Close hood (TM 9-2320-360-10).
10. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C EVAPORATOR COIL REPLACEMENT

0050 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Tape, Insulation (Item 85, Figure 1, WP 0062 00)

Materials/Parts - Continued

#12 O-Ring (Item 115, Figure 1, WP 0062 00)

References

WP 0049 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Refrigerant recovered (WP 0056 00)

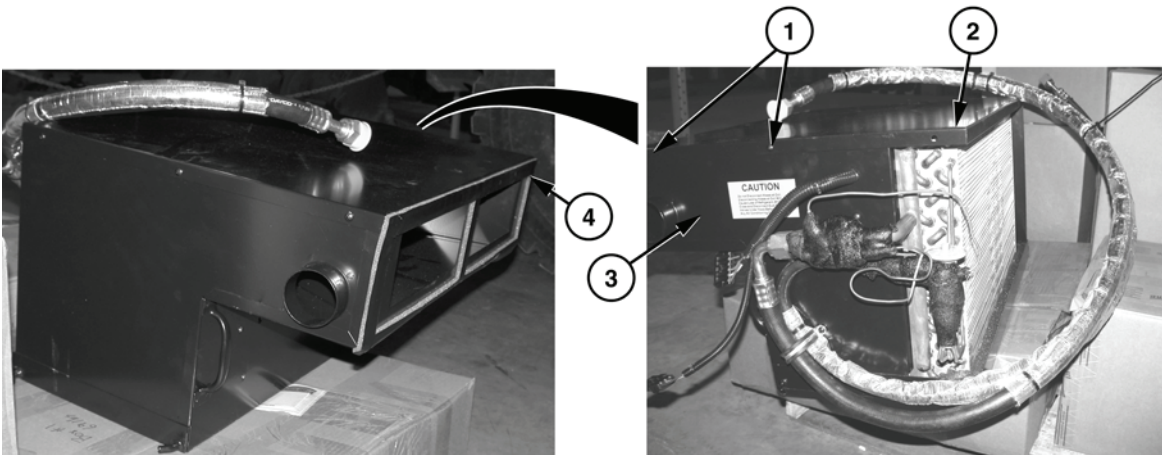
A/C evaporator subsystem removed (WP 0036 00)

REMOVAL

WARNING

Use care to prevent refrigerant from touching your skin or eyes; wear protective goggles and gloves when servicing Air Conditioning systems. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

1. Remove eight screws (1) and A/C evaporator cover (2) from A/C evaporator (3).
2. Remove tape (4), if damaged, from A/C evaporator cover (2).



HETF00289

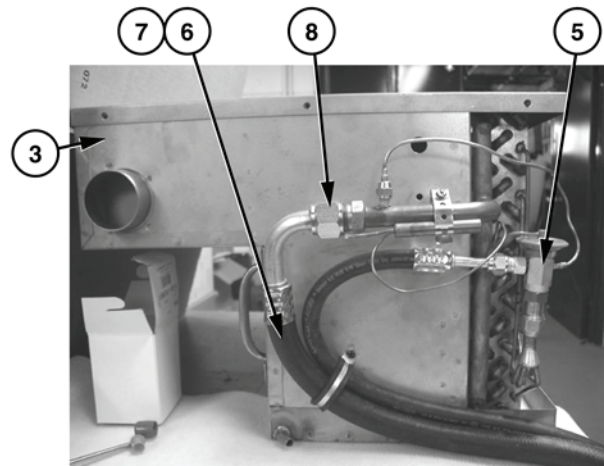
A/C EVAPORATOR COIL REPLACEMENT - CONTINUED

0050 00

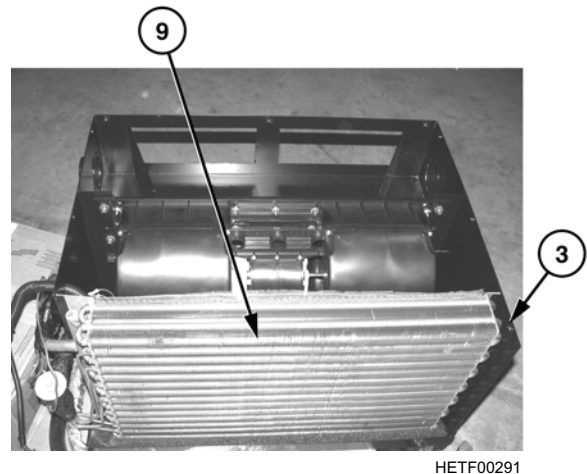
REMOVAL - CONTINUED**NOTE**

- Remove cork tape as required.
- Tag and mark hoses prior to removal.

3. Remove A/C expansion valve (5) (WP 0049 00).
4. Disconnect #12 A/C hose (6) and #12 O-ring (7) from fitting (8). Discard O-ring.



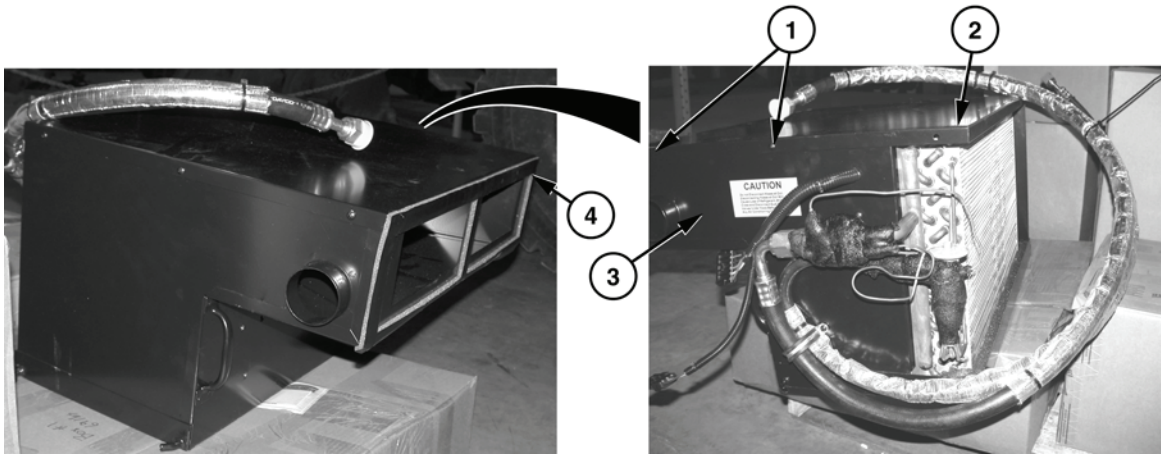
5. Slide A/C evaporator coil (9) out of tracks and remove from A/C evaporator (3).

**INSTALLATION**

1. Slide A/C evaporator coil (9) into tracks of A/C evaporator (3).
2. Lightly coat new #12 O-ring (7) with refrigerant compressor oil.
3. Install #12 hose (6) and new #12 O-ring (7) on fitting (8).
4. Install A/C expansion valve (5) (WP 0049 00).

A/C EVAPORATOR COIL REPLACEMENT - CONTINUED**0050 00****INSTALLATION - CONTINUED**

5. Install tape (4), as required, on A/C evaporator cover (2).
6. Install A/C evaporator cover (2) to A/C evaporator (3) with eight screws (1).



HETF00289

7. Install A/C evaporator subsystem (WP 0036 00).
8. Charge A/C system (WP 0056 00).
9. Perform leak test inspection (WP 0038 00).
10. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C SWITCH WIRING HARNESS REPLACEMENT

0051 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Tags, Identification (Item 14, WP 0061 00)

Tie, Plastic (Item 15, WP 0061 00)

Locknut (2) (TM 9-2320-360-24P)

Lockwasher (3) (TM 9-2320-360-24P)

References

WP 0028 00

WP 0057 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Alternator access panel removed (TM 9-2320-360-20)

Batteries disconnected (TM 9-2320-360-20-2)

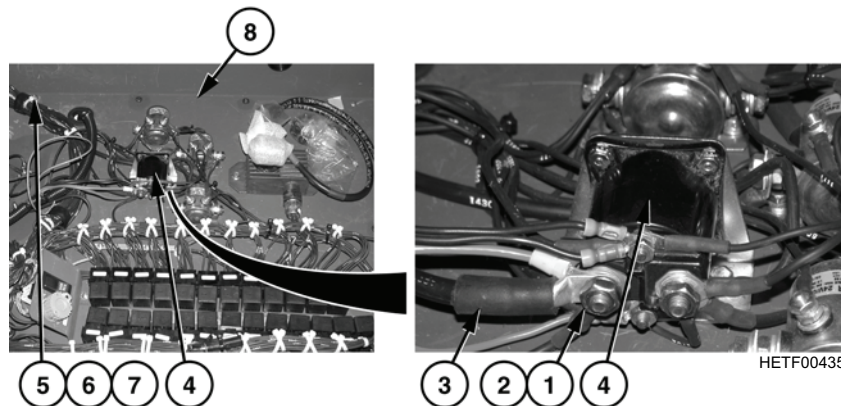
Electronic control box assembly covers removed (TM 9-2320-360-20-2)

Dash access panel removed (TM 9-2320-360-20-2)

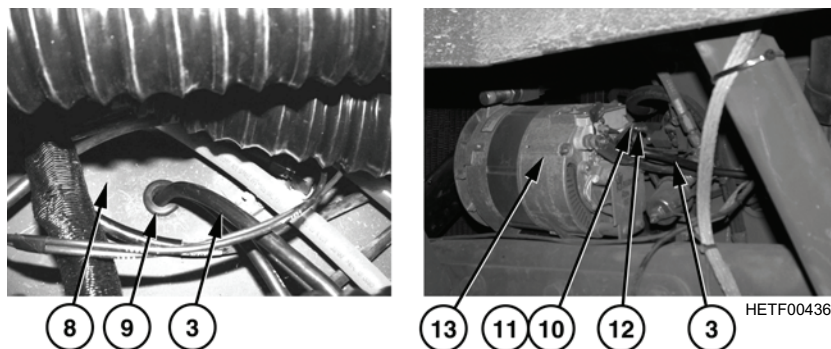
A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED**0051 00****REMOVAL****NOTE**

- Refer to WP 0057 00, Figure j., for electrical schematics.
- Tag and mark all wires prior to removal.
- Cut plastic ties as required.

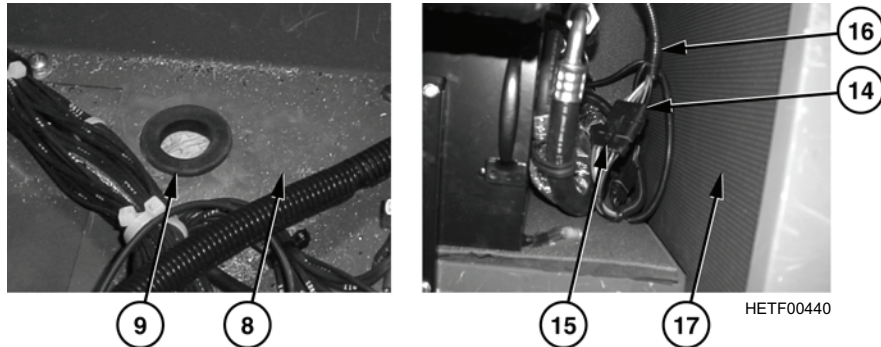
1. Open doghouse door (WP 0028 00).
2. Remove wire 1280 from alternator and 24 vdc magnetic switch (R22).
 - a. Remove nut (1), lockwasher (2), and wire 1280 (3) from 24 vdc magnetic switch (R22) (4). Discard lockwasher.
 - b. Remove screw (5), washer (6), and cushion clamp (7) from electrical control box (8) and wire 1280 (3).



- c. Remove wire 1280 (3) back through grommet (9) in bottom of electrical control box (8).
- d. Remove nut (10), lockwasher (11), and wire 1280 (3) from alternator positive (+) terminal (12) of alternator (13). Discard lockwasher.

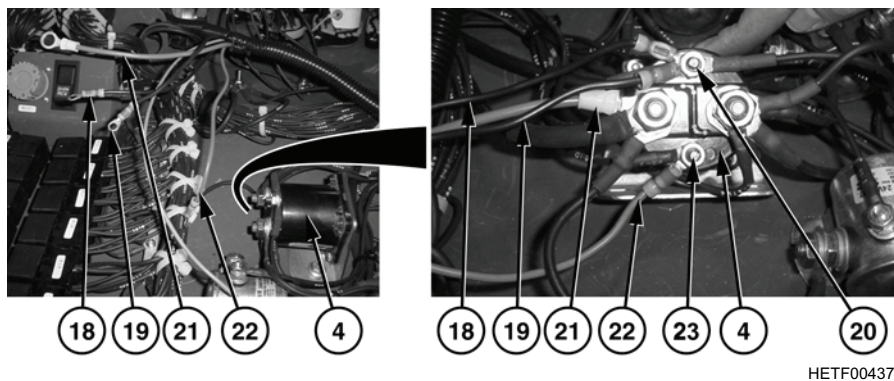


3. Remove A/C switch harness connector (14) from A/C evaporator connector (15).
4. Remove A/C switch harness (16) from doghouse (17) and grommet (9) in electrical control box (8).
5. Remove harness from 24 vdc magnetic switch (R22) (4).

REMOVAL - CONTINUED**NOTE**

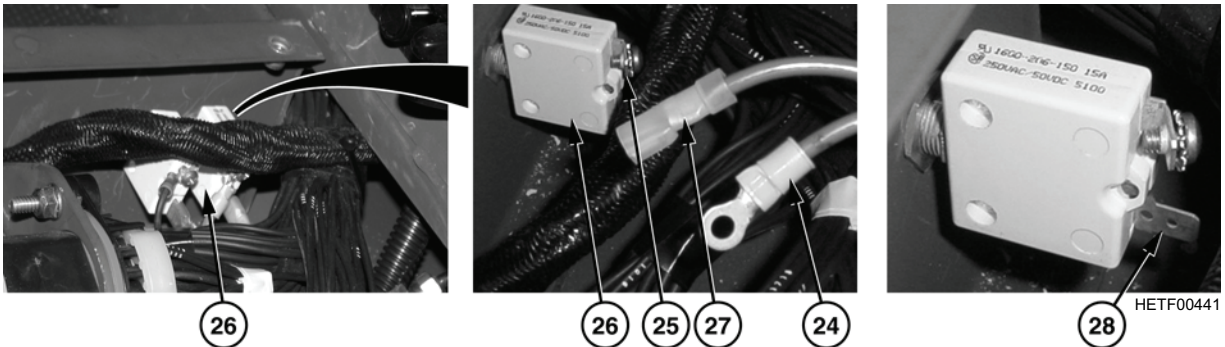
Ground terminal is identified by wire 1435.

- a. Remove locknut (20) from 24 vdc magnetic switch (R22) (4). Discard locknut.
- b. Remove two black ground wires (18 and 19) from 24 vdc magnetic switch (R22) (4).
- c. Remove red wire (21) from 24 vdc magnetic switch (R22) (4).
- d. Remove locknut (23) from 24 vdc magnetic switch (R22) (4). Discard locknut.
- e. Remove red wire (22) from 24 vdc magnetic switch (R22) (4).

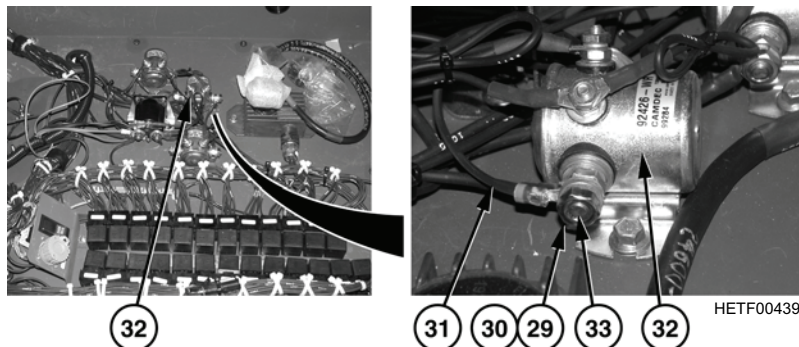


A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED**0051 00****REMOVAL - CONTINUED**

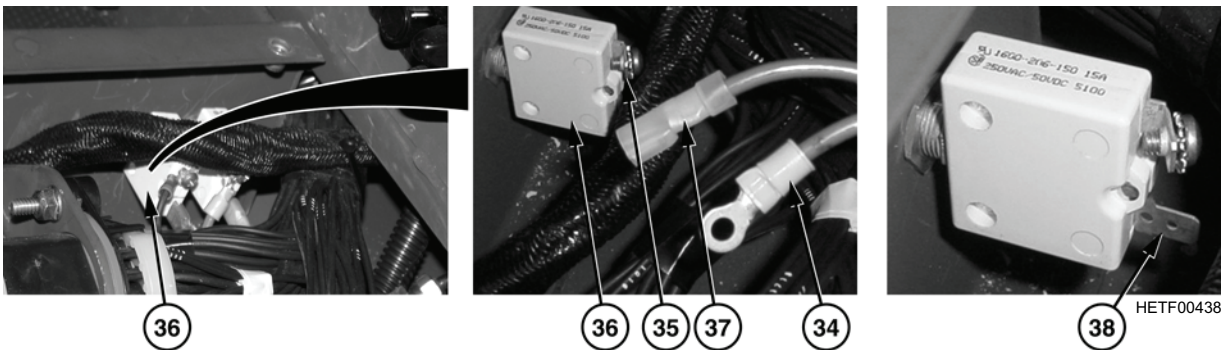
6. Remove harness from 20 amp A/C circuit breaker.
 - a. Remove black power lead (24) from screw-type terminal (25) of 20 amp circuit breaker (26).
 - b. Remove blue power lead (27) from slip-on terminal (28) of 20 amp circuit breaker (26).



7. Remove harness from 5 amp A/C fan solenoid circuit breaker.
 - a. Remove nut (29), lockwasher (30), and 12 vdc power lead (31) from 12 vdc magnetic switch (R31) (32) at wire terminal 1075A (33). Discard lockwasher.

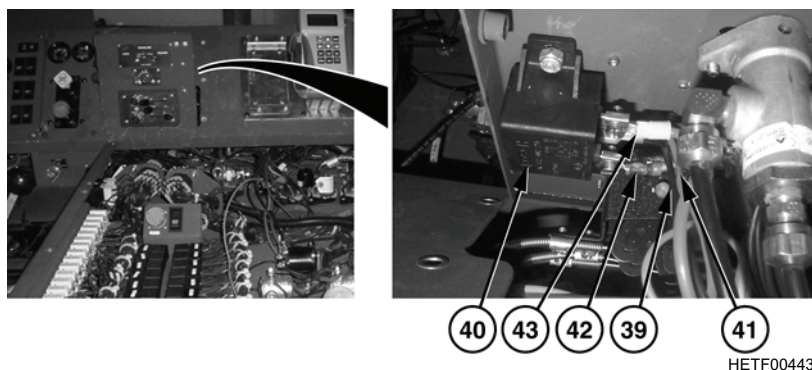


- b. Remove red power lead (34) from screw-type terminal (35) of 5 amp circuit breaker (36).
 - c. Remove red power lead (37) from slip-on terminal (38) of 5 amp circuit breaker (36).

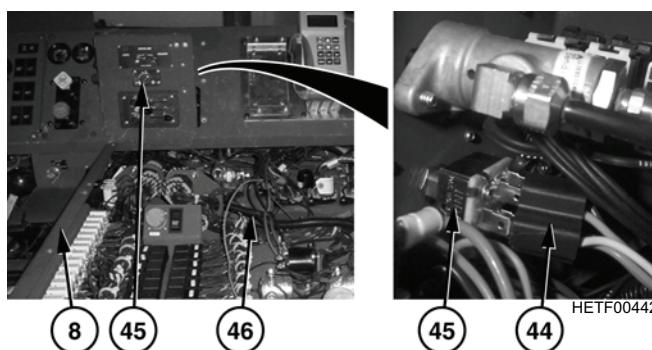


A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED**0051 00****REMOVAL - CONTINUED**

8. Remove harness from A/C relay.
 - a. Remove black wire (39) from A/C relay (40).
 - b. Remove red wire (41) from A/C relay (40).
 - c. Remove orange screw-type wire (42) from A/C relay (40).
 - d. Remove red screw-type wire (43) from A/C relay (40).



9. Remove harness from A/C fan control switch.
 - a. Remove 3-connection wiring harness connector (44) from rear of A/C fan control switch (45).
 - b. Pull A/C switch wiring harness (46) from electrical control box (8).

**INSTALLATION****NOTE**

Refer to WP 0057 00, Figure j., for electrical schematics.

1. Install harness on A/C fan control switch.
 - a. Position A/C switch wiring harness (46) in electrical control box (8).
 - b. Install 3-connection wiring harness connector (44) on rear of A/C fan control switch (45).
2. Install harness on A/C relay.
 - a. Install black wire (39) on A/C relay (40).
 - b. Install red wire (41) on A/C relay (40).
 - c. Install orange screw-type wire (42) on A/C relay (40).
 - d. Install red screw-type wire (43) on A/C relay (40).

A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED

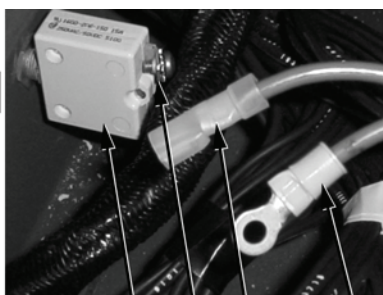
0051 00

INSTALLATION - CONTINUED

3. Install harness to 20 amp A/C circuit breaker.
 - a. Route wiring harness under relays to 20 amp circuit breaker (26).
 - b. Install black power lead (24) to screw-type terminal (25) of 20 amp circuit breaker (26).
 - c. Install blue power lead (27) to slip-on terminal (28) of 20 amp circuit breaker (26).



26



26

25

27

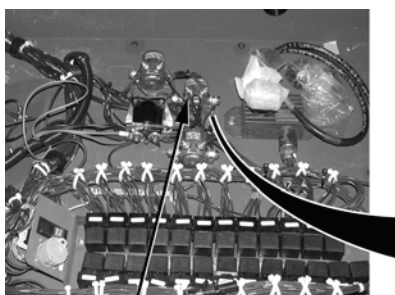
24



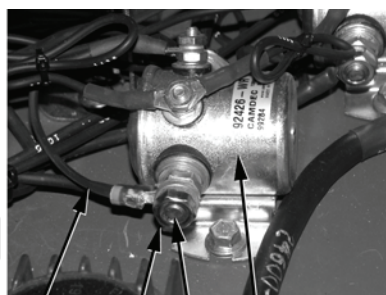
28

HETF00496

4. Install harness to 5 amp A/C fan solenoid circuit breaker.
 - a. Install 12 vdc power lead (31), new lockwasher (30), and nut (29) to 12 vdc magnetic switch (R31) (32) at wire terminal 1075A (33).



32



31

30

29

33

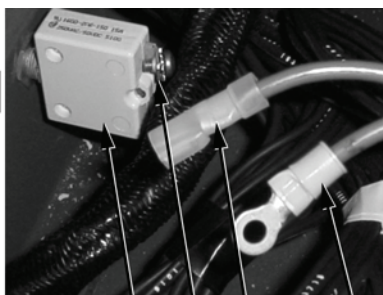
32

HETF00497

- b. Install red power lead (34) on screw-type terminal (35) of 5 amp circuit breaker (36).
 - c. Install red power lead (37) on slip-on terminal (38) of 5 amp circuit breaker (36).



36



36

35

37

34



38

HETF00498

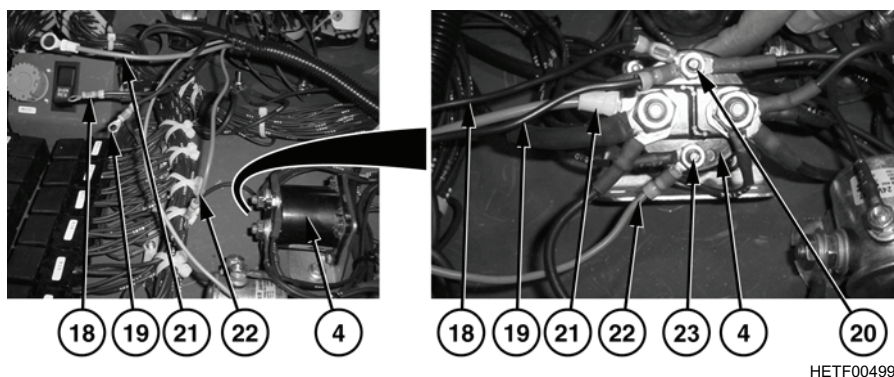
A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED**0051 00****INSTALLATION - CONTINUED**

5. Install harness to 24 vdc magnetic switch (R22).

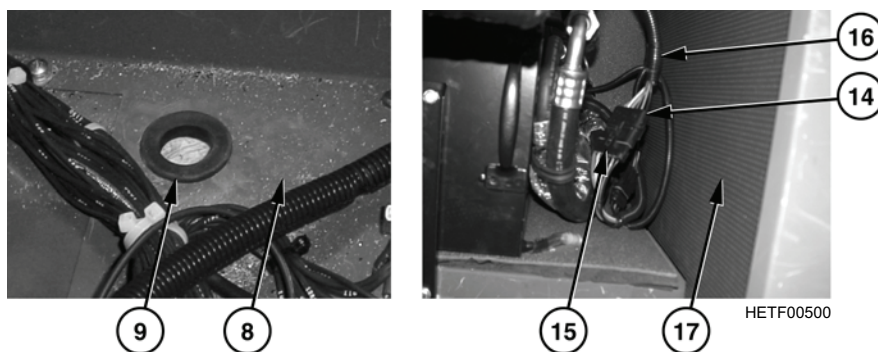
NOTE

Ground terminal is identified by wire 1435.

- Install two black ground wires (18 and 19) to 24 vdc magnetic switch (R22) (4).
- Install new locknut (20) on 24 vdc magnetic switch (R22) (4).
- Install red wire (21) to 24 vdc magnetic switch (R22) (4).
- Install red wire (22) to 24 vdc magnetic switch (R22) (4).
- Install new locknut (23) on 24 vdc magnetic switch (R22) (4).



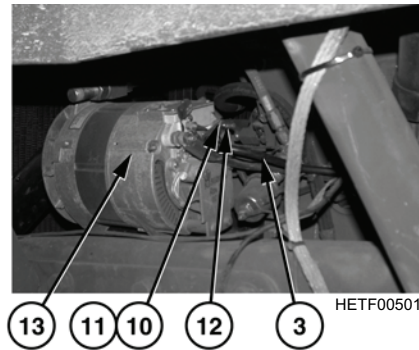
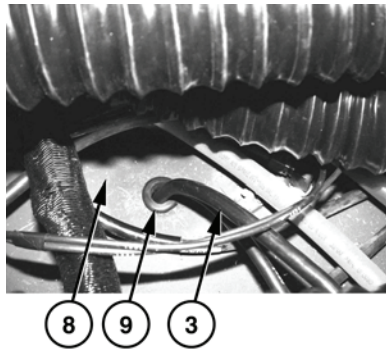
- Thread remaining portion of wiring harness (16) through grommet (9) in electrical control box (8) into interior of dog-house (17).
- Install A/C switch harness connector (14) on A/C evaporator connector (15).
- Install wire 1280 on alternator and 24 vdc magnetic switch (R22).



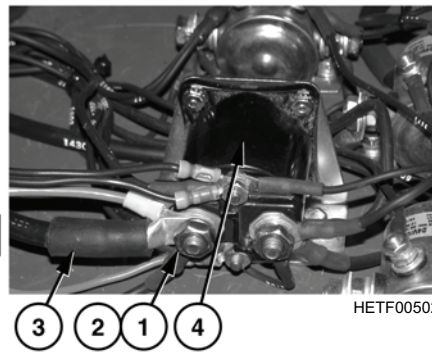
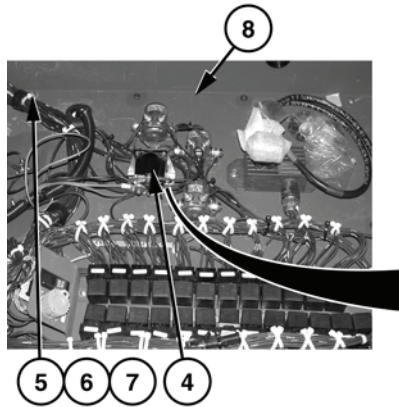
A/C SWITCH WIRING HARNESS REPLACEMENT - CONTINUED**0051 00****INSTALLATION - CONTINUED****CAUTION**

Ensure wire 1280 to alternator is loose enough to allow for alternator belt adjustment. Failure to follow this caution may result in damage to equipment.

- a. Install wire 1280 (3), new lockwasher (11), and nut (10) to alternator positive (+) terminal (12) of alternator (13).
- b. Feed wire 1280 (3) through tunnel and grommet (9) into bottom of electrical control box (8).



- c. Install wire 1280 (3), new lockwasher (2), and nut (1) to 24-vdc magnetic switch (R22) (4).
- d. Install wire 1280 (3) and cushion clamp (7) in bottom of electrical control box (8) with screw (5) and washer (6).



9. Install plastic ties where needed to secure the A/C switch harness.
10. Close doghouse door (WP 0028 00).
11. Install dash access panel (TM 9-2320-360-20-2).
12. Install electronic control box assembly covers (TM 9-2320-360-20-2).
13. Connect batteries (TM 9-2620-360-20-2).
14. Install alternator access panel (TM 9-2320-360-20-2).
15. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C HOSES REPLACEMENT

0052 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Ties, Plastic (Item 15, WP 0061 00)

#6 O-Ring (3), (Item 27, Figure 1, WP 0062 00)

#8 O-Ring (2) (Item 37, Figure 1, WP 0062 00)

Materials/Parts - Continued

Tape, Insulation (Item 85, Figure 1, WP 0062 00)

#10 O-Ring, (Item 113, Figure 1, WP 0062 00)

#12 O-Ring (2), (Item 115, Figure 1, WP 0062 00)

References

WP 0057 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

Refrigerant recovered (WP 0056 00)

REMOVAL

WARNING

Use care to prevent refrigerant from touching your skin or eyes. Be sure to wear proper protective goggles and non-leather gloves when servicing Air Conditioning systems to prevent personal injury. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

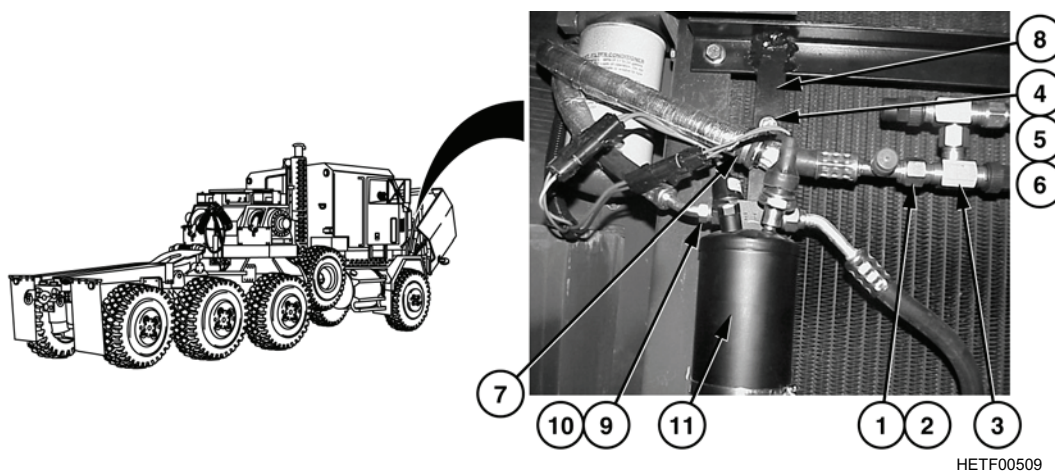
CAUTION

Cap and plug all lines and fittings or damage to equipment may result.

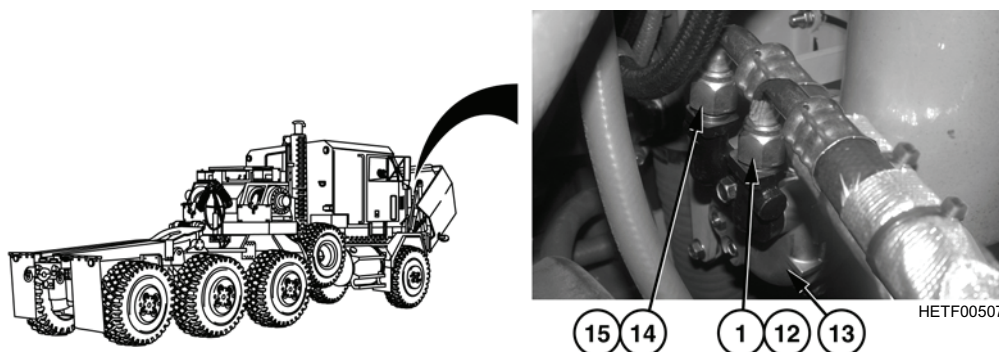
A/C HOSES REPLACEMENT - CONTINUED**0052 00****REMOVAL - CONTINUED****NOTE**

- Refer to WP 0057 00, Figure k., for routing and location of A/C hoses.
- Mark location of plastic ties before removing.
- Cut plastic ties as required.
- Tag and mark hoses prior to removal.
- Remove cork tape as required.

1. Remove discharge service hose (#8 A/C hose) (1) and #8 O-ring (2) from shutoff valve (3). Discard O-ring.
2. Remove nut (4), screw (5), washer (6), and cushion clamp (7) from A/C condenser assembly (8).
3. Remove #6 A/C hose (9) and #6 O-ring (10) from A/C receiver/dryer (11). Discard O-ring.

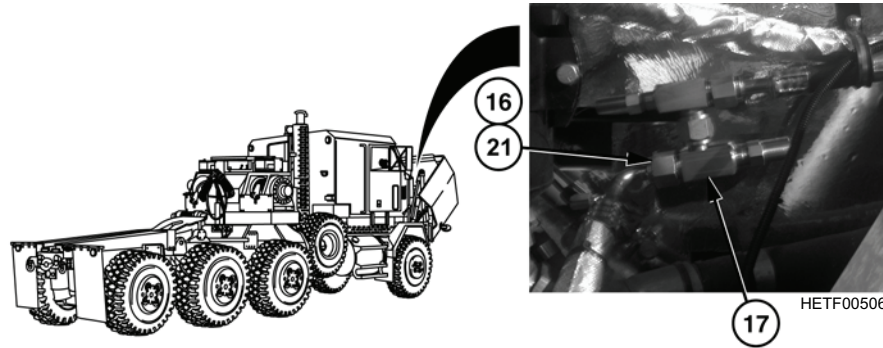


4. Remove discharge service hose (#8 A/C hose) (1) and #8 O-ring (12) from A/C compressor (13). Discard O-ring.
5. Remove discharge service hose (1) from vehicle.
6. Remove suction service hose (#10 A/C hose) (14) and #10 O-ring (15) from A/C compressor (13). Discard O-ring.

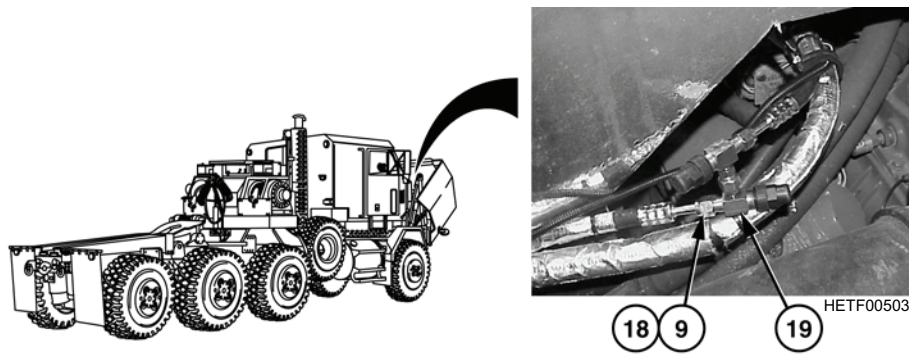


A/C HOSES REPLACEMENT - CONTINUED**0052 00****REMOVAL - CONTINUED**

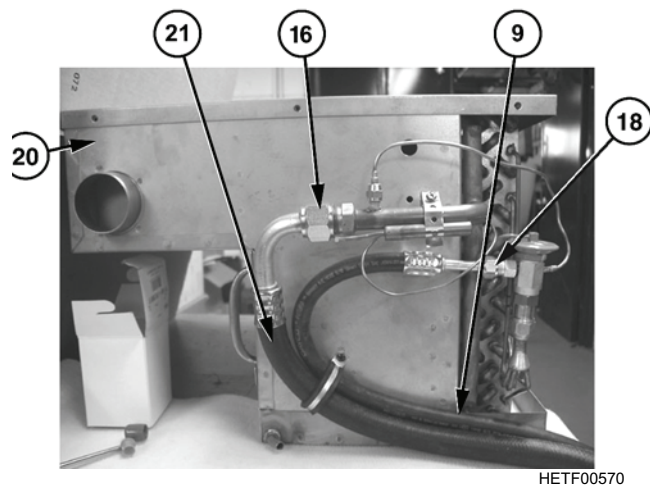
7. Remove suction service hose (#12 A/C hose) (21) and #12 O-ring (16) from shutoff valve (17). Discard O-ring.
8. Remove suction service hose (21) from vehicle.



9. Remove #6 A/C hose (9) and #6 O-ring (18) from shutoff valve (19). Discard O-ring.
10. Remove #6 A/C hose (9) from vehicle.



11. Remove #6 A/C hose (9) and #12 A/C hose (21), from A/C evaporator (20).
12. Remove #12 O-ring (16) and #6 O-ring (18) from A/C evaporator (20). Discard O-rings.

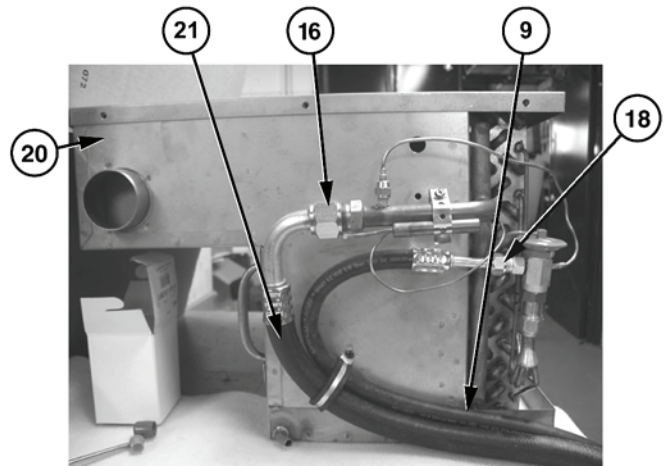


A/C HOSES REPLACEMENT - CONTINUED**0052 00****INSTALLATION**

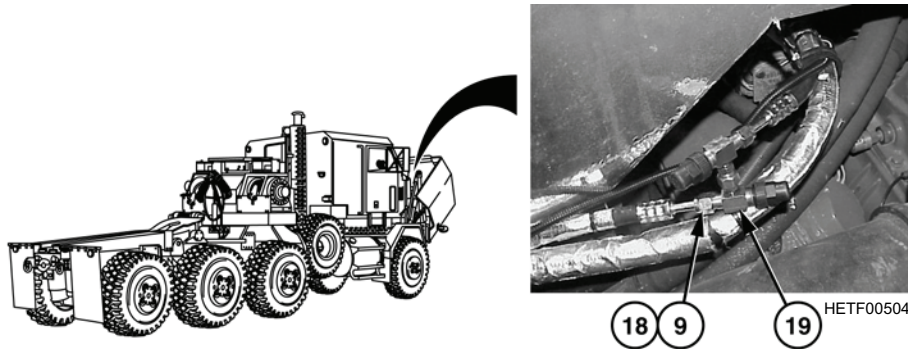
1. Lightly coat new #12 O-ring (16) and new #6 O-ring (18) with refrigerant compressor oil.

NOTE

- Refer to WP 0057 00, Figure k., for routing and location of A/C hoses.
 - Install cork tape as required.
2. Install #6 A/C hose (9) with #6 O-ring (18) on A/C evaporator (20).
 3. Install #12 A/C hose (21) with #12 O-ring (16) on A/C evaporator (20).

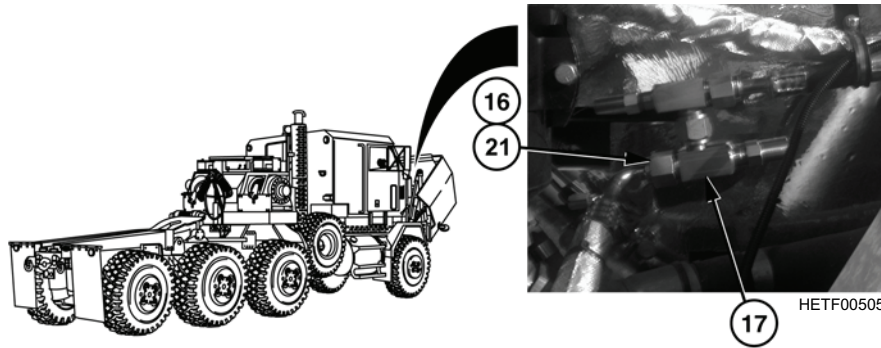


4. Install #6 A/C hose (9) and #6 O-ring (18) on shutoff valve (19).

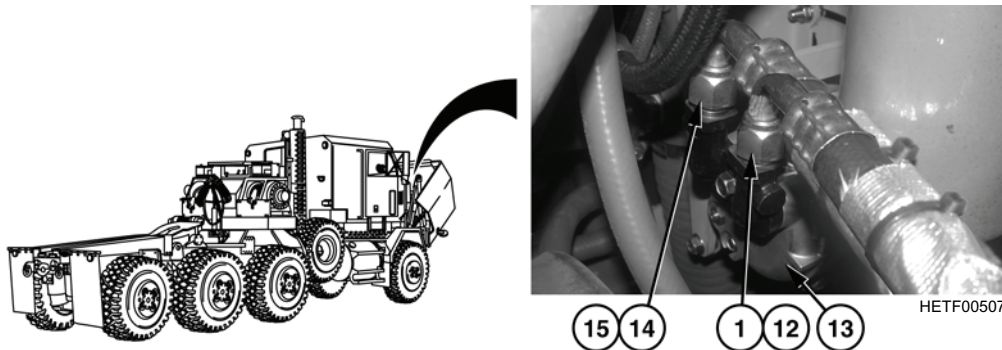


A/C HOSES REPLACEMENT - CONTINUED**0052 00****INSTALLATION - CONTINUED**

5. Install suction service hose (#12 A/C hose) (21) and #12 O-ring (16) on shutoff valve (17).

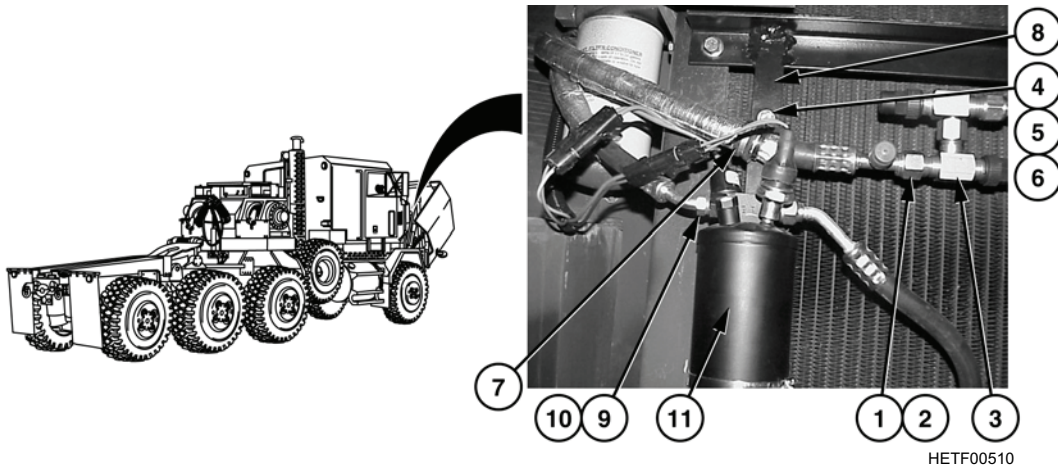


6. Lightly coat new #10 O-ring (15) and new #8 O-ring (12) with refrigerant compressor oil.
7. Install suction service hose (#10 A/C hose) (14) and #10 O-ring (15) on A/C compressor (13).
8. Install discharge service hose (#8 A/C hose) (1) and #8 O-ring (12) on A/C compressor (13).



A/C HOSES REPLACEMENT - CONTINUED**0052 00****INSTALLATION - CONTINUED**

9. Lightly coat new #6 O-ring (10) and new #8 O-ring (2) with refrigerant compressor oil.
10. Install #6 A/C hose (9) and #6 O-ring (10) on A/C receiver/dryer (11).
11. Install discharge service hose (#8 A/C hose) (1) and #8 O-ring (2) on shutoff valve (3).
12. Secure discharge service hose (1) to A/C condenser assembly (8) with cushion clamp (7), washer (6), screw (5), and nut (4).



13. Connect batteries (TM 9-2320-360-20-2).
14. Charge A/C system (WP 0056 00).
15. Perform leak test inspection (WP 0038 00).
16. Close hood (TM 9-2320-360-10).
17. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C HOSE SHUTOFF VALVES REPLACEMENT

0053 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 10, WP 0060 00)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Tags, Identification (Item 14, WP 0061 00)

Ties, Plastic (Item 15, WP 0061 00)

#6 O-ring (2) (Item 27, Figure 1, WP 0062 00)

Materials/Parts - Continued

#8 O-ring (3) (Item 37, Figure 1, WP 0062 00)

#12 O-ring (2) (Item 115, Figure 1, WP 0062 00)

References

WP 0038 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Refrigerant recovered (WP 0056 00)

REMOVAL

WARNING

Use care to prevent refrigerant from touching your skin or eyes. Be sure to wear proper protective goggles and non-leather gloves when servicing Air Conditioning systems to prevent personal injury. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.

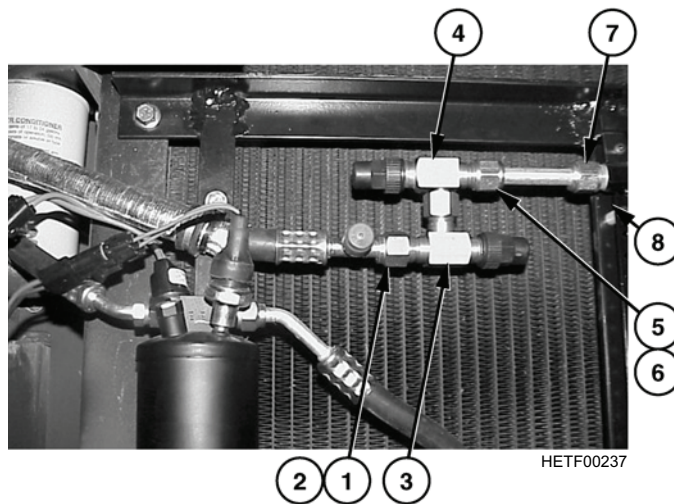
CAUTION

- Use care not to damage condenser assembly while removing two shutoff valves. Failure to follow this caution may cause damage to equipment.
- Cap and plug all lines and fittings or damage to equipment may result.

A/C HOSE SHUTOFF VALVES REPLACEMENT - CONTINUED**0053 00****REMOVAL - CONTINUED****NOTE**

- Removal procedures for two shutoff valves on the firewall are similar. O-ring sizes will vary
- Tag and mark all hoses and fittings prior to removal.

1. Remove #8 A/C hose (1) and #8 O-ring (2) from shutoff valve (3). Discard O-ring.
2. Remove shutoff valve (3) from shutoff valve (4).
3. Remove shutoff valve (4) and #8 O-ring (5) from straight adapter (6). Discard O-ring.
4. Remove straight adapter (6) and #8 O-ring (7) from A/C condenser (8). Discard O-ring.

**INSTALLATION**

1. Lightly coat new #8 O-rings (2, 7, and 5) with refrigerant compressor oil.
2. Install new #8 O-ring (2) and #8 A/C hose (1) on shutoff valve (3).
3. Install new #8 O-ring (7) and straight adapter (6) on A/C condenser (8).
4. Install new #8 O-ring (5) and shutoff valve (4) on straight adapter (6).
5. Install shutoff valve (4) on shutoff valve (3).
6. Charge A/C system (WP 0056 00).
7. Perform leak test inspection (WP 0038 00).
8. Close hood (TM 9-2320-360-10).
9. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

A/C RECEIVER/DRYER REPLACEMENT

0054 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

References

WP 0038 00

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Materials/Parts

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Hood opened (TM 9-2320-360-10)

Sealant, Loctite (Item 10, WP 0061 00)

Refrigerant recovered (WP 0054 00)

Tags, Identification (Item 14, WP 0061 00)

#6 O-Ring (3) (Item 27, Figure 1, WP 0062 00)

Battery disconnected (TM 9-2320-360-20-2)

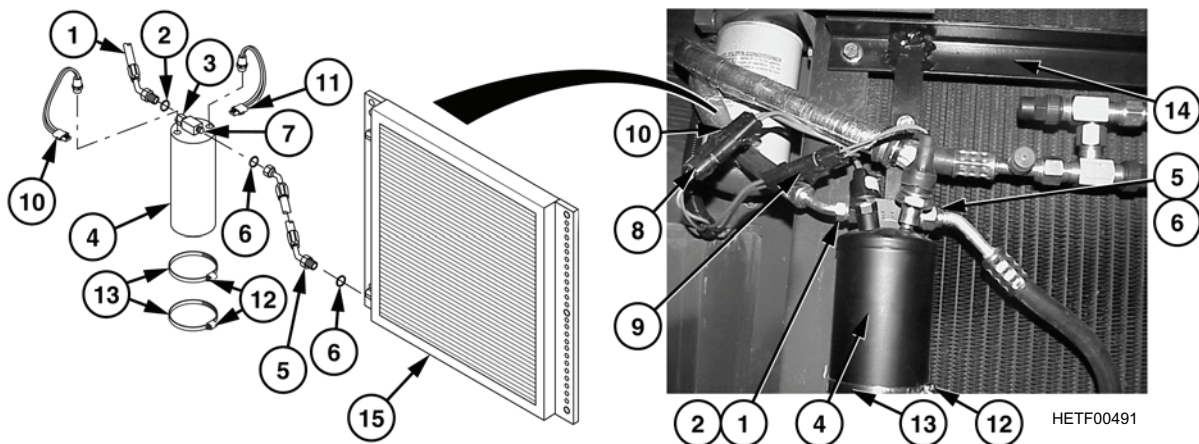
CAUTION

Cap and plug all lines and fittings or damage to equipment may result.

A/C RECEIVER/DRYER REPLACEMENT - CONTINUED**0054 00****REMOVAL****NOTE**

- Tag and mark hoses prior to removal.
- Tag and mark all wires prior to removal.

1. Remove #6 A/C hose (1) and #6 O-ring (2) from fitting (3) on A/C receiver/dryer (4). Discard O-ring.
2. Remove #6 A/C hose (5) and #6 O-ring (6) from fitting (7) on A/C receiver/dryer (4). Discard O-ring.
3. Disconnect two A/C compressor-receiver/dryer harness connectors (8 and 9) from A/C high pressure switch (10) and A/C binary switch (11) on A/C receiver/dryer (4).
4. Loosen two screws (12) on clamps (13) and remove A/C receiver/dryer (4) from condenser assembly mount (14).
5. Remove #6 A/C hose (5) and #6 O-ring (6) from A/C condenser (15). Discard O-ring.

**INSTALLATION**

1. Position A/C receiver/dryer (4) in clamps (13) of condenser assembly mount (14). Do not tighten.
2. Lightly coat three new #6 O-rings (2 and 6) with refrigerant compressor oil.
3. Install #6 hose (5) and #6 O-ring (6) on fitting (7) on A/C receiver/dryer (4).

WARNING

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

4. Apply sealant to #6 A/C hose (5) fitting.

NOTE

Ensure hose is installed in eleven o'clock position.

5. Install #6 A/C hose (5) and new #6 O-ring (6) on A/C condenser (15).
6. Install #6 A/C hose (1) and new #6 O-ring (2) on fitting (3) on A/C receiver/dryer (4).
7. Tighten screws (12) on clamps (13).

A/C RECEIVER/DRYER REPLACEMENT - CONTINUED

0054 00

INSTALLATION - CONTINUED

8. Connect two A/C compressor-receiver/dryer harness connectors (8 and 9) to A/C high pressure switch (10) and A/C binary switch (11) on A/C receiver/dryer (4).
9. Connect battery (TM 9-2320-360-20-2).
10. Charge A/C system (WP 0056 00).
11. Perform leak test inspection (WP 0038 00).
12. Close hood (TM 9-2320-360-10).
13. Remove wheel chocks (TM 9-2320-360-10).

END OF WORK PACKAGE

SECONDARY FUEL FILTER HEAD REPLACEMENT0055 00

THIS WORK PACKAGE COVERS

Removal, Installation

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Pan, Drain (Item 7, WP 0060 00)

Wrench, Strap (Item 15, WP 0060 00)

Materials/Parts

Sealing Compound (Item 2, WP 0061 00)

Oil, Fuel, Diesel (Item 5, WP 0061 00)

Materials/Parts - Continued

Tags, Identification (Item 14, WP 0061 00)

Filter, Fuel (TM 9-2320-360-24P)

Locknut (2) (Item 58, Figure 1, WP 0062 00)

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

Batteries disconnected (TM 9-2320-360-20-2)

REMOVAL

WARNING

Fuel is very flammable and can explode easily. Fuel system may be under pressure; be sure to wear the proper eye protection to avoid injury. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

SECONDARY FUEL FILTER HEAD REPLACEMENT - CONTINUED**0055 00****REMOVAL - CONTINUED**

1. Place drain pan under fuel filter (1).

NOTE

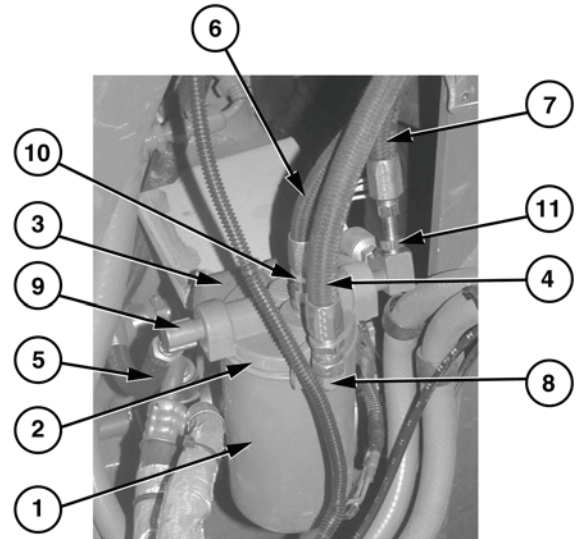
Fuel filter will be full of fuel.

2. Remove fuel filter (1) with gasket (2) from secondary fuel filter head (3), by turning counter-clockwise. Discard fuel filter with gasket.

NOTE

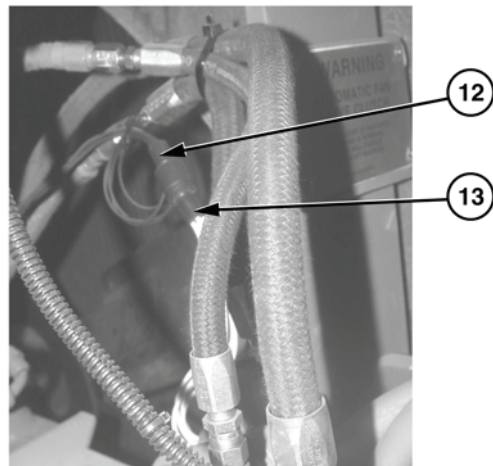
Tag and mark fuel lines before removing.

3. Disconnect four fuel line extensions (4 through 7) from two elbows (8 and 9) and reducers (10 and 11).



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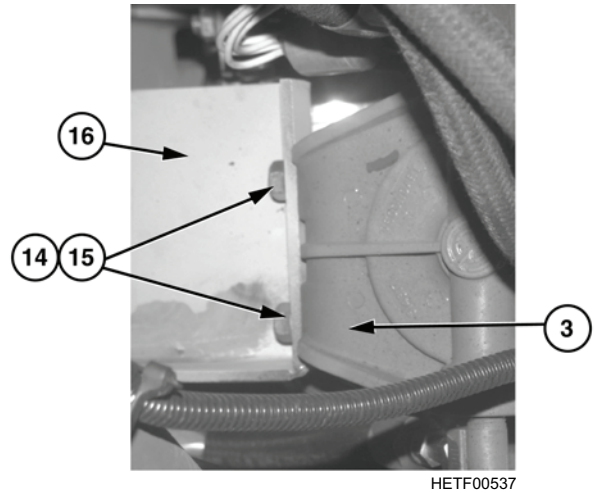
4. Disconnect STE-ICE harness extension (12) from STE-ICE sensor (13).



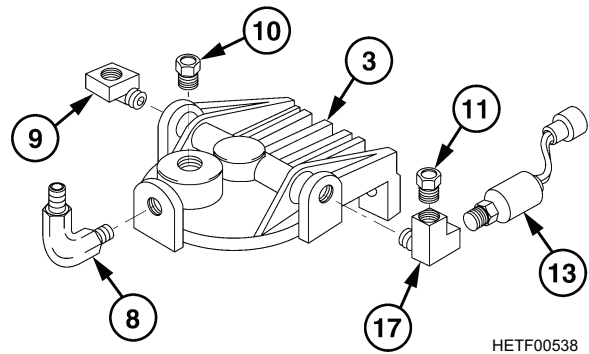
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SECONDARY FUEL FILTER HEAD REPLACEMENT - CONTINUED**0055 00****REMOVAL - CONTINUED**

5. Remove two screws (14), locknuts (15), and secondary fuel filter head (3) from upper A/C compressor bracket (16). Discard locknuts.



6. Remove STE-ICE sensor (13) from tee (17).
7. Remove reducer (10) from secondary fuel filter head (3).
8. Remove reducer (11) from tee (17).
9. Remove two elbows (8 and 9) and tee (17) from secondary fuel filter head (3).

**INSTALLATION****WARNING**

Adhesives and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated areas. If adhesive or sealing compound gets on skin or clothing, wash immediately with soap and water.

1. Coat threads of tee (17), STE-ICE sensor (13), two reducers (10 and 11), and elbows (8 and 9) with pipe thread sealing compound.
2. Install tee (17) and two elbows (8 and 9) on secondary fuel filter head (3).

NOTE

Reducer installed on secondary fuel filter head contains a calibrated restrictor.

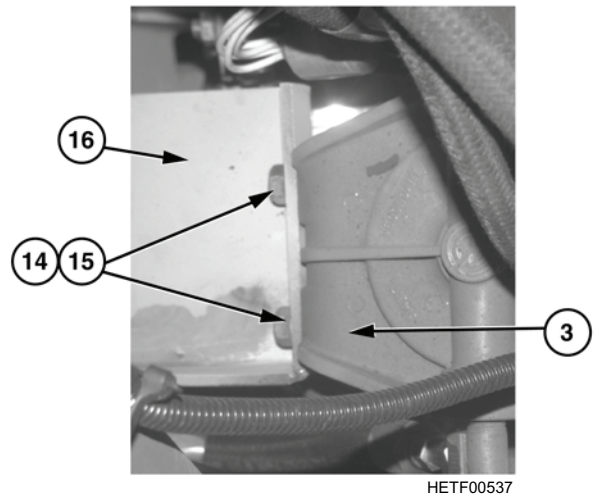
3. Install reducer (10) on secondary fuel filter head (3).
4. Install reducer (11) on tee (17).
5. Install STE-ICE sensor (13) on tee (17).

SECONDARY FUEL FILTER HEAD REPLACEMENT - CONTINUED

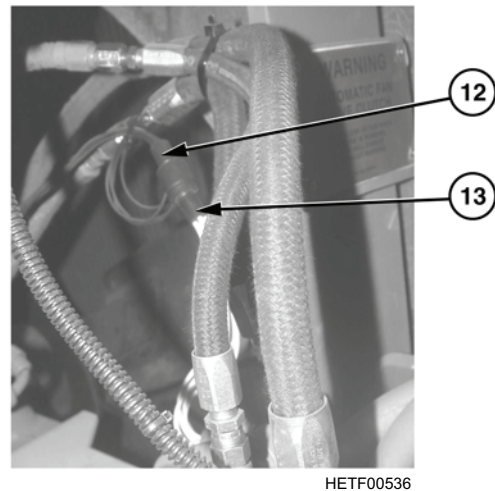
0055 00

INSTALLATION - CONTINUED

6. Install secondary fuel filter head (3) on upper A/C compressor bracket (16), with two screws (14) and new locknuts (15).



7. Connect STE-ICE harness extension (12) to STE-ICE sensor (13).



8. Connect two fuel line extensions (4 and 5) to elbows (8 and 9).
9. Connect two fuel line extensions (6 and 7) to reducers (10 and 11).

WARNING

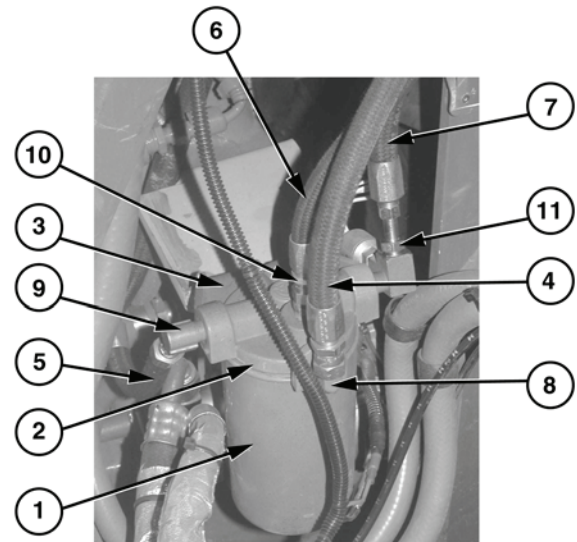
Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

10. Fill new fuel filter (1) with clean diesel fuel oil.
11. Moisten new gasket (2) with diesel fuel oil.

SECONDARY FUEL FILTER HEAD REPLACEMENT - CONTINUED**0055 00****INSTALLATION - CONTINUED****CAUTION**

Do not install secondary fuel filter with filter wrench. Hand-tighten only. Failure to follow this caution may cause damage to secondary fuel filter.

12. Install new fuel filter (1) and new gasket (2) on secondary fuel filter head (3), by turning clockwise.
13. Tighten until gasket (2) touches secondary fuel filter head (3), then tighten additional one-half turn.



HETF00539

14. Connect batteries (TM 9-2320-360-20-2).
15. Start engine (TM 9-2320-360-10).
16. Check fuel filter for leaks.
17. Shut off engine (TM 9-2320-360-10).
18. Close hood (TM 9-2320-360-10).
19. Remove wheel chocks (TM 9-2330-360-10).

END OF WORK PACKAGE

A/C SYSTEM REFRIGERANT (R-134a) MAINTENANCE

0056 00

THIS WORK PACKAGE COVERS

Recovery, Evacuation/Recycling, Purging, Flushing, Charging

INITIAL SETUP

Maintenance Level

Direct Support

Tools and Special Tools

Tool Kit, General Mechanic (Item 12, WP 0060 00)

Cap and Plug Set (Item 2, WP 0060 00)

Goggles (Item 4, WP 0060 00)

Detector, Leak (Item 8, WP 0060 00)

Test Set Subassembly (Item 11, WP 0060 00)

Materials/Parts

Gloves, Rubber (Item 4, WP 0061 00)

Oil, Refrigerant Compressor (Item 6, WP 0061 00)

Materials/Parts - Continued

Refrigerant, R-134a (Item 9, WP 0061 00)

References

WP 0012 00

WP 0038 00

WP 0054 00

Equipment Conditions

Wheels chocked (TM 9-2320-360-10)

Hood opened (TM 9-2320-360-10)

RECOVERY

WARNING

- Use care to prevent refrigerant from touching your skin or eyes; wear protective goggles and nonleather gloves when servicing Air Conditioning systems. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

NOTE

Recovery not required for initial installation. Proceed to *Evacuation/Recycling* in this work package.

A/C SYSTEM REFRIGERANT (R-134A) MAINTENANCE - CONTINUED

0056 00**RECOVERY - CONTINUED**

1. Remove cap from blue suction service valve (1) located at firewall on passenger side of vehicle.
2. Remove cap from red discharge service valve (2) located in front of radiator on passenger side of vehicle.

WARNING

Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

3. Ensure that recovery/recycling station manifold suction hand valve (3) and manifold discharge hand valve (4) are closed.

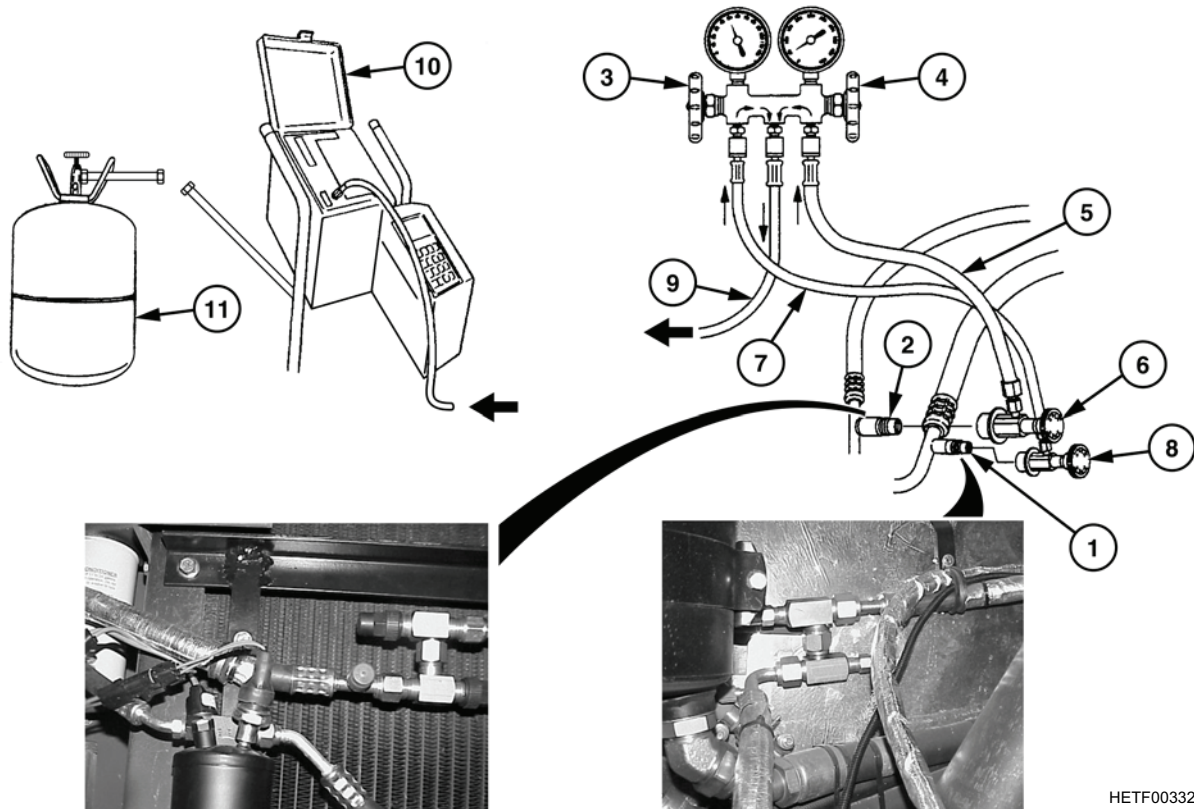
NOTE

Push down firmly on hose connectors until a clicking sound is heard to make sure coupler is locked.

4. Connect red high-side hose (5) to manifold discharge hand valve (4).
5. Connect red high-side hose (5) and coupler valve (6) to discharge service valve (2).
6. Connect blue low-side hose (7) to manifold suction hand valve (3).
7. Connect blue low-side hose (7) and coupler valve (8) to suction service valve (1).
8. Connect center hose (9) to recovery/recycling station (10) and receiving container (11).
9. Open valve on receiving container (11).
10. Turn knob clockwise on coupler to open coupler valve (6).
11. Turn knob clockwise on coupler to open coupler valve (8).
12. Refer to recovery/recycling station manufacturer's instructions and recover all refrigerant from system.

CAUTION

- Always comply with all local regulations regarding refrigerant disposal. Failure to follow this caution may result in penalties for improper disposal.
- A/C receiver/dryer must be replaced each time A/C system refrigerant is evacuated or damage to system may result. Refer to WP 0054 00 for replacement of A/C receiver/dryer.

RECOVERY - CONTINUED

HETF00332

- | | | | |
|---|-------------------------------|----|--------------------------------------|
| 1 | Suction Service Valve | 7 | Low-Side Hose |
| 2 | Discharge Service Valve | 8 | Coupler Valve |
| 3 | Manifold Suction Hand Valve | 9 | Center Hose (to receiving container) |
| 4 | Manifold Discharge Hand Valve | 10 | Recovery/Recycling Station |
| 5 | High-Side Hose | 11 | Receiving Container |
| 6 | Coupler Valve | | |

EVACUATION/RECYCLING**WARNING**

Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

CAUTION

- Always comply with all local regulations regarding refrigerant disposal. Failure to follow this caution may result in penalties for improper disposal.
 - System must have been recovered and compressor filled with correct amount of refrigerant oil.
 - A/C receiver/dryer must be replaced each time A/C system refrigerant is evacuated or damage to system may result.
1. Remove cap from blue suction service valve (1) located at compressor on passenger side of vehicle.
 2. Remove cap from red discharge service valve (2) located in front of radiator on passenger side of vehicle.

WARNING

Wear protective goggles and nonleather gloves when servicing A/C or injury may result.

3. Ensure that recovery/recycling station manifold suction hand valve (3) and manifold discharge hand valve (4) are closed.

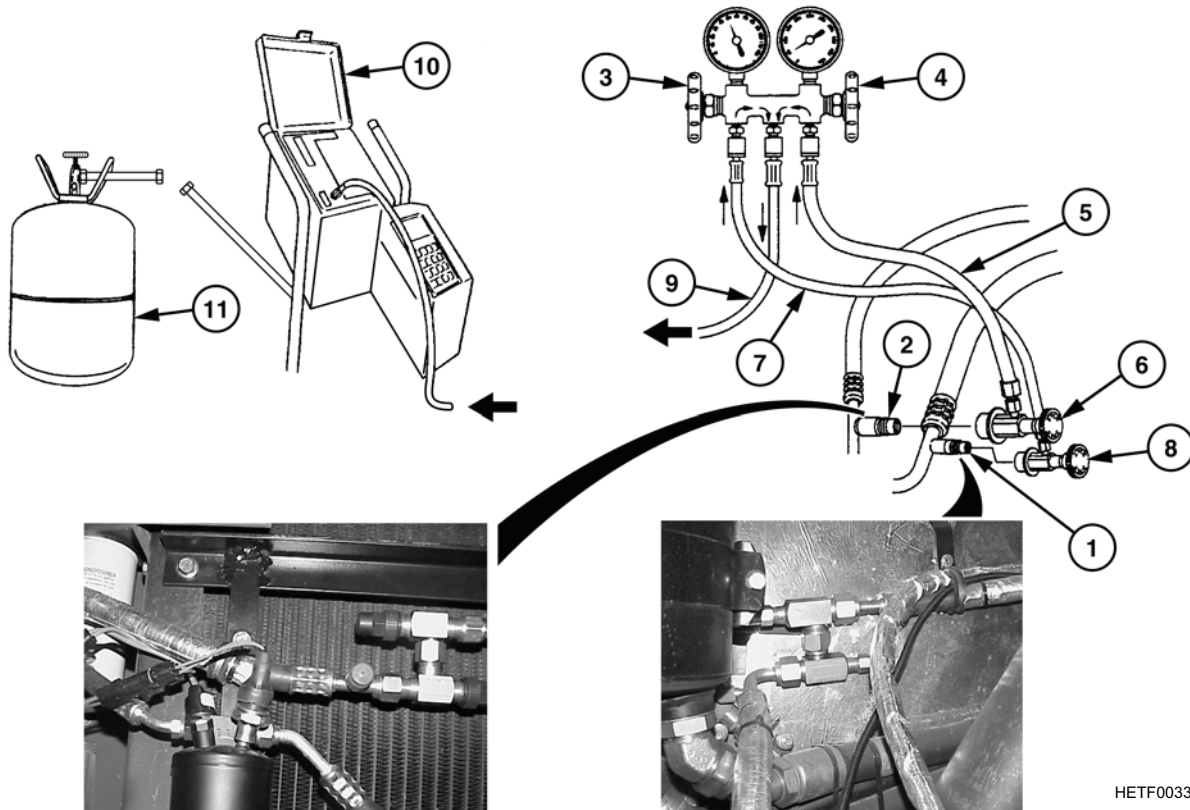
NOTE

Push down firmly on hose connectors until a clicking sound is heard to make sure coupler is locked.

4. Connect red high-side hose (5) to manifold discharge hand valve (4).
5. Connect red high-side hose (5) and coupler valve (6) to discharge service valve (2).
6. Connect blue low-side hose (7) to manifold suction hand valve (3).
7. Connect blue low-side hose (7) and coupler valve (8) to suction service valve (1).
8. Open valve on receiving container (11).
9. Turn knob clockwise on coupler to open coupler valve (6).
10. Turn knob clockwise on coupler to open coupler valve (8).
11. Open all six shut-off valves.
12. Refer to recovery/recycling station manufacturer's instructions and evacuate all refrigerant from system.
13. Evacuate to a minimum of 29 inches Hg vacuum for a minimum of one hour.

CAUTION

- Always comply with all local regulations regarding refrigerant disposal. Failure to follow this caution may result in penalties for improper disposal.
- A/C receiver/dryer must be replaced each time A/C system refrigerant is evacuated or damage to system may result. Refer to WP 0054 00 for replacement of A/C receiver/dryer.

EVACUATION/RECYCLING - CONTINUED

HETTF00332

- | | | | |
|---|-------------------------------|----|--------------------------------------|
| 1 | Suction Service Valve | 7 | Low-Side Hose |
| 2 | Discharge Service Valve | 8 | Coupler Valve |
| 3 | Manifold Suction Hand Valve | 9 | Center Hose (to receiving container) |
| 4 | Manifold Discharge Hand Valve | 10 | Recovery/Recycling Station |
| 5 | High-Side Hose | 11 | Receiving Container |
| 6 | Coupler Valve | | |

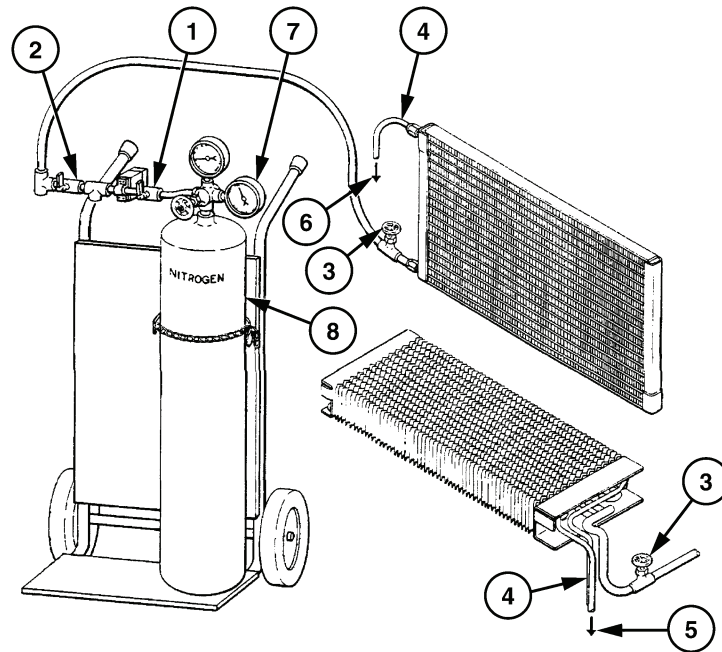
PURGING**WARNING**

Wear protective goggles and nonleather gloves when purging or injury may result.

CAUTION

Dry nitrogen gas is recommended for purging. A pressure regulator is required to regulate gas pressure between 0 and 200 psi (0-1379 kPa). Commercial cylinders of nitrogen contain pressures in excess of 2000 psi (13,790 kPa). This pressure must be reduced to 200 psi (1379 kPa) for purging or damage to equipment may result.

1. Recover system refrigerant.
2. Disconnect both ends of line or component to be purged.
3. Install caps or plugs tightly on system lines or components at disconnect points.
4. Ensure valves (1, 2, and 3) are closed.
5. Connect supply line valve (3) to outlet end of component or line.
6. Connect drain line (4) to inlet end of component or line.
7. Connect outlet end of drain line (4) to recycling system container (5) or to waste container (6).
8. Adjust nitrogen bottle regulator/gage (7) to 200 psi (1379 kPa).
9. Open nitrogen bottle control valve (1) and purging control valve (2), then slowly open supply line valve (3). Check drain line (4) for gas flow.
10. Let nitrogen flow at 200 psi (1379 kPa) for 1 to 2 minutes. If component or line was very wet, let nitrogen flow until there is no trace of refrigerant oil or solid bits of dirt or grit flowing from drain line (4).
11. Close nitrogen bottle control valve (1) and purging control valve (2) first, then close supply line valve (3).
12. Disconnect supply line valve (3) and drain line (4). Tightly cap both ends of component or line.

PURGING - CONTINUED

HETF00334

- | | | | |
|---|-------------------------------|---|--------------------------------|
| 1 | Nitrogen Bottle Control Valve | 5 | To Recycling System Container |
| 2 | Purging Control Valve | 6 | To Waste Container |
| 3 | Supply Line Valve | 7 | Nitrogen Bottle Regulator/Gage |
| 4 | Drain Line | 8 | Nitrogen Bottle |

FLUSHING**WARNING**

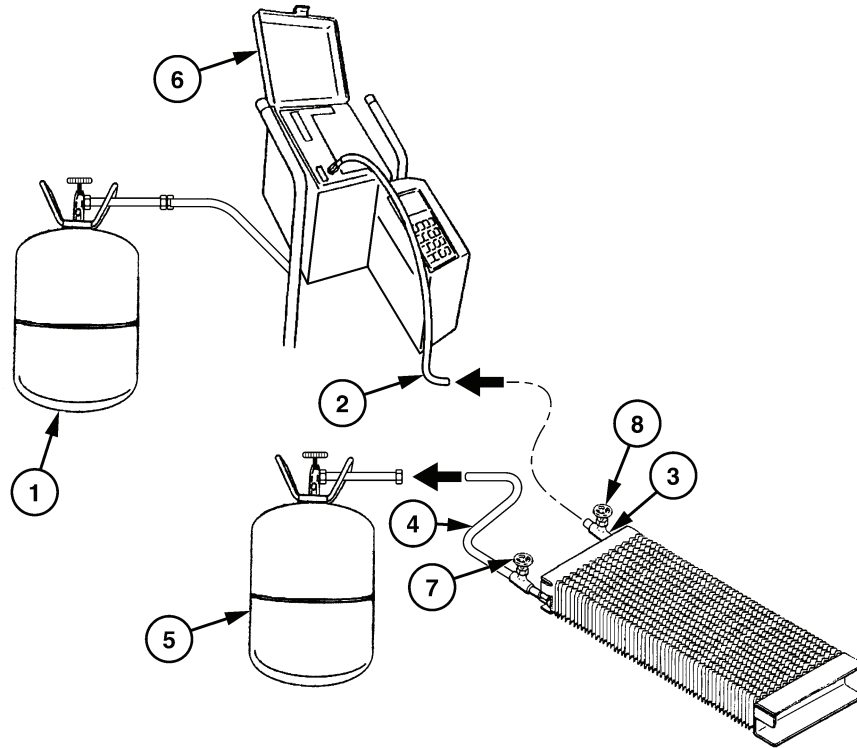
- Use care to prevent refrigerant from touching your skin or eyes; wear protective goggles and nonleather gloves when servicing Air Conditioning systems. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

1. Recover system refrigerant.
2. Disconnect both ends of line or component to be purged.
3. Install caps or plugs tightly on system lines or components at disconnect points.
4. Charge or pressurize R-134a refrigerant (1) as recommended by manufacturer.
5. Connect recovery/recycling station flushing supply line (2) to outlet hose (3) side of system to reverse flow system.

NOTE

If system is extremely contaminated, install a receiver/dryer in-line as a prefilter for recovery/recycling station.

6. Connect recovery/recycling station flushing drain line (4) from inlet valve side of system to receiving container (5).
7. Turn on recovery/recycling station (6) and open inlet valve (7). Allow about two pounds (one kilogram) of R-134a to flow through system.
8. Close supply line valve (8) and wait for recovery/recycling station (6) to shut off.
9. Disconnect recovery/recycling station flushing supply line (2) from outlet hose (3).
10. Disconnect recovery/recycling station flushing drain line (4) from inlet valve (7).
11. Purge system and check collection bottle for contaminants.
12. Refer to WP 0012 00 for general cleaning requirements.

FLUSHING - CONTINUED

HETF00524

- | | | | |
|---|---|---|----------------------------|
| 1 | R-134a Refrigerant | 5 | Receiving Container |
| 2 | Recovery/Recycling Station Flushing Supply Line | 6 | Recovery/Recycling Station |
| 3 | Outlet Hose | 7 | Inlet Valve |
| 4 | Recovery/Recycling Station Flushing Drain Line | 8 | Supply Line Valve |

CHARGING**WARNING**

- Use care to prevent refrigerant from touching your skin or eyes; wear protective goggles and nonleather gloves when servicing Air Conditioning systems. Liquid refrigerant, when exposed to air, quickly evaporates and will freeze skin or eye tissues. Serious injury or blindness may result if you come in contact with liquid refrigerant.
- Refrigerant R-134a A/C systems should not be pressure tested or leak tested with compressed air. Combustible mixtures of air and R-134a may form, resulting in a fire or explosion, which could cause personnel injury or death.

CAUTION

- **RECOVERY** and **EVACUATION/RECYCLING** procedures must be performed before system is charged or damage to system may result.
- Use care to prevent overcharging or damage to compressor may result.

NOTE

Obtain enough refrigerant in container to fully charge system.

1. Position R-134a tank on scale to make sure enough refrigerant is available to fully charge system. Weight of R-134a should be 48 fluid ounces (1.42 liter).
2. Refer to Table 1, *Ambient Temp/PSI Cross-Reference*, for proper system pressure levels at measured temperatures.
3. Charge refrigerant system as noted:

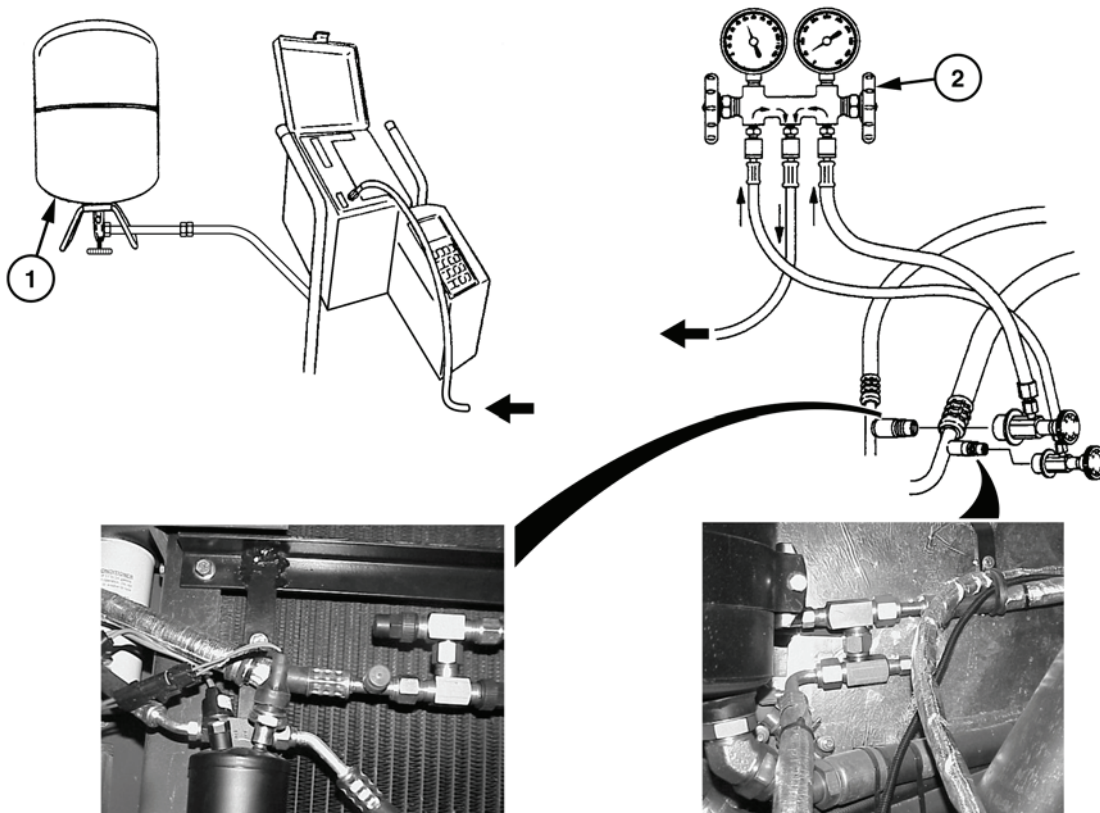
A/C SYSTEM REFRIGERANT (R-134A) MAINTENANCE - CONTINUED**0056 00****CHARGING - CONTINUED****Table 1. Ambient Temp/PSI Cross-Reference.**

°F	°C	HFC-134a (psi)	°F	°C	HFC-134a (psi)
-60	-51.1	21.8	55	12.8	51.1
-55	-48.3	20.4	60	15.6	57.3
-50	-45.6	18.7	65	18.3	63.9
-45	-42.8	16.9	70	21.1	70.9
-40	-40.0	14.8	75	23.8	78.4
-35	-37.2	12.5	80	26.7	88.4
-30	-34.4	9.8	85	29.4	94.9
-25	-31.7	6.9	90	32.2	103.9
-20	-28.9	3.7	95	35.0	113.5
-15	-26.1	0.0	100	37.8	123.6
-10	-23.3	1.9	105	40.6	134.3
-5	-20.6	4.1	110	43.3	145.3
0	-17.8	6.5	115	46.1	157.6
5	-15.0	9.0	120	48.9	170.3
10	-12.2	12.0	125	51.7	183.6
15	-9.4	15.0	130	54.4	197.6
20	-6.7	18.4	135	57.2	212.4
25	-3.9	22.1	140	60.0	227.9
30	-1.1	26.1	145	62.8	244.3
35	1.7	30.4	150	65.6	261.4
40	4.4	35.0	155	68.3	279.5
45	7.2	40.0	160	71.1	298.4
50	10.0	45.3	165	73.9	318.3

CHARGING - CONTINUED**NOTE**

Perform step (4) with engine off and low-side hand valve closed.

4. When charging from bulk container, position bulk container (1) upside down and open high-side hand valve (2).
5. Allow refrigerant to enter system until 48 fluid ounces (1.42 liter) has been added. Close high-side hand valve (2).
6. Start engine and run at 1500 rpm. Position cab A/C controls at maximum cooling and fan speed. Refrigerant compressor must engage/A/C will blow cold air.



HETF00523

A/C SYSTEM REFRIGERANT (R-134A) MAINTENANCE - CONTINUED**0056 00****CHARGING - CONTINUED****NOTE**

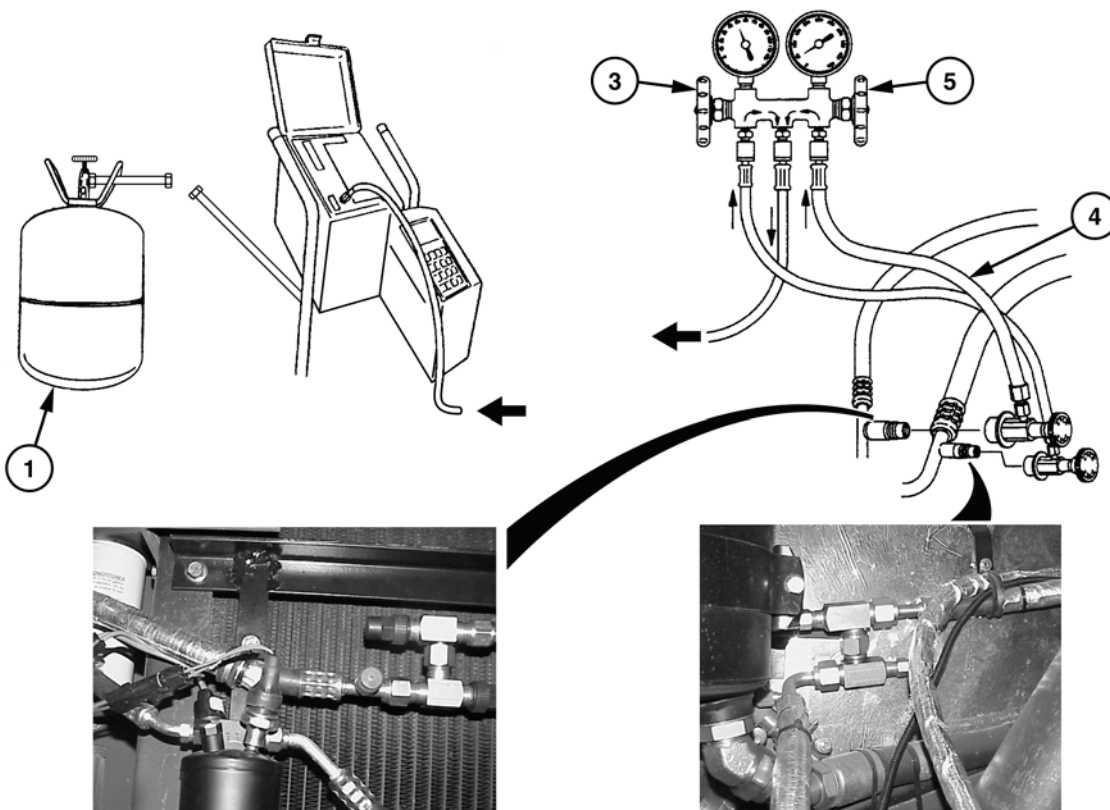
Perform step (7) if charge did not enter system.

7. Shut OFF engine.
8. Position bulk container (1) in upright position and open low-side hand valve (3) to draw vapor into system. Leave low-side hand valve (3) open until correct weight of refrigerant has entered system. Close low-side hand valve (3).

NOTE

If refrigerant is slow to enter system because of low outside temperatures, vaporization may be quickened by placing refrigerant in tub of warm water. Temperature should not exceed 125°F (52°C).

9. Disconnect high-side hose (4).
10. Start engine.
11. Open low-side and high-side hose valves (3 and 5) to recover refrigerant from lines.
12. Shut OFF engine.



HETF00522

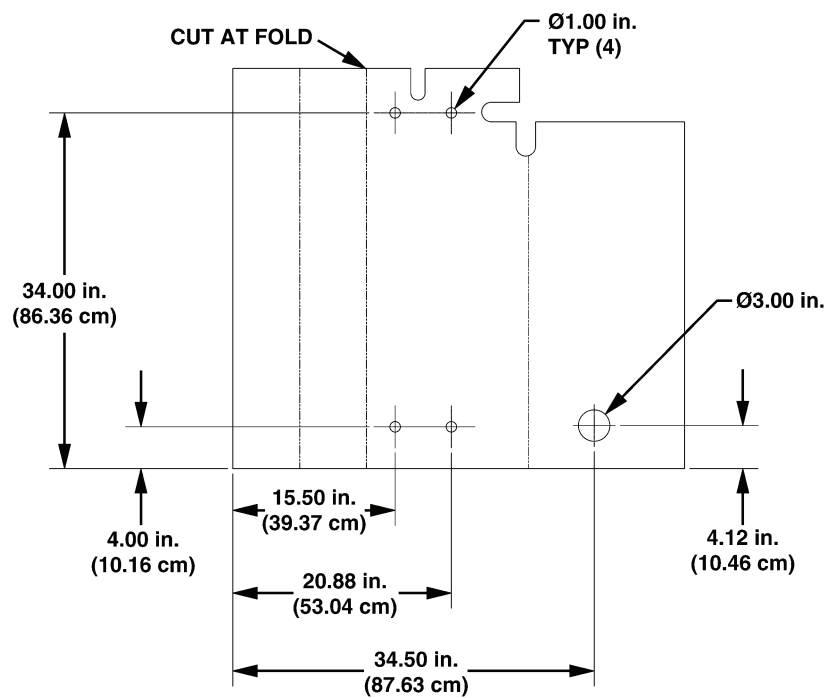
13. Leak test A/C system. Refer to WP 0038 00.
14. Check operation of A/C system.

END OF WORK PACKAGE

CHAPTER 10
SUPPORTING INFORMATION

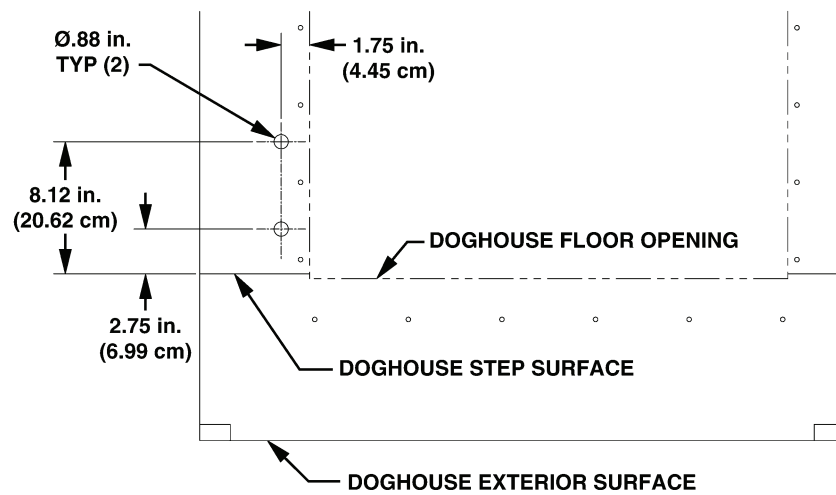
INSTALLATION DRAWINGS AND SCHEMATICS**0057 00**

FIGURE	FIGURE TITLE	WP PAGE NO.
Figure a.	Doghouse Floor Mat Template	0057 00-2
Figure b.	Doghouse Floor Template	0057 00-3
Figure c.	Doghouse Floor Engine Access Panel Template	0057 00-4
Figure d.	Doghouse Front Engine Access Panel Template	0057 00-5
Figure e.	Doghouse Top Insulation Template	0057 00-6
Figure f.	Electronic Control Box Template	0057 00-7
Figure g.	A/C Relay and A/C Control Switch Installation Template	0057 00-8
Figure h.	A/C Engine Fan Control Solenoid and A/C Circuit Breaker Installation Template	0057 00-9
Figure i.	A/C Condenser Assembly Installation Template	0057 00-10
Figure j.	A/C Electrical Diagram and Schematic	0057 00-11
Figure k.	A/C Refrigerant Schematics	0057 00-13



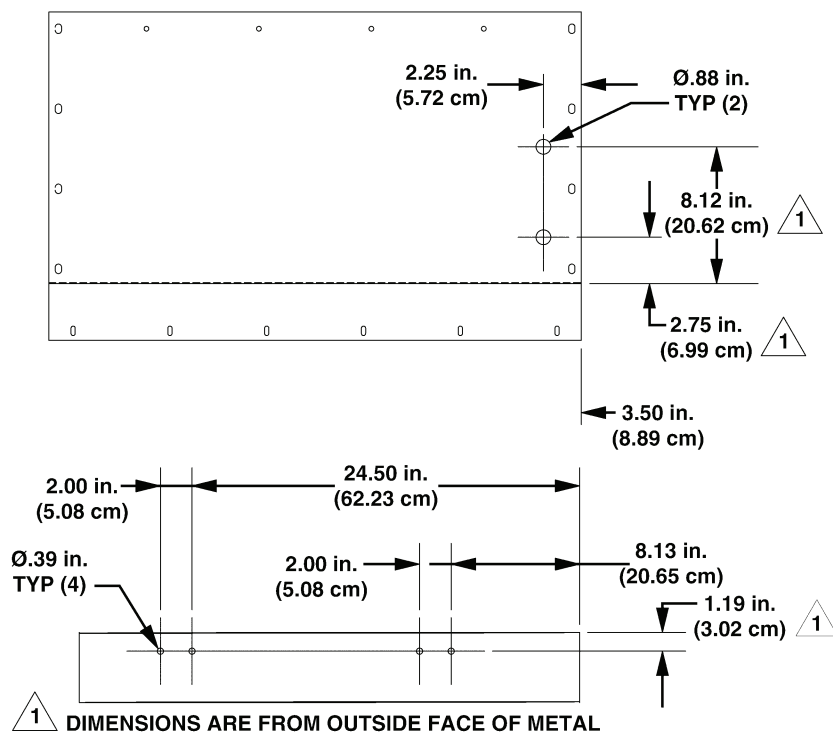
HETF00196

Figure a. Doghouse Floor Mat Template



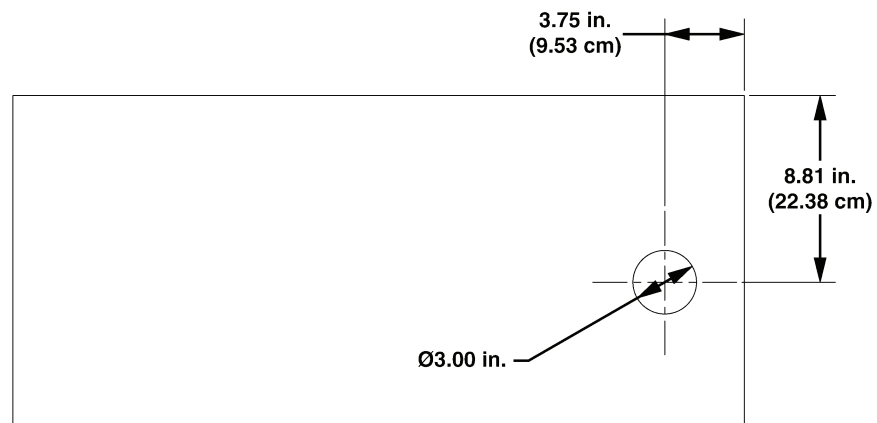
HETF00197

Figure b. Doghouse Floor Template



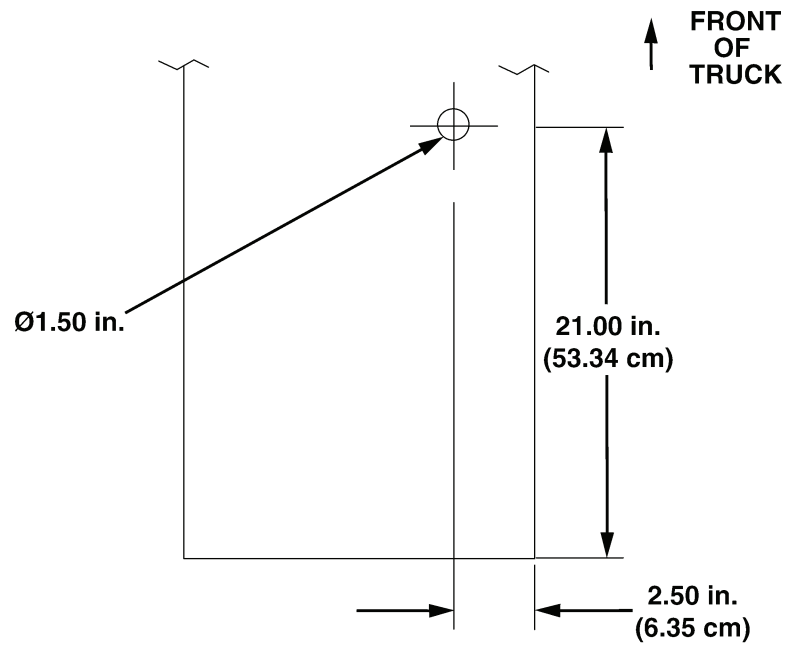
HETF00200

Figure c. Doghouse Floor Engine Access Panel Template



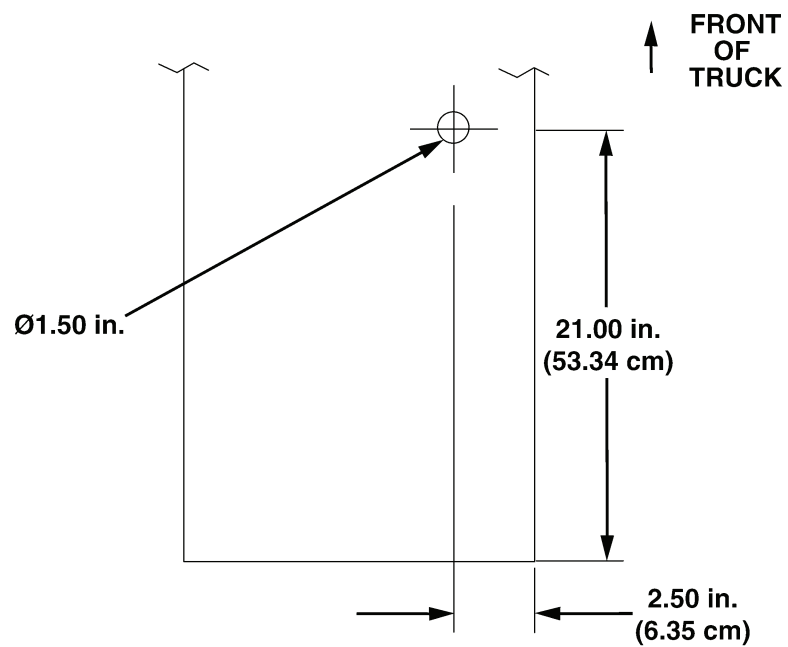
HETF00199

Figure d. Doghouse Front Engine Access Panel Template



HETF00214

Figure e. Doghouse Top Insulation Template



HETF00214

Figure f. Electronic Control Box Template

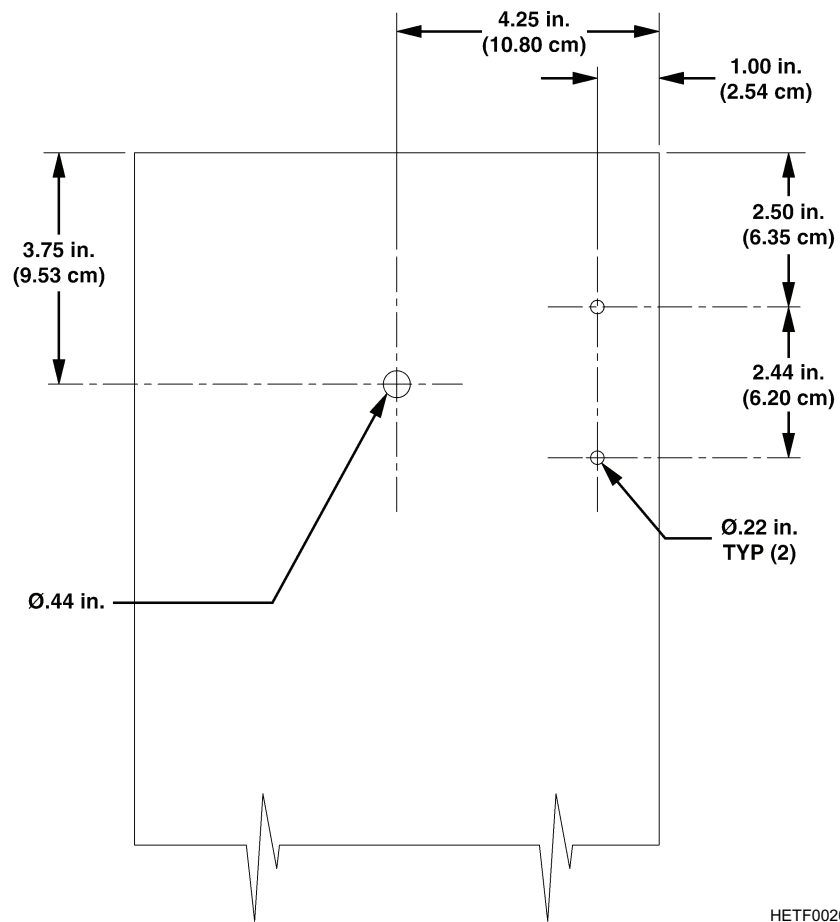
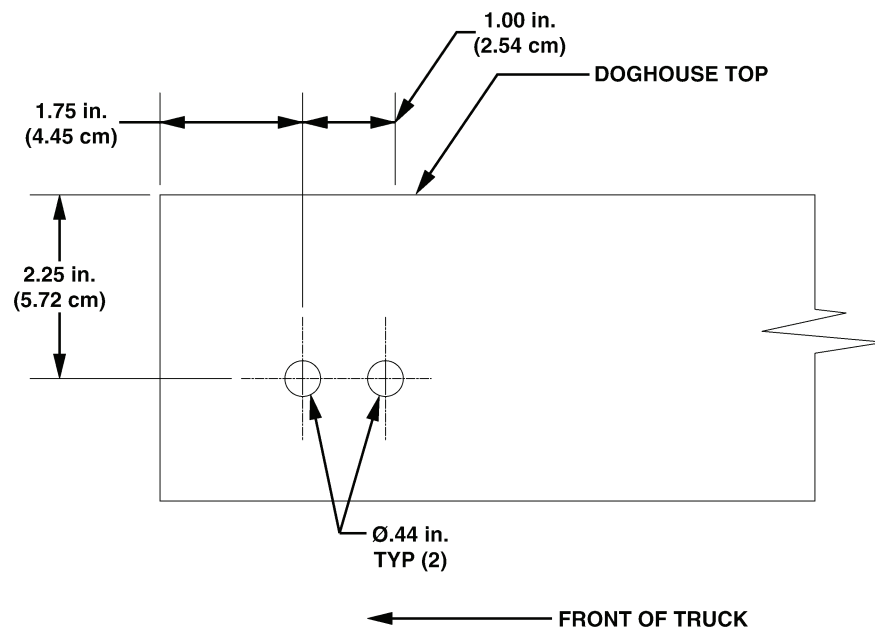


Figure g. A/C Relay and A/C Control Switch Installation Template



HETF00202

Figure h. A/C Engine Fan Control Solenoid and A/C Circuit Breaker Installation Template

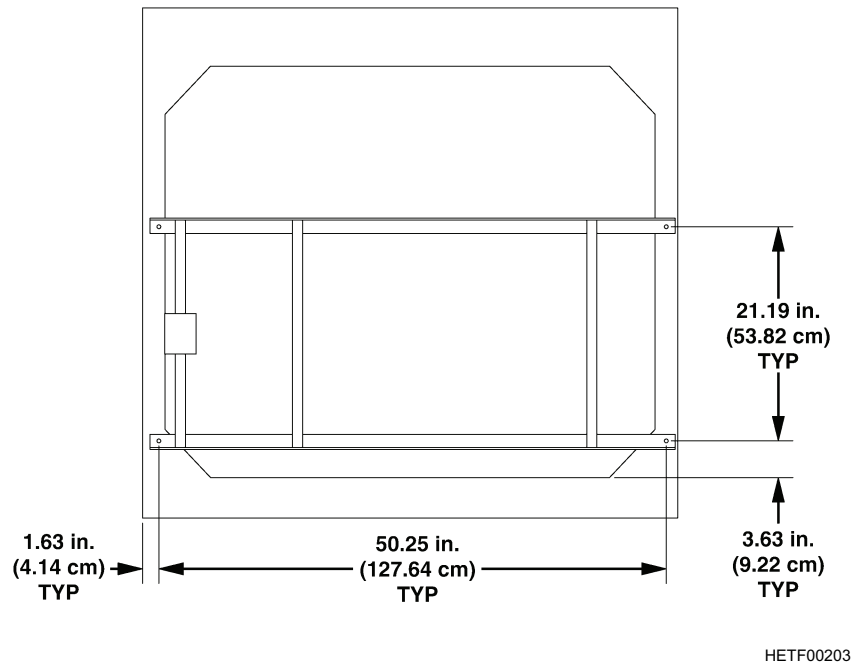
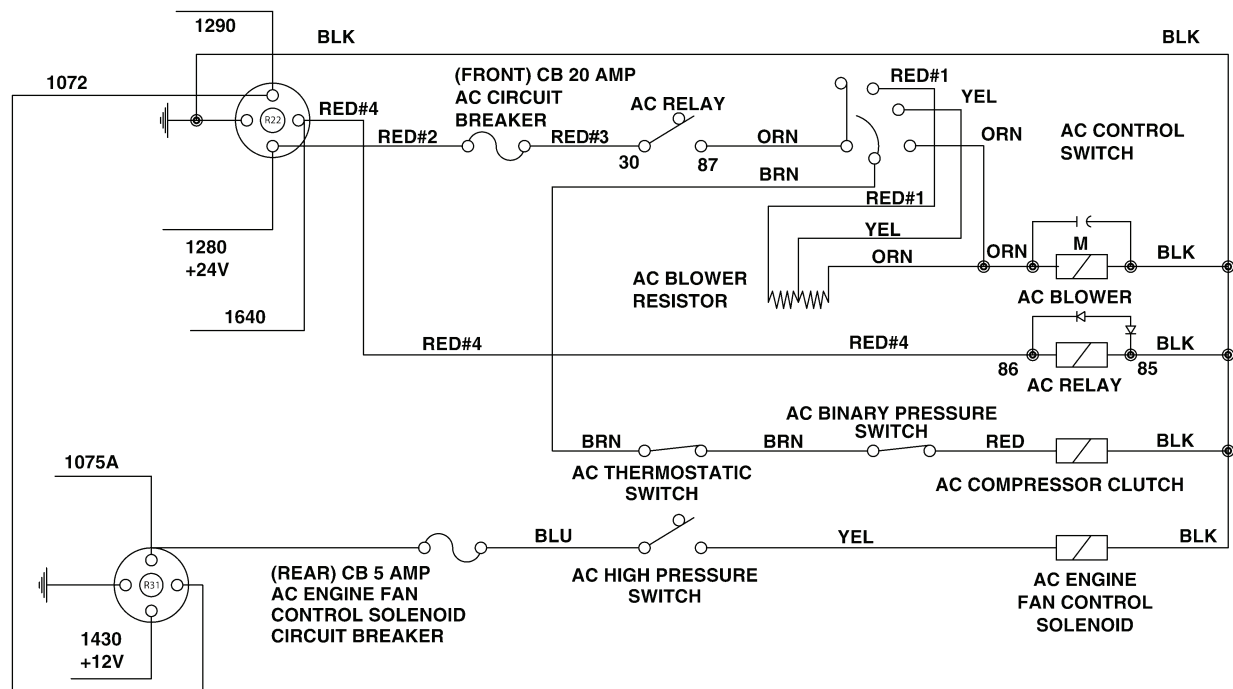
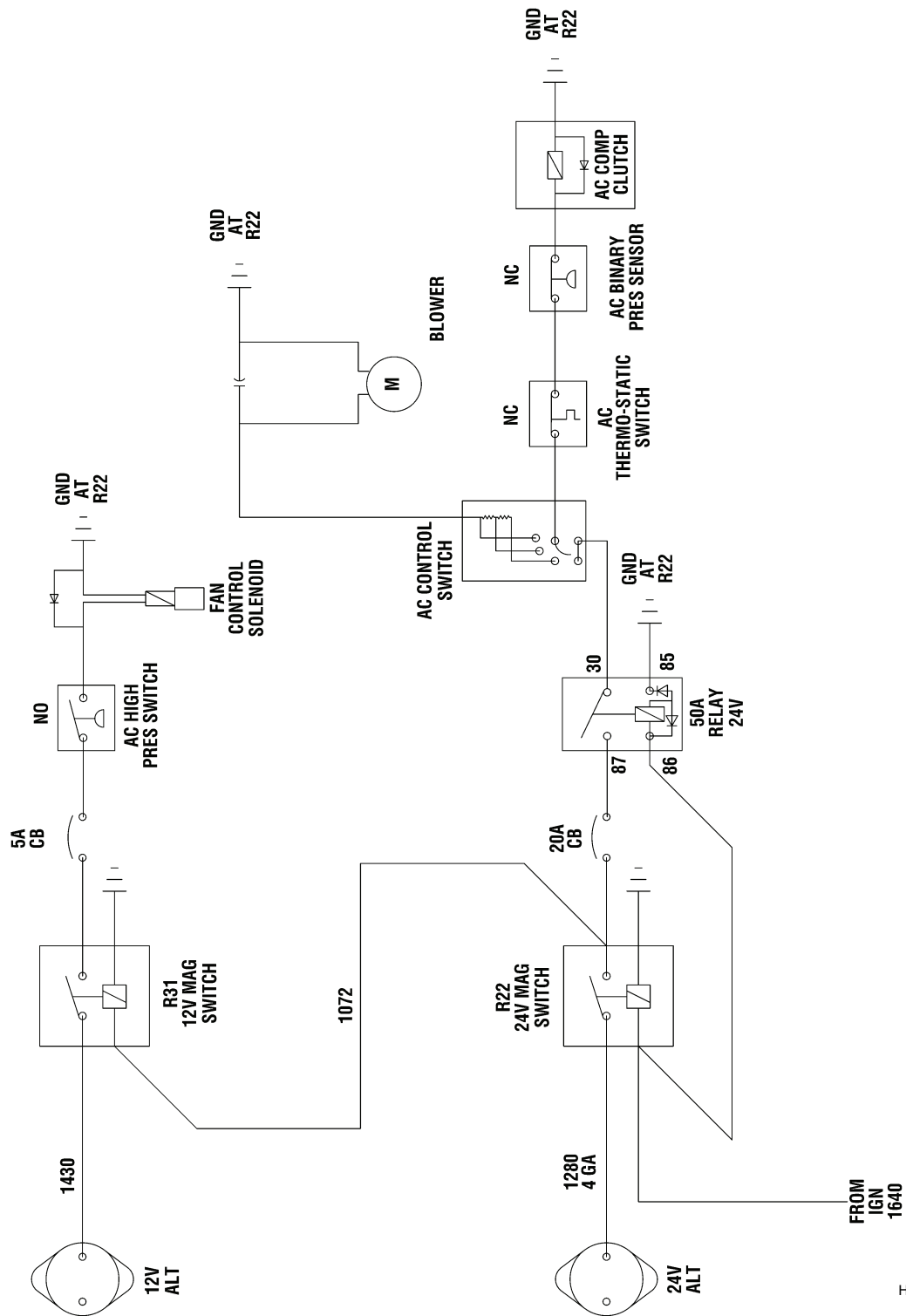


Figure i. A/C Condenser Assembly Installation Template



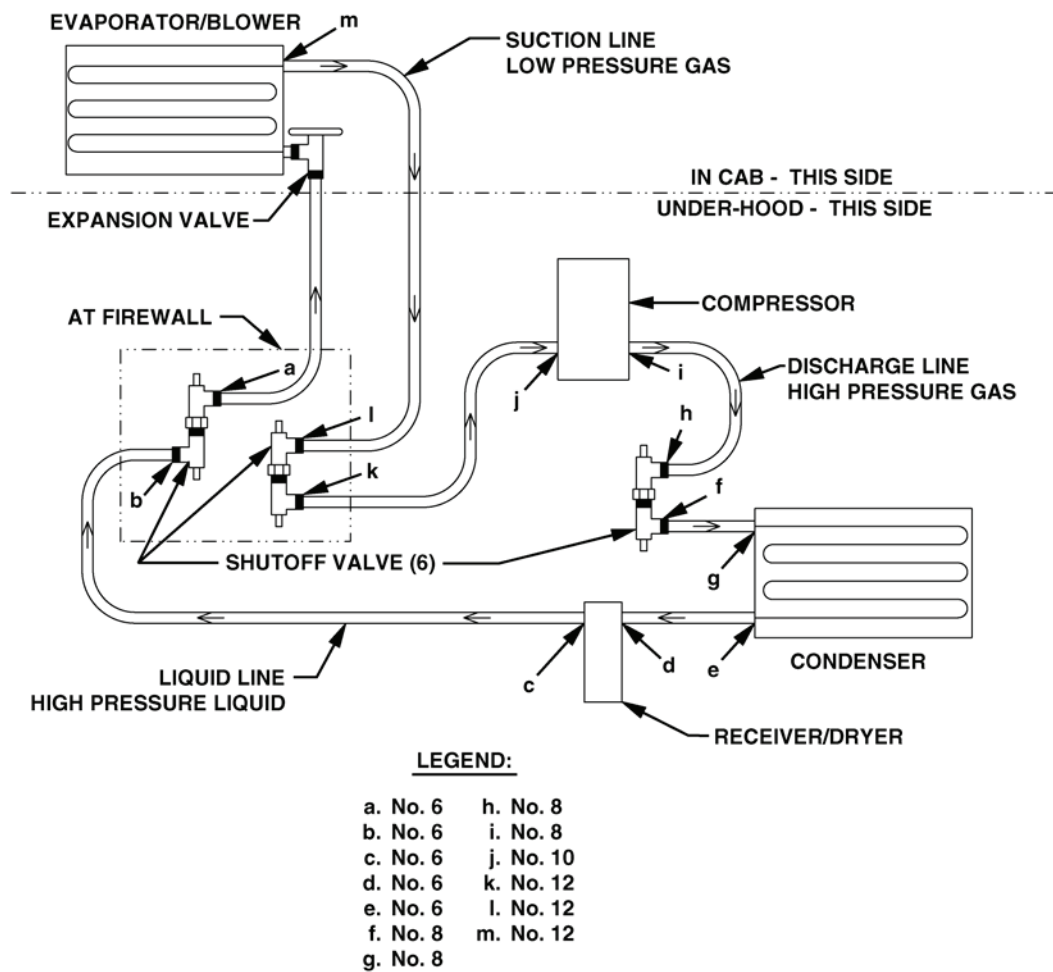
HETF00204

Figure j. A/C Electrical Diagram and Schematic (Sheet 1 of 2)



HETTF00574

Figure j. A/C Electrical Diagram and Schematic (Sheet 2 of 2)



HETF00205

Figure k. A/C Refrigerant Schematics

REFERENCES**0058 00****SCOPE**

This appendix lists forms, field manuals, technical manuals, and other publications referenced in this manual and which apply to unit maintenance of the HET AC.

DEPARTMENT OF THE ARMY PAMPHLETS

Consolidated Index of Army Publications and Blank Forms DA PAM 25-30

The Army Maintenance Management System (TAMMS) DA PAM 750-8

FORMS

Recommended Changes to Equipment Technical Publications DA Form 2028

Organizational Control Record for Equipment DA Form 2401

Equipment Inspection and Maintenance Worksheet DA Form 2404

Maintenance Request DA Form 2407

Preventive Maintenance Schedule and Record DD Form 314

Processing and Deprocessing Record for Shipment, Storage, and
Issue of Vehicles and Spare Engines DD Form 1397

Product Quality Deficiency Report (NSN 7540-00-105-0078) SF 368

TECHNICAL BULLETINS

Color, Marking, and Camouflage Painting of Military Vehicles. TB 43-0209

Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks TB 43-0212

TECHNICAL MANUALS

Multiservice Tactics, Techniques, and Procedures for Chemical,
Biological, Radiological and Nuclear Decontamination FM 3-11.5

Operator and Organizational Maintenance Manual Including Repair Parts and
Special Tools List for Decontamination Apparatus TM 3-423-214-12&P

Operator and Organizational Maintenance Manual for Chemical Alarm TM 3-6665-225-12

Operation and Maintenance of Ordnance Material in Extreme Cold Weather (0° to -65°F) FM 9-207

Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Material and
Related Materials Including Chemicals TM 9-247

Operator's Manual for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter TM 9-2320-360-10

Hand Receipt Manual for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter TM 9-2320-360-10-HR

Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List
for Truck, Tractor, M1070, 8 x 8, Heavy Equipment Transporter TM 9-2320-360-24P

Operator's, Unit, Direct Support, and General Support
Maintenance Manual for Lead-Acid Storage Batteries TM 9-6140-200-14

REFERENCES - CONTINUED0058 00

TECHNICAL MANUALS - CONTINUED

Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use. TM 750-244-6

SPECIFICATIONS AND STANDARDS

Solvent Cleaning Compound MIL-PRF-680

OTHER PUBLICATIONS

Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items) CTA-50-970

Army Medical Department Expendable/Durable ItemsCTA 8-100

END OF WORK PACKAGE

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

0059 00

THE ARMY MAINTENANCE SYSTEM MAC

- a. This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under The Army Maintenance Management System (TAMMS) concept.
- b. The Maintenance Allocation Chart (MAC) in Table 1 designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:
 - *Unit* - Includes two subcolumns, C (operator/crew) and O (unit) maintenance.
 - *Direct Support* - includes an F subcolumn.
 - *General Support* - includes an H subcolumn.
 - *Depot* - Includes a D subcolumn.
- a. Table 2 lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Table 1.
- b. Table 3 contains supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

- a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).
- b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, 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; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
- d. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper 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.
- f. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons 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. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and the assigned maintenance level is shown as the third position code of the SMR code.

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION - CONTINUED**0059 00****MAINTENANCE FUNCTIONS - CONTINUED**

- i. **Repair.** The application of maintenance services¹ including fault location/troubleshooting², removal/installation and disassembly/assembly³ procedures, and maintenance actions⁴ to identify troubles and restore serviceability to an item by 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 material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g. hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC, TABLE 1

- a. **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.
- b. **Column (2), Component/Assembly.** Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
- c. **Column (3), Maintenance Function.** Column 3 lists functions to be performed on the item listed in Column 2.
- d. **Column (4), Maintenance Level.** Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C. Operator or Crew Maintenance
 O Unit Maintenance
 F Direct Support Maintenance
 L Specialized Repair Activity (SRA)
 H General Support Maintenance
 D Depot Maintenance

*Asterisk indicates level of maintenance authorized to complete this function. No time is established.

1.Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

2.Fault location/troubleshooting - 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).

3.Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e. identified as maintenance significant).

4.Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION - CONTINUED

0059 00

EXPLANATION OF COLUMNS IN THE MAC, TABLE 1 - CONTINUED

- e. **Column (5), Tools and Equipment Ref Code.** Column 5 specifies, by code, those common tool sets (not individual tools), common Test, Measurement, and Diagnostic Equipment, and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in Table 2.
- f. **Column (6), Remarks Code.** When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Table 3.

EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, TABLE 2

- a. **Column (1), Tool or Test Equipment Code.** The tool and test equipment reference code correlates with a code used in the MAC, Table 1, column 5.
- 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 Stock Number.** The National Stock Number of the tool or test equipment.
- e. **Column (5), Tool Number.** The manufacturer's part number, model number, or type number.

EXPLANATION OF COLUMNS IN REMARKS, TABLE 3

- a. **Column (1), Remarks Code.** The code recorded in column 6, Table 1.
- b. **Column (2), Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Table 1.

END OF WORK PACKAGE

MAINTENANCE ALLOCATION CHART (MAC)

0060 00

Table 1. HET Maintenance Allocation Chart (MAC).

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01 0109	ENGINE Accessory Drive Mechanism: Pulley, Drive	Inspect Replace	0.1		1.5			1	
03 0306	FUEL SYSTEM Tanks, Hoses, Tubes, and Fittings: Fuel Filter	Inspect Service Replace	0.1	0.5 0.5				1 1,4	A
	Fuel Hoses, Tubes, and Fittings	Inspect Replace	0.1	1.0				1	A
0309	Fuel Filter Assemblies	Inspect	0.1	0.5				4	
05 0503	COOLING SYSTEM Water Manifold, Headers, Thermostats, Housing Gasket: Radiator Hoses	Inspect Replace	0.1	0.5				1 2	A
0505	Fan Assembly: Fan Blade and Spacer	Inspect Replace	0.1	1.5				1	
	Drive Belt and Tensioner	Inspect Replace	0.1	1.5				1 1	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0060 00

Table 1. HET Maintenance Allocation Chart (MAC) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
06	ELECTRICAL SYSTEM								
0601	Alternator: Power Wire	Align		0.2					
		Repair			2.0			3	
		Test		0.5				1	
	Arm, Belt Tension	Replace		0.5				1	
		Inspect		0.2				1	
		Replace		0.5				1	
		Adjust		0.5				1	
	Bracket, Mounting	Inspect		0.5				1	
		Replace		0.5				1	
0607	Instrument Panel: Switches	Inspect	0.1						
		Test		0.2				2	
		Replace		0.5				2	
	Circuit Breakers	Test	0.2	0.2					
		Replace		0.2				2	
0608	Miscellaneous Electrical Components:								
		Relays		0.2				2	
	Temperature Control	Replace		0.5				2	
		Inspect		0.5				2	
0613	Wiring Harnesses:	Test		0.5				2	
	A/C Switch Wiring	Inspect	0.2	0.2					
		Test		0.5				2	
	Harness	Replace			2.0			1	
		Repair		1.0				2	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0060 00

Table 1. HET Maintenance Allocation Chart (MAC) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT				
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
06	ELECTRICAL SYSTEM - Continued								
	A/C Receiver/dryer Harness	Inspect	0.1						
		Test		0.5				2	
		Replace			0.5			1	
		Repair		1.0				2	
18	BODY, CAB, HOOD, AND HULL								
1808	Stowage Box	Inspect		0.3					
		Repair		0.5				1	
		Replace		1.0				1	
22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS								
2210	Data Plates	Inspect	0.1	0.1					
		Replace		0.2				2	
52	REFRIGERATION AND A/C COMPONENTS								
5200	A/C System	Inspect	0.1	0.3					
		Service			1.5			1,6	
	Louvers	Inspect	0.1	0.1					
		Replace		0.3					
	Compressor	Inspect		0.5					
		Replace		2.0				1,5,6	
	Brackets	Inspect		0.1				1	
		Replace		0.5					
	Belt	Adjust	0.5					1	
		Replace	1.0					1	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0060 00

Table 1. HET Maintenance Allocation Chart (MAC) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
52	REFRIGERATION AND A/C COMPONENTS - Continued								
5202	Crankshaft	Inspect		0.2				1	
	Compressor Drive Pulley	Replace		0.5	0.5			1	
		Inspect		0.5					
5217	Valves and Lines	Replace		0.5				1,6	
		Inspect	0.1	0.2					A
5230	Condenser	Replace		1.0				1,5,6	
	Receiver/Dryer	Inspect	0.1	0.2					
		Replace		1.0				1,5,6	
	A/C Binary Switch	Inspect	0.1	0.2					
		Test		0.2					
		Replace		0.5				1,5,6	
	A/C High-Pressure Switch	Inspect		0.2				1,5,6	
		Test		0.2					
		Replace		0.5				1,5,6	
	Drain Hoses	Inspect		0.2					
		Replace		0.5				1	
5241	Evaporator	Inspect		0.5				1,5,6	
		Test		0.5				1,5,6	
		Repair		1.0				1,5,6	
		Replace		0.8				1,5,6	
5243	Blower Assembly	Inspect		0.2				1	
		Test		0.5				1	
		Replace		0.5				1	
5244	Thermostatic Controls	Inspect		0.2				1,2	
		Test		0.2				1,2	
		Replace		0.5				1,3	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0060 00

Table 1. HET Maintenance Allocation Chart (MAC) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
52	REFRIGERATION AND A/C COMPONENTS - Continued								
5245	Fan Control Switch	Inspect		0.5					
		Test		0.5					
		Replace		0.5					
	A/C Air Filters	Inspect		0.5				4	
		Replace		0.5				4	

MAINTENANCE ALLOCATION CHART (MAC) - CONTINUED

0060 00

Table 2. HET Tools and Special Tools.

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER (NSN)	(5) TOOL NUMBER (CAGEC)
1	O	Blade Kit, Hole Saw	3455-01-179-3216	4044A13 (39428)
2	O	Cap and Plug Set, Protective, dust and Moisture Seal	5340-00-450-5718	10935405 (19207)
3	O	Gage, Belt Tension	6635-01-143-2237	GA424 (55719)
4	O	Goggles	6930-00-355-7398	IF4B (89297)
5	O	Mirror, Inspection	5120-00-053-1808	2840 (08292)
6	O	Multimeter, Digital	6625-01-139-2512	T00377 (55026)
7	O	Pan, Drain	4910-00-287-2944	107G-DP (2J757)
8	F	Refrigerant Leak Detector	4940-00-103-6820	23-7023 (05083)
9	O	Shop Equipment, Automotive Maintenance and Repair, Common No. 1 Less Power	4910-00-754-0654	SC 4910-95-CL-A74 (19204)
10	O	Soldering Kit	3439-00-460-7198	W-TCP-K (96508)
11	F	Test Set	6685-01-438-5088	J38509 (33287)
12	O	Tool Kit, General Mechanic's	5180-01-454-3787	12B470000 (59678)
13	F	Tool Kit, Machinist: Post, Camp and Station	5280-00-511-1950	SC 5280-95-CL-A02 (19204)
14	O	Wrench, Adjustable	5120-00-264-3793	2117080 (24617)
15	O	Wrench, Strap, 1 - 6 in. capacity	5120-00-776-1840	W18-36 (37078)
16	O	Wrench, Torque, 3/8-in. drive, 0-200 lb in. (0-1700 Nm)	5120-00-853-4538	2002BI (70766)
17	O	Wrench, Torque, 1/2-in. drive, 0-175 ft. lb (0-237 Nm)	5100-00-640-6364	A-A-2411 (58536)

Table 3. HET Remarks.

(1) REMARKS CODE	(2) REMARKS
A	Inspect for leakage.

END OF WORK PACKAGE

EXPENDABLE AND DURABLE SUPPLIES AND MATERIALS LIST

0061 00**SCOPE**

This appendix lists expendable and durable supplies and materials you will need to operate and maintain the HET A/C. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

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, WP 0061 00).
- 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 the part number followed by Commercial and Government Entity (CAGE) Code in parentheses.
- e. **Column (5) - Unit of Measure (U/M).** Indicates the measure used in performing the actual maintenance function. This measure is expressed by two-character alphabetical abbreviations (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

EXPENDABLE AND DURABLE SUPPLIES AND MATERIALS LIST - CONTINUED

0061 00

Table 1. HET Expendable and Durable Items.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
1	O	8040-00-181-7761	Adhesive No. 4500 (76381) 44	oz
2	O		Compound, Sealing Pipe Thread Type A (61603) 92008	ea
3	C	8030-01-054-0740 7930-00-282-9699	Detergent, General Purpose (83421) 7930-00-282-9699	dr
4	O	9320-01-237-1157	Gloves, Rubber (19428) 509891	pr
5	O		Oil, Fuel, Diesel, DF-2 Regular VVF800 (81349)	gal
		9140-00-286-5295	5-Gallon Can	gal
		9140-00-286-5296	55-Gallon Drum	gal
		9140-00-286-5294	Bulk	
6	O	9150-01-524-4276	Oil, Refrigerant Compressor (62534) RD-5-7103-OP	bt
7	O	5350-00-619-9167	Paper, Emery, Grit #80 (58536) A-A-1047	sh
8	O	7920-00-205-1711	Rags, Wiping (64067) A-A-431	lb
9	O	6830-01-439-0614	Refrigerant (4V886) R134a	cy
10	O		Sealant, Loctite 242 (80244) MIL-S-46163	
		8030-01-014-5869	Type II Grade N	oz
11	O	8030-00-204-9149	Sealant, Loctite 59241	oz
12	O	6810-00-252-1345	Soap, Liquid (81349) MILWI5000CLASSIC	qt
13	O		Solvent, Cleaning (81349) MIL-PRF-680	
		6850-01-474-2318	1-Gallon Container	gal
14	O		Tags, Identification (64067) 9905-00-537-8954	
		9905-00-537-8954	Bundle of 50	bd
15	O	2590-01-457-7512	Tape, Foam (76381) 4504-2W	ea

EXPENDABLE AND DURABLE SUPPLIES AND MATERIALS LIST - CONTINUED**0061 00****Table 1. HET Expendable and Durable Items.**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/M
16	O	5975-00-984-6582	Tie, Plastic (06383) 1-55 1 Carton	hd

END OF WORK PACKAGE

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION**0062 00****SCOPE**

This RPSTL lists and authorizes spares and repair parts for performance of Field level maintenance of the Heavy Equipment Transporter (HET) A/C. It authorizes the requisitioning, issue, and disposition of spares and repair parts as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages:

- a. **Repair Parts Lists Work Package.** Work package containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This work package also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Repair parts kits are listed separately in their own functional group. Items listed are shown on the associated illustrations.
- b. **Special Tools List Work Package.** There are no special tools for the HET A/C.
- c. **Cross-Reference Indexes Work Package.** There are two cross-reference indexes in this RPSTL: National Stock Number Index and Part Number Index.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LISTS

- a. **Item No. (Column 1).** Indicates the number used to identify items called out in the illustration.
- b. **SMR Code (Column 2).** The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

SOURCE CODE	MAINTENANCE CODE		RECOVERABILITY CODE
XXxxx	xxXXx		xxxxX
1st two positions	3rd position	4th position	5th position
How you get an item.	Who can install, replace or use the item.	Who can do complete repair* on the item.	Who determines disposition action on an unserviceable item.

* *Complete Repair:* Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION - CONTINUED

0062 00

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LISTS - CONTINUED

- (1) **Source Code.** The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

<u>Code</u>	<u>Application/Explanation</u>
PA PB PC PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the maintenance category indicated by the code entered in the third position of the SMR code. <i>Items coded PC are subject to deterioration.</i>
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.
MO - Made at Unit/ AVUM level MF - Made at DS/AVIM Level MH - Made at GS Level ML - Made at SRA MD - Made at Depot	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk materiel which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk materiel group work package of the RPSTL. If the item is authorized to you by the third position of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO-Assembled by Unit/ AVUM level AF-Assembled by DS/ AVIM level AH-Assembled by GS level AL-Assembled by SRA AD-Assembled by Depot	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to NOTE below).
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N given, if no NSN is available.

NOTE

Cannibalization of controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION - CONTINUED**0062 00****EXPLANATION OF COLUMNS IN THE REPAIR PARTS LISTS - CONTINUED**

- (2) **Maintenance Code.** Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

- (a) Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
C	Crew or Operator maintenance done within Field/AVUM maintenance.
O	Unit Level/AVUM maintenance can remove, replace, and use the item.
F	Direct Support/AVIM maintenance can remove, replace, and use the item.
H	General Support maintenance can remove, replace, and use the item.
L	Specialized Repair Activity (SRA) can remove, replace, and use the item.
D	Depot Maintenance can remove, replace, and use the item.

- (b) Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

<u>Code</u>	<u>Application/Explanation</u>
O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct Support/AVIM is the lowest level that can do complete repair of the item.
H	General Support is the lowest level that can do complete repair of the item.
L	Specialized Repair Activity (SRA) is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. No parts or special tools are authorized for the maintenance of a "B"-coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION - CONTINUED**0062 00****EXPLANATION OF COLUMNS IN THE REPAIR PARTS LISTS - CONTINUED**

- (3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

<u>Code</u>	<u>Application/Explanation</u>
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O	Reparable item. When uneconomically repairable, condemn and dispose of the item at the Unit level maintenance.
F	Reparable item. When uneconomically repairable, condemn and dispose of the item at Direct Support level.
H	Reparable item. When uneconomically repairable, condemn and dispose of the item at General Support level.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L	Reparable item. Condemnation and disposal of item not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

- c. **NSN - (Column 3).** The NSN for the item is listed in this column.
- d. **CAGEC (Column 4).** The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.
- e. **PART NUMBER (Column 5).** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

- f. **DESCRIPTION AND USABLE ON CODE (UOC) (Column 6).** This column includes the following information:
- (1) The Federal item name and, when required, a minimum description to identify the item.
 - (2) P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
 - (3) Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
 - (4) The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION - CONTINUED**0062 00****EXPLANATION OF COLUMNS IN THE REPAIR PARTS LISTS - CONTINUED**

- g. **QTY (Column 7).** The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, group or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGE FORMAT AND COLUMNS

- a. **National Stock Number (NSN) Index Work Package.**
- (1) **STOCK NUMBER Column.** This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., NSN 5305-01-674-1467). When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.
 - (2) **FIG. Column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in WP 0063 00.
 - (3) **ITEM Column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.
- b. **Part Number (P/N) Index Work Package.** Part numbers in this index are listed in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).
- (1) **PART NUMBER Column.** Indicates the P/N assigned to the item.
 - (2) **FIG. Column.** This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.
 - (3) **ITEM Column.** The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

- a. **Usable On Code (UOC).** The UOC appears in the lower left corner of the DESCRIPTION column heading. Usable on codes are shown as "UOC:" in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOC's used in the RPSTL are:

<u>Code</u>	<u>Used On</u>
CP4	HET A/C

- b. **Associated Publications.** The publication(s) listed below pertain to the HET A/C and its components:

Publication	Short Title
TM 9-2320-360 Series	Series of Manuals for the HET A/C

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION - CONTINUED**0062 00****HOW TO LOCATE REPAIR PARTS**a. **When National Stock Number is Known.**

- (1) **First.** If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.
- (2) **Second.** Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

b. **When Part Number is Known.**

- (1) **First.** If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.
- (2) **Second.** Look up the item on the figure in the applicable repair parts list work package.

ABBREVIATIONS

For standard abbreviations see ASME Y14.38-1999, *Abbreviations and Acronyms*.

<u>Abbreviations</u>	<u>Explanation</u>
NIIN	National Item Identification Number (consists of the last 9 digits of the NSN)
RPSTL	Repair Parts and Special Tools Lists
SMR	Source, Maintenance, and Recoverability Code
TMDE	Test, Measurement, and Diagnostic Equipment

END OF WORK PACKAGE

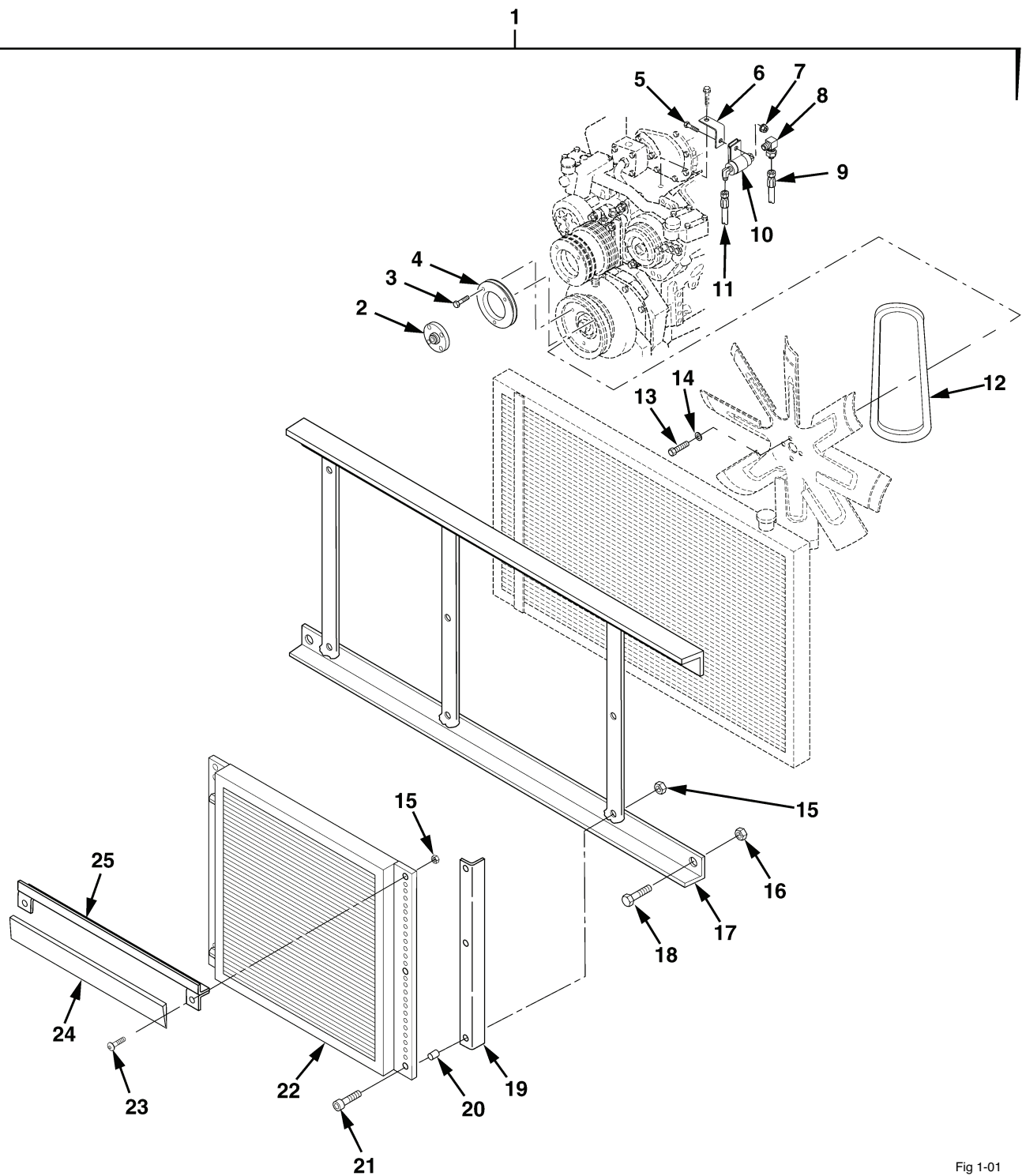


Fig 1-01

FIG. 1 HET AIR CONDITIONING (SHEET 1 OF 12)

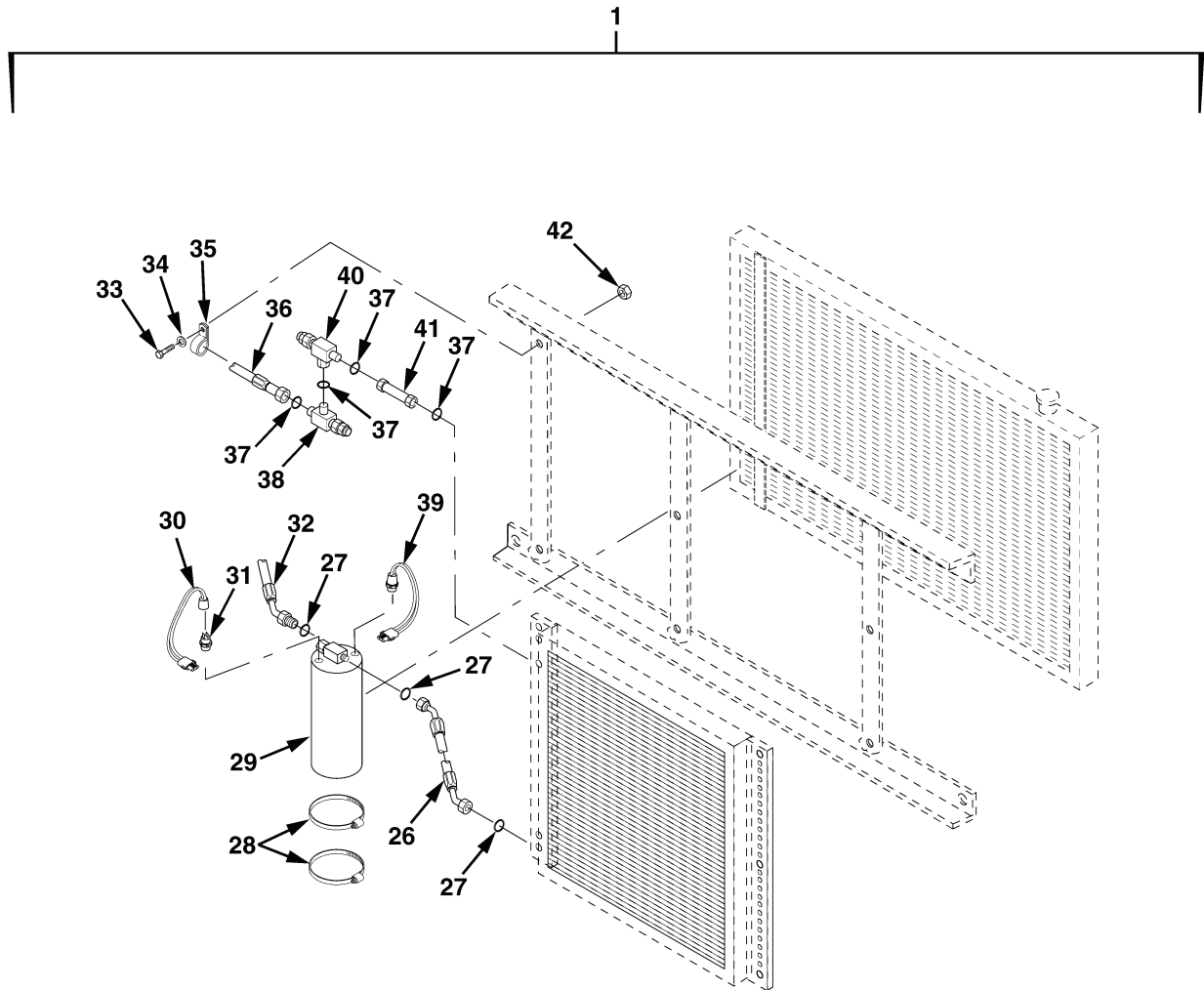


Fig 1-02

FIG. 1 HET AIR CONDITIONING (SHEET 2 OF 12)

1

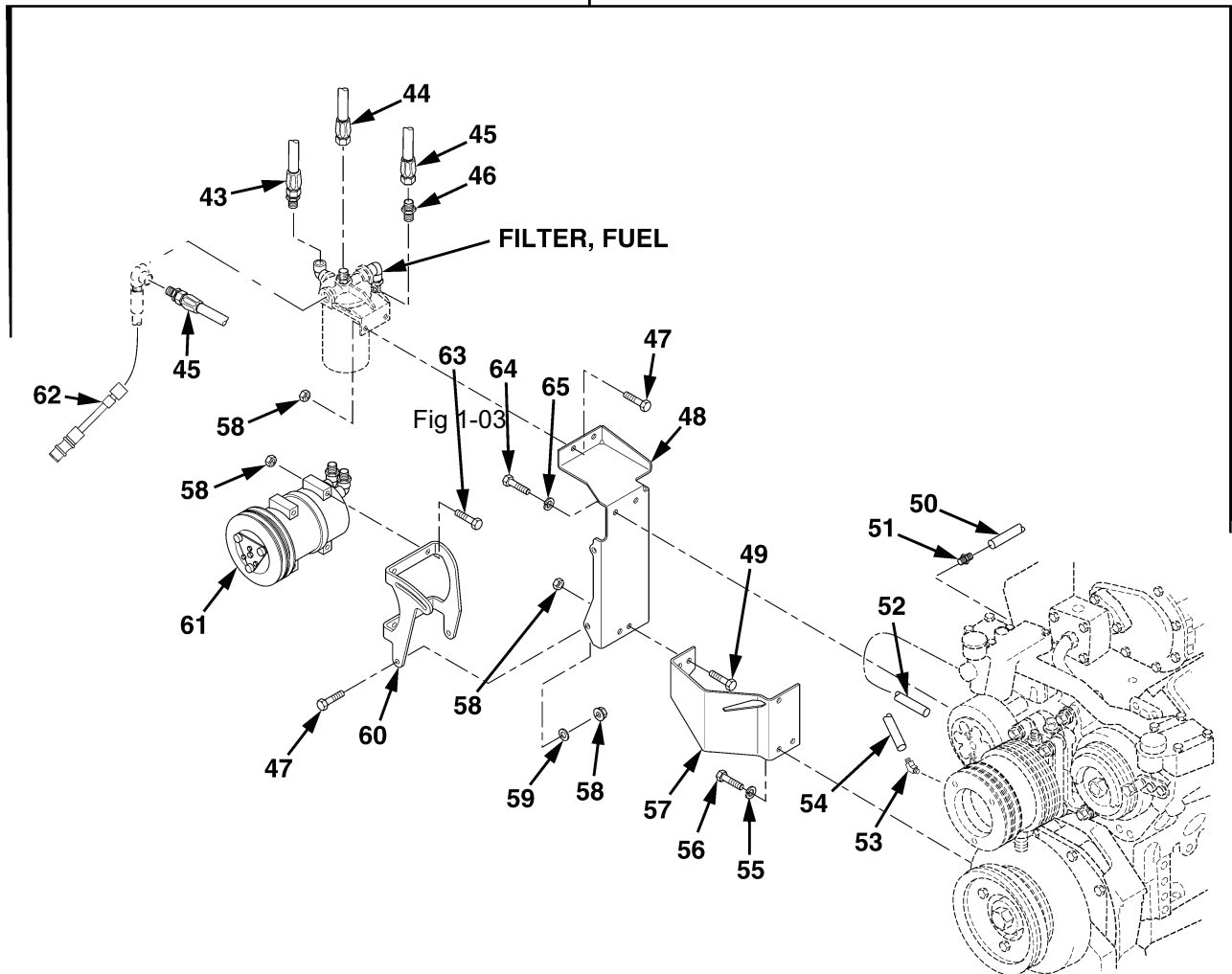


FIG. 1 HET AIR CONDITIONING (SHEET 3 OF 12)

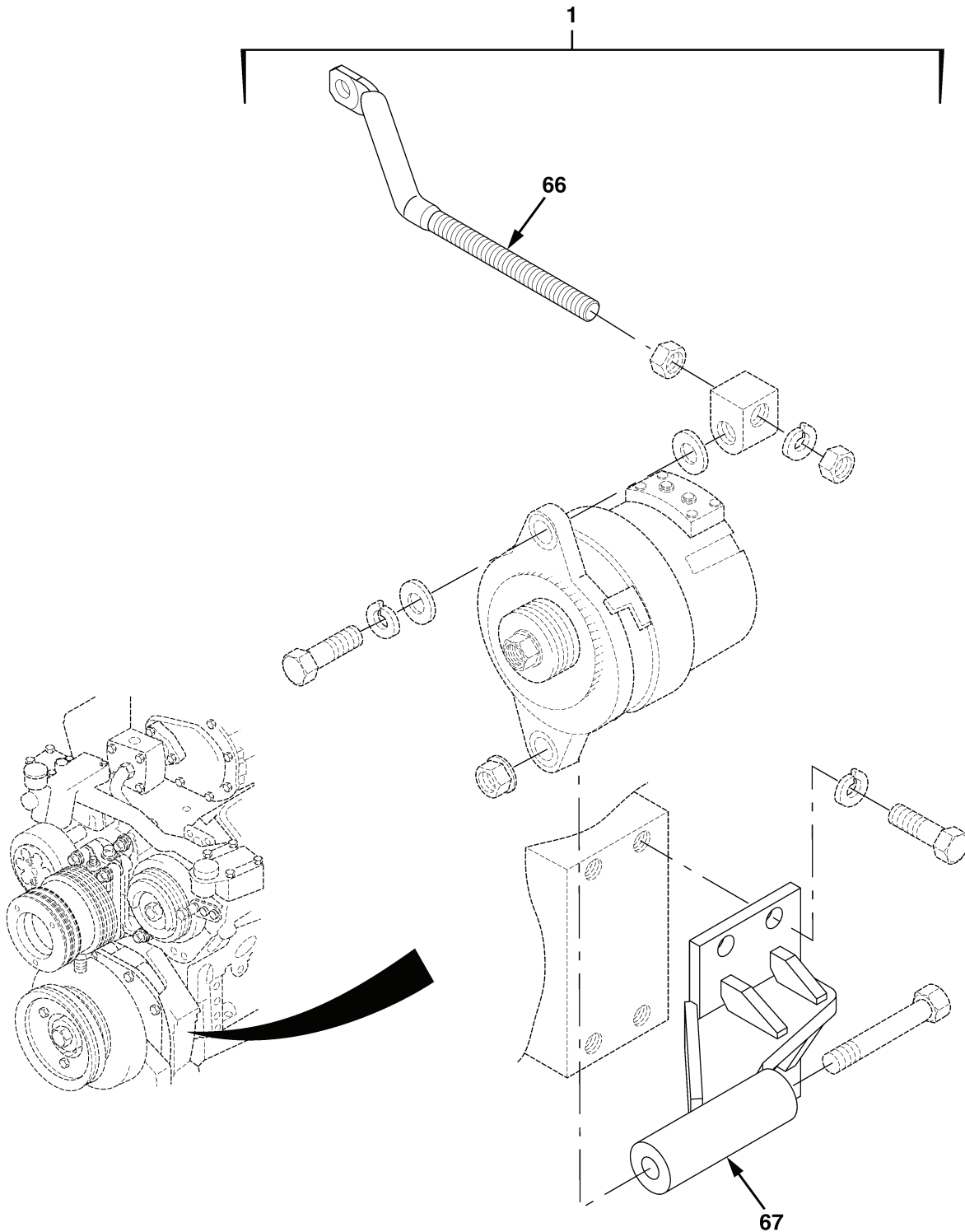


FIG. 1 HET AIR CONDITIONING (SHEET 4 OF 12)

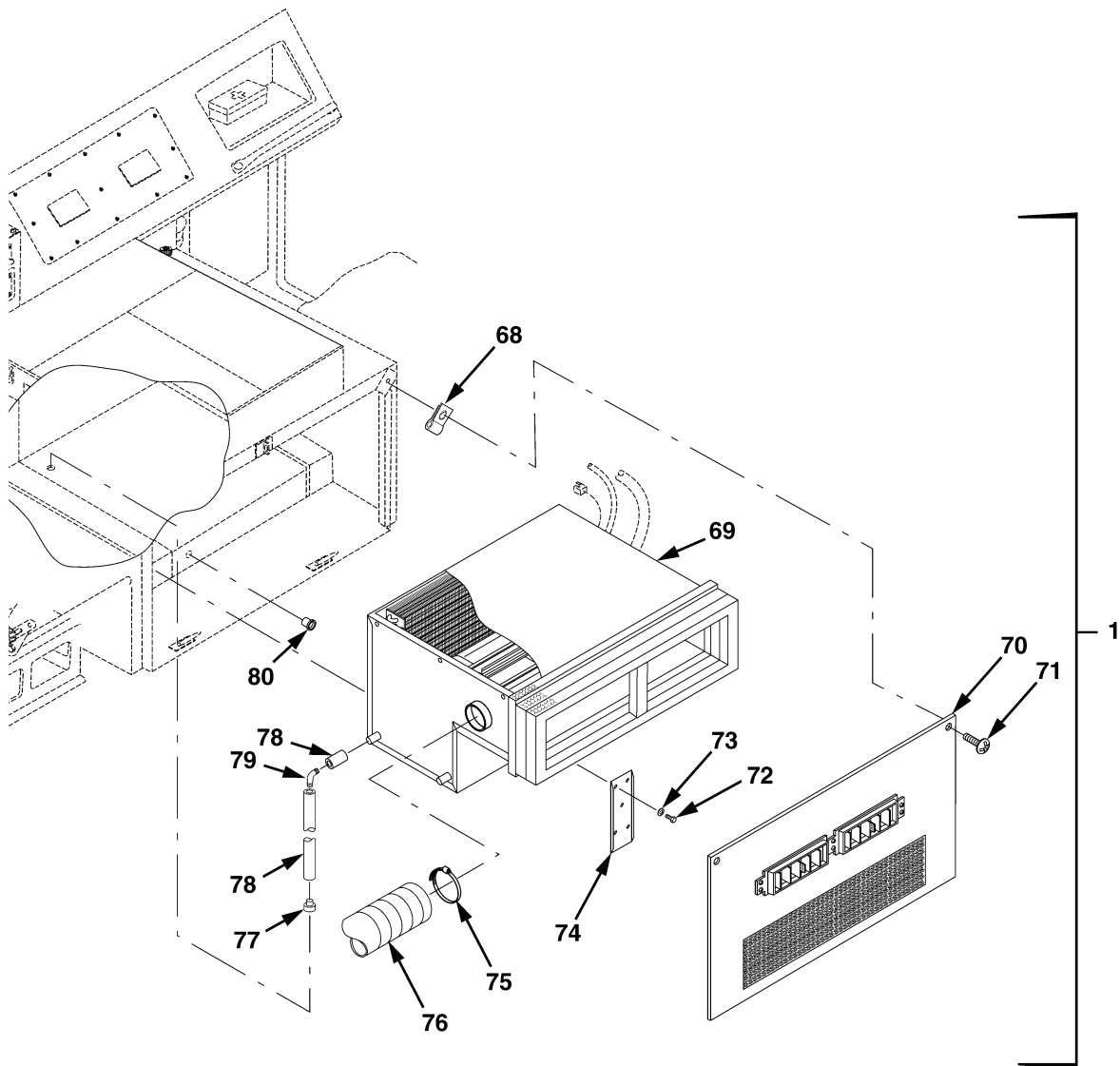


FIG. 1 HET AIR CONDITIONING (SHEET 5 OF 12)

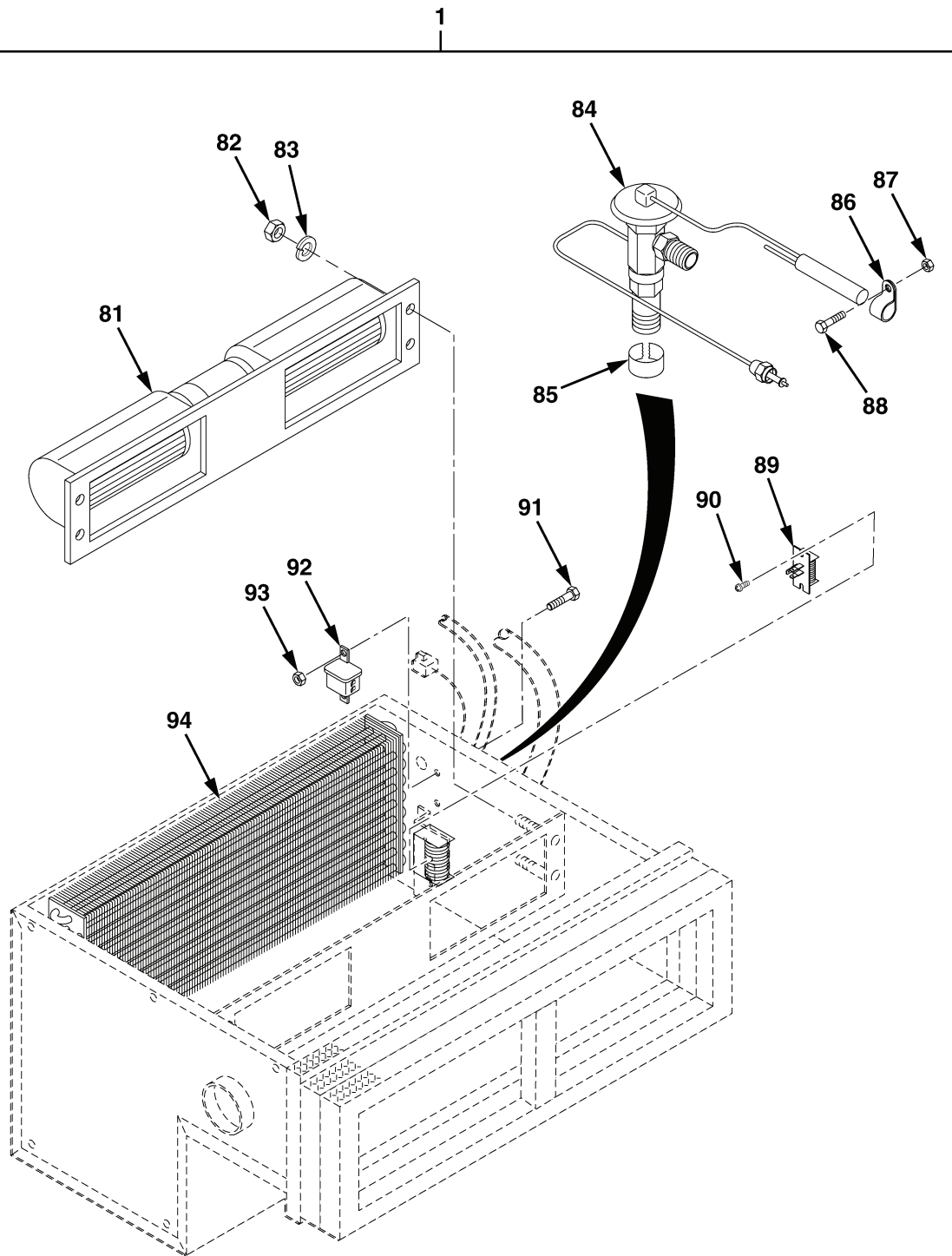


FIG. 1 HET AIR CONDITIONING (SHEET 6 OF 12)

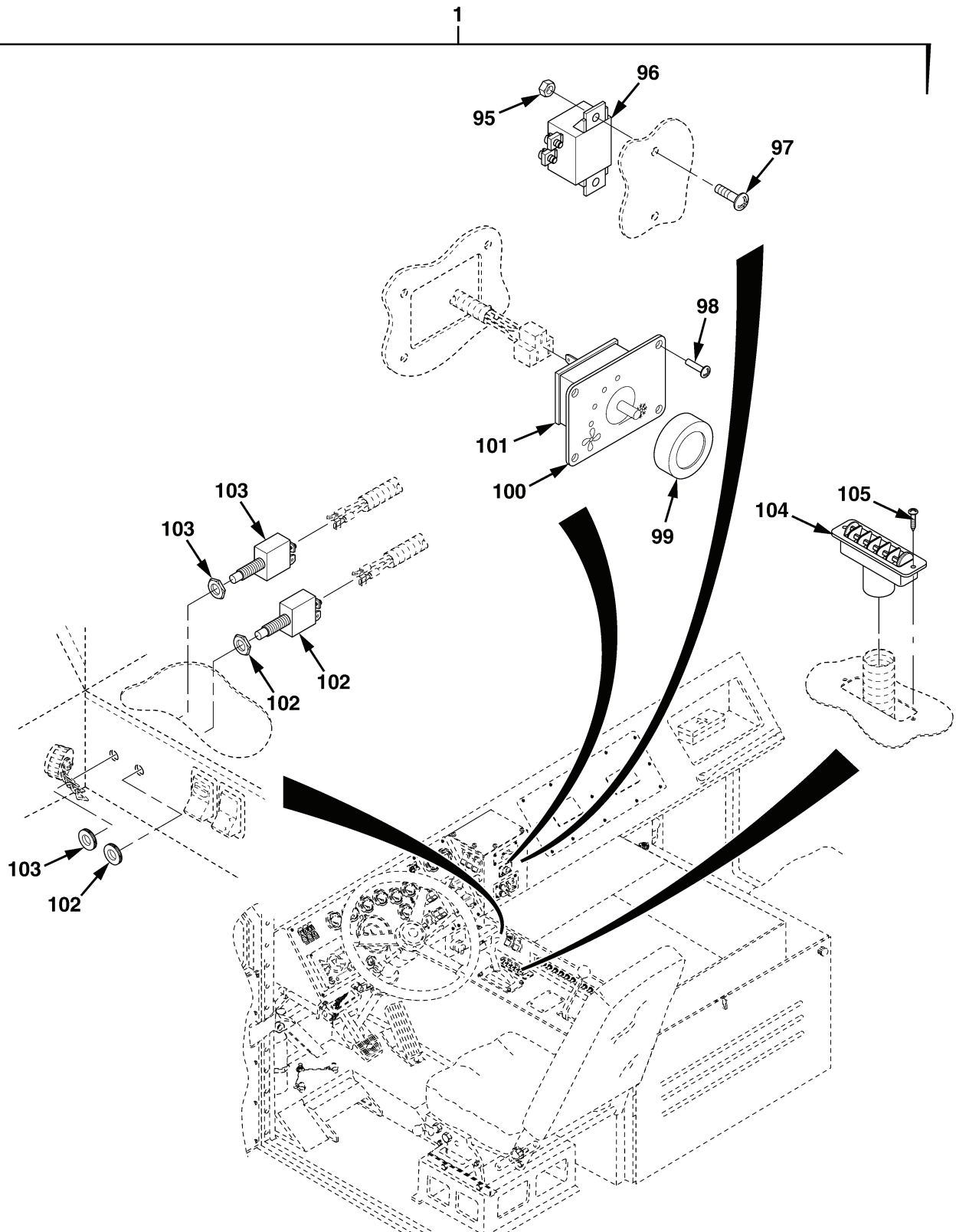


FIG. 1 HET AIR CONDITIONING (SHEET 7 OF 12)

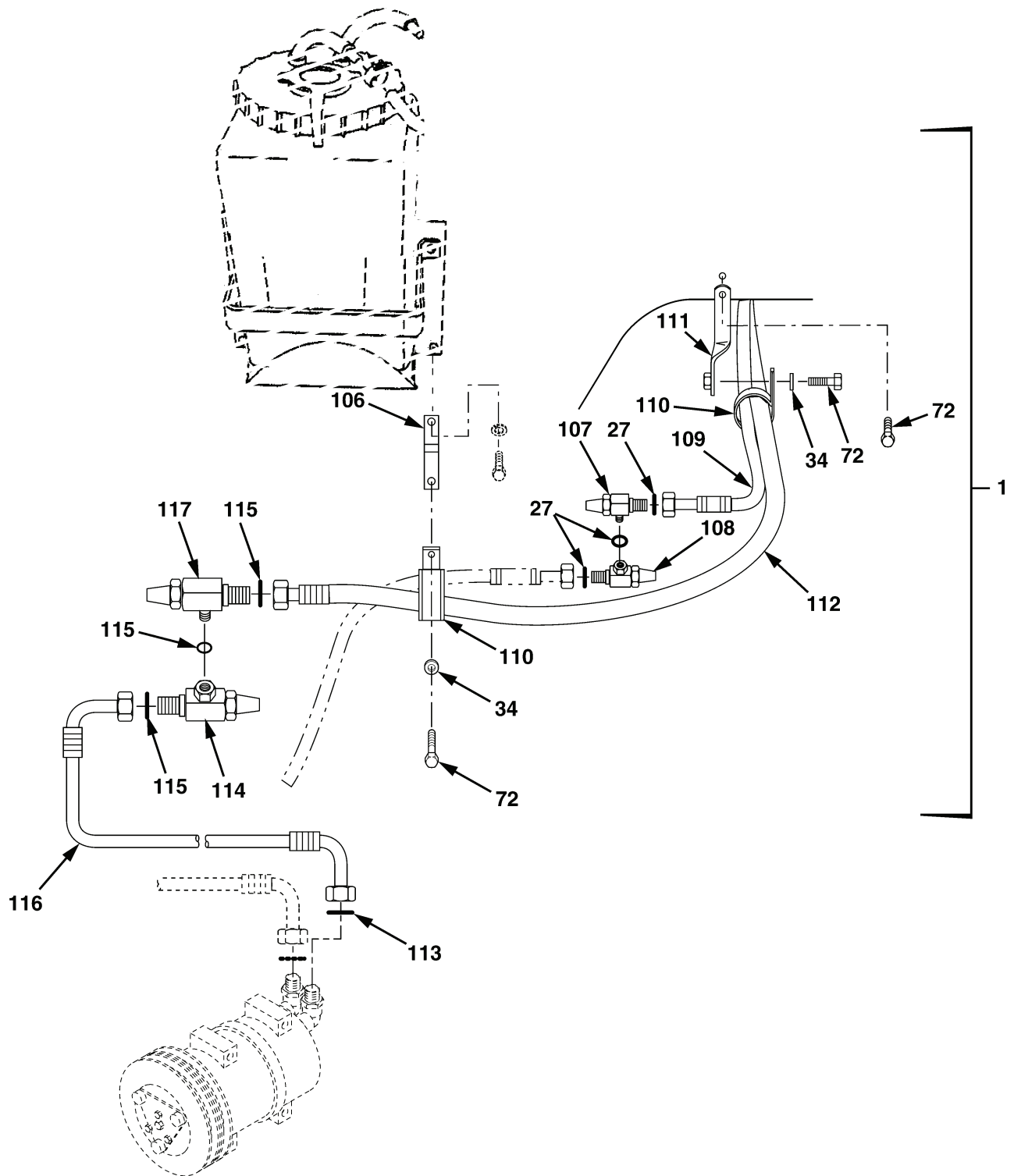


FIG. 1 HET AIR CONDITIONING (SHEET 8 OF 12)

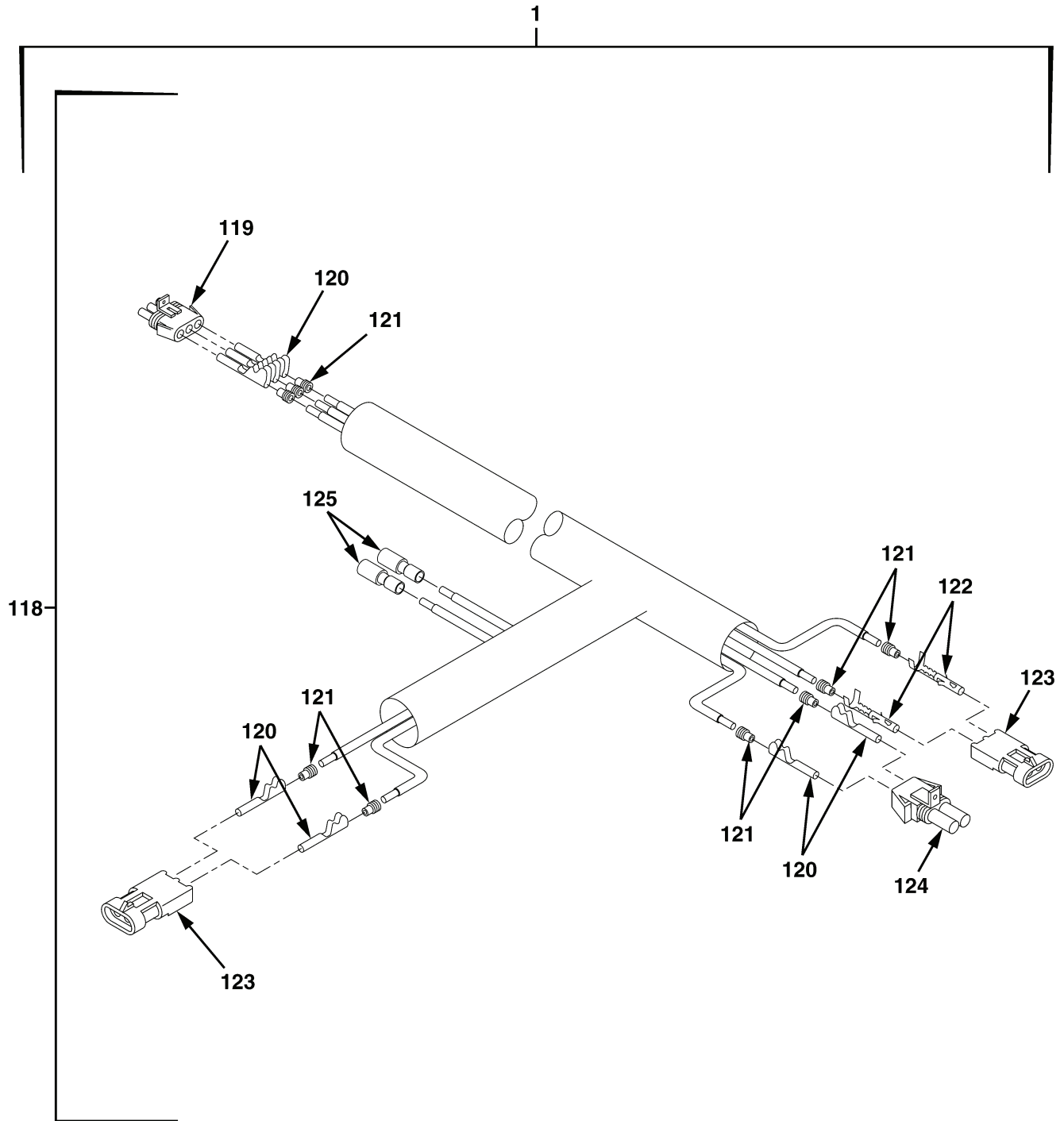


FIG. 1 HET AIR CONDITIONING (SHEET 9 OF 12)

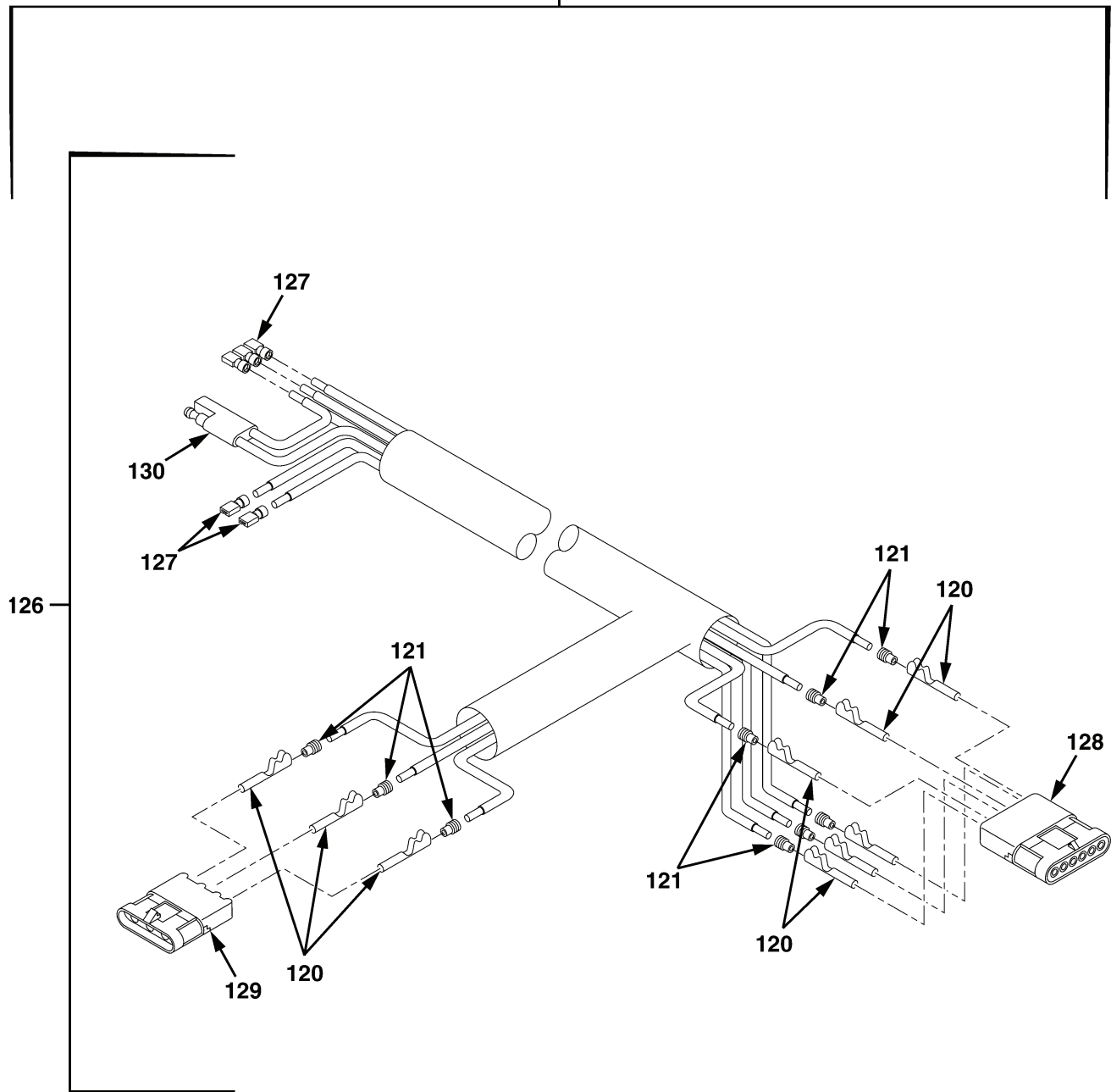


FIG. 1 HET AIR CONDITIONING (SHEET 10 OF 12)

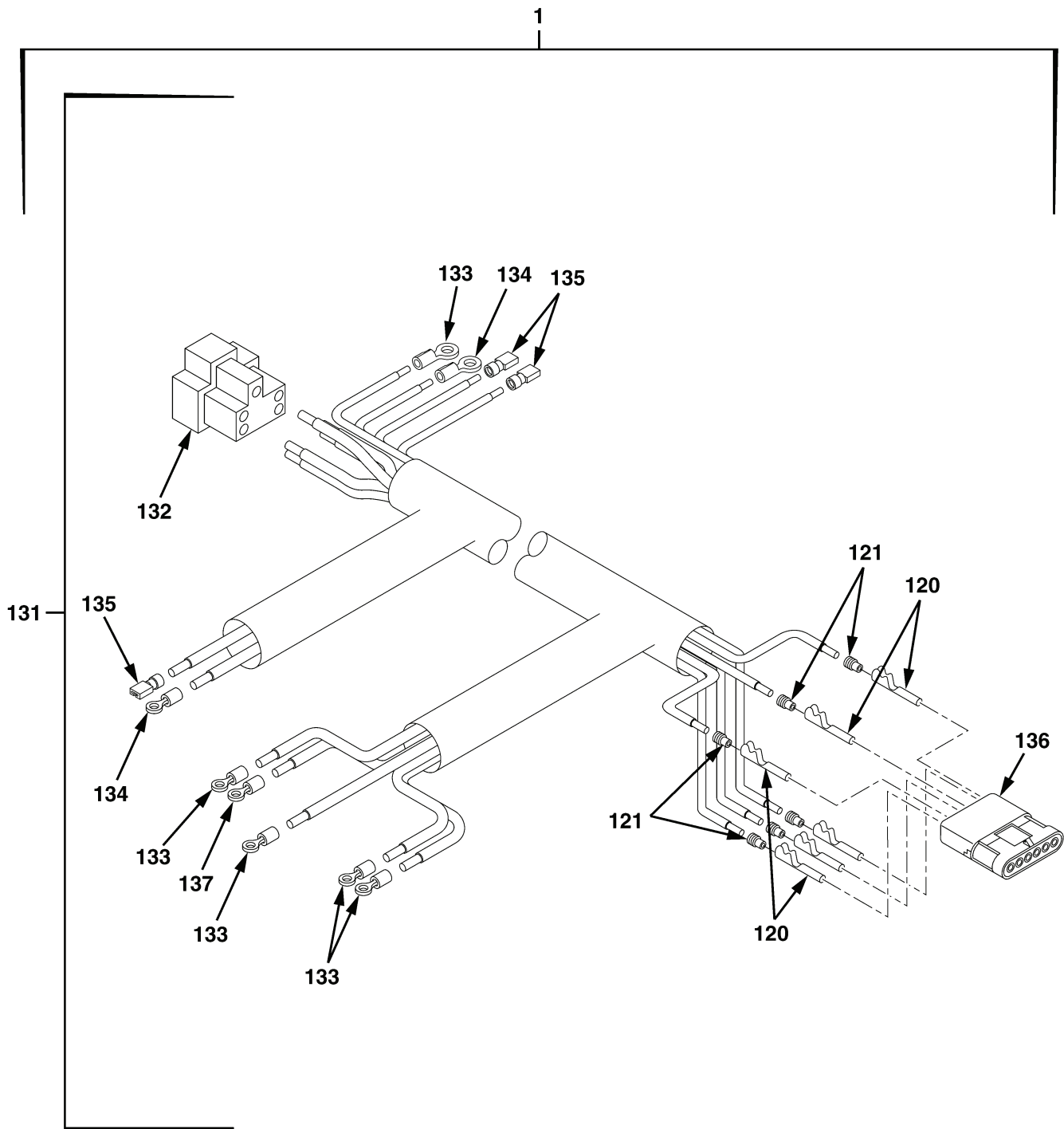


FIG. 1 HET AIR CONDITIONING (SHEET 11 OF 12)

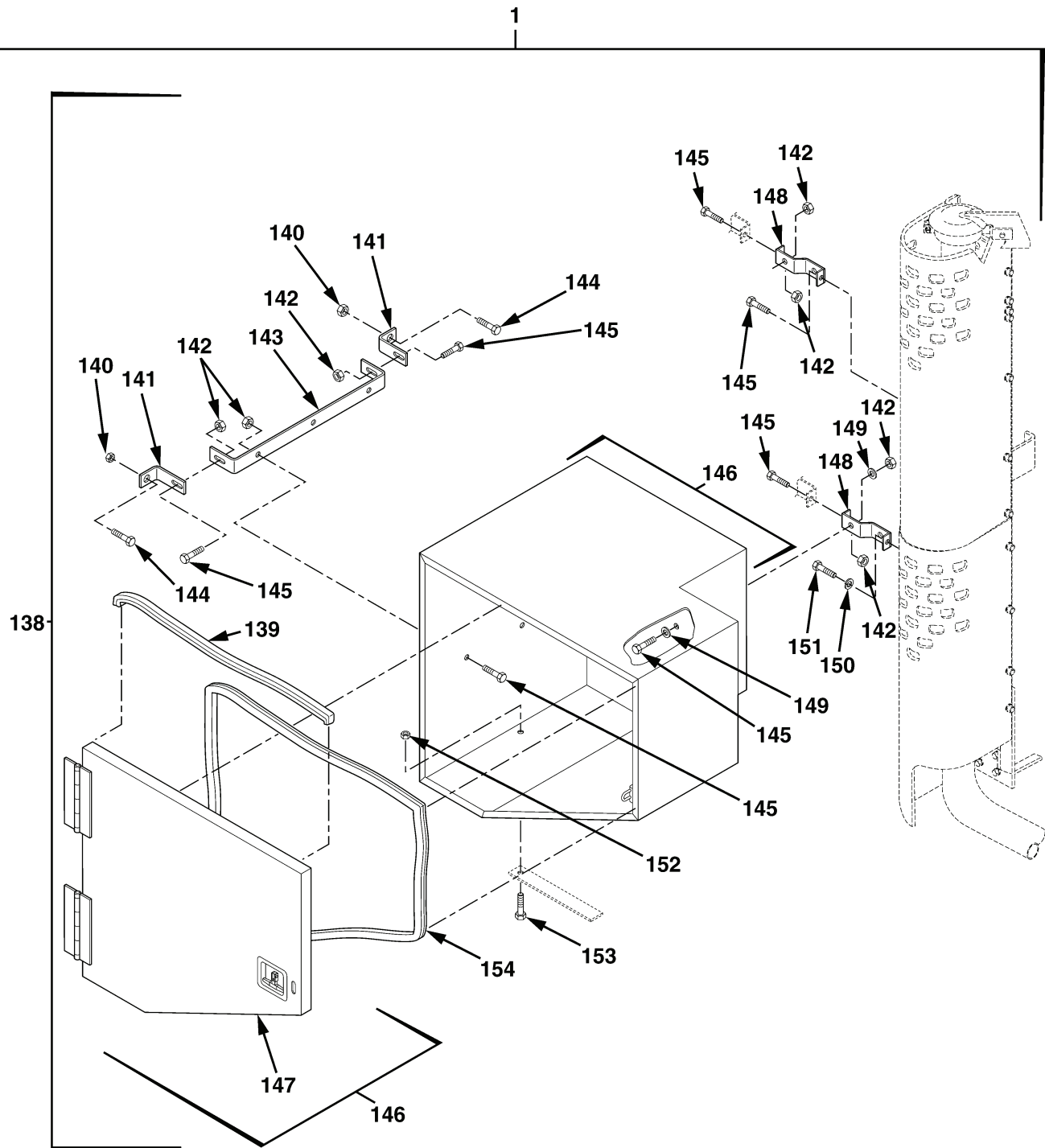


FIG. 1 HET AIR CONDITIONING (SHEET 12 OF 12)

TB 9-2320-360-13&P-1

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 52 REFRIGERATION,AIR CONDITIONER
HEATER, AND AIR CONDITIONER
COMPONENTS

GROUP 5200 AIR CONDITIONER/HEATER
ASSEMBLY AND GAS COMPRESSOR ASSEMBLY

FIG. 1 HET AIR CONDITIONING

1	PAFZZ	4120015054149	45152	3439127	A/C AND STOWAGE BOX.....	1
2	PAOZZ	5365015146201	45152	3425128	.SPACER, PLATE.....	1
3	PAOZZ	5305007252317	80204	B1821BH038C150N	.SCREW,CAP,HEXAGON H.....	1
4	PAOZZ	3020015140989	45152	3425108	.PULLEY,GROOVE.....	3
5	PAOZZ	5305013400225	45152	1754210	.SCREW,CAP,HEXAGON H.....	1
6	PAOZZ	5340013404023	45152	126699A	.BRACKET,ANGLE.....	1
7	PAOZZ	5310013405671	45152	1333510	.NUT,SELF-LOCKING,EX.....	1
8	PAOZZ	4730015141736	5N978	013570303	.ELBOW,PIPE.....	1
9	PAOZZ	4720015146158	5N978	023950016	.HOSE ASSEMBLY,METAL.....	1
10	PAOZZ	4810015144012	5N978	013580001	.VALVE,SOLENOID.....	1
11	PAOZZ	4720015145714	45152	3439125	.HOSE ASSEMBLY,METAL.....	1
12	PAOZZ	3030015141007	45152	3425130	.BELT,V.....	1
13	PAOZZ	5305011955041	45152	27937AX	.SCREW,CAP,HEXAGON H.....	4
14	PAOZZ	5310011332130	45152	355AX	.WASHER,LOCK.....	4
15	PAFZZ	5310012885096	45152	1571850	.NUT,SELF-LOCKING,AS.....	8
16	PAFZZ	5310012881116	45152	1437220	.NUT,SELF-LOCKING,EX.....	4
17	PAFZZ	5342015137148	5N978	073363051	.BRACKET,ENGINE ACCE.....	1
18	PAFZZ	5306012875714	45152	1614120	.BOLT,MACHINE.....	4
19	PAFZZ	2930015153517	5N978	073363952	.SHROUD,FAN,RADIATOR.....	2
20	PAFZZ	5365014792035	45152	8HB956	.SPACER,SLEEVE.....	6
21	PAFZA	5305000341194	53711	1611200PC351	.SCREW,CAP,SOCKET HE.....	6
22	PAFZZ	4130015133070	5N978	049990003	.CONDENSER COIL,REFR.....	1
23	PAFZZ	5305009887608	80205	MS16995-36	.SCREW,CAP,SOCKET HE.....	2
24	PAFZZ	2930015153512	5N978	073364152	.SHROUD,FAN,RADIATOR.....	8
25	PAFZZ	2930015153512	5N978	073364152	.SHROUD,FAN,RADIATOR.....	2
26	PAFZZ	4720015138746	45152	1KK124	.HOSE ASSEMBLY,NONME.....	1
27	PAFZZ	5331011988439	01276	22617-6	.O-RING.....	6
28	PAOZZ	4730013316630	9C234	11669079-5	.CLAMP,HOSE.....	2
29	PAFZZ	4130015133069	5N978	024900003	.RECEIVER,LIQUID REF.....	2
30	PAFZZ	6150015139708	5N978	020950027	.JUMPER HARNESS.....	2
31	PAFZZ	5930015134411	5N978	020800500	.SWITH,PRESSURE.....	2
32	PAFZZ	4720015138748	45152	1KK125	.HOSE ASSEMBLY,NONME.....	2
33	PAOZZ	5305000680508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H.....	2
34	PAOZZ	5310008094058	96906	MS27183-10	.WASHER,FLAT.....	4
35	PAOZZ	4730012733670	7Z588	63012	.CLAMP,HOSE.....	1
36	PAFZA	4720015171859	5N978	023950007	.HOSE,PREFORMED.....	1
37	PAFZZ	5331012442273	01276	22617-8	.O-RING.....	4
38	PAFZZ	4820015137536	5N978	014210080	.VALVE,TEE.....	1
39	PAFZZ	5930015148457	5N978	020800550	.SWITCH,PRESSURE.....	1
40	PAFZZ	4820015137562	5N978	014210081	.VALVE,TEE.....	1
41	PAFZA	4720015169335	5N978	023950008	.HOSE,ASSEMBLY, META.....	1
42	PAOZZ	5310010583183	45152	767HX1	.NUT,PLAIN,HEXAGON.....	1
43	PAOZZ	4720015145714	45152	3439125	.HOSE ASSEMBLY,METAL.....	1

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(1) ITEM	(2) SMR	(3)	(4)	(5) PART	(6)	(7)
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
44	PAOZZ	4720015145685	45152	3439126	.HOSE ASSEMBLY,METAL.....	1
45	PAOZZ	4720015146177	45152	3439124	.HOSE ASSEMBLY,METAL.....	1
46	PAOZZ	4730004034338	81343	SAE J512 6-6 040	.COUPLING,TUBE.....	1
				101BA		
47	PAFZZ	5306012875715	45152	1680530	.BOLT,MACHINE.....	2
48	PAFZZ	5340015138144	45152	3425111	.BRACKET,MULTIPLE AN.....	1
49	PAFZZ	5306012875714	45152	1614120	.BOLT,MACHINE.....	2
50	MOOOO		45152	69940AX-58	.HOSE,SILICONE.....	1
51	PAOZZ	4730011304353	99103	HI-1612	.ADAPTER,STRAIGHT,PI.....	1
52	MOOOO		45152	69851AX-48	.HOSE,SILICONE,.....	1
53	PAOZZ	4730005950143	96906	MS14307-4	.ELBOW,PIPE.....	1
54	MOOOO		45152	69851AX-47	.HOSE,SILICONE,.....	1
55	PAFZZ	5310010811283	45152	352AX	.WASHER,LOCK.....	3
56	PAFZZ	5305011722002	45152	316BX1	.SCREW,CAP,HEXAGON H.....	3
57	PAFZZ	5340015138142	45152	3425114	.BRACKET,MULTIPLE AN.....	1
58	PAFZZ	5310012881116	45152	1437220	.NUT,SELF-LOCKING,EX.....	3
59	PAFZZ	5310010623379	45152	362AX	.WASHER,FLAT.....	3
60	PAFZZ	5340015138147	45152	3425072	.BRACKET,MULTIPLE AN.....	1
61	PAFZZ	4130015141439	45152	3425129	.COMPRESSOR,REFRIGER.....	1
62	PAOZZ	6150015139705	45152	3439123	.WIRING HARNESS.....	1
63	PAFZZ	5305007813928	80204	B1821BH038C400N	.SCREW,CAP,HEXAGON H.....	4
64	PAFZZ	5306010845390	78500	S-268-1	.BOLT,MACHINE.....	2
65	PAFZZ	5310011290450	45152	351AX	.WASHER,LOCK.....	2
66	PAOZZ	3040015145600	45152	3425127	.ROD,ADJUSTMENT,ALTE.....	1
67	PAOZZ	5342015144517	45152	3425118	.BRACKET,ENGINE ACCE.....	1
68	PAOZZ	5310015173776	5N978	017130401	.NUT,CLIP-ON.....	2
69	PAOZZ	4130015133078	5N978	073361581	.EVAPORATOR COIL,REF.....	1
70	PAOZZ	5340015144925	5N978	073362381	.COVER,ACCESS.....	1
71	PAOZZ	5305015174195	5N978	018031100	.SCREW,MACHINE.....	2
72	PAOZZ	5305000680508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H.....	11
73	PAOZZ	5310002748715	80205	MS35338-63	.WASHER,LOCK.....	8
74	PAOZZ	5340015146264	5N978	073364800	.BRACKET,MOUNTING.....	2
75	PAOZZ	4730013316630	9C234	11669079-5	.CLAMP,HOSE.....	2
76	PAOZZ	4720014793415	45152	7HB776	.HOSE,AIR DUCT.....	2
77	PAOZZ	4130015142340	5N978	012890200	.AIR RESTRICTOR.....	4
78	MOOOO		06034	1101611-7	.HOSE,DRAIN - 3/8"ID.....	1
79	PAOZA	4730004667479	27901	62050	.ELBOW,HOSE.....	4
80	PAOZZ	5325013942414	78276	ALS7-420-165	.INSERT,SCREW THREAD.....	4
81	PAFZZ	6105015151231	45152	1KK160	.MOTOR,DIRECT CURREN.....	1
82	PAFZZ	5310011943014	45152	1369HX1	.NUT,PLAIN,HEXAGON.....	4
83	PAOZZ	5310009338120	80205	MS35338-138	.WASHER,LOCK.....	4
84	PAFZA	4820015152390	5N978	013550300	.VALVE,REGULATING,SY.....	1
85	PAFZZ	5640005806276	73030	HS7495-618	.INSULATION TAPE,THE.....	36
86	PAOOO	5340015502486	12168	623-10	.CLAMP,COPPER STRAP.....	10
87	PAFZZ	5310009349757	80205	MS35649-282	.NUT,PLAIN,HEXAGON.....	1
88	PAFZZ	5305009846189	80205	MS35206-241	.SCREW,MACHINE.....	1
89	XDOZZ		5N978	021800224	.RESISTOR ASSEMBLY.....	1
90	PAFZZ	5305011345458	39428	91783A831	.SCREW,MACHINE.....	2
91	PAFZZ	5305009846210	H2229	XX002-0637	.SCREW,MACHINE.....	2
92	PAFZZ	5930015148684	5N978	020860100	.SWITCH,THERMOSTATIC.....	1
93	PAFZZ	5310002081918	88044	AN365-1024A	.NUT,SELF-LOCKING,HE.....	2
94	PAFZA	4130015152051	5N978	073368001	.CONDENSER COIL,REFR.....	1

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
95	PAOZZ	5310002081918	88044	AN365-1024A	.NUT, SELF-LOCKING, HE.....	2
96	PAOZZ	5945015034128	53867	0 332 002 256	.RELAY, HYBRID.....	1
97	PAOZZ	5305012498564	45152	59031AX	.SCREW, MACHINE.....	2
98	PAOZZ	5320015317628	5N978	014040101	.RIVET, SOLID.....	4
98	PAOZZ	5320015317628	5N978	014040101	.RIVET, SOLID.....	4
99	PAOZZ	5355013978580	89522	U52-3PC	.KNOB.....	1
100	PAOZZ	5895015138565	5N978	020790281	.PLATE, ROTARY SWITCH.....	1
101	PAOZZ	5930014809092	5N978	020850300	.SWITCH, ROTARY.....	1
102	PAOZZ	5925012161975	45152	1404630	.CIRCUIT BREAKER.....	1
103	PAOZZ	5925013513659	45152	1732750	.CIRCUIT BREAKER.....	1
104	PAOZZ	2540015142269	5N978	024020205	.VENTILATOR, AIR CIRC.....	2
105	PAOZZ	5305004333711	80205	MS51861-35C	.SCREW, TAPPING.....	4
106	PAOZZ	5340015168806	5N978	073362551	.BRACKET, DOUBLE ANGL.....	1
107	PAFZZ	4820015137552	5N978	014210061	.VALVE, TEE.....	1
108	PAFZZ	4820015137543	5N978	014210060	.VALVE, TEE.....	1
109	PAFZZ	4720015138750	45152	1KK126	.HOSE ASSEMBLY, NONME.....	1
110	PAOZZ	4730011919701	39428	5416K16	.CLAMP, HOSE.....	2
111	PAOZZ	2590015166909	5N978	073361751	.BRACKET, VEHICULAR C.....	1
112	PAFZZ	4720015138752	5N978	023950005	.HOSE, PREFORMED.....	1
113	PAOZZ	5331015148498	5N978	019351000	.O-RING.....	1
114	PAFZZ	4820015137557	5N978	014210120	.VALVE, AC-FEMALE #12.....	1
115	PAFZZ	5331002287196	01276	22617-12	.O-RING.....	2
116	PAFZA	4720015171858	5N978	023950006	.HOSE, PREFORMED.....	1
117	PAFZZ	4820015137555	45152	1KK145	.VALVE, ANGLE.....	1
118	PAOZZ	6150015151249	5N978	020950019	.WIRING HARNESS, BRAN.....	1
119	PAOZZ	5935015125010	45152	1HB838	..CONNECTOR BODY, RECE.....	1
120	PAOZZ	5999014229740	19207	12420936	..CONTACT, ELECTRICAL.....	1
121	PAOZZ	5975012268078	77060	12010293	..BOOT, DUST AND MOIST.....	4
122	PAOZA	5999014064110	77060	12124582	..CONTACT, ELECTRICAL.....	1
123	PAOZZ	5935012144163	77060	12010973	..CONNECTOR BODY, PLUG.....	2
124	PAOZZ	5935012145259	77060	12015792	..CONNECTOR BODY, PLUG.....	1
125	PAOZZ	5940015173928	39428	71285K31	.TERMINAL, STUD.....	2
126	PAOZZ	6150015151258	5N978	020950020	.WIRING HARNESS, BRAN.....	1
127	PAOZZ	5940010823321	00779	3-350820-2	..TERMINAL, QUICK DISC.....	5
128	PAOZZ	5935015157960	77060	12020786	..CONNECTOR, PLUG, ELEC.....	1
129	PAOZZ	5935015151196	45152	8HR147	..CONNECTOR, PLUG, ELEC.....	1
130	PAOZZ	5940015173836	00779	60660-1	.TERMINAL, STUD.....	1
131	PAOZZ	6150015151809	5N978	020950018	.WIRING HARNESS, BRAN.....	1
132	PAOZZ	5940006209780	00779	42282-2	..TERMINAL, QUICK DISC.....	1
133	PAOZZ	5940001441530	00779	36154	..TERMINAL, LUG.....	5
134	PAOZZ	5940001434794	81343	MS25036-112	..TERMINAL, LUG.....	3
135	PAOZZ	5940012383895	39428	7243K21	..TERMINAL, QUICK DISC.....	1
136	PAOZZ	5935013446132	77060	12020926	..CONNECTOR, PLUG, ELEC.....	1
137	PAOZZ	5940001138183	81343	MS25036-113	..TERMINAL, LUG.....	1
138	PAOZZ	2540015054129	45152	3428365	.BOX, ACCESSORIES STO.....	2
139	PAOZZ	5330015151085	45152	3436598	..SEAL, NONMETALLIC ST.....	1
140	PAOZZ	5310013405671	45152	1333510	..NUT, SELF-LOCKING, EX.....	9
141	PAOZZ	5340015138068	45152	3428370	..BRACKET, DOUBLE ANGL.....	2
142	PAOZZ	5310011110645	45152	110311A	..NUT, SELF-LOCKING, EX.....	3
143	PAOZZ	5340015138098	45152	3428371	..BRACKET, ANGLE.....	1
144	PAOZZ	5306011505884	45152	115289A	..BOLT, MACHINE.....	2
145	PAOZZ	5305013400225	45152	1754210	..SCREW, CAP, HEXAGON H.....	9

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(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
146	PAOZZ	2540015137518	45152	3428366	..STOWAGE BOX DOOR.....	1
147	PAOZZ	5342015138063	45152	3428375	...DOOR, ACCESS, WEAPON.....	1
148	PAOZZ	5340015138139	45152	3428367	..BRACKET, DOUBLE ANGL.....	2
149	PAOZZ	5310010688446	45152	354AX	..WASHER, LOCK.....	1
150	PAOZZ	5310000814219	96906	MS27183-12	..WASHER, FLAT.....	1
151	PAOZZ	5305011575624	45152	1324510	..SCREW, TAPPING.....	1
152	PAOZZ	5310012881116	45152	1437220	..NUT, SELF-LOCKING, EX.....	3
153	PAOZZ	5305013405061	45152	1754280	..SCREW, CAP, HEXAGON H.....	3
154	PAOZA	5330015138668	45152	3428368	..GASKET.....	1

END OF FIGURE

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(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a)	(b)							
FIG NO	ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGE	PART NUMBER	USABLE ON CODE	UM	QTY INC IN UNIT
GROUP 9501 BULK MATERIAL								
BULK	1	PAOZZA	4720012473211	45152	69940AX	HOSE, NON METALLIC		FT.
BULK	2	PAOZZA	4720002414435	45152	69851A	HOSE, NON METALLIC		FT.
BULK	3	PAOZZA	4720000585452	06034	1101611-100	TUBING, NON METALLIC		FT.
BULK	4	PAOZZA	5312-01-251-3351	12168	623	HANGAL,COPPER STRAP		FT.
END OF FIGURE								

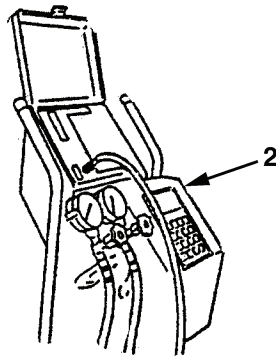
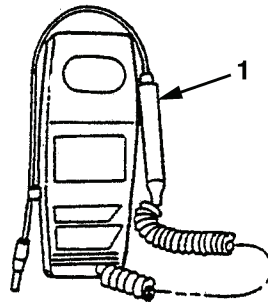


FIG. 2 TEST EQUIPMENT

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR CODE	NSN	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP 5200						
FIG. 2 TEST EQUIPMENT						
1	PEOZZ	4940-01-387-0948	07295	16500	LEAK DETECTOR,REFRI	1
2	PEFZZ	6685-01-438-5088	33278	J38509	TEST SET	1
END OF FIGURE						

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CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX					
STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-00-034-1194	1	21	5306-01-287-5714	1	18
5305-00-068-0508	1	33		1	49
	1	72	5306-01-287-5715	1	47
5310-00-081-4219	1	150	5310-01-288-1116	1	16
5940-00-113-8183	1	137		1	58
5940-00-143-4794	1	134		1	152
5310-00-208-1918	1	93	5310-01-288-5096	1	15
	1	95	4730-01-331-6630	1	28
5331-00-228-7196	1	115		1	75
5310-00-274-8715	1	73	5305-01-340-0225	1	5
4730-00-403-4338	1	46		1	145
5305-00-433-3711	1	105	5340-01-340-4023	1	6
4730-00-466-7479	1	79	5305-01-340-5061	1	153
5640-00-580-6276	1	85	5310-01-340-5671	1	7
4730-00-595-0143	1	53		1	140
5940-00-620-9780	1	132	5935-01-344-6132	1	136
5305-00-725-2317	1	3	5925-01-351-3659	1	103
5305-00-781-3928	1	63	5325-01-394-2414	1	80
5310-00-809-4058	1	34	5355-01-397-8580	1	99
5310-00-933-8120	1	83	5999-01-406-4110	1	122
5310-00-934-9757	1	87	5999-01-422-9740	1	120
5305-00-984-6189	1	88	5365-01-479-2035	1	20
5305-00-984-6210	1	91	4720-01-479-3415	1	76
5305-00-988-7608	1	23	5930-01-480-9092	1	101
5310-01-058-3183	1	42	5945-01-503-4128	1	96
5310-01-062-3379	1	59	2540-01-505-4129	1	138
5310-01-068-8446	1	149	4120-01-505-4149	1	1
5310-01-081-1283	1	55	5935-01-512-5010	1	119
5940-01-082-3321	1	127	4130-01-513-3069	1	29
5306-01-084-5390	1	64	4130-01-513-3070	1	22
5310-01-111-0645	1	142	4130-01-513-3078	1	69
5310-01-129-0450	1	65	5930-01-513-4411	1	31
4730-01-130-4353	1	51	5342-01-513-7148	1	17
5310-01-133-2130	1	14	2540-01-513-7518	1	146
5305-01-134-5458	1	90	4820-01-513-7536	1	38
5306-01-150-5884	1	144	4820-01-513-7543	1	108
5305-01-157-5624	1	151	4820-01-513-7552	1	107
5305-01-172-2002	1	56	4820-01-513-7555	1	117
4730-01-191-9701	1	110	4820-01-513-7557	1	114
5310-01-194-3014	1	82	4820-01-513-7562	1	40
5305-01-195-5041	1	13	5342-01-513-8063	1	147
5331-01-198-8439	1	27	5340-01-513-8068	1	141
5935-01-214-4163	1	123	5340-01-513-8098	1	143
5935-01-214-5259	1	124	5340-01-513-8139	1	148
5925-01-216-1975	1	102	5340-01-513-8142	1	57
5975-01-226-8078	1	121	5340-01-513-8144	1	48
5940-01-238-3895	1	135	5340-01-513-8147	1	60
5331-01-244-2273	1	37	5895-01-513-8565	1	100
5305-01-249-8564	1	97	5330-01-513-8668	1	154
4730-01-273-3670	1	35	4720-01-513-8746	1	26

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CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX		FIG.	ITEM
	FIG.	ITEM		
4720-01-513-8748	1	32		
4720-01-513-8750	1	109		
4720-01-513-8752	1	112		
6150-01-513-9705	1	62		
6150-01-513-9708	1	30		
3020-01-514-0989	1	4		
3030-01-514-1007	1	12		
4130-01-514-1439	1	61		
4730-01-514-1736	1	8		
2540-01-514-2269	1	104		
4130-01-514-2340	1	77		
4810-01-514-4012	1	10		
5342-01-514-4517	1	67		
5340-01-514-4925	1	70		
3040-01-514-5600	1	66		
4720-01-514-5685	1	44		
4720-01-514-5714	1	11		
	1	43		
4720-01-514-6158	1	9		
4720-01-514-6177	1	45		
5365-01-514-6201	1	2		
5340-01-514-6264	1	74		
5930-01-514-8457	1	39		
5331-01-514-8498	1	113		
5930-01-514-8684	1	92		
5330-01-515-1085	1	139		
5935-01-515-1196	1	129		
6105-01-515-1231	1	81		
6150-01-515-1249	1	118		
6150-01-515-1258	1	126		
6150-01-515-1809	1	131		
4130-01-515-2051	1	94		
4820-01-515-2390	1	84		
2930-01-515-3512	1	24		
	1	25		
2930-01-515-3517	1	19		
5935-01-515-7960	1	128		
2590-01-516-6909	1	111		
5340-01-516-8806	1	106		
4720-01-516-9335	1	41		
4720-01-517-1858	1	116		
4720-01-517-1859	1	36		
5310-01-517-3776	1	68		
5940-01-517-3836	1	130		
5940-01-517-3928	1	125		
5305-01-517-4195	1	71		
5320-01-531-7628	1	98		
	1	98		
5340-01-550-2486	1	86		

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CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
78276	ALS7-420-165		5325-01-394-2414	1	80
88044	AN365-1024A		5310-00-208-1918	1	93
				1	95
80204	B1821BH025C075N		5305-00-068-0508	1	33
				1	72
80204	B1821BH038C150N		5305-00-725-2317	1	3
80204	B1821BH038C400N		5305-00-781-3928	1	63
99103	HI-1612		4730-01-130-4353	1	51
73030	HS7495-618		5640-00-580-6276	1	85
96906	MS14307-4		4730-00-595-0143	1	53
80205	MS16995-36		5305-00-988-7608	1	23
81343	MS25036-112		5940-00-143-4794	1	134
81343	MS25036-113		5940-00-113-8183	1	137
96906	MS27183-10		5310-00-809-4058	1	34
96906	MS27183-12		5310-00-081-4219	1	150
80205	MS35206-241		5305-00-984-6189	1	88
80205	MS35338-138		5310-00-933-8120	1	83
80205	MS35338-63		5310-00-274-8715	1	73
80205	MS35649-282		5310-00-934-9757	1	87
80205	MS51861-35C		5305-00-433-3711	1	105
78500	S-268-1		5306-01-084-5390	1	64
81343	SAE J512 6-6 040		4730-00-403-4338	1	46
	101BA				
89522	U52-3PC		5355-01-397-8580	1	99
H2229	XX002-0637		5305-00-984-6210	1	91
53867	0 332 002 256		5945-01-503-4128	1	96
5N978	012890200		4130-01-514-2340	1	77
5N978	013550300		4820-01-515-2390	1	84
5N978	013570303		4730-01-514-1736	1	8
5N978	013580001		4810-01-514-4012	1	10
5N978	014040101		5320-01-531-7628	1	98
				1	98
5N978	014210060		4820-01-513-7543	1	108
5N978	014210061		4820-01-513-7552	1	107
5N978	014210080		4820-01-513-7536	1	38
5N978	014210081		4820-01-513-7562	1	40
5N978	014210120		4820-01-513-7557	1	114
5N978	017130401		5310-01-517-3776	1	68
5N978	018031100		5305-01-517-4195	1	71
5N978	019351000		5331-01-514-8498	1	113
5N978	020790281		5895-01-513-8565	1	100
5N978	020800500		5930-01-513-4411	1	31
5N978	020800550		5930-01-514-8457	1	39
5N978	020850300		5930-01-480-9092	1	101
5N978	020860100		5930-01-514-8684	1	92
5N978	020950018		6150-01-515-1809	1	131
5N978	020950019		6150-01-515-1249	1	118
5N978	020950020		6150-01-515-1258	1	126
5N978	020950027		6150-01-513-9708	1	30
5N978	021800224			1	89
5N978	023950005		4720-01-513-8752	1	112

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5N978	023950007		4720-01-517-1859	1	36
5N978	023950008		4720-01-516-9335	1	41
5N978	023950016		4720-01-514-6158	1	9
5N978	024020205		2540-01-514-2269	1	104
5N978	024900003		4130-01-513-3069	1	29
5N978	049990003		4130-01-513-3070	1	22
5N978	073361581		4130-01-513-3078	1	69
5N978	073361751		2590-01-516-6909	1	111
5N978	073362381		5340-01-514-4925	1	70
5N978	073362551		5340-01-516-8806	1	106
5N978	073363051		5342-01-513-7148	1	17
5N978	073363952		2930-01-515-3517	1	19
5N978	073364152		2930-01-515-3512	1	24
				1	25
5N978	073364800		5340-01-514-6264	1	74
5N978	073368001		4130-01-515-2051	1	94
45152	1HB838		5935-01-512-5010	1	119
45152	1KK124		4720-01-513-8746	1	26
45152	1KK125		4720-01-513-8748	1	32
45152	1KK126		4720-01-513-8750	1	109
45152	1KK145		4820-01-513-7555	1	117
45152	1KK160		6105-01-515-1231	1	81
06034	1101611-7			1	78
45152	110311A		5310-01-111-0645	1	142
45152	115289A		5306-01-150-5884	1	144
9C234	11669079-5		4730-01-331-6630	1	28
				1	75
77060	12010293		5975-01-226-8078	1	121
77060	12010973		5935-01-214-4163	1	123
77060	12015792		5935-01-214-5259	1	124
77060	12020786		5935-01-515-7960	1	128
77060	12020926		5935-01-344-6132	1	136
77060	12124582		5999-01-406-4110	1	122
19207	12420936		5999-01-422-9740	1	120
45152	126699A		5340-01-340-4023	1	6
45152	1324510		5305-01-157-5624	1	151
45152	1333510		5310-01-340-5671	1	7
				1	140
45152	1369HX1		5310-01-194-3014	1	82
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45152	1437220		5310-01-288-1116	1	16
				1	58
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45152	1571850		5310-01-288-5096	1	15
53711	1611200PC351		5305-00-034-1194	1	21
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45152	1680530		5306-01-287-5715	1	47
45152	1732750		5925-01-351-3659	1	103
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01276	22617-12	5331-00-228-7196	1	115	
01276	22617-6	5331-01-198-8439	1	27	
01276	22617-8	5331-01-244-2273	1	37	
45152	27937AX	5305-01-195-5041	1	13	
00779	3-350820-2	5940-01-082-3321	1	127	
45152	316BX1	5305-01-172-2002	1	56	
45152	3425072	5340-01-513-8147	1	60	
45152	3425108	3020-01-514-0989	1	4	
45152	3425111	5340-01-513-8144	1	48	
45152	3425114	5340-01-513-8142	1	57	
45152	3425118	5342-01-514-4517	1	67	
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45152	3425128	5365-01-514-6201	1	2	
45152	3425129	4130-01-514-1439	1	61	
45152	3425130	3030-01-514-1007	1	12	
45152	3428365	2540-01-505-4129	1	138	
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45152	3428371	5340-01-513-8098	1	143	
45152	3428375	5342-01-513-8063	1	147	
45152	3436598	5330-01-515-1085	1	139	
45152	3439123	6150-01-513-9705	1	62	
45152	3439124	4720-01-514-6177	1	45	
45152	3439125	4720-01-514-5714	1	11	
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45152	3439127	4120-01-505-4149	1	1	
45152	351AX	5310-01-129-0450	1	65	
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45152	354AX	5310-01-068-8446	1	149	
45152	355AX	5310-01-133-2130	1	14	
00779	36154		1	133	
45152	362AX	5310-01-062-3379	1	59	
00779	42282-2	5940-00-620-9780	1	132	
39428	5416K16	4730-01-191-9701	1	110	
45152	59031AX	5305-01-249-8564	1	97	
00779	60660-1	5940-01-517-3836	1	130	
27901	62050	4730-00-466-7479	1	79	
12168	623-10	5340-01-550-2486	1	86	
7Z588	63012	4730-01-273-3670	1	35	
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45152	69851AX-48		1	52	
45152	69940AX-58		1	50	
45152	7HB776	4720-01-479-3415	1	76	
39428	71285K31	5940-01-517-3928	1	125	
39428	7243K21	5940-01-238-3895	1	135	
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By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:


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Administrative Assistant to the
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SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (IMPRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT:

PUBLICATION NUMBER

TM 3-4230-209-10

PUBLICATION DATE

PUBLICATION TITLE

Decontaminating Apparatus
Power Driven, Skid-Mounted: 500-Gallon, M12A1

BE EXACT...PINPOINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
1-3	1-6		
3-1	3-3		
3-18	3-10		

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Tank unit illustration shows suction hose item #3 as two hoses coupled together. Reason: suction hose is now one hose.
Text refers to cleaning solvent item 7, App. D in Expendable Supplies Section. Reason: Should be item 10, App. D.
Blender hose illustration is not accurate as shown. Reason: Blender hose should show quick-disconnect couplings at both ends.

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

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SIGN HERE:

SSG Ted Ryba

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THE METRIC SYSTEM AND EQUIVALENTS

<p>Linear Measure</p> <p>1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches 1 Kilometer = 1000 Meters = 0.621 Miles</p> <p>Weights</p> <p>1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces 1 Kilogram = 1000 Grams = 2.2 Pounds 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons</p> <p>Liquid Measure</p> <p>1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces</p>	<p>Square Measure</p> <p>1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet 1 Sq Kilometer = 1,000,000 Sq Meters = 0.0386 Sq Miles</p> <p>Cubic Measure</p> <p>1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet</p> <p>Temperature</p> <p>$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$ 212° Fahrenheit is equivalent to 100° Celsius 90° Fahrenheit is equivalent to 32.2° Celsius 32° Fahrenheit is equivalent to 0° Celsius $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$</p>
--	---

APPROXIMATE CONVERSION FACTORS

To Change	To	Multiply By
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Sq Inches	Sq Centimeters	6.451
Sq Feet	Sq Meters	0.093
Sq Yards	Sq Meters	0.836
Sq Miles	Sq Kilometers	2.590
Acres	Sq Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

To Change	To	Multiply By
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Sq Inches	0.155
Sq Meters	Sq Feet	10.764
Sq Meters	Sq Yards	1.196
Sq Kilometers	Sq Miles	0.386
Sq Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

