

# TM 9-2350-277-40&P

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## TECHNICAL MANUAL

### SUSTAINMENT MAINTENANCE MANUAL

#### INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR

CARRIER, PERSONNEL, FULL TRACKED, ARMORED M113A3  
(NSN 2350-01-219-7577) (EIC AEY)

CARRIER, COMMAND POST, LIGHT TRACKED M577A3  
(NSN 2350-01-369-6085) (EIC AE7)

CARRIER, MORTAR, 120 MM M121, SELF-PROPELLED M1064A3  
(NSN 2350-01-369-6082) (EIC AE8)

CARRIER, STANDARDIZED INTEGRATED COMMAND POST SYSTEM  
(SICPS) M1068A3  
(NSN 2350-01-369-6086) (EIC AFC)

CARRIER, MECHANIZED SMOKE OBSCURANT M58  
(NSN 2350-01-418-6654) (EIC 5CG)

**SUPERSEDURE NOTICE** – This manual supersedes TM 9-2350-277-34 dated 2 January 2001 and TM 9-2350-277-24P dated 2 October 2003, including all changes.

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HEADQUARTERS, DEPARTMENT OF THE ARMY

30 APRIL 2012



## WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

### FIRST AID

For first aid information, see FM 4-25.11.

For hazardous materials, refer to the label and/or Material Safety Data Sheet (MSDS).

### EXPLANATION OF HAZARDOUS MATERIALS ICONS

#### HAZARDOUS MATERIALS WARNINGS



**EXPLOSION** – Rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.



**EYE PROTECTION** – Person with goggles shows that the material will injure the eyes.



**FIRE** – Flame shows that a material may ignite and cause burns.



**VAPOR** – Human figure in a cloud shows that material vapors present a danger or life or health.

#### HAZARDOUS MATERIALS DESCRIPTION

### WARNING



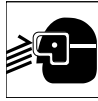
### EXPLOSION

**Improper disposal of magnesium can cause a fire or explosion. Do not expose magnesium to high temperatures. Let magnesium dry before placing in sealed metal containers. Label containers and ship to a Class 1 hazardous waste disposal site.**

**Fuel fumes can explode and burn you. Before welding: Drain all fuel. Disconnect and cap all fuel and vent lines. Purge fuel residue and fumes by steam cleaning. Purge air from fuel tank with Carbon Dioxide (CO<sub>2</sub>).**

## WARNING SUMMARY – Continued

### WARNING



### EYE PROTECTION

Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.

### WARNING



### FIRE

Magnesium may catch on fire if welded or exposed to high temperatures. Do not weld on magnesium castings or expose them to high temperatures.

Fine particles of magnesium can catch fire and burn you. Be very careful when filing or grinding on magnesium. Use grinding equipment marked FOR MAGNESIUM GRINDING ONLY. Keep a Class D fire extinguisher close by.

Water and foam type fire extinguishers will cause magnesium fires to flare up. Use a Class D fire extinguisher or a sodium chloride base dry powder to fight magnesium fires.

### WARNING



### VAPOR

Do not weld on plastic molding material parts. Welding on plastic molding material parts creates toxic fumes. Fumes are hazardous to your health and can result in death.



**CHANGE  
NO. 1**

**HEADQUARTERS, DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 30 DECEMBER 2013**

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2. New or updated text is indicated by a vertical bar in the outer margin of the page.
3. Added illustrations are indicated by a vertical bar adjacent to the figure number. Changed illustrations are indicated by a miniature pointing hand adjacent to the updated area and a vertical bar adjacent to the figure number.
4. Remove old pages and insert newpages as indicated below.

**Remove Pages**

A through B  
i through xiv  
Chapter 4 Title Page  
Index-1 through Index-6

**Insert Pages**

A through B  
i through xvi  
Chapter 4 Title Page  
Index-1 through Index-6

5. Replace the following work packages with their revised version.

**Work package number**

WP 0001  
WP 0006  
WP 0008  
WP 0011  
WP 0012  
WP 0013  
WP 0014  
WP 0022  
WP 0031  
WP 0034  
WP 0035  
WP 0040

WP 0041  
WP 0045  
WP 0051  
WP 0056  
WP 0057  
WP 0059  
WP 0063  
WP 0065  
WP 0066  
WP 0067  
WP 0069

6. Add the following new work packages.

**Work package number**

WP 0008.1

WP 0037.1

WP 0037.2

WP 0037.3

WP 0037.4

WP 0046.1

WP 0048.1

WP 0061.1

WP 0061.2

WP 0061.3

WP 0061.4

WP 0061.5

WP 0061.6

WP 0061.7

WP 0061.8

By Order of the Secretary of the Army:

Official:

A handwritten signature in black ink, appearing to read "Gerald B. O'Keefe". The signature is written in a cursive style with a large initial "G" and a distinct "B" and "O'Keefe".

GERALD B. O'KEEFE  
*Administrative Assistant to the  
Secretary of the Army*

1335705

RAYMOND T. ODIERNO  
*General, United States Army  
Chief of Staff*

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TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 44 AND TOTAL NUMBER OF WORK PACKAGES IS 84, CONSISTING OF THE FOLLOWING:

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WASHINGTON, DC, 30 APRIL 2012

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## HOW TO USE THIS MANUAL

### HOW TO USE THIS MANUAL

This manual tells you how to use and maintain the M113A3, M577A3, M1064A3, M1068A3, and M58 Carriers.

Before starting any task/procedure or before applying power to the carrier, make sure you have read this HOW TO USE section and the Controls and Indicators Work Package in TM 9-2350-277-10.

### WHAT'S IN THE MANUAL - FRONT TO BACK

This TM is divided into chapters and front and rear matter. The chapters are further divided into Work Packages (WPs) for ease of use.

The WARNING SUMMARY section provides safety and first aid information. This section includes general warnings not found in the TM text and a list of the most important detailed warnings extracted from the WPs. All of these warnings cover hazards that could kill or injure personnel.

The TABLE OF CONTENTS lists the WPs in each chapter.

CHAPTER 1 covers general introductory information with theory of operation. The Equipment Description WP gives a brief description of major parts and features of the vehicle. The Theory of Operation WP provides information that will help you understand how the vehicle components work.

CHAPTER 2 contains the general maintenance instructions.

CHAPTER 3 contains maintenance WPs for the engine.

CHAPTER 4 contains maintenance WPs for the cooling system.

CHAPTER 5 contains maintenance WPs for the electrical system.

CHAPTER 6 contains maintenance WPs for the transmission.

CHAPTER 7 contains maintenance WPs for the final drive.

CHAPTER 8 contains maintenance WPs for the wheels and tracks.

CHAPTER 9 contains maintenance WPs for steering.

CHAPTER 10 contains maintenance WPs for the shock absorbers.

CHAPTER 11 contains maintenance WPs for the hull.

CHAPTER 12 contains maintenance WPs for the hull accessory items.

CHAPTER 13 contains maintenance WPs for the auxiliary generator.

CHAPTER 14 contains maintenance WPs for the special purpose kits.

CHAPTER 15 contains maintenance WPs for the electrical equipment (M1068A3 only).

CHAPTER 16 contains part information.

CHAPTER 17 provides supporting information for the TM. It includes the following WPs:

The REFERENCES WP (WP 0067) lists references to be used by personnel in operating and maintaining the vehicle. These references include technical manuals and other publications.

The EXPENDABLE/DURABLE ITEMS WP (WP 0068) lists expendable supplies and materials that will be needed to operate and maintain the vehicle.

The COMMON TOOLS AND SUPPLEMENTS AND SPECIAL TOOLS/FIXTURES LIST WP (WP 0069) lists tools and equipment that will be needed to operate and maintain the vehicle.

DA FORM 2028 is used to report errors and to recommend improvements for procedures in this manual. Three blank DA Forms 2028 are in the back of this manual. A sample is provided to show you how to fill out the DA Form 2028.

## HOW TO USE THIS MANUAL – Continued

The back cover includes a METRIC CONVERSION CHART that can be used to convert U.S. customary measurements to their metric equivalents. Measurements in this manual are given in U.S. customary units with metric units in parentheses.

### HOW TO USE THE WORK PACKAGES

#### How to read the WP

Pay attention to all **WARNINGS**, **CAUTIONS**, and **NOTES**. These can appear in all types of procedures. They help you avoid harm to yourself, other personnel, and equipment. They also tell you things you should know about the procedure.

Before you start a procedure, get all the tools, supplies, and personnel you need to do the procedure. These items will be listed in the INITIAL SETUP of the WP.

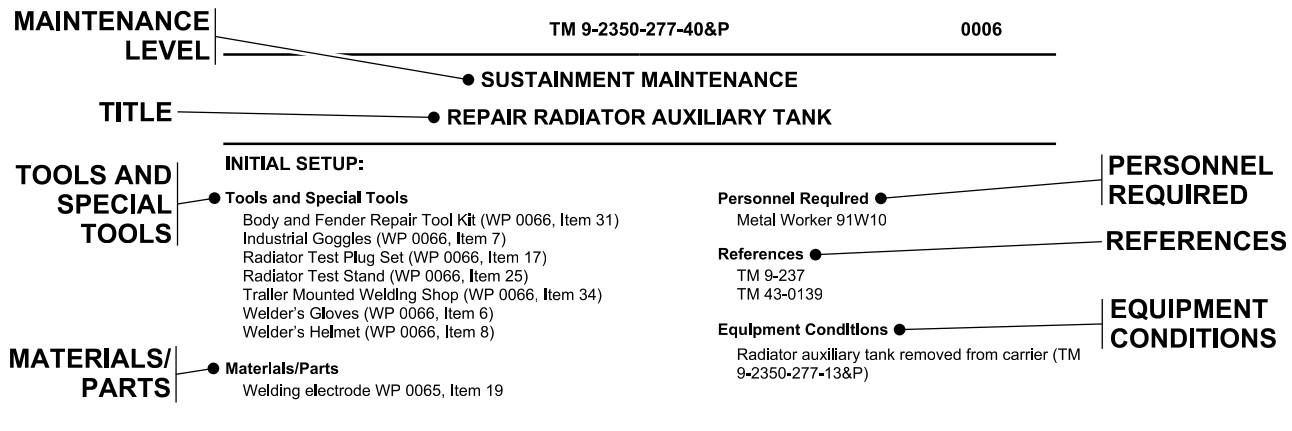
Start with Step 1 and do each step in the order given. Numbered primary steps tell you WHAT to do. Alpha substeps tell you HOW to do it.

Look at the illustrations. Locators show you where the equipment and parts are located on the vehicle. Close-up illustrations show the details you need to do the procedure.

#### Maintenance WPs

Maintenance WPs provide the procedures for removing, cleaning, inspecting, lubricating, and installing hull parts. Look at the following samples.

The first sample shows the INITIAL SETUP section on the first page of a WP. The legend defines each item of information.



#### LEGEND:

TITLE	The name of the procedure.
MAINTENANCE LEVEL	The level of maintenance authorized to perform the procedures in the WP.
TOOLS AND SPECIAL TOOLS	The tools and equipment needed to do the procedures in the WP.
MATERIALS/PARTS	The supplies and parts needed to do the procedures in the WP.
PERSONNEL REQUIRED	The personnel needed to do the procedures in the WP.
REFERENCES	Other WPs, TMs, and publications you will need to do the procedures in the WP.
EQUIPMENT CONDITION	Any special equipment conditions required before the procedure can be started.

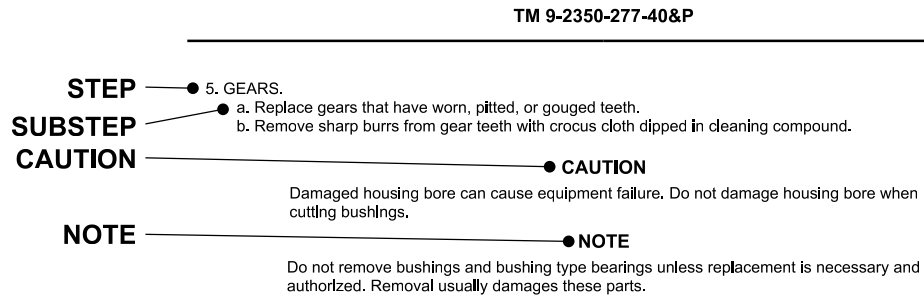
Figure 1. Sample WP Setup.

## HOW TO USE THIS MANUAL – Continued

Some WPs will include all of the above items. Other WPs will include only some of the above items.

Read the INITIAL SETUP section carefully before you start any procedure. Get the tools and supplies listed and the personnel needed. Be sure the equipment is in the condition required.

The second sample things to watch for when performing the procedures in a WP. Read all steps, substeps, WARNINGS, CAUTIONS, and NOTES before starting the WP procedure. The legend defines each item of information.



**LEGEND:**

STEP	Tells you WHAT to do.
SUBSTEP	This tells you HOW to do it.
WARNING	This describes some danger to yourself and other personnel.
CAUTION	This describes possible damage to equipment.
NOTE	This tells you important information to make the procedure easier.
LOCATOR	An illustration that locates the equipment on the vehicle.
CLOSEUP	A detailed illustration of the equipment.

Figure 2. Sample WP Procedure.

Some WPs will include all of the above items. Some will not.

Read all of the WP before starting. Follow the steps in the order given.

The words END OF TASK will tell you when you have finished the procedure.

**DEFINITION OF WP TERMS**

**WARNINGS, CAUTIONS, and NOTES**

Read all WARNINGS, CAUTIONS, and NOTES in the WP. WARNINGS, CAUTIONS, and NOTES are placed just before the step for which they apply. Ignoring a **WARNING** can cause death or injury to yourself or other personnel. Ignoring a **CAUTION** can cause damage to equipment. NOTES have facts to make the step and WP easier.

WARNINGS call attention to the things that can kill or injure personnel. WARNINGS are also listed in the Warning Summary section (page a).

CAUTIONS call attention to actions or material that can damage equipment.

NOTES contain information that makes the step and WP easier.

## HOW TO USE THIS MANUAL – Continued

### Helper

Helpers are needed for WPs that require more than one person. A helper may be needed to help lift heavy objects or act as an outside observer.

If a helper is needed to perform a procedure, the INITIAL SETUP will list “Helper” under the PERSONNEL REQUIRED heading.

If a helper assists with a step, the step will include: “Have helper assist.”

If a helper performs the action alone, the step will start with “(H):”

**CHAPTER 1**

**GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF  
OPERATION**

**FOR**

**M113A3, M577A3, M1064A3, M1068A3, AND M58**

**CHAPTER 1**

**GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION**

---

**WORK PACKAGE INDEX**

---

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GENERAL INFORMATION.....	0001
EQUIPMENT DESCRIPTION.....	0002
THEORY OF OPERATION .....	0003



---

**SUSTAINMENT MAINTENANCE****GENERAL INFORMATION**

---

**SCOPE**

**Type of Manual:** Sustainment Maintenance

**Equipment Model Number, Name, and Purpose:**

M113A3 Full Tracked Armored Personnel Carrier

**Purpose:** Transportation and positioning combat troops and supplies.

M577A3 Light Tracked Command Post Carrier

**Purpose:** Provides protection and mobility for field commanders in a tactical environment.

M1064A3 Self-propelled 120 MM M121 Mortar Carrier

**Purpose:** Provides mobility for the 4.7 inch (120 MM) Mortar M121 or M120. The M121 can be fired from a turntable mounted in the carrier. The M120 can be fired from a portable mount off the carrier.

**Other Applicable Manuals:** See TM 9-1015-250-23&P for Unit and Direct Support maintenance and repair parts for the 4.7 inch (120 MM) Mortar M121 or M120.

M1068A3 Standardized Integrated Command Post System (SICPS) Carrier

**Purpose:** Designed as a command post and field office to support the various configurations and installation layouts of the Army Tactical Command and Control System (ATCCS) and provide protection for field commanders in a tactical environment.

**Other Applicable Manuals:** See TM 11-7010-256-12&P for Operator's instructions, Unit maintenance, and repair parts for SICPS equipment.

See TM 10-8340-243-13&P for Operator's instructions, Unit and Direct Support maintenance, and repair parts for the Modular Command Post System (MCPS) tent and related parts.

M58 Mechanized Smoke Obscurant Carrier

**Purpose:** Designed to provide large area smoke screens in support of various tactical situations. Smoke can be generated in a static position or on the move.

**Other Applicable Manuals:** See TM 3-1040-285-10 for Operator's instructions for the Mechanized Smoke Obscurant System Smoke Generator.

See TM 3-1040-285-20 for Unit Maintenance for the Mechanized Smoke Obscurant System Smoke Generator.

See TM 3-1040-285-30 for Direct Support Maintenance for the Mechanized Smoke Obscurant System Smoke Generator.

See TM 3-1040-285-23P for repair parts for the Mechanized Smoke Obscurant System Smoke Generator.

**MAINTENANCE FORMS, RECORDS, AND REPORTS**

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

**REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)**

If your M113A3, M1064A3, M577A3, M1068A3, or M58 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.

ALL non-Aviation/Missile EIRs and PQDRs must be submitted through the Product Data Reporting and Evaluation Program (PDREP) Web site. The PDREP site is: <https://www.pdrep.csd.disa.mil/>.

If you do not have Internet access, you may submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 using email, regular mail, or fax using the addresses/fax numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

## CORROSION PREVENTION AND CONTROL (CPC)

Corrosion prevention and control of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. The term "corrosion" means the deterioration of a material or its properties due to a reaction of that material with its chemical environment. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking. Plastics, composites, and rubbers can also degrade (also considered to be corrosion based on the above definition of corrosion). Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking. The US Army has defined the following nine (9) forms of corrosion used to evaluate the deterioration of metals. These shall be used when evaluating and documenting corrosion.

UNIFORM (or general attack): Affects a large area of exposed metal surface, like rust on steel or tarnish on silver. It gradually reduces the thickness of the metal until it fails.

CREVICE: Occurs in crevices created by rubber seals, gaskets, bolt heads, lap joints, dirt or other surface deposits. It will develop anywhere moisture or other corrosive agents are trapped and unable to drain or evaporate.

SELECTIVE LEACHING: One element, usually the anodic element of an alloy, corrodes away, leaving the cathodic element. This can create holes in metal.

INTERGRANULAR: Metal deterioration caused by corrosion on the bonds between or across the grain boundaries of the metal. The metal will appear to be peeling off in sheets, flaking, or being pushed apart by layers. A particular type of intergranular corrosion is exfoliation.

PITTING: This can result from conditions similar to those for crevice corrosion. Pits can develop on various materials due to their composition. Rifle boxes are big victims of pitting.

EROSION: Results when a moving fluid (liquid or gas) flows across a metal surface, particularly when solid particles are present in the fluid. Corrosion actually occurs on the surface of the metal, but the moving fluid washes away the corrosion and exposes a new metal surface, which also corrodes.

FRETTING: Occurs as a result of small, repetitive movements (e.g., vibration) between two surfaces in contact with each other. It's usually identified by a black powder corrosion product or pits on the surface.

GALVANIC: Occurs when two different types of metal come in contact with each other, like steel bolts on aluminum, for example. This is a common problem on aircraft because of their mix of metals.

STRESS: Term used to describe corrosion cracking and corrosion fatigue.

Where an item is not ready/available due to one of these forms of corrosion, it shall be recorded as a corrosion failure in the inspection record and the appropriate code (170) for corrosion shall be used when requesting/performing maintenance.

SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

## DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

See the following technical manuals for information on destruction of Army materiel:

TM 750-244-2 Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.

TM 750-244-6 Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use.

TM 750-244-7 Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use.

TM 43-0002-33 Procedures for Destruction of Conventional Ammunition and Improved Conventional Munitions (ICM) to Prevent Enemy Use.

## PREPARATION FOR STORAGE OR SHIPMENT

Refer to TM 9-2350-277-13&P for procedures to prepare the M113 FOV for storage or shipment. For information about transport guidance, refer to TM 55-2305-224-14.

## NOMENCLATURE CROSS-REFERENCE

This listing includes nomenclature cross references used in this manual.

Locknut	Self-locking nut
Lockscrew	Self-locking bolt
Lockwasher	Self-locking washer
Standoff	Spacer, plate
Tie Strap	Electrical tiedown strap

## LIST OF ABBREVIATIONS/ACRONYMS

Many abbreviations are used in this manual. They are listed below. Learn what each one means. It will make your job easier.

AC	Alternating Current
AMP	Ampere
ATCCS	Army Tactical Command and Control System
CAGEC	Commercial and Government Entity Code
CO2	Carbon Dioxide
CPC	Corrosion Prevention and Control
DC	Direct Current
EIR	Equipment Improvement Recommendations
EMP	Electromagnetic Pulse
F	Fahrenheit
FIG.	Figure
FOV	Family of Vehicles
GMAW	Gas Metal-Arc Welding
HCI	Hardness Critical Item
ICM	Improved Conventional Munitions
LB-FT	Pound Feet
LB-IN	Pound Inch
MAC	Maintenance Allocation Chart
MCPS	Modular Command Post System
MIG	Metal Inert Gas
MSDS	Material Safety Data Sheet
MTOE	Modified Table of Organization and Equipment
No.	Number
NSN	National Stock Number
PMCS	Preventive Maintenance Checks and Services
PSI	Pounds per Square Inch
P/N	Part Number
QTY	Quantity
RPSTL	Repair Parts and Special Tools List
SICPS	Standardized Integrated Command Post System
SMR	Source, Maintenance, and Recoverability
SOP	Standard Operating Procedures
SRA	Specialized Repair Activity
TAMMS	The Army Maintenance Management System

TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
UOC	Usable On Code
UV	Ultraviolet
U/I	Unit of Issue
V	Volt
WP	Work Package

Metric equivalents are used throughout this manual. Metric symbols and units are:

C	Celsius
cm	Centimeter
kPa	Kilopascal
ml	milliliter
mm	Millimeter
N·m	Newton-meters

### QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this Technical Manual (TM). If quality of material requirements are not stated in this manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

### SAFETY, CARE, AND HANDLING

See Warning Summary in front of manual.

### REPAIR PARTS, SPECIAL TOOLS, SUPPORT EQUIPMENT, AND TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE)

#### COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, see the Modified Table of Organization and Equipment (MTOE) for your unit. Common tools and equipment needed for the maintenance procedures in the manual are listed in WP 0069.

#### SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools, TMDE, and support equipment needed for the maintenance procedures in this manual are listed in WP 0069. Additional TMDE and special tools are listed in TM 9-2350-277-13&P.

#### NOTE

**More than one model of multimeter is available to you in the supply system. You may use any model available.**

### REPAIR PARTS

Repair parts are listed and illustrated in this manual. See Chapter 16 work package index for a complete list of Repair Parts and Special Tools List (RPSTL) work packages. Maintenance and supply personnel can order them.

### END OF WORK PACKAGE

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**OPERATOR INSTRUCTIONS****EQUIPMENT DESCRIPTION**

---

**EQUIPMENT DESCRIPTION****EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES**

For equipment characteristics, capabilities, and features, see TM 9-2350-277-13&P.

**LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS**

For location and descriptions of major components, see TM 9-2350-277-13&P.

**EQUIPMENT DATA**

For equipment data, see TM 9-2350-277-13&P.

For additional equipment data, see TM 9-2350-277-13&P.

**END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE****THEORY OF OPERATION**

---

**SCOPE**

This section describes the functions of the hull system. Also it describes the power plant, auxiliary automotive system, suspension and electrical systems, and special equipment.

**POWER PLANT**

The diesel engine and transmission are major parts of the power plant. The dc generator, exhaust, cooling, and engine air systems are support systems for the power plant.

**DIESEL ENGINE**

The diesel engine is the primary source of power for the carrier. The engine changes air and diesel fuel into energy and delivers this power to the transmission. The diesel engine consists of three major systems: fuel, oil, and starting.

In the fuel system, diesel fuel is stored in the fuel tanks. The fuel is drawn through one filter and pumped through the other filter to the engine. The injectors force fuel into combustion cylinders where it is mixed with air and changed into energy.

The oil system provides lubrication for the engine. Oil is cycled throughout the engine by a pump. The pump is located at the lower front of the engine. An oil filter cleans the oil, and an oil cooler reduces oil temperature.

The engine is equipped with a heavy duty starter. The starter, with built in solenoid, is used to crank the engine for starting.

**TRANSMISSION**

The carrier uses a hydromechanical transmission with hydrostatic steering. The transmission has its own oil system with filters and separately mounted oil cooler. This transmission oil system is separate from the engine oil system.

The transmission delivers power from the engine to the left and right final drives. The left and right final drives are driven by propeller shafts. The final drives deliver power to drive sprockets in the suspension system.

**DC GENERATOR**

The dc generator is part of the carrier electrical system. It is driven directly by engine power. The generator charges the batteries in the carrier when the engine is running. A regulator mounted near the driver keeps the voltages at the correct level.

**EXHAUST SYSTEM**

Major exhaust system parts are the turbocharger, exhaust manifolds, and muffler.

The turbocharger is driven by exhaust gases from the engine. The turbocharger helps the engine develop more power and operate more efficiently. The exhaust manifolds carry the exhaust gases to the turbocharger from the engine. The muffler cuts down engine noise and allows exhaust to escape outside the carrier.

**COOLING SYSTEM**

The cooling system cools the engine and transmission. It consists of a fan, fan drive, fan speed control assembly, radiator, coolant pump, auxiliary tank, transmission oil cooler, engine oil cooler, and thermostats. The cooling system contains approximately 53 quarts of liquid coolant. The liquid coolant is cycled through the engine and transmission oil cooler by the coolant pump. This process keeps the engine and transmission temperature in a safe operation range.

As coolant flows through the engine, it absorbs heat from the engine and transmission oil coolers. The heated coolant then flows to the radiator to remove coolant heat. The coolant fan pulls outside air in and through the radiator to remove heat. The fan is powered by the engine through a fan drive.

The variable speed fan drive system is designed to modulate the cooling fan speed to maintain relatively constant coolant temperatures despite vehicle load or ambient temperature. The cooling fan speed is controlled by the fan drive assembly. The fan drive assembly is driven by the engine crankshaft through a splined coupling. The fan drive assembly contains a multi-plate clutch pack which regulates the fan drive output speed. In the old variable speed fan drive configuration, the thermostatic control valve senses engine coolant temperature and regulates the hydraulic pressure to the fan drive assembly clutch pack. The higher the coolant temperature, the higher the hydraulic pressure which will result in less clutch slip and higher fan speed. The new variable speed fan drive configuration is electromagnetically controlled. The new configuration uses the same process of changing pressure plates, locking up or releasing to speed up or slow down the fan. The variable speed fan drive is electromagnetically regulated by the electronic controller which receives information from switches and sensors. This allows the cooling system to operate efficiently so full power is not required. The electronic controller has diagnostic capability to help the crew and maintenance personnel in troubleshooting the variable speed fan drive and cooling system.

The surge tank acts as an overflow tank to keep the cooling system from overpressurizing. It also removes air from the engine coolant. There is a low coolant level transmitter to signal the operator if more coolant is needed.

## **ENGINE AIR SYSTEM**

The engine air system allows air to enter the engine. The air cleaner cleans air that enters the engine. Dust is drawn out through a scavenge outlet. Air is filtered through a reusable filter element before delivery to the engine. An air filter indicator shows when the element is clogged and needs cleaning or replacing. After being filtered, the air moves through the turbocharger and into the engine cylinders.

## **AUXILIARY AUTOMOTIVE SYSTEMS**

The auxiliary automotive systems include driver controls, fuel cells, personnel heater, and bilge pumps. Also there is a crew ventilation system, and fire suppression system.

## **DRIVER CONTROLS**

The driver controls regulate the engine, transmission, steering, and braking systems of the vehicle.

The fuel shutoff control is used to stop the supply of fuel to the fuel pump. To start the engine, the driver must open the valve. The throttle linkages are used to control the engine speed. The gear selector allows the driver to choose the proper gear for the carrier. The steering system controls the carrier direction. The steering control consists of a steering wheel and linkage connected to the transmission.

The brake system allows the driver to stop a moving carrier and hold the carrier in position. The braking system consists of the service brake and the parking brake. The service brakes are hydraulic and applied by pedal. The parking brake mechanically locks the transmission to prevent carrier movement. Also, the system has levers, rods, shafts, and linkages connecting to the transmission brake shaft.

## **FUEL TANKS**

Diesel fuel is stored in two separate fuel tanks. They are located on the back of the carrier hull. The fuel is drawn from the fuel tanks through the primary fuel filter by the fuel pump. The fuel then flows through the secondary fuel filter to the injectors. The injectors regulate the amount of fuel that enters the engine.

## **PERSONNEL HEATER**

The personnel heater system provides heat inside the carrier. Major parts are the combination combustion chamber/heat exchanger, blowers, a fuel pump, and an electrical control and safety system. The heater operates using diesel fuel drawn from the fuel tanks. Fuel is delivered to the combustion chamber from the fuel pump. Outside air is drawn into the combustion chamber by one of the blowers. A blower draws air from the crew compartment into the combustion chamber. The air is warmed by heat from the combustion process and then returned to the crew compartment.



## **BILGE PUMPS**

Two electrically driven bilge pumps remove water and other liquids from the hull. Water enters the pumps through a screened inlet. The pumps force water out of the carrier through outlet tubes. The bilge pumps are controlled by a switch on the driver's instrument panel.

## **HYDRAULIC SYSTEM**

The ramp is raised or lowered by a hydraulic system which consists of a pump, a cylinder, a control valve, and a hydraulic tank. This system is controlled by a three position valve located near the driver. Moving the valve to either RAISE or LOWER position directs fluid to and from the ramp cylinder.

## **FIRE EXTINGUISHER SYSTEM**

It consists of one Carbon Dioxide (CO<sub>2</sub>) cylinder. CO<sub>2</sub> can put out fires quickly and effectively. The fixed fire extinguisher is operated manually by pulling on a "T" handle located on the hull or by turning a handle on the fire extinguisher.

The fire extinguisher located in the driver's compartment is manually discharged into the engine compartment. Another portable fire extinguisher is located in the personnel department.

## **SUSPENSION SYSTEM**

The suspension system supports the carrier and delivers engine power to the road. It allows the carrier to maneuver and be stable. Suspension system parts are the drive sprockets, tracks, idler wheels, track adjuster, road wheels, and road wheel support arms. Also, there are torsion bars and shock absorbers.

The drive sprockets drive the tracks. They are powered by left and right final drives from the transmission. The tracks consist of two flexible chains of track shoes. The tracks ride on the drive sprockets and are guided by idler wheels. The idler wheels can be adjusted to maintain correct track tension.

There are five pairs of road wheels per side. Track centerguides fit between each pair of road wheels. All road wheels are connected to support arms.

## **ELECTRICAL SYSTEM**

The electrical system provides power for the carrier. The system operates on wet cell batteries and includes charging, regulating and monitoring equipment. The batteries provide a normal operating 24 volts with an amperage capability of 200 amps per hour.

The batteries supply the carrier with electricity when the engine is off. All electrical power is delivered through the distribution box except for the engine coolant heater and personnel heater which are directly powered from the batteries. Electrical power flows from the batteries through the distribution box, cables, and wiring assemblies to the hull. The hull is a ground for the electrical system.

The generator recharges the batteries and supplies electricity while the engine is running. The generator has 200 amps per hour capability.

There are several electrical subsystems within the hull. Each subsystem contains at least one wiring assembly. Major electrical subsystems and assemblies include the interior and exterior lights, fuel supply, starting and charging systems, ventilation, heating, and bilge pumps.

## **WINTERIZATION EQUIPMENT**

Personnel heaters are standard equipment on M577A3, M1068A3, and M58 carriers, but are kit items on M113A3 and M1064A3 carriers. Since maintenance of heater components is the same for both standard heaters and kit heaters, they are only covered in one place in this manual. See Table of Contents for maintenance of heater components.

## **END OF WORK PACKAGE**



**CHAPTER 2**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**SUSTAINMENT GENERAL MAINTENANCE**

**CHAPTER 2**  
**MAINTENANCE INSTRUCTIONS**

---

**WORK PACKAGE INDEX**

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Title	WP Sequence No.
GENERAL MAINTENANCE INSTRUCTIONS.....	0004

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**SUSTAINMENT MAINTENANCE**  
**GENERAL MAINTENANCE INSTRUCTIONS**

---

**INITIAL SETUP:****Materials/Parts**

Cleaning compound (WP 0068, Item 5)  
Crocus cloth (WP 0068, Item 7)  
Detergent (WP 0068, Item 9)  
Wiping rag (WP 0068, Item 20)

**References**

Drawing 12472301  
TM 9-214  
TM 9-2350-277-13&P  
TM 43-0139

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**SCOPE**

This work package contains safety warnings, guidelines, and general maintenance instructions. They should be followed when doing maintenance procedures authorized for sustainment maintenance level.

**PREPARATION FOR MAINTENANCE**

1. Practice all shop safety procedures and read all warnings in this manual.
2. Get tools and equipment before starting a maintenance task. See TM 9-2350-277-13&P and the maintenance tasks for tools, equipment, parts, and materials.
3. Parts to discard, such as lockwashers, locknuts, and gaskets, are listed in the maintenance tasks. If the step does not say to discard a part, the part should be saved. It may be used later, or repaired.
4. Handling techniques.
  - a. Avoid damage to parts during disassembly, cleaning, inspection, repair, and reassembly procedures. Nicks, scratches, and dents caused by careless handling could result in equipment failure.
  - b. Dirt can damage parts and cause malfunctions. Make sure all air and fluid openings, lines, and hoses are capped or plugged during maintenance procedures.
5. Identification.
  - a. During disassembly, tag parts to ensure proper assembly.
  - b. During disassembly, tag leads on electrical parts to ensure proper assembly. Tag each lead, as it is removed, with numbers from wiring diagrams and terminals.

**TORQUING**

Where needed, torque values are listed in the maintenance task. When torquing, use one of the star pattern sequences below unless otherwise stated in the maintenance task.

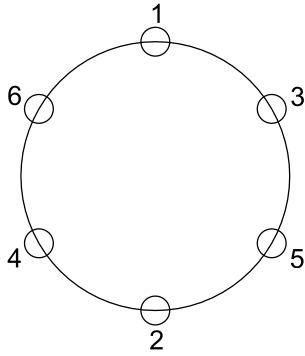


Figure 1. 6 - Hole Pattern.

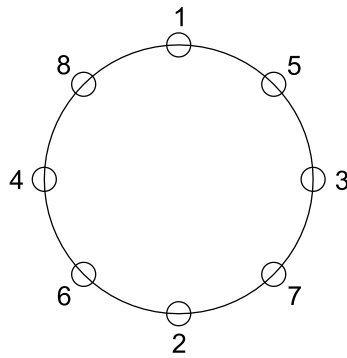


Figure 2. 8 - Hole Pattern.

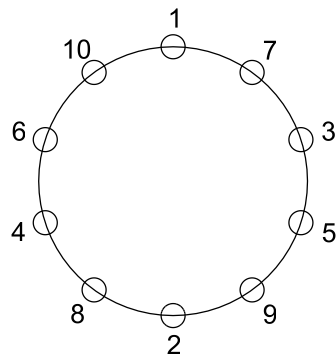


Figure 3. 10 - Hole Pattern.

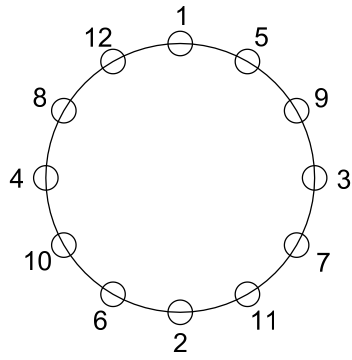


Figure 4. 12 - Hole Pattern.

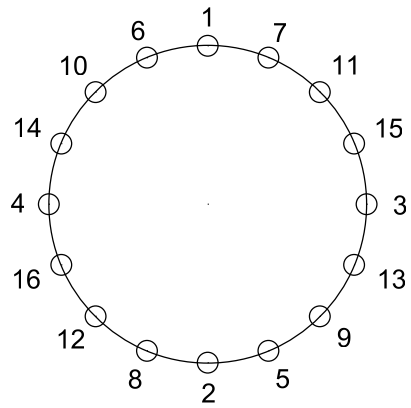


Figure 5. 16 - Hole Pattern.

## TORQUE WRENCH ADAPTERS AND CONVERSION FORMULA

1. Torque wrench adapters (extensions) are used to tighten screws and nuts to specific values that cannot be reached with a regular socket on the end of a torque wrench. This makes the dial or scale reading less than the actual torque applied to the screw or nut. When using an adapter, determine the dial or scale reading as follows:
  - a. Check your manual for specific torque value to which the screw or nut should be tightened.
  - b. Measure the length of your torque wrench, from the center of the handle (point A) to the center of the socket (point B). Record this measurement.
  - c. Multiply the above measurement by the desired torque. Record this sum.
  - d. Measure length of adapter from socket end (point C) to screw or nut end (point D). Record this measurement.
  - e. Add length of adapter Step d to the length of the torque wrench Step b. Record this sum.
  - f. Divide the sum found in Step c by the sum found in Step e.
  - g. The sum found in Step f is your torque wrench setting.

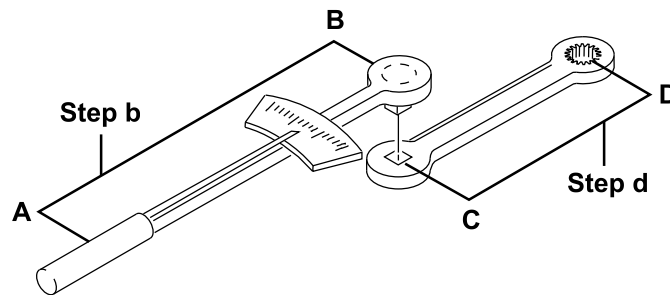


Figure 6. Torque Wrench Adapter.

### NOTE

**Setting the torque wrench dial at the reading found in Step g will deliver the required torque at the end of your adapter.**

- h. Set your dial.

**Example: (Metric equivalents omitted for clarity).**

40 lb-ft required.

12 inches.

$12 \times 40 = 480$ .

4 inches.

$12 + 4 = 16$  inches.

$480/16 = 30$  lb-ft.

Torque wrench dial setting = 30.



## CLEANING

### General Cleaning

Cleaning is very important. All parts must be cleaned well and kept clean during maintenance. Dirt or foreign matter can cause malfunctions and equipment failure. General cleaning procedures are detailed in the following steps. Special cleaning procedures are covered in the task relating to the specific part. Clean after repair and before assembly.

### WARNING



**Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.**

### CAUTION

**Lye or caustic substances will damage metal surfaces. Do not use lye or caustic mixtures to clean metal surfaces.**

### CAUTION

**Cleaning solvent causes leather, rubber, and synthetic materials to become brittle. Do not use cleaning solvent to clean seals, cables, and flexible hoses.**

1. Clean every part well after disassembly and before assembly or installation. Clean parts such as housings, covers, and dipsticks before disassembly. Avoid getting dirt and foreign matter in a system. Inspect and cap all air and fluid openings, lines, and hoses.
2. Use care when handling parts during cleaning and maintenance. Nicks, scratches, dents, and burrs can prevent proper assembly or cause malfunctions after assembly. Keep hands free of grease. Grease collects dirt. Cover or wrap parts to protect from dirt.
3. Except where specially called for in a task, don't use abrasives, files, wire brushes, or sharp tools. On some surfaces, finish is important to the operation of close fitting parts.
4. Remove gum or old grease deposits by soaking parts in cleaning compound. Scrub with a brush. Use crocus cloth to remove minor surface defects.
5. If steam cleaning is used, dry parts at once with compressed air. Apply a thin film of clean oil to surfaces that are not painted to prevent rusting. Never use lye or caustic mixtures that will corrode or etch metal surfaces.
6. Lubrication of new bearings, see TM 9-214 for cleaning and lubrication procedures. Bearings that have been in service should also be lubricated.
7. Castings.
  - a. Clean inner and outer surfaces of casting with cleaning compound. Dry casting with compressed air.
  - b. Remove sludge and gum deposits with a brush.
  - c. Blow out all tapped holes and armor mounting inserts with compressed air.
8. Bearings require special cleaning techniques, see TM 9-214 for cleaning and maintenance procedures for ball bearings.

9. Oil passages.
  - a. Make sure all oil passages are not clogged.
  - b. Clean oil passages and break up any sludge or gum deposits.
  - c. Flush oil passages with cleaning compound. Dry parts with compressed air.
10. Clean seals, cables, and flexible hoses with detergent and water. Dry parts with wiping rag.
11. Blow out insert holes with compressed air.
12. If gasket is being removed, scrape old gasket material and sealant off mating surface. Clean mating surface with cleaning compound. Dry with wiping rag.

## INSPECTION

### General

All parts must be inspected with care. Replace parts if damage or wear exceeds allowable limits.

Procedures for inspection will be the same for most parts. General inspection procedures are given in the following steps. Special inspection procedures are covered in the task as needed.

1. Castings.
  - a. Use magnetic particle inspection equipment to check ferrous castings for cracks. Use a magnifying glass and strong light to check nonmetal castings for cracks. Check areas next to studs, threaded inserts, sharp corners, and fillets.
  - b. Inspect all castings and forgings for breaks, cracks, and wear or scoring that would impair function.
  - c. Inspect machined surfaces for nicks, burrs, and raised metal. Mark damaged areas for repair.
  - d. Use straightedge to check all mounting flanges on housings and supports for bends. Inspect mating flanges for stains which would indicate oil leakage.
  - e. Inspect all threaded parts for damaged or stripped threads.
2. Inspect bearing races for wear and color changes due to heat, see TM 9-214 for inspection procedures for ball bearings.
3. Inspect bearings for free and smooth rotation, and broken or missing rollers. Also look for tightness of fit in bearing bores. Inspect bearing races for wear and color changes due to heat. See TM 9-214 for inspection procedures.
4. Inspect all studs for stripped or damaged threads, bent or loose condition, and signs of stretching.
5. Gears.
  - a. Use magnetic particle inspection equipment to check all gears for cracks.
  - b. Inspect gears for burrs, wear, cracked or broken teeth, and pitting at tooth contact areas.
6. Bushings and bushing type bearings.
  - a. Check all bushings and bushing type bearings for secure fit in casting. Check for color changes which could mean overheating. Inspect for size, scoring, out of roundness, burrs, sharp edges, and signs of seizing.
  - b. Check for dirt in oil holes and in bushing type bearings. Oil holes and grooves must be clean and not damaged.

7. Oil seals.
  - a. Inspect feather edge of oil seals for tears, fraying, hardening, and cracking.
  - b. Replace metal covered oil seals when there are signs of damage or oil leakage.
8. Inspect core holes for signs of leakage. Replace damaged core hole plugs.
9. Inserts.
  - a. Inspect inserts for cracks and stripped or damaged threads.
  - b. Check inserts for loose fit.
  - c. Inspect armor mounting inserts and hull screw holes for loose or missing plugs and setscrews, as required.
10. Grease seals, preformed packing, and gaskets.
  - a. Inspect seals that are composition type, rings, and preformed packing for wear, brittleness, cracks, cuts, and damage.
  - b. Inspect lip seals for cracks, wear, cuts, and brittleness. Inspect springs and seal shells for damage.
  - c. Gaskets and seals on electrical parts may be reused. Inspect gaskets and seals for wear, nicks, cuts, and torn or missing gasket material. Replace gasket, if needed.
11. Inspect splined parts for burrs, wear, and twisted, cracked or broken splines.
12. Inspect all threaded parts for burrs, and stripped or damaged threads.
13. Inspect retaining rings for nicks, burrs, defects, loss of tension, or wear.
14. Inspect springs for wear, defects, breaks, and loss of tension or compression. Inspect springs using a spring tester.
15. Inspect shafts and spindles for excessive wear, binding, scores, cracks, burrs, and obstructed oil passages.
16. Electrical parts.
  - a. Inspect electrical parts before you install them. Look for mildew and corroded or burned parts.
  - b. Inspect electrical parts for pinched or loose wires, and for cracked or broken wires, circuit cards, relays, and connectors.
  - c. Inspect insulation and heat shrink tubing for cracks, tears, burns, or missing material.

## REPAIR

General repair procedures are given in the following steps. Special repairs are covered in the task. After repair, clean all parts well.

1. Castings.
  - a. Replace all cracked or broken castings.
  - b. Repair minor damage to machined surfaces of castings with crocus cloth. Replace any part with defects that cannot be corrected or which will impair function.
  - c. Repair minor surface bends by working bent surface of casting across sheet of crocus cloth on surface plate. Replace bent castings which would impair assembly or function.
  - d. Repair damaged pipe or screw threads with correct tap or die.
2. See TM 9-214 for inspection and maintenance of ball bearings.
3. See TM 9-214 for inspection and maintenance of needle roller bearings.

4. Studs.
  - a. Replace all bent or loose studs, or studs which show signs of stretching.
  - b. Repair minor thread damage with standard thread chaser.
  - c. To remove studs, back out studs slowly with stud extractor to avoid heating and possible seizure. If studs are broken too short to use extractor, drill and extract studs with suitable remover. A short stud may be removed by welding nut to stud and removing with wrench.
  - d. To replace studs, lightly apply antiseize compound to stud before you install it. Only standard studs are supplied for repair parts. If threaded hole is damaged beyond repair, drill and tap damaged hole. Install threaded insert in tapped hole.

5. Gears.
  - a. Replace gears that have worn, pitted, or gouged teeth.
  - b. Remove sharp burrs from gear teeth with crocus cloth dipped in cleaning compound.

### CAUTION

**Damaged housing bore can cause equipment failure. Do not damage housing bore when cutting bushings.**

### NOTE

**Do not remove bushings and bushing type bearings unless replacement is necessary and authorized. Removal usually damages these parts.**

6. Bushings and bushing type bearings.
  - a. Replace bushings and bushing type bearings if they are loose, scored, or have color change due to heat. When you replace bushings and bushing type bearings, check nearby parts for damage or wear.
  - b. Remove bushings and bushing type bearings by pressing them out. Use a suitable arbor press or special tools. It may be necessary to remove bushings in blind holes with a saw, or by using a narrow cap chisel.
  - c. Install bushings or bushing type bearings by aligning them in casting or retaining cage. Press bushing or bushing type bearings into place with suitable arbor press or with special tools.
7. Oil seals must be replaced when thin feather edge is damaged, or when seal material is brittle.
  - a. Press damaged oil seal from casting. Be careful not to damage bore.
  - b. When oil seal bore is damaged so an oil tight seal is impossible, replace casting or adapter. Remove slight nicks, burrs, and scratches with crocus cloth dipped in cleaning compound.
  - c. Install new oil seal in casting bore or adapter using suitable oil seal replacement tool.
8. Replace insert when threads are stripped or when insert is cracked or loose.
  - a. Drill and remove damaged insert from casting.
  - b. Install new insert in casting using suitable replacement tool.
  - c. Install plugs in armor mounting inserts, as required.
  - d. Install setscrews in hull armor mounting screw holes, as required.
9. Seals, preformed packing, grommets, and gaskets should be replaced when removed unless otherwise stated in the maintenance task. They should not be reused.
10. Splined parts.
  - a. Remove burrs from splined parts with a soft honing stone.
  - b. Replace parts that are worn or have twisted, cracked, or broken splines.

**NOTE**

**Chase threads with a used tap or die. A new tap may cut oversize, while a new die may cut undersize.**

11. Repair all parts that have stripped or damaged threads by chasing threads with a used tap or die. Replace parts that cannot be repaired.
12. Retaining rings.
  - a. Retaining rings should be replaced when removed unless otherwise stated in the maintenance task. They should not be reused.
  - b. Some retaining rings are beveled on one side. When installing this type of ring, the beveled side must face the part to be retained.
13. Discard springs that have defects. Load and height inspection data, where needed, are given in maintenance procedures.
14. Shafts and spindles.
  - a. Replace shafts and spindles that show signs of wear, binding, scores, cracks, burrs, or clogged oil passages.
  - b. Remove obstructions with compressed air or by probing with soft wire.
  - c. Remove burrs and minor surface defects with a crocus cloth.
15. Electrical parts.
  - a. Replace corroded or burned parts and parts which show signs of mildew.
  - b. Tighten loose connections.
  - c. Replace cracked or broken wires, circuit cards, relays, and connectors.
  - d. Replace cracked, torn, or burned insulation and heat shrink tubing.

**WELDING INSTRUCTIONS**

For welding instructions, see Drawing 12472301.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

There are no PMCS or lubrication procedures required for the M113 FOV carriers at the sustainment maintenance level. For operator and field maintenance level PMCS and lubrication procedures, see TM 9-2350-277-13&P.

**END OF WORK PACKAGE**



**CHAPTER 3**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**ENGINE**

**CHAPTER 3**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPAIR/OVERHAUL ENGINE ASSEMBLY.....	0005



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**SUSTAINMENT MAINTENANCE**  
**REPAIR/OVERHAUL ENGINE ASSEMBLY**

---

**INITIAL SETUP:****Personnel Required**

Track Vehicle Repairer 91H10

TM 9-2815-205-24P

**Equipment Condition**Engine assembly removed from carrier  
(TM 9-2350-277-13&P)**References**

TM 9-2815-205-24

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**REPAIR OR REPLACEMENT**

1. To repair/overhaul engine assembly, see TM 9-2815-205-24 and TM 9-2815-205-24P.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



**CHAPTER 4**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**COOLING SYSTEM**

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**CHAPTER 4**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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<b>Title</b>	<b>WP Sequence No.</b>
REPAIR RADIATOR.....	0006
REPAIR FAN AND GENERATOR VARIABLE SPEED DRIVE (OLD CONFIGURATION).....	0007
REPAIR VENTILATING FAN ASSEMBLY.....	0008
REPAIR MIXED FLOW VENTILATING FAN ASSEMBLY.....	0008.1
REPAIR FAN DRIVE SHAFT AND BEARING HOUSING.....	0009

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**SUSTAINMENT MAINTENANCE**
**REPAIR RADIATOR**


---

**INITIAL SETUP:****Tools and Special Tools**

Apron (WP 0069, Item 1)  
 Brush, Wire, Scratch (WP 0069, Item 3)  
 Industrial Goggles (WP 0069, Item 6)  
 Radiator Test Plug Set (WP 0069, Item 16)  
 Radiator Test Stand (WP 0069, Item 25)  
 Shop Equipment, Radiator (WP 0069, Item 22A)  
 Soldering Torch Kit (WP 0069, Item 23A)

**Materials/Parts**

Soldering flux (WP 0068, Item 16)

Tin alloy solder (WP 0068, Item 17)

**Personnel Required**

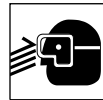
Allied Trade Specialist 91E10

**References**

TM 750-254

**Equipment Condition**

Radiator removed from carrier  
 (TM 9-2350-277-13&P)

**WARNING**

**Air pressure in excess of 30 psi (207 kPa) can injure personnel. Do not direct pressurized air at yourself or others. Always wear goggles.**

**TESTING RADIATOR FOR FLOW**

1. Plug auxiliary tank connector opening (Figure 1, Item 1). Use radiator test plug set.
2. Plug radiator outlet opening (Figure 1, Item 3). Use radiator test plug set.
3. Immerse radiator in water. Direct air at 25-30 psi (172-207 kPa) into inlet opening (Figure 1, Item 2). Use a suitable water container.
4. If air bubbles appear, repair radiator.

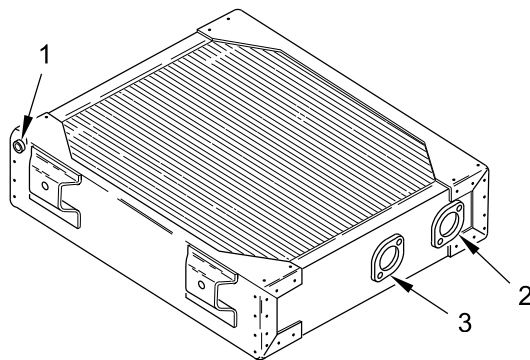


Figure 1. Radiator Testing.

**CLEANING RADIATOR**

1. Clean radiator. See TM 750-254. Use safety goggles, rubber gloves, and rubber apron.
2. Thoroughly flush radiator. See TM 750-254. Use radiator test plug set.
3. Retest radiator for flow.
4. If water does not flow freely from inlet opening after cleaning, clean by RODDING, Step 4.

**DISASSEMBLE**

1. Heat, melt, and wire brush off the solder that secures two side brackets (Figure 2, Item 8) and (Figure 2, Item 6) to two end tanks (Figure 2, Item 4) and (Figure 2, Item 7).
2. Heat, melt, and wire brush off the solder that secures two end tanks (Figure 2, Item 4) and (Figure 2, Item 7) to core (Figure 2, Item 5).

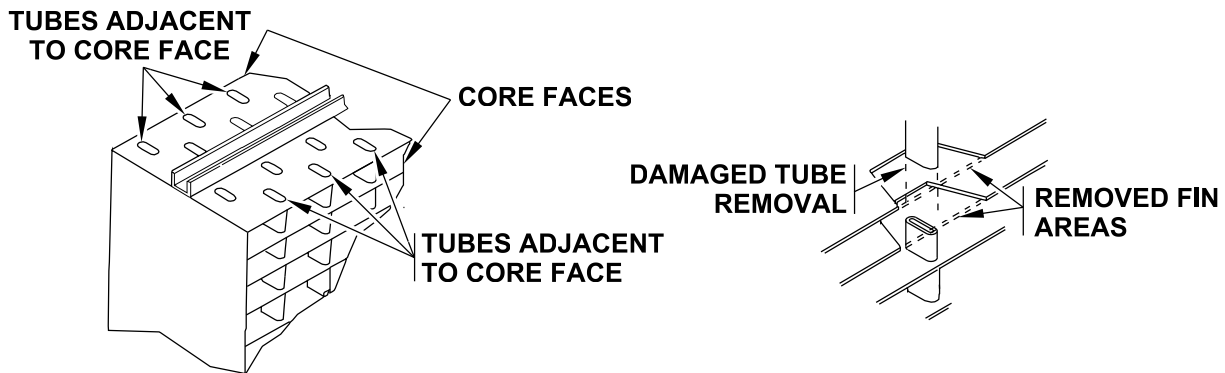
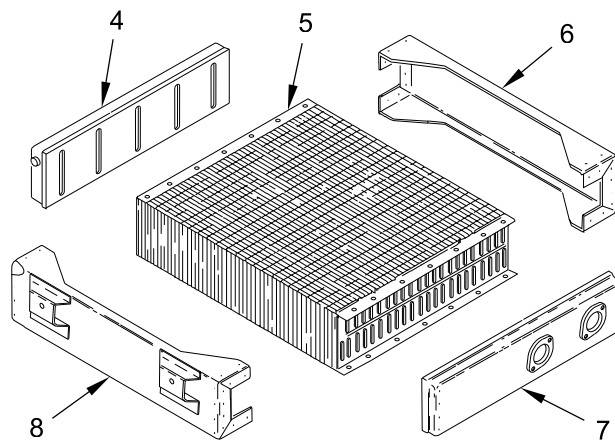


Figure 2. Radiator Disassembly.

## INSPECT AND REPAIR

1. Check upper and lower radiator tanks, baffles, and reinforcements. Repair solder breaks.
2. Repair shall be limited to no more than two tubes adjacent to the core face on either side.
3. Removed areas of fin shall not exceed 6-1/2 square inches (42 square centimeters) per side, per any tube repair. Length of tube splice shall not exceed 2 inches (5 cm). Tube blockage is not allowed.
4. Heat solder repair of the upper and lower tanks, overflow tube, and inlet and outlet openings is allowed.
5. Heat soldering of a core shall not exceed a linear length of 8 inches (20 cm) for any one core assembly.
6. Fin straightening is allowed.

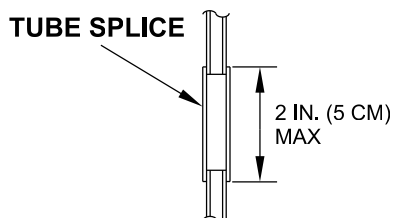


Figure 3. Radiator Inspect and Repair.

## RODDING

1. Disassemble radiator Step 1 .
2. Wire brush rust, scale, and sediment from core tube openings.
3. Locate plugged tubes (Figure 4, Item 10) by directing water into tubes. Look for flow at other end.
4. Insert a metal rod (Figure 4, Item 9) long enough, and slightly smaller in diameter than tubes (Figure 4, Item 10) through tubes to remove blockage.
5. Clear tubes (Figure 4, Item 10) until water flows through freely.

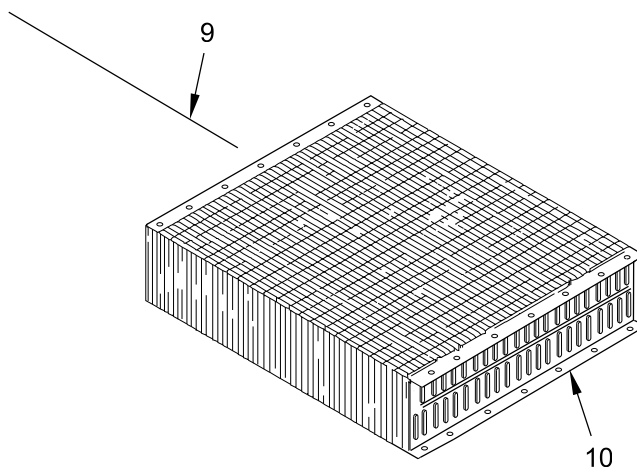


Figure 4. Radiator Rodding.

**ASSEMBLE**

1. Install end tanks (Figure 5, Item 4) and (Figure 5, Item 7) on core (Figure 5, Item 5). Secure with acid core solder.
2. Install two side brackets (Figure 5, Item 8) and (Figure 5, Item 6) on two end tanks (Figure 5, Item 4) and (Figure 5, Item 7). Secure with acid core solder.
3. Test radiator Step 1. Replace leaky radiator.

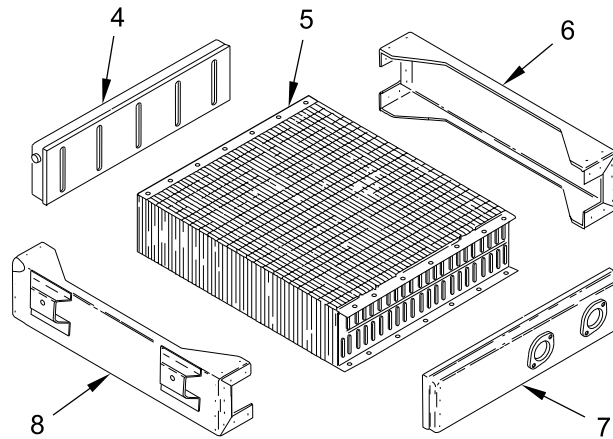


Figure 5. Radiator Assembly.

**END OF TASK****FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**
**REPAIR FAN AND GENERATOR VARIABLE SPEED DRIVE (OLD CONFIGURATION)**


---

**INITIAL SETUP:****Tools and Special Tools**

Arbor Press (WP 0069, Item 18)  
 General Mechanic's Tool Kit (WP 0069, Item 29)  
 Jacking Screw (WP 0069, Item 21)  
 Mechanical Puller (WP 0069, Item 20)  
 Retaining Ring Pliers Set (WP 0069, Item 13)  
 Socket Driver, 3/8 inch drive, Hex 3/16 inch  
 (WP 0069, Item 23)  
 Torque Wrench, 1/2 inch drive, 50-250 lb-ft  
 (WP 0069, Item 42)  
 Torque Wrench, 3/8 inch drive, 0-300 lb-in  
 (WP 0069, Item 38)

**Gasket**

Hose clamp, 2 inch (51 mm) diameter (2)  
 Preformed packing  
 Preformed packing  
 Retaining ring (3)  
 Seal (3)  
 Shim stock, 0.020 inch x 6 inch x 1 1/2 inch (0.5 mm  
 x 152 mm x 38 mm)

**Personnel Required**

Track Vehicle Repairer 91H10  
 Helper (H)

**Materials/Parts**

Engine lubricating oil (WP 0068, Item 8)  
 Encased seal  
 Encased seal (2)

**Equipment Condition**

Fan and generator variable speed drive assembly  
 removed from carrier (TM 9-2350-277-13&P)

---

**DISASSEMBLY****CAUTION**

**Cast aluminum can be damaged. Do not overtighten or mar in holding fixture.**

1. Place drive assembly (Figure 1, Item 4) in a suitable holding fixture. Have helper assist.
2. Secure generator pulley (Figure 1, Item 3), and remove screw (Figure 1, Item 1) and washer (Figure 1, Item 2).

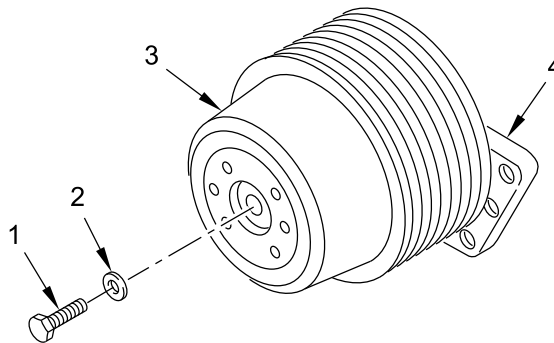


Figure 1. Generator Pulley Mounting Screw – Removal.

3. Install three jacking screws (Figure 2, Item 5) in generator pulley (Figure 2, Item 3).

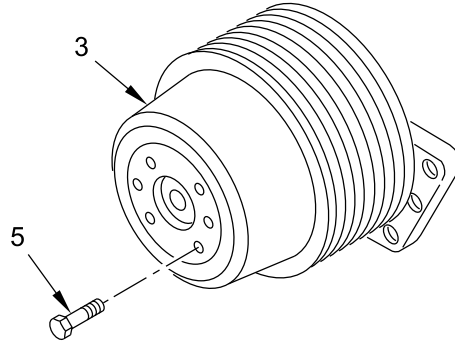


Figure 2. Jack Screws – Installation.

4. Using three jacking screws (Figure 3, Item 5), separate generator pulley (Figure 3, Item 3) from fan pulley (Figure 3, Item 8). Remove preformed packing (Figure 3, Item 6) and key (Figure 3, Item 7). Discard preformed packing.
5. Secure fan pulley (Figure 3, Item 8) in holding fixture.

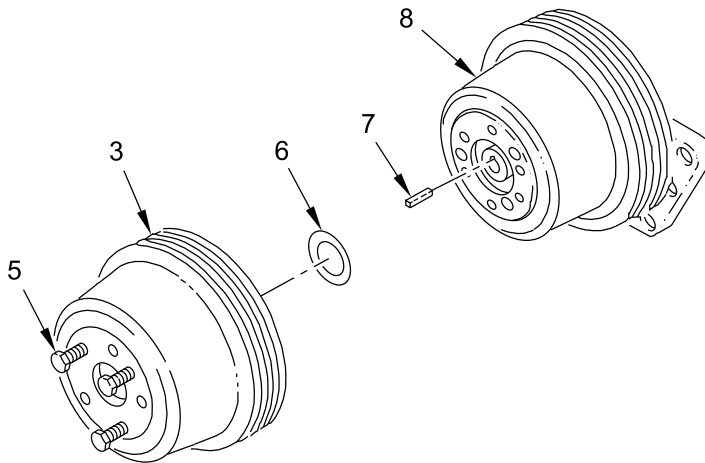


Figure 3. Generator Pulley – Removal.

- Remove six screws (Figure 4, Item 9) and six washers (Figure 4, Item 10) from fan pulley (Figure 4, Item 8). Separate fan pulley from inner housing assembly (Figure 4, Item 11).
- Reverse housing assembly (Figure 4, Item 11) in holding fixture.

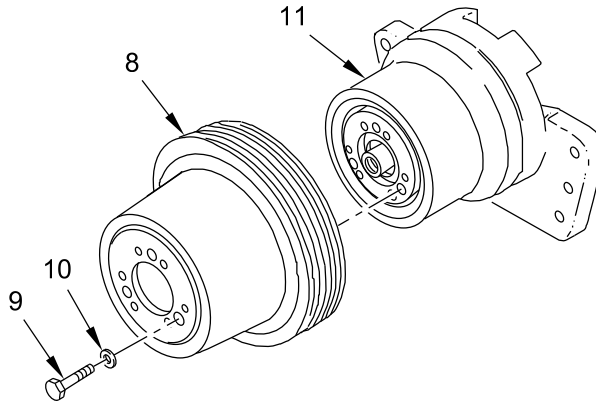


Figure 4. Fan Pulley – Removal.

#### NOTE

**Use two of the screws removed in Step 8 as jacking screws to remove cover plate.**

- Remove six screws (Figure 5, Item 12) and six washers (Figure 5, Item 13) from cover plate (Figure 5, Item 14). Install two jacking screws in threaded holes of cover plate.

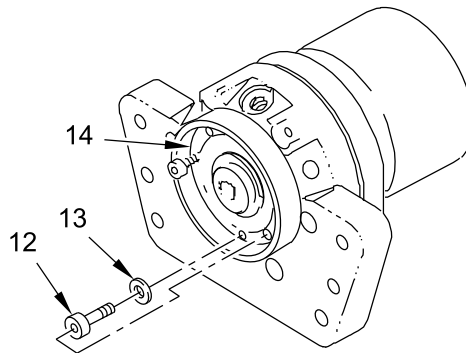


Figure 5. Jack Screws – Installation.

9. Remove cover plate (Figure 6, Item 14) and preformed packing (Figure 6, Item 16) from rear housing (Figure 6, Item 17). Discard preformed packing. Remove two jacking screws (Figure 6, Item 12) from cover plate (Figure 6, Item 14).
10. Press encased oil seal (Figure 6, Item 15) out of cover plate (Figure 6, Item 14). Discard oil seal.

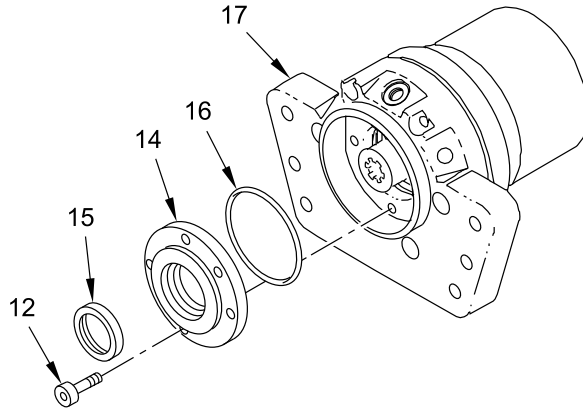


Figure 6. Cover Plate – Removal.

#### NOTE

**When the front housing is separated from the rear housing, the inner housing with shaft and clutch assembly may stay with the front housing.**

11. Remove six screws (Figure 7, Item 21) and six washers (Figure 7, Item 20) from front housing (Figure 7, Item 19).
12. Separate front housing (Figure 7, Item 19) from rear housing (Figure 7, Item 17). Tap off at shaft with rubber hammer.
13. Remove gasket (Figure 7, Item 18) from rear housing (Figure 7, Item 17). Discard gasket.

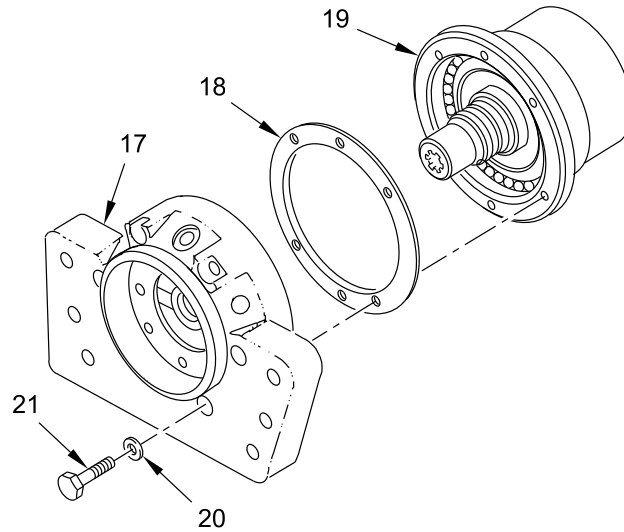


Figure 7. Front/Rear Housing – Separation.

14. Remove the large lock ring (Figure 8, Item 22) that secures the clutch housing assembly (Figure 8, Item 23) to the front housing (Figure 8, Item 19).

#### NOTE

**If bearing (Figure 8, Item 24) remains inside of front housing (Figure 8, Item 19), go to Step 29 for bearing removal. If bearing remains on inner housing (Figure 8, Item 23), go to Step 23. After removal of bearing, return to Step 16.**

15. Press clutch housing assembly (Figure 8, Item 23) (with shaft and clutch) out of front housing (Figure 8, Item 19).

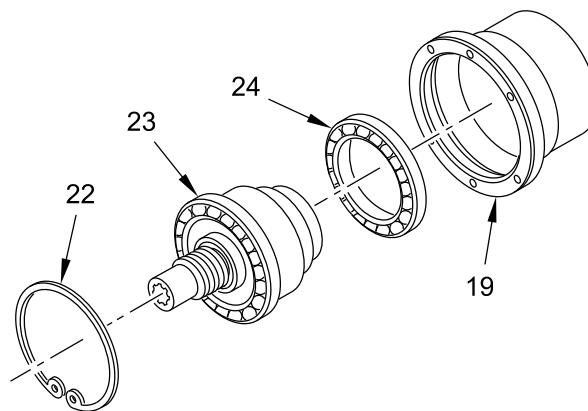


Figure 8. Clutch Housing Assembly – Removal.

16. Press shaft and clutch assembly (Figure 9, Item 26) out of inner housing (Figure 9, Item 25).

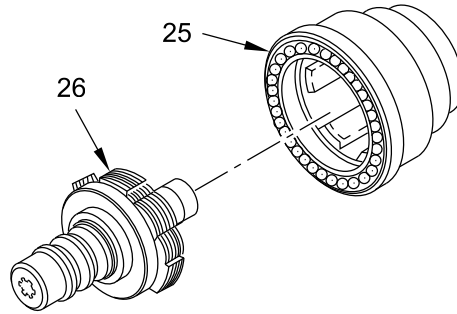


Figure 9. Shaft and Clutch Assembly – Removal.

17. Remove spacer (Figure 10, Item 27) from shaft and clutch assembly (Figure 10, Item 26).

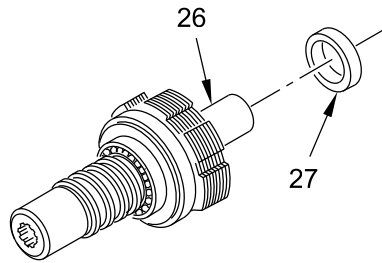


Figure 10. Spacer – Removal.

18. Press shaft (Figure 11, Item 29) out of clutch assembly (Figure 11, Item 31).
19. Remove key (Figure 11, Item 7) from shaft (Figure 11, Item 29).
20. Press bearing (Figure 11, Item 30) from shaft (Figure 11, Item 29).
21. Remove three retaining rings (Figure 11, Item 28) from shaft (Figure 11, Item 29). Discard retaining rings.

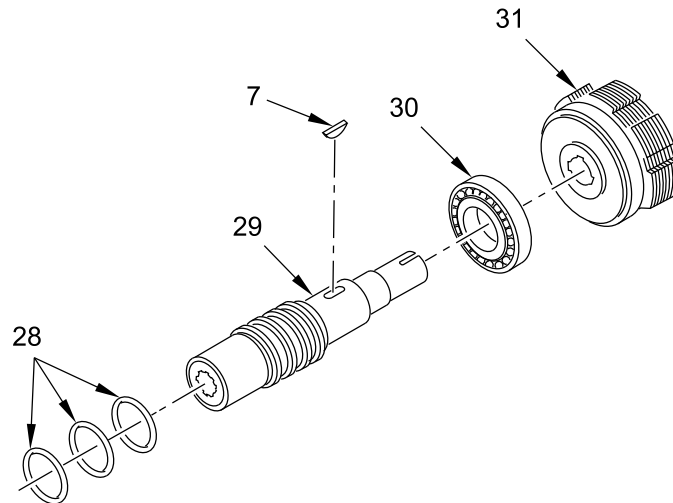


Figure 11. Shaft and Clutch – Disassembly.

22. Press larger bearing (Figure 12, Item 32) from the inner housing (Figure 12, Item 25).
23. Remove bearing (Figure 12, Item 24) from inner housing (Figure 12, Item 25). Use mechanical puller.

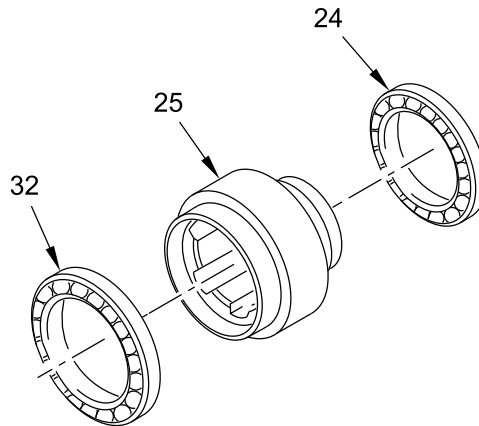


Figure 12. Outer Bearings – Removal.

24. Remove lock ring (Figure 13, Item 33) from inner housing (Figure 13, Item 25).
25. Remove bearing (Figure 13, Item 34) from inner housing (Figure 13, Item 25). Use mechanical puller.
26. Remove oil seal (Figure 13, Item 35) from inner housing (Figure 13, Item 25). Discard oil seal.

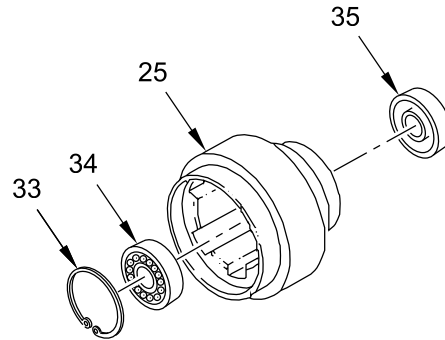


Figure 13. Inner Bearings – Removal.

27. Remove encased oil seal (Figure 14, Item 36) from the front housing (Figure 14, Item 19). Discard oil seal.
28. Remove lock ring (Figure 14, Item 37) from front housing (Figure 14, Item 19).

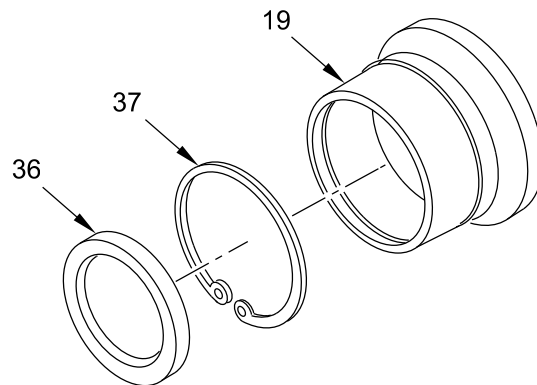


Figure 14. Oil Seal and Lock Ring – Removal.



29. Press bearing (Figure 15, Item 24) from front housing (Figure 15, Item 19).

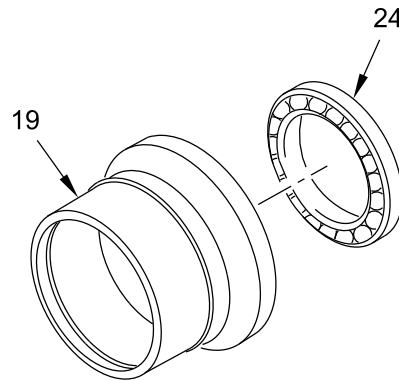


Figure 15. Inner Bearing – Removal.

#### END OF TASK

#### ASSEMBLY

1. Install lock ring (Figure 16, Item 37) in front housing (Figure 16, Item 19).

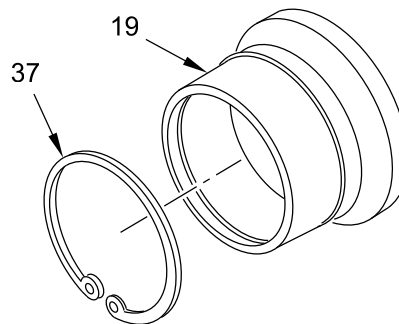


Figure 16. Lock Ring – Installation.

2. Install new encased oil seal (Figure 17, Item 35) in inner housing (Figure 17, Item 25).
3. Press bearing (Figure 17, Item 34) into inner housing (Figure 17, Item 25).
4. Install lock ring (Figure 17, Item 33) in inner housing (Figure 17, Item 25).

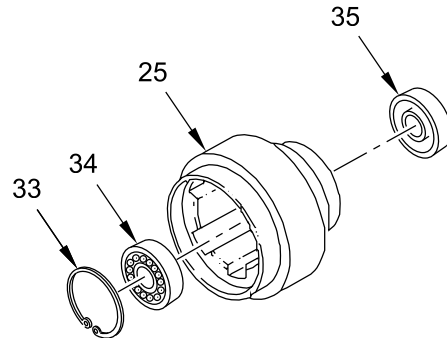


Figure 17. Inner Bearings – Installation.

5. Press smaller bearing (Figure 18, Item 24) on inner housing (Figure 18, Item 25).
6. Press bearing (Figure 18, Item 32) on inner housing (Figure 18, Item 25).

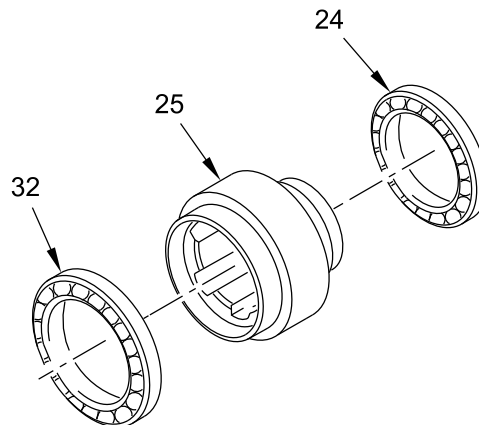


Figure 18. Outer Bearings – Installation.

7. Coat three new retaining rings (Figure 19, Item 28) with lubricating oil. Install three retaining rings on shaft (Figure 19, Item 29).
8. Press bearing (Figure 19, Item 30) on shaft (Figure 19, Item 29).
9. Install key (Figure 19, Item 7) on shaft (Figure 19, Item 29).
10. Lightly lubricate shaft (Figure 19, Item 29) before installing clutch (Figure 19, Item 31).
11. Press clutch (Figure 19, Item 31) onto shaft (Figure 19, Item 29).

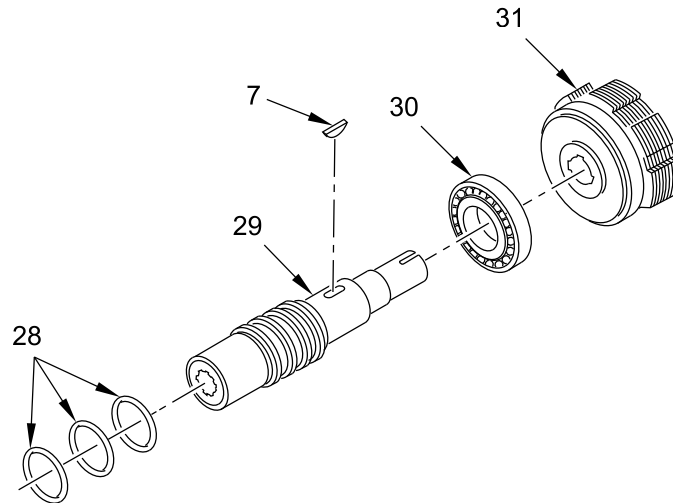


Figure 19. Shaft and Clutch – Assembly.

12. Install spacer (Figure 20, Item 27) on shaft and clutch assembly (Figure 20, Item 26).

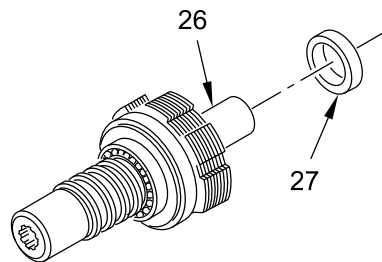


Figure 20. Spacer – Installation.

13. Align ring tabs (Figure 21, Item 38) on clutch assembly (Figure 21, Item 31) before installing shaft into inner housing (Figure 21, Item 25).
14. Press shaft and clutch assembly (Figure 21, Item 26) into inner housing (Figure 21, Item 25).

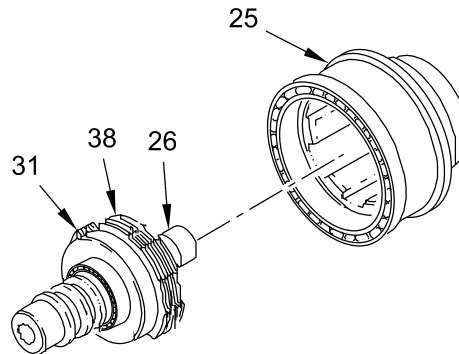


Figure 21. Shaft and Clutch Assembly – Installation.

15. Lightly lubricate both outer bearing races (Figure 22, Item 32) and (Figure 22, Item 24).
16. Support front housing (Figure 22, Item 19) only during installation of inner housing (Figure 22, Item 25) on arbor press to allow inner housing to extend down past front housing edge.
17. Press inner housing (Figure 22, Item 25) (with clutch and shaft) into front housing (Figure 22, Item 19).
18. Install large lock ring (Figure 22, Item 22) that secures the inner housing (Figure 22, Item 25) to the front housing (Figure 22, Item 19).
19. Lubricate new encased oil seal (Figure 22, Item 36).
20. Install new encased oil seal (Figure 22, Item 36) into front housing (Figure 22, Item 19). Use brass drift and hammer.

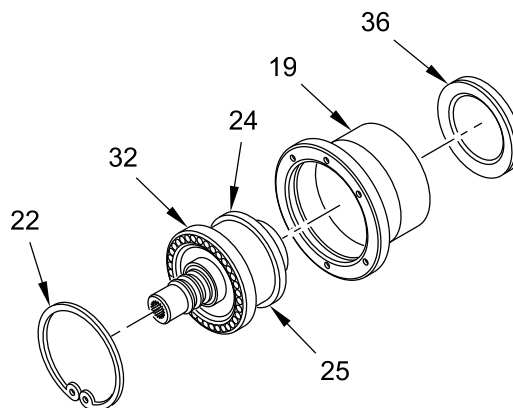


Figure 22. Oil Seal and Lock Ring – Installation.

21. Using .020 inch (.5 mm) shim stock and two 2 inch (51 mm) diameter hose clamps, compress three retaining rings (Figure 23, Item 28) on shaft (Figure 23, Item 29). Allow to set for 30 minutes. Remove both clamps and shim stock.

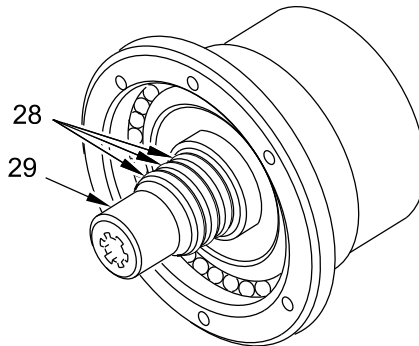


Figure 23. Rear Housing Gasket – Installation.

22. Install new gasket (Figure 24, Item 18) on rear housing (Figure 24, Item 17).
23. Install front housing (Figure 24, Item 19) on rear housing (Figure 24, Item 17).
24. Install six screws (Figure 24, Item 21) and washers (Figure 24, Item 20) to secure front housing (Figure 24, Item 19) to rear housing (Figure 24, Item 17). Torque screws (Figure 24, Item 21) to 210-220 lb-in (24-25 N·m). Use torque wrench (WP 0069, [Item 38](#)).

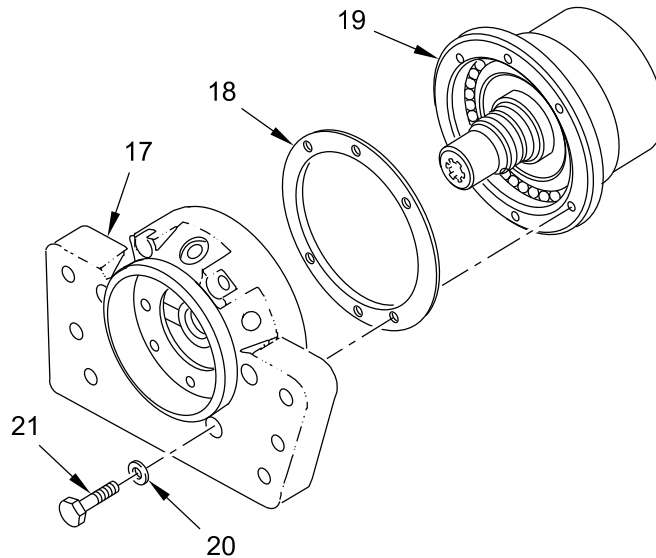


Figure 24. Front/Rear Housing – Reunion.

25. Install new encased oil seal (Figure 25, Item 15) in cover plate (Figure 25, Item 14).
26. Pump oil through lower oil passage (Figure 25, Item 39) until rear housing (Figure 25, Item 17) is full.
27. Lubricate new preformed packing (Figure 25, Item 16) and install on cover plate (Figure 25, Item 14). Install cover plate (Figure 25, Item 14) on rear housing (Figure 25, Item 17).

28. Install six screws (Figure 25, Item 12) and six washers (Figure 25, Item 13) to secure cover plate (Figure 25, Item 14). Torque screws (Figure 25, Item 12) to 100-105 lb-in (11-12 N·m). Use torque wrench (WP 0069, [Item 38](#)).
29. Install protective plugs in three rear ports.

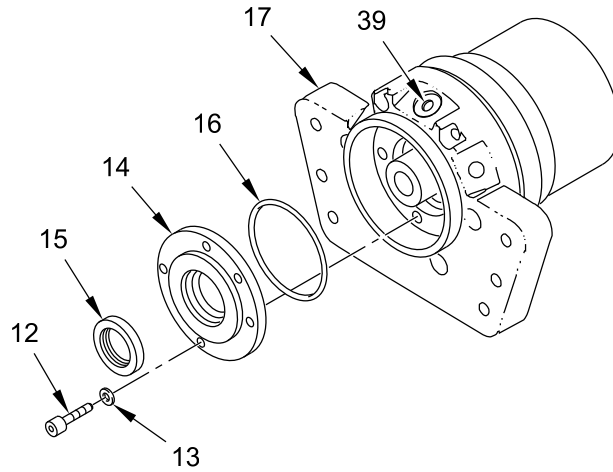


Figure 25. Cover Plate – Installation.

30. Reverse housing assembly (Figure 26, Item 11).
31. Install fan pulley (Figure 26, Item 8) on housing assembly (Figure 26, Item 11). Secure pulley with six screws (Figure 26, Item 9) and six washers (Figure 26, Item 10). Torque screws (Figure 26, Item 9) to 210-220 lb-in (24-25 N·m). Use torque wrench (WP 0069, Item 38).

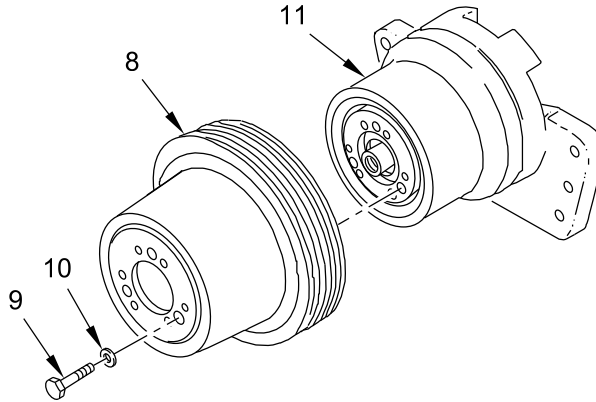


Figure 26. Fan Pulley – Installation.

32. Lubricate new preformed packing (Figure 27, Item 6) and install on generator pulley (Figure 27, Item 3).
33. Install key (Figure 27, Item 7) on shaft (Figure 27, Item 29).
34. Install generator pulley (Figure 27, Item 3) on fan pulley (Figure 27, Item 8). Secure with screw (Figure 27, Item 1) and washer (Figure 27, Item 2). Torque screw (Figure 27, Item 1) to 76-79 lb-ft (103-108 N·m). Use torque wrench (WP 0069, Item 42).

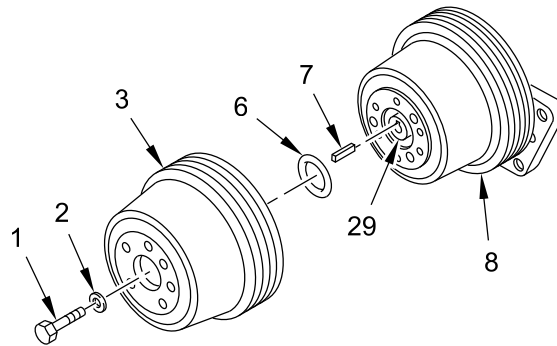


Figure 27. Generator Pulley – Installation.

#### **FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

#### **END OF TASK**

#### **END OF WORK PACKAGE**





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**SUSTAINMENT MAINTENANCE**  
**REPAIR VENTILATING FAN ASSEMBLY**

---

**INITIAL SETUP:****Tools and Special Tools**

Adjustable Wrench (WP 0069, Item 36)  
General Mechanic's Tool Kit (WP 0069, Item 29)  
Mechanical Puller Kit (WP 0069, )  
Torque Wrench, 1/2 inch drive, 50-250 lb-ft  
(WP 0069, Item 42)  
Torque Wrench, 3/8 inch drive, 5-75 lb-ft  
(WP 0069, Item 40)

**Materials/Parts**

Locknut (4)  
Lockwasher (4)

Lockwasher (8)  
Sealing compound (WP 0068, Item 14)  
Washer (3)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Fan assembly removed from carrier  
(TM 9-2350-277-13&P)  
Fan drive shaft and bearing housing removed from  
fan assembly (TM 9-2350-277-13&P)

---

**DISASSEMBLY**

1. Remove four screws (Figure 1, Item 15), four lockwashers (Figure 1, Item 14), four washers (Figure 1, Item 13), and cover (Figure 1, Item 12) from fan housing (Figure 1, Item 11). Discard lockwashers.
2. Remove six screws (Figure 1, Item 10), two screws (Figure 1, Item 18), eight washers (Figure 1, Item 9), eight lockwashers (Figure 1, Item 2), eight nuts (Figure 1, Item 1), and fan housing (Figure 1, Item 11) from support (Figure 1, Item 3). Discard lockwashers.
3. Remove nut (Figure 1, Item 16) and washer (Figure 1, Item 17) from fan (Figure 1, Item 8) on shaft (Figure 1, Item 7). Discard washer.
4. Use puller to remove fan (Figure 1, Item 8) from gearbox (Figure 1, Item 19).
5. Remove key (Figure 1, Item 6) from shaft (Figure 1, Item 7).
6. Remove four screws (Figure 1, Item 5), four locknuts (Figure 1, Item 20), eight washers (Figure 1, Item 4), and gearbox (Figure 1, Item 19) from support (Figure 1, Item 3). Discard locknuts.
7. If letters on marker are illegible, replace marker. See TM 9-2350-277-13&P.
8. If name plate is damaged, replace it. See TM 9-2350-277-13&P.

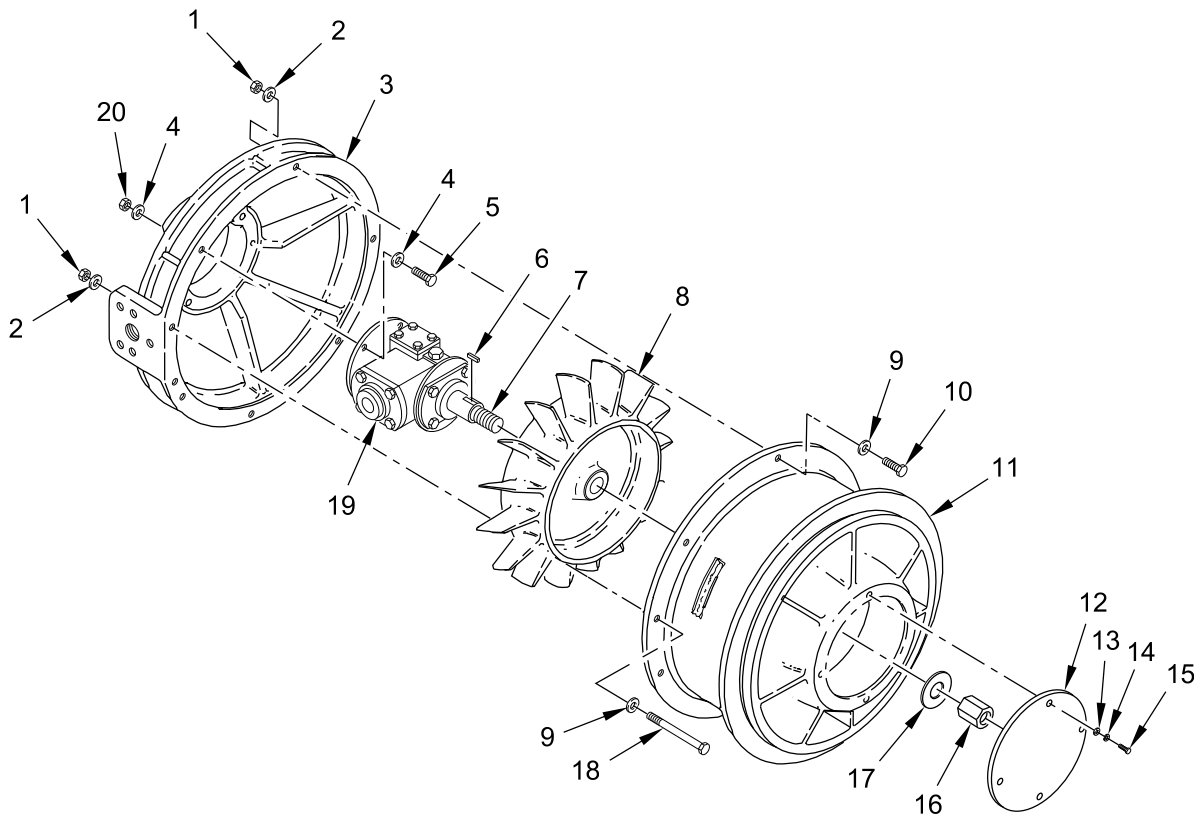


Figure 1. Ventilating Fan – Disassembly.

**END OF TASK**

**ASSEMBLY**

1. Install gearbox (Figure 2, Item 19) on support (Figure 2, Item 3). Secure with four screws (Figure 2, Item 5), eight washers (Figure 2, Item 4), and four new locknuts (Figure 2, Item 20).
2. Install key (Figure 2, Item 6) and fan (Figure 2, Item 8) on shaft (Figure 2, Item 7) of gearbox (Figure 2, Item 19). Secure with new washer (Figure 2, Item 17) and nut (Figure 2, Item 16).
3. To seat rotor and seal, torque nut (Figure 2, Item 16) to 70-75 lb-ft (95-102 N·m). Use torque wrench (WP 0069, Item 42). Then remove nut (Figure 2, Item 16) and washer (Figure 2, Item 17).
4. Apply sealing compound to both sides of washer (Figure 2, Item 17).
5. Install washer (Figure 2, Item 17) and nut (Figure 2, Item 16) on shaft (Figure 2, Item 7). Torque nut (Figure 2, Item 16) to 27-32 lb-ft (37-43 N·m). Use torque wrench (WP 0069, Item 40).
6. Bend one edge of washer (Figure 2, Item 17) against nut (Figure 2, Item 16) and one edge against fan (Figure 2, Item 8).
7. Install fan housing (Figure 2, Item 11) on support (Figure 2, Item 3). Secure with six screws (Figure 2, Item 10), two screws (Figure 2, Item 18), eight washers (Figure 2, Item 9), eight new lockwashers (Figure 2, Item 2), and eight nuts (Figure 2, Item 1).
8. Install cover (Figure 2, Item 12) on fan housing (Figure 2, Item 11). Secure with four screws (Figure 2, Item 15), four new lockwashers (Figure 2, Item 14), and four washers (Figure 2, Item 13).

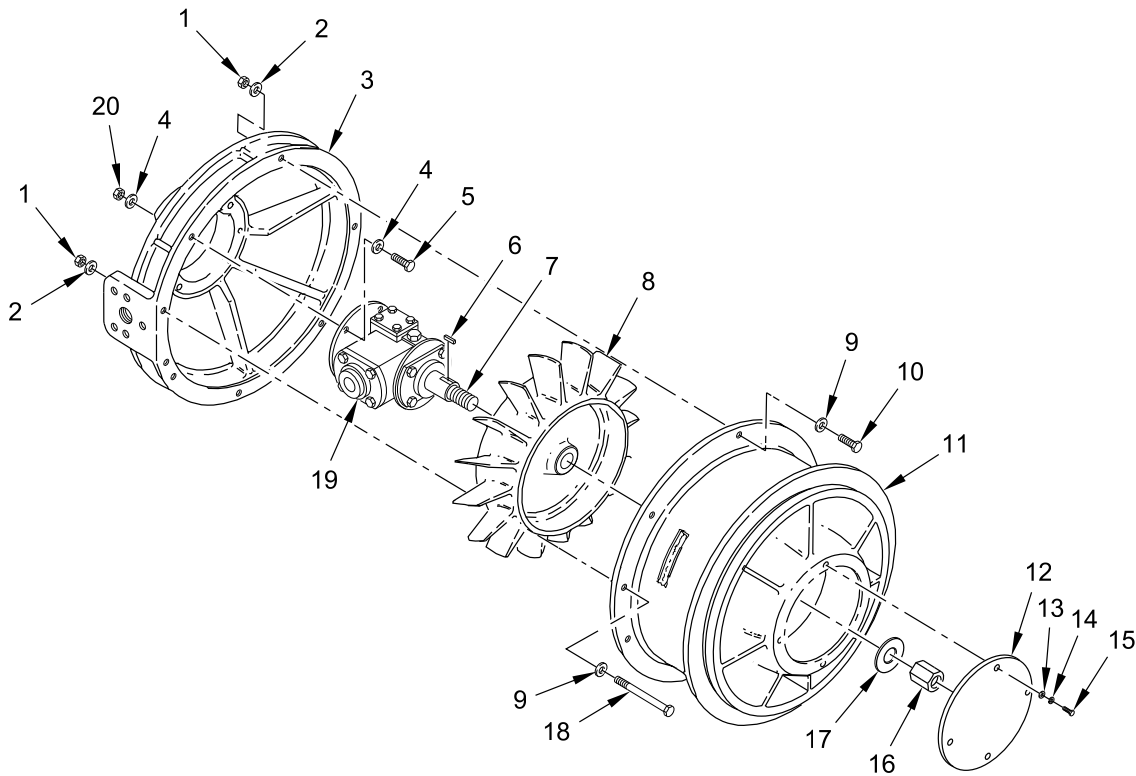


Figure 2. Ventilating Fan – Assembly.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Install drive shaft and bearing housing in fan assembly, see TM 9-2350-277-13&P.
2. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**

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**SUSTAINMENT MAINTENANCE**  
**REPAIR MIXED FLOW VENTILATING FAN ASSEMBLY**

---

**INITIAL SETUP:****Tools and Special Tools**

Adjustable Wrench (WP 0069, Item 36)  
General Mechanic's Tool Kit (WP 0069, Item 29)  
Mechanical Puller Kit (WP 0069, )  
Torque Wrench, 1/2 inch drive, 50-250 lb-ft  
(WP 0069, Item 42)  
Torque Wrench, 3/8 inch drive, 5-75 lb-ft  
(WP 0069, Item 40)

**Materials/Parts**

Locknut (4)  
Lockwasher (4)

Sealing compound (WP 0068, Item 14)  
Washer (3)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Fan assembly removed from carrier  
(TM 9-2350-277-13&P)  
Fan drive shaft and bearing housing removed from  
fan assembly (TM 9-2350-277-13&P)

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**DISASSEMBLY**

1. Remove nut (Figure 1, Item 7) and washer (Figure 1, Item 6) from fan (Figure 1, Item 8) on shaft (Figure 1, Item 9). Discard washer.
2. Use puller to remove fan (Figure 1, Item 8) from gearbox (Figure 1, Item 5).
3. Remove key (Figure 1, Item 4) from shaft (Figure 1, Item 9).
4. Remove four screws (Figure 1, Item 1), four locknuts (Figure 1, Item 3), eight washers (Figure 1, Item 2), and gearbox (Figure 1, Item 5) from fan housing (Figure 1, Item 10). Discard locknuts.
5. If letters on marker are illegible, replace marker. See TM 9-2350-277-13&P.
6. If name plate is damaged, replace it. See TM 9-2350-277-13&P.

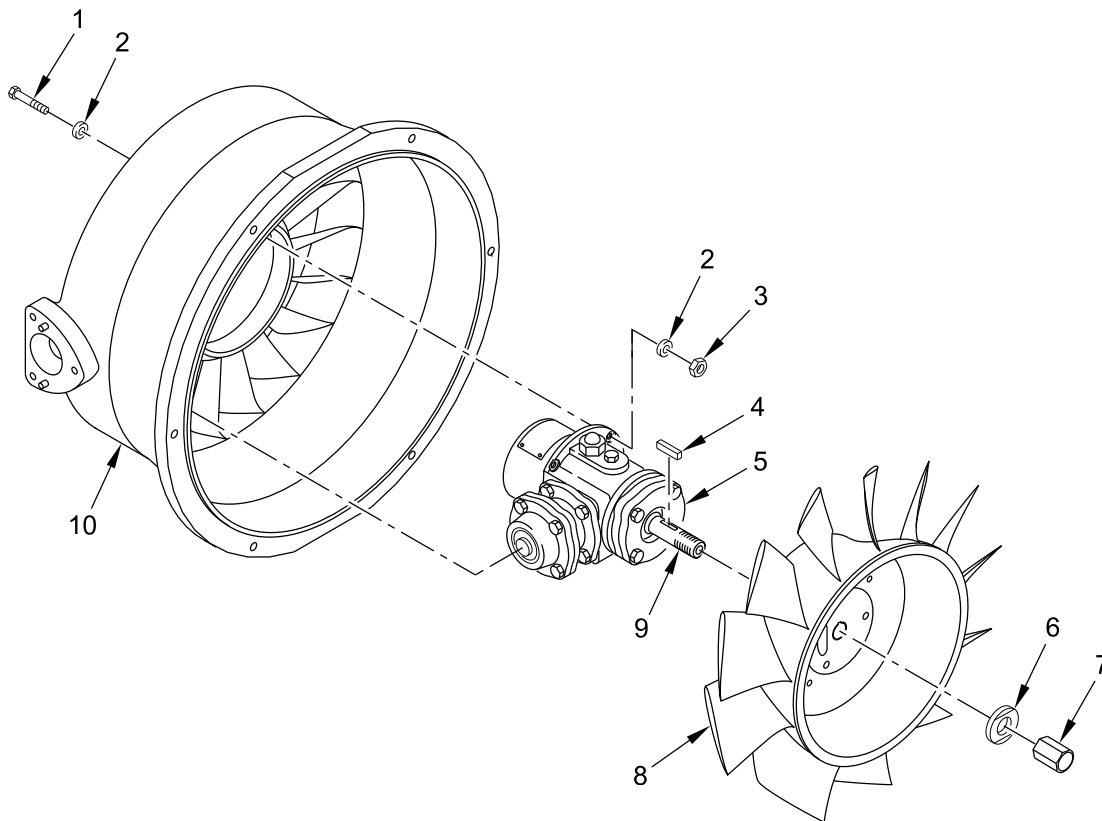


Figure 1. Mixed Flow Ventilating Fan – Disassembly.

**END OF TASK**

**ASSEMBLY**

1. Install gearbox (Figure 2, Item 5) on fan housing (Figure 2, Item 10). Secure with four screws (Figure 2, Item 1), eight washers (Figure 2, Item 2), and four new locknuts (Figure 2, Item 3). Torque screws (Figure 2, Item 1) to 40-45 lb-ft (55-61 N·m). Use torque wrench (WP 0069, Item 40).
2. Install key (Figure 2, Item 4) and fan (Figure 2, Item 8) on shaft (Figure 2, Item 9) of gearbox (Figure 2, Item 5). Secure with new washer (Figure 2, Item 6) and nut (Figure 2, Item 7).
3. To seat rotor and seal, torque nut (Figure 2, Item 7) to 70-75 lb-ft (95-102 N·m). Use torque wrench (WP 0069, Item 42). Then remove nut (Figure 2, Item 7) and washer (Figure 2, Item 6).
4. Apply sealing compound to both sides of washer (Figure 2, Item 6).
5. Install washer (Figure 2, Item 6) and nut (Figure 2, Item 7) on shaft (Figure 2, Item 9). Torque nut (Figure 2, Item 7) to 27-32 lb-ft (37-43 N·m). Use torque wrench (WP 0069, Item 40).
6. Bend one edge of washer (Figure 2, Item 6) against nut (Figure 2, Item 7) and one edge against fan (Figure 2, Item 8).

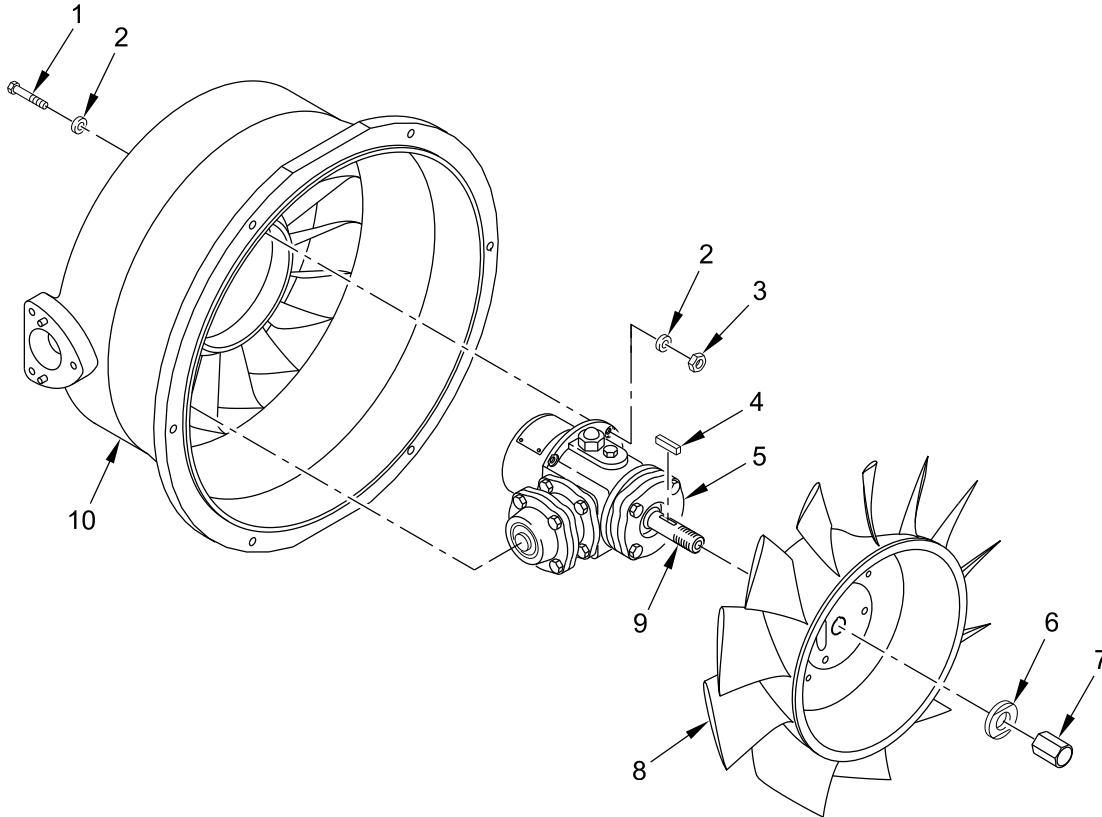


Figure 2. Mixed Flow Ventilating Fan – Assembly.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Install drive shaft and bearing housing in fan assembly, see TM 9-2350-277-13&P.
2. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE**  
**REPAIR FAN DRIVE SHAFT AND BEARING HOUSING**

---

**INITIAL SETUP:****Tools and Special Tools**

Arbor Press (WP 0069, Item 18)  
General Mechanic's Tool Kit (WP 0069, Item 29)  
Hammer Set, Holder and Inserts (WP 0069, Item 9)

**Equipment Condition**

Shaft and bearing housing removed from carrier  
(TM 9-2350-277-13&P)

**Personnel Required**

Track Vehicle Repairer 91H10

---

**DISASSEMBLY**

1. Remove drive shaft (Figure 1, Item 2) from bearing housing (Figure 1, Item 1) by pressing shaft (Figure 1, Item 2) out.

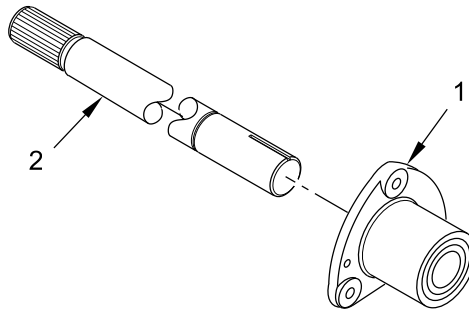


Figure 1. Fan Drive Shaft and Bearing Housing – Disassembly.

2. Place bearing housing (Figure 2, Item 1) on flat surface. Tap outer edge of bearing (Figure 2, Item 3) until bearing turns to vertical position. Tap bearing edge to remove bearing from housing.

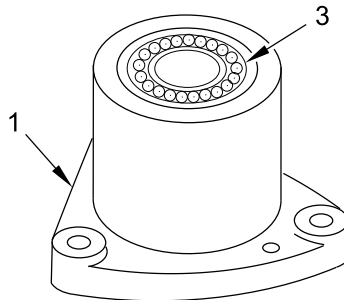


Figure 2. Bearing Housing – Disassembly.

**END OF TASK**

**INSPECTION-ACCEPTANCE AND REJECTION CRITERIA**

1. Inspect drive shaft and fan pulley for wear and damage. Replace bad drive shaft or front pulley.
2. Inspect bearing support and fan housing for wear and damage. Replace if necessary.

**END OF TASK****ASSEMBLY**

1. Place bearing housing (Figure 3, Item 1) on flat surface with bearing on top. Tap outer race of bearing (Figure 3, Item 3) evenly until bearing race is seated flush with edge of housing. Tap edge of bearing downward to seat bearing in housing.

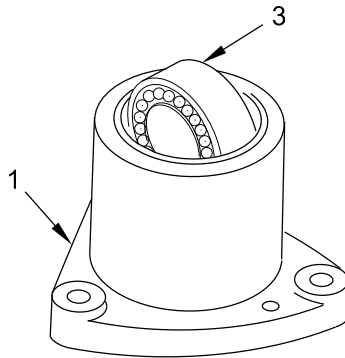


Figure 3. Bearing Housing – Assembly.

2. Press drive shaft (Figure 4, Item 2) in bearing housing (Figure 4, Item 1).

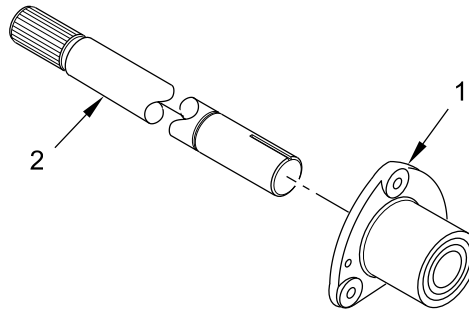


Figure 4. Fan Drive Shaft and Bearing Housing – Assembly.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**

**CHAPTER 5**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**ELECTRICAL SYSTEM**

**CHAPTER 5**  
**MAINTENANCE INSTRUCTIONS**

---

**WORK PACKAGE INDEX**

---

<b>Title</b>	<b>WP Sequence No.</b>
REPAIR GENERATOR.....	0010
REPAIR ENGINE WIRING HARNESS.....	0011
REPAIR TRANSMISSION WIRING HARNESS.....	0012
REPAIR TRANSMISSION CONTROL WIRING HARNESS.....	0013
REPAIR FRONT MAIN WIRING HARNESS.....	0014

---

**SUSTAINMENT MAINTENANCE****REPAIR GENERATOR**

---

**INITIAL SETUP:****Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Generator removed from carrier  
(TM 9-2350-277-13&P)

**References**

TM 9-2920-257-30&P

---

**REPAIR OR REPLACEMENT**

1. Repair generator, see TM 9-2920-257-30&P.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE**  
**REPAIR ENGINE WIRING HARNESS**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Materials/Parts**

Insulation tape (WP 0068, Item 11)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Engine wiring harness removed from carrier  
(TM 9-2350-277-13&P)

---

**NOTE**

Old configuration engine wiring harnesses are a one piece wiring harness for both the generator and engine. New configuration wiring harnesses have been split into two separate wiring harnesses, one for the generator and the other for the engine. This procedure can be used to repair either configuration of the engine wiring harness.

**REPAIR OR REPLACEMENT****NOTE**

Determine which configuration of engine wiring harness you have for repair by checking the wiring harness identification band. If the number on the band is 12554698, skip Step 1 and go to Step 2. If the number on the band is 12349873, begin repair at Step 1.

1. Remove the harness identification band and insulation tape binding the two harnesses together. Mark two new identification bands, one with number 12554697 for the new generator wiring harness and the other 12554698 for the new engine wiring harness. Install the new harness identification bands on each of the appropriate wiring harnesses.
2. Perform continuity check on engine wiring harness assembly to determine which parts require repair or replacement.
3. Repair connectors/leads as required, see TM 9-2350-277-13&P for maintenance procedures and (WP 0048 or WP 0048.1) for repair parts.
4. Repeat continuity check on engine wiring harness assembly to determine that repairs have been completed.
5. Use insulation tape to bind wiring harness.

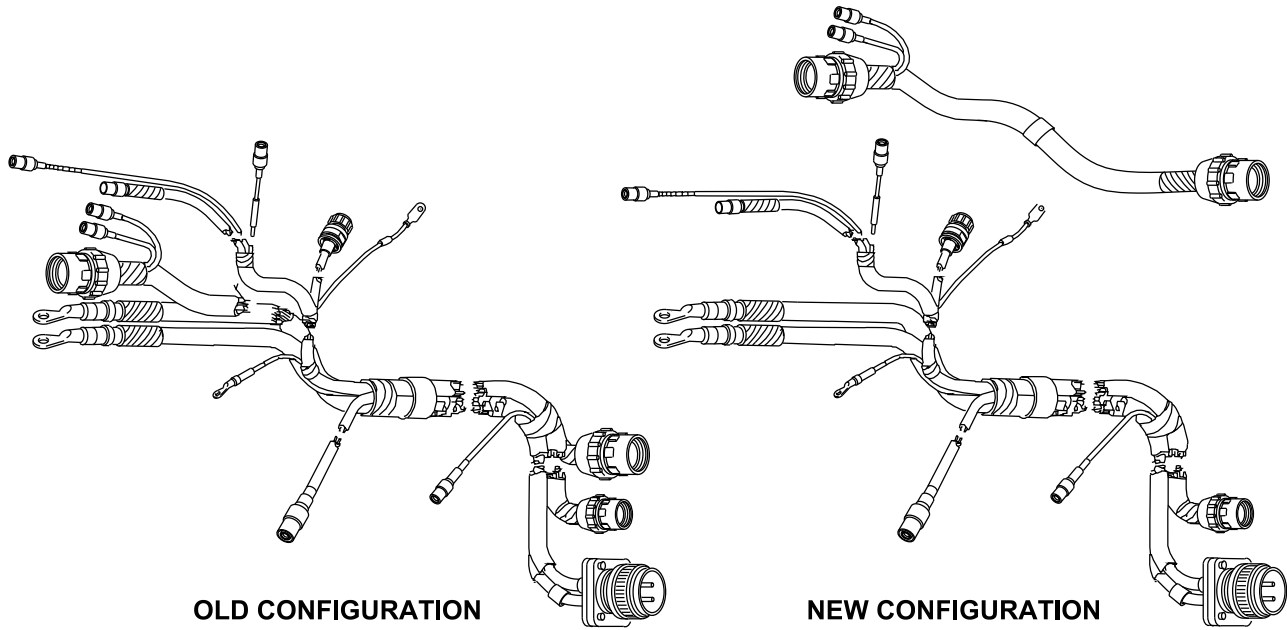


Figure 1. Engine Wiring Harnesses.



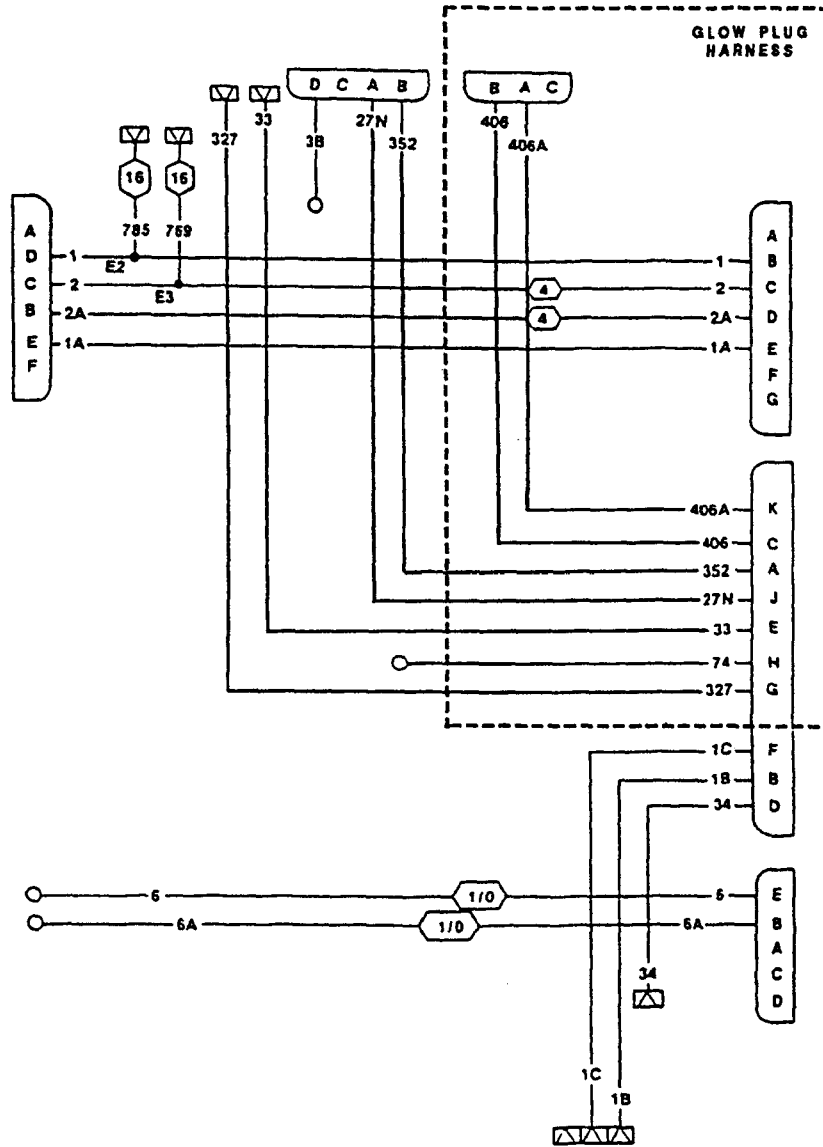


Figure 2. Engine Wiring Harness Diagram (Old Configuration).

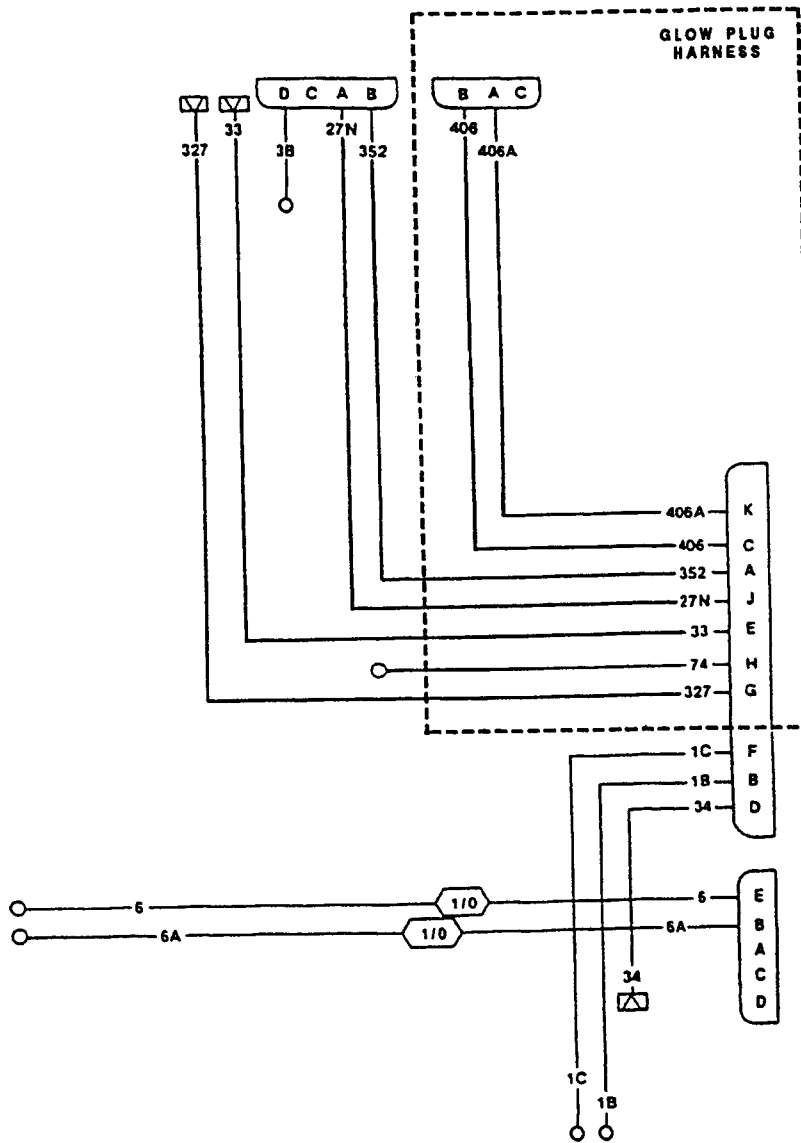


Figure 3. Engine Wiring Harness Diagram (New Configuration).

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR TRANSMISSION WIRING HARNESS**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Personnel Required**

Track Vehicle Repairer 91H10

**Materials/Parts**

Insulation tape (WP 0068, Item 11)

**Equipment Condition**

Transmission wiring harness removed from carrier  
(TM 9-2350-277-13&P)

---

**REPAIR OR REPLACEMENT**

1. Perform continuity check on transmission wiring harness to determine which parts require repair or replacement.
2. Repair connectors as required, see TM 9-2350-277-13&P.
3. Repair small connectors as required, see TM 9-2350-277-13&P.
4. Repeat continuity check on transmission wiring harness assembly to determine that repairs have been completed.
5. Use insulation tape to bind wiring harness.

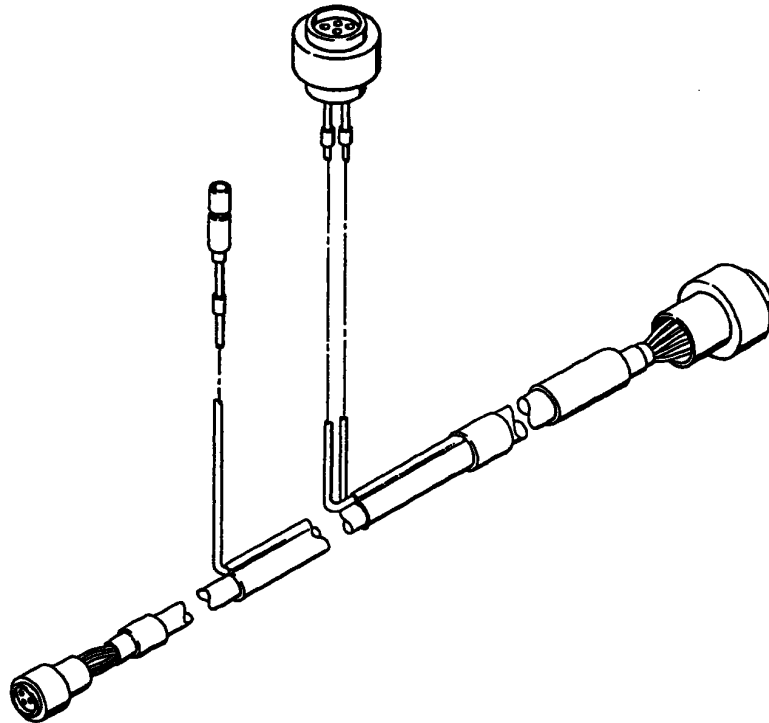


Figure 1. Transmission Wiring Harness.

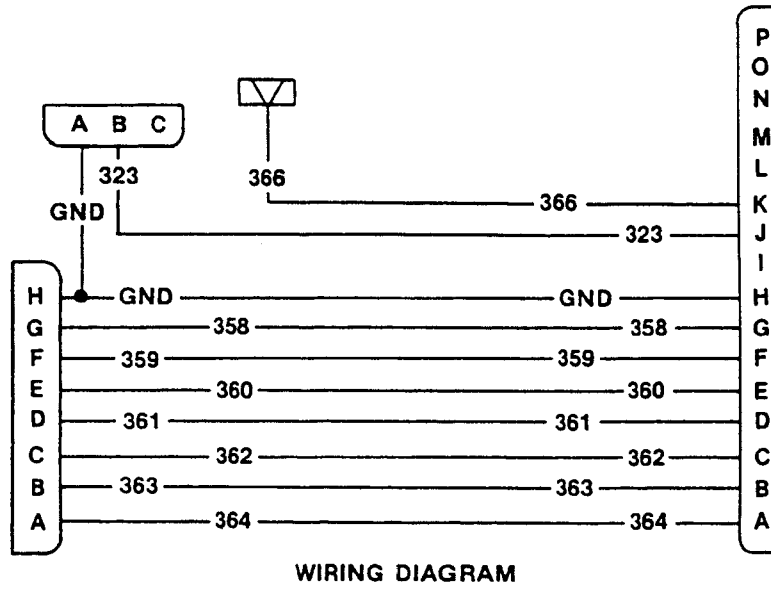


Figure 2. Transmission Wiring Harness Diagram.

END OF TASK

FOLLOW ON MAINTENANCE

1. Return to supply per local Standard Operating Procedures (SOP).

END OF TASK

END OF WORK PACKAGE

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR TRANSMISSION CONTROL WIRING HARNESS**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Personnel Required**

Track Vehicle Repairer 91H10

**Materials/Parts**

Insulation tape (WP 0068, Item 11)

**Equipment Condition**

Wiring harness removed from carrier  
(TM 9-2350-277-13&P)

---

**REPAIR OR REPLACEMENT**

1. Perform continuity check on transmission control wiring harness to determine which parts require repair or replacement.
2. Repair connectors as required, see TM 9-2350-277-13&P.
3. Repair terminals as required, see TM 9-2350-277-13&P.
4. Repeat continuity check on transmission control wiring harness assembly to determine that repairs have been completed.
5. Use insulation tape to bind wiring harness.

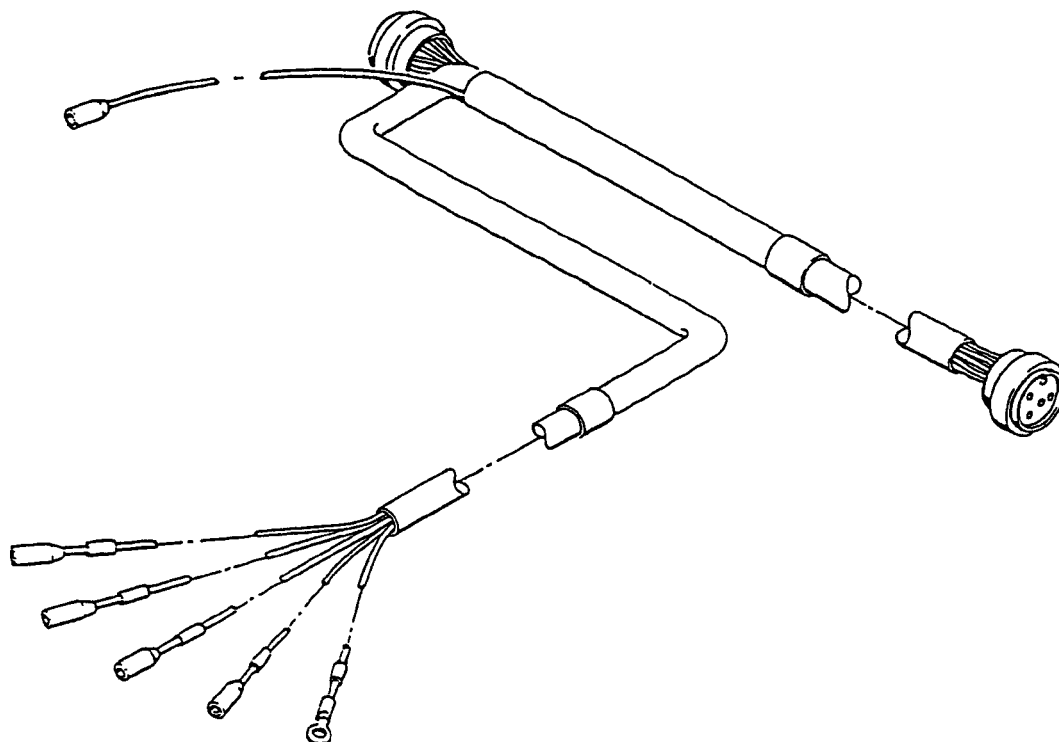


Figure 1. Transmission Control Wiring Harness.

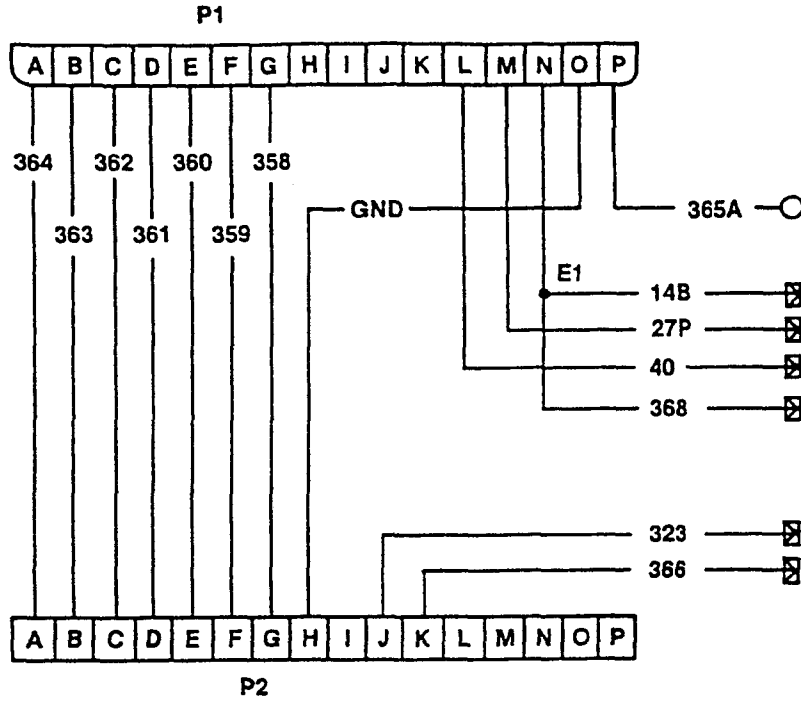


Figure 2. Transmission Control Wiring Harness Diagram.

END OF TASK

FOLLOW ON MAINTENANCE

1. Return to supply per local Standard Operating Procedures (SOP).

END OF TASK

END OF WORK PACKAGE

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR FRONT MAIN WIRING HARNESS**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Personnel Required**

Track Vehicle Repairer 91H10

**Materials/Parts**

Insulation tape (WP 0068, Item 11)

**Equipment Condition**

Front main wiring harness assembly removed from carrier (TM 9-2350-277-13&P)

---

**REPAIR**

1. Perform continuity check on front main wiring harness assembly to determine which parts require repair or replacement.
2. Repair connectors as required, see TM 9-2350-277-13&P.
3. Repair terminals as required, see TM 9-2350-277-13&P.
4. Repeat continuity check on front main wiring harness assembly to ensure that repairs have been completed.
5. Use insulation tape to bind wiring harness.

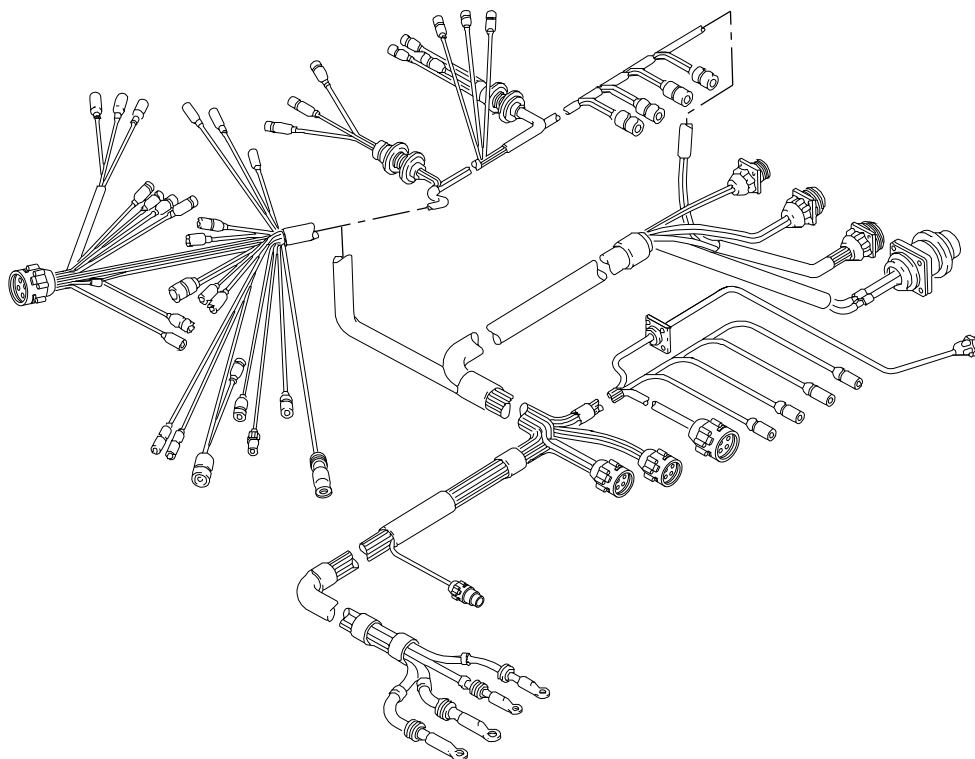


Figure 1. Front Main Wiring Harness.





**CHAPTER 6**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**TRANSMISSION**

**CHAPTER 6**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPAIR/OVERHAUL TRANSMISSION ASSEMBLY.....	0015

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**SUSTAINMENT MAINTENANCE**  
**REPAIR/OVERHAUL TRANSMISSION ASSEMBLY**

---

**INITIAL SETUP:****Personnel Required**

Track Vehicle Repairer 91H10

TM 9-2520-272-40P

**Equipment Condition**Transmission assembly removed from carrier  
(TM 9-2350-277-13&P)**References**

TM 9-2520-272-40

---

**REPAIR OR REPLACEMENT**

1. To repair/overhaul transmission assembly, see TM 9-2520-272-40 and TM 9-2520-272-40P.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



**CHAPTER 7**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**FINAL DRIVE**

**CHAPTER 7**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPAIR/OVERHAUL FINAL DRIVE ASSEMBLY.....	0016

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR/OVERHAUL FINAL DRIVE ASSEMBLY**

---

**INITIAL SETUP:****Personnel Required**

Track Vehicle Repairer 91H10

NMWR 9-2520-574

**Equipment Condition**Final drive assembly removed from carrier  
(TM 9-2350-277-13&P)**References**TM 9-2520-238-34  
TM 9-2520-238-34P

---

**REPAIR OR REPLACEMENT**

1. To repair/overhaul final drive assembly, see TM 9-2520-238-34, TM 9-2520-238-34P, and NMWR 9-2520-574.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**





**CHAPTER 8**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**WHEELS AND TRACK**

**CHAPTER 8**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPAIR TRACK TENSION ADJUSTER.....	0017

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR TRACK TENSION ADJUSTER**

---

**INITIAL SETUP:****Tools and Special Tools**

Arbor Press (WP 0069, Item 18)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Materials/Parts**

Engine oil (WP 0068, Item 8)  
Repair kit P/N 5703829  
Sleeve bearing (2)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Track tension adjuster removed from carrier  
(TM 9-2350-277-13&P)

---

**DISASSEMBLY**

1. Loosen bleeder valve (Figure 1, Item 16). Push plunger (Figure 1, Item 8) in as far as it will go.
2. Maintain inward pressure on plunger (Figure 1, Item 8) and rotate counterclockwise until plunger rotates freely.
3. Pull plunger (Figure 1, Item 8) from piston (Figure 1, Item 2).
4. Remove retaining ring (Figure 1, Item 9), wiper ring (Figure 1, Item 10), and packing (Figure 1, Item 11) from piston (Figure 1, Item 2). Discard retaining ring, wiper ring, and packing.
5. Press bearing (Figure 1, Item 12) about 1 inch (3 cm) in piston (Figure 1, Item 2) to force retaining ring (Figure 1, Item 13) from groove in piston.
6. Pull bearing (Figure 1, Item 12) from piston (Figure 1, Item 2). Discard bearing.
7. Turn retaining ring (Figure 1, Item 13) 90 degrees in piston (Figure 1, Item 2). Remove ring from piston. Discard ring.
8. Close bleeder valve (Figure 1, Item 16). Force grease through lubrication fitting (Figure 1, Item 15) until piston assembly (Figure 1, Item 14) is forced from piston (Figure 1, Item 2).
9. Use a clean cloth to remove excess grease from piston assembly (Figure 1, Item 14) and piston (Figure 1, Item 2).

**NOTE**

**Packing set may be a five or seven piece design.**

10. Remove retaining ring (Figure 1, Item 3), bearing (Figure 1, Item 4), and five packings (Figure 1, Item 5), (Figure 1, Item 6), and (Figure 1, Item 7) from piston assembly (Figure 1, Item 14). Discard packings, bearing, and retaining ring.
11. Remove bleeder valve (Figure 1, Item 16) and lubrication fitting (Figure 1, Item 15) from piston (Figure 1, Item 2).
12. Press two sleeve bearings (Figure 1, Item 1) from piston (Figure 1, Item 2) and plunger (Figure 1, Item 8). Discard sleeve bearings.

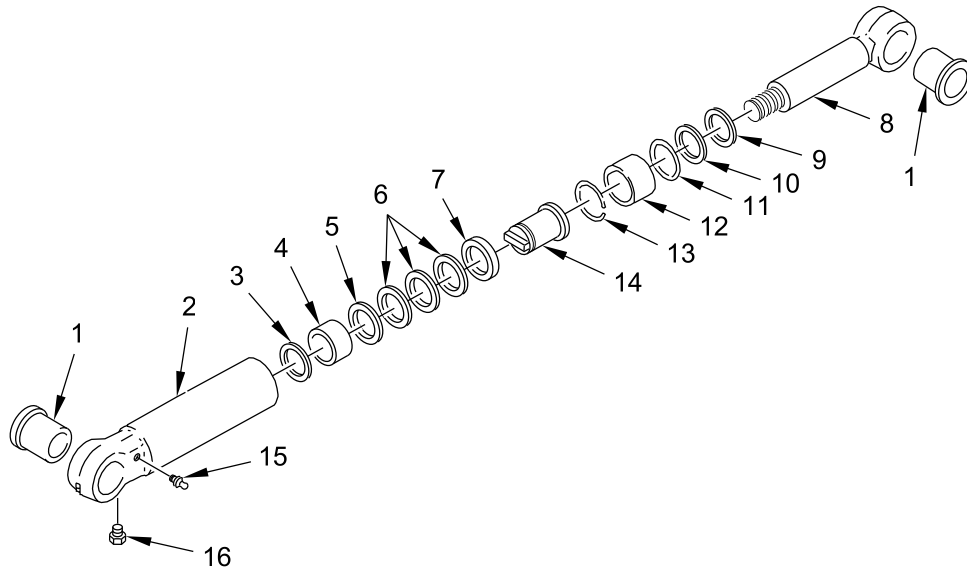


Figure 1. Track Tension Adjuster – Removal.

## END OF TASK

## INSPECT AND REPAIR

1. Check threads of plunger (Figure 2, Item 8) and piston (Figure 2, Item 2). Chase damaged threads with a die. Replace parts as a matched set if the threads of either part are stripped or worn.
2. Check machined surfaces of piston (Figure 2, Item 2) and plunger (Figure 2, Item 8). Remove grooves and scratches. Replace parts that have deep grooves and scratches or are worn.

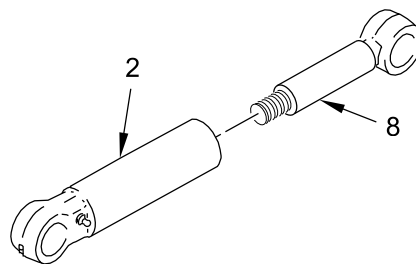


Figure 2. Inspection/Repair.

3. Check parts shown in Table 1, page 0017-5 that have reference letters.
4. Check the parts dimensions with Table 1, page 0017-5 to determine replacement.

## END OF TASK

**ASSEMBLY**

1. Press new sleeve bearing (Figure 3, Item 1) in piston (Figure 3, Item 2) from side opposite lubrication fitting (Figure 3, Item 15). Use arbor press.
2. Press new sleeve bearing (Figure 3, Item 1) in plunger (Figure 3, Item 8). Use arbor press.

**NOTE**

**Packings, bearings, and retaining rings are part of repair kit P/N 5703829.**

3. Install five new packings (Figure 3, Item 5), (Figure 3, Item 6), and (Figure 3, Item 7), new bearing (Figure 3, Item 4), and new retaining ring (Figure 3, Item 3) on piston assembly (Figure 3, Item 14).
4. Apply a light coat of engine oil to piston assembly (Figure 3, Item 14) and to inside of piston (Figure 3, Item 2).
5. Install piston assembly (Figure 3, Item 14) in piston (Figure 3, Item 2).
6. Install new retaining ring (Figure 3, Item 13) in piston (Figure 3, Item 2). Make sure it seats in groove.
7. Install new bearing (Figure 3, Item 12) in piston (Figure 3, Item 2).
8. Install new packing (Figure 3, Item 11), new wiper ring (Figure 3, Item 10), and new retaining ring (Figure 3, Item 9) in piston (Figure 3, Item 2).
9. Install plunger (Figure 3, Item 8) in piston (Figure 3, Item 2). Maintain inward pressure on plunger and rotate clockwise until secure.
10. Install bleeder valve (Figure 3, Item 16) and lubrication fitting (Figure 3, Item 15) in piston (Figure 3, Item 2).

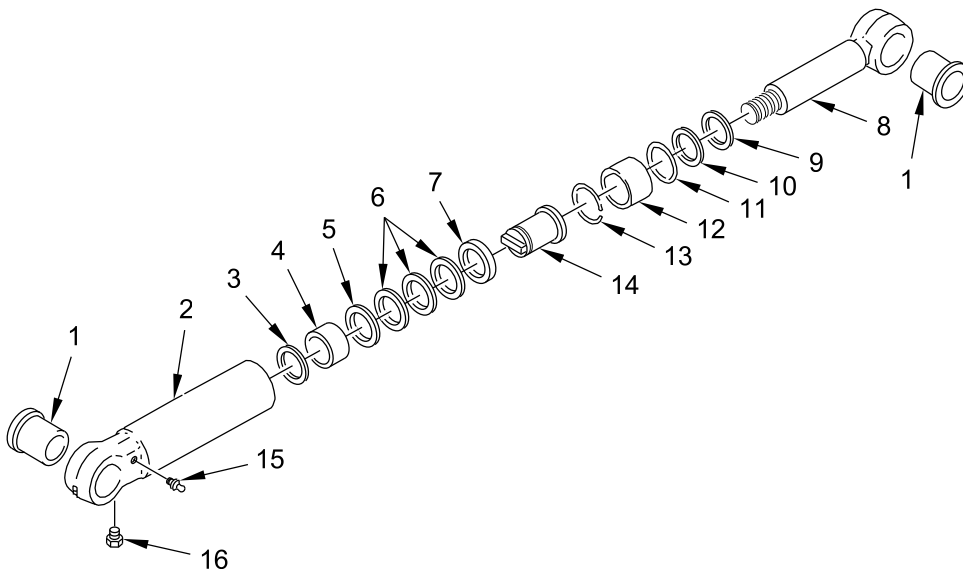


Figure 3. Track Tension Adjuster – Installation.

Table 1. Track Tension Adjuster.

Reference Letter	Point of Measurement	Sizes and Fits of New Parts	Wear Limits
A	Outside diameter of plunger	1.7580 to 1.7600	1.7560
B	Outside diameter of piston assembly	1.9940 to 1.9970	1.9930
C	Inside diameter of piston bearing	1.7620 to 1.7650	1.7670
D	Outside diameter of piston	1.4990 to 1.5010	1.4980
E	Outside diameter of sleeve	1.8780 to 1.8830	*
F	Inside diameter of sleeve	1.5200 to 1.5300	1.5450
G	Inside diameter of piston or plunger bearing bore	1.8740 to 1.8760	*
H	Inside diameter of piston bearing	1.5030 to 1.5060	1.5160
I	Outside diameter of piston bearing	1.9940 to 1.9970	1.9930
J	Inside diameter of piston bearing	1.9990 to 2.0010	2.0020

\* Must be within new parts dimensions.

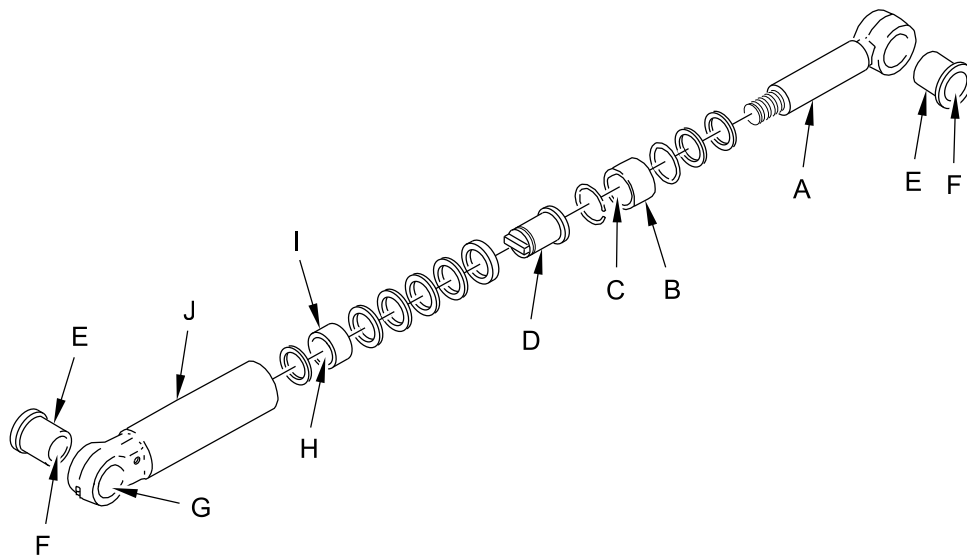


Figure 4. Track Tension Adjuster Specifications.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**





**CHAPTER 9**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**STEERING**

**CHAPTER 9**  
**MAINTENANCE INSTRUCTIONS**

---

**WORK PACKAGE INDEX**

---

Title	WP Sequence No.
REPAIR STEERING BRACKET AND SHAFT HOUSING BEARINGS.....	0018

---

**SUSTAINMENT MAINTENANCE**  
**REPAIR STEERING BRACKET AND SHAFT HOUSING BEARINGS**

---

**INITIAL SETUP:****Tools and Special Tools**

Arbor Press (WP 0069, Item 18)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Materials/Parts**

Bearing  
Bearing  
Bearing (2)

Bearing

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Steering brackets removed from carrier  
(TM 9-2350-277-13&P)

---

**DISASSEMBLY**

1. Press two bearings (Figure 1, Item 1) and (Figure 1, Item 3) from bracket (Figure 1, Item 2). Discard bearings.

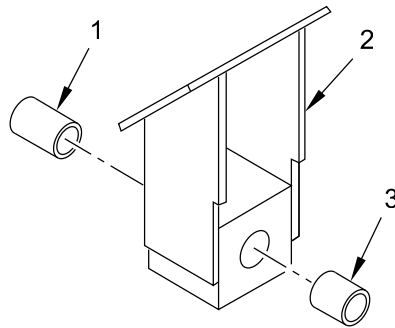


Figure 1. Steering Bracket Bearing – Removal.

2. Press three bearings (Figure 2, Item 4), (Figure 2, Item 6), and (Figure 2, Item 7) from housing (Figure 2, Item 5). Discard bearings.

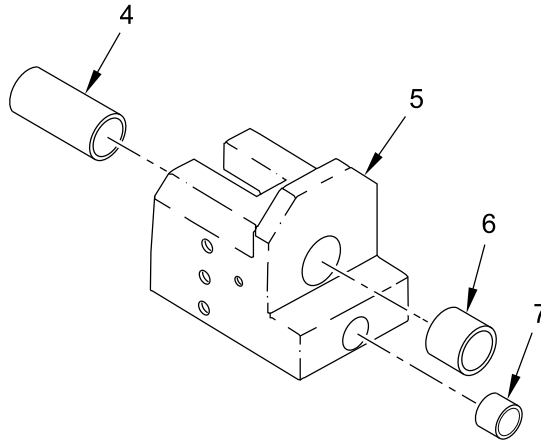


Figure 2. Shaft Housing Bearing – Removal.

#### END OF TASK

#### ASSEMBLY

1. Place three new bearings (Figure 3, Item 4), (Figure 3, Item 6), and (Figure 3, Item 7) on housing (Figure 3, Item 5) and press into place.

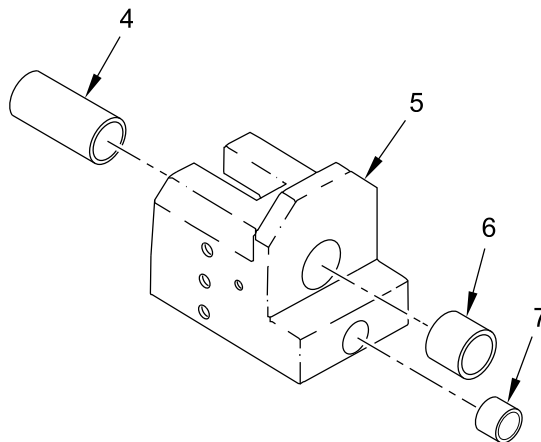


Figure 3. Shaft Housing Bearing – Installation.

2. Place two new bearings (Figure 4, Item 1) and (Figure 4, Item 3) on bracket (Figure 4, Item 2) and press into place.

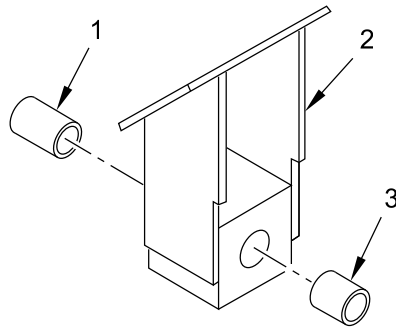


Figure 4. Steering Bracket Bearing – Installation.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



**CHAPTER 10**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**SHOCK ABSORBERS**

**CHAPTER 10**  
**MAINTENANCE INSTRUCTIONS**

---

**WORK PACKAGE INDEX**

---

Title	WP Sequence No.
REPAIR SHOCK ABSORBER.....	0019



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**SUSTAINMENT MAINTENANCE****REPAIR SHOCK ABSORBER**

---

**INITIAL SETUP:****Tools and Special Tools**

- Arbor Press (WP 0069, Item 18)
- General Mechanic's Tool Kit (WP 0069, Item 29)
- Positioner (WP 0069, Item 17)
- Stake (WP 0069, Item 24)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Shock absorber removed from carrier  
(TM 9-2350-277-13&P)

**Materials/Parts**

- Bearing (2)
- 

**DISASSEMBLY**

1. Remove two self-aligning bearings (Figure 1, Item 2) from shock absorber (Figure 1, Item 1). Use press (Figure 1, Item 3), support (Figure 1, Item 5), and positioner (Figure 1, Item 4). Discard bearings.

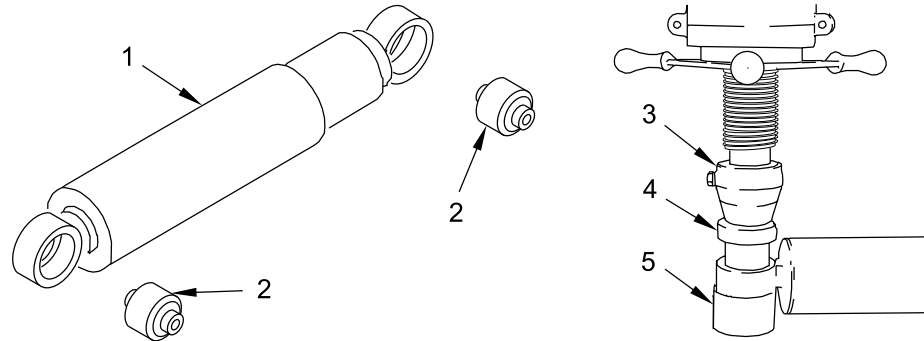


Figure 1. Shock Absorber – Removal.

**END OF TASK**

**ASSEMBLY**

1. Install two new self-aligning bearings (Figure 2, Item 2) in shock absorber (Figure 2, Item 1). Use press (Figure 2, Item 3), support (Figure 2, Item 5), and positioner (Figure 2, Item 4).

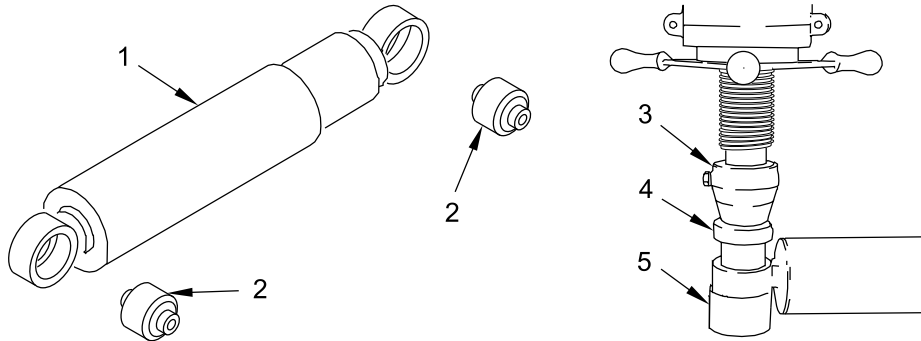


Figure 2. Shock Absorber – Installation.

2. Stake two self-aligning bearings (Figure 3, Item 2) into shock absorber (Figure 3, Item 1). Use press (Figure 3, Item 3), stake (Figure 3, Item 6), and positioner (Figure 3, Item 4).

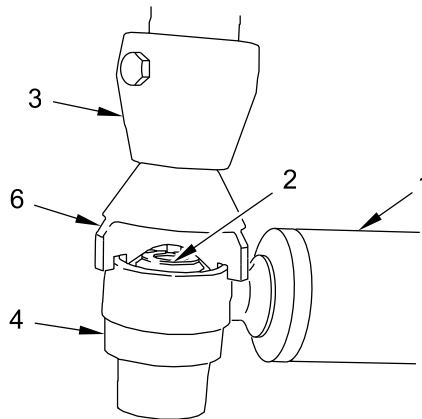


Figure 3. Bearing Staking.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**

**CHAPTER 11**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**RAMP ACCESS DOOR**

**CHAPTER 11**  
**MAINTENANCE INSTRUCTIONS**

---

**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPLACE RAMP ACCESS DOOR HINGE BEARINGS (M113A3 ONLY).....	0020

**SUSTAINMENT MAINTENANCE****REPLACE RAMP ACCESS DOOR HINGE BEARINGS (M113A3 ONLY)****INITIAL SETUP:****Tools and Special Tools**

- Arbor Press (WP 0069, Item 18)
- General Mechanic's Tool Kit (WP 0069, Item 29)

**Personnel Required**

- Track Vehicle Repairer 91H10

**Materials/Parts**

- Bearing (2)

**Equipment Condition**

- Ramp access door and hinges removed from carrier (TM 9-2350-277-13&P)

**REMOVAL**

1. Remove bearings (Figure 1, Item 1) from door hinges (Figure 1, Item 2). Use arbor press.

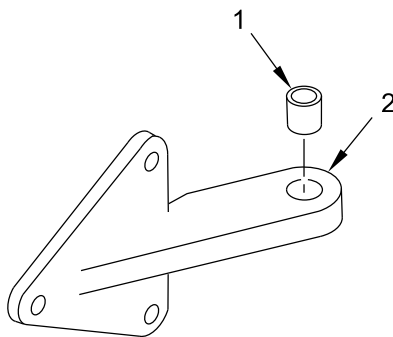


Figure 1. Ramp Access Door Hinge Bearings – Removal.

**END OF TASK****INSTALLATION**

1. Install new bearings (Figure 2, Item 1) in door hinges (Figure 2, Item 2). Use arbor press.

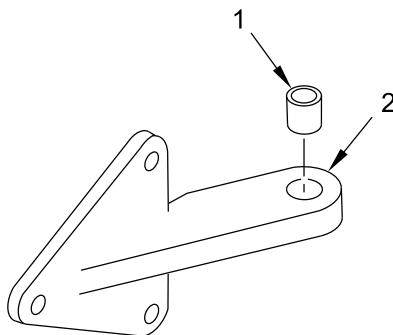


Figure 2. Ramp Access Door Hinge Bearings – Installation.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**

**CHAPTER 12**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**HULL ACCESSORY ITEMS**

**CHAPTER 12**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
REPAIR TENT (M577A3 ONLY).....	0021



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**SUSTAINMENT MAINTENANCE**
**REPAIR TENT (M577A3 ONLY)**


---

**INITIAL SETUP:****Tools and Special Tools**

Industrial Sewing Machine (WP 0069, Item 22)  
 General Mechanic's Tool Kit (WP 0069, Item 29)

**Materials/Parts**

Adhesive sealant (WP 0068, Item 3)  
 Canvas preservative coating (WP 0068, Item 4)  
 Cleaning compound (WP 0068, Item 5)  
 Cotton duck cloth (WP 0068, Item 6)  
 Polyester thread (WP 0068, Item 12)

**Personnel Required**

Fabric Repairman 91E10

**References**

FM 10-16

**Equipment Condition**

Tent removed from carrier (TM 9-2350-277-13&P)

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**INSPECTION OF INSTALLED ITEMS**

1. Check tent. Mark defects to be repaired.

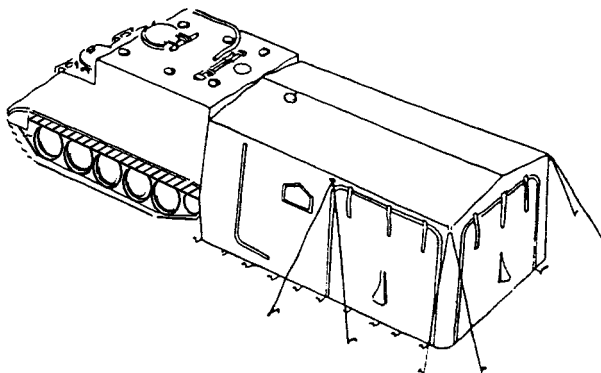


Figure 1. Defect Marking.

2. Check framework, support leg, ridge, eave and bow poles, joints, adjusting pins and chains. Remove burs. Straighten bends and dents. Weld broken joints. Replace badly damaged parts.
3. Check tensile strength of fabric. Grasp a small fold of fabric between thumb and forefinger of each hand, gripping it closely so tips of forefingers touch. Test material against threads that run the length of material. The weaker cross threads should not be used for testing tensile strength. Tug material several times. If it does not rip, it is repairable. If it tears on first tug, test several areas for extent of damage. Weak sections must be replaced.
4. Check fabric. Repair sections that have been weakened by stains or that cannot be brushed clean. Repair or replace sections that are worn or torn or have a large number of patches.
5. Check stitching. Repair runoffs and broken threads. Restitch weak stitching and open seams.
6. Check webbing. Repair or replace tie tapes, guy lines, corner straps and web reinforcements that are frayed, worn or torn.
7. Check leather. Replace leather reinforcements that are cracked, worn or weak.
8. Check hardware. Replace parts that are broken, bent, corroded or missing.

9. Check toggles. Replace split, broken or missing toggles.
10. Check loops, guy lines, foot stops and mounting lines. Replace parts that have frayed or broken strands or raveled ends.
11. Check netting. Replace torn netting.

**END OF TASK****REPAIR OR REPLACEMENT****NOTE**

**To repair fabric, use 12-19/64 ounce (363 ml) per square cotton sateen or cotton duck and size FF polyester thread. The cloth and thread must be fire, water, weather and mildew resistant.**

1. Use lockstitching to install all patches, straps, flaps and side fasteners and to repair open seams. Use smallest needle size you can to make weatherproof seams. Allow five to seven stitches per 1 inch (3 cm). Backstitch all thread breaks at least 1 inch (3 cm). Backstitch all ends at least 1 inch (3 cm), except where ends are turned under in a hem or seam or held down by other stitching. Maintain thread tension so stitching is tight and lock is firmly fixed in center of material. Trim all ends. Take care, when restitching, to make a new stitch line. All hardware, leather, webbing, lines and netting used for repair must be the same as the original material.

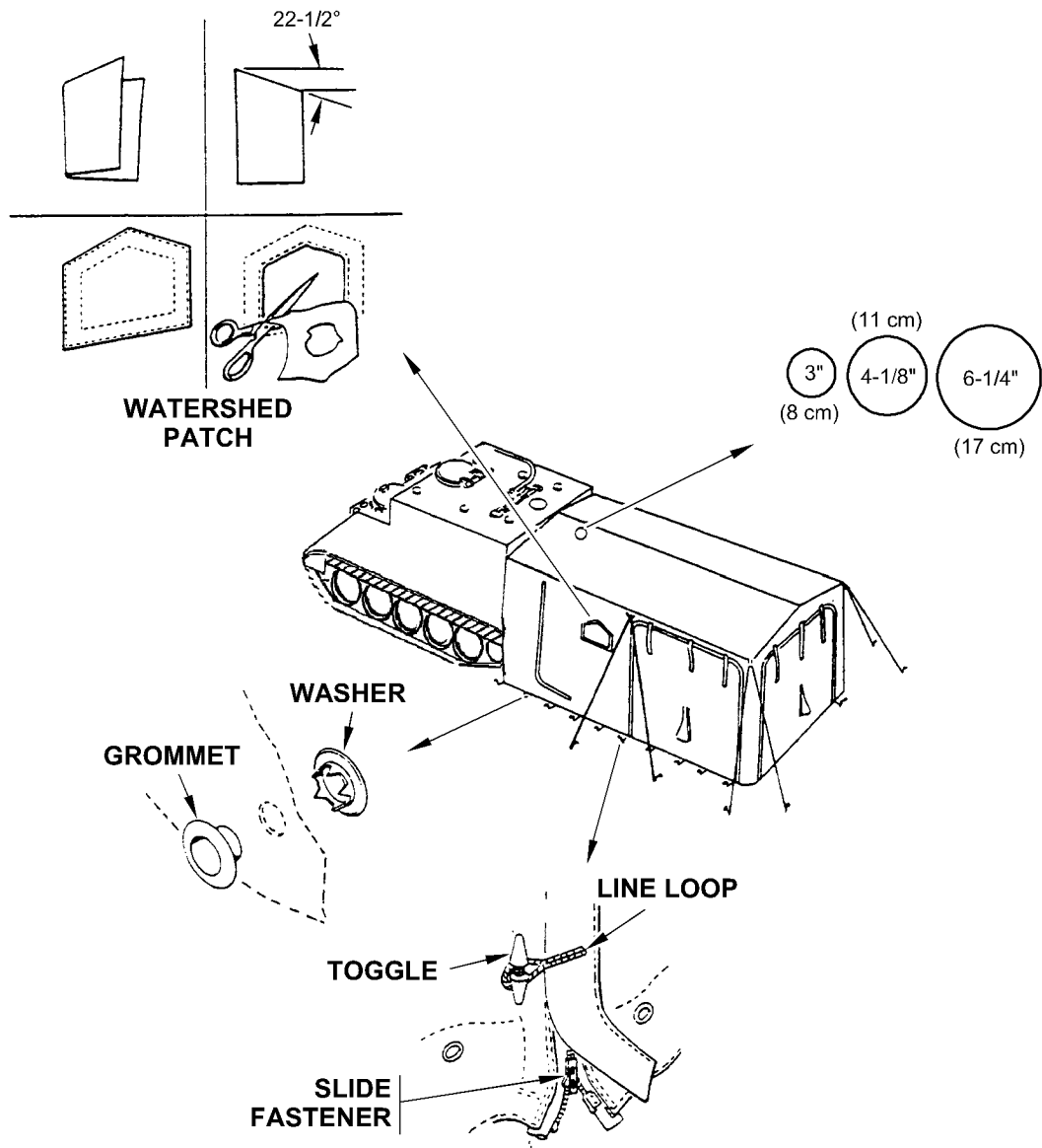


Figure 2. Fabric Repair.

**NOTE**

A hole or tear in the tent more than 4-3/4 inch (12 cm) in diameter or length may be repaired by a cement patch. The tear must not occur on seams, edges, or areas that support hardware. The materials used to make a cement patch are adhesive, round patches, roller, board, wire brush, and soft bristled brush. For cement patch repair, do **Step 2** - **Step 9**.

2. Select one of three sizes of patches that will overlap damaged area with a margin of at least 3/4 inch (19 cm) on all sides.

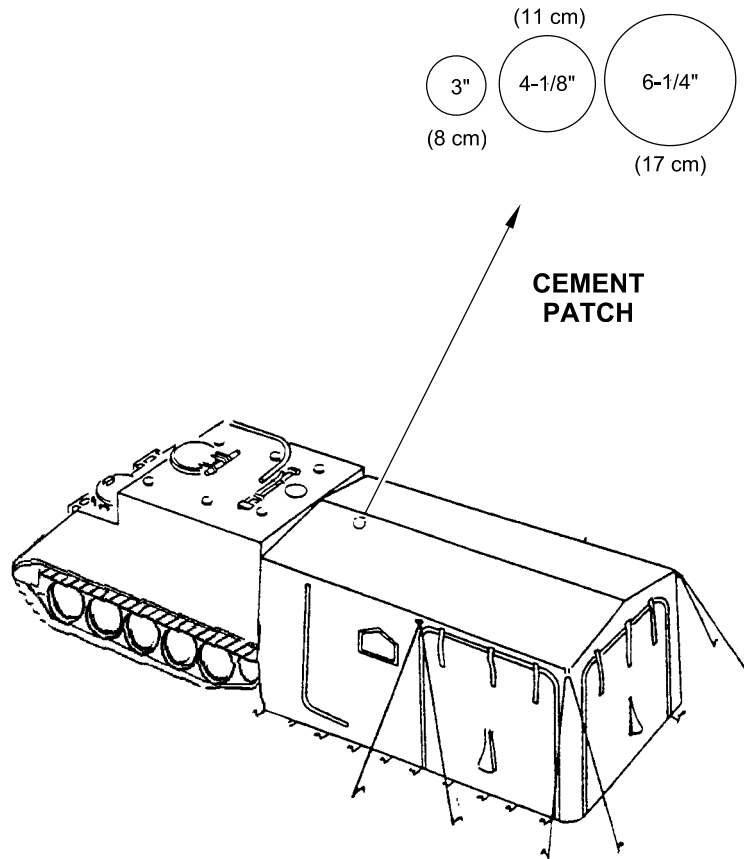


Figure 3. Patch Measurements.

3. Place board under damaged area for a flat working surface.
4. Buff patch and damaged area of tent with a wire brush.

### WARNING



**Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.**

**Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.**

5. Center patch over damaged area. Apply adhesive to patch and patch edge with a soft bristle brush, making a circle on tent.
6. Lift patch. Apply adhesive to area of tent inside adhesive circle.
7. Allow adhesive to dry until tacky.
8. Press cement surfaces together firmly with roller while tacky.
9. Seal by wiping edge of patch with soft bristle brush.

**NOTE**

The watershed patch has the top edge angled to give a roof effect. Because the roof-type top edge sheds water, the patch lasts longer than a rectangular patch. For watershed patch repair, do **Step 10 - Step 14**.

10. Cut patch large enough to overlap 2 inches (5 cm) on all sides of area to be repaired. Allow for 3/4 inch (19 mm) turn-under of edge.

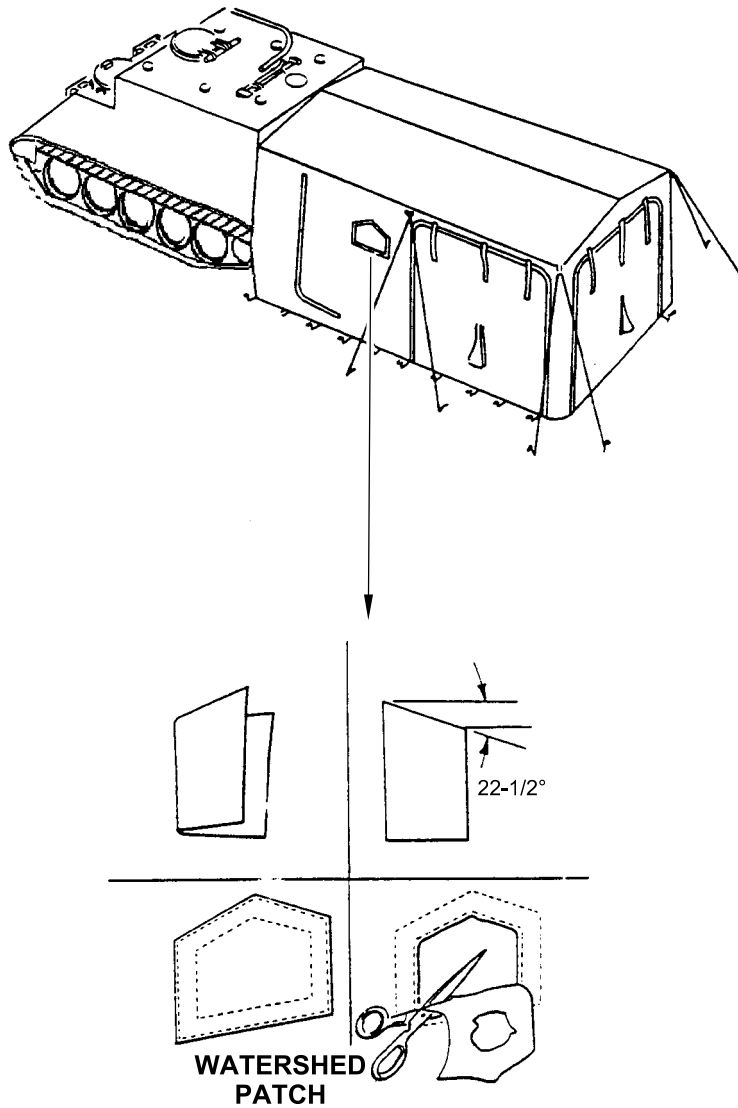


Figure 4. Patch Application.

11. Fold patch in half lengthwise. Cut from open edges to folded edge at 22-1/2 degree angle.
12. Center patch over damaged area on outside of tent. Turn under patch edges. Stitch in place with a row of stitching no more than 1/8 inch (3 mm) from the edge.
13. Secure patch to tent with a second row of stitching. Place second row 3/8 inch to 1/2 inch (10-13 mm) from first row.
14. Turn material over. Cut away damaged area, notch corners, and turn edges in. Stitch turned edges to patch with a row of stitching no more than 1/8 inch (3 mm) from the edge.

#### **NOTE**

**Extensive damage between seams is repaired with a seam-to-seam patch. For seam-to-seam patch repair, do Step 15 - Step 19.**

15. Open seam 2 inches (5 cm) beyond damaged area on both sides.
16. Square off damaged area from seam to seam.
17. Cut patch 2 inches (5 cm) wider than squared-off section. Allow for 3/4 inch (19 mm) turn-under on sides.
18. Center patch over cutaway section. Turn sides under and reform double-felled seams at top and bottom.
19. Finish by stitching patch into place.
20. Install webbing and reinforcements. Machine stitch a rectangular pattern 1/8 inch (3 mm) in from the edges, a set of stitches 1/8 inch (3 mm) in from end stitchings, and diagonal stitches from corner to corner.

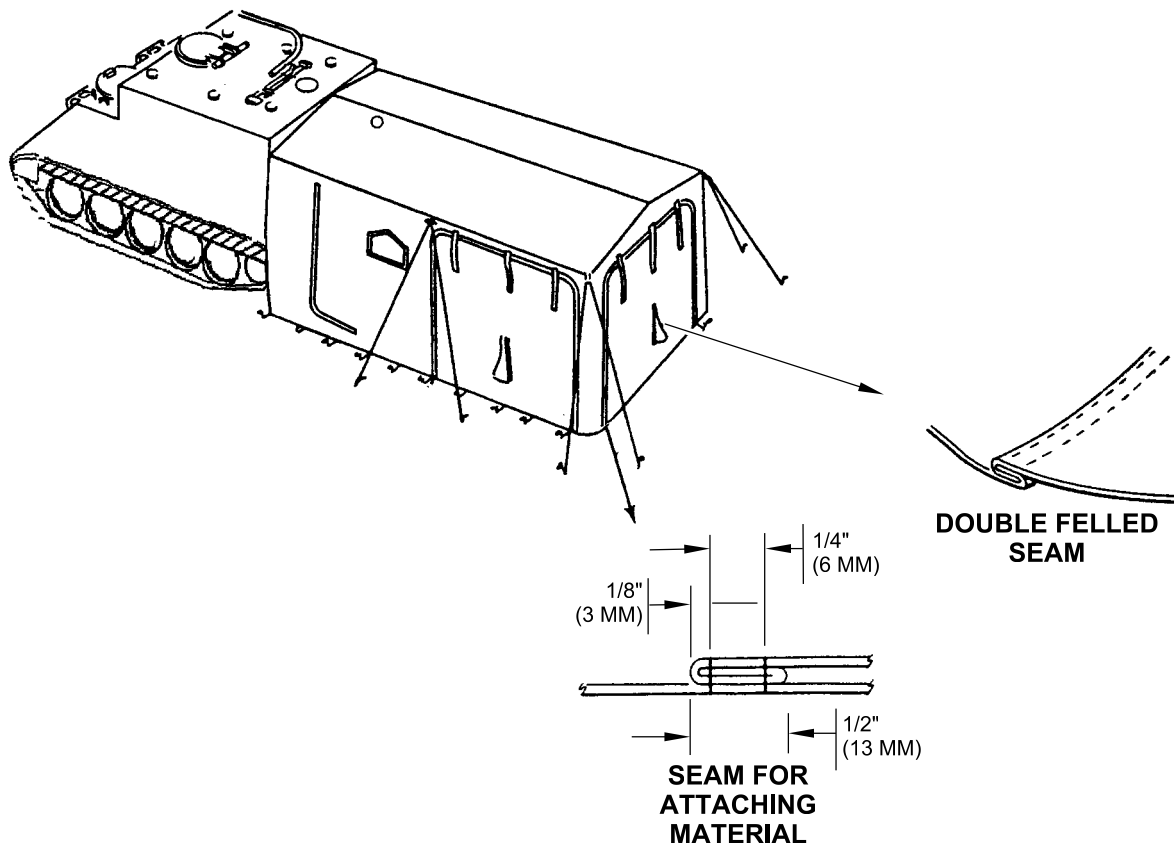


Figure 5. Webbing Reinforcement.



21. Attach all leather reinforcements. Use the same stitching method used for webbing.
22. Install end clips. Insert strap into ball-type end clip. Flatten clip with hammer.
23. Install grommets per FM 10-16. Holes punched in the material to receive grommets shall be smaller than outside diameter of grommet barrel. Clinch grommets firmly without cutting material.

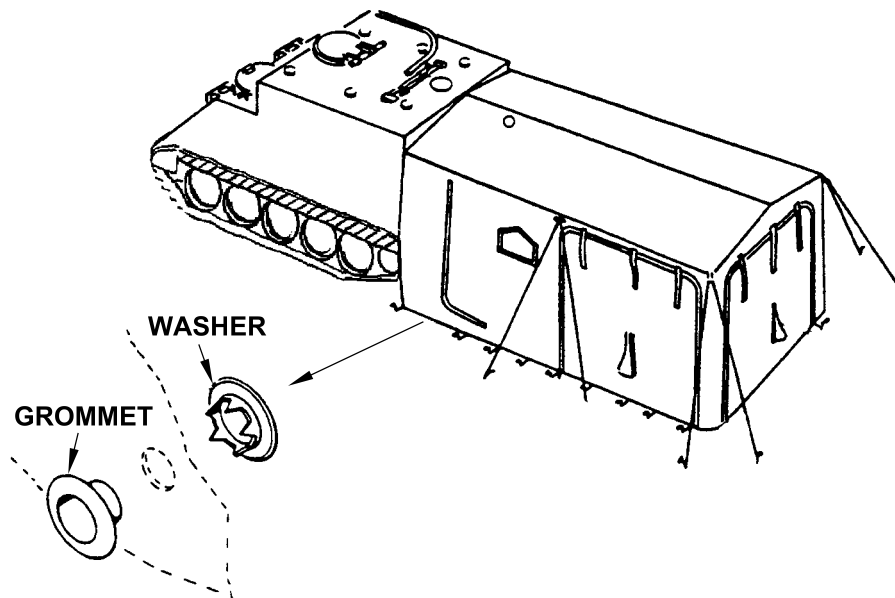


Figure 6. Grommet – Installation.

24. Install line loops in fastener flaps. Use hand-sewn, overcast stitch. See FM 10-16 for overcast stitch and information on hand sewing.

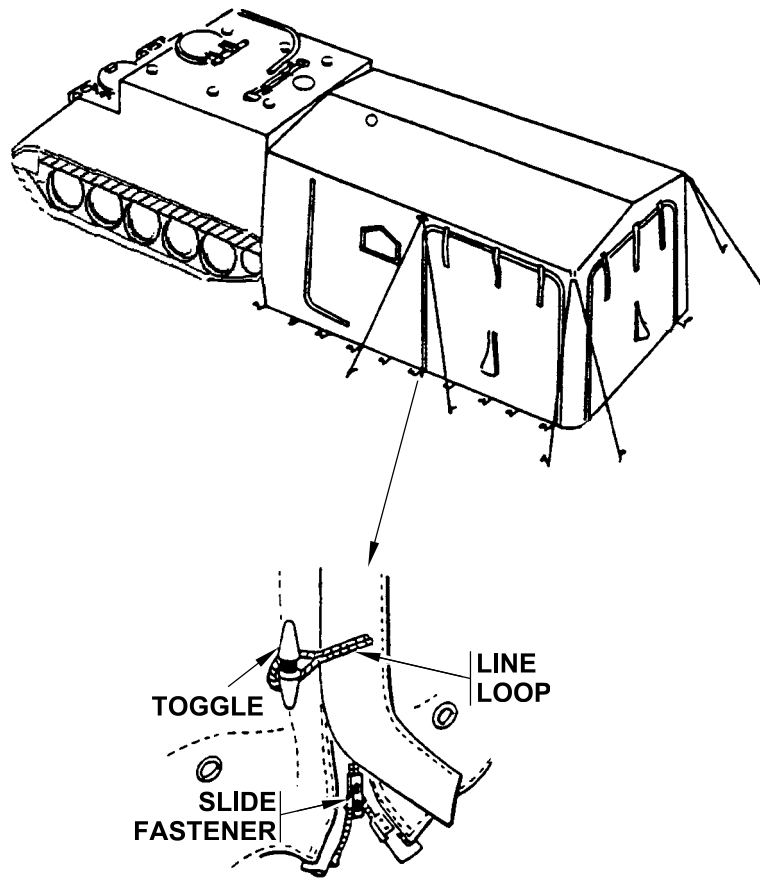


Figure 7. Line Loop – Installation.

25. Install netting. Use machine stitching.

### WARNING



**Adhesive, primer, sealant compounds, and isopropyl alcohol are toxic and flammable. These compounds are toxic to eyes, skin, and respiratory tract. Continued exposure can make you dizzy and irritate your eyes and throat.**

**Always use in well ventilated areas, away from heat, sparks, and flames. Do not breathe fumes. Do not allow into contact with skin and eyes. Use goggles or face shield and protective gloves.**

26. Make sure tent is dry. Remove dirt, oil and grease stains.
27. Erect tent (TM 9-2350-277-13&P).
28. Reduce paste to spray consistency by mixing with cleaning compound.
29. Apply compound by spray gun. Operator should wear respirator.
30. Apply compound to patches and newly repaired areas.
31. Allow at least 24 hours for tent to dry.

### **FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



**CHAPTER 13**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**AUXILIARY GENERATOR**

**CHAPTER 13**  
**MAINTENANCE INSTRUCTIONS**

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**WORK PACKAGE INDEX**

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Title	WP Sequence No.
■ REPAIR AUXILIARY POWER UNIT COVER (M577A3 ONLY).....	0022

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**SUSTAINMENT MAINTENANCE****REPAIR AUXILIARY POWER UNIT COVER (M577A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Industrial Sewing Machine (WP 0069, Item 22)

**References**

FM 10-16

**Materials/Parts**

Adhesive sealant (WP 0068, Item 3)

Vinyl coated nylon cloth (WP 0068, Item 18)

**Equipment Condition**

Cover removed from carrier (TM 9-2350-277-13&amp;P)

**Personnel Required**Fabric Repairman 91E10

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**INSPECTION OF INSTALLED ITEMS**

1. Check fabric. Weak or torn areas may be repaired by a cement patch or machined patch. All material used to repair the cover must be the same as the original material.
2. Check tensile strength of fabric. Grasp a small fold of fabric between thumb and forefinger of each hand, gripping it closely so tips of forefingers touch. Tug material several times. If it does not rip, it is repairable. If it tears on first tug, test several areas for extend of damage. Weak sections must be replaced.
3. Check for spots and stains. Non-wear spots and stains are all right if fabric has been brushed clean. Repair fabric where fabric strength has been weakened by mildew, sap, or dirt stains.
4. Check fabric. Repair opened seams, runoff stitching, and broken threads. Restitch worn stitching.
5. Check webbing straps. Repair or replace worn, frayed, or torn straps.
6. Check buckles. Replace buckles that are bent, broken, or missing.
7. Check for slide fasteners (zippers). Replace zippers that are rusted or do not work correctly.
8. Check eyelets, washers, and studs. Replace parts that are bent, broken, or missing.

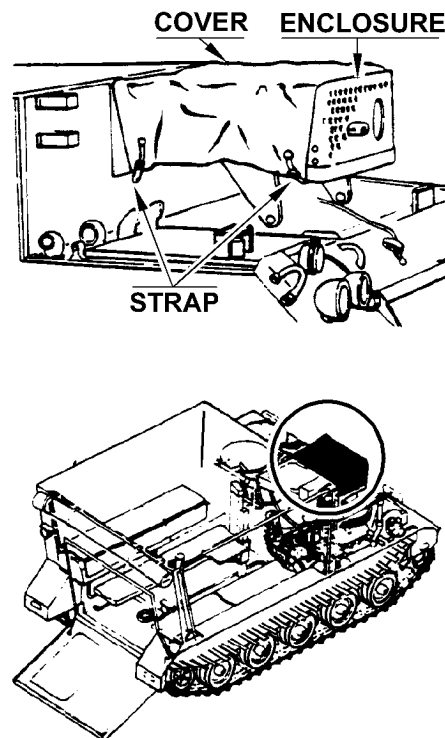


Figure 1. Inspection of Installed Items.

**END OF TASK**



**REPAIR OR REPLACEMENT****NOTE**

The materials used to make a cement patch are adhesive, round patch of vinyl coated nylon cloth, roller, board, wire brush, and soft bristle brush.

1. Select patch that overlaps damaged area with a margin of at least 3/4 inch (19 mm) on all sides.
2. Place board under damaged area for a flat working surface.
3. Buff patch and damaged area of fabric with wire brush.

**WARNING**

**Adhesive is flammable and can injure you. Keep it away from heat, sparks, and open flame. Avoid repeated or prolonged breathing of vapors. Avoid contact with your skin.**

4. Center patch over damaged area. Apply adhesive to patch and patch edge, making a circle on fabric with soft bristle brush.
5. Lift patch. Apply adhesive to area of fabric inside adhesive circle.
6. Allow adhesive to dry until tacky (about ten minutes).
7. Press cement surfaces together firmly with roller while tacky.
8. Seal by wiping edge of patch with soft bristle brush.
9. Install or repair webbing using machine stitching in a square pattern with diagonal stitches from corner to corner.

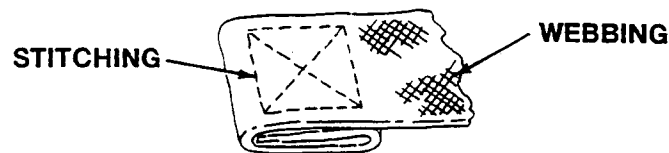


Figure 2. Patch – Repair.

10. Repair hardware as shown in the following figure. See FM 10-16 for installation of eyelets and studs with washers.

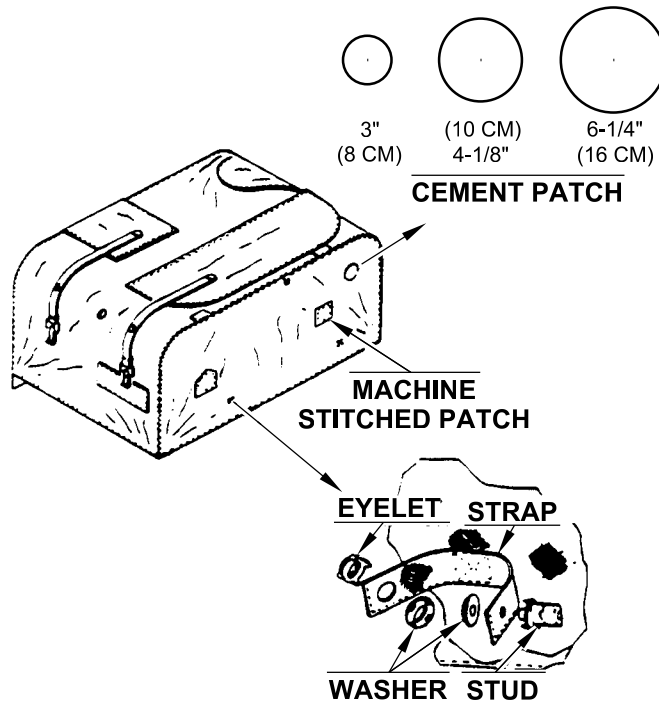


Figure 3. Eyelet and Stud – Repair.

#### NOTE

Use lock stitching when you install patches, flaps, and straps or repair open seams. Use polyester thread and smallest needle you can to make weatherproof seams. Allow five to seven stitches per inch (3 cm). Backstitch all thread breaks at least one inch (three cm). Backstitch all ends at least one inch (three cm), except where ends are turned under in a hem or seam or held down by other stitching. Maintain thread tension so stitching is tight and lock is fixed firmly in center of material. Trim all ends. Take care when restitching to make a new stitch line.

11. Repair extensive damage between seams Step 12 - Step 22.
12. Open seam two inches (five cm) beyond damaged area on both sides.
13. Square off damaged area from seam to seam.
14. Cut patch two inches (five cm) wider than squared-off section. Allow for 3/4 inch (19 mm) turnunder on sides.
15. Center patch over cutaway section. Turn sides under, and reform double-felled seams at top and bottom.
16. Finish by stitching patch into place. Secure patch to cover with a second row of stitching. Place second row 3/8 inch to 1/2 inch (10-13 mm) from first.

**NOTE**

The watershed patch is a patch with the top edge angled off to give a roof effect. Because the roof type patch sheds water, the patch lasts longer than a square patch.

17. Use watershed patches, as needed.
18. Cut patch large enough to overlap two inches (five cm) on all sides of area to be repaired. Allow for 3/4 inch (19 mm) turn under of edge.
19. Fold patch in half lengthwise. Cut from open edges to folded edge at 22-1/2 degree angle as shown in illustration.
20. Center patch over damaged area. Turn under patch edges and stitch in place with a row of stitching no more than 1/8 inch (3 mm) from edge.
21. Secure patch to cover with a second row of stitching. Place second row 3/8 inch to 1/2 inch (10-13 mm) from first.
22. Turn material over. Cut away damaged area, notch corners, and turn edges in. Stitch turned-in edges to patch with a row of stitching no more than 1/8 inch (3 mm) from edge.

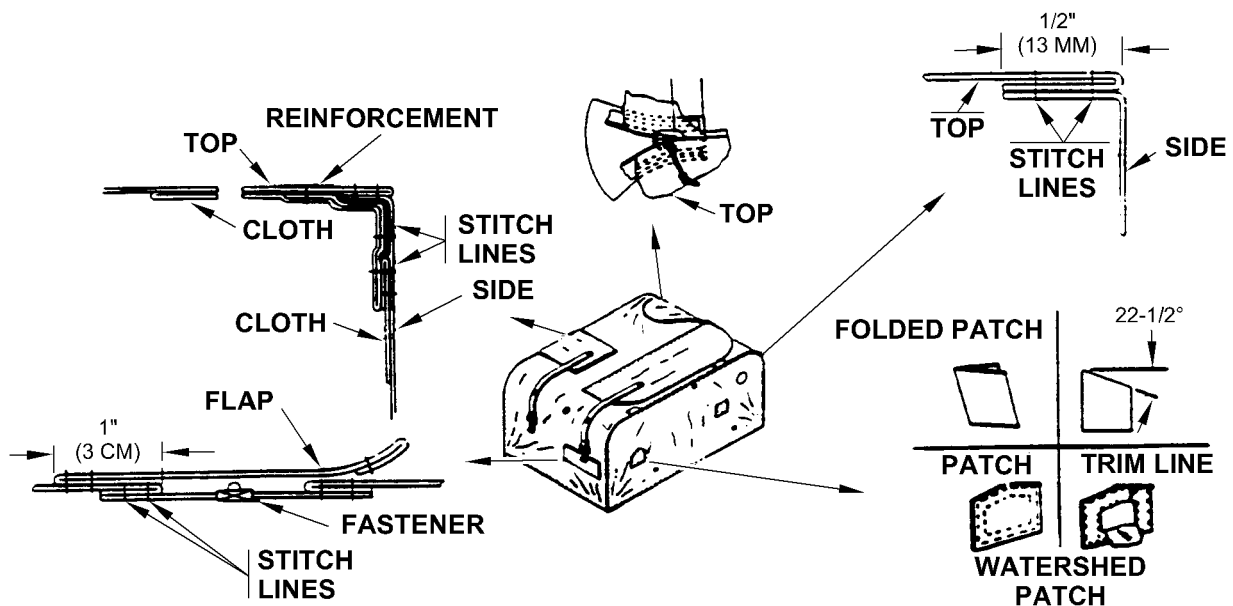


Figure 4. Extensive Damage – Repair.

**END OF TASK****FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**



**CHAPTER 14**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**SPECIAL PURPOSE KITS**

**CHAPTER 14**  
**MAINTENANCE INSTRUCTIONS**

**WORK PACKAGE INDEX**

Title	WP Sequence No.
REPAIR PERSONNEL HEATER ASSEMBLY.....	0023
INSTALL ENGINE COOLANT HEATER KIT.....	0024
FINAL TEST – COOLANT HEATER.....	0025
REPLACE FUEL CONTROL VALVE.....	0026
REPLACE RESTRICTION THERMOSTAT.....	0027
REPLACE OVERHEAT THERMOSTAT.....	0028
REPLACE FIXED RESISTOR.....	0029
REPLACE BURNER PACKING AND GASKET.....	0030
REPLACE DIODE AND MOTOR RESISTOR.....	0031
REPLACE BLOWER MOTOR.....	0032

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**SUSTAINMENT MAINTENANCE**  
**REPAIR PERSONNEL HEATER ASSEMBLY**

---

**INITIAL SETUP:****Personnel Required**

Track Vehicle Repairer 91H10

TM 9-2540-207-14&amp;P

**Equipment Condition**Personnel heater assembly removed from carrier  
(TM 9-2350-277-13&P)**References**

TM 9-2540-205-24&amp;P

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**REPAIR OR REPLACEMENT**

1. To repair personnel heater assembly, see TM 9-2540-205-24&P or TM 9-2540-207-14&P.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**





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**SUSTAINMENT MAINTENANCE**  
**INSTALL ENGINE COOLANT HEATER KIT**

---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)

**Materials/Parts**

Adhesive (WP 0068, Item 1)  
Cleaning Compound (WP 0068, Item 5)  
Sealing Compound (WP 0068, Item 15)  
Parts Kit, Vehicular Compartment Heater, P/N  
12349820  
Tie Strap (2)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Personnel heater kit installed (M113A3 and M58  
Only) (TM 9-2350-277-13&P)  
Personnel heater kit installed (M1064A3 Only)  
(TM 9-2350-277-13&P)

Battery ground lead disconnected  
(TM 9-2350-277-13&P)  
Carrier blocked (TM 9-2350-277-13&P)  
Carrier cooling system drained  
(TM 9-2350-277-13&P)  
Driver's compartment floor plates removed  
(TM 9-2350-277-13&P)  
Driver's power plant access panel removed  
(TM 9-2350-277-13&P)  
Power plant front access door opened  
(TM 9-2350-277-13&P)  
Power plant grille raised (TM 9-2350-277-13&P)  
Power plant rear access panel removed  
(TM 9-2350-277-13&P)  
Power plant removed (TM 9-2350-277-13&P)  
Rear and right front floor plates removed  
(TM 9-2350-277-13&P)

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**INSTALLATION****NOTE**

**Fuel hoses used on the engine coolant heater installation are the flareless type. If it is necessary to replace hose, the connection fittings must also be replaced.**

1. Install mounting bracket (Figure 1, Item 5) on right front sponson. Secure with four screws (Figure 1, Item 8), four washers (Figure 1, Item 7), and lockwasher (Figure 1, Item 6).

2. Install coolant pump (Figure 1, Item 11) and ground lead (Figure 1, Item 2) for wiring harness (Figure 1, Item 1) on mounting bracket (Figure 1, Item 5). Secure with clamp (Figure 1, Item 12), two screws (Figure 1, Item 13), three washers (Figure 1, Item 10), lockwasher (Figure 1, Item 4), and two nuts (Figure 1, Item 9).

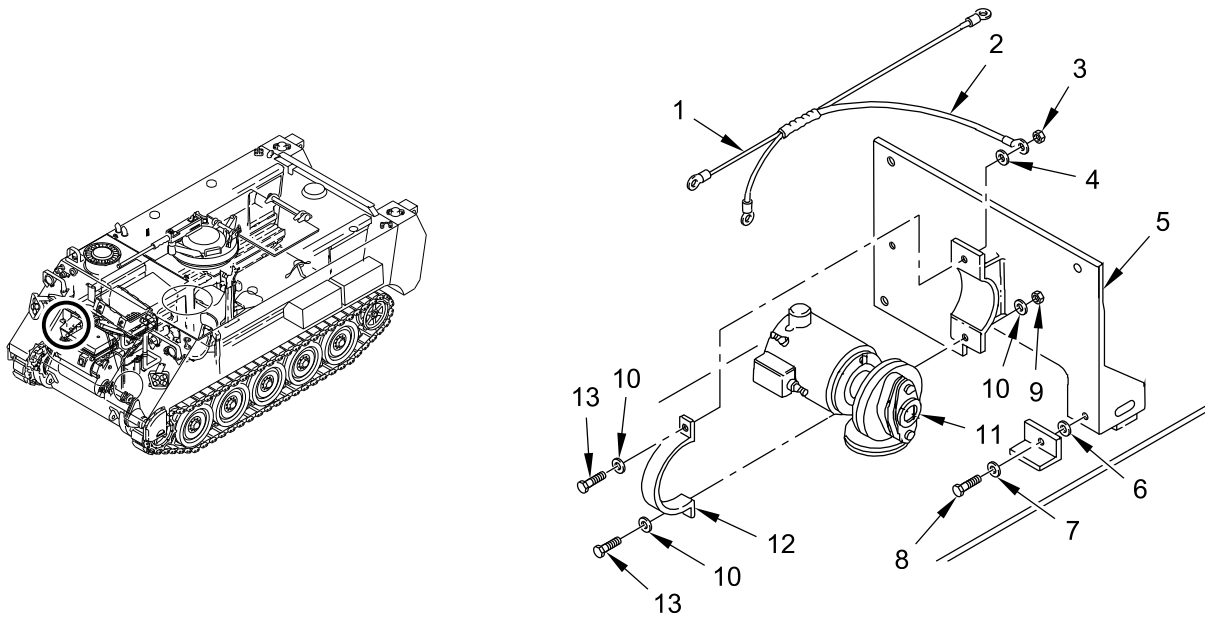


Figure 1. Mount Bracket/Coolant Pump – Installation.

3. Install two mounting saddles (Figure 2, Item 16) on mounting bracket (Figure 2, Item 5). Secure with four screws (Figure 2, Item 13), four washers (Figure 2, Item 10), and four nuts (Figure 2, Item 3).
4. Install two clamps (Figure 2, Item 15) on two mounting saddles (Figure 2, Item 16).
5. Install coolant heater (Figure 2, Item 14) on two mounting saddles (Figure 2, Item 16). Secure with two clamps (Figure 2, Item 15).

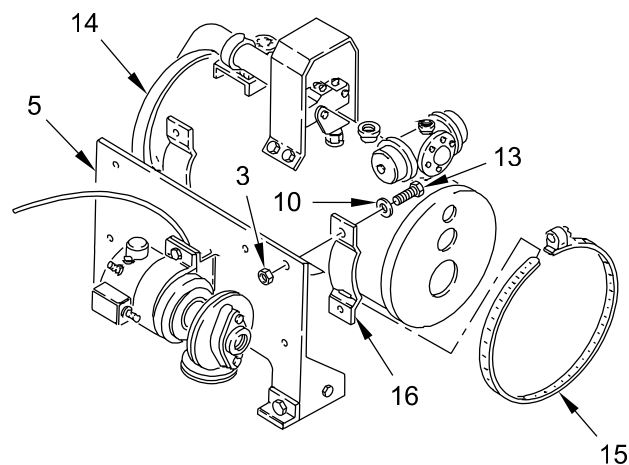


Figure 2. Mounting Saddle/Coolant Heater – Installation.

6. Apply sealing compound to external tapered threads of bushings (Figure 3, Item 17), (Figure 3, Item 21), and (Figure 3, Item 24), two shutoff cocks (Figure 3, Item 20), and three elbows (Figure 3, Item 19), (Figure 3, Item 22), and (Figure 3, Item 27). Do not apply sealing compound beyond small end of tapered threads.
7. Install bushing (Figure 3, Item 24), shutoff cock (Figure 3, Item 20), and elbow (Figure 3, Item 27) in pump (Figure 3, Item 11).
8. Install elbow (Figure 3, Item 22) on control valve (Figure 3, Item 23).
9. Install tee (Figure 3, Item 17) in coolant heater (Figure 3, Item 14).
10. Install bushing (Figure 3, Item 21) in tee (Figure 3, Item 17).
11. Install shutoff cock (Figure 3, Item 20) in bushing (Figure 3, Item 21).
12. Install bushing (Figure 3, Item 18) in tee (Figure 3, Item 17).
13. Install elbow (Figure 3, Item 19) in bushing (Figure 3, Item 18).
14. Install hose (Figure 3, Item 25) and clamp (Figure 3, Item 26) on elbow (Figure 3, Item 27).

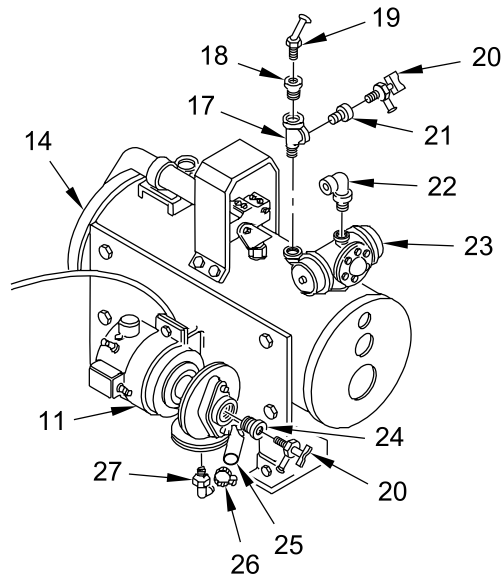


Figure 3. Miscellaneous Tees/Elbows/Bushings – Installation.

15. Install elbow (Figure 4, Item 27) in coolant heater (Figure 4, Item 14).
16. Install hose (Figure 4, Item 25) and clamp (Figure 4, Item 26) on elbow (Figure 4, Item 27). Tighten clamp.
17. Install hose (Figure 4, Item 28) on elbow (Figure 4, Item 19). Secure with clamp (Figure 4, Item 29).
18. Install hose (Figure 4, Item 30) on shutoff cock (Figure 4, Item 20). Secure with clamp (Figure 4, Item 31).

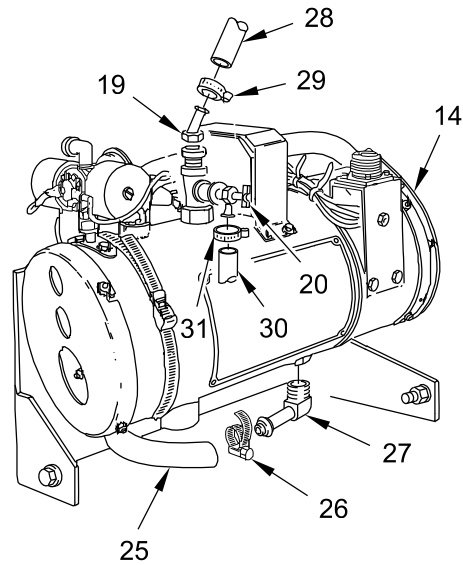


Figure 4. Miscellaneous Hoses – Installation.

19. Install exhaust pipe (Figure 5, Item 33) on lower tube (Figure 5, Item 34). Secure with clamp (Figure 5, Item 32). Do not tighten clamp.
20. Install lower tube (Figure 5, Item 34) in coolant heater (Figure 5, Item 14). Secure with clamp (Figure 5, Item 32). Do not tighten clamp.
21. Tighten two clamps (Figure 5, Item 32).

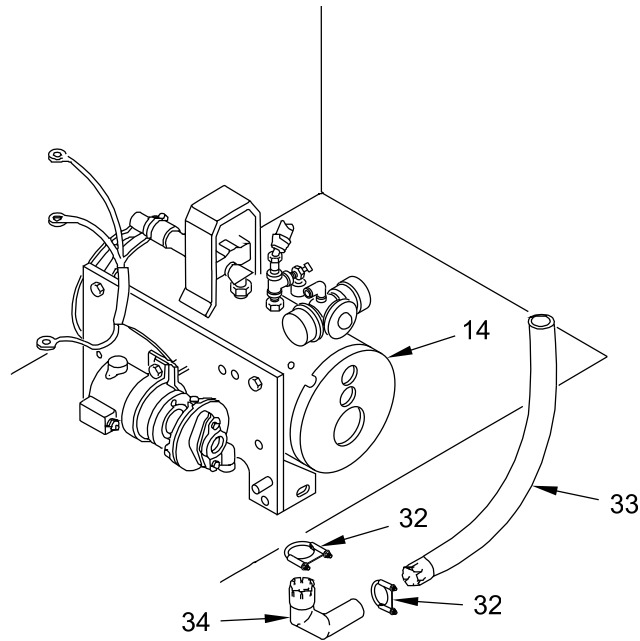


Figure 5. Exhaust Pipe/Tube – Installation.

22. Apply sealing compound to external threads of elbow (Figure 6, Item 36), elbow (Figure 6, Item 39), elbow (Figure 6, Item 42), and nipple (Figure 6, Item 40).
23. Install filter (Figure 6, Item 43) and spacer (Figure 6, Item 37). Secure with two screws (Figure 6, Item 45), washers (Figure 6, Item 44), lockwashers (Figure 6, Item 46), and nuts (Figure 6, Item 38).
24. Install two elbows (Figure 6, Item 36) and (Figure 6, Item 39) on fuel filter (Figure 6, Item 43).
25. Install nipple (Figure 6, Item 40) on elbow (Figure 6, Item 39).
26. Install fuel shutoff valve (Figure 6, Item 41) on nipple (Figure 6, Item 40).
27. Install elbow (Figure 6, Item 42) on fuel shutoff valve (Figure 6, Item 41).
28. Connect hose (Figure 6, Item 35) to elbow (Figure 6, Item 36).

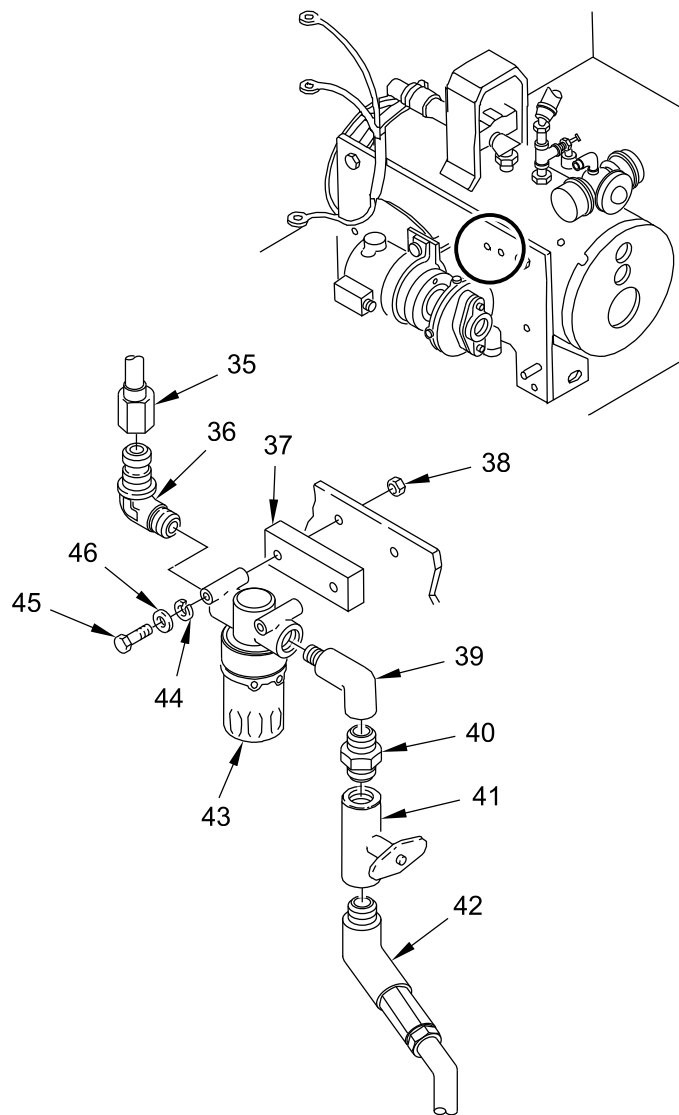


Figure 6. Fuel Filter/Fuel Shutoff Valve – Installation.

29. Install coolant heater fuel pump (Figure 7, Item 51) on bracket (Figure 7, Item 57). Secure with two screws (Figure 7, Item 50), four lockwashers (Figure 7, Item 48), two washers (Figure 7, Item 49) and two nuts (Figure 7, Item 47).
30. Apply sealing compound to external tapered threads of adapter (Figure 7, Item 52), fuel pump (Figure 7, Item 51), and elbow (Figure 7, Item 54). Do not apply sealing compound beyond small end of tapered threads. Do not apply sealing compound on adapter and elbow threads for hose connections.
31. Install adapter (Figure 7, Item 52) on coolant heater fuel pump (Figure 7, Item 51).
32. Install fuel supply hose (Figure 7, Item 53) on adapter (Figure 7, Item 52).
33. Install coupling (Figure 7, Item 56) on coolant heater fuel pump (Figure 7, Item 51).
34. Install elbow (Figure 7, Item 54) on coupling (Figure 7, Item 56).
35. Install fuel hose (Figure 7, Item 55) on elbow (Figure 7, Item 54).

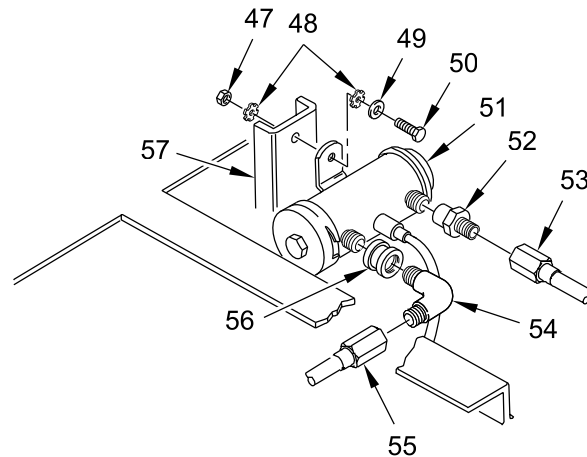


Figure 7. Fuel Pump – Installation.

36. Remove and discard cap (Figure 8, Item 58) from personnel heater fuel pump (Figure 8, Item 68).
37. Install fuel hose (Figure 8, Item 55) on personnel heater fuel pump tee (Figure 8, Item 67).
38. Install fuel hose (Figure 8, Item 66) on tee (Figure 8, Item 67).
39. Install coolant heater fuel pump lead (Figure 8, Item 60) and clamp (Figure 8, Item 61) on weldnut (Figure 8, Item 63). Secure with screw (Figure 8, Item 59), washer (Figure 8, Item 64), and two lockwashers (Figure 8, Item 62).
40. Connect circuit 402A lead (Figure 8, Item 65) to coolant heater fuel pump lead (Figure 8, Item 60).

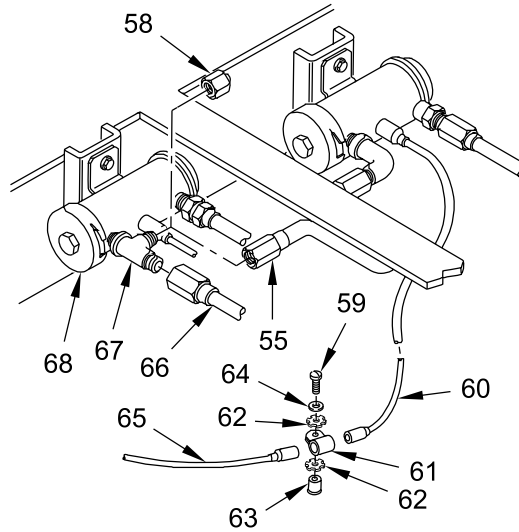


Figure 8. Fuel Pump Hoses/Electrical Leads – Connect.



41. Apply sealing compound to external tapered threads of elbow (Figure 9, Item 69). Do not apply sealing compound beyond small end of tapered threads.
42. Install elbow (Figure 9, Item 69) and jam nut (Figure 9, Item 73) on bulkhead.
43. Route fuel supply hose (Figure 9, Item 53) through hull openings under hull floor.
44. Install four clamps (Figure 9, Item 71) and three clamps (Figure 9, Item 72) on fuel supply hose. (Figure 9, Item 53) Secure with seven screws (Figure 9, Item 70).
45. Connect fuel supply hose (Figure 9, Item 53) to elbow (Figure 9, Item 69).

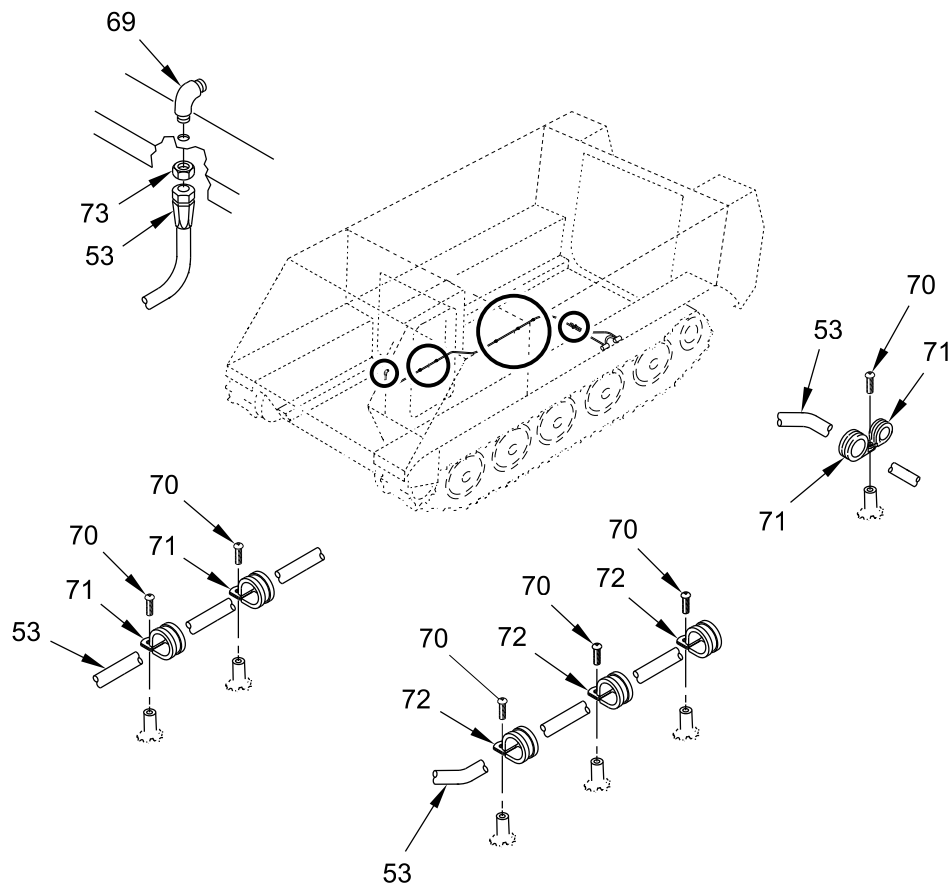


Figure 9. Fuel Supply Hose – Connect.

46. Install fuel supply hose (Figure 10, Item 74) on elbow (Figure 10, Item 69).
47. Install five clamps (Figure 10, Item 71) on fuel supply hose (Figure 10, Item 74).
48. Align three clamps (Figure 10, Item 71) on hull weldnuts. Secure with three screws (Figure 10, Item 75).
49. Align two clamps (Figure 10, Item 71) with bracket (Figure 10, Item 78). Secure with two screws (Figure 10, Item 76) and nuts (Figure 10, Item 77).
50. Connect fuel supply hose (Figure 10, Item 74) to valve elbow (Figure 10, Item 39).

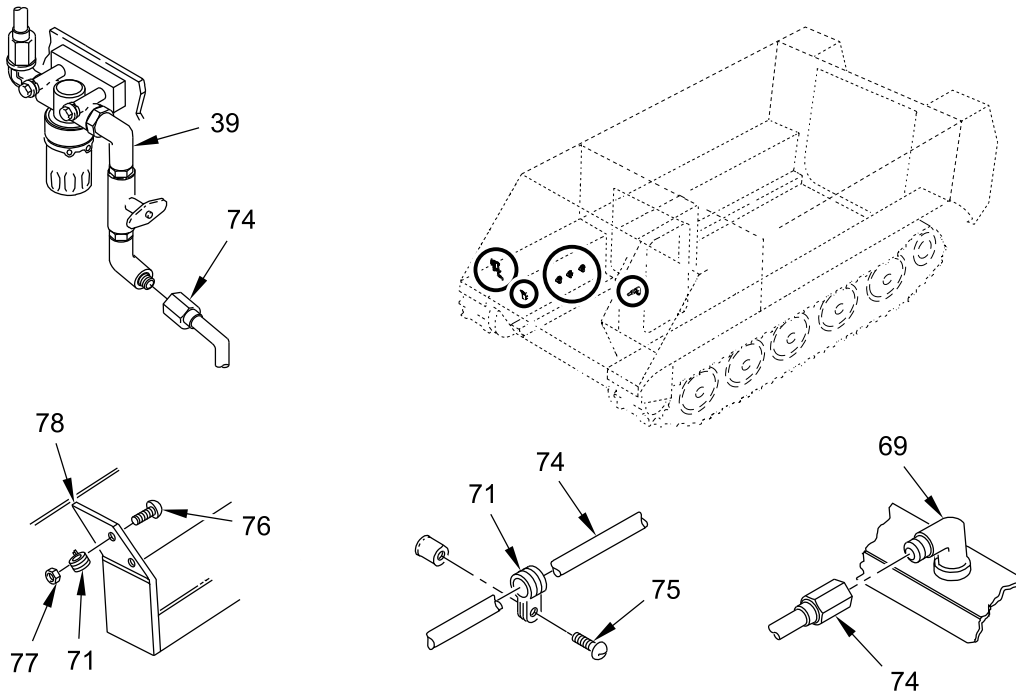


Figure 10. Fuel Supply Hose – Connect.

51. Remove batteries and retainers. See TM 9-2350-277-13&P.
52. Clean battery box with cleaning compound.
53. Renew adhesive backing on insulation sheets with cleaning compound. Wait 10 to 20 seconds until adhesive becomes tacky.
54. Install insulation sheets (Figure 11, Item 85), (Figure 11, Item 86), (Figure 11, Item 84), and (Figure 11, Item 83) and strip (Figure 11, Item 81) in battery box (Figure 11, Item 82).
55. Install insulation sheets (Figure 11, Item 80) on battery box covers (Figure 11, Item 79).

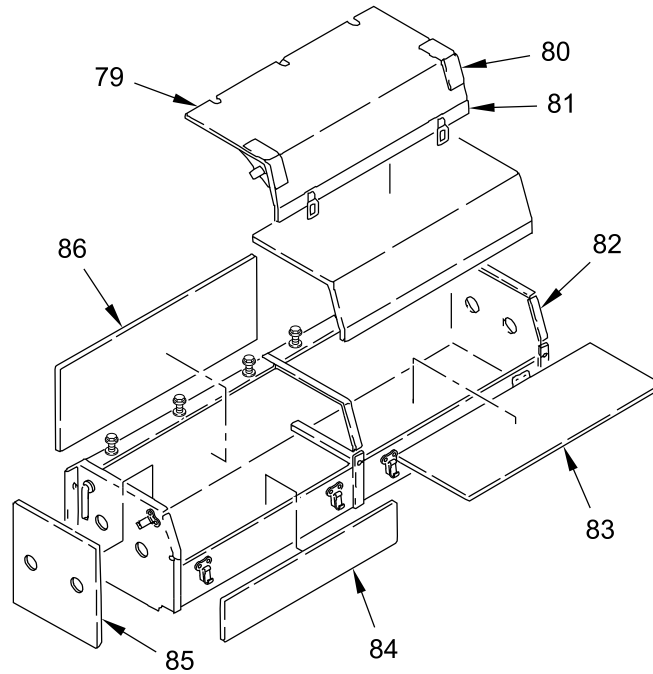


Figure 11. Battery Insulation Sheet – Installation.

56. Install four grommets (Figure 12, Item 89) and two battery plates (Figure 12, Item 88) in battery box (Figure 12, Item 82).
57. Install four clamps (Figure 12, Item 87) on two battery plates (Figure 12, Item 88).

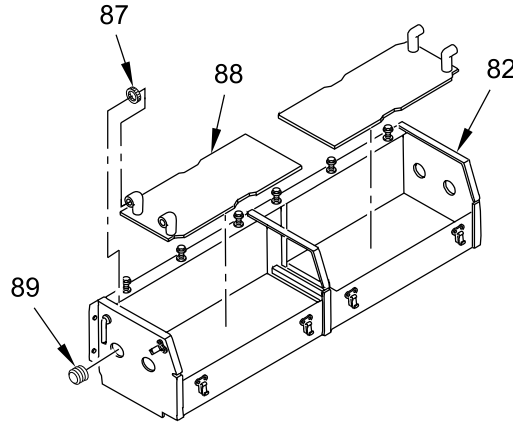


Figure 12. Battery Plates – Installation.

58. Remove two blank grommets (Figure 13, Item 90) from driver's floor plate on older models. On newer models remove two nuts (Figure 13, Item 93), four washers (Figure 13, Item 92), and two screws (Figure 13, Item 91). Discard grommets or nuts, washers, and screws.

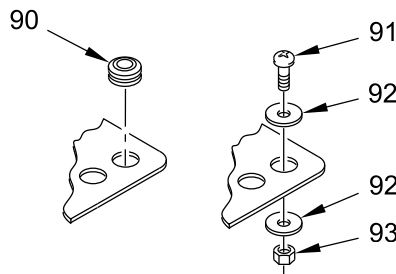


Figure 13. Grommet – Removal.

59. Install two elbows (Figure 14, Item 94) in driver's floor plate and secure with two nuts (Figure 14, Item 95).

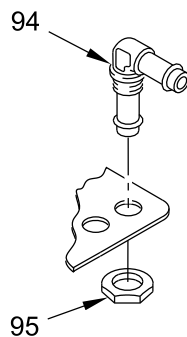


Figure 14. Driver's Floor Plate Elbow – Installation.

60. Connect battery box hose (Figure 15, Item 98) to battery plates (Figure 15, Item 88). Secure with two clamps (Figure 15, Item 96).
61. Connect one coolant pump hose (Figure 15, Item 99) and one engine hose (Figure 15, Item 97) to battery plates (Figure 15, Item 88). Secure hoses with two clamps (Figure 15, Item 96).

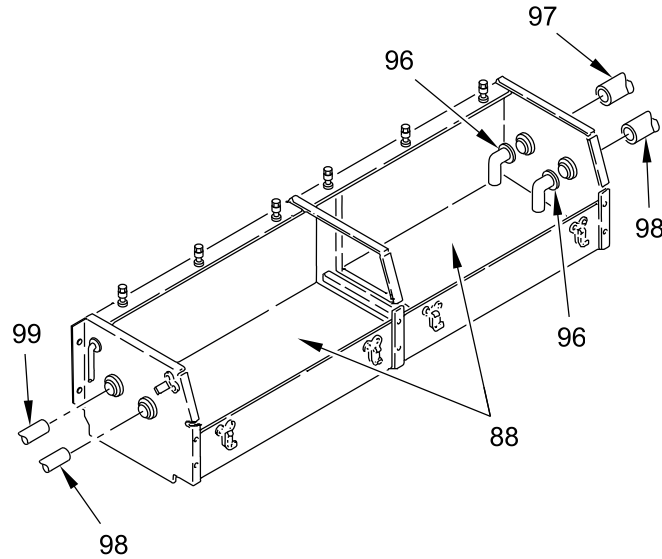


Figure 15. Battery Box/Coolant Pump Hose – Installation.

62. Route hoses (Figure 16, Item 99) and (Figure 16, Item 97) along sponson to elbows (Figure 16, Item 94) in floor plate.
63. Install one clamp (Figure 16, Item 96) on each hose (Figure 16, Item 99) and (Figure 16, Item 97). Connect hoses to elbows (Figure 16, Item 94) and secure with clamps (Figure 16, Item 96).
64. Install one clamp (Figure 16, Item 101) on each hose (Figure 16, Item 99) and (Figure 16, Item 97). Secure to seat bracket (Figure 16, Item 104) with two screws (Figure 16, Item 103), washers (Figure 16, Item 102), and nuts (Figure 16, Item 100).

### NOTE

**Do not kink hoses.**

65. Install clamp (Figure 16, Item 110) on hoses (Figure 16, Item 99) and (Figure 16, Item 97). Secure to weldnut (Figure 16, Item 105) with screw (Figure 16, Item 108) and washer (Figure 16, Item 109).
66. Install batteries and retainers. See TM 9-2350-277-13&P.
67. Install one clamp (Figure 16, Item 96) on each second coolant pump hose (Figure 16, Item 107) and second engine hose (Figure 16, Item 106). Connect hoses to elbows (Figure 16, Item 94) under driver's floor plate. Tighten clamps.

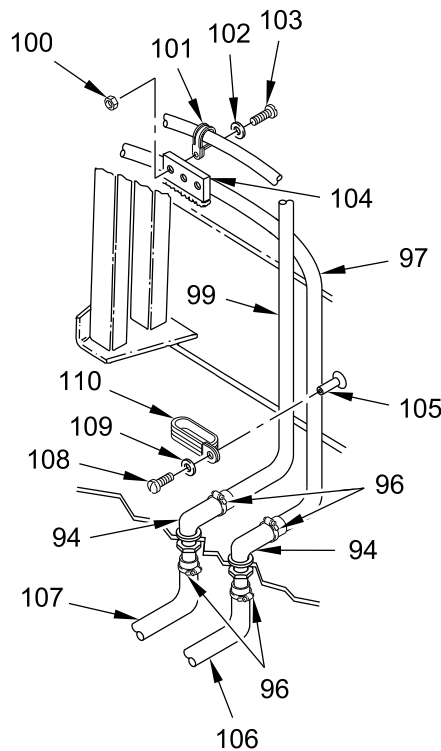


Figure 16. Driver's Floor Plate Hoses/Clamps – Installation.

68. Route second coolant pump hose and second engine hose into engine compartment. Leave engine hose for later connection to the engine after the power plant is installed. Route coolant pump hose (Figure 17, Item 106) along front of engine compartment to coolant pump (Figure 17, Item 11).
69. Install clamp (Figure 17, Item 96) on coolant pump hose (Figure 17, Item 106). Connect hose (Figure 17, Item 106) to coolant pump shutoff valve (Figure 17, Item 20). Tighten clamp.

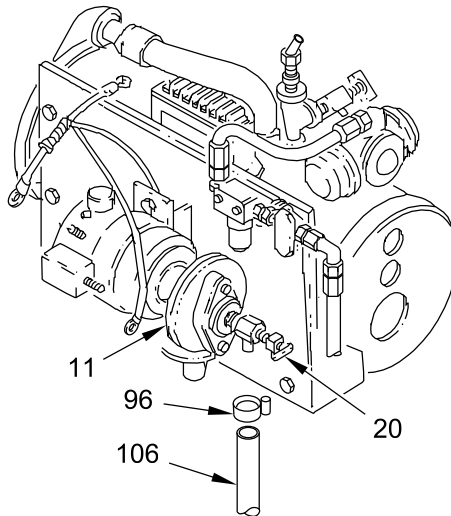


Figure 17. Coolant Pump Hose – Installation.

70. Apply sealing compound to external tapered threads of elbow (Figure 18, Item 112) and adapter (Figure 18, Item 113). Do not apply sealing compound beyond small end of tapered threads.
71. Install elbow (Figure 18, Item 112) in engine block fitting (Figure 18, Item 111). Install adapter (Figure 18, Item 113) in elbow (Figure 18, Item 112).

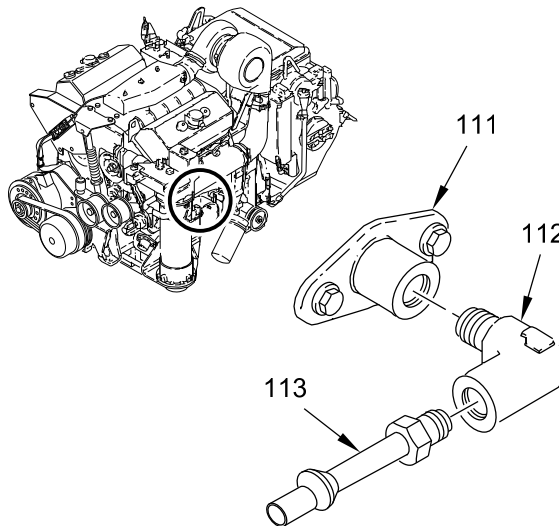


Figure 18. Engine Block Fitting Elbow – Installation.

72. Apply sealing compound to external threads of elbow (Figure 19, Item 116) and drain cock (Figure 19, Item 117). Do not apply sealing compound beyond small end of tapered threads.
73. Install new gasket (Figure 19, Item 114) and fitting (Figure 19, Item 115) on engine block. Secure with two screws (Figure 19, Item 118) and washers (Figure 19, Item 119).
74. Install elbow (Figure 19, Item 116) and drain cock (Figure 19, Item 117) on fitting (Figure 19, Item 115).

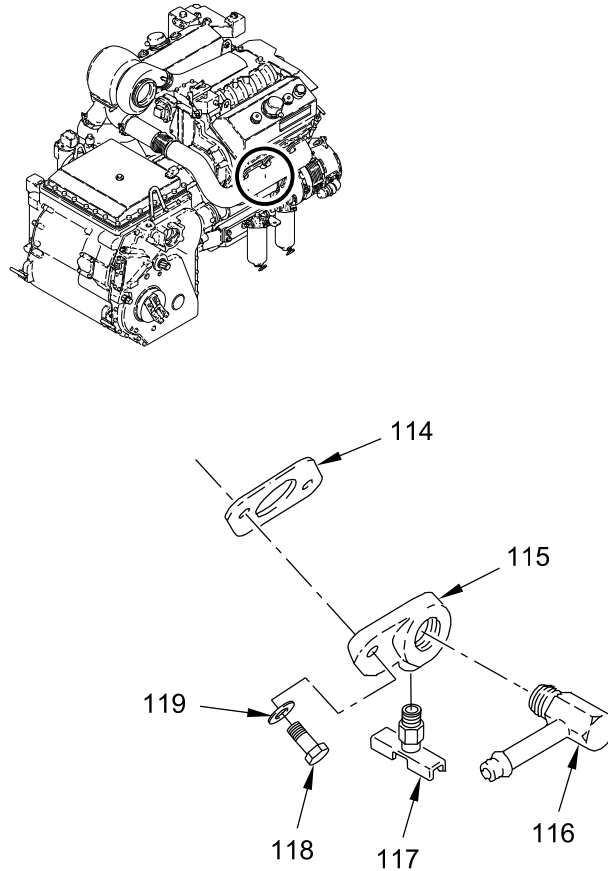


Figure 19. Drain Cock – Installation.



75. Secure ground lead (Figure 20, Item 128) to coolant pump terminal (Figure 20, Item 126) with nut (Figure 20, Item 127).
76. Secure circuit 402B lead (Figure 20, Item 121) to coolant pump terminal (Figure 20, Item 125) with nut (Figure 20, Item 124).
77. Secure circuit 402B lead (Figure 20, Item 121) to terminal No. 4 (Figure 20, Item 122) of terminal strip (Figure 20, Item 123) with screw (Figure 20, Item 120).

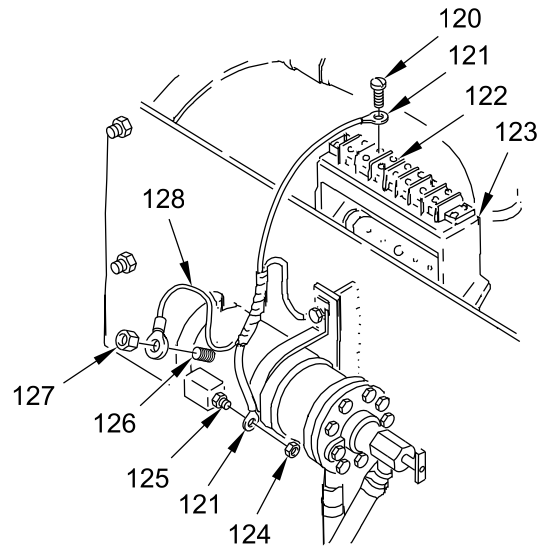


Figure 20. Circuit 402B Lead/Ground Lead – Connect.

78. Remove four screws (Figure 21, Item 129), four washers (Figure 21, Item 130), and plate (Figure 21, Item 131) from driver's compartment bulkhead. Discard plate.
79. Thread terminal ground lead (Figure 21, Item 132) and coolant heater connector (Figure 21, Item 133) of wiring harness (Figure 21, Item 134) through driver's compartment bulkhead opening.

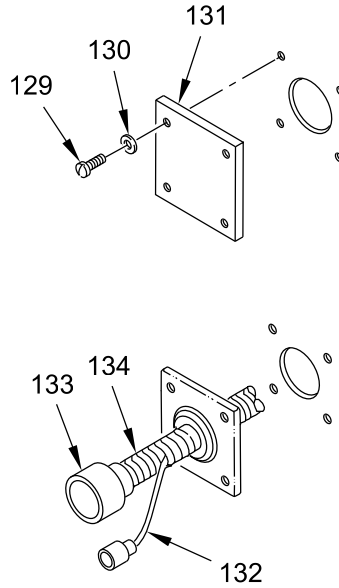


Figure 21. Bulkhead Wiring Harness – Routing.

80. Connect coolant heater connector (Figure 22, Item 133) of wiring harness (Figure 22, Item 134) to coolant heater receptacle (Figure 22, Item 135).

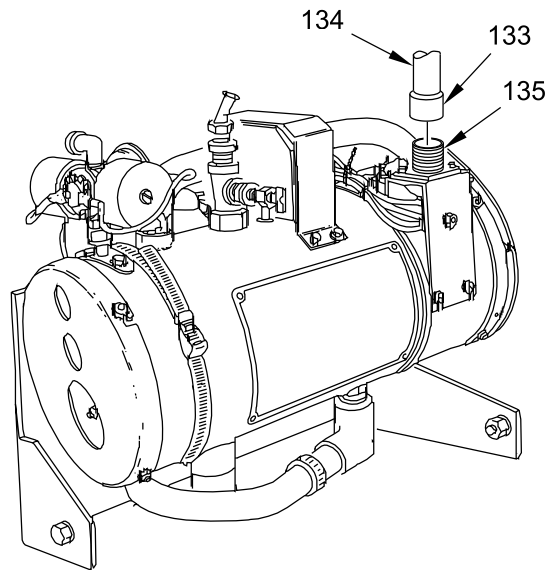


Figure 22. Wiring Harness/Coolant Heater – Connect.

81. Install wiring harness (Figure 23, Item 134) and terminal ground lead (Figure 23, Item 132) to mounting bracket (Figure 23, Item 5). Secure with two screws (Figure 23, Item 139), nuts (Figure 23, Item 137), clamps (Figure 23, Item 138), and lockwashers (Figure 23, Item 136).

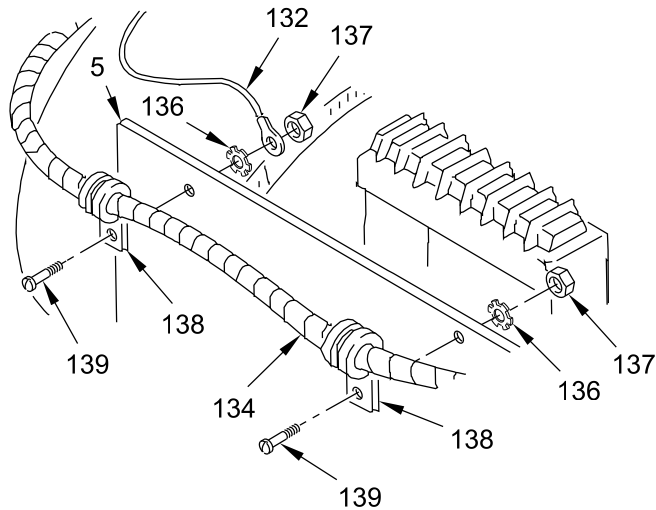


Figure 23. Wiring Harness/Ground Lead to Mount Bracket – Installation.

82. Install two tie straps (Figure 24, Item 140) around the coolant pump hose (Figure 24, Item 107) and two wiring harnesses (Figure 24, Item 134) and (Figure 24, Item 141).

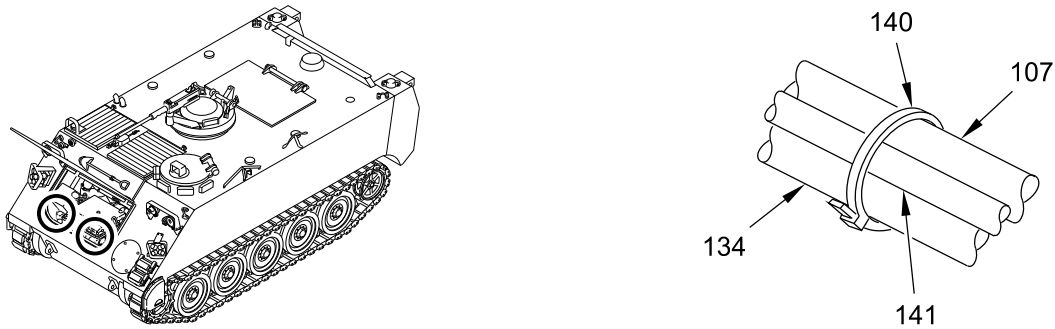


Figure 24. Tie Wrap – Installation (Typical).

83. Install wiring harness plate (Figure 25, Item 142) to driver's compartment bulkhead. Secure with four screws (Figure 25, Item 129) and washers (Figure 25, Item 130).

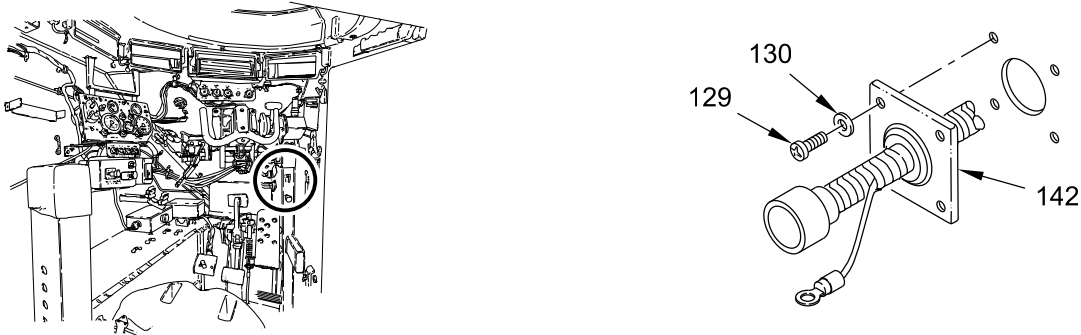


Figure 25. Wiring Harness/Bulkhead Plate – Installation.

84. Remove two screws (Figure 26, Item 146) and control panel (Figure 26, Item 145) from control box case (Figure 26, Item 144).
85. Remove and discard two screws, nuts, and washers supplied with control box case (Figure 26, Item 144).
86. Install control box case (Figure 26, Item 144) on hull bracket (Figure 26, Item 143). Secure with two screws (Figure 26, Item 149).
87. Install control panel (Figure 26, Item 145) to control box case (Figure 26, Item 144). Secure with two screws (Figure 26, Item 146).
88. Connect circuit 400A lead (Figure 26, Item 148) to control box lead (Figure 26, Item 147).

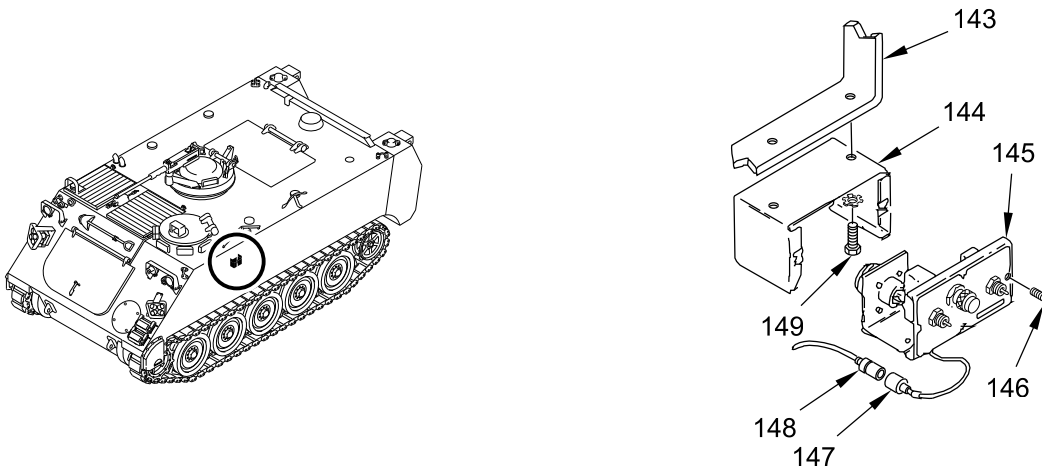


Figure 26. Control Panel – Replacement.

89. Connect control box connector (Figure 27, Item 147) of wiring harness (Figure 27, Item 134) to control box receptacle (Figure 27, Item 148).
90. Connect main wiring harness 402A lead (Figure 27, Item 145) to coolant heater wiring harness lead (Figure 27, Item 146). Secure wiring harness (Figure 27, Item 134) to front main (Figure 27, Item 144) with eight straps (Figure 27, Item 143).

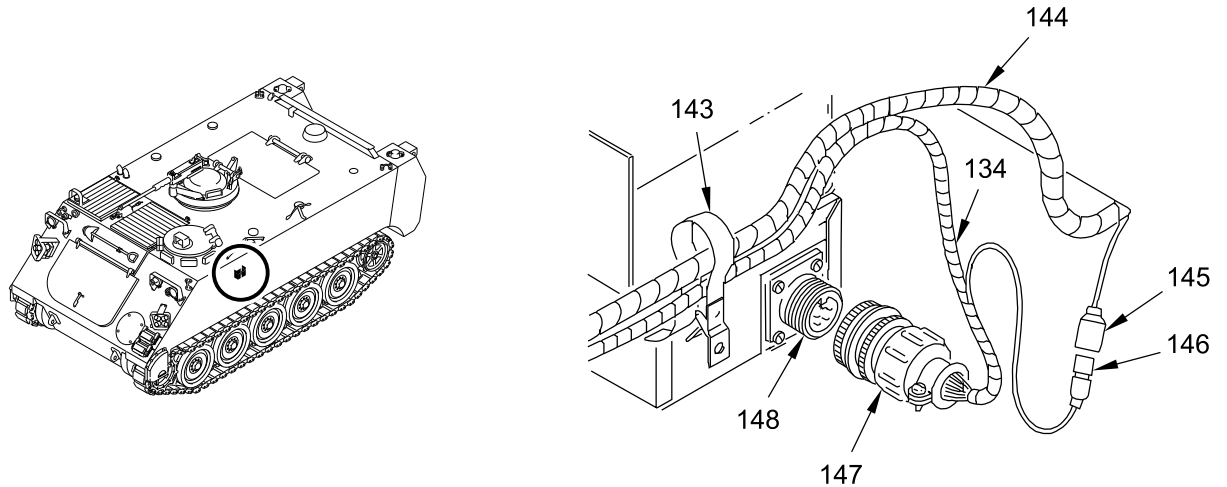


Figure 27. Control Box Connector/402A Lead – Connect.

91. Install wiring harness (Figure 28, Item 134) on mounting bracket. Secure with screw (Figure 28, Item 149) and clamp (Figure 28, Item 138).

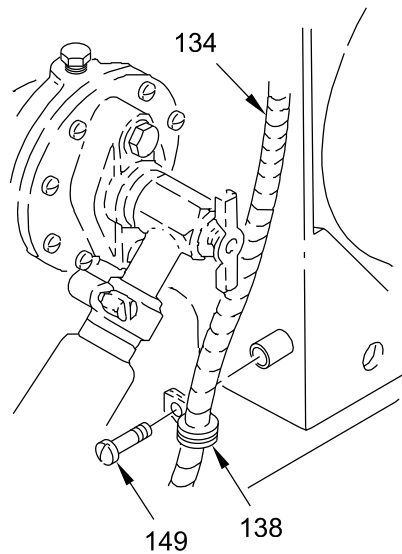


Figure 28. Wiring Harness to Mounting Bracket – Installation.

92. Install wiring harness (Figure 29, Item 134) on two weldnuts (Figure 29, Item 151). Secure with two clamps (Figure 29, Item 138) and screws (Figure 29, Item 150).
93. Remove three screws (Figure 29, Item 150) and clamps (Figure 29, Item 153) that secure smoke grenade wiring harness (Figure 29, Item 152) to three weldnuts (Figure 29, Item 151).
94. Install wiring harness (Figure 29, Item 134) and smoke grenade wiring harness (Figure 29, Item 152) on three weldnuts (Figure 29, Item 151). Secure with three screws (Figure 29, Item 150), clamps (Figure 29, Item 153), and clamps (Figure 29, Item 138).

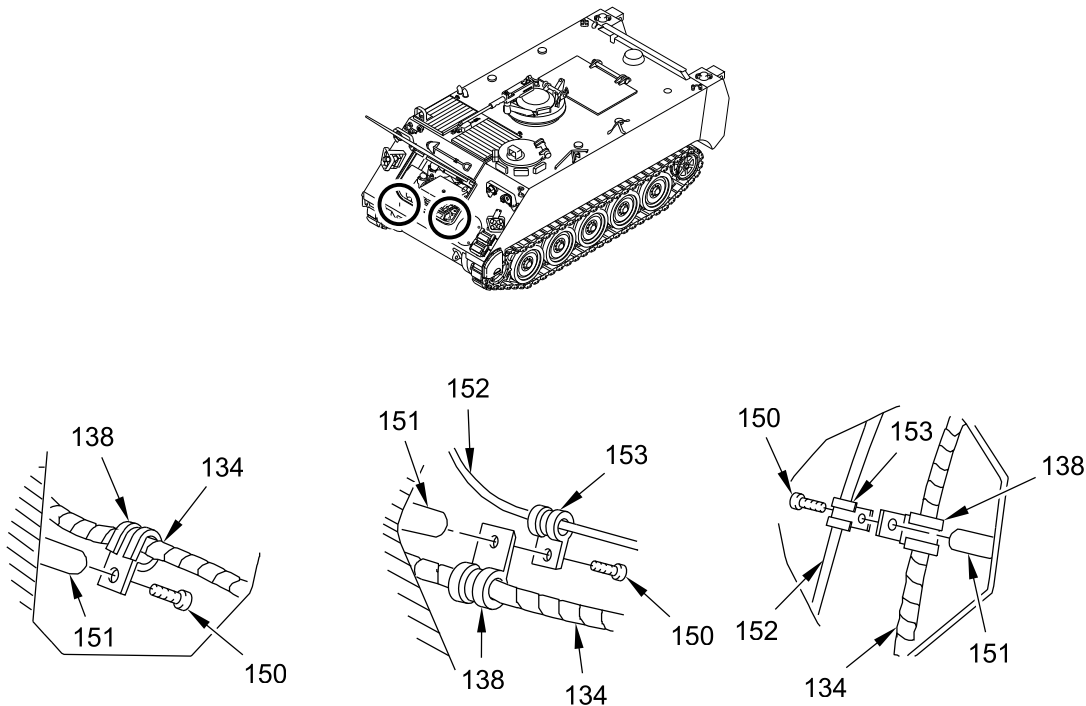


Figure 29. Smoke Grenade Wiring Harness – Clamping.

95. Install power plant assembly. See TM 9-2350-277-13&P.
96. Connect hose (Figure 30, Item 154) to elbow (Figure 30, Item 116). Secure with clamp (Figure 30, Item 96).

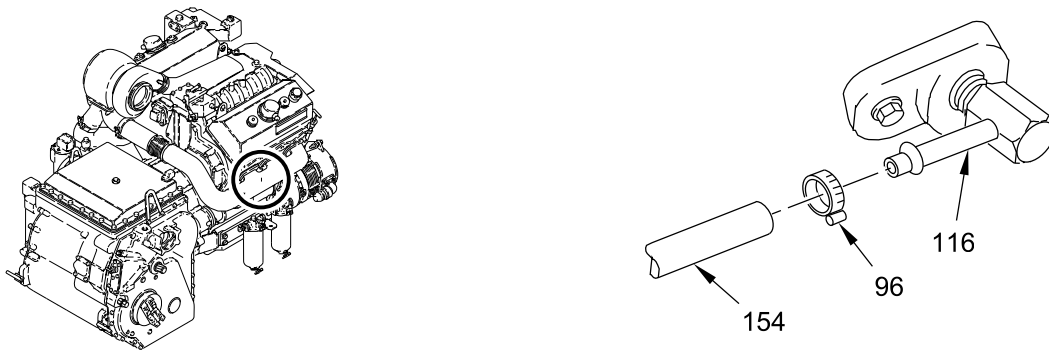


Figure 30. Power Plant Hose – Installation.

97. Lower power plant grill assembly. See TM 9-2350-277-13&P.
98. Remove four screws (Figure 31, Item 157), washers (Figure 31, Item 158), and plate from grille. Discard plate.
99. Install upper tube (Figure 31, Item 156) on exhaust pipe (Figure 31, Item 33). Secure with clamp (Figure 31, Item 32). Do not tighten.
100. Position upper tube (Figure 31, Item 156) and gasket (Figure 31, Item 155) on grille.
101. Secure with four screws (Figure 31, Item 157) and washers (Figure 31, Item 158).
102. Tighten clamp (Figure 31, Item 32).

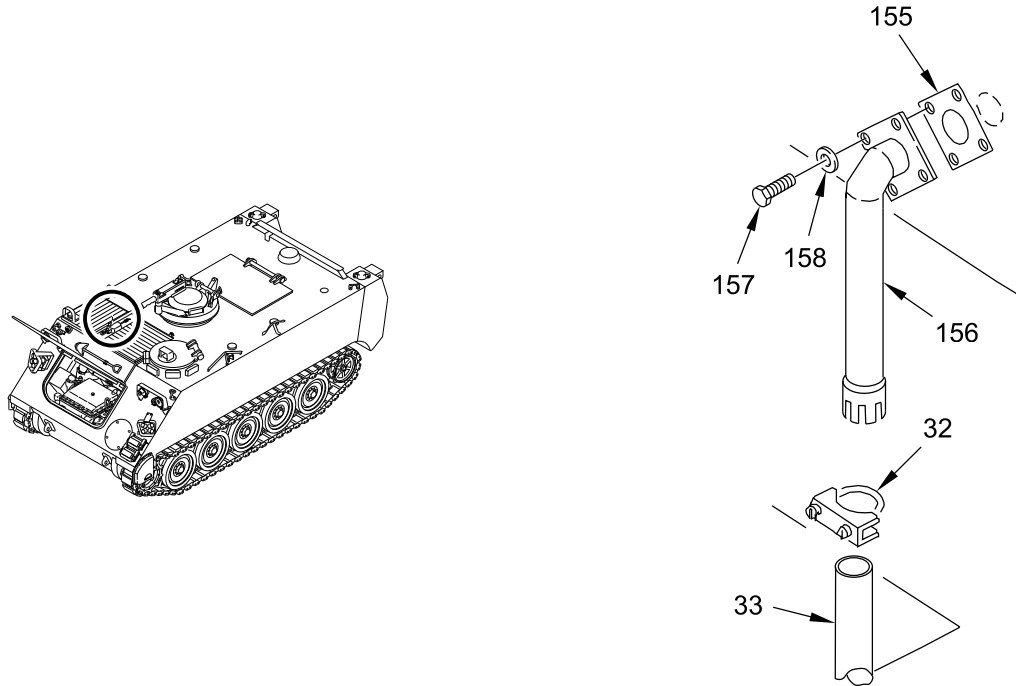


Figure 31. Power Plant Upper Tube – Installation.

103. Install elbow (Figure 32, Item 19) on auxiliary radiator tank (Figure 32, Item 159).
104. Install hose (Figure 32, Item 28) on elbow (Figure 32, Item 19). Secure with clamp (Figure 32, Item 29).

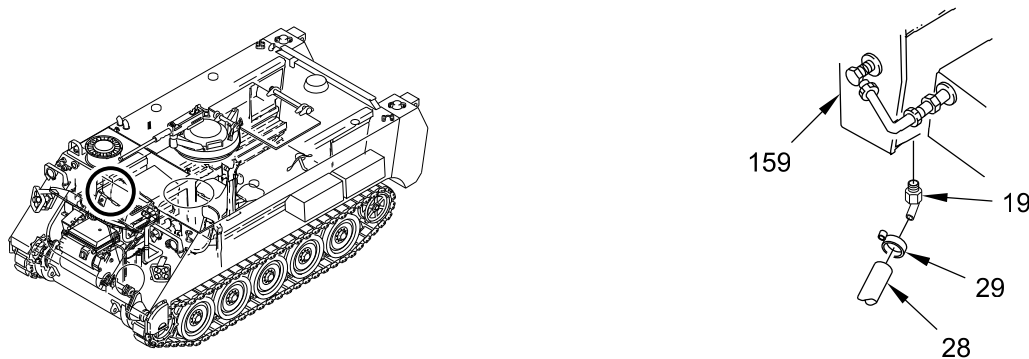


Figure 32. Auxiliary Radiator Tank Elbow/Hose – Installation.

105. Connect hose (Figure 33, Item 107) to adapter (Figure 33, Item 113). Secure with clamp (Figure 33, Item 96).



Figure 33. Adapter Hose – Connect.

106. Open fuel tank shutoff valves (Figure 34, Item 160).

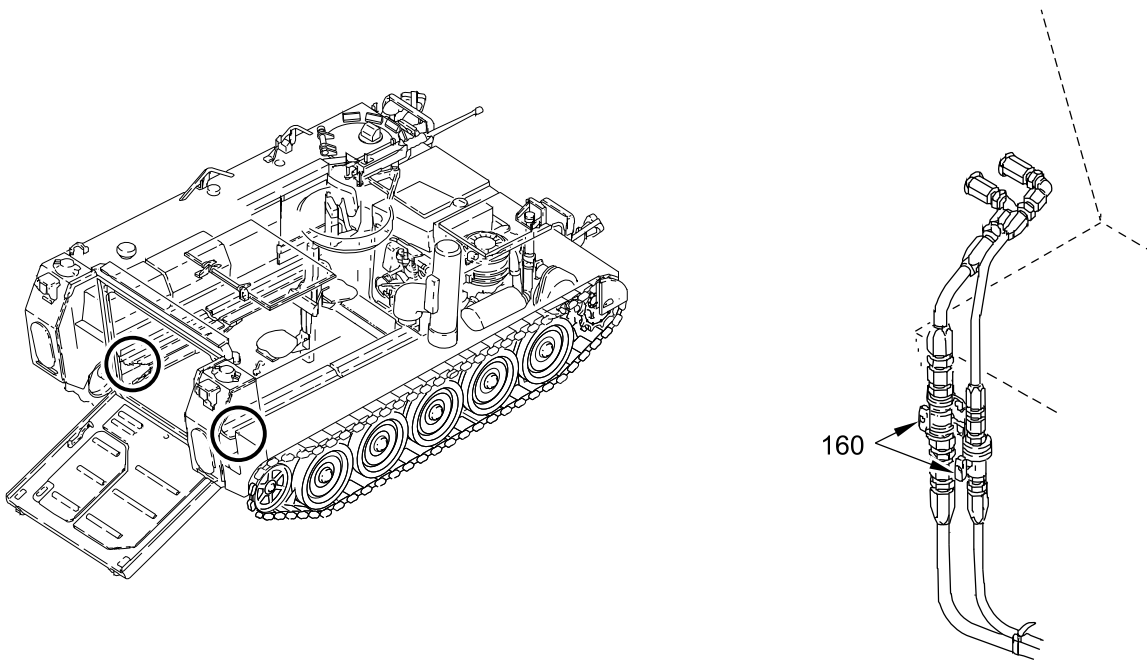


Figure 34. Fuel Tank Shutoff Valves – Open.



**FOLLOW ON MAINTENANCE**

1. Lower power plant grille, see TM 9-2350-277-13&P.
2. Fill carrier cooling system, see TM 9-2350-277-13&P.
3. Connect battery ground lead, see TM 9-2350-277-13&P.
4. Bleed coolant heater fuel line, see TM 9-2350-277-13&P.
5. Start coolant heater, see TM 9-2350-277-13&P. Check that heater works right and does not leak. Turn coolant heater off.
6. Install rear and right front floor plates, see TM 9-2350-277-13&P.
7. Install driver's compartment floor plates, see TM 9-2350-277-13&P.
8. Install driver's power plant access panel, see TM 9-2350-277-13&P.
9. Install power plant rear access panel, see TM 9-2350-277-13&P.
10. Close power plant front access door, see TM 9-2350-277-13&P.

**END OF TASK****END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**FINAL TEST – COOLANT HEATER**

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**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool Kit (WP 0069, Item 26)  
General Mechanic's Tool Kit (WP 0069, Item 29)

0 to 30 volt DC voltmeter  
24 volt DC power source

**Personnel Required**

Track Vehicle Repairer 91H10

**Materials/Parts**

Control box  
Fuel filter  
Fuel pump  
Fuel source  
Stopwatch  
Suitable coolant container (5 gallon minimum)  
Suitable exhaust hose (10 foot maximum)  
Suitable rack or cradle  
Thermometer  
0 to 20 amps DC ammeter

**References**

WP 0024  
WP 0026  
WP 0028  
TM 9-2350-277-13&P

**Equipment Condition**

Coolant heater removed from carrier  
(TM 9-2350-277-13&P)

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**TEST AND INSPECTION****TEST SETUP****CAUTION**

**Test setup must be wired for negative ground.**

1. After overhaul of coolant heater, conduct a final test before installation, to make sure heater will work right. The suggested typical test setup is shown.

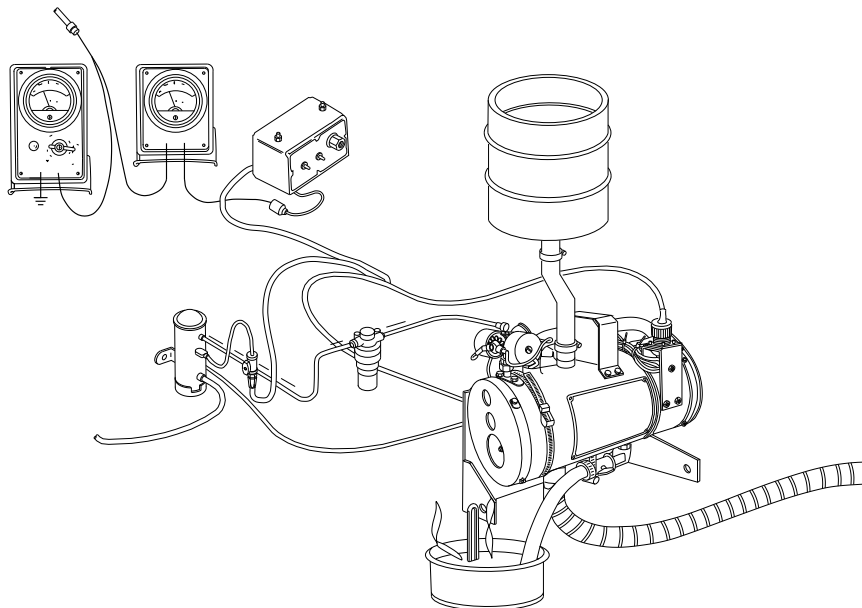


Figure 1. Coolant Heater Test Setup.

**COOLANT SYSTEM**

1. Do not use more than five gallons of coolant. Use same coolant as in carrier. Do not use water.
2. Change coolant quickly. Allow coolant to cool between tests. The coolant system should have a shutoff valve (Figure 2, Item 2).
3. Vent the coolant container (Figure 2, Item 1) for air. The coolant container may remain open or closed. Use of a thermo-syphon type flow is allowed. No pump is required.

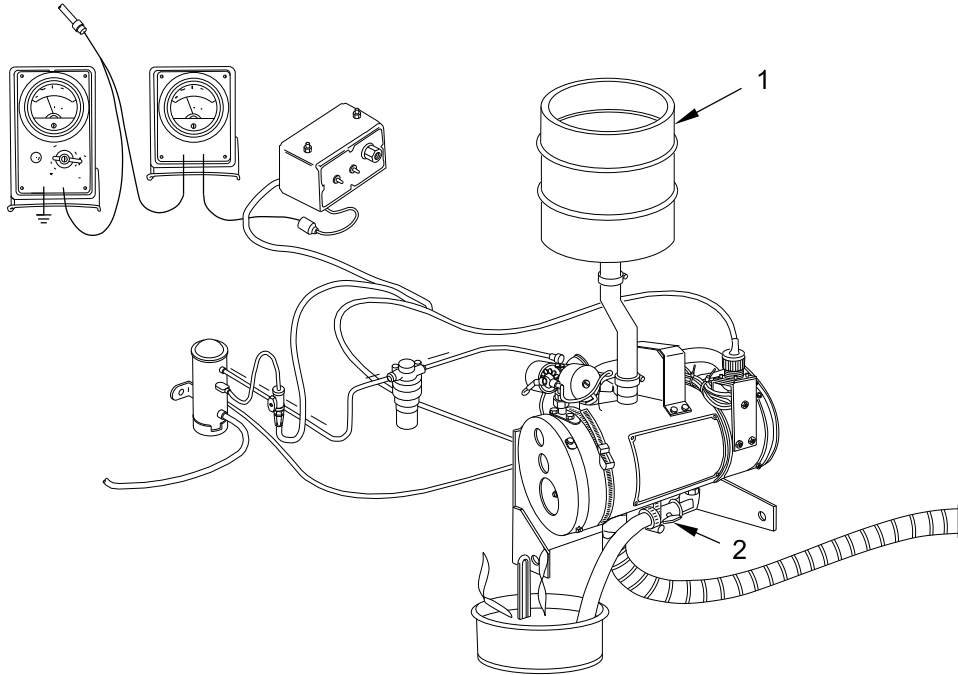


Figure 2. Coolant Check.

**ELECTRICAL WIRING**

1. Wire the heater (Figure 3, Item 7) as shown on (WP 0024), using the regular wiring harness. Connect a voltmeter (Figure 3, Item 3) across the circuit. Insert an ammeter (Figure 3, Item 5) between the hot lead of the control box (Figure 3, Item 6) and the power source (Figure 3, Item 4).
2. Use a fully charged battery for the power source.

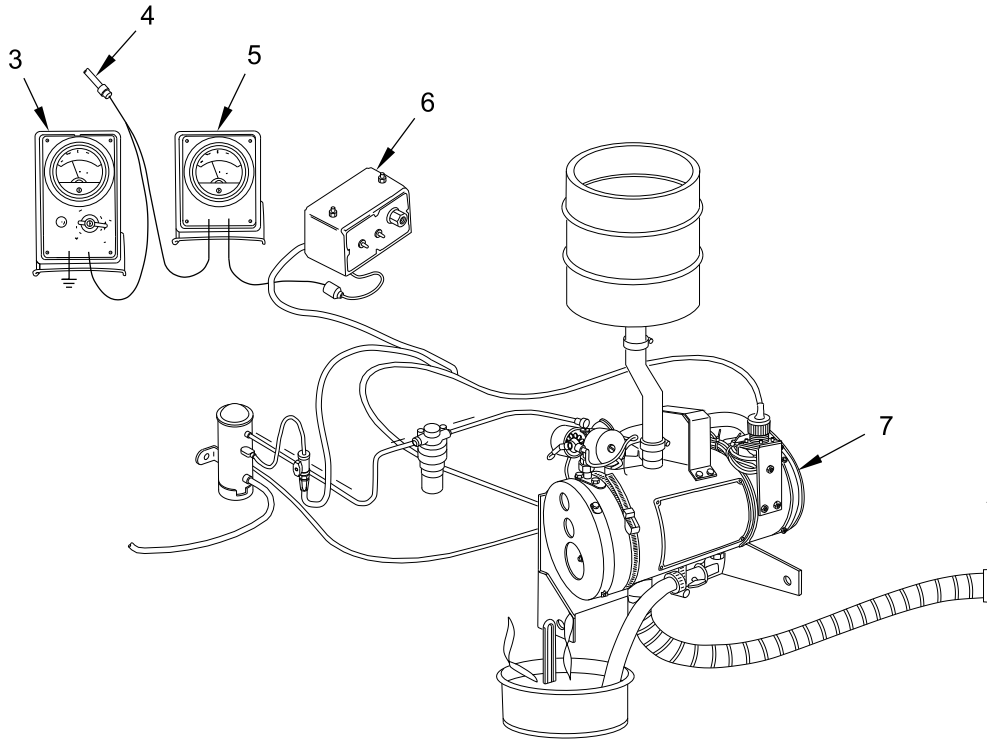


Figure 3. Electrical Check.

**EXHAUST COLLECTOR**

1. Conduct the heater exhaust away from the test area. Use an exhaust extension made of flexible hose (Figure 4, Item 8) not more than ten feet long.

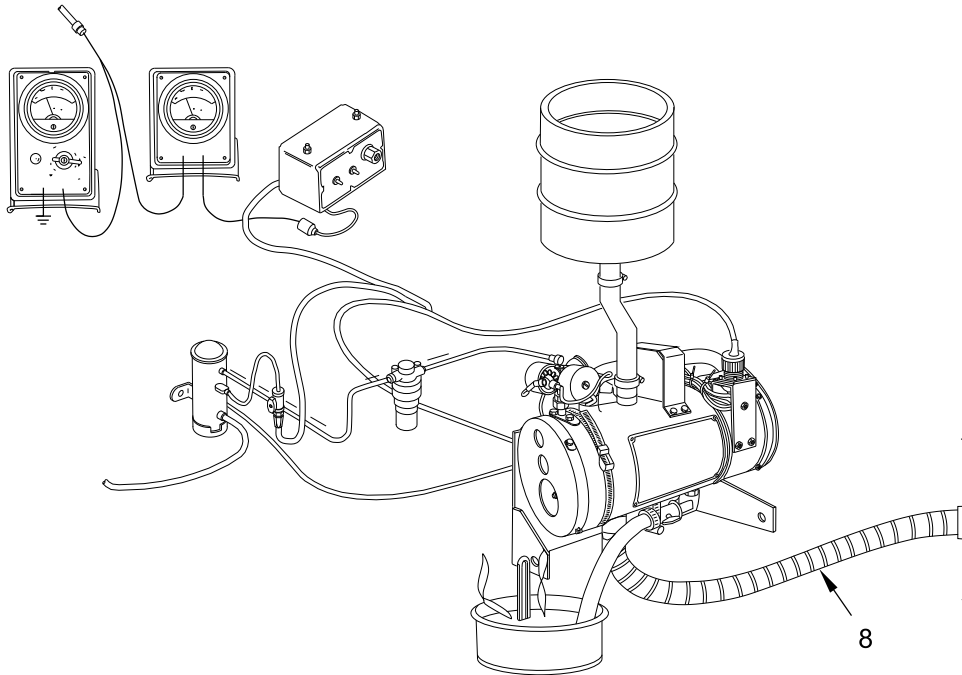


Figure 4. Exhaust Venting.

**TESTING**

1. A complete test of the coolant heater consists of the following:
  - a. Fuel flow test (WP 0026).
  - b. Burn test.
  - c. Restriction thermostat test.
  - d. Overheat thermostat test.
  - e. Combustion air blower test.
2. Obtaining equipment for the combustion air blower test may be difficult. Do not do this test if the heater burns properly and the igniter cavity does not show undue carbon deposits.
3. Replace the blower if the heater goes out during test or smokes a lot and has heavy carbon deposits in the igniter cavity (WP 0032). Moderate carbon deposits are normal and do not indicate a bad blower.

**BURN TEST**

1. Secure coolant heater to test stand (Figure 5, Item 9) and coolant, fuel, electrical, and exhaust connections. Do not start the heater unless there is an ample supply of coolant.
2. Remove heater end cover (Figure 5, Item 10) and check inside for coolant leakage before starting burn test. Replace heater if coolant has leaked.
3. Place heater control switch in START position and start timing heater immediately.
4. Note ammeter reading. Amperage draw must not exceed 12.8 amps (15.3 amps below 70° F (21° C)).
5. Heater should ignite within 40 seconds from time heater control switch is turned on.
6. The flame detector switch must transfer within 200 seconds. Transfer will be indicated by the pilot lamp and a drop in amperage draw. Move the heater control switch to RUN. Amperage draw must not exceed 1.5 amps (4 amps below 70° F (21° C)).
7. If the heater fails to ignite or is slow to set flame, clean the igniter cavity and install a new igniter, see TM 9-2350-277-13&P.
8. If the flame detector switch does not transfer within the required time limits, the burner is bad. Replace heater if burner is bad.
9. Allow the heater to burn one minute on HI heat, then move heater control HI-LO switch to LO. Burning and blower speed should continue, but slow down. If the heater goes out, replace the fuel control valve and heater end cover (WP 0026).
10. Turn the heater control switch to OFF. Fuel flow and burning should stop in about 30 seconds. Blower should continue to run from one to three minutes and then stop. If blower does not work within limits, readjust the flame detector switch (TM 9-2350-277-13&P). If the blower still fails to work within limits, replace the flame detector switch (TM 9-2350-277-13&P).

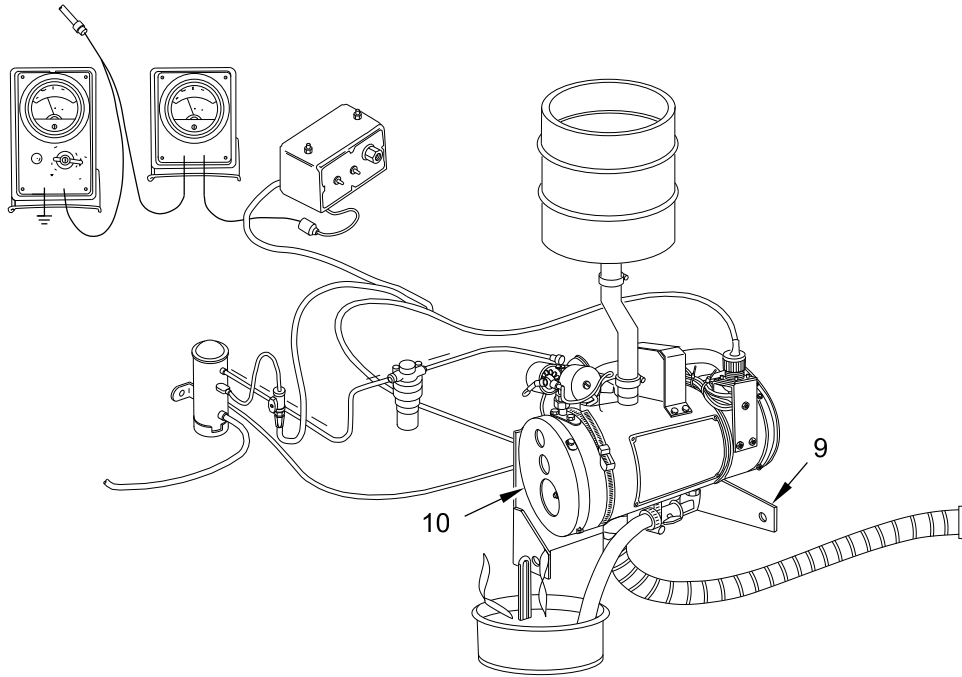


Figure 5. Operational Check.

**TESTING RESTRICTION AND OVERHEAT THERMOSTATS****NOTE**

**Thermostat shown in fuel control valve is set to open at 70° F (21° C) and to close at 30° F (-1° C). If temperature is below 70° F (21° C), the heating element in fuel control valve can be energized during any operational cycle.**

1. Turn the heater on and run it until the coolant is hot enough to make the heater cycle from high to low heat. Leave the heater alone, then take the temperature of the coolant. The temperature should be between 140° F (60° C) and 170° F (76° C). If coolant temperature is not within limits, replace restriction thermostat (WP 0027).
2. After testing the restriction thermostat, close circuit across terminal board terminals No. 4 and No. 5, to make the heater stay on high heat. Heat the coolant until the heater burning stops. Check the temperature of the coolant, it should be not less than 220° F (104° C) or more than 250° F (121° C). If the coolant temperature is not within these limits, replace the overheat thermostat (WP 0028).



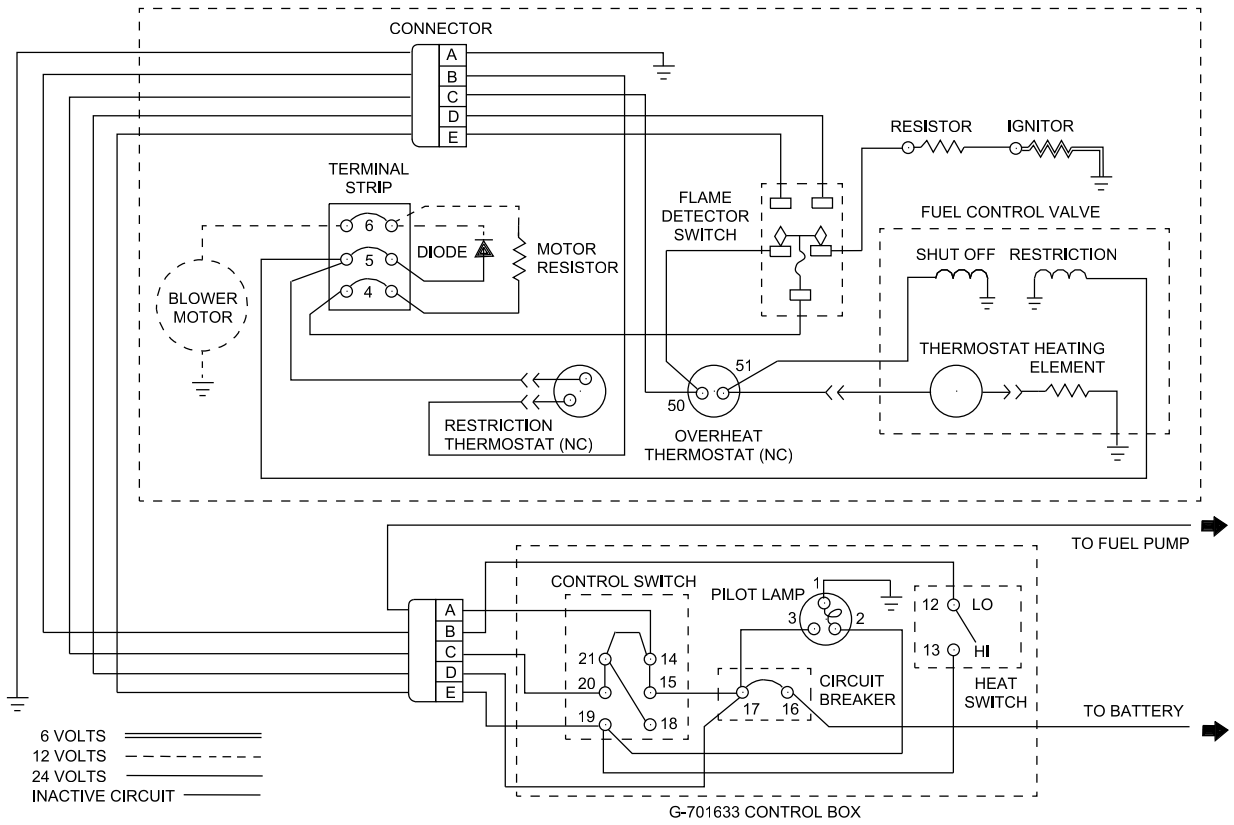


Figure 6. Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**REPLACE FUEL CONTROL VALVE**

---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)

**Materials/Parts**

Insulating varnish (WP 0068, Item 10)  
Calibrated cubic centimeter container  
Overflow receptacle  
Watch

**Personnel Required**

Track Vehicle Repairer 91H10

**References**

WP 0024

**Equipment Condition**

Coolant heater removed from carrier  
(TM 9-2350-277-13&P)

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**REMOVAL**

1. Remove nut (Figure 1, Item 6) from union (Figure 1, Item 5) beneath fuel control valve (Figure 1, Item 1).
2. Remove two screws (Figure 1, Item 3) and fuel control valve (Figure 1, Item 1) from bracket (Figure 1, Item 2) and fuel tube (Figure 1, Item 4).

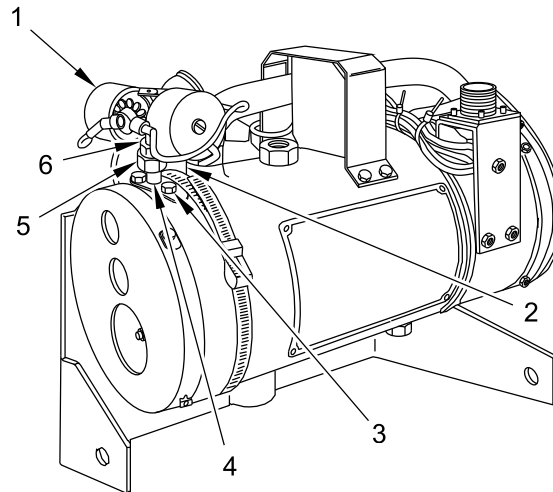


Figure 1. Fuel Control Valve – Removal.

3. Remove four screws (Figure 2, Item 8) and guard (Figure 2, Item 7) from coolant heater (Figure 2, Item 9).

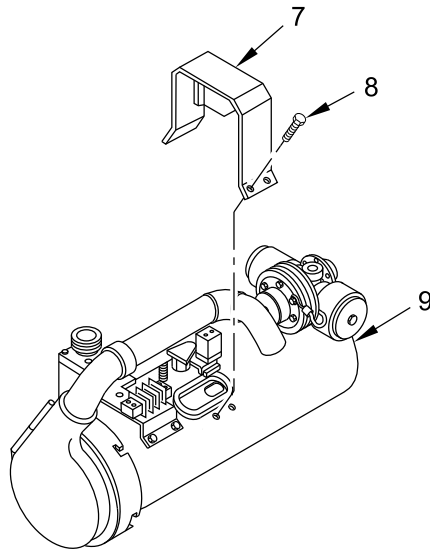


Figure 2. Guard – Removal.

4. Disconnect two fuel control valve leads (Figure 3, Item 14) and (Figure 3, Item 12) from overheated thermostat (Figure 3, Item 13).
5. Disconnect fuel control valve lead (Figure 3, Item 10) from terminal strap (Figure 3, Item 11).

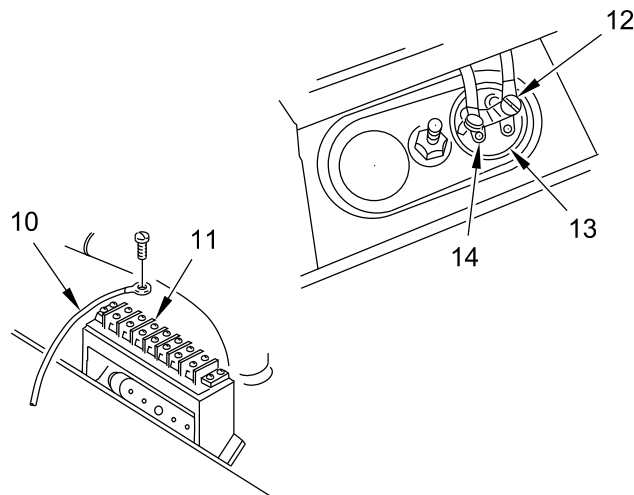


Figure 3. Fuel Control Valve Leads – Disconnect.

**END OF TASK**

## TEST AND INSPECTION

### FUEL FLOW TEST

1. Connect fuel control valve (Figure 4, Item 15) to coolant heater fuel hose (Figure 4, Item 16). Fuel pressure must be three to 15 psi (21 to 103 kPa), when fuel valve is open.
2. Place fuel control valve outlet over calibrated (Figure 4, Item 18) and overflow (Figure 4, Item 19) containers.
3. Make sure the body of fuel control valve (Figure 4, Item 15) is grounded.
4. Energize fuel control valve solenoids. Connect two solenoid leads (Figure 4, Item 17) and (Figure 4, Item 21) to a 24 volts DC power source (Figure 4, Item 20). Solenoids are now open for high heat fuel flow.

### WARNING



**Sparks from static electricity could cause a fire or explosion. Make sure to ground the coolant heater before you open fuel supply valve.**

5. Open coolant heater fuel supply valve (WP 0024). Bleed fuel hose in a suitable container.
6. After fuel flow is stable, place calibrated cubic centimeter container under fuel control valve (Figure 4, Item 15).
7. Allow fuel to flow for exactly one minute then close coolant heater fuel supply valve. Container should contain  $14 \pm 2$  cubic centimeters of fuel.
8. Repeat Step 1 - Step 7 with shutoff solenoid side lead (Figure 4, Item 21) only of fuel control valve (Figure 4, Item 15) energized with 24 volts DC power source (Figure 4, Item 20).
9. Calibrated cubic centimeter container (Figure 4, Item 18) should now contain  $8.5 \pm 2$  cubic centimeters of fuel.

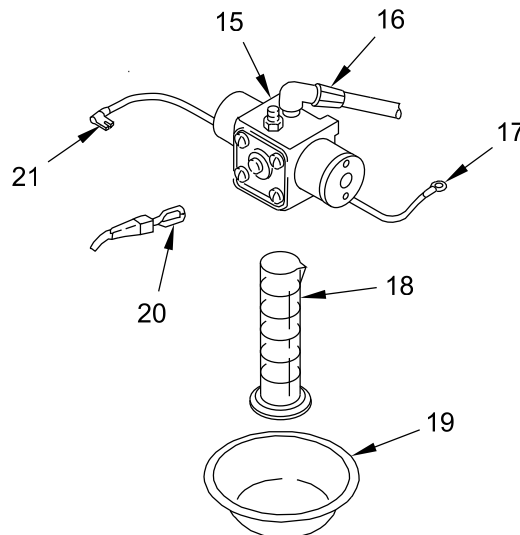


Figure 4. Fuel Control Valve Flow Test.

10. If fuel flow rates are not within limits, adjust flow. Turn adjusting screw (Figure 5, Item 22) to right to increase and to left to decrease. Adjust high heat flow first, then low heat flow.
11. After fuel flow is adjusted within limits, seal adjusting screw (Figure 5, Item 22) with insulating varnish.
12. If fuel flow cannot be adjusting within limits, replace fuel control valve (Figure 5, Item 15).

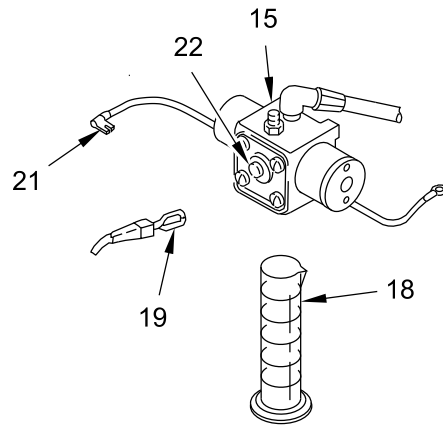


Figure 5. Fuel Control Valve Flow Test (Continued).

#### LEAK TEST

1. Repeat high heat fuel flow test. Disconnect both solenoid leads (Figure 6, Item 17) and (Figure 6, Item 21) from 24 volts DC power source (Figure 6, Item 20).
2. One or two drops of fuel may form after solenoid leads are disconnected from power source. Further leakage is not acceptable.
3. Replace fuel control valve (Figure 6, Item 15) that leaks.

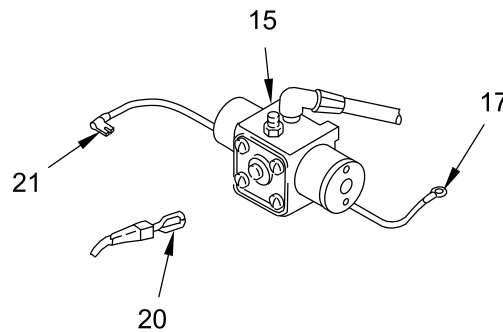


Figure 6. Fuel Control Valve Leak Test.

**END OF TASK**

**INSTALLATION**

1. Connect fuel control valve lead (Figure 7, Item 10) to terminal strap (Figure 7, Item 11).
2. Connect two fuel control valve leads (Figure 7, Item 14) and (Figure 7, Item 12) to overheated thermostat (Figure 7, Item 13).

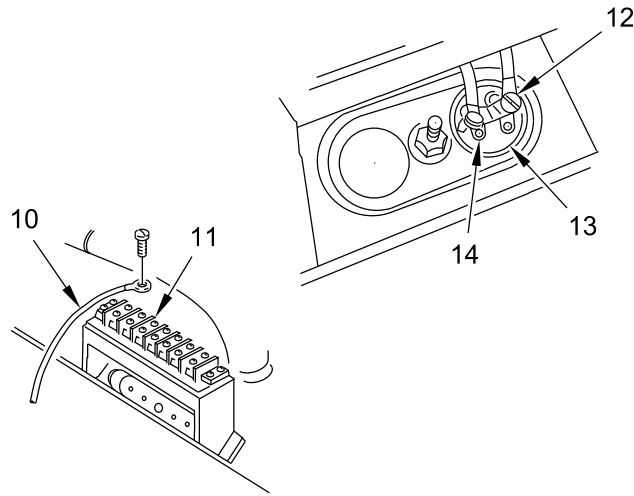


Figure 7. Fuel Control Valve Leads – Connect.

3. Install guard (Figure 8, Item 7) on coolant heater (Figure 8, Item 9). Secure with four screws (Figure 8, Item 8).

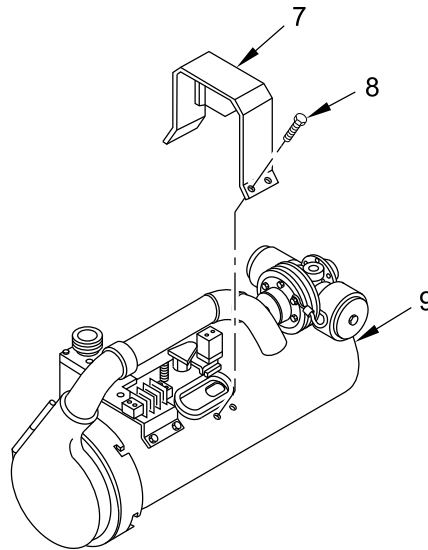


Figure 8. Guard – Installation.

4. Install fuel control valve (Figure 9, Item 1) on bracket (Figure 9, Item 2) and fuel tube (Figure 9, Item 4). Secure fuel control valve to bracket with two screws (Figure 9, Item 3).
5. Tighten nut (Figure 9, Item 6) on union (Figure 9, Item 5) beneath fuel control valve (Figure 9, Item 1).

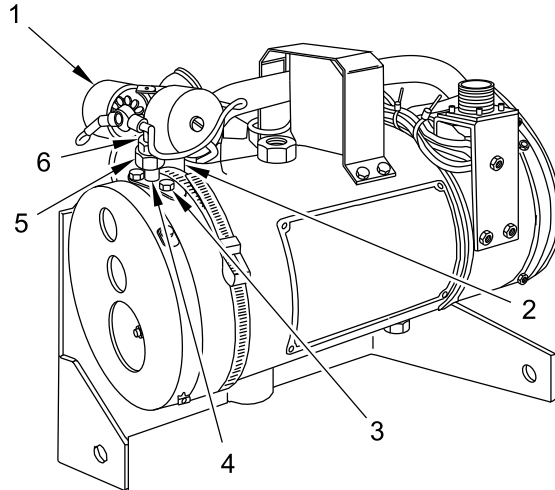


Figure 9. Fuel Control Valve – Installation.

#### **FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

#### **END OF TASK**

#### **END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**REPLACE RESTRICTION THERMOSTAT**

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**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)  
Metric Wrench Kit (WP 0069, Item 35)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Engine coolant heater removed from carrier  
(TM 9-2350-277-13&P)

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**Materials/Parts**

Restriction Thermostat

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**REMOVAL**

1. Remove four screws (Figure 1, Item 2) and guard (Figure 1, Item 1) from coolant heater (Figure 1, Item 3).
2. Remove nut (Figure 1, Item 9), and combustion tube assembly (Figure 1, Item 8) from coolant heater (Figure 1, Item 3) and blower assembly (Figure 1, Item 5).
3. Disconnect blower assembly lead (Figure 1, Item 6) from terminal number six of terminal strap (Figure 1, Item 7).
4. Loosen four nuts (Figure 1, Item 4) and turn blower assembly (Figure 1, Item 5) counterclockwise to remove blower assembly from coolant heater (Figure 1, Item 3).

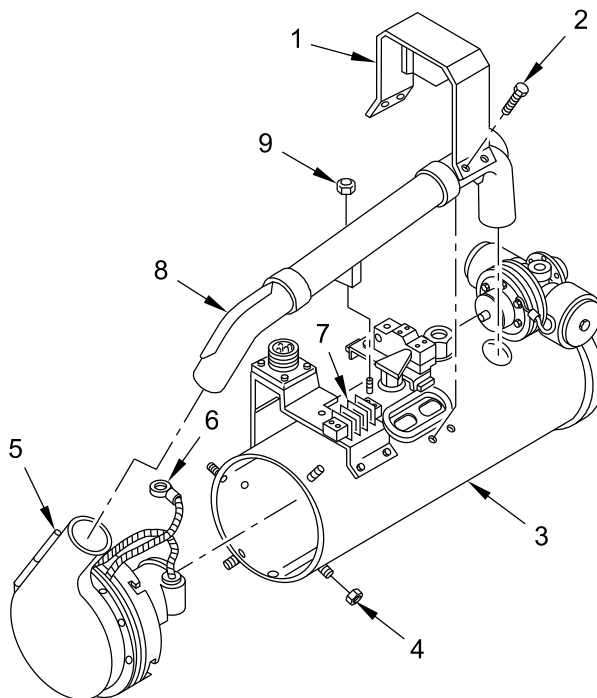


Figure 1. Blower Assembly and Combustion Tube – Removal.

5. Disconnect two leads (Figure 2, Item 10) from restriction thermostat (Figure 2, Item 11).
6. Remove two nuts (Figure 2, Item 14), two washers (Figure 2, Item 13), restriction thermostat (Figure 2, Item 11), and two spacers (Figure 2, Item 12) from heater (Figure 2, Item 3).

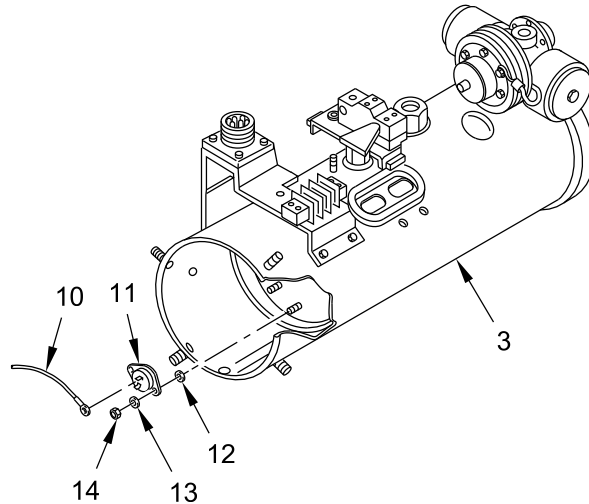


Figure 2. Restriction Thermostat – Removal.

## END OF TASK

## INSTALLATION

1. Place two spacers (Figure 3, Item 12) and new restriction thermostat (Figure 3, Item 11) on studs of heater (Figure 3, Item 3). Secure with two washers (Figure 3, Item 13) and two nuts (Figure 3, Item 14).
2. Connect two leads (Figure 3, Item 10) to restriction thermostat (Figure 3, Item 11).

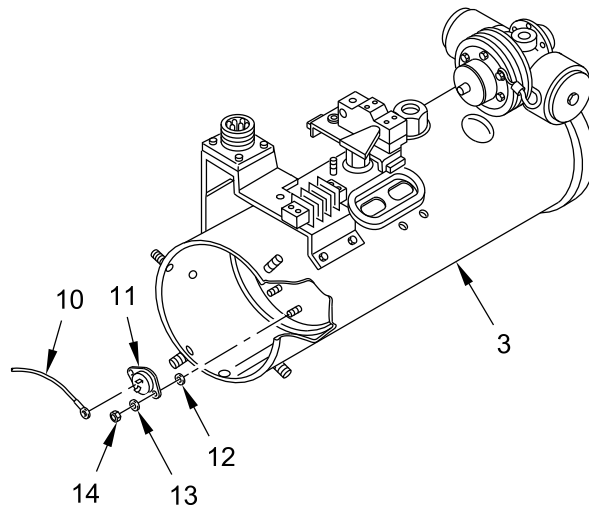


Figure 3. Restriction Thermostat – Installation.

3. Install blower assembly (Figure 4, Item 5) on heater (Figure 4, Item 3) and turn clockwise. Secure with four nuts (Figure 4, Item 4).
4. Connect blower assembly lead (Figure 4, Item 6) to terminal number six of terminal strap (Figure 4, Item 7).
5. Place combustion tube assembly (Figure 4, Item 8) on coolant heater (Figure 4, Item 3) and blower assembly (Figure 4, Item 5). Secure with nut (Figure 4, Item 9).
6. Install guard (Figure 4, Item 1) on coolant heater (Figure 4, Item 3). Secure with four screws (Figure 4, Item 2).

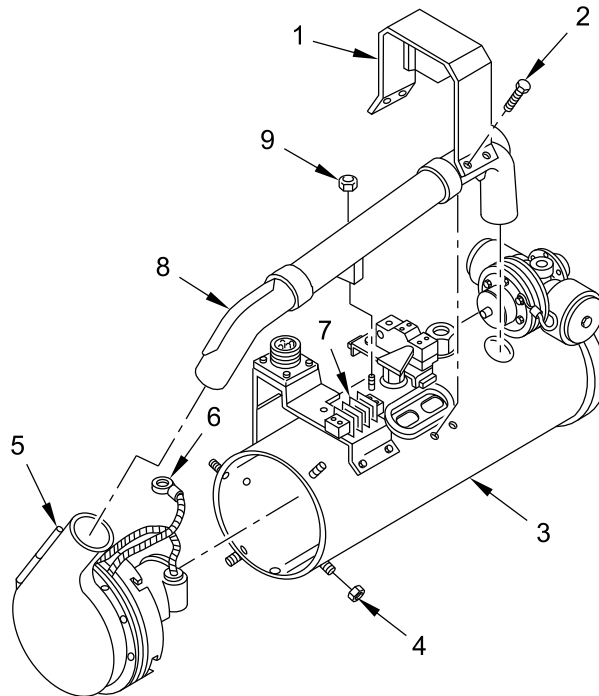


Figure 4. Combustion Tube and Blower Assembly – Installation.

#### **FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

#### **END OF TASK**

#### **END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**REPLACE OVERHEAT THERMOSTAT**

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**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Materials/Parts**

Lockwasher  
Packing

Thermostatic switch

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Engine coolant heater removed from carrier  
(TM 9-2350-277-13&P)

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**REMOVAL**

1. Remove four screws (Figure 1, Item 2) and guard (Figure 1, Item 1) from coolant heater (Figure 1, Item 3).

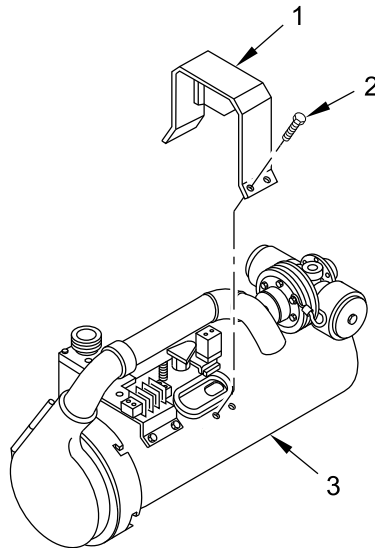


Figure 1. Guard – Removal.

2. Disconnect two leads (Figure 2, Item 5) from overheat thermostat (Figure 2, Item 4).
3. Remove nut (Figure 2, Item 6), lockwasher (Figure 2, Item 7), and retainer (Figure 2, Item 8) from coolant heater. Discard lockwasher.
4. Remove overheat thermostat (Figure 2, Item 4), packing (Figure 2, Item 10), and washer (Figure 2, Item 9) from coolant heater. Discard packing.
5. Use multi-meter to check resistance through overheat thermostat.
6. Multi-meter should read 0 ohms. If reading is infinity, replace overheat thermostat.

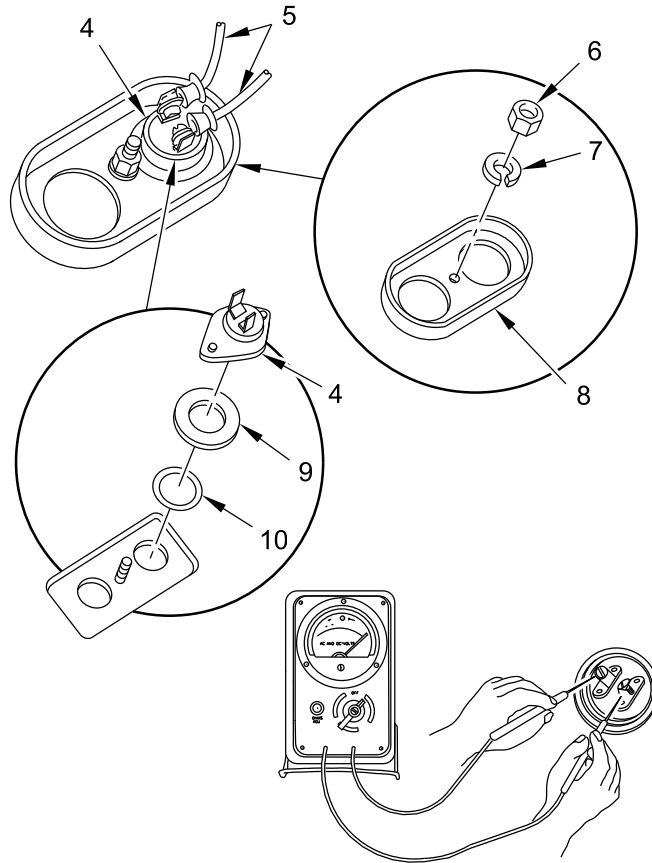


Figure 2. Overheat Thermostat – Removal.

**END OF TASK**

**INSTALLATION**

1. Install new packing (Figure 3, Item 10), washer (Figure 3, Item 9), and overheat thermostat (Figure 3, Item 4) on coolant heater. Secure with retainer (Figure 3, Item 8), new lockwasher (Figure 3, Item 7), and nut (Figure 3, Item 6).
2. Connect two leads (Figure 3, Item 5) to overheat thermostat (Figure 3, Item 4).

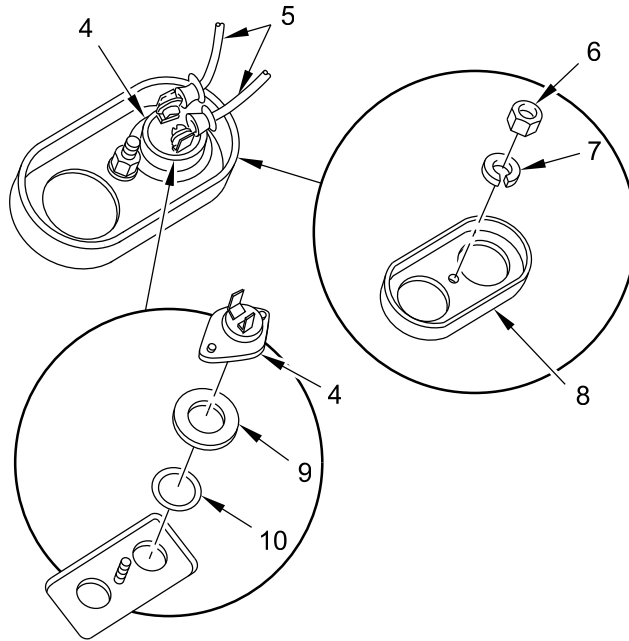


Figure 3. Overheat Thermostat – Installation.

3. Install guard (Figure 4, Item 1) on coolant heater (Figure 4, Item 3). Secure with four screws (Figure 4, Item 2).

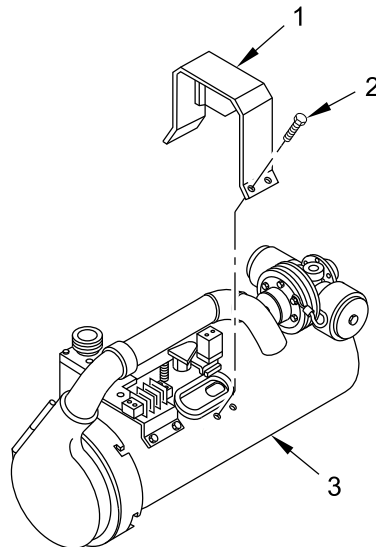


Figure 4. Guard – Installation.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**
**REPLACE FIXED RESISTOR**


---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool Kit (WP 0069, Item 26)  
 General Mechanic's Tool Kit (WP 0069, Item 29)  
 Metric Wrench Kit (WP 0069, Item 35)

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Engine coolant heater removed from carrier  
 (TM 9-2350-277-13&P)

**Materials/Parts**

Sleeve

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**REMOVAL**

1. Remove two screws (Figure 1, Item 15) and fuel control valve bracket (Figure 1, Item 14) from coolant heater (Figure 1, Item 13).
2. Loosen four nuts (Figure 1, Item 12), and remove end cover (Figure 1, Item 6) from heater (Figure 1, Item 13).
3. Remove two screws (Figure 1, Item 2) that secure tapping plate (Figure 1, Item 11), flange (Figure 1, Item 3), and fuel tube (Figure 1, Item 4) to heater (Figure 1, Item 13).
4. Remove nut (Figure 1, Item 7), fixed resistor (Figure 1, Item 9), flange (Figure 1, Item 3), fuel tube (Figure 1, Item 4), and sleeve (Figure 1, Item 1) from heater (Figure 1, Item 13).
5. Remove nut (Figure 1, Item 10), screw (Figure 1, Item 5), and electrical lead (Figure 1, Item 8) from fixed resistor (Figure 1, Item 9).

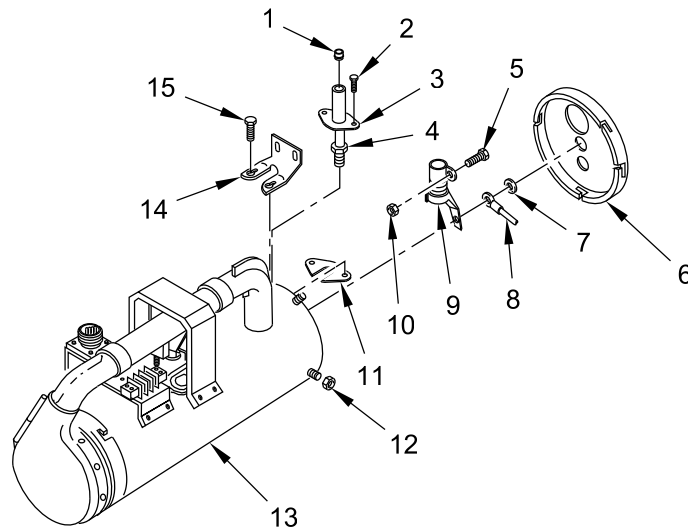


Figure 1. Fixed Resistor – Removal.

**END OF TASK**

**TESTING**

1. Use multi-meter (Figure 2, Item 16). Check resistance from circuit 7 terminal end (Figure 2, Item 17) to strap end (Figure 2, Item 18) of fixed resistor.
2. Multi-meter should read 1.6 to 1.7 ohms. If reading is not in range, replace fixed resistor.

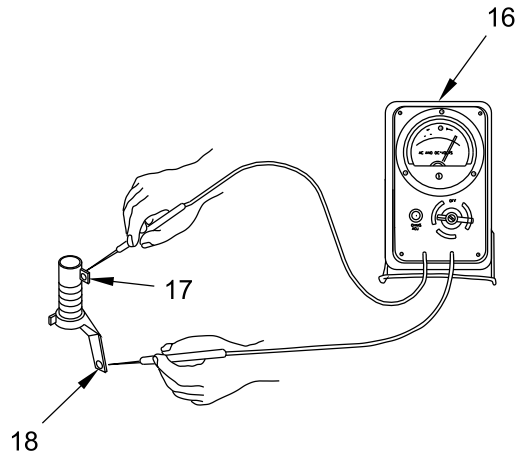


Figure 2. Fixed Resistor – Testing.

**END OF TASK****INSTALLATION**

1. If fixed resistor (Figure 3, Item 9) is to be replaced, grind or cut sleeve (Figure 3, Item 1) off of fuel tube (Figure 3, Item 4). Discard sleeve.
2. Install fixed resistor (Figure 3, Item 9) and new sleeve (Figure 3, Item 1) on fuel tube (Figure 3, Item 4).
3. Secure electrical lead (Figure 3, Item 8) to fixed resistor (Figure 3, Item 9) with screw (Figure 3, Item 5) and nut (Figure 3, Item 10).
4. Secure fixed resistor (Figure 3, Item 9) to heater (Figure 3, Item 13) with nut (Figure 3, Item 7).
5. Secure fuel tube (Figure 3, Item 4), flange (Figure 3, Item 3), and tapping plate (Figure 3, Item 11) to heater (Figure 3, Item 13) with two screws (Figure 3, Item 2).
6. Install end cover (Figure 3, Item 6) on heater (Figure 3, Item 13). Tighten four nuts (Figure 3, Item 12).
7. Secure fuel control valve bracket (Figure 3, Item 14) to heater (Figure 3, Item 13) with two screws (Figure 3, Item 15).

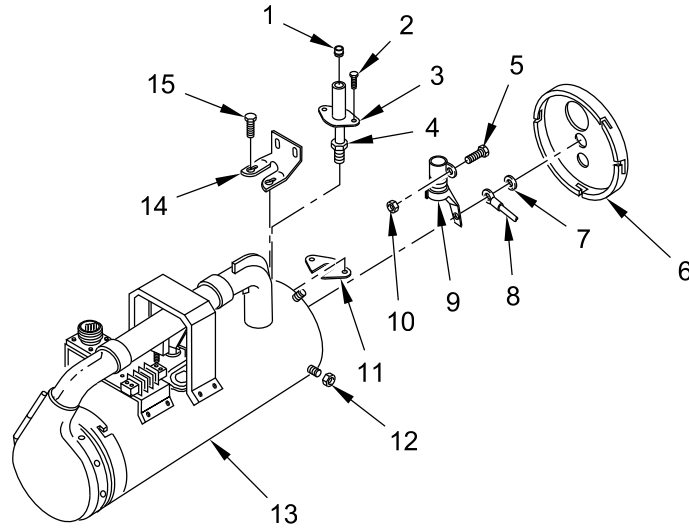


Figure 3. Fixed Resistor – Installation.

**FOLLOW ON MAINTENANCE**

1. Return to supply pre local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE**  
**REPLACE BURNER PACKING AND GASKET**

---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)  
Metric Wrench Kit (WP 0069, Item 35)

**Materials/Parts**

Gasket  
Preformed Packing

**Personnel Required**

Track Vehicle Repairer 91H10

**Equipment Condition**

Fixed resistor removed (WP 0029)  
Fuel control valve removed (WP 0026)

---

**REMOVAL**

1. Remove screw (Figure 1, Item 3), washer (Figure 1, Item 2) and ground strap (Figure 1, Item 4) from burner assembly (Figure 1, Item 1).
2. Remove four nuts (Figure 1, Item 5), four bolts (Figure 1, Item 7), four clamps (Figure 1, Item 6), and burner (Figure 1, Item 1) from heater (Figure 1, Item 8).
3. Remove preformed packing (Figure 1, Item 10) and gasket (Figure 1, Item 9) from burner (Figure 1, Item 1). Discard preformed packing and gasket.

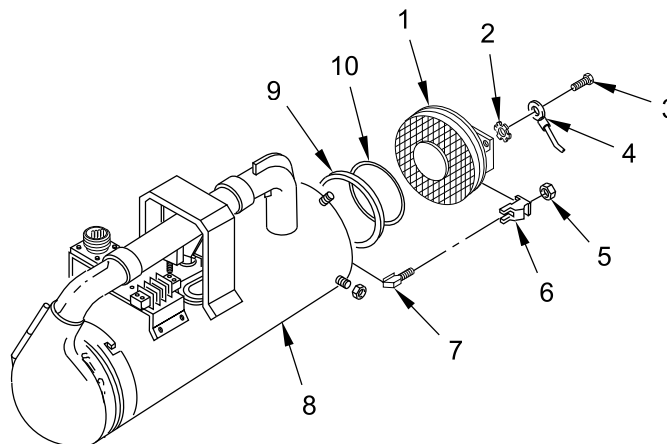


Figure 1. Burner Packing and Gasket – Removal.

**END OF TASK**

**INSTALLATION**

1. Install new preformed packing (Figure 2, Item 10) and new gasket (Figure 2, Item 9) in groove of burner (Figure 2, Item 1).
2. Place burner (Figure 2, Item 1) in heater (Figure 2, Item 8). Secure with four nuts (Figure 2, Item 5), four bolts (Figure 2, Item 7), and four clamps (Figure 2, Item 6).
3. Install ground strap (Figure 2, Item 4) on burner (Figure 2, Item 1). Secure with screw (Figure 2, Item 3) and washer (Figure 2, Item 2).

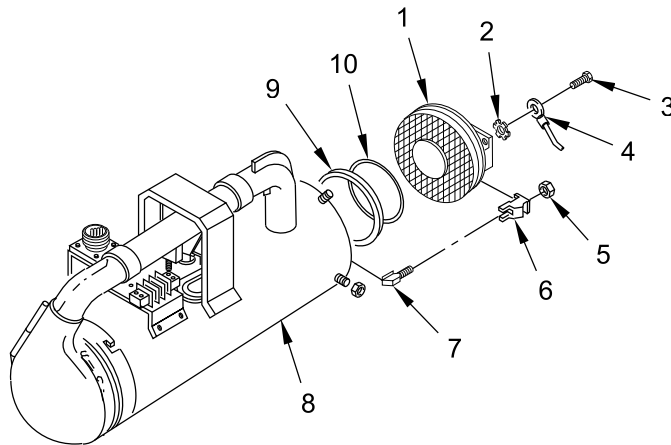


Figure 2. Burner Packing and Gasket – Installation.

**FOLLOW ON MAINTENANCE**

1. Install fixed resistor (WP 0029).
2. Install fuel control valve (WP 0026).
3. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK****END OF WORK PACKAGE**

---

**SUSTAINMENT MAINTENANCE**  
**REPLACE DIODE AND MOTOR RESISTOR**

---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool  
Kit (WP 0069, Item 26)  
General Mechanic's Tool Kit (WP 0069, Item 29)  
Metric Wrench Kit (WP 0069, Item 35)

**Equipment Condition**

Engine coolant heater removed from carrier  
(TM 9-2350-277-13&P)

**Personnel Required**

Track Vehicle Repairer 91H10

---

**REMOVAL**

1. Remove four screws (Figure 1, Item 2) and guard (Figure 1, Item 1) from heater (Figure 1, Item 3).

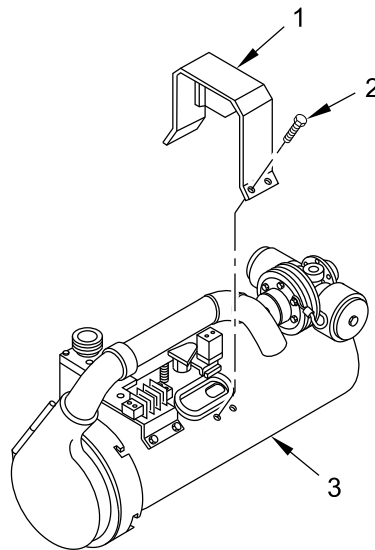


Figure 1. Guard – Removal.

**NOTE**

**Note direction of arrow on diode so it can be installed later.**

2. Remove diode (Figure 2, Item 4) from holder (Figure 2, Item 5).
3. Remove motor resistor (Figure 2, Item 8) leads from terminals No. 4 and No. 6 on terminal board (Figure 2, Item 7).
4. Remove nut (Figure 2, Item 6), screw (Figure 2, Item 9), and motor resistor (Figure 2, Item 8) from bracket (Figure 2, Item 10).

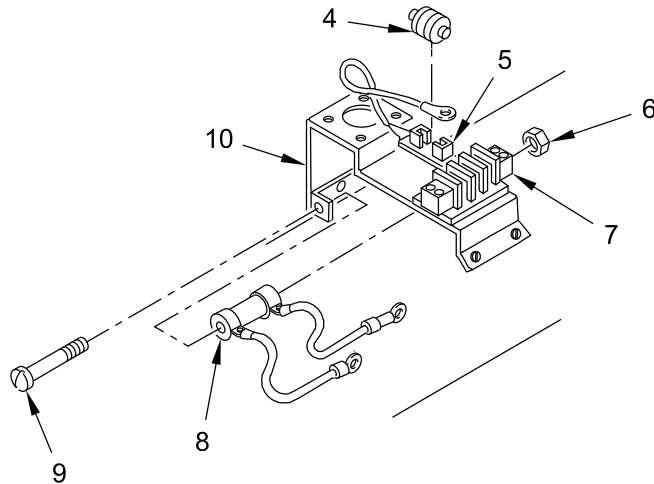


Figure 2. Diode/Motor Resistor – Removal.

**END OF TASK****TESTING**

1. Use multimeter to check diode (Figure 3, Item 4). Set meter to above 200 ohms range. Place probes on each end of diode and note reading. Switch probes and note reading. One reading must indicate continuity and other reading must indicate high resistance, if they do not replace diode.

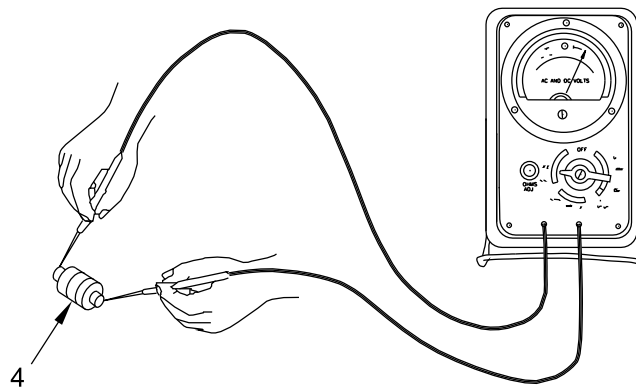


Figure 3. Diode – Testing.



2. Use multimeter to check motor resistor (Figure 4, Item 8). Multimeter must read 250 to 300 ohms. Replace out of range resistor.

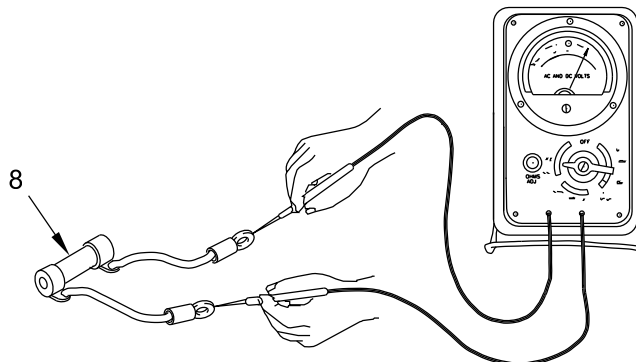


Figure 4. Motor Resistor – Testing.

## END OF TASK

## INSTALLATION

1. Install motor resistor (Figure 5, Item 8) on bracket (Figure 5, Item 10) with screw (Figure 5, Item 9) and nut (Figure 5, Item 6).
2. Secure motor resistor (Figure 5, Item 8) leads to terminals No. 4 and No. 6 of terminal board (Figure 5, Item 7).
3. Install diode (Figure 5, Item 4) in holder (Figure 5, Item 5).

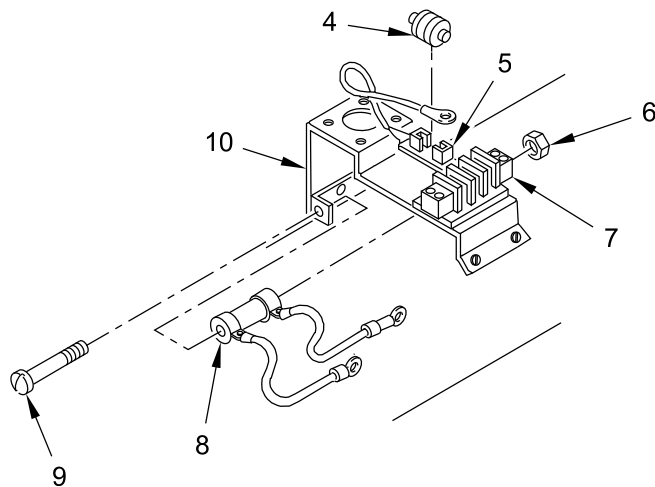


Figure 5. Diode/Motor Resistor – Installation.

4. Install guard (Figure 6, Item 1) on heater (Figure 6, Item 3). Secure with four screws (Figure 6, Item 2).

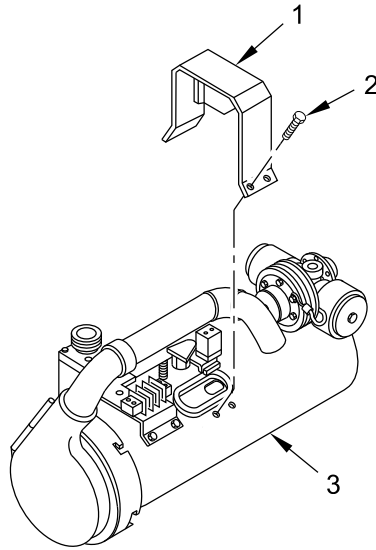


Figure 6. Guard – Installation.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**

---

**SUSTAINMENT MAINTENANCE****REPLACE BLOWER MOTOR**

---

**INITIAL SETUP:****Tools and Special Tools**

Automotive Fuel and Electrical System Repair Tool Kit (WP 0069, Item 26)  
Metric Wrench Kit (WP 0069, Item 35)

**Equipment Condition**

Engine coolant heater removed from carrier (TM 9-2350-277-13&P)

**Personnel Required**

Track Vehicle Repairer 91H10

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**REMOVAL**

1. Remove four screws (Figure 1, Item 2) and guard (Figure 1, Item 1) from coolant heater (Figure 1, Item 3).
2. Remove nut (Figure 1, Item 9) and combustion tube assembly (Figure 1, Item 8) from coolant heater (Figure 1, Item 3) and blower assembly (Figure 1, Item 5).
3. Disconnect blower assembly lead (Figure 1, Item 6) from terminal number six of terminal strap (Figure 1, Item 7).
4. Loosen four nuts (Figure 1, Item 4) and turn blower assembly (Figure 1, Item 5) counterclockwise to remove blower assembly from coolant heater (Figure 1, Item 3).

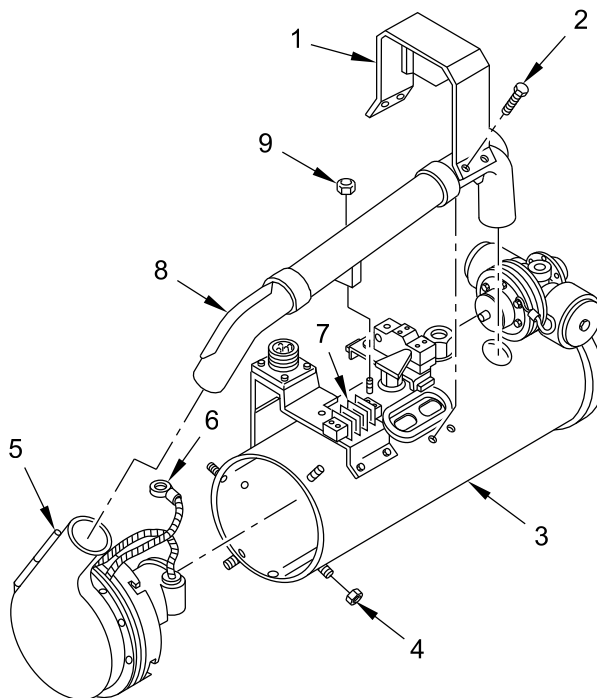


Figure 1. Blower Assembly – Removal.

5. Remove seven screws (Figure , Item 19), seven speed nuts (Figure , Item 16), and cover (Figure , Item 10) from blower plate (Figure , Item 12).
6. Loosen set screw (Figure , Item 18) and remove fan vane (Figure , Item 11) from motor (Figure , Item 14).
7. Remove three screws (Figure 2, Item 17), three spacers (Figure 2, Item 15), grommets (Figure 2, Item 13), and motor (Figure 2, Item 14) from blower plate (Figure 2, Item 12).

## END OF TASK

## INSTALLATION

1. Install motor (Figure 2, Item 14) in blower plate (Figure 2, Item 12). Secure with three screws (Figure 2, Item 17), three spacers (Figure 2, Item 15), and grommets (Figure 2, Item 13).
2. Place fan vane (Figure 2, Item 11) flush with end of motor shaft. Secure with set screw (Figure 2, Item 18).
3. Install cover (Figure 2, Item 10) on blower plate (Figure 2, Item 12). Secure with seven screws (Figure 2, Item 19) and seven speed nuts (Figure 2, Item 16). Turn fan vane (Figure 2, Item 11) through combustion tube opening to make sure fan vane is clear.

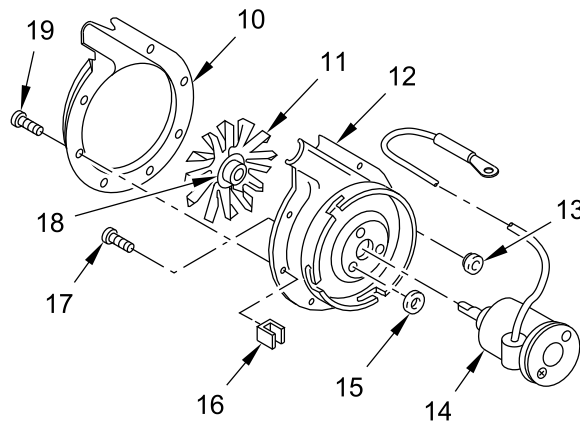


Figure 2. Blower Motor – Disassembly, Assembly.

4. Place blower assembly (Figure 3, Item 5) on heater (Figure 3, Item 3) and turn clockwise. Secure with four nuts (Figure 3, Item 4).
5. Connect blower assembly lead (Figure 3, Item 6) to terminal number six of terminal strap (Figure 3, Item 7).
6. Place combustion tube assembly (Figure 3, Item 8) on coolant heater (Figure 3, Item 3) and blower assembly (Figure 3, Item 5). Secure with nut (Figure 3, Item 9).
7. Install guard (Figure 3, Item 1) on coolant heater (Figure 3, Item 3). Secure with four screws (Figure 3, Item 2).

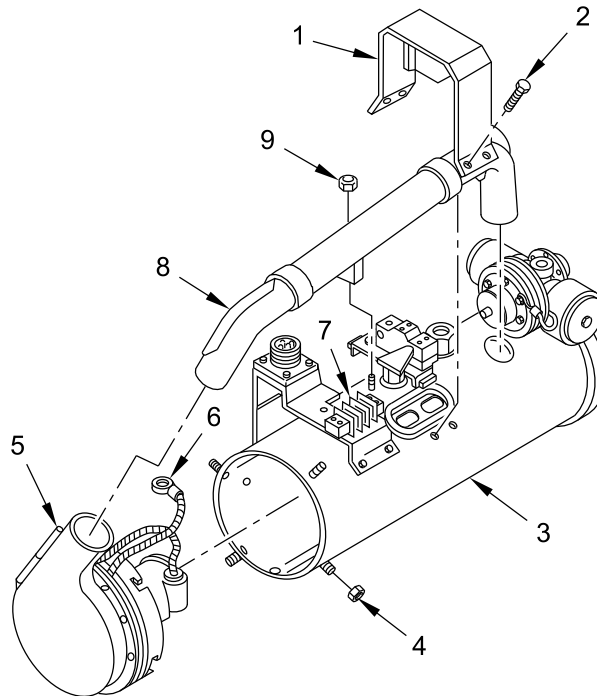


Figure 3. Blower Assembly – Installation.

#### **FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

#### **END OF TASK**

#### **END OF WORK PACKAGE**



**CHAPTER 15**  
**MAINTENANCE INSTRUCTIONS**  
**FOR**  
**ELECTRICAL EQUIPMENT (M1068A3 ONLY)**

**CHAPTER 15**  
**MAINTENANCE INSTRUCTIONS**

**WORK PACKAGE INDEX**

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REPAIR EXTERNAL COMMUNICATION BOX A11 (M1068A3 ONLY).....	0037
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**SUSTAINMENT MAINTENANCE****REPAIR TENT INTERFACE PANEL BOX A5 (M1068A3 ONLY)**

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**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)  
General Mechanic's Tool Kit (WP 0069, Item 29)

**Personnel Required**

Power-Generation Equipment Repairer 91D10  
Radio Repairer 94E10

**Materials/Parts**

Adhesive (WP 0068, Item 1)  
Lockwasher (14)  
Self-locking nut (30)

**Equipment Condition**

Tent interface panel box removed from carrier  
(TM 9-2350-277-13&P)

---

**NOTE**

Tag all leads before disconnecting for proper installation later.

**DISASSEMBLY**

1. Remove 14 screws (Figure 1, Item 1), 14 lockwashers (Figure 1, Item 2), and faceplate (Figure 1, Item 3) from box (Figure 1, Item 8). Discard lockwashers.

**NOTE**

**Do not remove gasket unless gasket is damaged.**

2. If any of four gaskets (Figure 1, Item 4) are damaged, remove only the damaged gaskets from box (Figure 1, Item 8).
3. Remove four locknuts (Figure 1, Item 5), four screws (Figure 1, Item 9), connector J8 (Figure 1, Item 6), and gasket (Figure 1, Item 7) from box (Figure 1, Item 8). Discard locknuts.
4. Remove four locknuts (Figure 1, Item 5), four screws (Figure 1, Item 9), dust cap (Figure 1, Item 12), connector J137 (Figure 1, Item 10), and gasket (Figure 1, Item 7) from faceplate (Figure 1, Item 3). Discard locknuts.
5. Disconnect four leads (Figure 1, Item 14) from four posts (Figure 1, Item 11) and (Figure 1, Item 13).

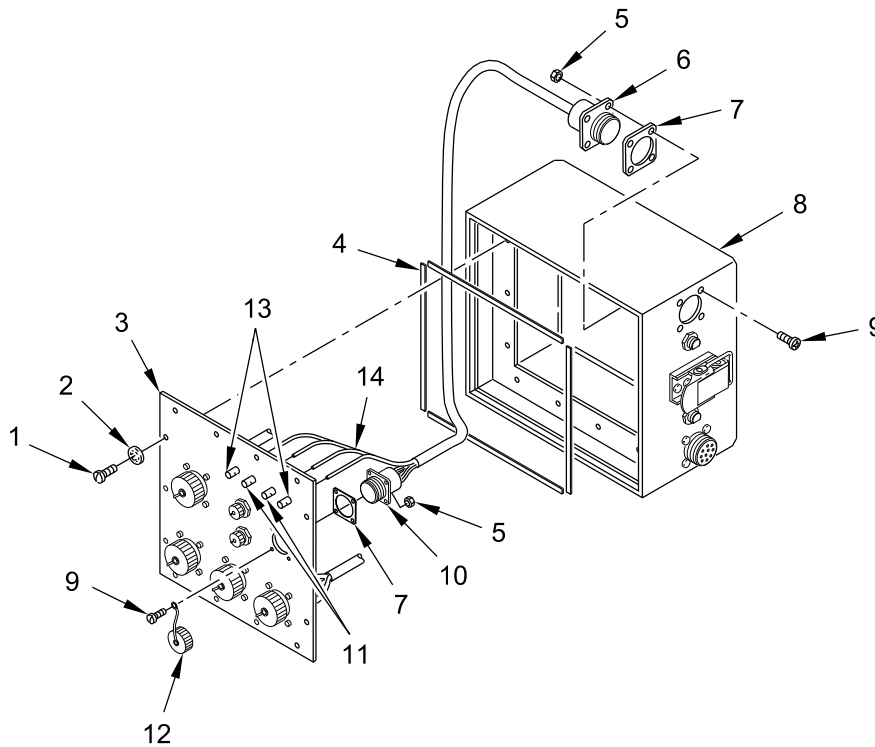


Figure 1. Tent Interface Panel Box – Disassembly.

6. Disconnect three lead terminals (Figure 2, Item 20) from connector J11 (Figure 2, Item 19).
7. Disconnect three terminals (Figure 2, Item 31) from connector J12 (Figure 2, Item 10).
8. Disconnect three lead terminals (Figure 2, Item 32) from connector J13 (Figure 2, Item 33).

9. Remove 12 screws (Figure 2, Item 9), 12 locknuts (Figure 2, Item 5), three dust caps (Figure 2, Item 35), connectors (Figure 2, Item 19), (Figure 2, Item 10), and (Figure 2, Item 33), and three gaskets (Figure 2, Item 18), (Figure 2, Item 7), and (Figure 2, Item 34) from faceplate (Figure 2, Item 3). Discard locknuts.
10. Remove four screws (Figure 2, Item 9), locknuts (Figure 2, Item 5), J7 connector (Figure 2, Item 30), and gasket (Figure 2, Item 18) from box (Figure 2, Item 8). Discard locknuts.
11. Remove two jamnuts (Figure 2, Item 25), lockwashers (Figure 2, Item 24), and connectors J9 lockwashers (Figure 2, Item 21) and J10 (Figure 2, Item 22) from box (Figure 2, Item 8).
12. Remove two jamnuts (Figure 2, Item 25), two lockwashers (Figure 2, Item 24), and connectors J113(Figure 2, Item 39) and J114 (Figure 2, Item 40) from faceplate (Figure 2, Item 3).
13. Remove four screws (Figure 2, Item 9), locknuts (Figure 2, Item 5), connector J22 (Figure 2, Item 38), gasket (Figure 2, Item 37), and dust cap (Figure 2, Item 36) from faceplate (Figure 2, Item 3). Discard locknuts.
14. Remove posts (Figure 2, Item 13) and (Figure 2, Item 11) from faceplate (Figure 2, Item 3).
15. Remove two locknuts (Figure 2, Item 17), two screws (Figure 2, Item 15), and two caps (Figure 2, Item 16) from faceplate (Figure 2, Item 3). Discard locknuts.
16. Remove six nuts (Figure 2, Item 23), six screws (Figure 2, Item 29), six washers (Figure 2, Item 28), two catch assemblies (Figure 2, Item 27), and two pads (Figure 2, Item 26) from box (Figure 2, Item 8).

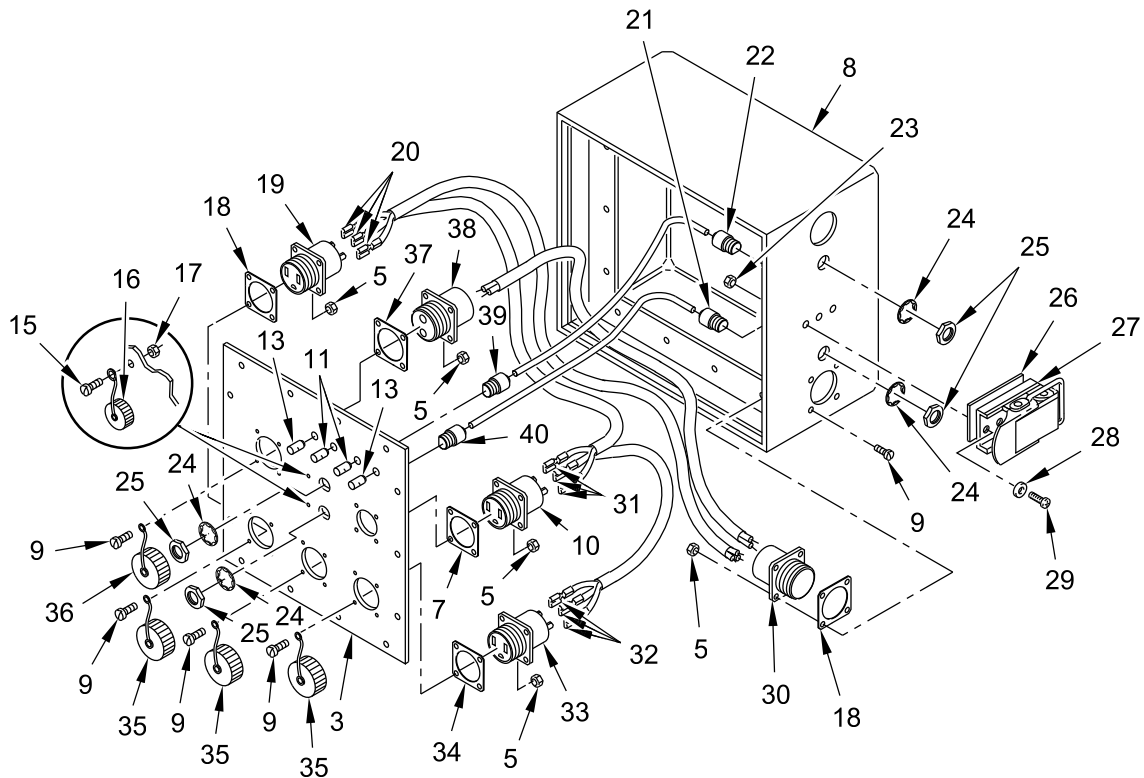


Figure 2. Connector – Removal.

END OF TASK

**ASSEMBLY**

1. Install two catch assemblies (Figure 3, Item 27), two pads (Figure 3, Item 26), six screws (Figure 3, Item 29), six washers (Figure 3, Item 28), and six nuts (Figure 3, Item 23) on box (Figure 3, Item 8).
2. Install two caps (Figure 3, Item 16), two screws (Figure 3, Item 15), and two new locknuts (Figure 3, Item 17) on faceplate (Figure 3, Item 3).
3. Install posts (Figure 3, Item 11) and (Figure 3, Item 13) on faceplate (Figure 3, Item 3).
4. Install connector J22 (Figure 3, Item 38), gasket (Figure 3, Item 37), dust cap (Figure 3, Item 36), four screws (Figure 3, Item 9), and four new locknuts (Figure 3, Item 5) on faceplate (Figure 3, Item 3).
5. Install two connectors J113 (Figure 3, Item 39) and J114 (Figure 3, Item 40), two lockwashers (Figure 3, Item 24), and two jamnuts (Figure 3, Item 25) on faceplate (Figure 3, Item 3).
6. Install two connectors J9 (Figure 3, Item 21) and J10 (Figure 3, Item 22), two lockwashers (Figure 3, Item 24), and two jamnuts (Figure 3, Item 25) on box (Figure 3, Item 8).
7. Install connector J7 (Figure 3, Item 30), gasket (Figure 3, Item 18), four screws (Figure 3, Item 9), and four locknuts (Figure 3, Item 5) on box (Figure 3, Item 8).
8. Install three connectors (Figure 3, Item 19), (Figure 3, Item 10), and (Figure 3, Item 33), gaskets (Figure 3, Item 18), (Figure 3, Item 7), and (Figure 3, Item 34), dust caps (Figure 3, Item 35), 12 screws (Figure 3, Item 9), and 12 new locknuts (Figure 3, Item 5) on faceplate (Figure 3, Item 3).

**NOTE**

**Use wiring diagram Figure 5, page 0033-7 to assist in assembly.**

9. Connect three lead terminals (Figure 3, Item 32) on connector J13 (Figure 3, Item 33).
10. Connect three lead terminals (Figure 3, Item 31) on connector J12 (Figure 3, Item 10).
11. Connect three lead terminals (Figure 3, Item 20) on connector J11 (Figure 3, Item 19).

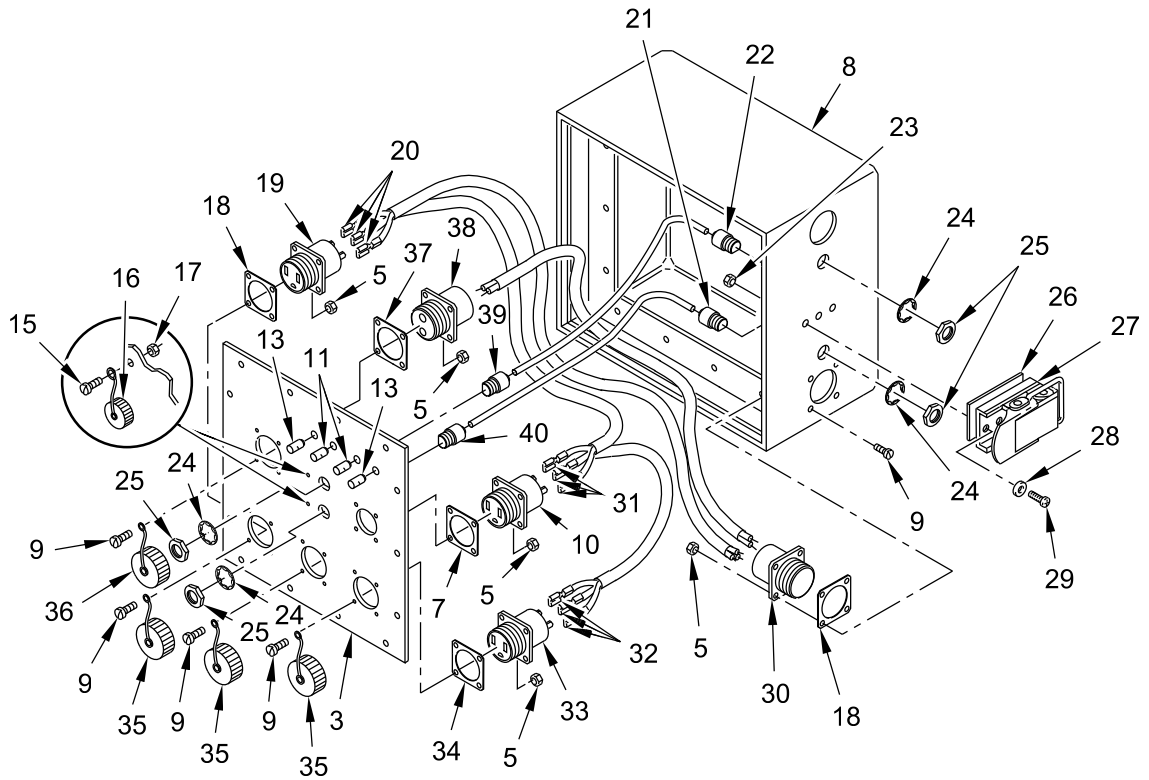


Figure 3. Connector – Installation.

12. Install four leads (Figure 4, Item 14) on posts (Figure 4, Item 11) and (Figure 4, Item 13).
13. Install connector J137 (Figure 4, Item 10), gasket (Figure 4, Item 7), dust cap (Figure 4, Item 12), four screws (Figure 4, Item 9), and four new locknuts (Figure 4, Item 5) on faceplate (Figure 4, Item 3).
14. Install connector J8 (Figure 4, Item 6), gasket (Figure 4, Item 7), four screws (Figure 4, Item 9), and four new locknuts (Figure 4, Item 5) on box (Figure 4, Item 8).
15. Install new gaskets (Figure 4, Item 4) by applying a thin coat of adhesive to box surface and to gasket surface. Allow ten to twenty minutes to dry (tacky to the touch). Position gasket on box (Figure 4, Item 8) and press firmly into place.
16. Install faceplate (Figure 4, Item 3), 14 new lockwashers, (Figure 4, Item 2) and 14 screws (Figure 4, Item 1) on box (Figure 4, Item 8).

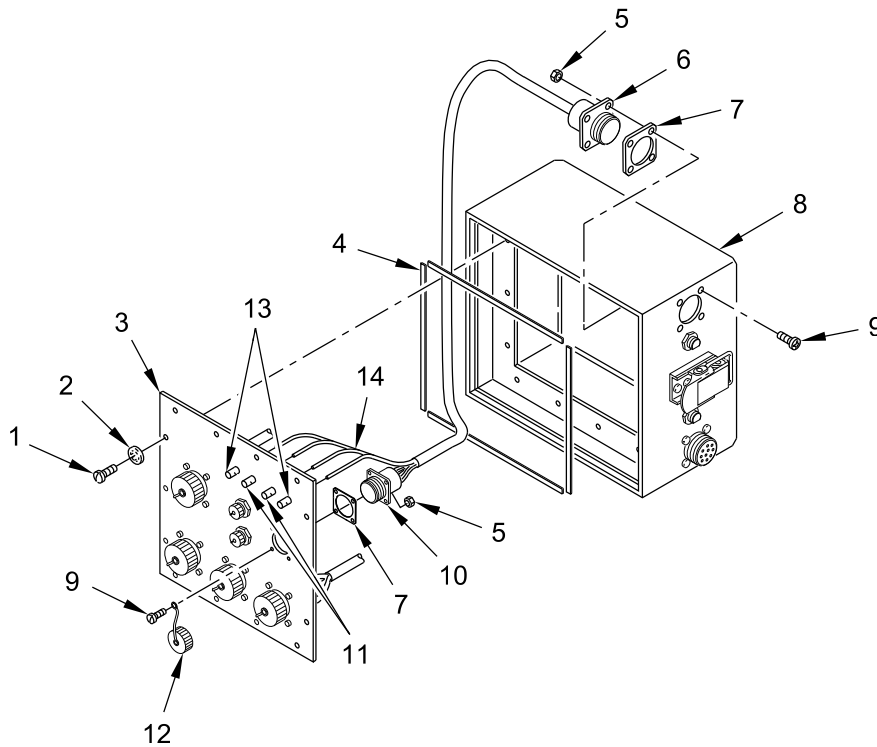


Figure 4. Tent Interface Panel Box – Assembly.

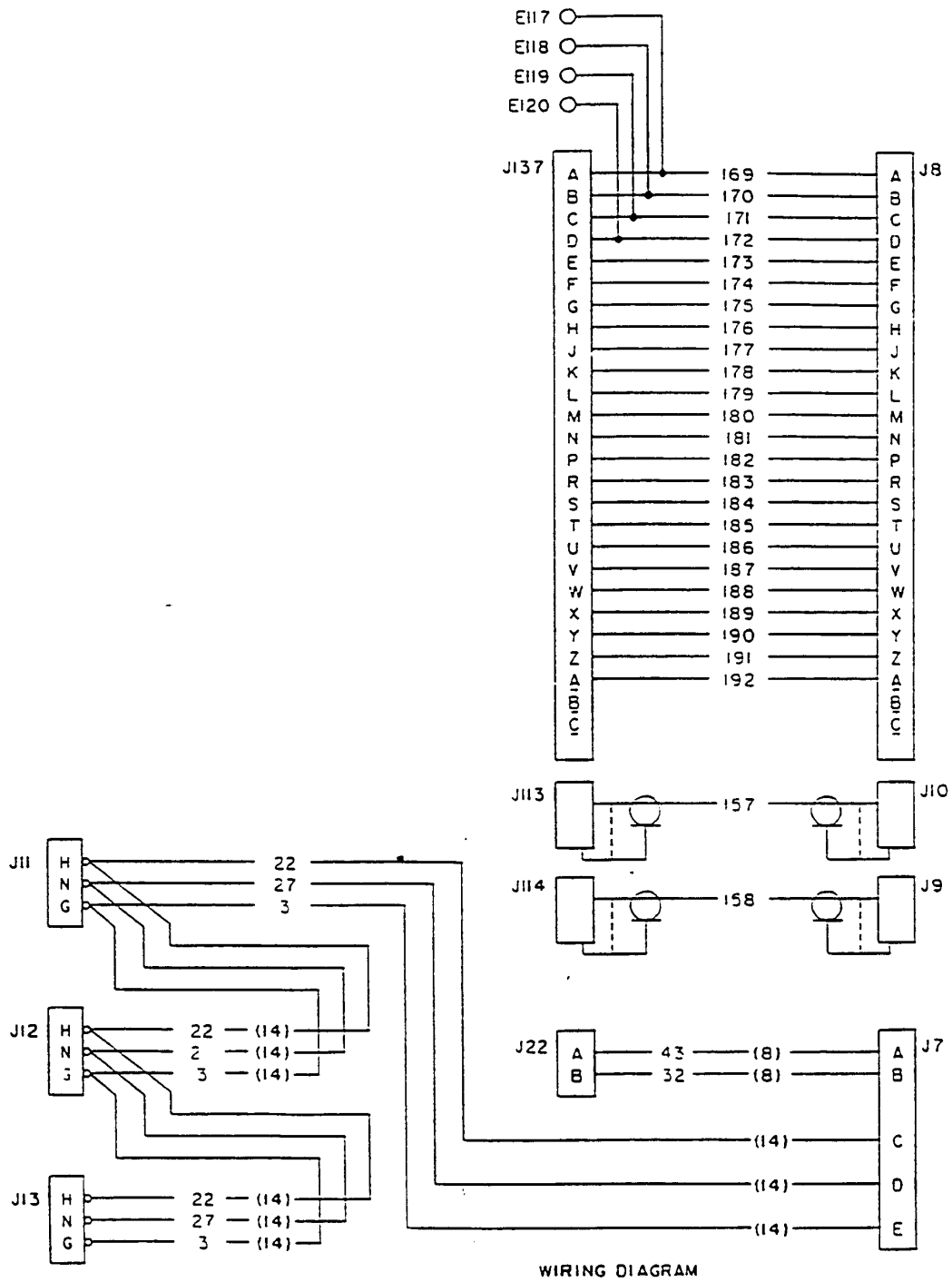


Figure 5. Tent Interface Panel Box A5 Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE****REPAIR AC POWER EXTENSION BOXES A6 AND A7 (M1068A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Equipment Condition**AC power extension box A6 removed from carrier  
(TM 9-2350-277-13&P)**Materials/Parts**

Self-locking nut (40)

AC power extension box A7 removed from carrier  
(TM 9-2350-277-13&P)**Personnel Required**Track Vehicle Repairer 91H10

---

**NOTE****Tag all leads before disconnecting for proper installation later.**

**DISASSEMBLY****NOTE**

**Mechanical Disassembly/Assembly are the same for boxes A6 and A7.  
Electrical reference designators are different.**

1. Remove four screws (Figure 1, Item 6) and cover (Figure 1, Item 5) with gasket from extension box (Figure 1, Item 1).
2. Remove four screws (Figure 1, Item 10), locknuts (Figure 1, Item 3), and connector J1 (Figure 1, Item 2) from extension box (Figure 1, Item 1). Discard locknuts.
3. Disconnect leads from connectors if necessary.
4. Remove 16 screws (Figure 1, Item 7), locknuts (Figure 1, Item 4), four dust caps (Figure 1, Item 8), and connectors (Figure 1, Item 9) from cover (Figure 1, Item 5). Discard locknuts.

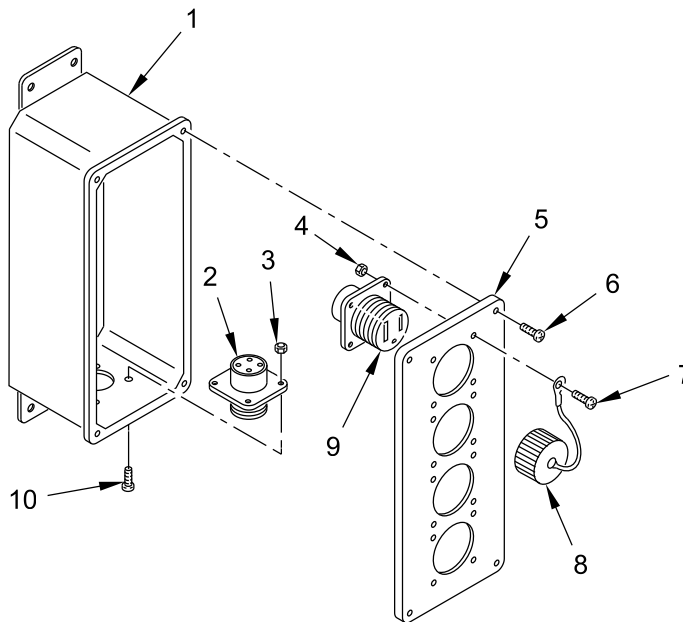


Figure 1. AC Power Extension Box – Disassembly.

**END OF TASK**

**ASSEMBLY****NOTE**

**Use Wiring Diagrams Figure 3, page 0034-4 for installation of wires to connectors.**

1. Install four connectors (Figure 2, Item 9), dust caps (Figure 2, Item 8), on cover (Figure 2, Item 5). Secure with 16 screws (Figure 2, Item 7) and new locknuts (Figure 2, Item 4).
2. Install connector J1 (Figure 2, Item 2) on extension box (Figure 2, Item 1). Secure with four screws (Figure 2, Item 10) and new locknuts (Figure 2, Item 3).

**NOTE**

**Color Designation for Terminals: H (HOT) = YELLOW , N (NEUTRAL) = WHITE , G (GROUND) = GREEN**

3. Connect leads to connectors if necessary.
4. Install cover (Figure 2, Item 5) with gasket on extension box (Figure 2, Item 1) and secure with four screws (Figure 2, Item 6).

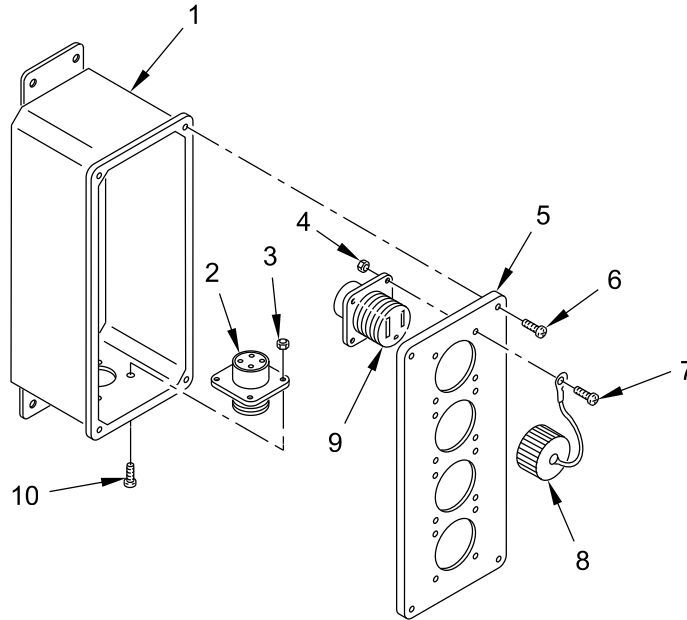
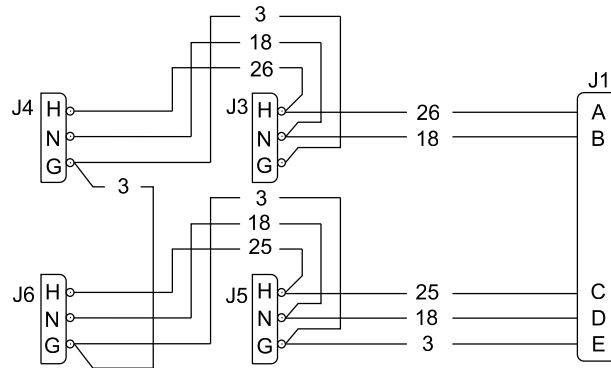
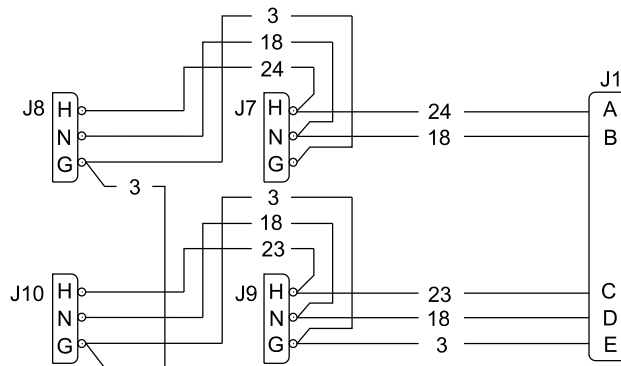


Figure 2. AC Power Extension Box – Assembly.



**12383854-1 (A6) WIRING DIAGRAM**



**12383854-2 (A7) WIRING DIAGRAM**

Figure 3. Wiring Diagrams.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**

---

**SUSTAINMENT MAINTENANCE****REPAIR ROADSIDE DC POWER EXTENSION BOX A9 (M1068A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Equipment Condition**

Roadside DC power extension box removed from carrier (TM 9-2350-277-13&amp;P)

**Materials/Parts**

Locknut (28)

**Personnel Required**Track Vehicle Repairer 91H10

---

**NOTE****Tag all leads before disconnecting for proper installation later.**

**DISASSEMBLY**

1. Remove four screws (Figure 1, Item 7) and cover (Figure 1, Item 6) with gasket from extension box (Figure 1, Item 2).
2. Remove four screws (Figure 1, Item 1), four locknuts (Figure 1, Item 4), and connector J1 (Figure 1, Item 14) from extension box (Figure 1, Item 2). Discard locknuts.
3. Remove four screws (Figure 1, Item 1), four locknuts (Figure 1, Item 4), and connector J2 (Figure 1, Item 3) from extension box (Figure 1, Item 2). Discard locknuts.
4. Remove 16 screws (Figure 1, Item 8), 16 locknuts (Figure 1, Item 5), four dust caps (Figure 1, Item 9), and four connectors J18-J21 (Figure 1, Item 13) from cover (Figure 1, Item 6). Discard locknuts.
5. Remove four screws (Figure 1, Item 10), four locknuts (Figure 1, Item 4), dust cap (Figure 1, Item 11), and connector J23 (Figure 1, Item 12) from cover (Figure 1, Item 6). Discard locknuts.
6. Disconnect leads from connectors if necessary.

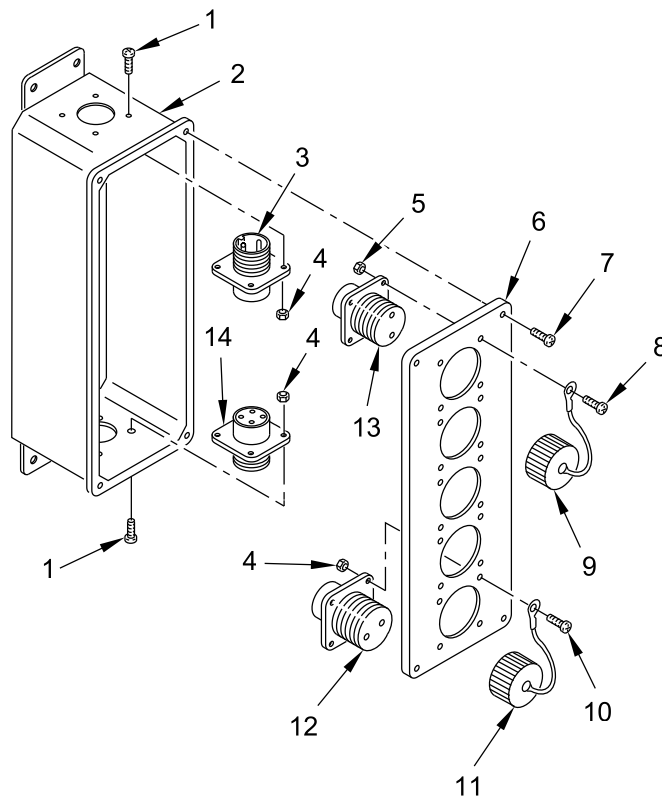


Figure 1. Roadside DC Power Extension Box – Disassembly.

**END OF TASK**

**ASSEMBLY**

1. Install connector J23 (Figure 2, Item 12) on cover (Figure 2, Item 6) with dustcap (Figure 2, Item 11). Secure with four screws (Figure 2, Item 10) and four new locknuts (Figure 2, Item 4).
2. Install four connectors J18-J21 (Figure 2, Item 13) on cover (Figure 2, Item 6) with dust caps (Figure 2, Item 9). Secure with 16 screws (Figure 2, Item 8) and 16 new locknuts (Figure 2, Item 5).
3. Install connector J2 (Figure 2, Item 3) on extension box (Figure 2, Item 2). Secure with four screws (Figure 2, Item 1) and four new locknuts (Figure 2, Item 4).
4. Install connector J1 (Figure 2, Item 14) on extension box (Figure 2, Item 2). Secure with four screws (Figure 2, Item 1) and four new locknuts (Figure 2, Item 4).

**NOTE**

**Use wiring diagram Figure 3, page 0035-4 for installation of wires to connectors.**

5. Connect leads to connectors if necessary.
6. Install cover (Figure 2, Item 6) with gasket on extension box (Figure 2, Item 2). Secure with four screws (Figure 2, Item 7).

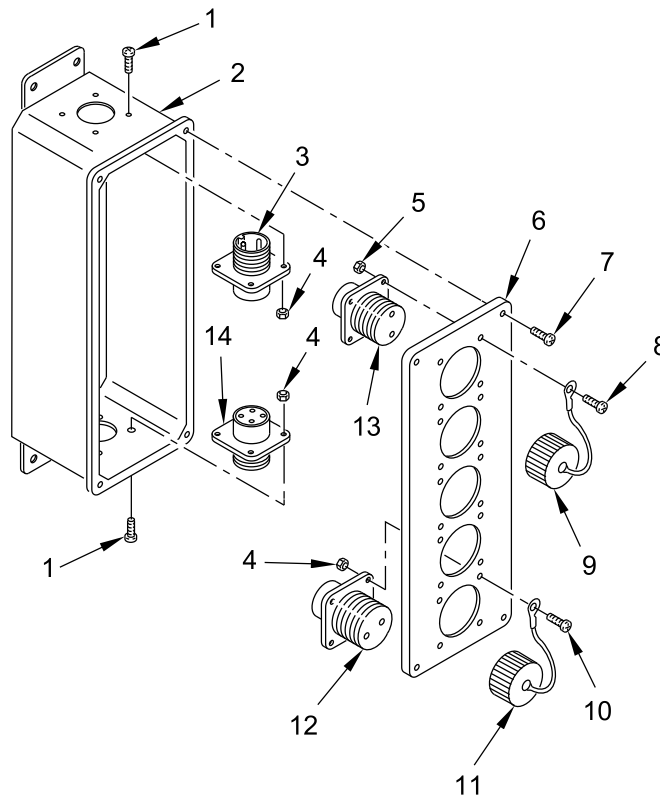
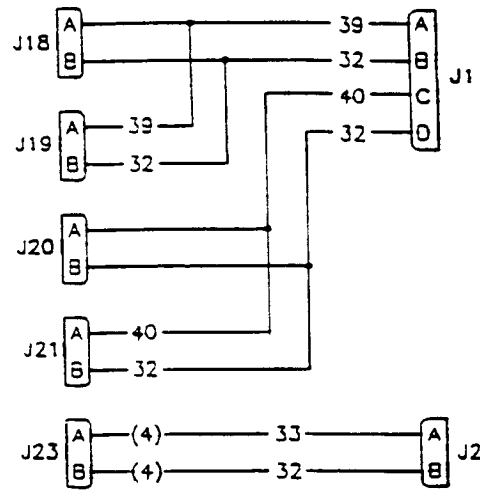


Figure 2. Roadside DC Power Extension Box – Assembly.



**(A9) WIRING DIAGRAM**

Figure 3. Roadside DC Power Extension Box A9 Wiring Diagram.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



---

**SUSTAINMENT MAINTENANCE****REPAIR SIGNAL PATCH PANEL BOX A10 (M1068A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

Rivet (as required)

**Personnel Required**

Radio Repairer 29E10

**Materials/Parts**

Adhesive primer (WP 0068, Item 13)

Sealing compound (WP 0068, Item 14)

Locknut (20)

Lockwasher (as required)

**Equipment Condition**Signal patch panel box removed from carrier  
(TM 9-2350-277-13&P)

---

**NOTE****Tag all leads before disconnecting for proper installation later.**

**DISASSEMBLY**

1. Remove 12 screws (Figure 1, Item 14), 12 lockwashers (Figure 1, Item 13), two strips (Figure 1, Item 12), and three jackfields (Figure 1, Item 15) from signal patch panel box (Figure 1, Item 3).
2. Remove 16 locknuts (Figure 1, Item 7), 16 screws (Figure 1, Item 19), and four connectors J136, J138, J139, and J140, (Figure 1, Item 16) from signal patch panel box (Figure 1, Item 3). Discard locknuts.
3. Remove four locknuts (Figure 1, Item 7), screws (Figure 1, Item 19), and connector J135 (Figure 1, Item 6) from signal patch panel box (Figure 1, Item 3). Discard locknuts.
4. Disconnect leads (Figure 1, Item 8) from five connectors J135, J136, J138, J139, and J140 (Figure 1, Item 6) and (Figure 1, Item 16).
5. Remove 156 screws (Figure 1, Item 9), 156 lockwashers (Figure 1, Item 10), and 156 jacks (Figure 1, Item 11) from three jackfields (Figure 1, Item 15). Discard lockwashers.
6. Remove two leads from each jack (Figure 1, Item 11).
7. Remove eight jamnuts (Figure 1, Item 1), eight lockwashers (Figure 1, Item 2), and eight connectors (Figure 1, Item 4) from signal patch panel box (Figure 1, Item 3).
8. Remove eight cables (Figure 1, Item 5) from eight connectors (Figure 1, Item 4).
9. If dust caps (Figure 1, Item 18) are damaged, remove rivets (Figure 1, Item 17) and dust caps from signal patch panel box (Figure 1, Item 3).

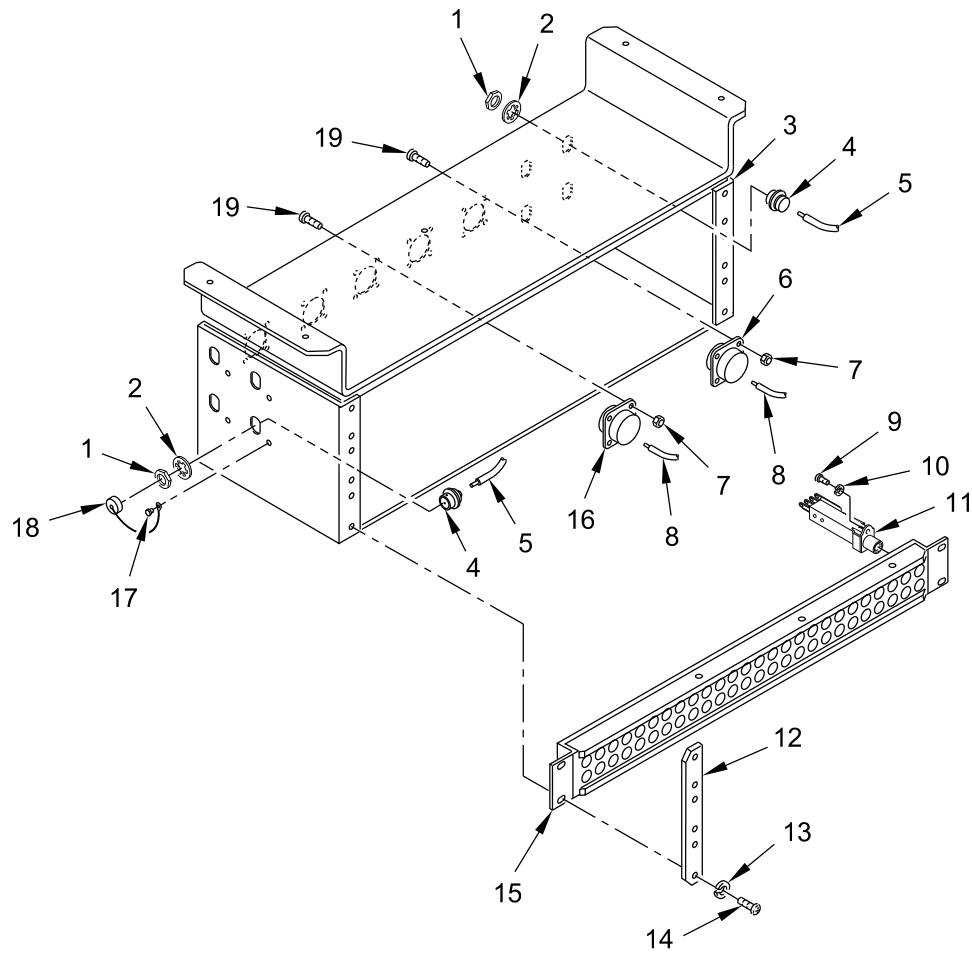


Figure 1. Signal Patch Panel Box – Disassembly.

END OF TASK

**ASSEMBLY**

1. If dust caps (Figure 2, Item 18) were removed, install dust caps on signal patch panel box. Secure with new rivets (Figure 2, Item 17).
2. Install eight connectors (Figure 2, Item 4) on signal patch panel box (Figure 2, Item 3). Secure with eight lockwashers (Figure 2, Item 2) and eight jamnuts (Figure 2, Item 1).

**NOTE**

**Install eight cables (Figure 2, Item 5) on eight connectors (Figure 2, Item 4) using wiring diagram Figure 3, page 0036-6 .**

3. Apply primer and sealant to threads of 156 screws (Figure 2, Item 9).
4. Install 156 jacks (Figure 2, Item 11) on three jackfields (Figure 2, Item 15). Secure with 156 new lockwashers (Figure 2, Item 10) and 156 screws (Figure 2, Item 9).

**NOTE**

**Install two leads (Figure 2, Item 8) on each jack (Figure 2, Item 11) using wiring diagram Figure 3, page 0036-6.**

5. Install four connectors J136, J138, J139, and J140 (Figure 2, Item 16) on signal patch panel box (Figure 2, Item 3). Secure with 16 screws (Figure 2, Item 19) and 16 new locknuts (Figure 2, Item 7).
6. Install connector J135 (Figure 2, Item 6) on signal patch panel (Figure 2, Item 3). Secure with four screws (Figure 2, Item 19) and four new locknuts (Figure 2, Item 7).

**NOTE**

**Install leads (Figure 2, Item 8) on five connectors J135, J136, J138, J139, and J140 (Figure 2, Item 6) and (Figure 2, Item 16), using wiring diagram Figure 3, page 0036-6.**

7. Install three jackfields (Figure 2, Item 15) on signal patch panel box (Figure 2, Item 3). Secure with two strips (Figure 2, Item 12), 12 new lockwashers (Figure 2, Item 13), and 12 screws (Figure 2, Item 14).

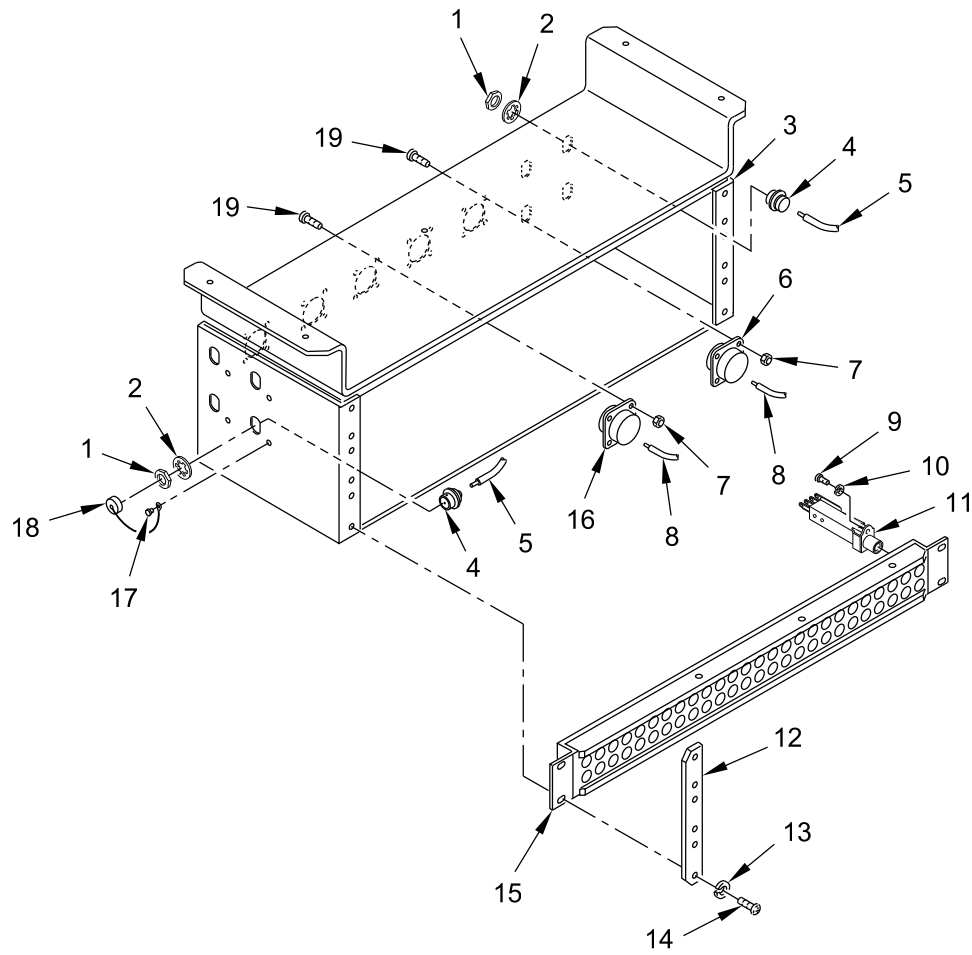


Figure 2. Signal Patch Panel Box – Assembly.

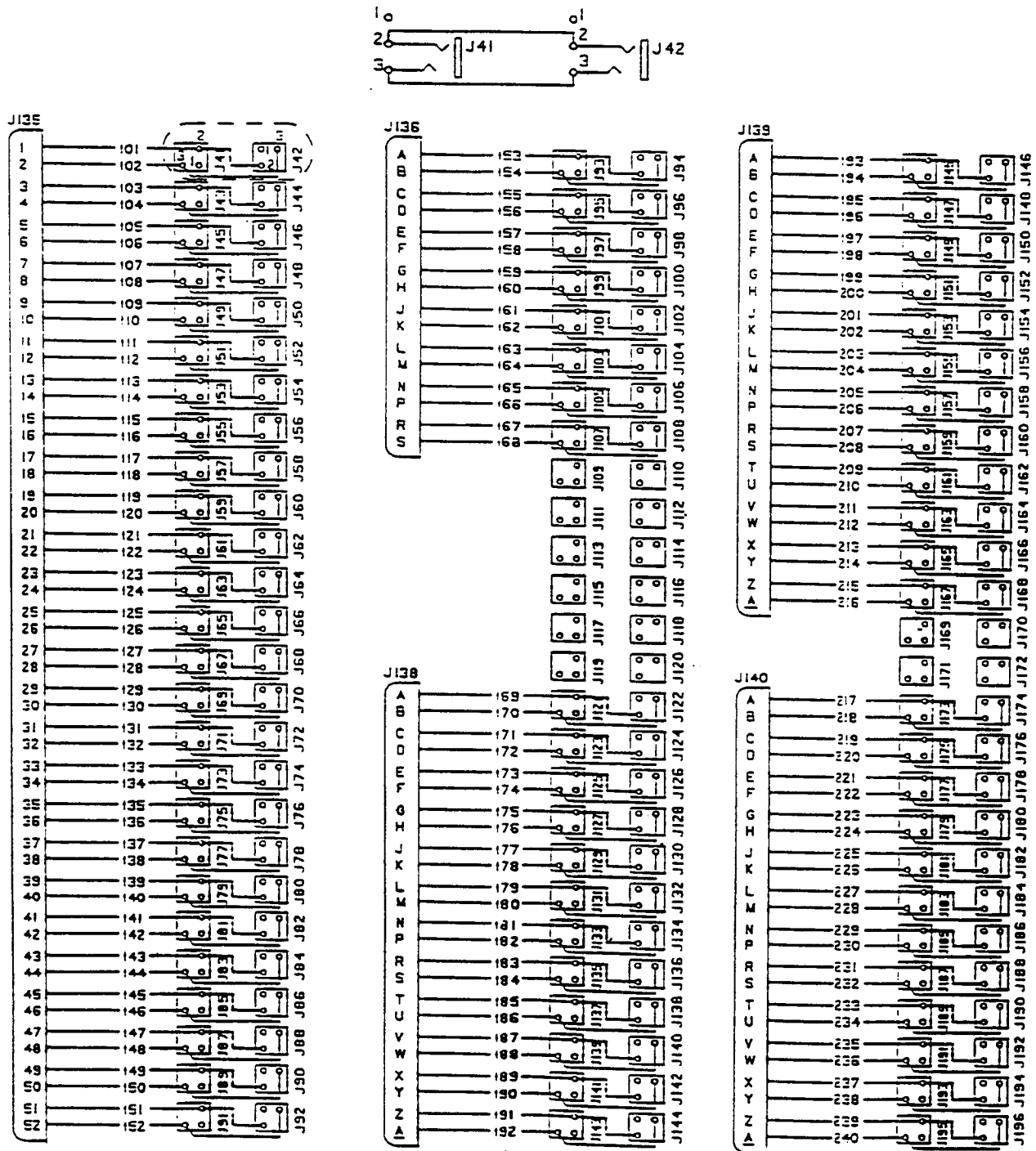


Figure 3. Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**





---

**SUSTAINMENT MAINTENANCE****REPAIR EXTERNAL COMMUNICATION BOX A11 (M1068A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

Lockwasher (22)

**Personnel Required**

Radio Repairer 94E10

**Materials/Parts**

Locknut (2)

Locknut (4)

Locknut (8)

Locknut (8)

**Equipment Condition**External communication box removed from carrier  
(TM 9-2350-277-13&P)

---

**NOTE****Tag all leads/cables before disconnecting for proper installation later.**

**DISASSEMBLY**

1. Remove four screws (Figure 1, Item 6), locknuts (Figure 1, Item 7), and two latches of latch assembly (Figure 1, Item 5) from communication box (Figure 1, Item 4). Discard locknuts.
2. Remove four screws (Figure 1, Item 11), four locknuts (Figure 1, Item 12), and two catches of latch assembly (Figure 1, Item 5) from communication box lid (Figure 1, Item 13). Discard locknuts.
3. Remove four screws (Figure 1, Item 1), four locknuts (Figure 1, Item 3), and latch half of door holder (Figure 1, Item 2) from lid (Figure 1, Item 13). Discard locknuts.
4. Remove four screws (Figure 1, Item 1), four locknuts (Figure 1, Item 3), and catch half of door holder (Figure 1, Item 2) from communication box (Figure 1, Item 4). Discard locknuts.
5. Remove two screws (Figure 1, Item 10), four washers (Figure 1, Item 9), two locknuts (Figure 1, Item 8), and lid (Figure 1, Item 13) from communication box (Figure 1, Item 4). Discard locknuts.

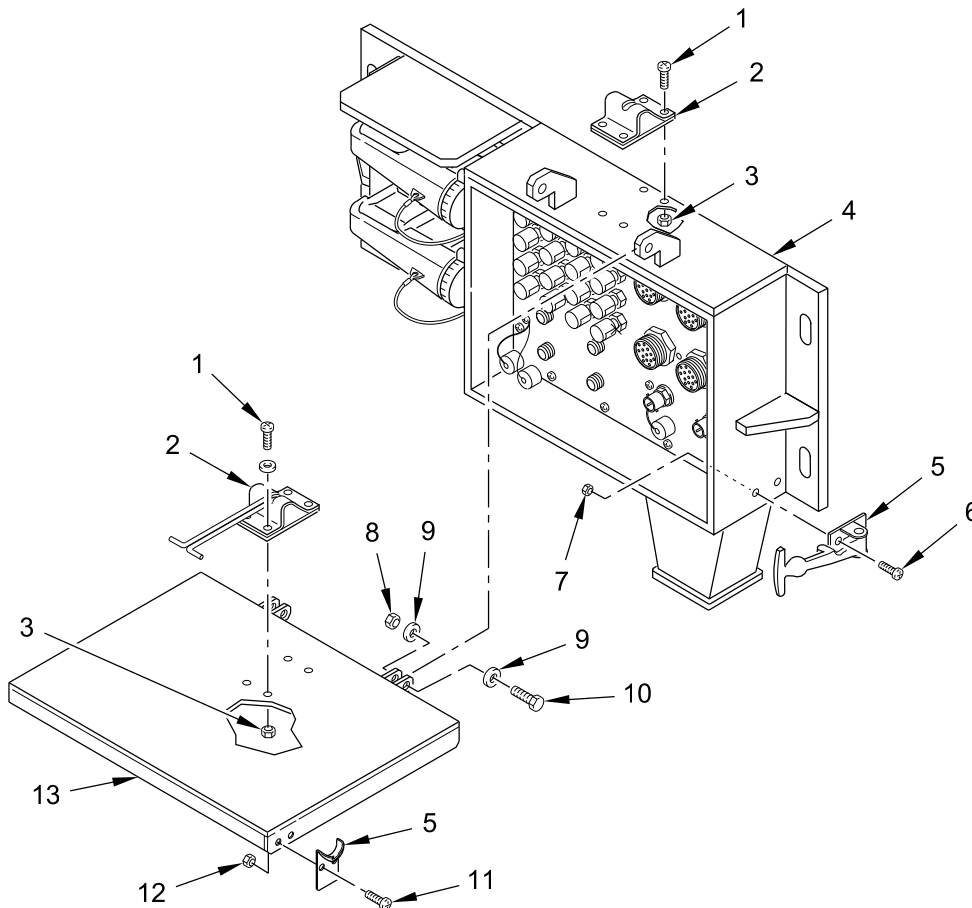


Figure 1. External Communication Box – Disassembly.

**NOTE**

Replace pads only if damaged.

**NOTE**

If cable W118 is being replaced, remove connector (Figure 2, Item 33) before discarding.

6. Remove 12 screws (Figure 2, Item 16), 12 lockwashers (Figure 2, Item 15), cable W117 (Figure 2, Item 14), and cable W118 (Figure 2, Item 17) from communication box (Figure 2, Item 4). Discard lockwashers.
7. Remove 14 screws (Figure 2, Item 16), 14 lockwashers (Figure 2, Item 30), and faceplate (Figure 2, Item 25) from communication box (Figure 2, Item 4). Discard lockwashers.
8. Remove two screws (Figure 2, Item 27), two locknuts (Figure 2, Item 24), and four caps (Figure 2, Item 29) from faceplate (Figure 2, Item 25). Discard locknuts.
9. Remove two screws (Figure 2, Item 27), two locknuts (Figure 2, Item 24), and two caps (Figure 2, Item 26) from faceplate (Figure 2, Item 25). Discard locknuts.
10. Remove four cables (Figure 2, Item 20) from faceplate (Figure 2, Item 25).
11. Loosen 16 binding posts (Figure 2, Item 31) and remove cable W115 (Figure 2, Item 32).
12. Remove four connectors (Figure 2, Item 18) and four cables (Figure 2, Item 19) from faceplate (Figure 2, Item 25).
13. Remove two nuts (Figure 2, Item 28), four bushings (Figure 2, Item 23), cable W101 (Figure 2, Item 21), and cable W102 (Figure 2, Item 22) from faceplate (Figure 2, Item 25).

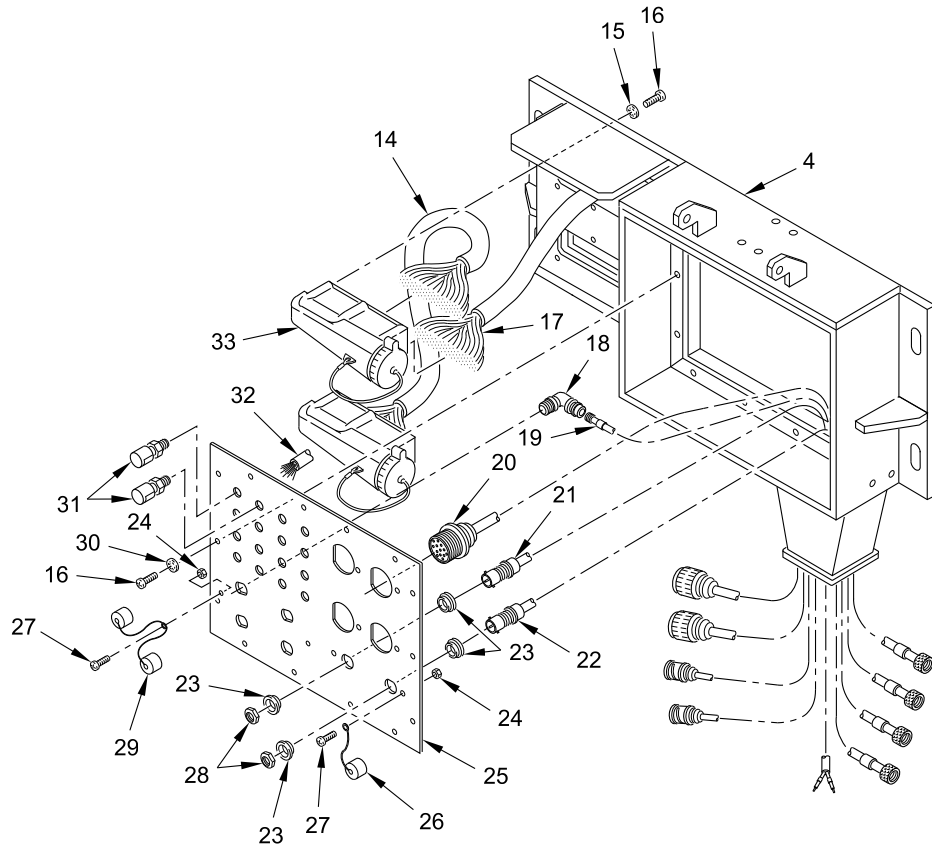


Figure 2. Cables – Removal.

END OF TASK

## ASSEMBLY

## NOTE

See wiring diagram Figure 5, page 0037-6 for installing/connecting of wires to connectors.

1. Install cable W101 (Figure 3, Item 21), cable W102 (Figure 3, Item 22) on faceplate (Figure 3, Item 25). Secure with four bushings (Figure 3, Item 23) and two nuts (Figure 3, Item 28).
2. Install four cables (Figure 3, Item 19) and connectors (Figure 3, Item 18) on faceplate (Figure 3, Item 25).
3. Connect cable W115 (Figure 3, Item 32) to 16 binding posts (Figure 3, Item 31).
4. Install four cables (Figure 3, Item 20) on faceplate (Figure 3, Item 25).
5. Install two caps (Figure 3, Item 26) on faceplate (Figure 3, Item 25). Secure with two screws (Figure 3, Item 27) and new locknuts (Figure 3, Item 24).
6. Install four caps (Figure 3, Item 29) on faceplate (Figure 3, Item 25). Secure with two screws (Figure 3, Item 27) and new locknuts (Figure 3, Item 24).
7. Install faceplate (Figure 3, Item 25) on communication box (Figure 3, Item 4). Secure with 14 screws (Figure 3, Item 16) and new lockwashers (Figure 3, Item 30).
8. Install cable W117 (Figure 3, Item 14) and cable W118 (Figure 3, Item 17) on communication box (Figure 3, Item 4). Secure with 12 screws (Figure 3, Item 16) and new lockwashers (Figure 3, Item 15).

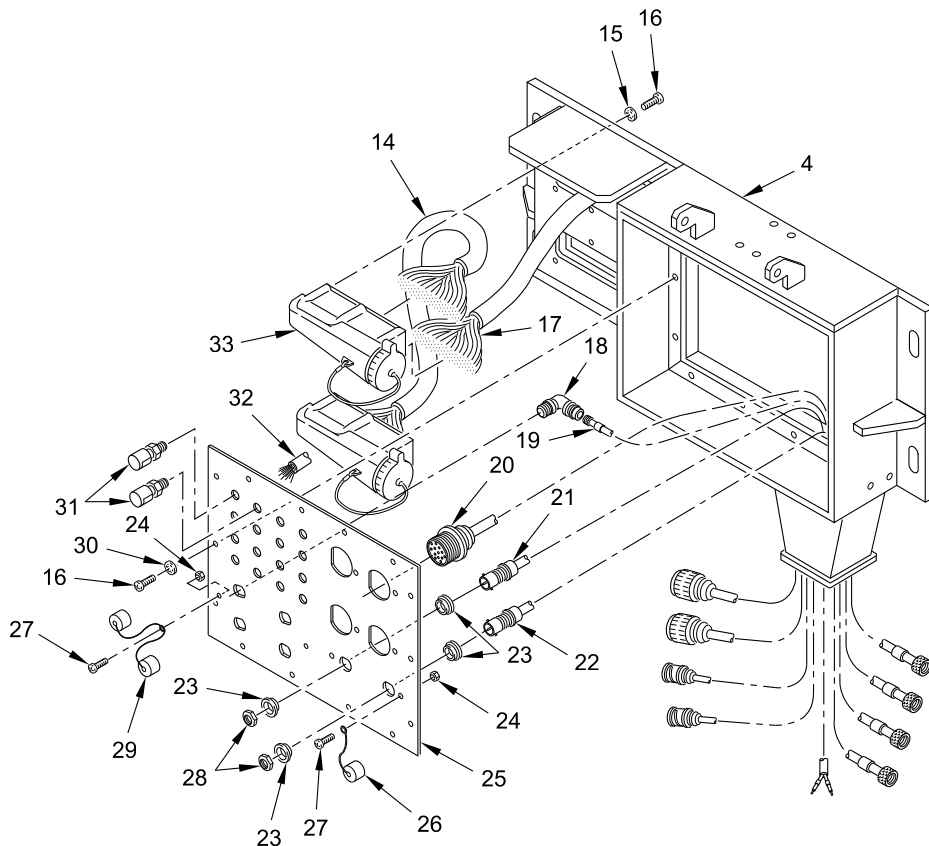


Figure 3. Cables – Installation.

9. Install lid (Figure 4, Item 13) on communication box (Figure 4, Item 4). Secure with two screws (Figure 4, Item 10), four washers (Figure 4, Item 9), and two new locknuts (Figure 4, Item 8).
10. Install catch half of door holder (Figure 4, Item 2) on communication box (Figure 4, Item 4). Secure with four screws (Figure 4, Item 1) and new locknuts (Figure 4, Item 3).
11. Install latch half of door holder (Figure 4, Item 2) on lid (Figure 4, Item 13). Secure with four screws (Figure 4, Item 1) and new locknuts (Figure 4, Item 3).
12. Install two catches of latch assembly (Figure 4, Item 6) on lid (Figure 4, Item 13). Secure with four screws (Figure 4, Item 11) and new locknuts (Figure 4, Item 5).
13. Install two latches of latch assembly (Figure 4, Item 5) on communication box (Figure 4, Item 4). Secure with four screws (Figure 4, Item 6) and new locknuts (Figure 4, Item 7).

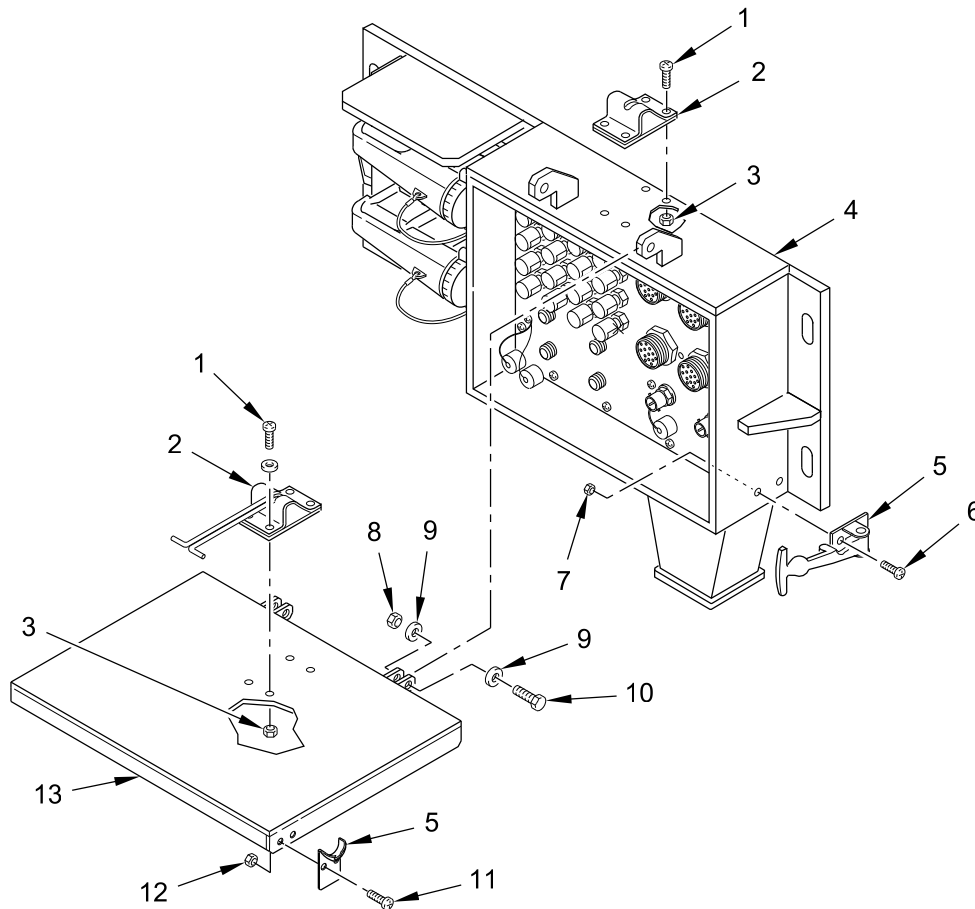


Figure 4. External Communication Box – Assembly.

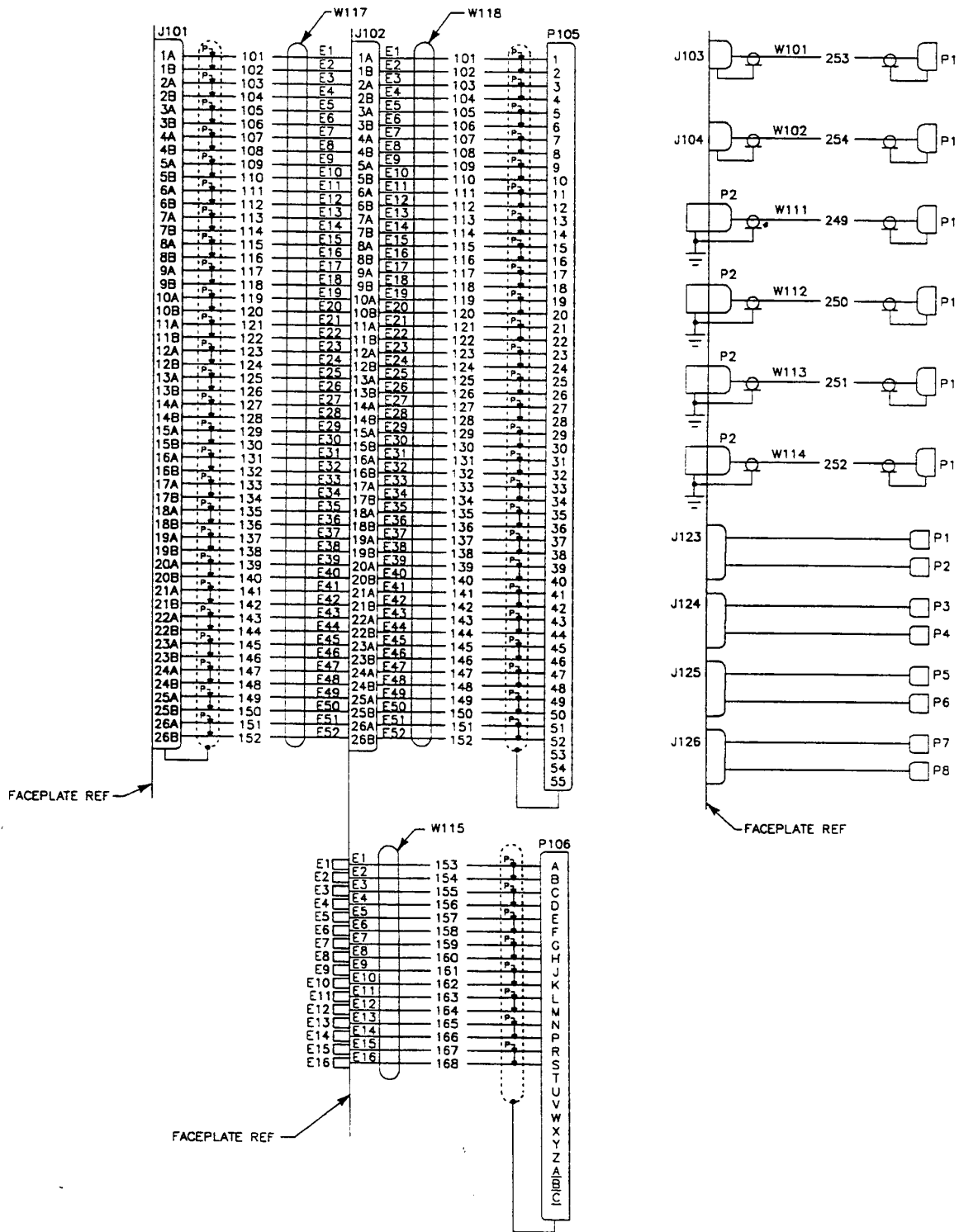


Figure 5. Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**





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**SUSTAINMENT MAINTENANCE****REPLACE LAN A CABLE W101 AND/OR LAN B CABLE W102**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Materials/Parts**

Locknut (2)  
Lockwasher (14)  
Tie Strap

**Personnel Required**

Helper (H)  
Radio Repairer 29E10

**Equipment Condition**

Engine stopped (TM 9-2350-277-13&P)  
Carrier blocked (TM 9-2350-277-13&P)  
All external power disconnected  
(TM 11-7010-256-12&P)  
Battery ground lead disconnected  
(TM 9-2350-277-13&P)

---

**REMOVAL**

1. Lift and secure cover (Figure 1, Item 1) of external communications box A11 (Figure 1, Item 2).
2. Remove 14 screws (Figure 1, Item 13), lockwashers (Figure 1, Item 14), and faceplate (Figure 1, Item 15) from external communications box A11 (Figure 1, Item 2). Discard lockwashers.

**NOTE**

Tag cables before disconnecting them for proper installation later.

3. Disconnect W101 cable, jack J103 (Figure 1, Item 9), jam nut (Figure 1, Item 12), two bushings (Figure 1, Item 11) from faceplate (Figure 1, Item 15) LAN A on external communications box A11 (Figure 1, Item 2).
4. Disconnect W102 cable, jack J104 (Figure 1, Item 10), jam nut (Figure 1, Item 12), two bushings (Figure 1, Item 11) from faceplate (Figure 1, Item 15) LAN B on external communications box A11 (Figure 1, Item 2).

5. Remove and push W101 cable (Figure 1, Item 9) and/or W102 cable (Figure 1, Item 10) down through hull top plate (Figure 1, Item 8), pull through opening in bottom of external communications box A11 (Figure 1, Item 2). Have helper assist.
6. Remove two locknuts (Figure 1, Item 7), four washers (Figure 1, Item 6), two screws (Figure 1, Item 5), and clamps (Figure 1, Item 4) from W101 cable (Figure 1, Item 9) and W102 cable (Figure 1, Item 10). Discard locknuts.
7. Remove and discard tie straps (Figure 1, Item 3) as required.

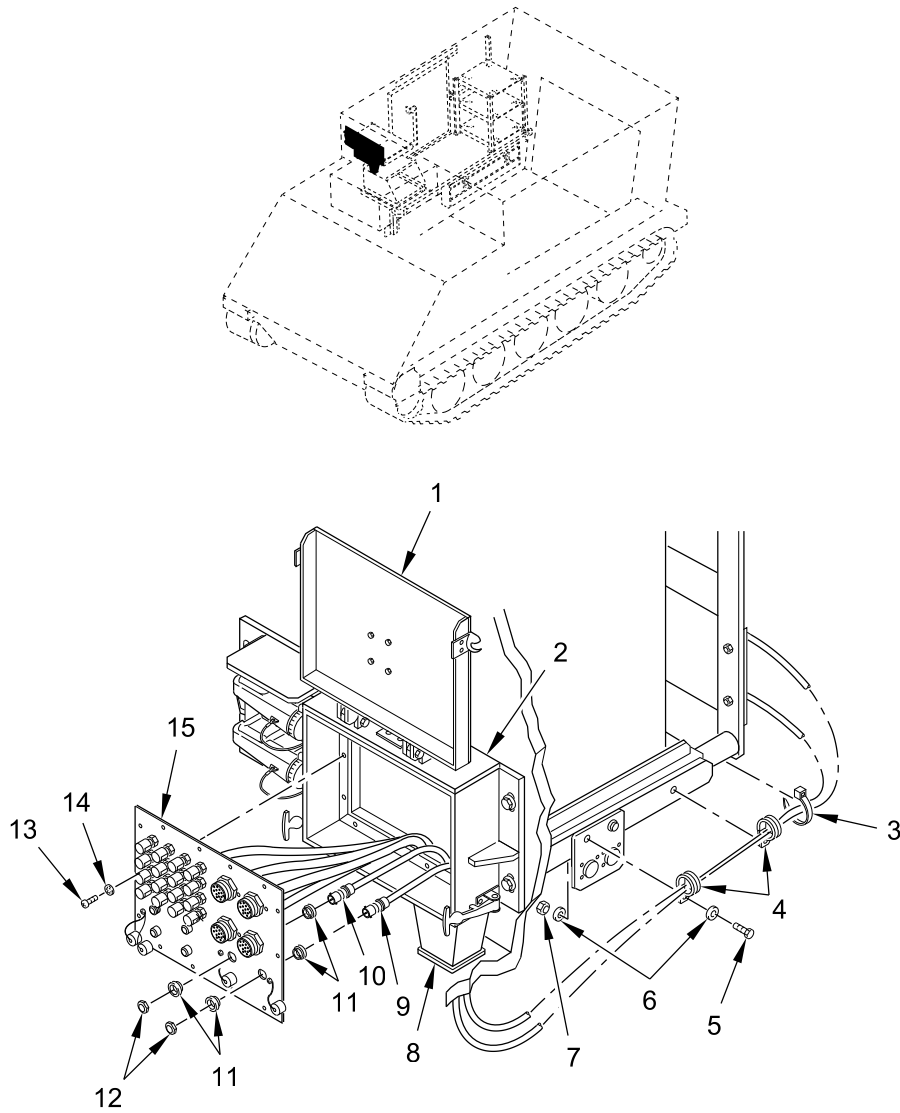


Figure 1. LAN Cable/External Communication Box – Disconnect.

8. Disconnect W101 cable (Figure 2, Item 9) from data panel assembly A12, jack J1 (Figure 2, Item 16). Remove from carrier.
9. Disconnect W102 cable (Figure 2, Item 10) from data panel assembly A12, jack J4 (Figure 2, Item 17), remove from carrier.

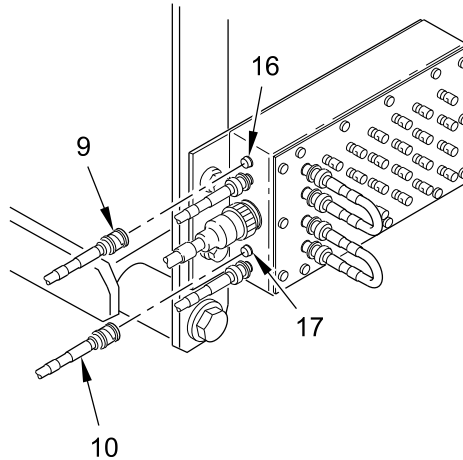


Figure 2. LAN Cable/Data Panel Assembly – Disconnect.

#### END OF TASK

#### INSTALLATION

1. Connect W101 cable (Figure 3, Item 9) on data panel assembly A12, jack J1 (Figure 3, Item 16).
2. Connect W102 cable (Figure 3, Item 10) on data panel assembly A12, jack J4 (Figure 3, Item 17).

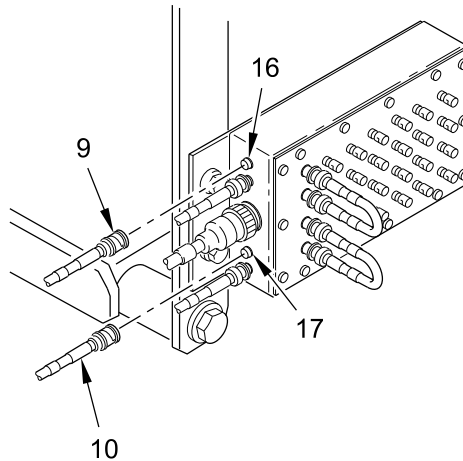


Figure 3. LAN Cable/Data Panel Assembly – Connect.

3. Install W101 cable, jack J103 (Figure 4, Item 9) and/or W102 cable, jack J104 (Figure 4, Item 10) in carrier and route through hole in hull top plate (Figure 4, Item 8) up into base of external communications box A11 (Figure 4, Item 2). Have helper assist.
4. Connect W101 cable, jack J103 (Figure 4, Item 9) with two bushings (Figure 4, Item 11), on faceplate (Figure 4, Item 15) LAN A, secure with jam nut (Figure 4, Item 12).
5. Connect W102 cable, jack J104 (Figure 4, Item 10) with two bushings (Figure 4, Item 11), on faceplate (Figure 4, Item 15) LAN B, secure with jam nut (Figure 4, Item 12).
6. Secure W101 cable (Figure 4, Item 9) and/or W102 (Figure 4, Item 10) to hull with two clamps (Figure 4, Item 4), screws (Figure 4, Item 5), four washers (Figure 4, Item 6), and two new locknuts (Figure 4, Item 7).
7. Secure slack in cable with new tie straps (Figure 4, Item 3) as required.
8. Install faceplate (Figure 4, Item 15) on external communications box A11 (Figure 4, Item 2). Secure with 14 new lockwashers (Figure 4, Item 14), and screws (Figure 4, Item 13).
9. Lower and secure cover (Figure 4, Item 1) of external communications box A11 (Figure 4, Item 2).

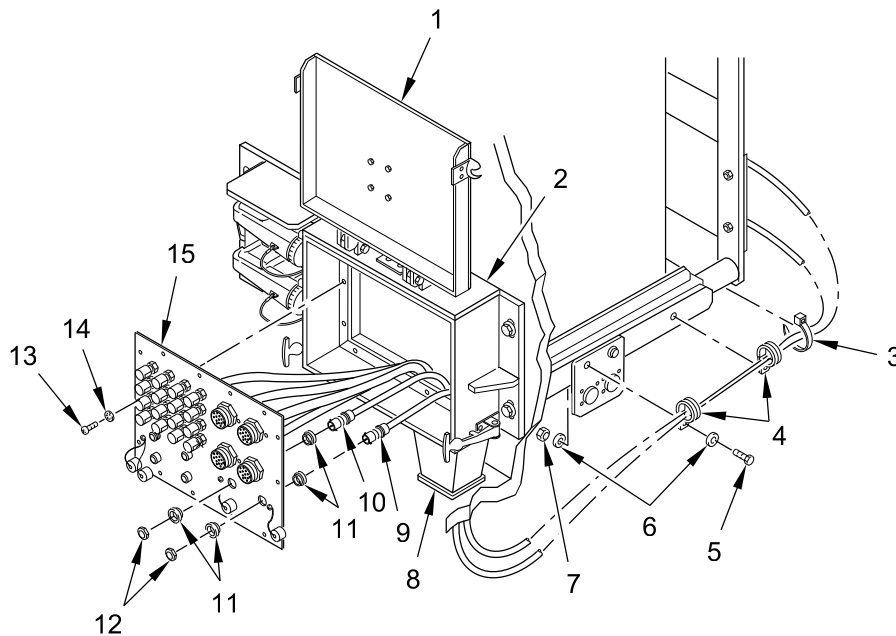


Figure 4. LAN Cable/External Communication Box – Connect.

#### END OF TASK

#### FOLLOW ON MAINTENANCE

1. Connect battery ground lead, see (TM 9-2350-277-13&P).
2. Set MASTER SWITCH to ON, see (TM 9-2350-277-13&P). Check that electrical system works properly.
3. Set MASTER SWITCH to OFF, see (TM 9-2350-277-13&P).

#### END OF TASK

#### END OF WORK PACKAGE

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**SUSTAINMENT MAINTENANCE****REPLACE RF 1, 2, 3, 4 CABLE ASSEMBLIES W111, W112, W113, AND W114**

---

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Materials/Parts**

Lockwasher (14)

Tie Strap (AR)

**Personnel Required**

Helper (H)

Radio Repairer 29E10

**Equipment Condition**

Engine stopped (TM 9-2350-277-13&P)

Carrier blocked (TM 9-2350-277-13&P)

All external power disconnected

(TM 11-7010-256-12&P)

Battery ground lead disconnected

(TM 9-2350-277-13&P)

---

**REMOVAL**

1. Lift and secure cover (Figure 1, Item 1) of external communications box A11 (Figure 1, Item 2).
2. Remove 14 screws (Figure 1, Item 8), lockwashers (Figure 1, Item 7), and faceplate (Figure 1, Item 9) from external communications box A11 (Figure 1, Item 2). Discard lockwashers.

**NOTE**

Tag all cables before disconnecting them.

3. Disconnect W111 P2 cable (Figure 1, Item 11) from jack J115 (Figure 1, Item 4) on faceplate (Figure 1, Item 9).

4. Disconnect W112 cable, plug P2 (Figure 1, Item 5) from jack J116 (Figure 1, Item 4) on faceplate (Figure 1, Item 9).
5. Disconnect W113 cable, plug P2 (Figure 1, Item 10) from jack J117 (Figure 1, Item 4) on faceplate (Figure 1, Item 9).
6. Disconnect W114 cable, plug P2 (Figure 1, Item 6) from jack J118 (Figure 1, Item 4) on faceplate (Figure 1, Item 9).
7. Remove and push W111, W112, W113, and/or W114 cables down through hull top plate (Figure 1, Item 3), pull through opening in bottom of external communication box A11 (Figure 1, Item 2). Have helper assist.

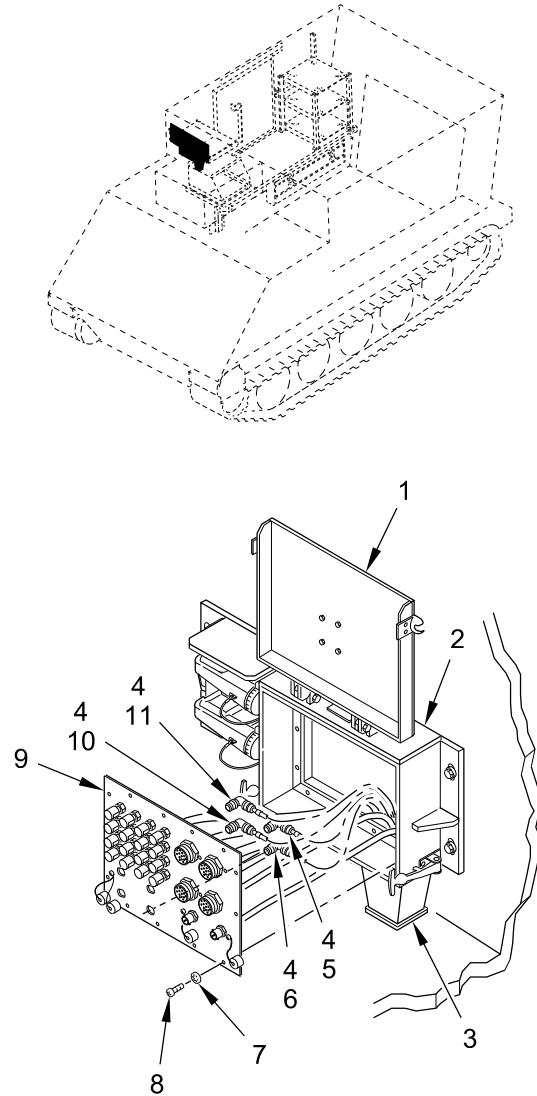


Figure 1. RF Cable/External Communications Box – Disconnect.

8. Remove tie straps (Figure 2, Item 12) as required. Discard tie straps.
9. Remove four clamps (Figure 2, Item 14) and screws (Figure 2, Item 13) securing cable bundle to hull. Remove clamps from cable bundle.
10. Remove two clamps (Figure 2, Item 14), clamp (Figure 2, Item 16), and screw (Figure 2, Item 15) securing cable bundles to hull. Remove clamp (Figure 2, Item 14) from cable bundle.

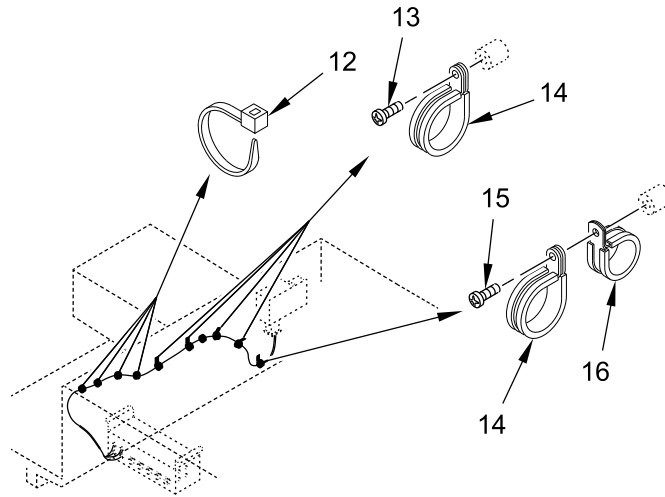


Figure 2. RF Cable/Signal Patch Panel Box – Disconnect.

**NOTE**

Tag all cables before disconnecting them for proper installation later.

11. Disconnect W111 cable, plug P1 (Figure 3, Item 11) from jack J115 (Figure 3, Item 17) on signal patch panel box A10 (Figure 3, Item 18).
12. Disconnect W112 cable, plug P1 (Figure 3, Item 5) from jack J116 (Figure 3, Item 17) on signal patch panel box A10 (Figure 3, Item 18).
13. Disconnect W113 cable, plug P1 (Figure 3, Item 10) from jack J117 (Figure 3, Item 17) on signal patch panel box A10 (Figure 3, Item 18).
14. Disconnect W114 cable, plug P1 (Figure 3, Item 6) from jack J118 (Figure 3, Item 17) on signal patch panel box A10 (Figure 3, Item 18).
15. Remove cable assemblies from carrier. Have helper assist.

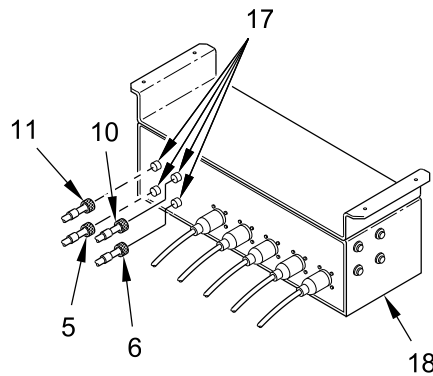


Figure 3. RF Cable/Signal Patch Panel Box – Disconnect.

**END OF TASK**



**INSTALLATION**

1. Install cable assemblies in carrier. Have helper assist.
2. Connect W111 cable, plug P1 (Figure 4, Item 11) to jack J115 (Figure 4, Item 17) on signal patch panel box A10 (Figure 4, Item 18).
3. Connect W112 cable, plug P1 (Figure 4, Item 5) to jack J116 (Figure 4, Item 17) on signal patch panel box A10 (Figure 4, Item 18).
4. Connect W113 cable, plug P1 (Figure 4, Item 10) to jack J117 (Figure 4, Item 17) on signal patch panel box A10 (Figure 4, Item 18).
5. Connect W114 cable, plug P1 (Figure 4, Item 6) to jack J118 (Figure 4, Item 17) on signal patch panel box A10 (Figure 4, Item 18).

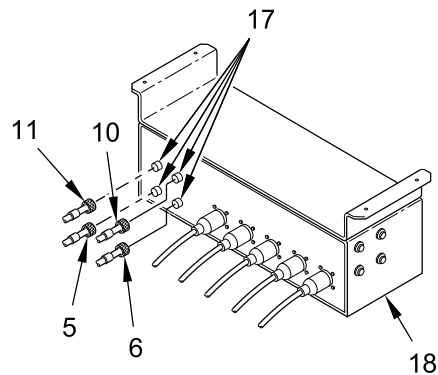


Figure 4. RF Cable/External Communications Box – Connect.

6. Push W111, W112, W113, and/or W114 cables down through hull top plate (Figure 5, Item 3), and through bottom of external communication box A11 (Figure 5, Item 2). Have helper assist.
7. Connect W111 cable, plug P2 (Figure 5, Item 11) to jack J115 (Figure 5, Item 4) on faceplate (Figure 5, Item 9).
8. Connect W112 cable, plug P2 (Figure 5, Item 5) to jack J116 (Figure 5, Item 4) on faceplate (Figure 5, Item 9).
9. Connect W113 cable, plug P2 (Figure 5, Item 10) to jack J117 (Figure 5, Item 4) on faceplate (Figure 5, Item 9).
10. Connect W114 cable, plug P2 (Figure 5, Item 6) to jack J118 (Figure 5, Item 4) on faceplate (Figure 5, Item 9).
11. Install faceplate (Figure 5, Item 9) on external communications box A11 (Figure 5, Item 2). Secure with 14 screws (Figure 5, Item 8) and new lockwashers (Figure 5, Item 7).
12. Lower and secure cover (Figure 5, Item 1) of external communications box A11 (Figure 5, Item 2).

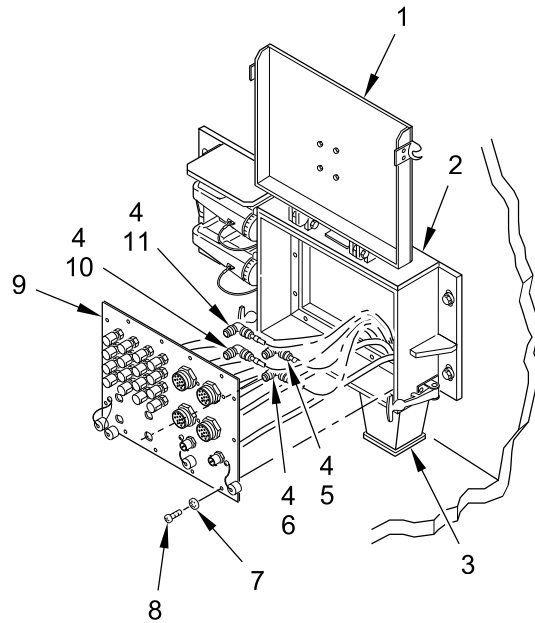


Figure 5. RF Cable/External Communications Box – Connect.

13. Install clamp (Figure 6, Item 14) on cable bundle and secure with clamps (Figure 6, Item 14) and (Figure 6, Item 16) to hull with screw (Figure 6, Item 15).
14. Install four clamps (Figure 6, Item 14) on cable bundle. Secure with four screws (Figure 6, Item 13).
15. Install new tie straps (Figure 6, Item 12) as required.

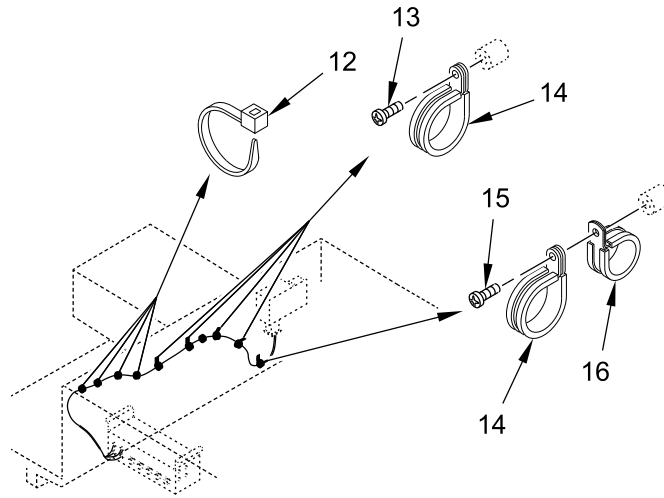


Figure 6. RF Cable/Signal Patch Panel Box – Connect.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Connect battery ground lead, see (TM 9-2350-277-13&P).
2. Set MASTER SWITCH to ON, see (TM 9-2350-277-13&P). Check that electrical system works properly.
3. Set MASTER SWITCH to OFF, see (TM 9-2350-277-13&P).

**END OF TASK**

**END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**REPLACE CABLE ASSEMBLY W115**

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**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Materials/Parts**

Lockwasher (14)

Tie Strap (AR)

**Personnel Required**

Helper (H)

Radio Repairer 29E10

**Equipment Condition**

Engine stopped (TM 9-2350-277-13&P)

Carrier blocked (TM 9-2350-277-13&P)

All external power disconnected

(TM 11-7010-256-12&P)

Battery ground lead disconnected

(TM 9-2350-277-13&P)

---

**REMOVAL**

1. Lift and secure lid (Figure 1, Item 1) on external communication box A11 (Figure 1, Item 2).
2. Remove 14 screws (Figure 1, Item 5), lockwashers (Figure 1, Item 4), and faceplate (Figure 1, Item 6) from external communication box A11 (Figure 1, Item 2). Discard lockwashers.

**NOTE**

Tag all leads before disconnecting from binding posts for proper installation later.

3. Remove 16 binding posts (Figure 1, Item 7) and leads (Figure 1, Item 8) from external communication box A11 (Figure 1, Item 2).

4. Remove and push W115 cable assembly down through hull top plate (Figure 1, Item 3), pull through opening in bottom of external communication box A11 (Figure 1, Item 2). Have helper assist.

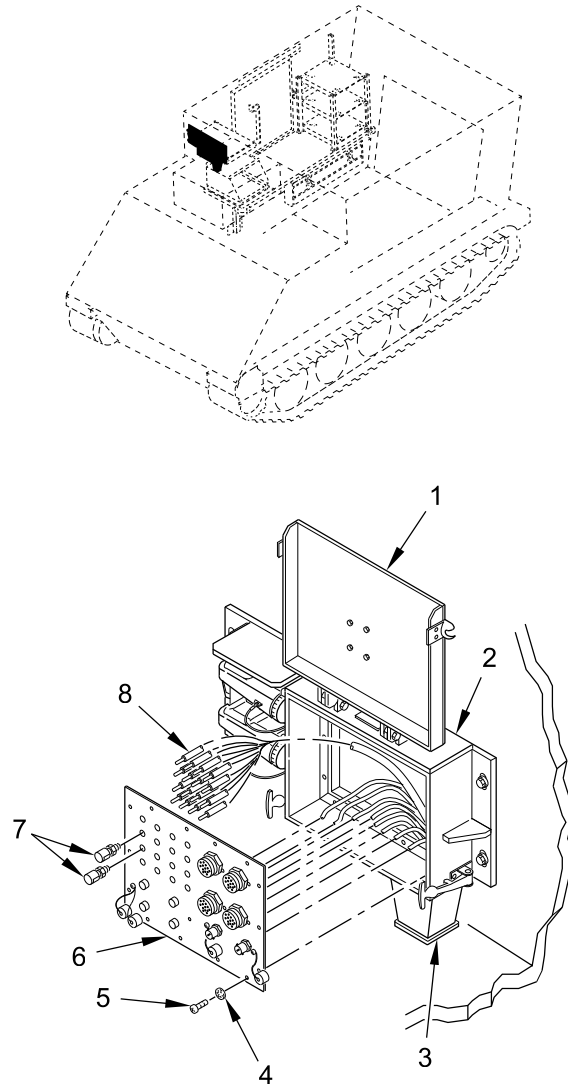


Figure 1. External Communication Box – Disassembly.

5. Remove tie straps (Figure 2, Item 9) as required. Discard tie straps.
6. Remove four clamps (Figure 2, Item 11) and screw (Figure 2, Item 10) securing cable bundle to hull. Remove clamps from cable bundle.
7. Remove clamp (Figure 2, Item 11), clamp (Figure 2, Item 13), and screw (Figure 2, Item 12) securing cable bundles to hull. Remove clamp (Figure 2, Item 11) from cable bundle.

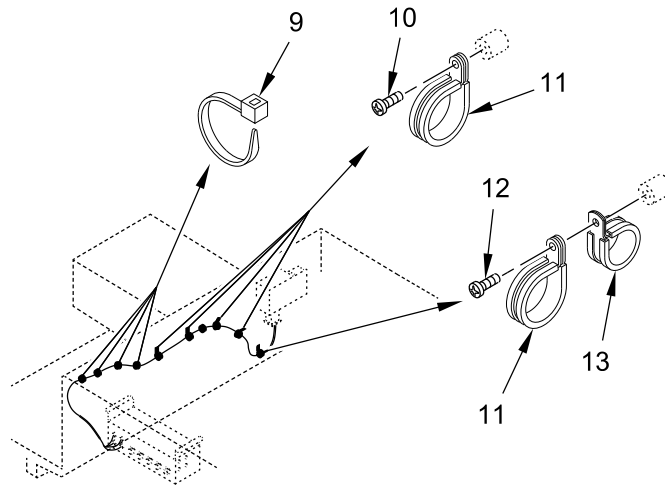


Figure 2. Bundle – Removal.

8. Disconnect W115 cable assembly, plug P106 (Figure 3, Item 16) from jack J136 (Figure 3, Item 15) on signal patch panel box A10 (Figure 3, Item 14).
9. Remove cable assembly from carrier. Have assistant help.

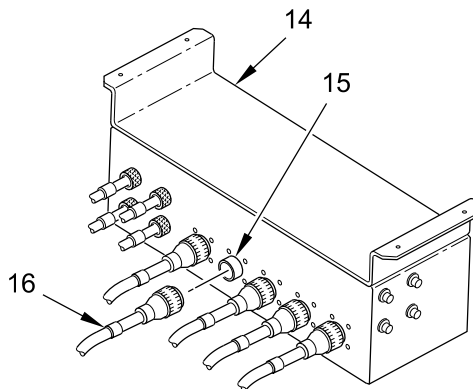


Figure 3. Cable/Signal Patch Panel – Disconnect.

**END OF TASK**

**INSTALLATION**

1. Install W115 cable assembly into carrier. Have helper assist.
2. Connect W115 cable assembly, plug P106 (Figure 4, Item 16) to jack J136 (Figure 4, Item 15) on signal patch panel box A10 (Figure 4, Item 14).

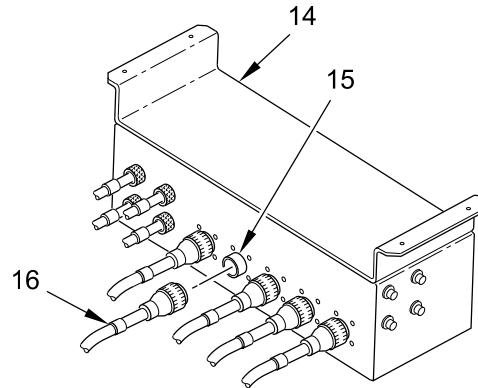


Figure 4. Cable/Signal Patch Panel – Connect.

3. Push W115 cable down through hull top plate (Figure 5, Item 3), and through bottom of external communication box A11 (Figure 5, Item 2). Have helper assist.
4. Connect leads (Figure 5, Item 8) to 16 binding posts (Figure 5, Item 7) on faceplate (Figure 5, Item 6).
5. Install faceplate (Figure 5, Item 6) on external communication box A11 (Figure 5, Item 2). Secure with 14 new lockwashers (Figure 5, Item 4) and screws (Figure 5, Item 5).
6. Close and secure lid (Figure 5, Item 1) on external communication box A11 (Figure 5, Item 2).

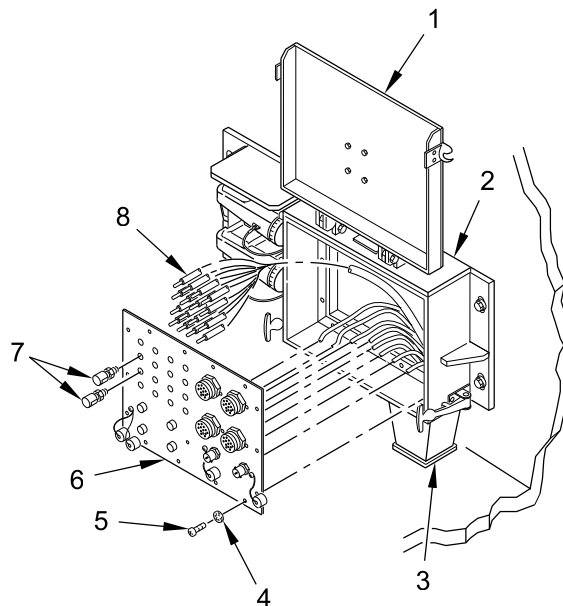


Figure 5. Bundle and Faceplate – Installation.



7. Install four clamps (Figure 5, Item 11) on cable bundle. Secure to hull with screws (Figure 5, Item 10) as required.
8. Install clamp (Figure 5, Item 11) on cable bundle. Secure with clamps (Figure 5, Item 11) and (Figure 5, Item 13) to hull with screw (Figure 5, Item 12).
9. Install new straps (Figure 5, Item 9) as required.

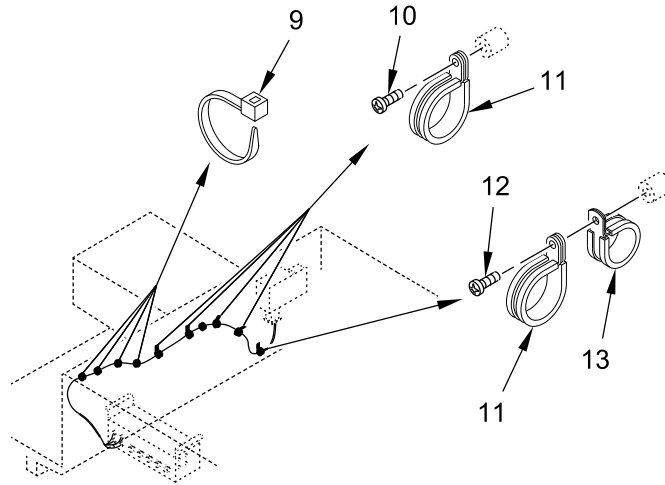


Figure 6. External Communication Box – Assembly.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Connect battery ground lead, see (TM 9-2350-277-13&P).
2. Set MASTER SWITCH to ON, see (TM 9-2350-277-13&P). Check that electrical system works properly.
3. Set MASTER SWITCH to OFF, see (TM 9-2350-277-13&P).

**END OF TASK**

**END OF WORK PACKAGE**



**SUSTAINMENT MAINTENANCE**  
**REPLACE CABLE ASSEMBLIES W117 AND W118**

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Equipment Condition**External communication box removed from carrier  
(TM 9-2350-277-13&P)**Materials/Parts**

Lockwasher (12)

**Personnel Required**

Radio Repairer 29E10

**REMOVAL****NOTE**

Tag all cables before disconnecting them for proper installation later.

1. Remove 12 screws (Figure 1, Item 2), lockwashers (Figure 1, Item 1), and J101 connector (Figure 1, Item 5), and J102 connector (Figure 1, Item 6) from the external communication box A11 (Figure 1, Item 4). Discard lockwashers.
2. Remove W117 cable assembly (Figure 1, Item 7) and W118 cable assembly (Figure 1, Item 3) from connector J102 (Figure 1, Item 5) from the external communication box A11 (Figure 1, Item 4).
3. Remove cable W117 (Figure 1, Item 7) and W118 cable (Figure 1, Item 3) from external communication box A11 (Figure 1, Item 4).

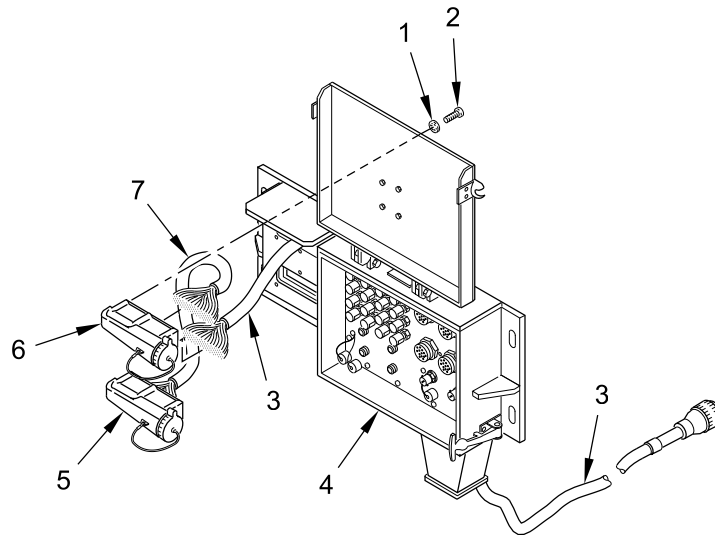


Figure 1. W117 and W118 Cable Assemblies – Removal.

**END OF TASK**

**INSTALLATION**

1. Install W118 cable (Figure 2, Item 3) through the bottom of of external communication box A11 (Figure 2, Item 4).
2. Install W117 cable assembly (Figure 2, Item 7) and W118 cable assembly (Figure 2, Item 3) on connector J102 (Figure 2, Item 6).
3. Install J101 connector (Figure 2, Item 5) and J102 connector (Figure 2, Item 6) on external communication box A11 (Figure 2, Item 4). Secure with 12 screws (Figure 2, Item 2), and new lockwashers (Figure 2, Item 1).

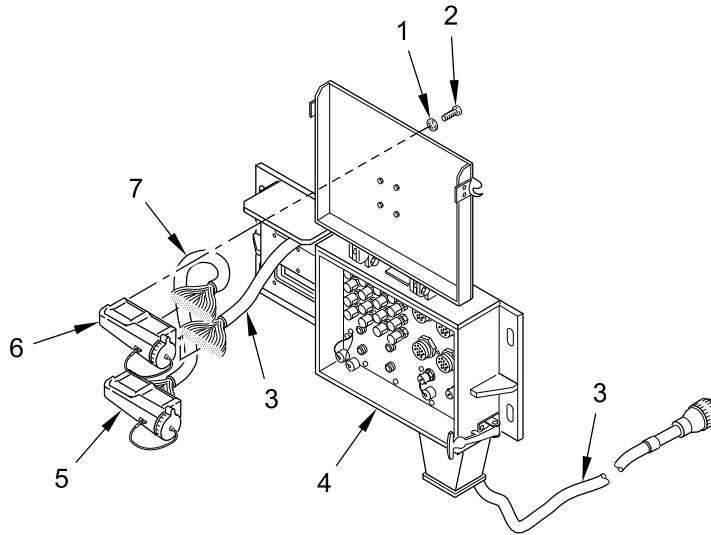


Figure 2. W117 and W118 Cable Assemblies – Installation.

**END OF TASK****FOLLOW ON MAINTENANCE**

Install external communication box A11, see (TM 9-2350-277-13&P).

**END OF TASK****END OF WORK PACKAGE**

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**SUSTAINMENT MAINTENANCE****REPAIR ROADSIDE AND CURBSIDE DATA PANEL ASSEMBLIES A12 AND A13 (M1068A3 ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Radio Equipment Tool Kit (WP 0069, Item 33)

**Personnel Required**

Radio Repairer 94E10

**Materials/Parts**

Locknut (4)

Lockwasher (14)

**Equipment Condition**Data panel(s) removed from carrier  
(TM 9-2350-277-13&P)

---

**NOTE****Tag all leads before removal for proper installation later.****NOTE****Follow illustration for disassembly/assembly of red/black binding posts.**

**DISASSEMBLY**

1. Remove 14 screws (Figure 1, Item 5), 14 lockwashers (Figure 1, Item 6), curbside panel faceplate (Figure 1, Item 3), and/or roadside panel faceplate (Figure 1, Item 7) from box (Figure 1, Item 1). Discard lockwashers.
2. Disconnect leads (Figure 1, Item 2) from 24 binding posts (Figure 1, Item 4).

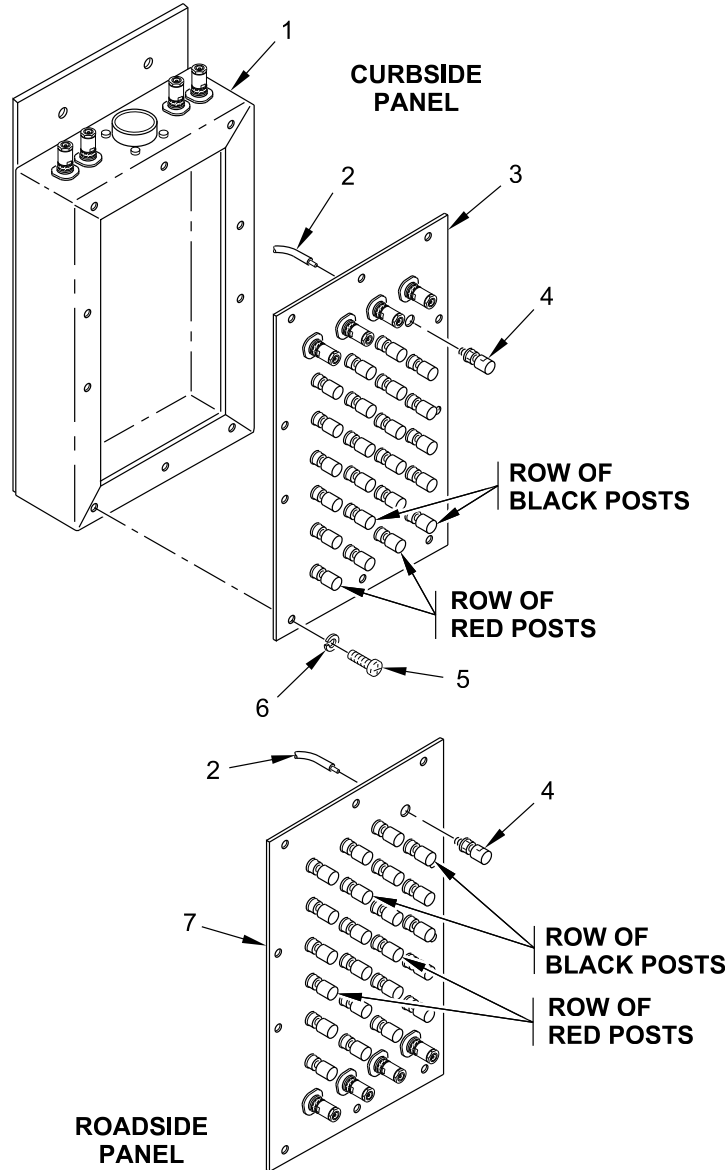


Figure 1. Roadside and Curbside Data Panel – Disassembly.

- Remove four connectors J1, J2, J4, J5 (Figure 2, Item 11), four cables (Figure 2, Item 12), four lockwashers (Figure 2, Item 10), and four jamnuts (Figure 2, Item 9) from box (Figure 2, Item 1).

### NOTE

**Do Step 4 for curbside panel only. Do Step 5 for roadside panel only.**

- Remove four connectors J105, J106, J107, and J108 (Figure 2, Item 11), four cables (Figure 2, Item 12), four lockwashers (Figure 2, Item 10), and four jamnuts (Figure 2, Item 9) from faceplate (Figure 2, Item 3).
- Remove four connectors J109, J110, J111, and J112 (Figure 2, Item 11), four cables (Figure 2, Item 12), four lockwashers (Figure 2, Item 10), and four jamnuts (Figure 2, Item 9) from faceplate (Figure 2, Item 7).
- Remove four screws (Figure 2, Item 8), four locknuts (Figure 2, Item 14), and connector J3 (Figure 2, Item 13) from box (Figure 2, Item 1). Discard locknuts.
- Disconnect leads (Figure 2, Item 2) from connector J3 (Figure 2, Item 13).
- Remove 24 binding posts (Figure 2, Item 4) from curbside panel faceplate (Figure 2, Item 3) and/or roadside panel faceplate (Figure 2, Item 7).

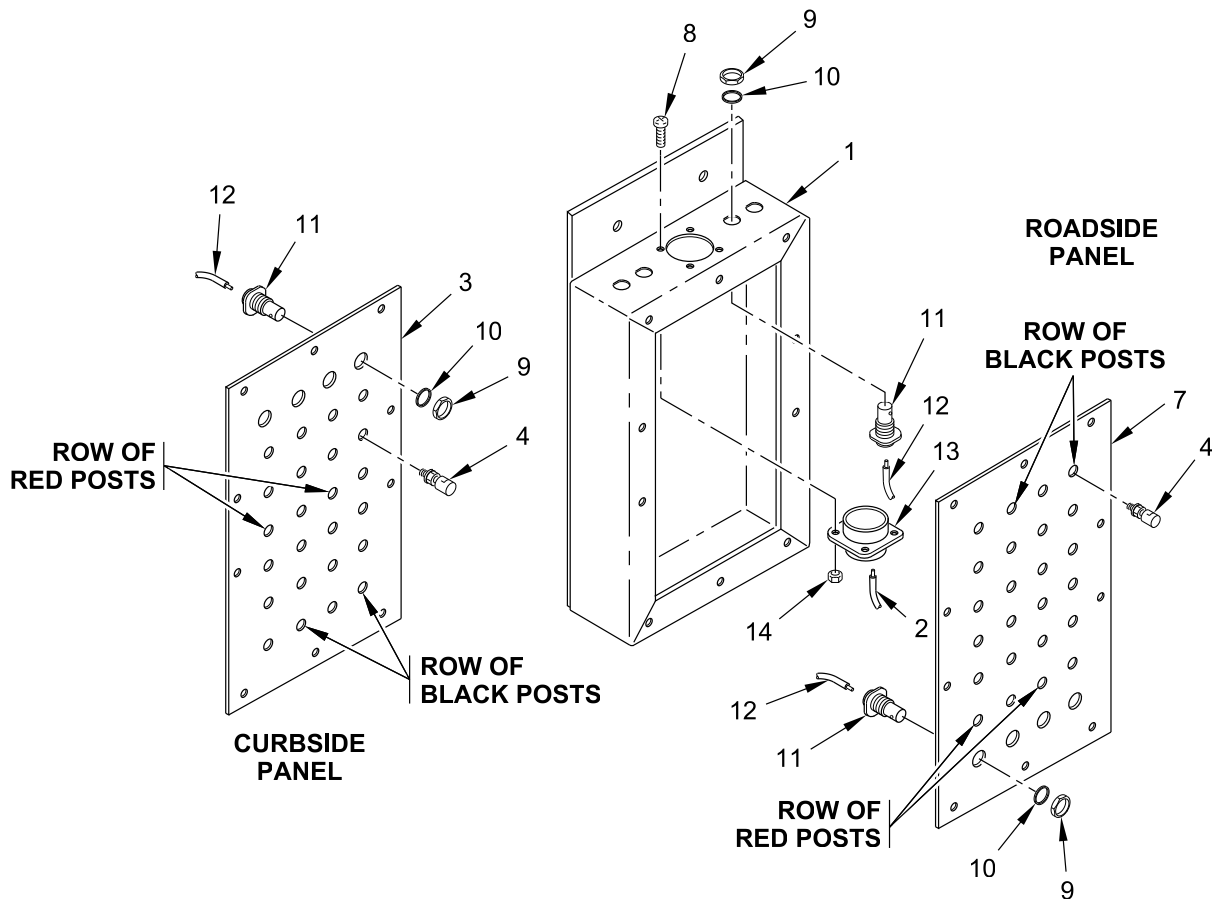


Figure 2. Connector/Post - Removal.

**END OF TASK**

**ASSEMBLY**

**NOTE**

**See wiring diagrams Figure 5, page 0038-6 and/or Figure 6, page 0038-6 for assembly of wires to connectors/binding posts.**

1. Install 24 binding posts (Figure 3, Item 4) on curbside panel faceplate (Figure 3, Item 3) and/or roadside panel faceplate (Figure 3, Item 7).
2. Connect leads (Figure 3, Item 2) to connector J3 (Figure 3, Item 13).
3. Install connector J3 (Figure 3, Item 13) on box (Figure 3, Item 1). Secure with four screws (Figure 3, Item 8) and four new locknuts (Figure 3, Item 14).
4. Install four connectors J109, J110, J111, and J112 (Figure 3, Item 11) and cables (Figure 3, Item 12) on faceplate (Figure 3, Item 7). Secure with four lockwashers (Figure 3, Item 10) and four jamnuts (Figure 3, Item 9).
5. Install four connectors J105, J106, J107 and J108 (Figure 3, Item 11) and cables (Figure 3, Item 12) on faceplate (Figure 3, Item 3). Secure with four lockwashers (Figure 3, Item 10) and four jamnuts (Figure 3, Item 9).
6. Install four connectors J1, J2, J4, J5 (Figure 3, Item 11) and cables (Figure 3, Item 12) on box (Figure 3, Item 1). Secure with four lockwashers (Figure 3, Item 10) and four jamnuts (Figure 3, Item 9).

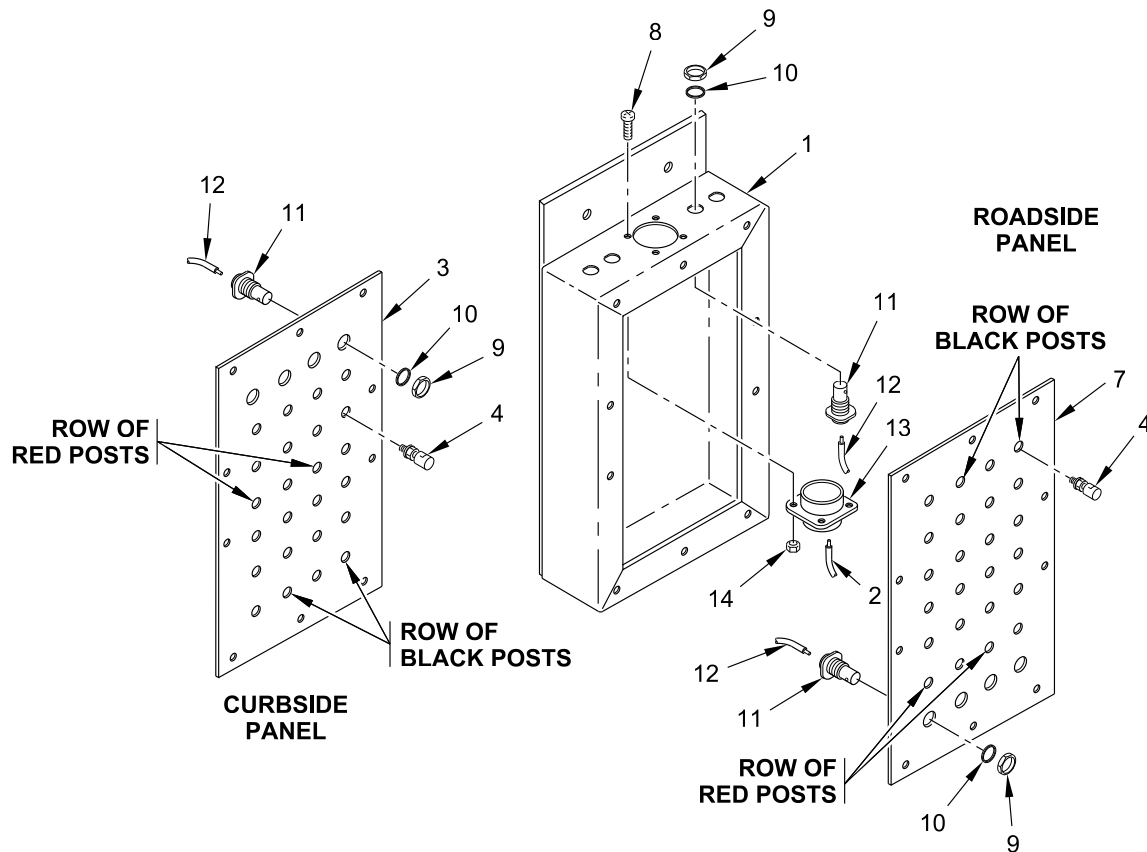


Figure 3. Connector/Post – Installation.



**NOTE**

See wiring diagrams Figure 5, page 0038-6 and/or Figure 6, page 0038-6 for assembly of wires to connectors/binding posts.

7. Connect leads (Figure 4, Item 2) to 24 binding posts (Figure 4, Item 4).
8. Install curbside panel faceplate (Figure 4, Item 3) and/or roadside panel faceplate (Figure 4, Item 7) on box (Figure 4, Item 1). Secure with 14 screws (Figure 4, Item 5) 14 new lockwashers (Figure 4, Item 6).

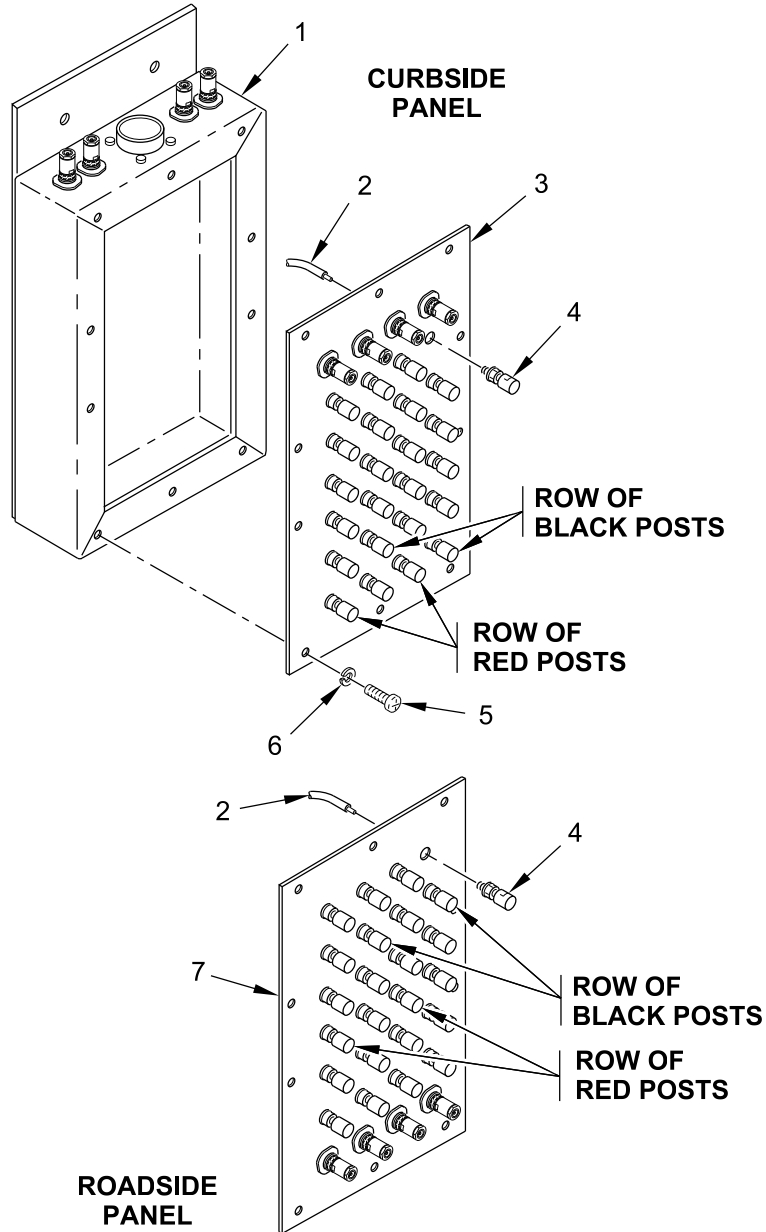


Figure 4. Roadside and Curbside Data Panel – Assembly.

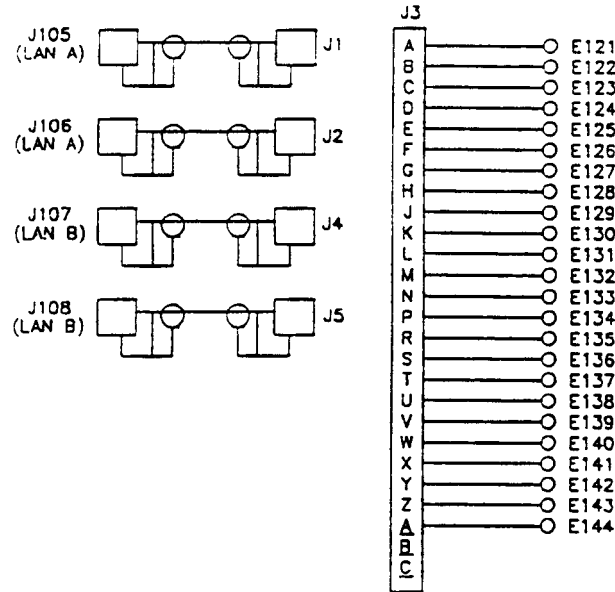


Figure 5. Curbside Data Panel A12 Wiring Diagram.

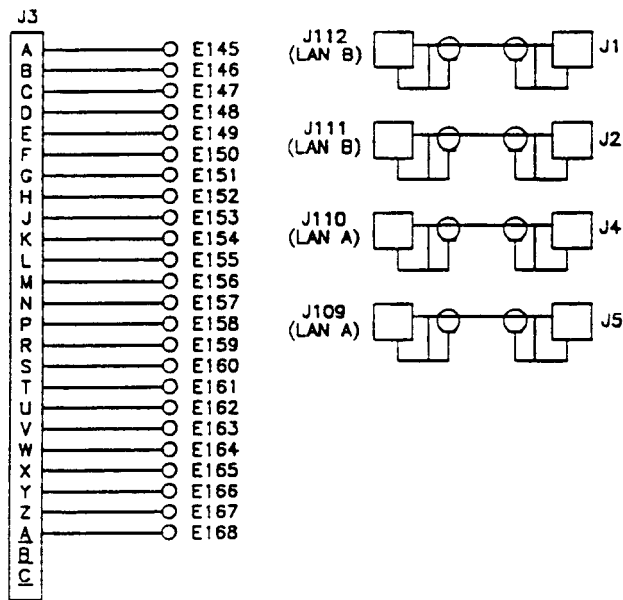


Figure 6. Roadside Data Panel A13 Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



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**SUSTAINMENT MAINTENANCE**  
**REPAIR PHONE EXTENSION BOX A14 (M1068A3 ONLY)**

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**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Personnel Required**

Radio Repairer 94E10

**Materials/Parts**

Adhesive (WP 0068, Item 2)

Locknut (4)

Lockwasher (12)

Tie Strap

**Equipment Condition**Phone extension box removed from stowage box  
(TM 9-2350-277-13&P)

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**NOTE**

**Tag all leads before removal for proper installation later.**

**DISASSEMBLY**

1. Remove 12 screws (Figure 1, Item 7), lockwashers (Figure 1, Item 6), and faceplate (Figure 1, Item 9) from phone extension box (Figure 1, Item 1). Discard lockwashers.
2. Disconnect all leads (Figure 1, Item 11) from binding posts (Figure 1, Item 8).
3. Remove binding posts (Figure 1, Item 8) from faceplate (Figure 1, Item 9).
4. Remove and discard tie straps (Figure 1, Item 10), as required.
5. Remove four locknuts (Figure 1, Item 4), screws (Figure 1, Item 2), and connector J1 (Figure 1, Item 3) from phone extension box (Figure 1, Item 1). Discard locknuts.
6. Remove leads (Figure 1, Item 11) from connector J1 (Figure 1, Item 3).
7. If damaged, remove gaskets (Figure 1, Item 5) as required.

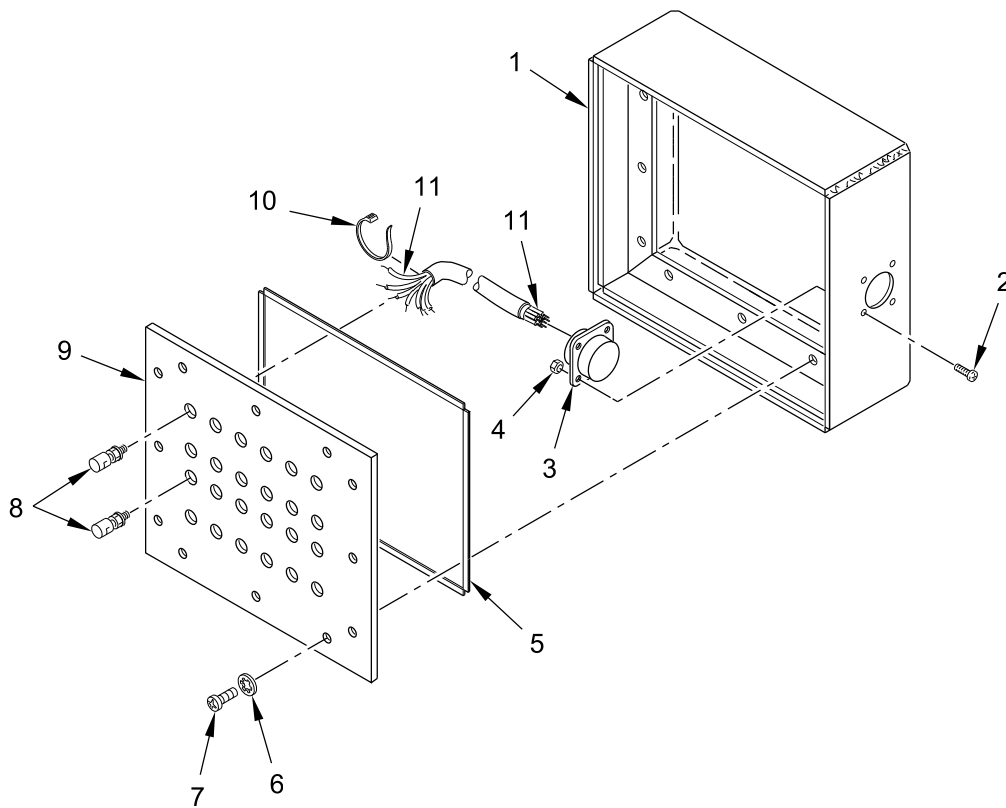


Figure 1. Phone Extension Box – Disassembly.

**END OF TASK**

**ASSEMBLY**

1. If removed, install new gaskets (Figure 2, Item 5) by applying a thin coat of adhesive to phone extension box surface and to gasket surface. Allow 10 to 20 minutes to dry (tacky to the touch). Position gasket on phone extension box and press firmly into place.

**NOTE**

**See wiring diagram Figure 3, page 0039-4 to identify location of post by color and for rewiring connector J1 and binding posts.**

2. Install leads (Figure 2, Item 11) in connector J1 (Figure 2, Item 3).
3. Install connector J1 (Figure 2, Item 3) on phone extension box (Figure 2, Item 1). Secure with four screws (Figure 2, Item 2) and four new locknuts (Figure 2, Item 4).
4. Install 24 binding posts (Figure 2, Item 8) on faceplate (Figure 2, Item 9).
5. Connect all leads (Figure 2, Item 11) to 24 binding posts (Figure 2, Item 8).
6. Install new tie straps (Figure 2, Item 10), as required.
7. Install faceplate (Figure 2, Item 9) on phone extension box (Figure 2, Item 1). Secure with 12 new lockwashers (Figure 2, Item 6) and 12 screws (Figure 2, Item 7).

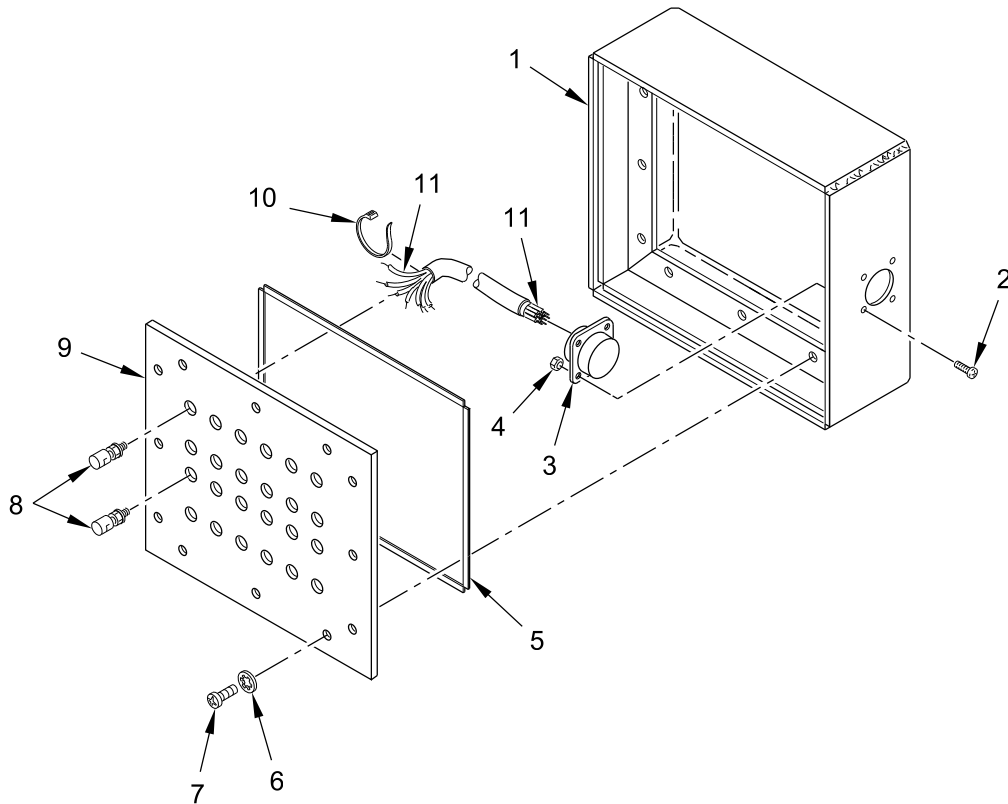


Figure 2. Phone Extension Box – Assembly.

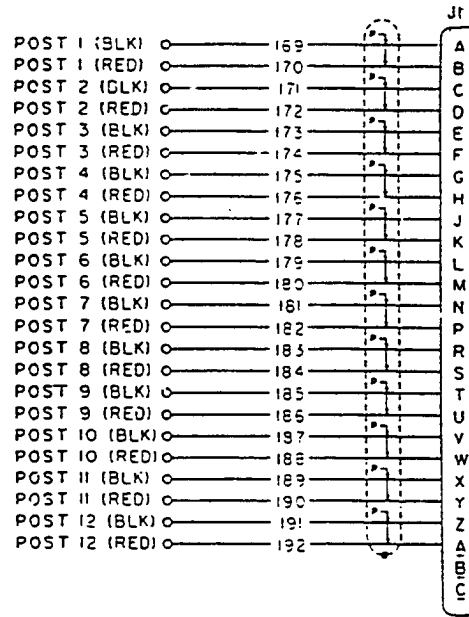


Figure 3. Wiring Diagram.

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



## SUSTAINMENT MAINTENANCE

## REPAIR ROADSIDE AC POWER EXTENSION BOX A18 (M1068A3 ONLY)

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Equipment Condition**

Roadside AC power extension box A18 removed from carrier (TM 9-2350-277-13&amp;P)

**Materials/Parts**

Locknut (24)

**Personnel Required**

Track Vehicle Repairer 91H10

**NOTE**

Tag all leads before removal for proper installation later.

**DISASSEMBLY**

1. Remove four screws (Figure 1, Item 7) and cover (Figure 1, Item 6) with gasket from extension box (Figure 1, Item 1).
2. Remove four screws (Figure 1, Item 8), four locknuts (Figure 1, Item 4), and connector J6 (Figure 1, Item 10) from extension box (Figure 1, Item 1). Discard locknuts.
3. Remove four screws (Figure 1, Item 3), four locknuts (Figure 1, Item 4), and connector J1 (Figure 1, Item 2) from extension box (Figure 1, Item 1). Discard locknuts.
4. Disconnect leads from connectors if necessary.
5. Remove 16 screws (Figure 1, Item 8), 16 locknuts (Figure 1, Item 4), four connectors (Figure 1, Item 5), and dust caps (Figure 1, Item 9) from cover (Figure 1, Item 6). Discard locknuts.

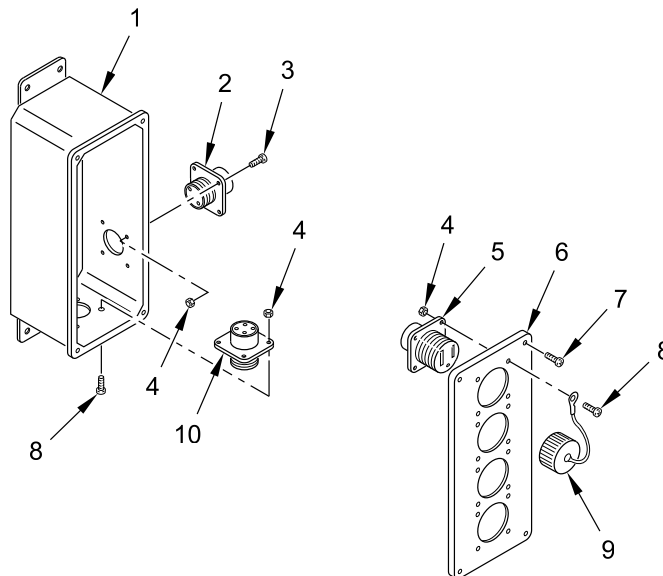


Figure 1. Roadside AC Power Extension Box – Disassembly.

**END OF TASK**

## ASSEMBLY

## NOTE

See wiring diagram Figure 3, page 0040-3 for assembly of wires to connectors.

1. Install four connectors (Figure 2, Item 5) on cover (Figure 2, Item 6) with dust caps (Figure 2, Item 9). Secure with 16 screws (Figure 2, Item 8) and 16 new locknuts (Figure 2, Item 4).
2. Install connector J1 (Figure 2, Item 2) on extension box (Figure 2, Item 1). Secure with four screws (Figure 2, Item 3) and four new locknuts (Figure 2, Item 4).
3. Install connector J6 (Figure 2, Item 10) on extension box (Figure 2, Item 1). Secure with four screws (Figure 2, Item 8) and four new locknuts (Figure 2, Item 4).
4. Connect leads to connectors if necessary.
5. Install cover (Figure 2, Item 6) with gasket on extension box (Figure 2, Item 1). Secure with four screws (Figure 2, Item 7).

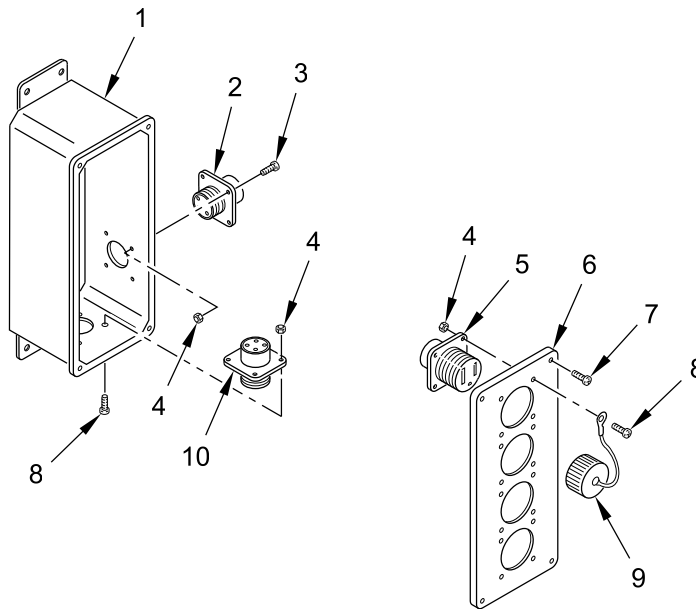


Figure 2. Roadside AC Power Extension Box – Assembly.

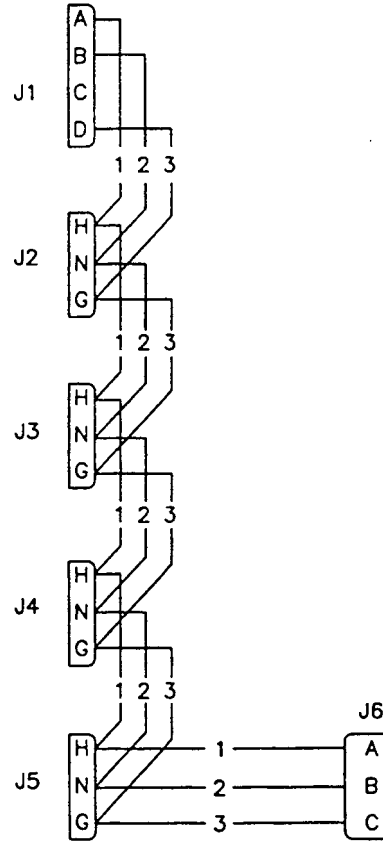


Figure 3. A18 Wiring Diagram.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**



## SUSTAINMENT MAINTENANCE

## REPAIR CURBSIDE AC POWER EXTENSION BOX A19 (M1068A3 ONLY)

**INITIAL SETUP:****Tools and Special Tools**

Electronic Equipment Tool Kit (WP 0069, Item 28)

**Equipment Condition**

Curbside AC power extension box A19 removed from carrier (TM 9-2350-277-13&amp;P)

**Materials/Parts**

Locknut (28)

**Personnel Required**

Track Vehicle Repairer 91H10

**NOTE**

Tag all leads before removal for proper installation later.

**DISASSEMBLY**

1. Remove four screws (Figure 1, Item 8) and cover (Figure 1, Item 1) with gasket from extension box (Figure 1, Item 4).
2. Remove four screws (Figure 1, Item 5), four locknuts (Figure 1, Item 3), and connector J15 (Figure 1, Item 6) from extension box (Figure 1, Item 4). Discard locknuts.
3. Remove 24 screws (Figure 1, Item 5), 24 locknuts (Figure 1, Item 3), six connectors (Figure 1, Item 2), and dust caps (Figure 1, Item 7) from cover (Figure 1, Item 1). Discard locknuts.

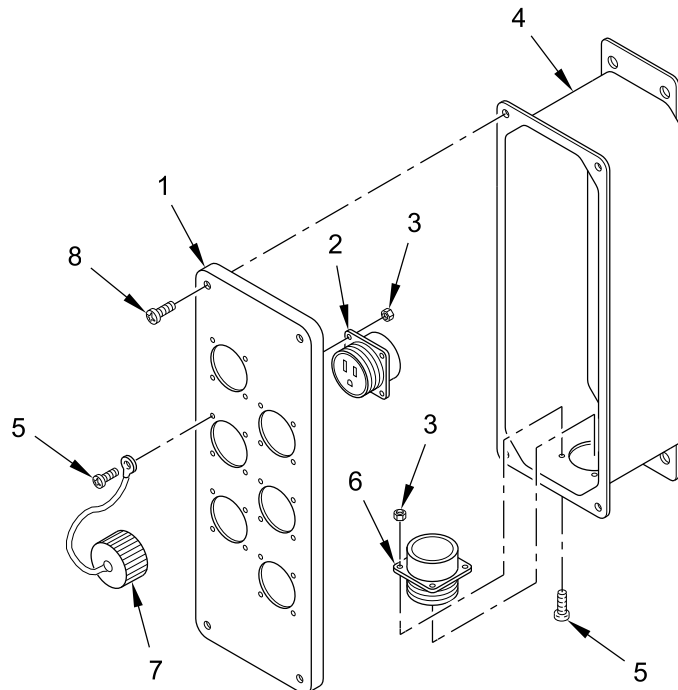


Figure 1. Curbside AC Power Extension Box – Disassembly.

**END OF TASK**

**ASSEMBLY****NOTE**

**Use wiring diagram Figure 3, page 0041-3 for assembly of wires to connectors.**

1. Install six connectors (Figure 2, Item 2) on cover (Figure 2, Item 1) with dust caps (Figure 2, Item 7). Secure with 24 screws (Figure 2, Item 5) and 24 new locknuts (Figure 2, Item 3).
2. Install connector J15 (Figure 2, Item 6) on extension box (Figure 2, Item 4). Secure with four screws (Figure 2, Item 5) and four new locknuts (Figure 2, Item 3).
3. Connect leads to connectors if necessary.
4. Install cover (Figure 2, Item 1) with gasket on extension box (Figure 2, Item 4). Secure with four screws (Figure 2, Item 8).

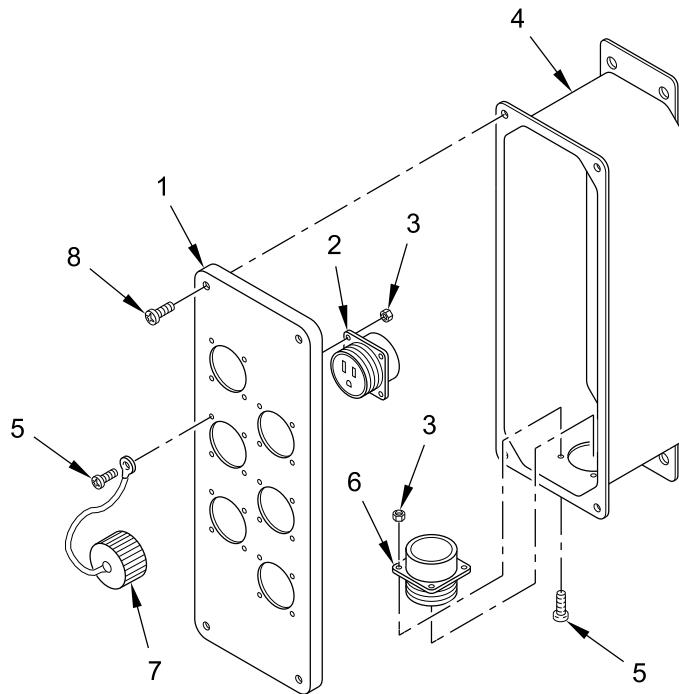


Figure 2. Curbside AC Power Extension Box – Assembly.

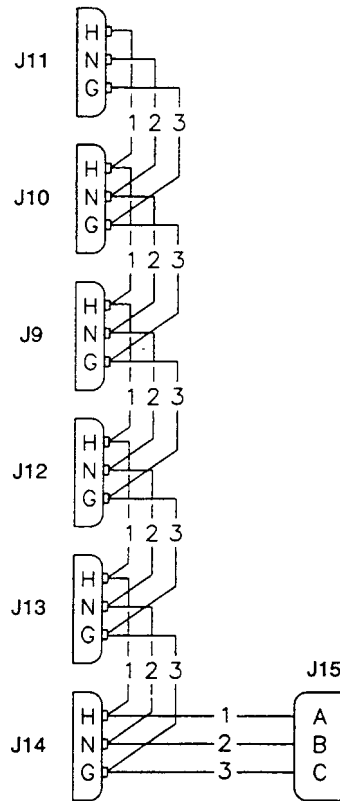


Figure 3. A19 Wiring Diagram.

**END OF TASK**

**FOLLOW ON MAINTENANCE**

1. Return to supply per local Standard Operating Procedures (SOP).

**END OF TASK**

**END OF WORK PACKAGE**





**CHAPTER 16**  
**REPAIR PARTS LIST**  
**FOR**  
**SUSTAINMENT MAINTENANCE**



**SUSTAINMENT MAINTENANCE**

**M113A3 FOV REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) INTRODUCTION**

**INTRODUCTION**

**SCOPE**

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of sustainment maintenance of the M113A3, M1064A3, M1068A3, M577A3, and M58 carriers. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools 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.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include 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. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.
3. Cross-Reference Indexes Work Packages. There are two cross-reference index work packages in this RPSTL: the National Stock Number (NSN) Index work package, and the Part Number (P/N) Index work package The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

**EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES**

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout. This entry may be subdivided into 4 subentries, one for each service.

<u>Source Code</u> <b>XX</b>	<u>Maintenance Code</u> <b>XX</b>	<u>Recoverability Code</u> <b>X</b>
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.
		5th position: Who determines disposition action on unserviceable items.

\*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.

Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

<u>Source Code</u>	<u>Application/Explanation</u>
PA	
PB	
PC	<b>NOTE</b> Items coded PC are subject to deterioration.
PD	
PE	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the third position of the SMR code.
PF	
PG	
PH	
PR	
PZ	
KD	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.
KF	
KB	
MF-Made at field MH-Made at below depot/ sustainment level ML-Made at SRA MD-Made at depot	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AF-Assembled by field AH-Assembled by below depot/ sustainment level AL-Assembled by SRA AD-Assembled be 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 part number.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's part number.
XD	Item is not stocked. Order an XD-coded item through local purchase or normal supply channels using the CAGEC and part number given, if no NSN is available.

**NOTE**

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

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:

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 the following levels of maintenance:

<b>Maintenance Code</b>	<b>Application/Explanation</b>
F -	Field maintenance can remove, replace, and use the item.
H -	Below Depot Sustainment maintenance can remove, replace, and use the item.
L -	Specialized repair activity can remove, replace, and use the item.
K -	Contractor facility can remove, replace, and use the item.
Z -	Item is not authorized to be removed, replace, or used at any maintenance level.
D -	Depot can remove, replace, and use the item.

\*NOTE - Army may use C in the third position. However, for joint service publications, Army will use O.

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.

<b>Maintenance Code</b>	<b>Application/Explanation</b>
F -	Field is the lowest level that can do complete repair of the item.
H -	Below Depot Sustainment is the lowest level that can do complete repair of the item.
L -	Specialized repair activity (enter specialized repair activity or TASMG designator) 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.
K -	Complete repair is done at contractor facility.
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

<b>Recoverability Code</b>	<b>Application/Explanation</b>
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
F -	Reparable item. When uneconomically repairable, condemn and dispose of the item at the field level.
H -	Reparable item. When uneconomically repairable, condemn and dispose of the item at the below depot sustainment 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 not authorized below Specialized Repair Activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.
K -	Reparable item. Condemnation and disposal to be performed at contractor facility.

NSN (Column (3)). The NSN for the item is listed in this column.

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.

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**

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.

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. Part numbers 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.

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, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

## EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package. NSN's in this index are listed in National Item Identification Number (NIIN) sequence.

**STOCK NUMBER Column.** This column lists the NSN in NIIN sequence. The NIIN consists of the last nine digits of the NSN. 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.

For example, if the NSN is 5385-01-574-1476, the NIIN is 01-574-1476.

**FIG. Column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

**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.

2. Part Number (P/N) Index Work Package. Part numbers in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations 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).

**PART NUMBER Column.** Indicates the part number assigned to the item.

**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.

**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

**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 UOCs used in the RPSTL are:

<u>Code</u>	<u>Used On</u>
APC	M113A3
AP2	M1064A3
AP3	M1068A3
AP5	M577A3
AP8	M58

**"Fabrication Instructions.** Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in TM 9-2350-277-40&P.

**Index Numbers.** Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / Part Number (P/N) Index work packages and the bulk material list in the repair parts list work package.

## HOW TO LOCATE REPAIR PARTS

### 1. When NSNs or Part Numbers Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

### 2. When NSN Is Known.

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.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

### 3. When Part Number Is Known.

First. If you have the part number and not the NSN, look in the PART NUMBER column of the part number index work package. Identify the figure and item number. Second. Look up the item on the figure in the applicable repair parts list work package.

## ABBREVIATIONS

For standard abbreviations, see ASME Y14.38M, Abbreviations and Acronyms.

## END OF WORK PACKAGE



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SUSTAINMENT MAINTENANCE

ENGINE

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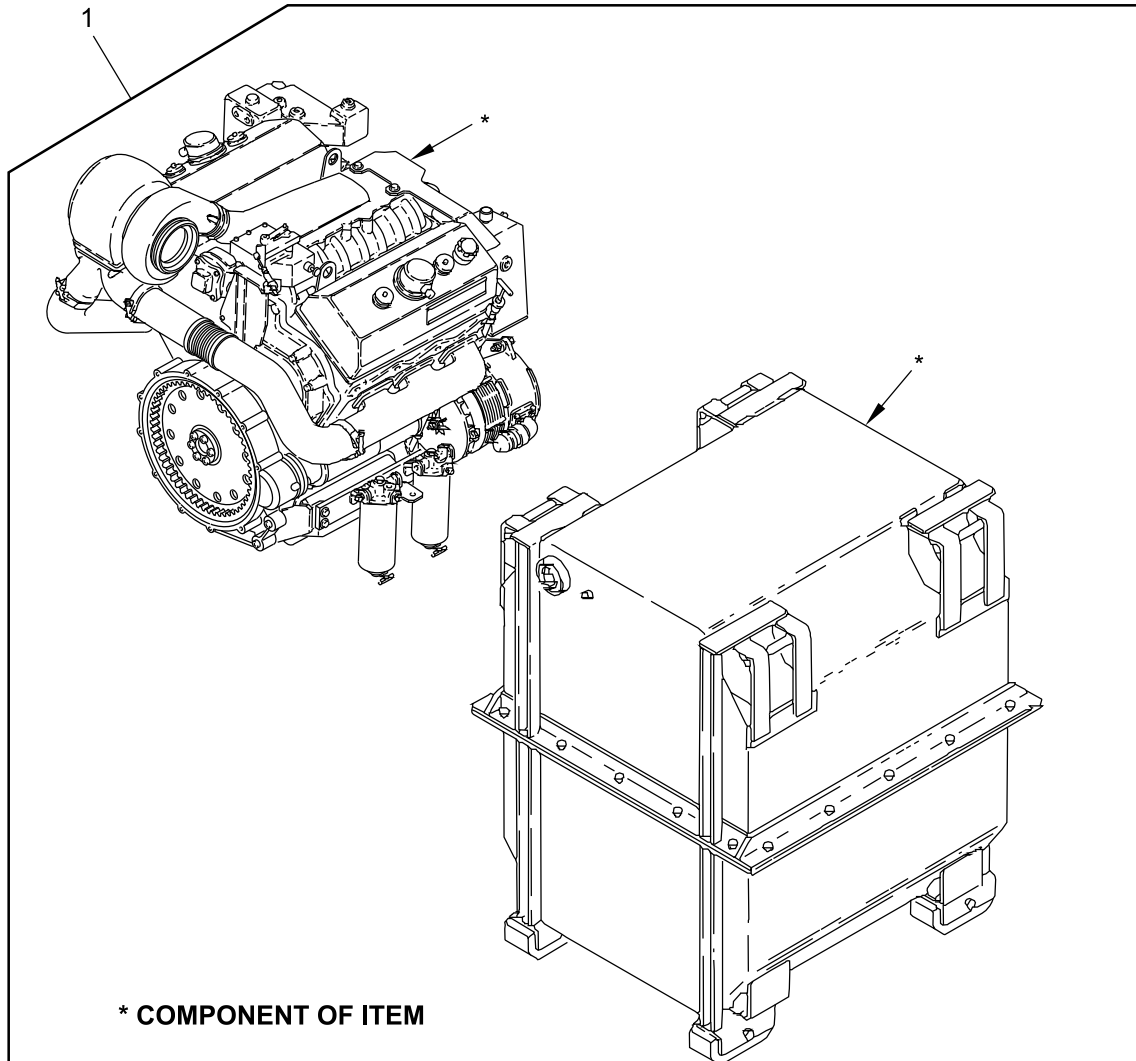


Figure 1. Engine With Container.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0100 ENGINE ASSEMBLY FIGURE 1 Engine With Container.	
1	PAFHD	2815-01-248-7644	19207	5705597	ENGINE, W/CONTAINER 5063-5393, AIR BOX HEATED ENGINE REFER TO TM 9-2815-205-24P FOR COMPONENT PARTS OTHER THAN FIELD MAINTENANCE WHICH ARE LISTED IN TM 9-2350-277-13&P.....	1
1	PAFHD	2815-01-412-2715	19207	57K1006	ENGINE, W/CONTAINER 5063-539L, GLOW PLUG HEATED ENGINE REFER TO TM 9-2815-205-24P FOR COMPONENT PARTS OTHER THAN FIELD MAINTENANCE WHICH ARE LISTED IN TM 9-2350-277-13&P.....	1
END OF FIGURE						

END OF WORK PACKAGE



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SUSTAINMENT MAINTENANCE  
RADIATOR

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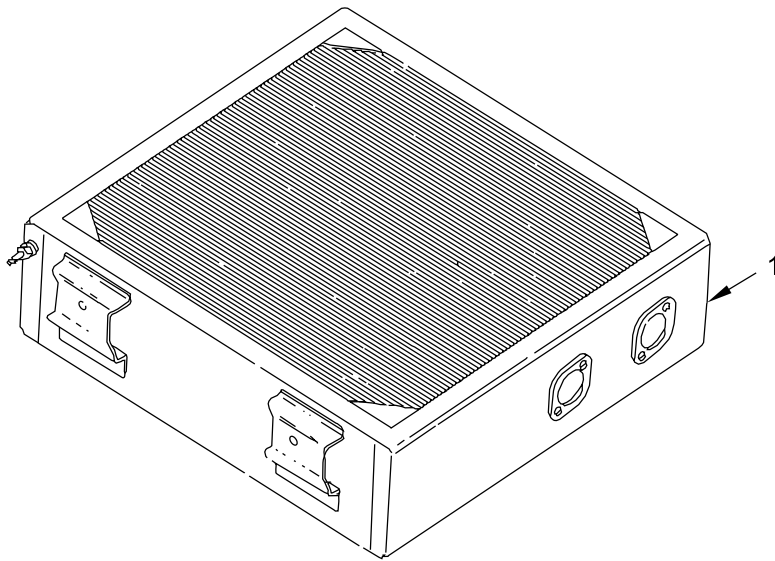


Figure 2. Radiator.

0044-2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0501 RADIATOR, EVAPORATIVE COOLER, OR HEAT EXCHANGER	
					FIGURE 2 Radiator.	
1	PAFHH	2930-01-061-4294	19207	11669369	RADIATOR,ENGINE COO .....	1
					END OF FIGURE	

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE

FAN ASSEMBLY

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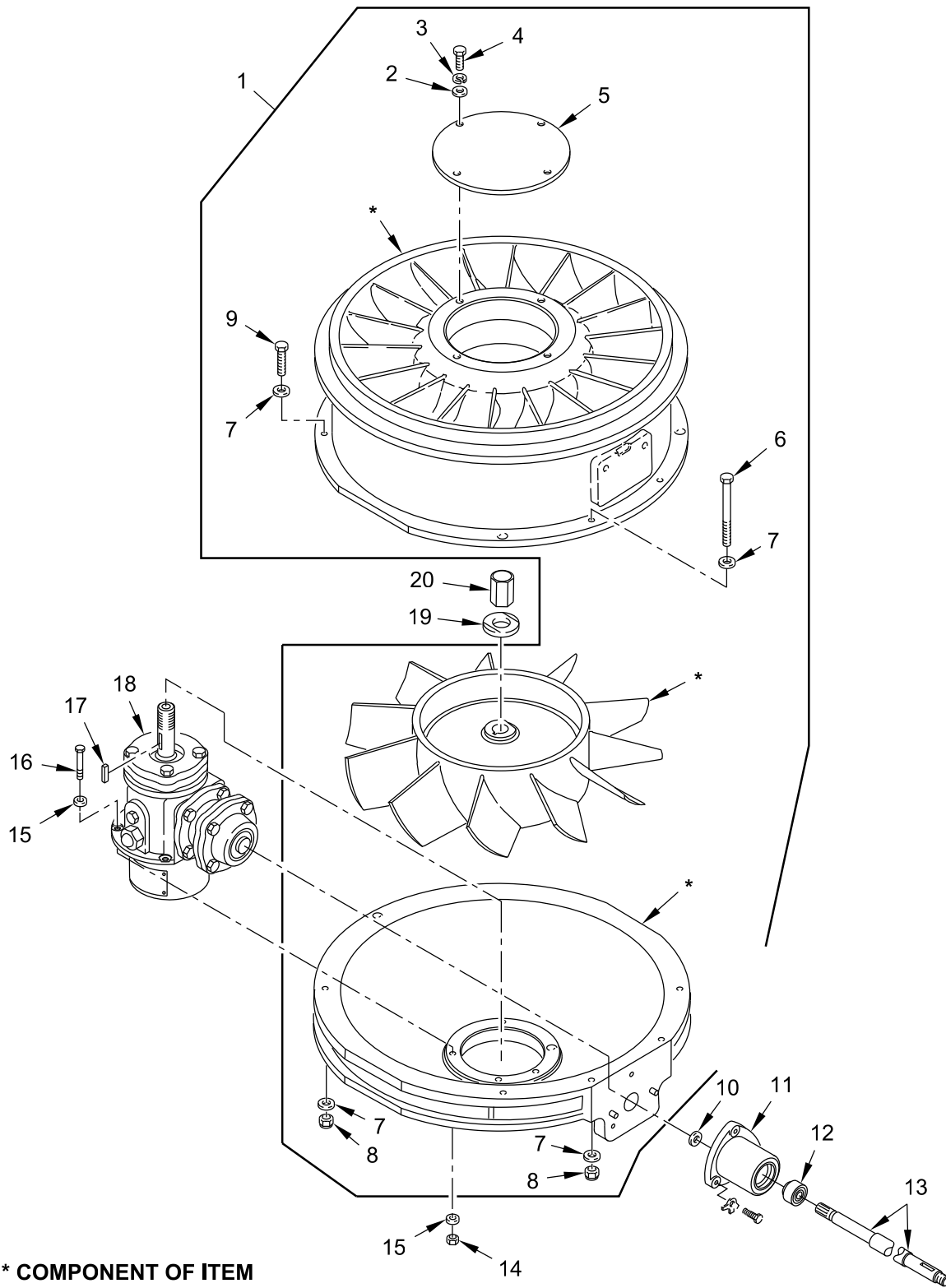
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0505 FAN ASSEMBLY FIGURE 3 Variable Speed Fan Drive (Original Configuration).	
1	PAFHH	2930-01-320-0530	19207	12350003-1	DRIVE,VARIABLE SPEE .....	1
2	PAHZZ	3020-01-249-0154	19207	12349767	.PULLEY,GROOVE .....	1
3	PAHZZ	5331-00-542-1329	99517	MS28775-120	.O-RING .....	1
4	PAHZZ	5310-00-927-9400	19200	10910174-30	.WASHER,FLAT .....	1
5	PAHZZ	5305-00-071-2068	80204	B1821BH050C138N	.SCREW,CAP,HEXAGON H .....	1
6	PAHZZ	5310-01-254-1377	19207	10910174-17	.WASHER,FLAT .....	12
7	PAHZZ	5306 00-226-4827	80204	B1821BH031C100N	.BOLT,MACHINE .....	6
8	PAHZZ	3110-01-253-9879	19207	12349864	.BEARING,BALL,ANNULA .....	1
9	PAHZZ	5325-00-804-2773	96906	MS16625-1218	.RING,RETAINING .....	1
10	PAHZZ	5365-01-254-0026	19207	12349764	.SPACER,RING .....	1
11	PAHZZ	2930-01-248-5002	19207	12350062-1	.CLUTCH,FAN,ENGINE .....	1
12	PAHZZ	3110-00-554-5304	58536	AA59583-407JABT	.BEARING,BALL,ANNULA .....	1
13	PAHZZ	5330 01-254-9676	19207	12350077	.RING,RETAINING .....	3
14	PAHZZ	2930-01-242-4596	19207	12349796	.SHAFT,SHOULDERED .....	1
15	PAHZZ	5330-01-390-4342	19207	12349766 NON-ASBESTOS	.GASKET .....	1
16	XAHZZ		19207	12349768	.HOUSING,PUMP AND BE .....	1
17	PAHZZ	5305-00-253-5614	80205	MS21318-20	.SCREW,DRIVE .....	4
18	MDDZZ		19207	12354667	.PLATE,IDENTIFICATIO .....	1
19	PAHZZ	5306-00-038-8994	80205	NAS1352-4-14P	.BOLT,MACHINE .....	6
20	PAHZZ	5310-00-865-9513	19200	10910174-1	.WASHER,FLAT .....	6
21	PAHZZ	5305-00-978-9380	96906	MS16997-61	.SCREW,CAP,SOCKET HE .....	6
22	PAHZZ	5330-01-326-7597	19207	12358784-2	.SEAL,PLAIN,ENCASED .....	2
23	PAHZZ	4320-01-325-9679	19207	12349765-1	.WATER OUTLET,ENGINE .....	1
24	PAHZZ	5331-01-078-2379	81343	MS28775-043	.O-RING .....	1
25	PAHZZ	5325-00-852-6862	96906	MS16625-1550	.RING,RETAINING .....	1
26	PAHZZ	3110-01-245-2508	19207	12349995	.BEARING,BALL,AND RO .....	1
27	XAHZZ		19207	12349744	.HOUSING,BEARING .....	1
28	PAHZZ	3110-01-252-9222	19207	12349994	.BEARING,BALL ANNULA .....	1
29	PAHZZ	5325-00-252-6865	96906	MS16625-1500	.RING,RETAINING .....	1
30	PAHZZ	5330-01-326-7598	19207	12358784-1	.SEAL,PLAIN,ENCASED .....	1
31	XAHZZ		19207	12349745	.HOUSING,BEARING .....	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
32	PAHZZ	3020-01-248-8939	19207	12349749	.PULLEY,GROOVE .....	1
33	PAHZZ	5315-00-781-2004	80205	MS20068-145	.KEY,MACHINE .....	2
END OF FIGURE						

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SUSTAINMENT MAINTENANCE  
FAN ASSEMBLY CONTINUED

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\* COMPONENT OF ITEM

Figure 4. Vaneaxial Fan.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0505 FAN ASSEMBLY CONTINUED	
					FIGURE 4 Vaneaxial Fan.	
1	PAFHH	4140-01-111-2267	19207	12269363	FAN,VANEAXIAL .....	1
2	PAHZZ	5310-00-014-5850	96906	MS27183-42	.WASHER,FLAT .....	4
3	PAHZZ	5310-00-576-5752	80205	MS35333-39	.WASHER,LOCK .....	4
4	PAHZZ	5305-00-989-7434	80205	MS35207-263	.SCREW,MACHINE .....	4
5	PAHZZ	5340-01-062-0866	19207	12253580	.COVER,ACCESS .....	1
6	PAHZZ	5305-00-990-8632	80204	B1821BH038C375N	.SCREW,CAP,HEXAGON H .....	2
7	PAHZZ	5310-00-080-6004	96906	MS27183-14	.WASHER,FLAT .....	16
8	PAHZZ	5310-01-516-3509	81349	M45913/1-6CG8Z	.NUT,SELF-LOCKING,HE .....	8
9	PAHZZ	5305-00-725-2317	80204	B1821BH038C150N	.SCREW,CAP,HEXAGON H .....	6
10	PAHZZ	5330-00-714-6129	19207	10875193	PACKING,PREFORMED .....	1
11	PAFHH	3130-00-443-4826	19207	8756933	HOUSING,BEARING,DRI .....	1
12	PAHZZ	3110-01-269-9270	19207	12313635	BEARING,BALL,ANNULA .....	1
13	PAHZZ	3040-01-249-3383	19207	12349618	SHAFT,STRAIGHT .....	1
14	PAHZZ	5310-01-516-6509	81349	M45913/1-6CG8Z	NUT,SELF-LOCKING,HE .....	4
15	PAHZZ	5310-00-080-6004	96906	MS27183-14	WASHER,FLAT .....	8
16	PAHZZ	5305-00-269-3217	80204	B1821BH038C225N	SCREW,CAP,HEXAGON H .....	4
17	PAHZZ	5315-01-098-3923	80205	MS20066-170	KEY,MACHINE .....	1
18	PAHHH	3010-01-318-5670	19207	12349762-1	DRIVE UNIT,ANGLE SEE TM 9-2520-238-34P FOR COMPONENT PARTS.....	1
19	PAHZZ	5310-00-443-5096	19207	11646725	WASHER,FLAT .....	1
20	PAHZZ	5310-01-049-2779	19207	12253195	NUT,SLEEVE .....	1
					END OF FIGURE	

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE  
FAN ASSEMBLY CONTINUED

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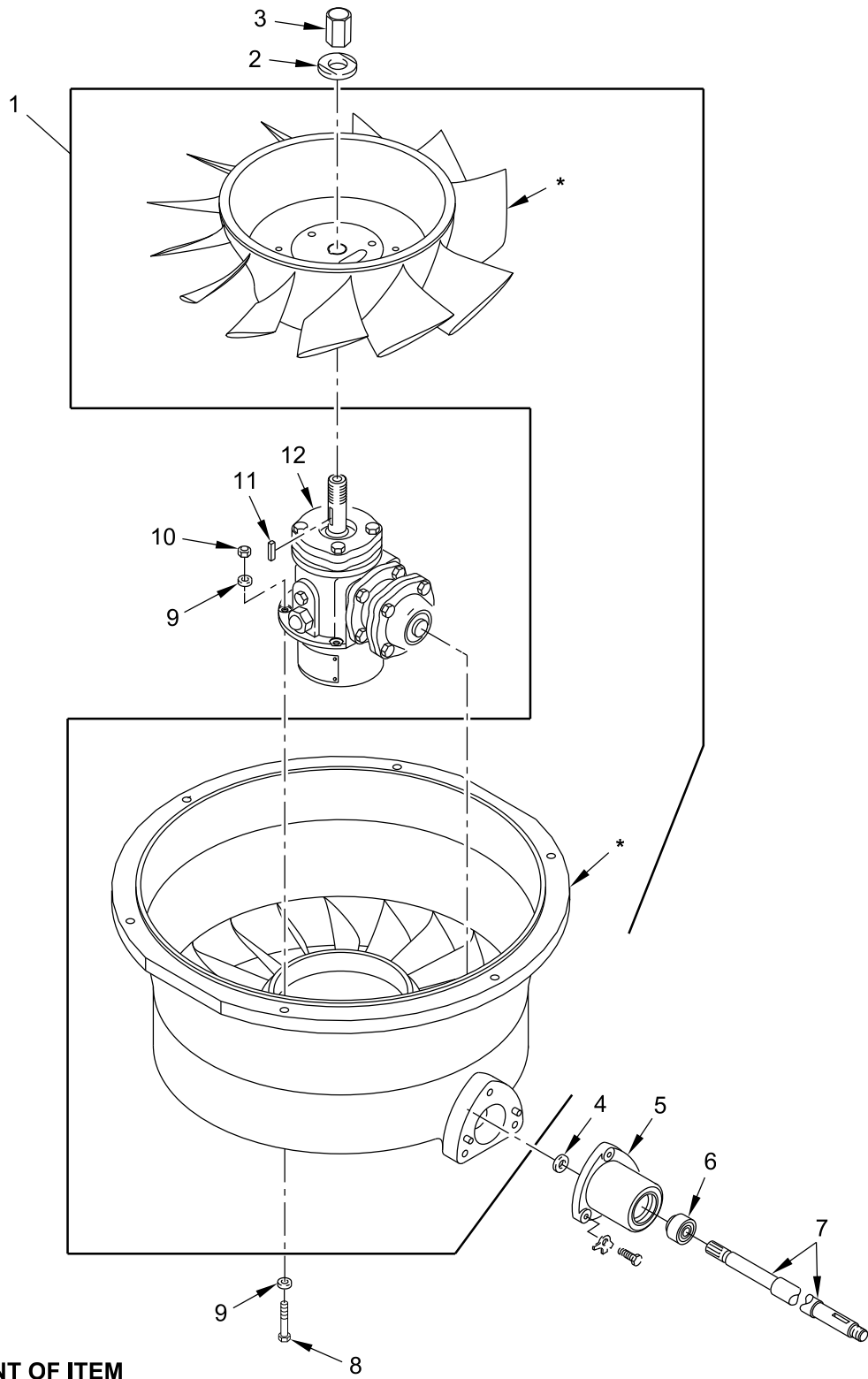


Figure 4A. Mixed Flow Fan Kit 57K4359.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0505 FAN ASSEMBLY CONTINUED	
					FIGURE 4A. Mixed Flow Fan Kit 57K4359.	
1	PAFHH		19207	12553486	FAN, MIXED FLOW .....	1
2	PAHZZ	5310-00-443-5096	19207	11646725	WASHER,FLAT .....	1
3	PAHZZ	5310-01-049-2779	19207	12253195	NUT,SLEEVE .....	1
4	PAHZZ	5330-00-714-6129	19207	10875193	PACKING,PREFORMED .....	1
5	PAFHH	3130-00-443-4826	19207	8756933	HOUSING,BEARING,DRI .....	1
6	PAHZZ	3110-01-269-9270	19207	12313635	BEARING,BALL,ANNULA .....	1
7	PAHZZ	3040-01-249-3383	19207	12349618	SHAFT,STRAIGHT .....	1
8	PAHZZ	5305-00-269-3217	80204	B1821BH038C225N	SCREW,CAP,HEXAGON H .....	4
9	PAHZZ	5310-00-080-6004	96906	MS27183-14	WASHER,FLAT .....	8
10	PAHZZ	5310-01-516-3509	81349	M45913/1-6CG8Z	NUT,SELF-LOCKING,HE .....	4
11	PAHZZ	5315-01-098-3923	80205	MS20066-170	KEY,MACHINE .....	1
12	PAHHH	3010-01-318-5670	19207	12349762-1	DRIVE UNIT,ANGLE SEE TM 9-2520-238-34P FOR COMPONENT PARTS.....	1
END OF FIGURE						



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SUSTAINMENT MAINTENANCE  
GENERATOR, ALTERNATOR

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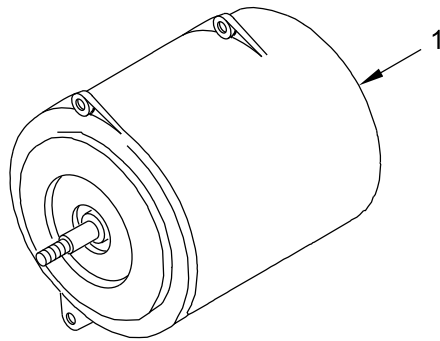


Figure 5. 200 AMP Generator.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR, ALTERNATOR	
					FIGURE 5 200 AMP Generator.	
1	PAFHH	2920-01-508-2752	0EDY1	A0012266AC	GENERATOR,ENGINE AC SEE TM 9-2920-257-30&P FOR COMPONENT PARTS.....	1
1	PAFHH	2920-01-292-2993	76761	N1206	GENERATOR,ENGINE AC SEE TM 9-2920-257-30&P FOR COMPONENT PARTS.....	1
END OF FIGURE						

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE  
HULL OR CHASSIS WIRING HARNESS

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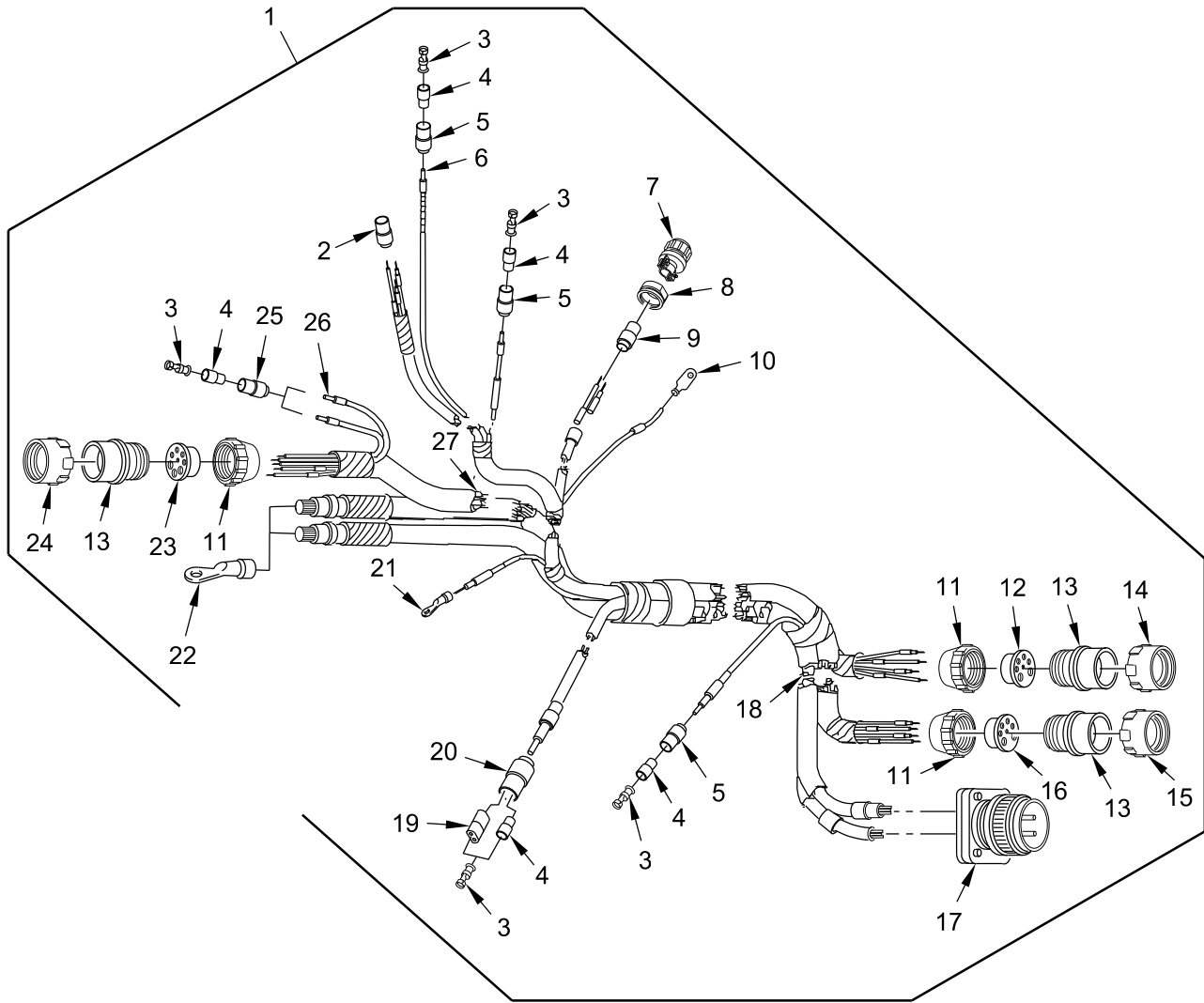


Figure 6. Engine Wiring Harness (Old Configuration).

CHANGE 1

0048-2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS CONTINUED	
					FIGURE 6 Engine Wiring Harness (Old Configuration).	
1	PAFHH	6150-01-453-2089	19207	12349873-1	WIRING HARNESS,BRAN .....	1
2	PAHZZ	5935-01-108-7592	02660	44-103-10004	.CONNECTOR,PLUG,ELEC .....	1
3	PAHZZ	5940-00-399-6676	19207	8338564	.TERMINAL ASSEMBLY .....	7
4	PAHZZ	5970-00-833-8562	19207	8338562	.INSULATOR,BUSHING .....	6
5	PAHZZ	5935-00-833-8561	19207	8338561	.SHELL,ELECTRICAL CO .....	3
6	MHHZZ	6145-00-152-6499	81349	M13486/1-5	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-5 (81349).....	1
7	PAHZZ	5935-00-509-6194	96906	MS3456W10SL4S	.CONNECTOR,PLUG,ELEC USED ON AIR BOX ENGINE.....	1
7	PAHZZ	5935-01-026-5872	96906	MS3456W16-10S	.CONNECTOR,PLUG,ELEC USED ON GLOW PLUG ENGINE.....	1
8	PAHZZ	5935-01-102-4708	19207	12293185-5	.ADAPTER,CABLE CLAMP .....	1
9	PAHZZ	5970-01-149-4017	19207	12293287-7	.INSULATION SLEEVING .....	1
10	PAHZZ	5940-00-113-3147	96906	MS20659-127	.TERMINAL,LUG .....	1
11	PAHZZ	5310-00-393-6685	19207	7723309	.NUT,PLAIN,KNURLED .....	3
12	PAHZZ	5365-00-303-4841	19207	8341848	.BUSHING,NONMETALLIC .....	1
13	PAHZZ	5975-00-771-6634	19207	7716634	.NUT,COUPLING,ELECTR .....	3
14	PAHZZ	5935-00-081-0400	19207	8724259	.CONNECTOR,PLUG,ELEC .....	1
15	PAHZZ	5935-00-080-1020	19207	8724255	.CONNECTOR,PLUG,ELEC .....	1
16	PAHZZ	5365-00-507-8766	19207	7388366	.BUSHING,NONMETALLIC .....	1
17	PAHZZ	5935-01-181-8997	96906	MS3456W32-1P	.CONNECTOR,PLUG,ELEC .....	1
18	MHHZZ	6145-00-705-6674	81349	M13486/1-14	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-14 (81349).....	1
19	PAHZZ	5935-00-745-7886	19207	10875101	.CONNECTOR BODY,PLUG .....	1
20	PAHZZ	5935-00-745-7885	0N942	10875100	.SHELL,ELECTRICAL CO .....	1
21	PAHZZ	5940-00-143-4774	81343	MS25036-153	.TERMINAL,LUG .....	1
22	PAHZZ	5940-00-115-5001	81343	MS20659-135	.TERMINAL,LUG .....	1
23	PAHZZ	5935-00-784-1701	19207	10874855	.INSERT,ELECTRICAL C .....	1
24	PAHZZ	5935-00-730-7325	97403	13207E6384-4	.CONNECTOR,PLUG,ELEC .....	2
25	PAHZZ	5975-00-660-5962	19207	8724494	.CABLE NIPPLE,ELECTR .....	2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
26	MHHZZ	6145-00-161-1609	81349	M13486/1-3	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-3 (81349).....	1
27	MHHZZ	6145-00-538-8219	81349	M13486/1-11	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-11 (81349).....	1

END OF FIGURE

END OF WORK PACKAGE

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SUSTAINMENT MAINTENANCE  
HULL OR CHASSIS WIRING HARNESS

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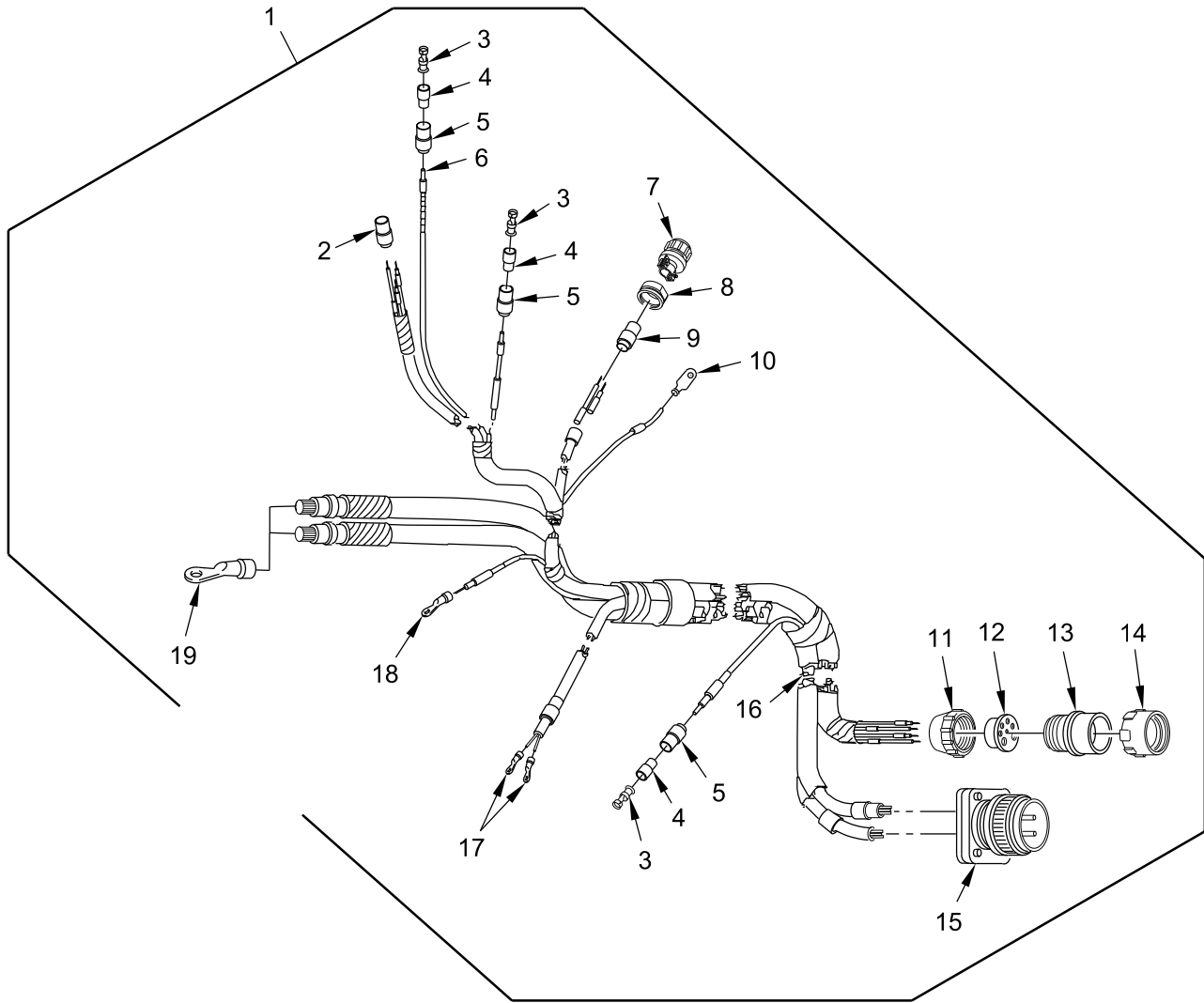


Figure 6A. Engine Wiring Harness (New Configuration).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS CONTINUED	
					FIGURE 6A. Engine Wiring Harness (New Configuration).	
1	PAFHH		19207	12554698	WIRING HARNESS, BRAN .....	1
2	PAHZZ	5935-01-108-7592	02660	44-103-10004	.CONNECTOR, PLUG, ELEC .....	1
3	PAHZZ	5940-00-399-6676	19207	8338564	.TERMINAL ASSEMBLY .....	7
4	PAHZZ	5970-00-833-8562	19207	8338562	.INSULATOR, BUSHING .....	6
5	PAHZZ	5935-00-833-8561	19207	8338561	.SHELL, ELECTRICAL CO .....	3
6	MHHZZ	6145-00-152-6499	81349	M13486/1-5	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N M13486/1-5 (81349).....	1
7	PAHZZ	5935-01-026-5872	96906	MS3456W16-10S	.CONNECTOR, PLUG, ELEC USED ON GLOW PLUG ENGINE.....	1
8	PAHZZ	5935-01-102-4708	19207	12293185-5	.ADAPTER, CABLE CLAMP .....	1
9	PAHZZ	5970-01-149-4017	19207	12293287-7	.INSULATION SLEEVING .....	1
10	PAHZZ	5940-00-113-3147	96906	MS20659-127	.TERMINAL, LUG .....	1
11	PAHZZ	5310-00-393-6685	19207	7723309	.NUT, PLAIN, KNURLED .....	1
12	PAHZZ	5365-00-507-8766	19207	7388366	.BUSHING, NONMETALLIC .....	1
13	PAHZZ	5975-00-771-6634	19207	7716634	.NUT, COUPLING, ELECTR .....	1
14	PAHZZ	5935-00-080-1020	19207	8724255	.CONNECTOR, PLUG, ELEC .....	1
15	PAHZZ	5935-01-181-8997	96906	MS3456W32-1P	.CONNECTOR, PLUG, ELEC .....	1
16	MHHZZ	6145-00-705-6674	81349	M13486/1-14	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N M13486/1-14 (81349).....	1
17	PAFZZ	5940-00-107-1481	96906	MS20659-104	.TERMINAL, LUG .....	2
18	PAHZZ	5940-00-143-4774	81343	MS25036-153	.TERMINAL, LUG .....	1
19	PAHZZ	5940-00-115-5001	81343	MS20659-135	.TERMINAL, LUG .....	1

END OF FIGURE

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE  
HULL OR CHASSIS WIRING HARNESS CONTINUED

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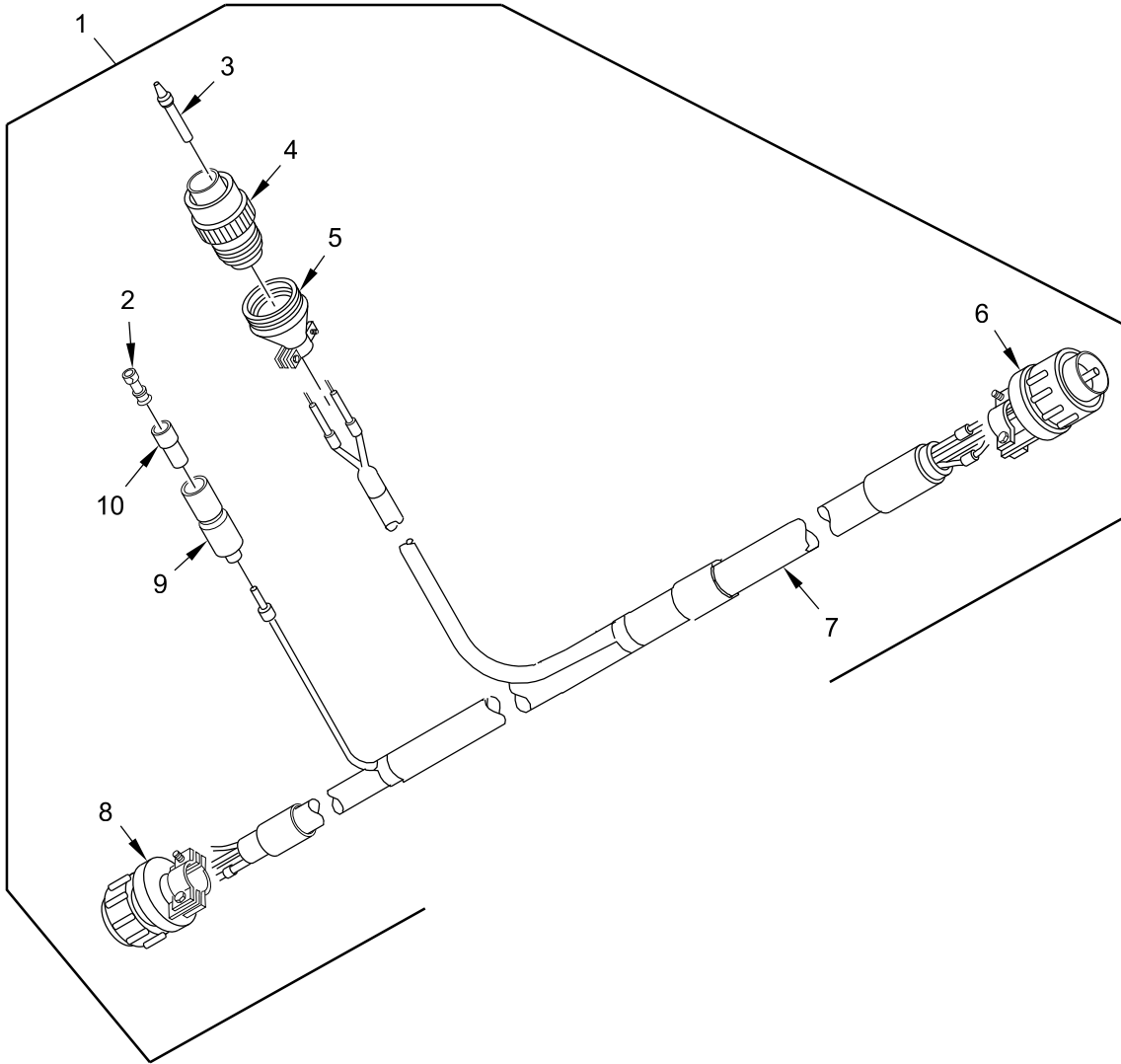


Figure 7. Transmission Wiring Harness.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS CONTINUED	
					FIGURE 7 Transmission Wiring Harness.	
1	PAFHH	6150-01-239-1970	19207	12349810	WIRING HARNESS, BRAN .....	1
2	PAHZZ	5940-00-399-6676	19207	8338564	.TERMINAL ASSEMBLY .....	1
3	PAHZZ	5935-00-198-4007	96906	MS3187-16	.PLUG, END SEAL, ELECT .....	1
4	PAHZZ	5935-01-083-6230	81343	MS3459W10SL-3S	.CONNECTOR, PLUG, ELEC .....	1
5	PAHZZ	5935-01-179-5430	81349	M85049/52-1-10W	.CLAMP, CABLE, ELECTRI .....	1
6	PAHZZ	5935-01-047-7976	96906	MS3456W24-7P	.CONNECTOR, PLUG, ELEC .....	1
7	MHHZZ	6145-00-161-1609	81349	M13486/1-3	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL P/N M13486/1-3 (81349)	1
8	PAHZZ	5935-01-076-9456	96906	MS3456W20-7S	.CONNECTOR, PLUG, ELEC .....	1
9	PAHZZ	5975-00-660-5962	19207	8724494	.CABLE NIPPLE, ELECTR .....	1
10	PAHZZ	5970-00-833-8562	19207	8338562	.INSULATOR, BUSHING .....	1
END OF FIGURE						

END OF WORK PACKAGE



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SUSTAINMENT MAINTENANCE  
HULL OR CHASSIS WIRING HARNESS CONTINUED

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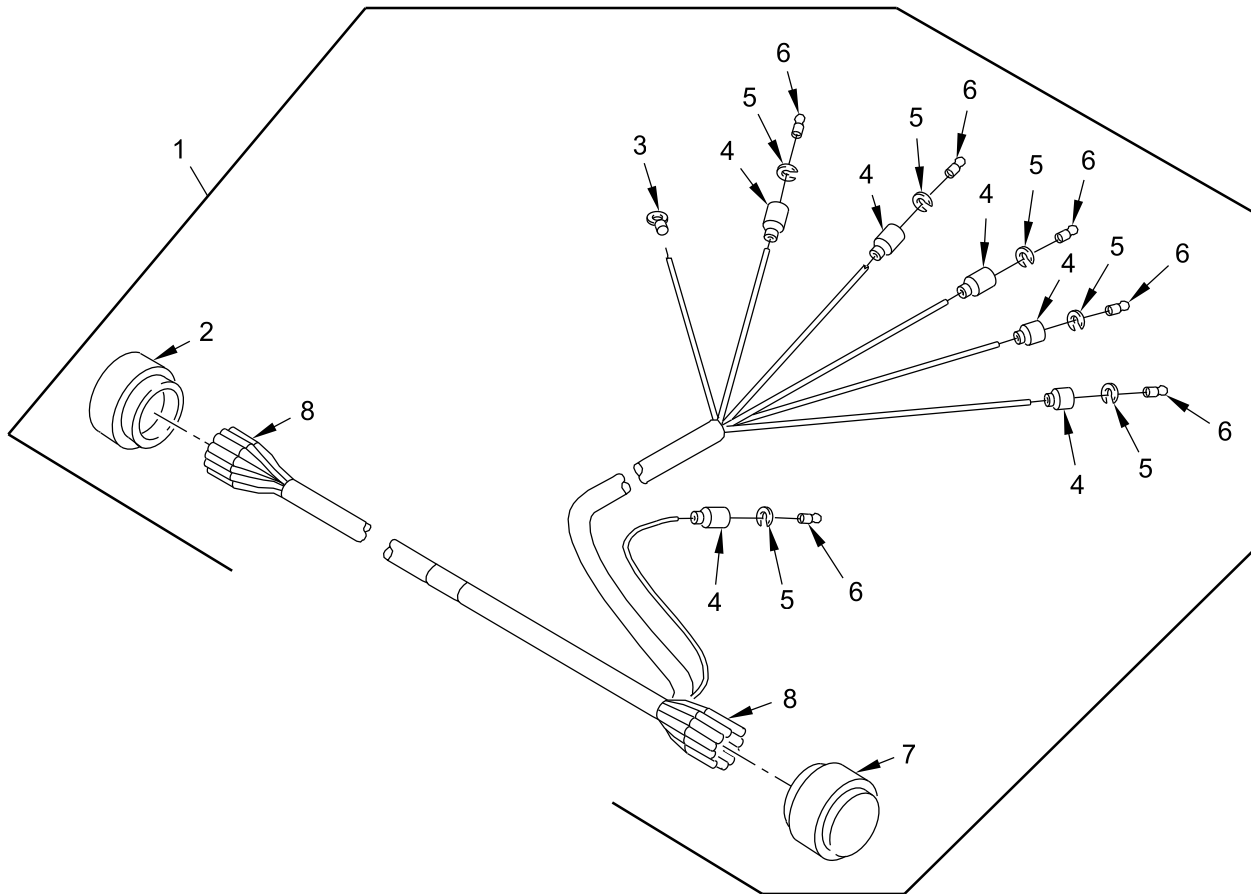


Figure 8. Wiring Harness, Transmission Controller.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS CONTINUED	
					FIGURE 8 Wiring Harness, Transmission Controller.	
1	PBFHH	6150-01-245-2560	19207	12349813	WIRING HARNESS,BRAN .....	
2	PAHZZ	5935-01-048-0080	96906	MS3456W24-7S	.CONNECTOR,PLUG,ELEC .....	1
3	PAHZZ	5940-00-283-5281	81343	MS25036-109	.TERMINAL,LUG .....	1
4	PAHZZ	5935-00-691-5591	19207	8724495	.SHELL,ELECTRICAL CO .....	6
5	PAHZZ	5310-00-656-0067	19207	8724497	.WASHER,SLOTTED .....	6
6	PAHZZ	5999-00-926-3144	58536	AA52536-3	.CONTACT,ELECTRICAL .....	6
7	PAHZZ	5935-01-013-4479	96906	MS3450W24-7S	.CONNECTOR,RECEPTACL .....	1
8	MHHZZ	6145-00-161-1609	81349	M13486/1-3	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-3 (81349)	1
END OF FIGURE						

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE  
HULL OR CHASSIS WIRING HARNESS CONTINUED

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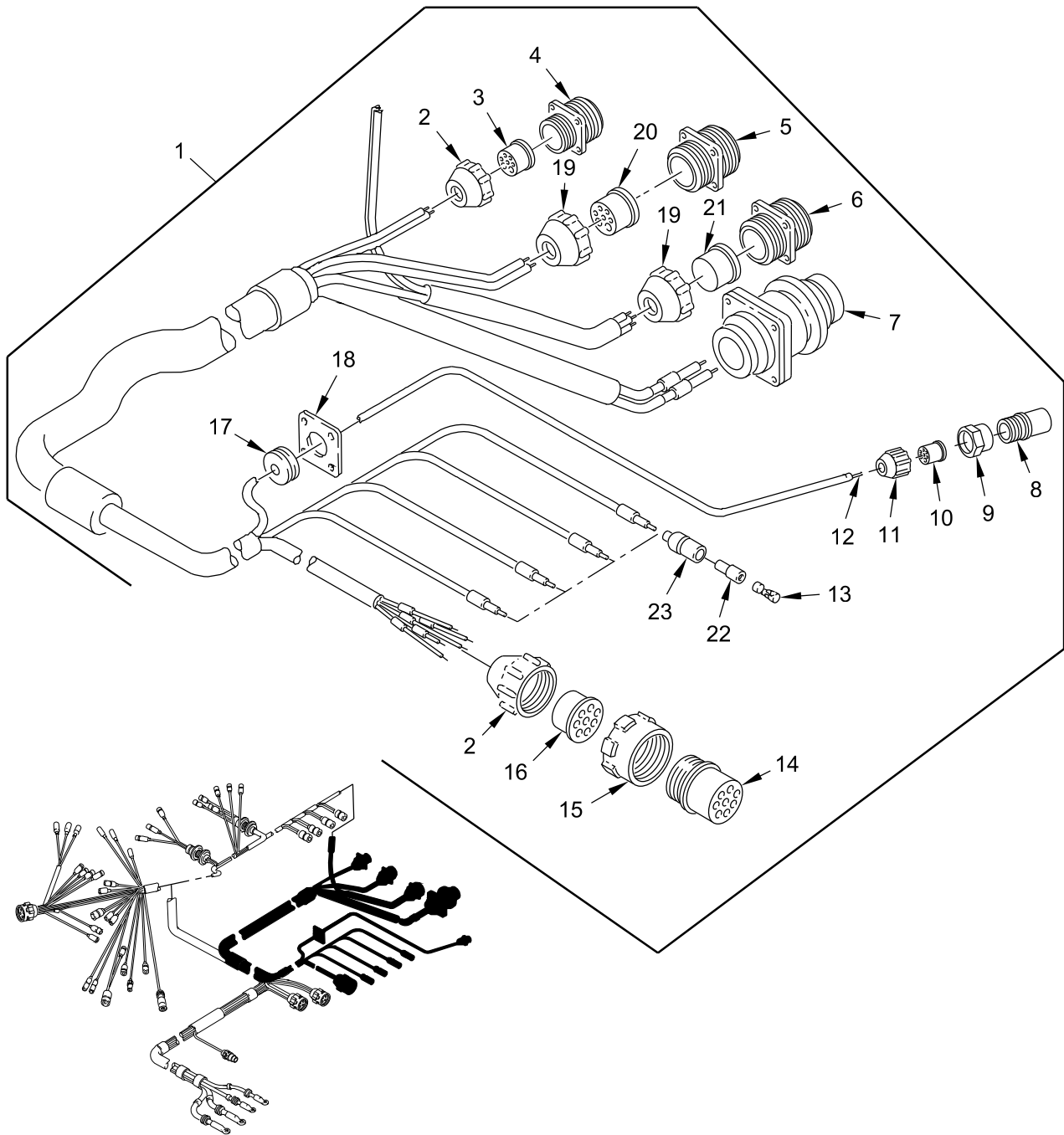


Figure 11. Main Wiring Harness, Forward Section.  
(Sheet 1 of 4)

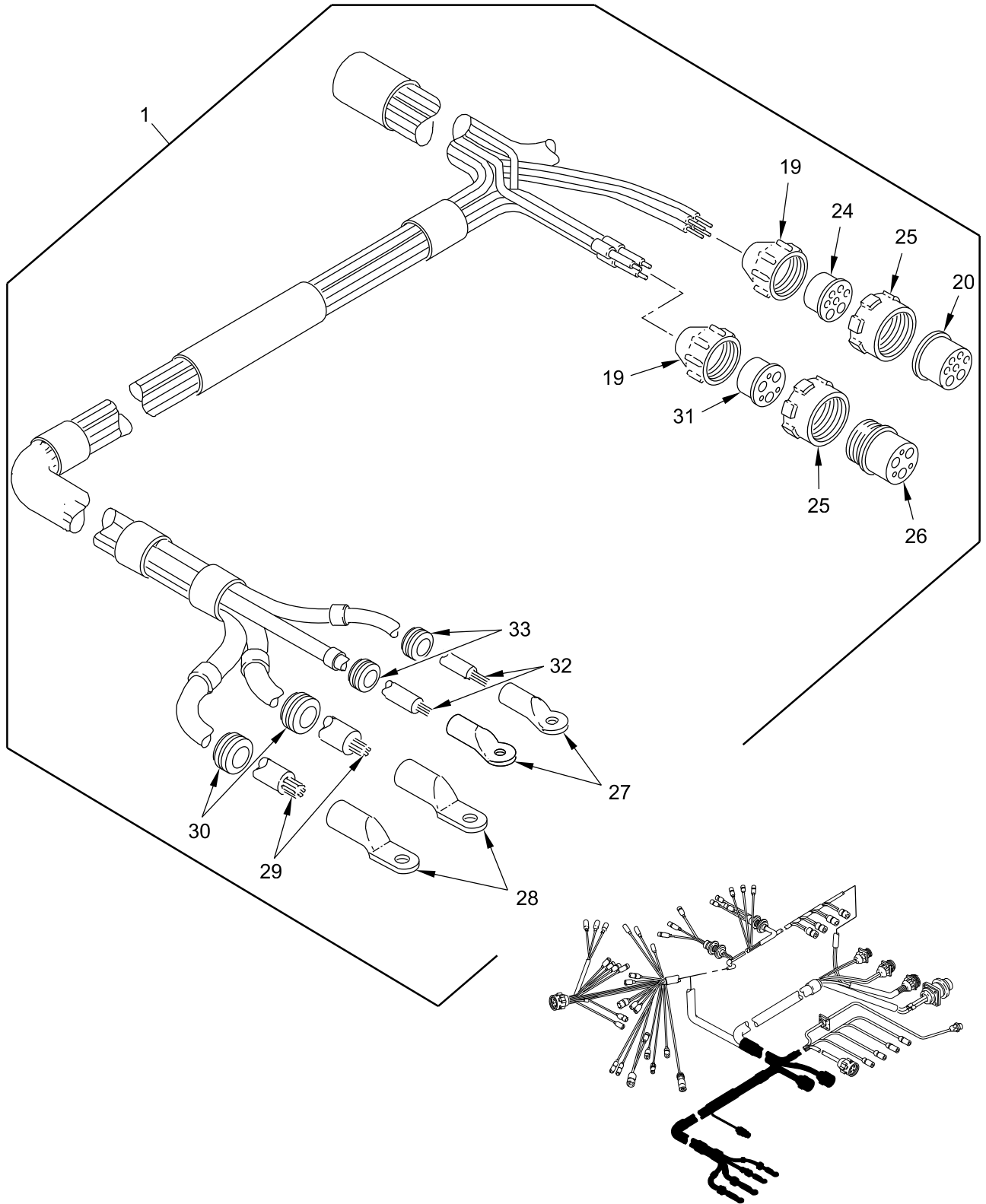


Figure 11. Main Wiring Harness, Forward Section.  
(Sheet 2 of 4)

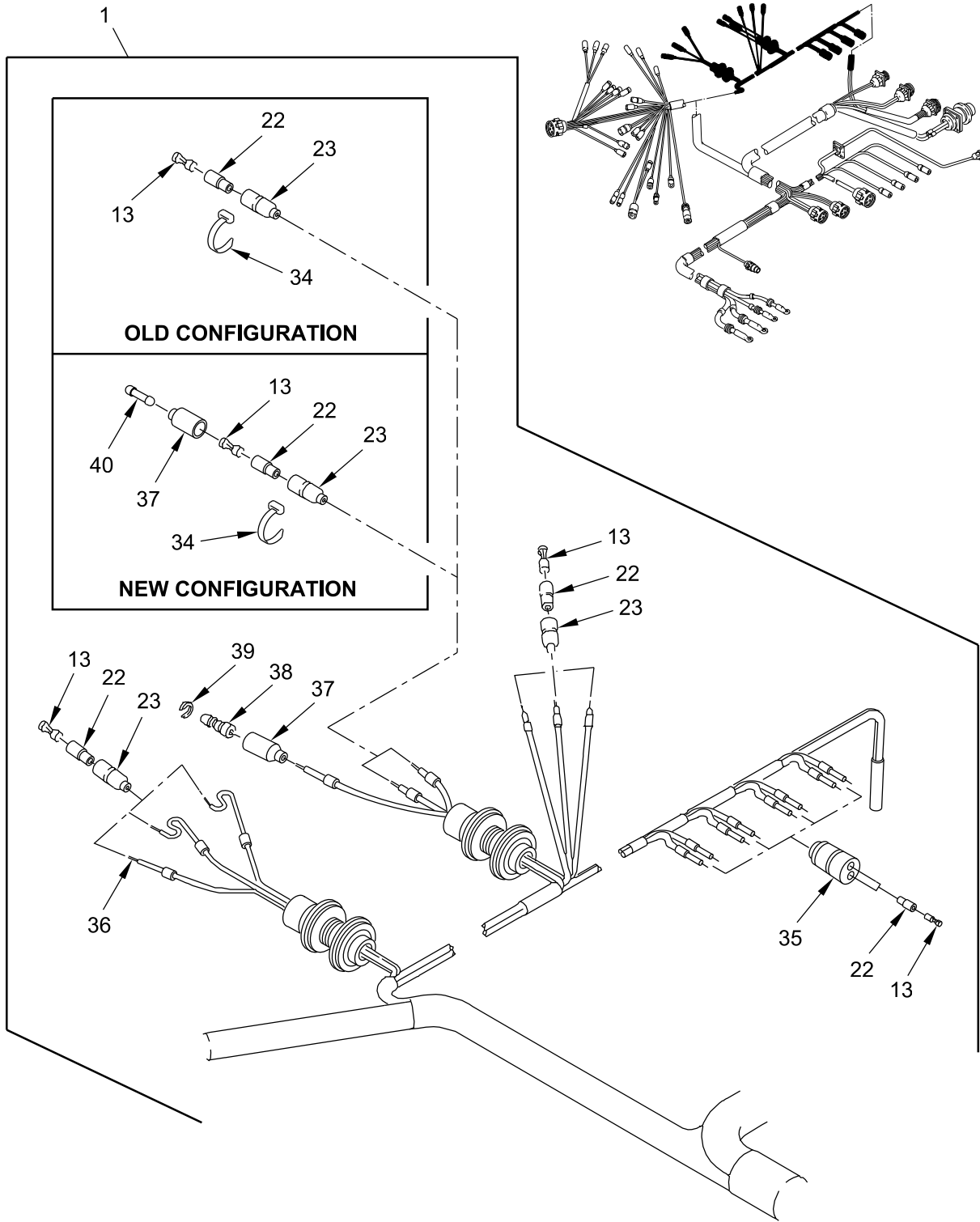


Figure 11. Main Wiring Harness, Forward Section.  
(Sheet 3 of 4)

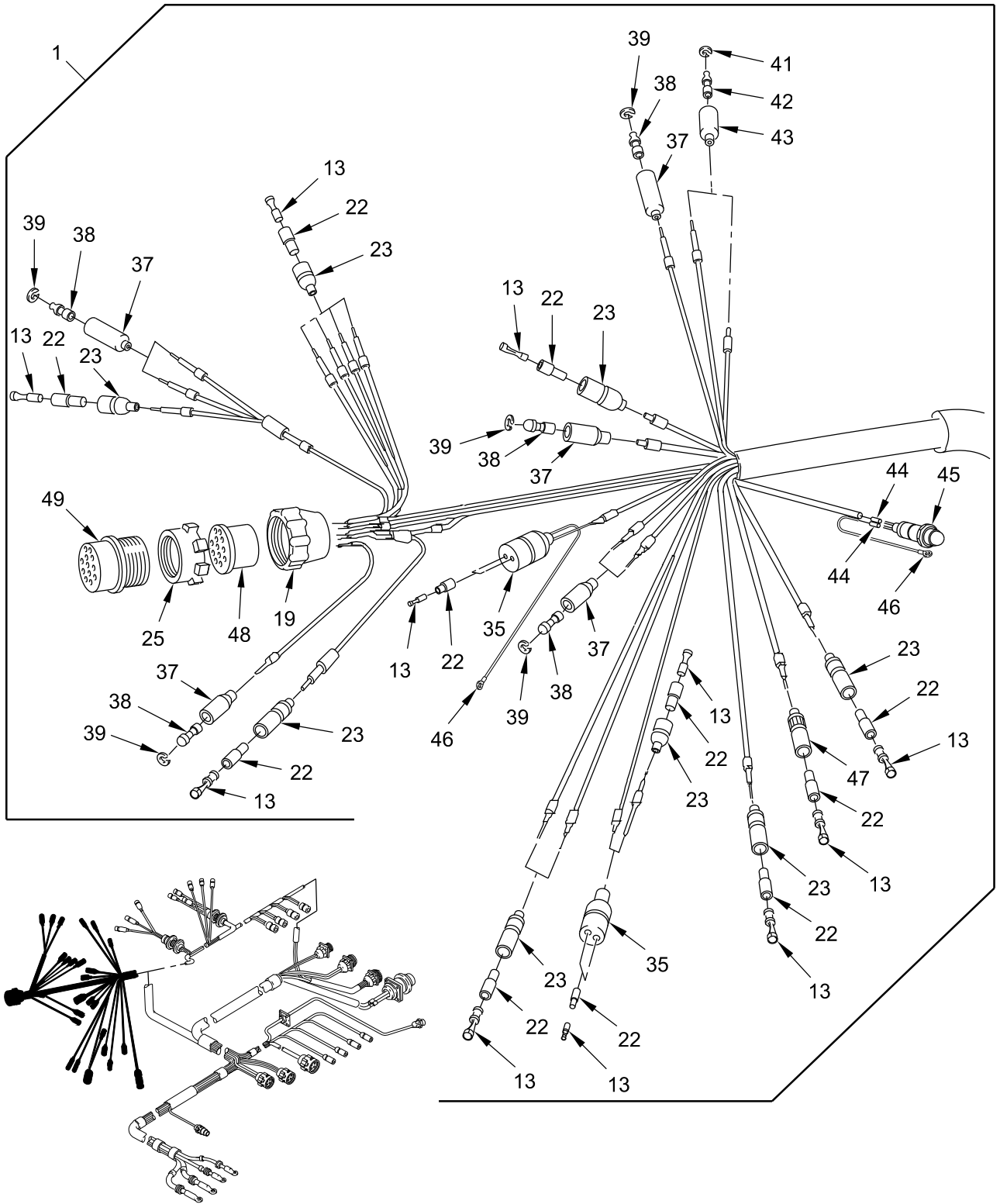


Figure 11. Main Wiring Harness, Forward Section.  
(Sheet 4 of 4)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0613 HULL OR CHASSIS WIRING HARNESS CONTINUED	
					FIGURE 9 Main Wiring Harness, Forward Section.	
1	PAFFF	6150-01-482-3390	19207	12349881-3	WIRING HARNESS,BRAN .....	1
1	PAFFF	6150-01-575-9064	19207	12475177	WIRING HARNESS,BRAN .....	1
2	PAHZZ	5935-00-333-9414	19207	7723308	.NUT,BUSHING RETAINE .....	2
3	PAHZZ	5935-00-770-8274	19207	10874858	.INSERT,ELECTRICAL C .....	1
4	PAHZZ	5935-00-201-5997	19207	7716785	.CONNECTOR,RECEPTACL .....	1
5	PAHZZ	5935-00-502-9262	19207	8713567	.CONNECTOR,RECEPTACL .....	1
6	PAHZZ	5935-00-178-6075	19207	7388359	.CONNECTOR,RECEPTACL .....	1
7	PAHZZ	5935-01-246-9207	96906	MS3450W32-1S	.CONNECTOR,RECEPTACL .....	1
8	PAHZZ	5935-00-686-2610	19207	8724199	.CONNECTOR,PLUG,ELEC .....	1
9	PAHZZ	5975-00-522-7125	77820	10-40457-12S	.NUT,COUPLING,ELECTR .....	1
10	PAHZZ	5365-00-752-7631	19207	7527631	.BUSHING,NONMETALLIC .....	1
11	PAHZZ	5935-00-333-3088	19207	7723306	.NUT,BUSHING RETAINE .....	1
12	MHHZZ	6145-00-705-6678	81349	M13486/1-7	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-7 (81349).....	1
13	PAHZZ	5940-00-399-6676	19207	8338564	.TERMINAL ASSEMBLY .....	37
14	PAHZZ	5365-00-772-2322	19207	7722322	.BUSHING,NONMETALLIC .....	1
15	PAHZZ	5310-01-154-6728	19207	8701325-1	.NUT,PLAIN,ROUND .....	1
16	PAHZZ	5935-00-614-3959	18876	8526701	.CONNECTOR,PLUG,ELEC .....	1
17	PAFZZ	5325-00-950-9956	96906	MS35489-63	.GROMMET,NONMETALLIC .....	1
18	PAFZZ	5340-01-258-6097	19207	12349914	.COVER,ACCESS .....	1
19	PAHZZ	5310-00-393-6685	19207	7723309	.NUT,PLAIN,KNURLED .....	5
20	PAHZZ	5365-00-303-4841	19207	8341848	.BUSHING,NONMETALLIC .....	1
21	PAHZZ	5365-00-507-8766	19207	7388366	.BUSHING,NONMETALLIC .....	1
22	PAHZZ	5970-00-833-8562	19207	8338562	.INSULATOR,BUSHING .....	37
23	PAHZZ	5935-00-833-8561	19207	8338561	.SHELL,ELECTRICAL CO .....	24
24	PAHZZ	5935-00-081-0400	19207	8724259	.CONNECTOR,PLUG,ELEC .....	1
25	PAHZZ	5975-01-151-7033	19207	7716634-1	.NUT,COUPLING,ELECTR .....	3
26	PAHZZ	5935-00-784-1701	19207	10874855	.INSERT,ELECTRICAL C .....	1
27	PAHZZ	5940-00-115-4995	96906	MS20659-112	.TERMINAL,LUG .....	2
28	PAHZZ	5940-00-115-2684	96906	MS20659-118	.TERMINAL,LUG .....	2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
29	MHHZZ	6145-00-705-6674	81349	M13486/1-14	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-14 (81349).....	1
30	PAHZZ	5325-00-276-6089	96906	MS35489-16	.GROMMET,NONMETALLIC .....	2 ■
31	PAHZZ	5935-00-730-7325	97403	13207E6384-4	.CONNECTOR,PLUG,ELEC .....	1
32	MHHZZ	6145-00-538-8219	81349	M13486/1-11	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-11 (81349).....	1
33	PAHZZ	5325-00-276-6100	96906	MS35489-14	.GROMMET,NONMETALLIC .....	2 ■
34	PAHZZ	5975-00-570-9598	81343	MS3367-7-9	.STRAP,TIEDOWN,ELECT .....	2 ■
35	PAHZZ	5935-00-767-7936	96906	MS27145-1	.CONNECTOR,PLUG,ELEC .....	8
36	MHHZZ	6145-00-152-6499	81349	M13486/1-5	.WIRE,ELECTRICAL MAKE FROM WIRE,ELECTRICAL P/N M13486/1-5 (81349).....	1
37	PAHZZ	5935-00-572-9180	19207	8338566	.SHELL,ELECTRICAL CO .....	10
38	PAHZZ	5999-00-057-2929	58536	AA52536-2	.CONTACT,ELECTRICAL .....	8
39	PAHZZ	5310-00-833-8567	19207	8338567	.WASHER,SLOTTED .....	8
40	PAHZZ	5935-00-214-0904	19207	7982907	.DUMMY CONNECTOR,PLU .....	2
41	PAHZZ	5310-00-595-7044	19207	8338573	.WASHER,SLOTTED .....	2
42	PAHZZ	5999-00-925-6495	58536	AA52536-1	.CONTACT,ELECTRICAL .....	2
43	PAHZZ	5935-00-695-9077	19207	8338572	.SHELL,ELECTRICAL CO .....	2
44	PAHZZ	5970-01-123-5027	81343	M23053/5-105-P	.INSULATION SLEEVING GLOW PLUG ENGINE .....	2
45	PAHZZ	6210-01-128-2719	19207	12296787-2	.LIGHT,INDICATOR GLOW PLUG ENGINE .....	1
46	PAHZZ	5940-00-705-6710	19207	7056710	.TERMINAL,LUG .....	2
47	PAHZZ	5935-00-399-6673	19207	7982401	.SHELL,ELECTRICAL CO .....	1
48	PAHZZ	5365-00-090-5426	19207	7722333	.BUSHING,NONMETALLIC .....	1
49	PAHZZ	5935-00-686-2599	19207	8724258	.CONNECTOR,PLUG,ELEC .....	1

END OF FIGURE





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SUSTAINMENT MAINTENANCE  
TRANSMISSION

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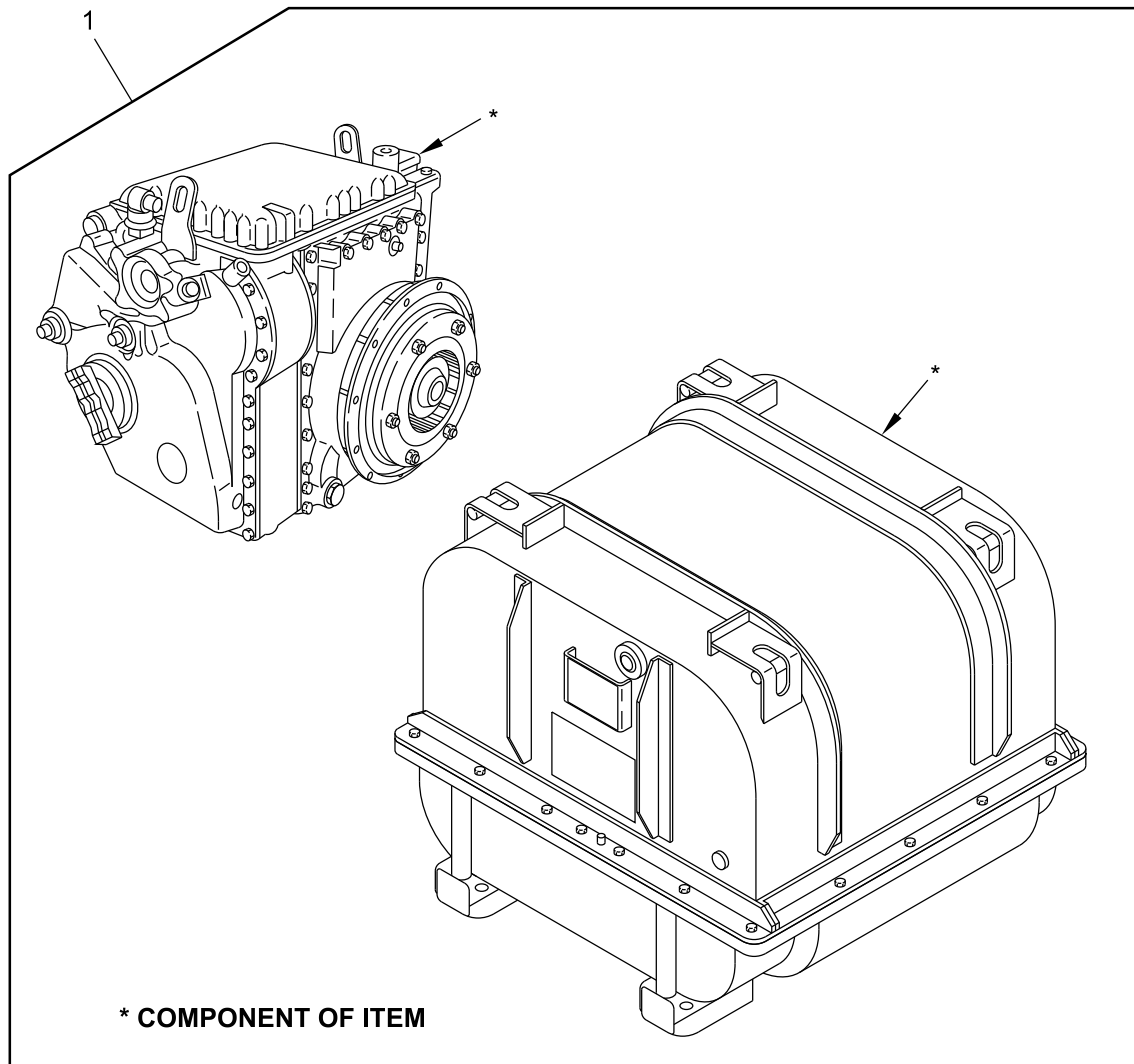


Figure 10. Transmission With Container.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0700 TRANSMISSION ASSEMBLY	
					FIGURE 10 Transmission With Container.	
1	PAFHD	2520-01-397-1074	19207	12371043	TRANSMISSION W/CONT X200-4A, SEE TM 9-2520-272-40P FOR COMPONENT PARTS.....	1
END OF FIGURE						

END OF WORK PACKAGE



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**SUSTAINMENT MAINTENANCE**  
**POWER TRANSFER, FINAL DRIVE, PLANETARY OR DROP GEAR BOX ASSEMBLIES**

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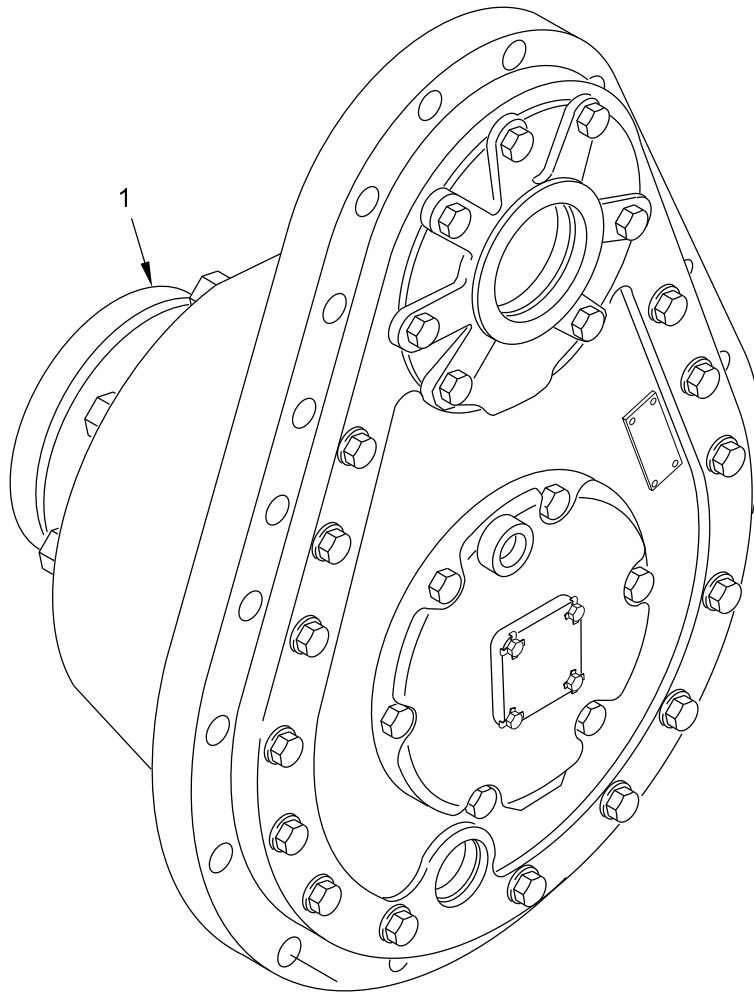


Figure 11. Final Drive Assembly.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0801 POWER TRANSFER, FINAL DRIVE, PLANETARY OR DROP GEAR BOX ASSEMBLIES	
					FIGURE 11 Final Drive Assembly.	
1	PAFDD	2520-01-061-5766	19207	12253512	FINAL DRIVE ASSEMBL SEE TM 9-2520-238-34P FOR COMPONENT PARTS.....	2
END OF FIGURE						

END OF WORK PACKAGE





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SUSTAINMENT MAINTENANCE  
TRACK IDLERS AND BRACKETS

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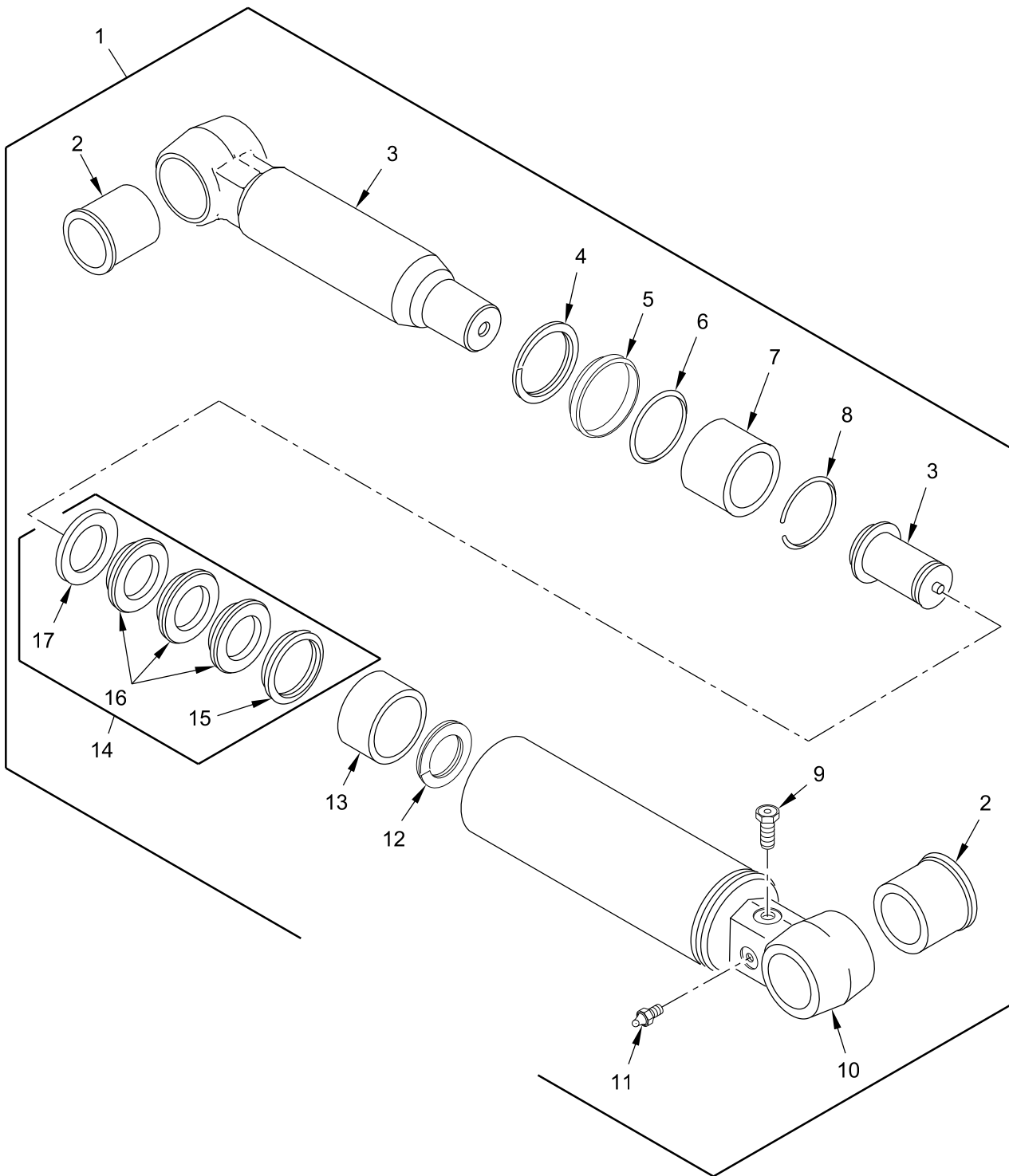


Figure 12. Track Adjuster, Vehicular.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1301 TRACK IDLERS AND BRACKETS FIGURE 12 Track Adjuster, Vehicular.	
1	PAFHH	2530-00-403-6776	19207	11660968	ADJUSTER,TRACK,VEHI .....	2
2	PAHZZ	3120-00-679-7949	58572	10861440	.BUSHING,SLEEVE .....	2
3	PAHZZ	2530-00-134-8967	19207	11616380	.ARM,CONTROL,VEHICUL .....	1
4	PAFHH	5325-00-768-8563	80756	RRT206	.RING,RETAINING PART OF KIT P/N 5703829.....	1
5	PAHZZ	5330-00-517-0388	96906	MS28776M2-19	.RING,WIPER PART OF KIT P/N 5703829...	1
6	PAHZZ	5331-00-291-7342	81343	MS29513-224	.O-RING PART OF KIT P/N 5703829.....	1
7	PAHZZ	3120-00-866-6235	19207	10932466	.BEARING,SLEEVE PART OF KIT P/N 5703829.....	1
8	PAHZZ	5325-00-057-4501	19207	10932417	.RING,RETAINING PART OF KIT P/N 5703829.....	1
9	PAHZZ	2530-00-679-7961	19207	10861777	.BLEEDER VALVE,TRACK .....	1
10	XAHZZ		19207	11660969	.HOUSING,TRACK ADJUST .....	1
11	PAHZZ	4730-00-050-4208	81343	AS15003-1	.FITTING,LUBRICATION .....	1
12	PAHZZ	5325-00-621-3192	81349	M2742610136A	.RING,RETAINING PART OF KIT P/N 5703829.....	1
13	PAHZZ	3120-00-930-2340	19207	10932465	.BEARING,SLEEVE PART OF KIT P/N 5703829.....	1
14	PAHZZ	5330-01-060-8526	19207	11661485	.PACKING ASSEMBLY PART OF KIT P/N 5703829.....	1
15	PAHZZ	5330-00-057-4495	19207	8737864	..PACKING,PREFORMED .....	1
16	PAHZZ	5330-00-006-2451	19207	8737865	..PACKING,PREFORMED .....	3
17	PAHZZ	5330-00-057-4494	19207	8737863	..PACKING,PREFORMED .....	1

END OF FIGURE

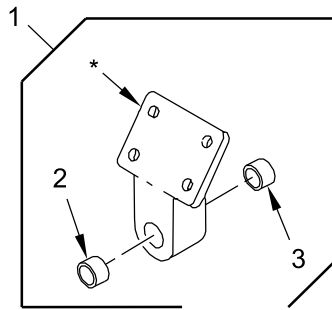
END OF WORK PACKAGE



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**SUSTAINMENT MAINTENANCE**  
**MECHANICAL STEERING GEAR ASSEMBLY**

---



\* COMPONENT OF ITEM

Figure 13. Steering Bracket and Shaft Housing Bearings.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1401 STEERING BRACKET AND SHAFT HOUSING BEARINGS	
					FIGURE 13 Steering Bracket and Shaft Housing Bearings.	
1	PAFHH	5340-01-257-3869	19207	12349802	BRACKET,MOUNTING .....	1
2	PAHZZ	3120-01-113-5221	26124	2586229-88	.BEARING,SLEEVE .....	1
3	PAHZZ	3120-00-061-9683	26124	12DU08	.BEARING,SLEEVE .....	1
END OF FIGURE						

**END OF WORK PACKAGE**

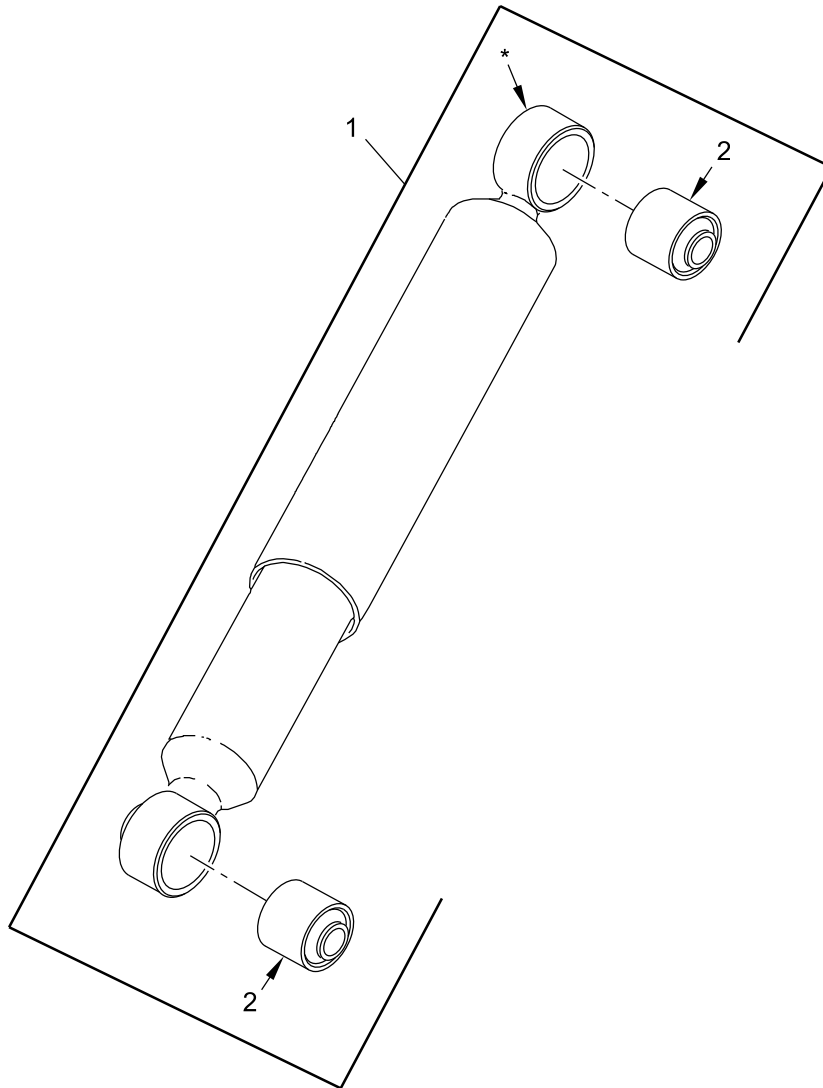




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SUSTAINMENT MAINTENANCE  
SHOCK ABSORBERS EQUIPMENT

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\* COMPONENT OF ITEM

Figure 14. Shock Absorbers Bearings.

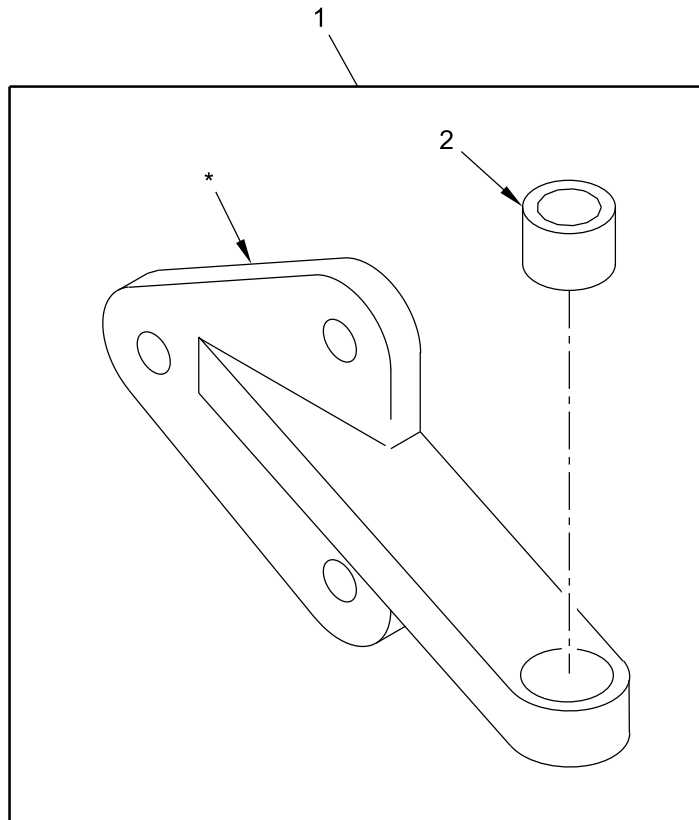
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1604 SHOCK ABSORBERS EQUIPMENT	
					FIGURE 14 Shock Absorbers Bearings.	
1	PAFHH	2510-01-621-2974	19207	12498200	SHOCK ABSORBER,DIRE .....	1 ■
2	PAHZZ		19207	12531877	.BEARING,PLAIN,SELF- .....	2 ■
					END OF FIGURE	



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**SUSTAINMENT MAINTENANCE**  
**BODY, CAB, HOOD, AND HULL ASSEMBLIES**

---



**\* COMPONENT OF ITEM**

Figure 15. Ramp Access Door Hinge Bearings (M113A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1801 BODY, CAB, HOOD, AND HULL ASSEMBLIES	
					FIGURE 15 Ramp Access Door Hinge Bearings (M113A3).	
1	PAFHH	2510-01-239-1954	19207	12350185	HINGE,DOOR,VEHICULA ..... UOC: APC	1
2	PAHZZ	3120-00-425-6467	81346	MS17795-128	.BEARING,SLEEVE ..... UOC: APC	2
END OF FIGURE						





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SUSTAINMENT MAINTENANCE  
CANVAS, RUBBER OR PLASTIC

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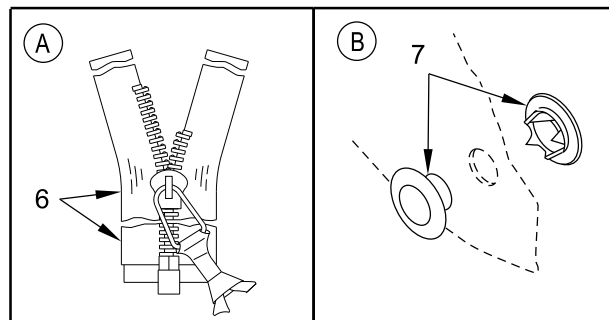
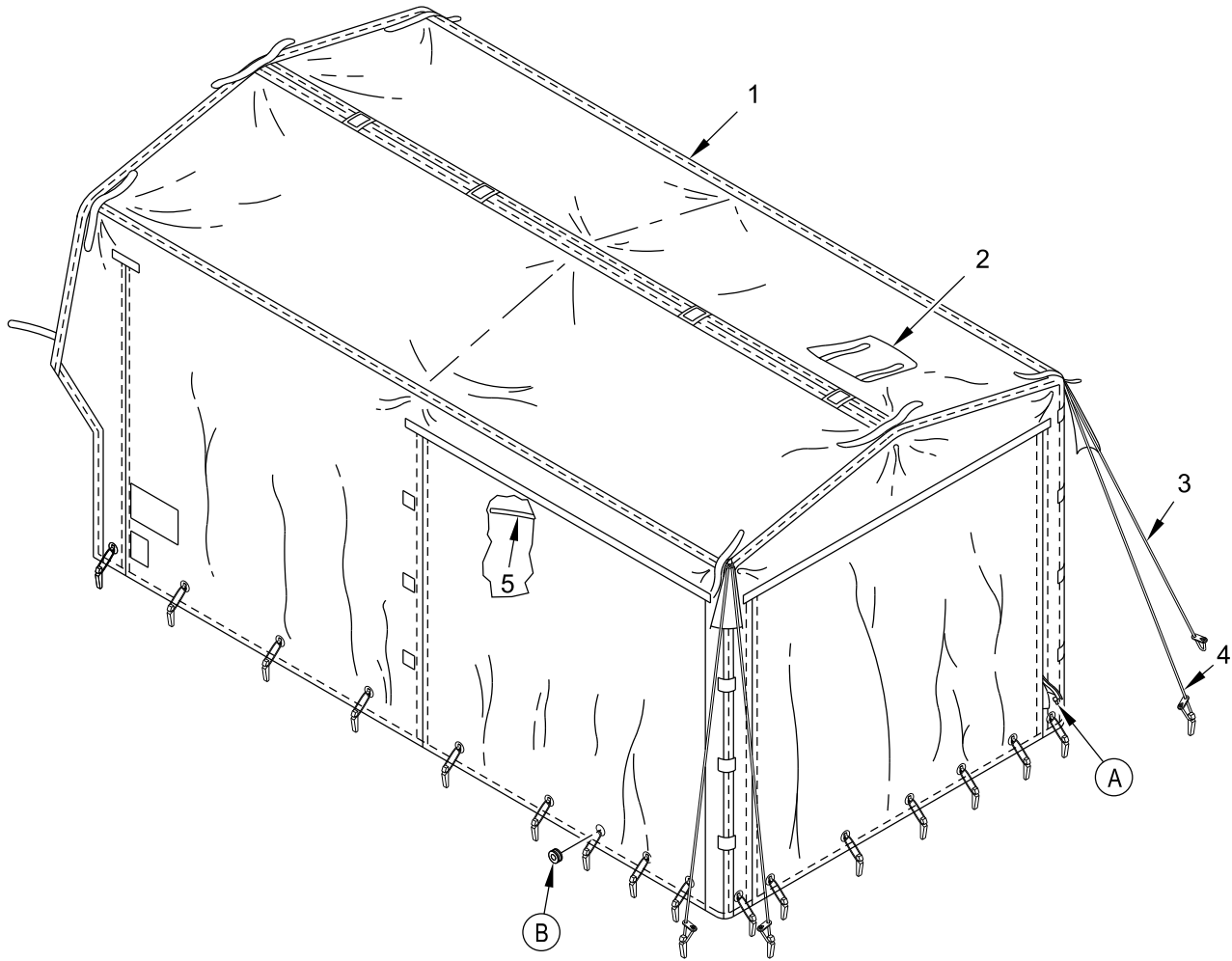


Figure 16. Extension Cover Tent (M577A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 2201 CANVAS, RUBBER OR PLASTIC	
					FIGURE 16 Extension Cover Tent (M577A3).	
1	PAFHH	8340-00-134-7512	19207	11617260	TENT ..... UOC: AP5,	1
2	MHHZZ		19207	11617260-57	CORD,COTTON MAKE FROM CORD P/N AA55622-I-2-8 (58356)..... UOC: AP5,	2
3	MHHZZ		19207	11617260-54	LINE,TENT MAKE FROM ROPE P/N A- A-50057 (81349)..... UOC: AP5,	4
4	XDHZZ	8340-00-205-2759	70167	23B28045-1	SLIP,TENT LINE ..... UOC: AP5,	8
5	MHHZZ		19207	11617260-16	CORD,COTTON MAKE FROM CORD P/N AA55622-I-2-8 (58356)..... UOC: AP5,	1
6	PAHZZ	5325-01-235-3610	19207	12349611	FASTENER,SLIDE,INTE ..... UOC: AP5,	11
7	PAHZZ	5325-00-291-0293	80205	MS20230BS3	GROMMET,METALLIC ..... UOC: AP5,	35
END OF FIGURE						

END OF WORK PACKAGE



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SUSTAINMENT MAINTENANCE  
WINTERIZATION EQUIPMENT

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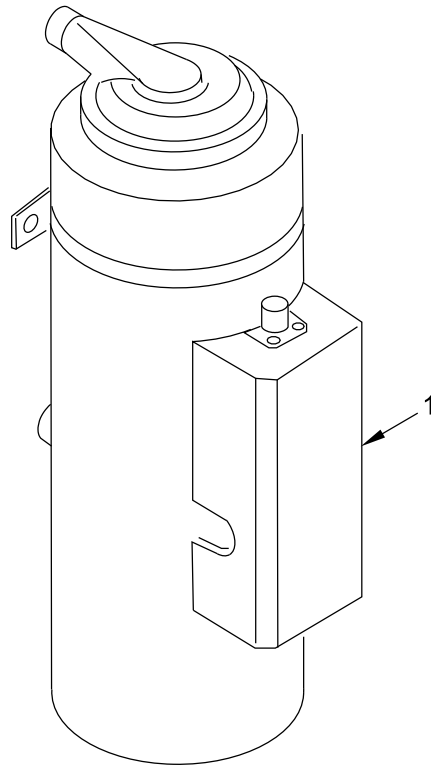


Figure 17. Personnel Compartment Heating Unit.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 2207 WINTERIZATION EQUIPMENT FIGURE 17 Personnel Compartment Heating Unit.	
1	PAFHD	2540-01-396-2826	19207	12474864	HEATER,VEHICULAR,CO SEE TM 9-2540-207-14&P FOR COMPONENTS; MODEL A20..... END OF FIGURE	1





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SUSTAINMENT MAINTENANCE  
GENERATOR AND ENGINE ASSY

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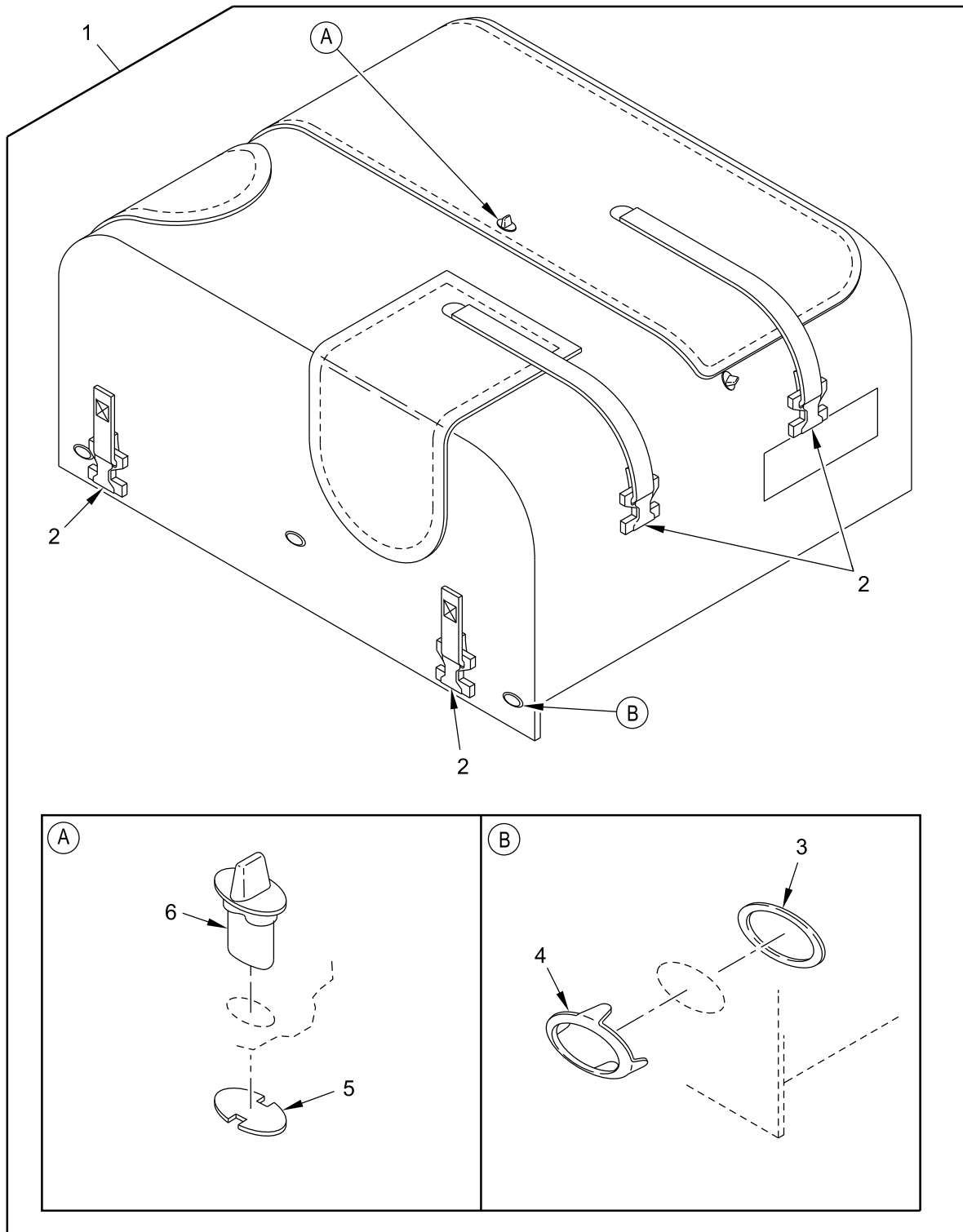


Figure 18. 4.2 kW Auxiliary Generator (M1068A3, M577A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 2901 GENERATOR AND ENGINE ASSY	
					FIGURE 18 4.2 kW Auxiliary Generator (M1068A3, M577A3).	
1	PAFHH	2540-00-066-4281	19207	10932720	COVER,AUXILIARY POW ..... UOC: AP3,AP5,	1
2	PAHZZ	5430-00-543-3477	19207	8690468	.STRAP,WEBBING ..... UOC: AP3,AP5,	4
3	PAHZZ	5365-01-509-6708	19207	12474776	.WASHER,EYELET ..... UOC: AP3,AP5,	3
4	PAHZZ	5325-01-505-9992	19207	12474775-1	.SOCKET,TURNBUTTON F ..... UOC: AP3,AP5,	3
5	PAHZZ	5325-01-505-9987	19207	12474778	.PLATE,TURNBUTTON ..... UOC: AP3,AP5,	3
6	PAHZZ	5325-01-508-4953	19207	12474777-1	.STUD,TURNBUTTON FAS ..... UOC: AP3,AP5,	3
END OF FIGURE						

END OF WORK PACKAGE



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SUSTAINMENT MAINTENANCE  
WINTERIZATION KITS

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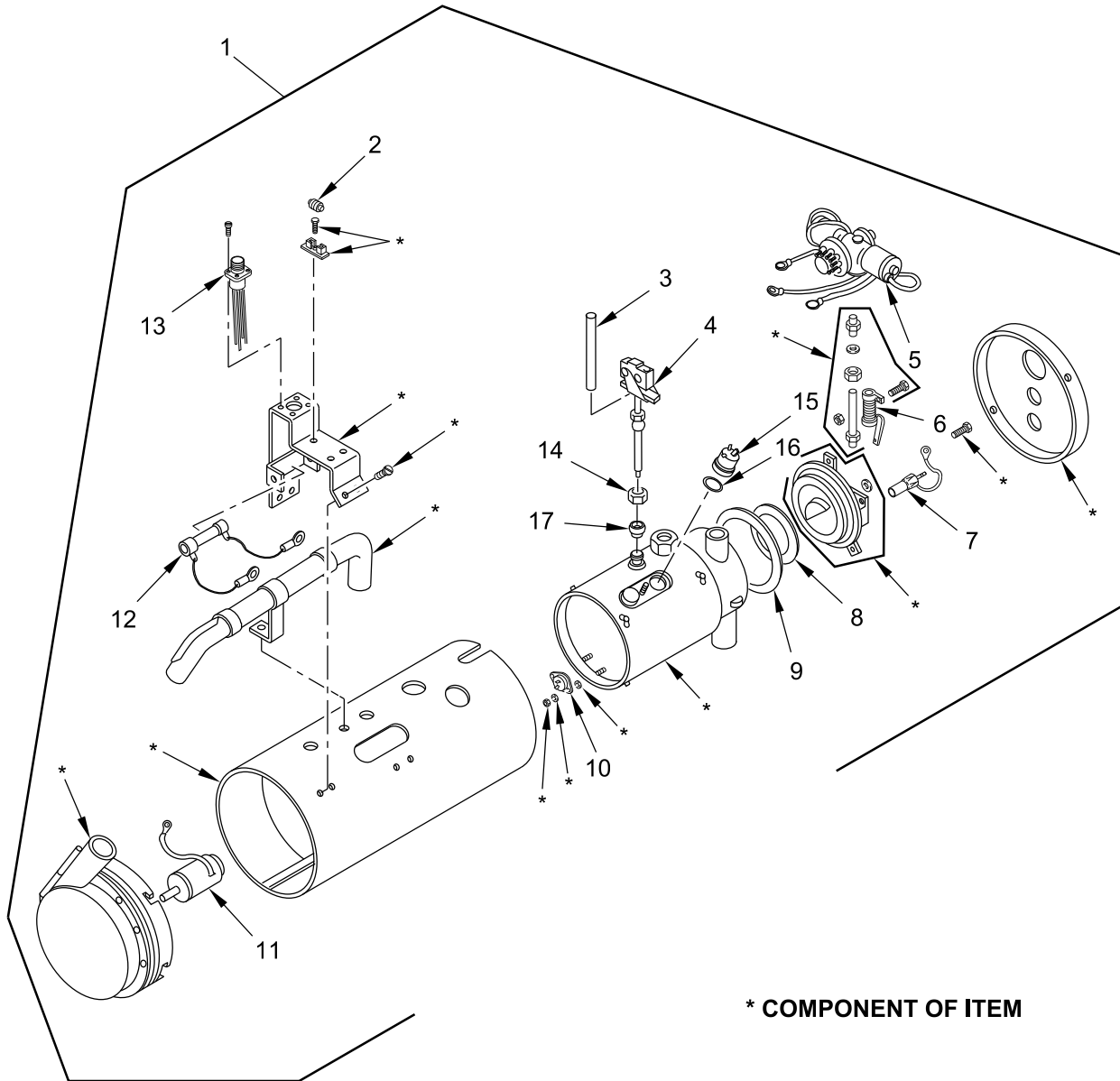


Figure 19. Heater Assembly, Coolant (M113A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 3303 WINTERIZATION KITS FIGURE 19 Heater Assembly, Coolant (M113A3).	
1	PAFHH	2990-00-997-1532	19207	11601698	HEATER ASSEMBLY,COO ..... UOC: APC,	
2	PAHZZ	5961-00-997-1527	19207	11602328	.DIODE,COOLANT,HEATE ..... UOC: APC,	1
3	PAHZZ	2540-00-216-5722	78385	704225	.ROD,NONEXPANSIVE ..... UOC: APC,	1
4	PAHZZ	5930-00-345-5455	19207	11663057	.SWITCH,THERMOSTATIC ..... UOC: APC,	1
5	PAHZZ	2910-00-052-0033	78385	G702573	.VALVE,FUEL CONTROL, ..... UOC: APC,	1
6	PAHZZ	5905-00-089-1111	78385	702853	.RESISTOR,FIXED,WIRE ..... UOC: APC,	1
7	PAHZZ	4520-00-312-2017	19207	7700170	.IGNITER,SPARK,FUEL ..... UOC: APC,	1
8	PAHZZ	5330-00-997-1533	19207	11588688-1	.PACKING,PREFORMED ..... UOC: APC,	1
9	PAHZZ	5330-00-997-1528	78385	703349	.GASKET ..... UOC: APC,	1
10	PAHZZ	5930-00-997-1529	78385	702566	.SWITCH,THERMOSTATIC ..... UOC: APC,	1
11	PAHZZ	6105-00-787-8532	78385	G700139	.MOTOR,DIRECT CURREN ..... UOC: APC,	1
12	PAHZZ	2590-00-997-1530	78385	G703647	.RESISTOR AND CABLES ..... UOC: APC,	1
13	PAHZZ	5935-01-154-6264	96906	MS3452W18-11P	.CONNECTOR,RECEPTACL ..... UOC: APC,	1
14	PAHZZ	4730-00-011-4627	81343	4-060110B	.NUT,TUBE COUPLING ..... UOC: APC,	1
15	PAHZZ	5930-00-678-7768	78385	704401-2	.SWITCH,THERMOSTATIC ..... UOC: APC,	1
16	PAHZZ	5330-01-129-0361	78385	730051-1	.O-RING ..... UOC: APC,	1
17	PAHZZ	4730-01-193-7390	81343	4-060115	.SLEEVE,COMPRESSION, ..... UOC: APC,	1
					END OF FIGURE	

END OF WORK PACKAGE





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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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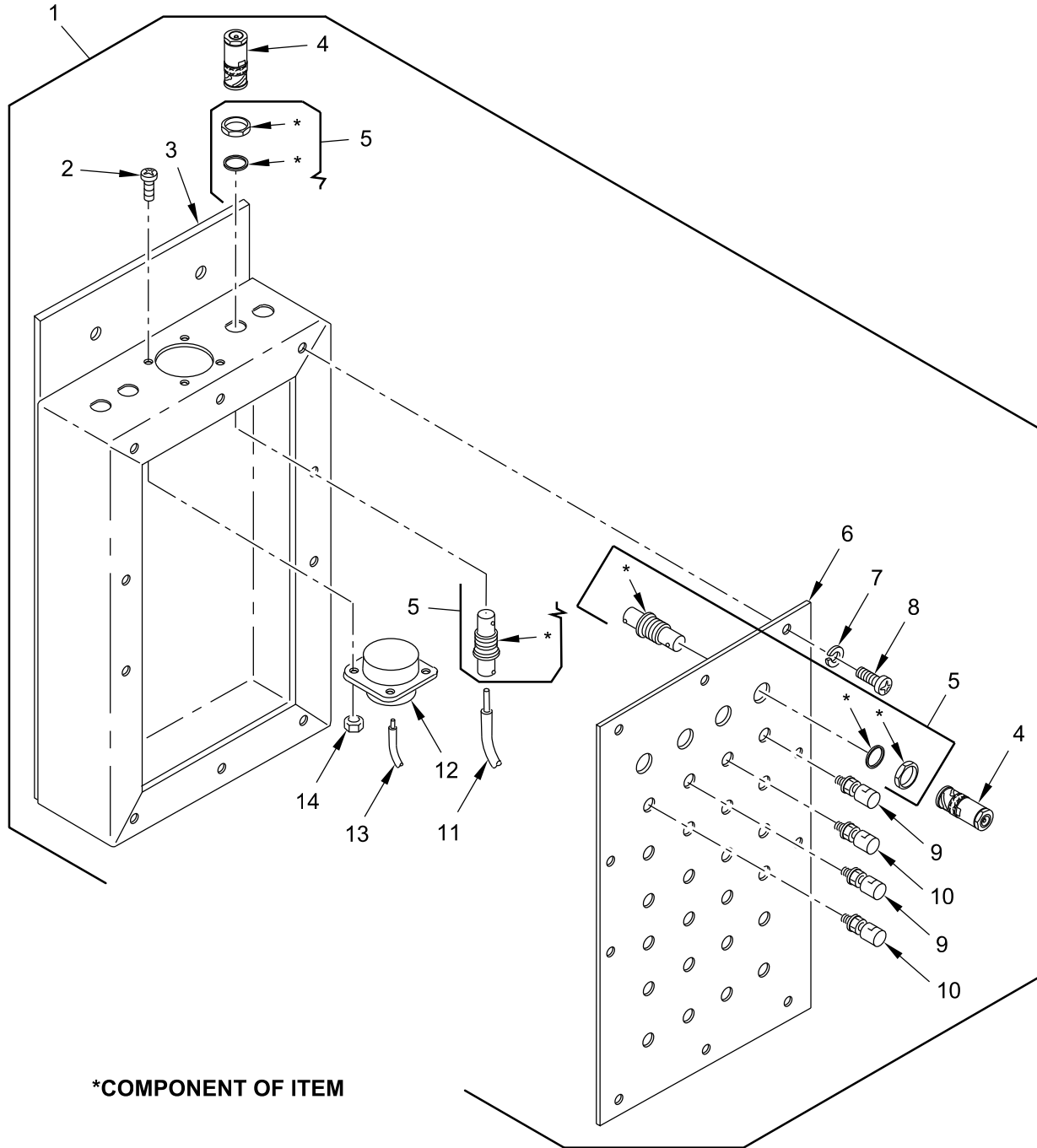


Figure 19A. Roadside Data Box Assembly (M1068A3).

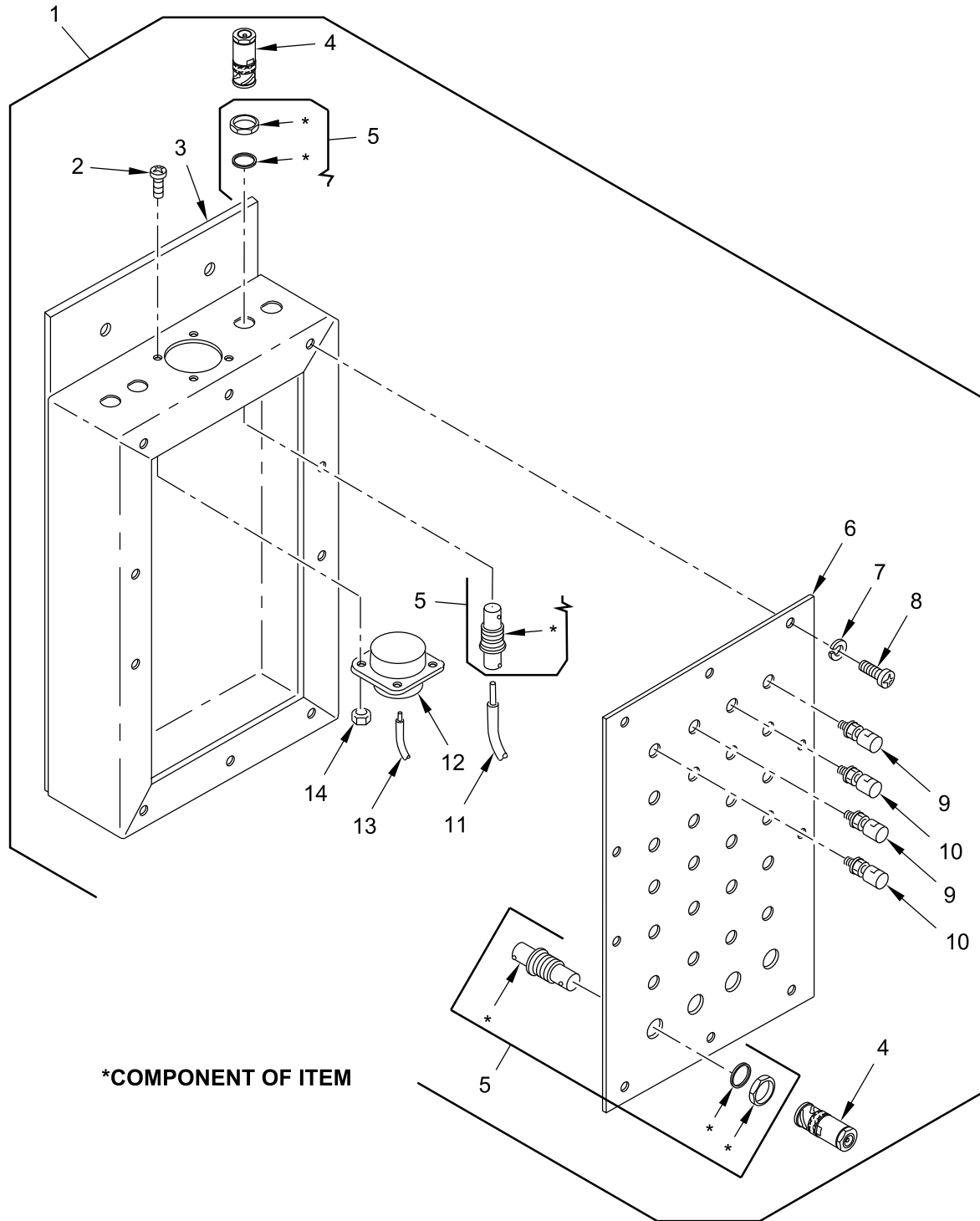
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED	
					FIGURE 19A.Roadside Data Box Assembly (M1068A3).	
1	PAFHH	6110-01-506-5803	19207	12383883-4	PANEL,POWER DISTRIB ..... UOC: AP3	1
2	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	4
3	XAHZZ		19207	12383842	.BOX,DATA PANEL ..... UOC: AP3	1
4	PAHZZ	5935-01-043-0629	81349	M39012/16-0101	.CONNECTOR,PLUG,ELEC ..... UOC: AP3	8
5	PAHZZ	5935-01-464-1697	74868	31-4803	.ADAPTER,CABLE CLAMP ..... UOC: AP3	8
6	XAHZZ		19207	12383890-2	.FACEPLATE ..... UOC: AP3	1
7	PAHZZ	5310-00-559-0070	80205	MS35333-38	.WASHER,LOCK ..... UOC: AP3	10
8	PAHZZ	5305-00-984-6194	96906	MS35206-246	.SCREW,MACHINE ..... UOC: AP3	10
9	PAHZZ	5940-00-926-8162	58536	AA59559-2	.POST,BINDING,ELECTR ..... UOC: AP3	12
10	PAHZZ	5940-00-937-5237	58536	A-A-59559-1	.POST,BINDING,ELECTR ..... UOC: AP3	12
11	PAHZZ	6145-00-823-2544	81349	M17/60-RG142	.CABLE,RADIO FREQUEN ..... UOC: AP3	1
12	PAHZA	5935-00-170-9768	96906	MS27508E16B26P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
13	MFHZZ		81349	M81044/9-20-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-20-9 (81349)..... UOC: AP3	1
14	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	4
END OF FIGURE						



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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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**\*COMPONENT OF ITEM**

Figure 19B. Curbside Data Box Assembly (M1068A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED	
					FIGURE 19B.Curbside Data Box Assembly (M1068A3).	
1	PAFHH	6110-01-506-6738	19207	12383883-3	PANEL,POWER DISTRIB ..... UOC: AP3	1
2	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	4
3	XAHZZ		19207	12383842	.BOX,DATA PANEL ..... UOC: AP3	1
4	PAHZZ	5935-01-043-0629	81349	M39012/16-0101	.CONNECTOR,PLUG,ELEC ..... UOC: AP3	8
5	PAHZZ	5935-01-464-1697	74868	31-4803	.ADAPTER,CABLE CLAMP ..... UOC: AP3	8
6	XAHZZ		19207	12383890-1	.FACEPLATE ..... UOC: AP3	1
7	PAHZZ	5310-00-559-0070	80205	MS35333-38	.WASHER,LOCK ..... UOC: AP3	10
8	PAHZZ	5305-00-984-6194	96906	MS35206-246	.SCREW,MACHINE ..... UOC: AP3	10
9	PAHZZ	5940-00-926-8162	58536	AA59559-2	.POST,BINDING,ELECTR ..... UOC: AP3	12
10	PAHZZ	5940-00-937-5237	58536	A-A-59559-1	.POST,BINDING,ELECTR ..... UOC: AP3	12
11	PAHZZ	6145-00-823-2544	81349	M17/60-RG142	.CABLE,RADIO FREQUEN ..... UOC: AP3	1
12	PAHZA	5935-00-170-9768	96906	MS27508E16B26P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
13	MFHZZ		81349	M81044/9-20-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-20-9 (81349)..... UOC: AP3	1
14	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	4
END OF FIGURE						





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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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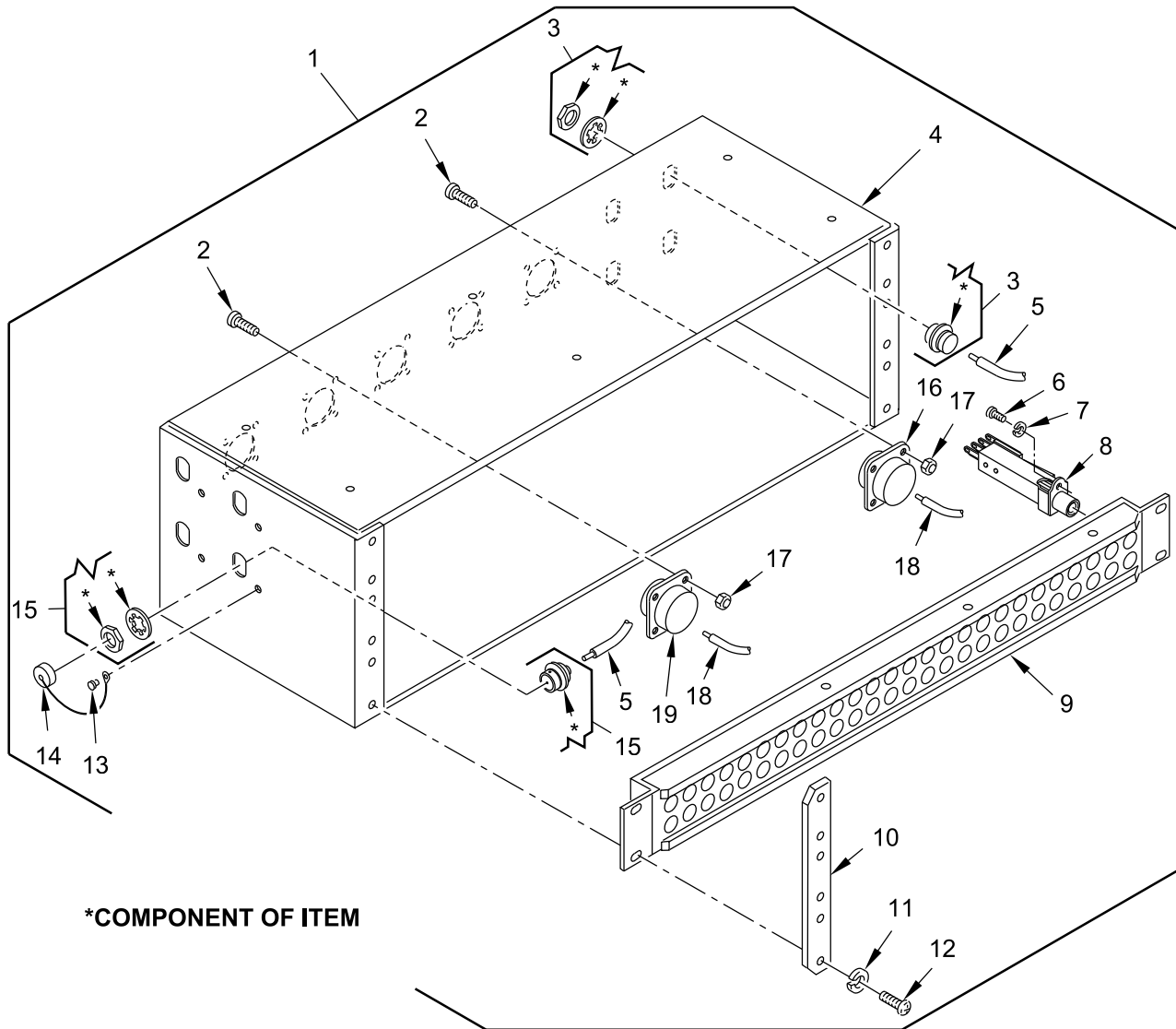


Figure 19C. Patch Panel Box Assembly (M1068A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED  FIGURE 19CPatch Panel Box Assembly (M1068A3).	
1	PAFHH	5895-01-370-1053	19207	12383948	PANEL,PATCHING,COMM ..... UOC: AP3	1
1	PAFHH	5895-01-549-6065	19207	12383948-1	PANEL,PATCHING,COMM ..... UOC: AP3	1
2	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	20
3	PAHZZ	5935-01-043-0637	81349	M39012/05-0101	.CONNECTOR,PLUG,ELEC ..... UOC: AP3	4
4	XAHZZ		19207	12383950	.BOX,PATCH PANEL USED WITH PANEL 12383948..... UOC: AP3	1
4	XAHZZ		19207	12383950-4	.BOX,PATCH PANEL USED WITH PANEL 12383948-1..... UOC: AP3	1
5	MFHZZ		81349	M17/75-RG214	.CABLE,RADIO FREQUEN MAKE FROM CABLE P/N M17/75-RG214 (81349) UOC: AP3	1
6	PAHZZ	5305-00-984-4988	80205	MS35206-228	.SCREW,MACHINE ..... UOC: AP3	156
7	PAHZZ	5310-00-579-0079	80205	MS35333-37	.WASHER,LOCK ..... UOC: AP3	156
8	PAHZZ	5935-00-192-4825	81349	M641/3-1	.JACK,TELEPHONE ..... UOC: AP3	156
9	XAHZZ		19207	12382144	.JACK ASSEMBLY,TELEP ..... UOC: AP3	3
10	PAHZZ	5340-01-369-6237	19207	12383951	.PLATE,MOUNTING ..... UOC: AP3	2
11	PAHZZ	5310-00-576-5752	80205	MS35333-39	.WASHER,LOCK ..... UOC: AP3	18
12	PAHZZ	5305-00-984-6211	05047	ASME B18.6.3	.SCREW,MACHINE ..... UOC: AP3	12
13	PAHZZ	5320-00-582-3521	96906	MS20600B4W3	.RIVET,BLIND ..... UOC: AP3	4
14	PAHZZ	5935-00-113-0352	81349	M39012/25-0011	.COVER,ELECTRICAL CO ..... UOC: AP3	4
15	PAHZA	5935-00-599-7902	81349	M39012/03-0012	.CONNECTOR,RECEPTACL ..... UOC: AP3	4
16	PAHZA	5935-00-425-2107	96906	MS27508E16B35S	.CONNECTOR,RECEPTACL ..... UOC: AP3	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
17	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	20
18	MFHZZ		81349	M81044/9-22-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-20-9 (81349)..... UOC: AP3	1
19	PAHZA	5935-00-233-6783	96906	MS27508E16B26S	.CONNECTOR,RECEPTACL ..... UOC: AP3	4
END OF FIGURE						

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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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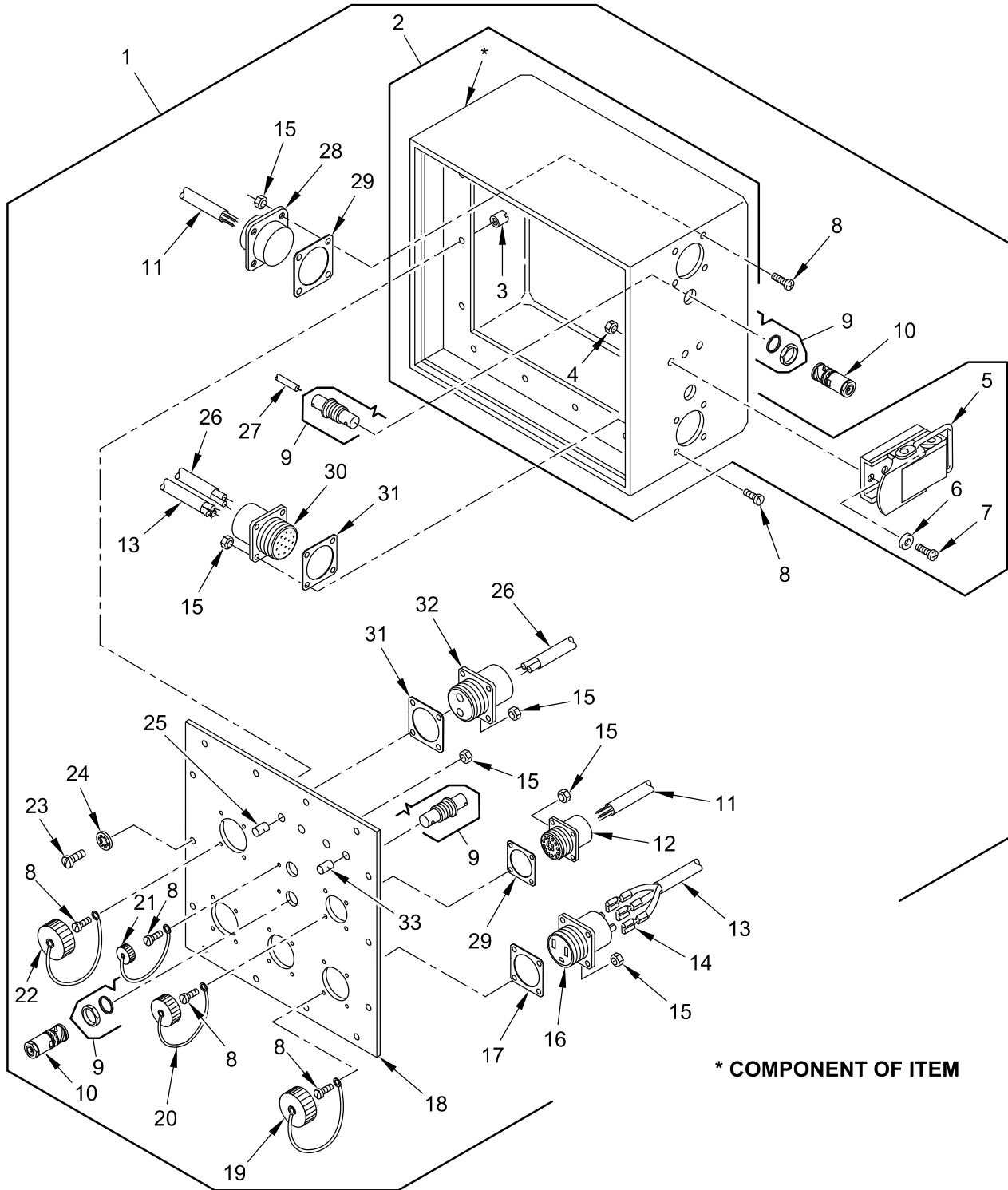


Figure 19D. Tent Interface Box and Panel Assembly (M1068A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED  FIGURE 19D.Tent Interface Box and Panel Assembly (M1068A3).	
1	PAFHH	6110-01-506-5798	19207	12383862-1	DISTRIBUTION BOX ..... UOC: AP3	1
2	PAHZZ	5975-01-376-2278	19207	12383807	.JUNCTION BOX ..... UOC: AP3	1
3	PAHZZ	5310-00-121-7753	96906	MS27130-S15	..NUT,PLAIN,BLIND RIV ..... UOC: AP3	12
4	PAHZZ	5310-00-902-6676	80205	MS21083N3	..NUT,SELF-LOCKING,HE ..... UOC: AP3	6
5	PAHZZ	5340-01-127-5482	98003	SCC76220	..CATCH,CLAMPING ..... UOC: AP3	2
6	PAHZZ	5310-00-809-8546	96906	MS27183-8	..WASHER,FLAT ..... UOC: AP3	6
7	PAHZZ	5305-00-995-3444	80205	MS35207-266	..SCREW,MACHINE ..... UOC: AP3	6
8	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	30
9	PAHZZ	5935-01-464-1697	74868	31-4803	.ADAPTER,CABLE CLAMP ..... UOC: AP3	4
10	PAHZZ	5935-01-043-0629	81349	M39012/16-0101	.CONNECTOR,PLUG,ELEC ..... UOC: AP3	4
11	MFHZZ		81349	M81044/9-20-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-20-9 (81349)..... UOC: AP3	1
12	PAHZA	5935-00-233-6783	96906	MS27508E16B26S	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
13	MFHZZ		81349	M81044/9-14-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-14-9 (81349)..... UOC: AP3	1
14	PAHZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL,LUG ..... UOC: AP3	9
15	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	30
16	PAHZZ	5935-00-615-3911	14933	85031-1	.CONNECTOR,RECEPTACL ..... UOC: AP3	3
17	PAHZZ	5330-00-641-4336	58536	A52481-8	.GASKET ..... UOC: AP3	3
18	XAHZZ		19207	12383887	.FACEPLATE ..... UOC: AP3	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
19	PAHZZ	5935-01-176-1708	81343	MS25043-22DA	.COVER,ELECTRICAL CO ..... UOC: AP3	3
20	PAHZZ	5935-01-265-3083	96906	MS27511B16CL	.COVER,ELECTRICAL CO ..... UOC: AP3	1
21	PAHZZ	5985-01-370-5431	19207	12382025	.DUMMY LOAD,ELECTRIC ..... UOC: AP3	2
22	PAHZZ	5935-00-221-8620	96906	MS25043-20DA	.COVER,ELECTRICAL CO ..... UOC: AP3	1
23	PAHZZ	5305-00-984-6194	96906	MS35206-246	.SCREW,MACHINE ..... UOC: AP3	14
24	PAHZZ	5310-00-576-5752	80205	MS35333-39	.WASHER,LOCK ..... UOC: AP3	14
25	PAHZZ	5940-00-937-5237	58536	A-A-59559-1	.POST,BINDING,ELECTR ..... UOC: AP3	2
26	MFHZZ		81343	M81044/9-8-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-8-9 (81343)..... UOC: AP3	1
27	PAHZZ	6145-00-823-2544	81349	M17/60-RG142	.CABLE,RADIO FREQUEN ..... UOC: AP3	2
28	PAHZA	5935-00-170-9768	96906	MS27508E16B26P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
29	PAHZZ	5330-00-946-8344	58536	A52481-5	.GASKET ..... UOC: AP3	1
30	PAHZA	5935-01-150-8751	96906	MS3452W20-14P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
31	PAHZZ	5330-00-968-1753	58536	A52481-7	.GASKET ..... UOC: AP3	2
32	PAHZZ	5935-01-225-1986	96906	MS3452W20-23S	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
33	PAHZZ	5940-00-926-8162	58536	AA59559-2	.POST,BINDING,ELECTR ..... UOC: AP3	2

END OF FIGURE



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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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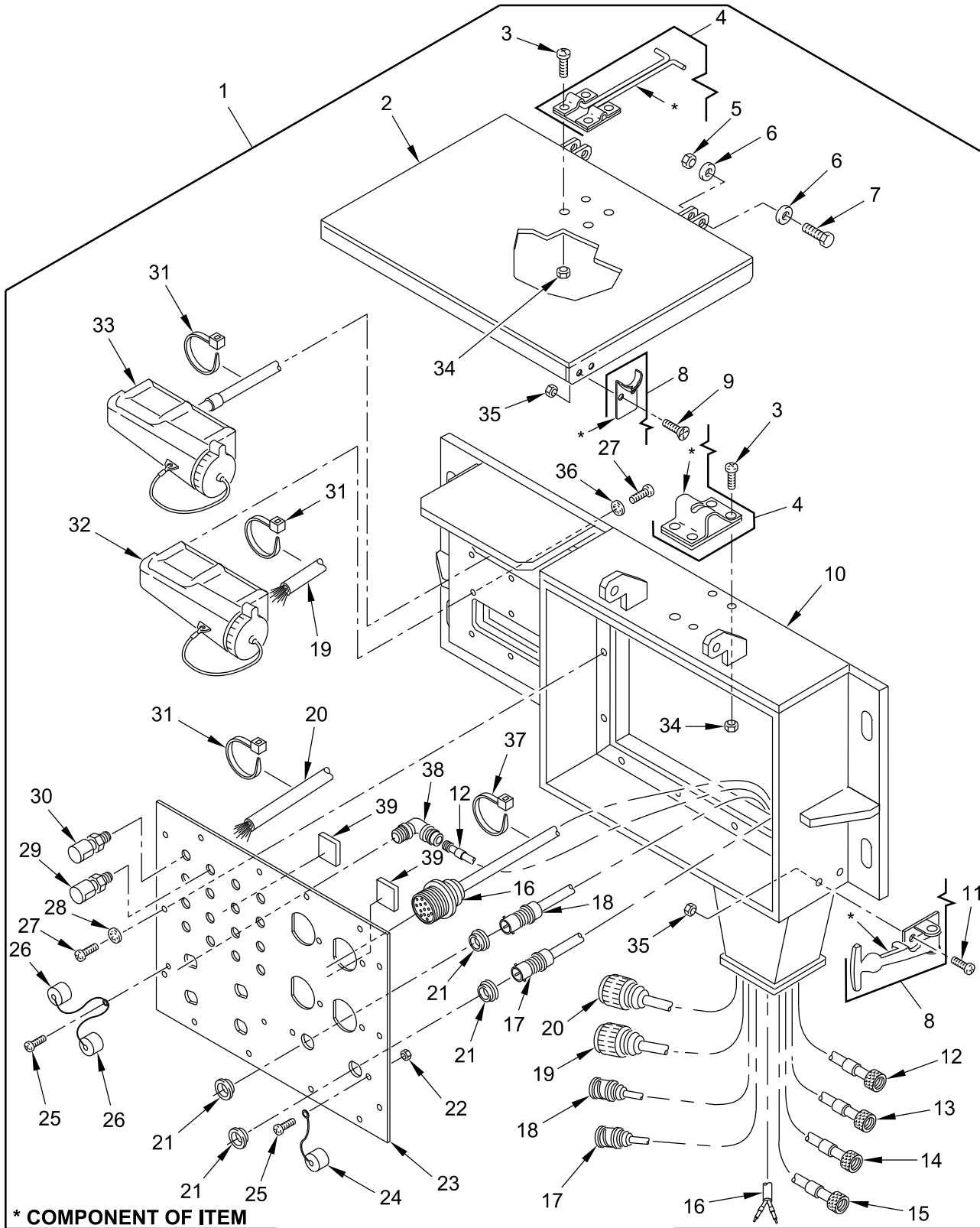


Figure 19E. External Communications Box Assembly (M1068A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED  FIGURE 19E.External Communications Box Assembly (M1068A3).	
1	PAFHH	5975-01-519-2771	19207	12383967-1	BAX ASSY,EXT COMM ..... UOC: AP3	1
2	PAFZZ	5340-01-369-4857	19207	12383971	.COVER,ACCESS ..... UOC: AP3	1
3	PAFZZ	5305-00-984-6195	80205	MS35206-247	.SCREW,MACHINE ..... UOC: AP3	8
4	PAFZZ	5340-01-554-5668	19207	12384119	.HOLDER,DOOR ..... UOC: AP3	1
5	PAFZZ	5310-01-516-3509	81349	M45913/1-6CG8Z	.NUT,SELF-LOCKING,HE ..... UOC: AP3	2
6	PAFZZ	5310-00-080-6004	96906	MS27183-14	.WASHER,FLAT ..... UOC: AP3	4
7	PAFZZ	5305-00-782-9489	80204	B1821BH038C200N	.SCREW,CAP,HEXAGON H ..... UOC: AP3	2
8	PAFZZ	4930-00-780-9105	94222	37-10-101-10-P	.LATCH ASSEMBLY,COVE ..... UOC: AP3	2
9	PAFZZ	5305-00-984-7341	96906	MS35191-273	.SCREW,MACHINE ..... UOC: AP3	4
10	XAHZZ		19207	12383972	.BOX,EXTERNAL COMMUN ..... UOC: AP3	1
11	PAFZZ	5305-00-993-1848	80205	MS35207-265	.SCREW,MACHINE ..... UOC: AP3	4
12	PAHZZ	5995-01-382-9414	80212	12383869-1	.CABLE ASSEMBLY,RADI W111..... UOC: AP3	1
13	PAHZZ	5995-01-382-9430	80212	12383869-2	.CABLE ASSEMBLY,RADI W112..... UOC: AP3	1
14	PAHZZ	5995-01-382-9527	80212	12383869-3	.CABLE ASSEMBLY,RADI W113..... UOC: AP3	1
15	PAHZZ	5995-01-382-9469	80212	12383869-4	.CABLE ASSEMBLY,RADI W114..... UOC: AP3	1
16	PAHZZ	6080-01-451-5532	19207	12382508-3	.CABLE ASSY,FIBER OP ..... UOC: AP3	1
16	PAHZZ	6080-01-451-7402	19207	12382508-1	.CABLE ASSY,FIBER OP ..... UOC: AP3	1
16	PAHZZ	6080-01-451-5531	19207	12382508-2	.CABLE ASSY,FIBER OP ..... UOC: AP3	1
16	PAHZZ	6080-01-451-5533	19207	12382508-4	.CABLE ASSY,FIBER OP ..... UOC: AP3	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
17	PAHZZ	5995-01-505-7133	19207	12383870-4	.CABLE ASSEMBLY,RADI W102..... UOC: AP3	1
18	PAHZZ	5995-01-505-7142	19207	12383870-3	.CABLE ASSEMBLY,RADI W101..... UOC: AP3	1
19	PAHZA	6150-01-377-5490	19207	12383909	.CABLE ASSEMBLY,SPEC W118..... UOC: AP3	1
20	PAHZZ	6150-01-376-3020	19207	12383908	.CABLE ASSEMBLY,SPEC W115..... UOC: AP3	1
21	PAHZZ	5970-00-177-1548	00779	330620	.INSULATOR,BUSHING ..... UOC: AP3	4
22	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	4
23	XAHZZ		19207	12383907	.FACEPLATE ..... UOC: AP3	1
24	PAHZZ	5985-01-370-5431	19207	12382025	.DUMMY LOAD,ELECTRIC ..... UOC: AP3	2
25	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	4
26	PAHZZ	5935-00-113-0352	81349	M39012/25-0011	.COVER,ELECTRICAL CO ..... UOC: AP3	4
27	PAHZZ	5305-00-984-6194	96906	MS35206-246	.SCREW,MACHINE ..... UOC: AP3	26
28	PAHZZ	5310-00-576-5752	80205	MS35333-39	.WASHER,LOCK ..... UOC: AP3	14
29	PAHZZ	5940-00-937-5237	58536	A-A-59559-1	.POST,BINDING,ELECTR ..... UOC: AP3	8
30	PAHZZ	5940-00-926-8162	58536	AA59559-2	.POST,BINDING,ELECTR ..... UOC: AP3	8
31	PAFZZ	5975-00-899-4606	81343	MS3367-2-0	.STRAP,TIEDOWN,ELECT ..... UOC: AP3	6
32	PAHZZ	5935-01-080-6329	81349	M55074/3-01	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
33	PAHZZ	6150-01-374-7768	.19207	12383868	CABLE ASSEMBLY,SPEC W117..... UOC: AP3	1
34	PAFZZ	5310-00-811-3494	80205	MS21044N08	.NUT,SELF-LOCKING,HE ..... UOC: AP3	8
35	PAFZZ	5310-00-877-5797	80205	MS21044N3	.NUT,SELF-LOCKING,HE ..... UOC: AP3	8
36	PAHZZ	5310-00-559-0070	80205	MS35333-38	.WASHER,LOCK ..... UOC: AP3	12
37	PAFZZ	5975-00-985-6630	96906	MS3367-3-0	.STRAP,TIEDOWN,ELECT ..... UOC: AP3	1
38	PAHZA	5935-00-578-2957	80058	UG202AU	.ADAPTER,CONNECTOR ..... UOC: AP3	4

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(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
39	PAHZZ	9330-01-408-8229	06383	EMS-A-C	.PLATE,RETAINING,WIN ..... UOC: AP3	2

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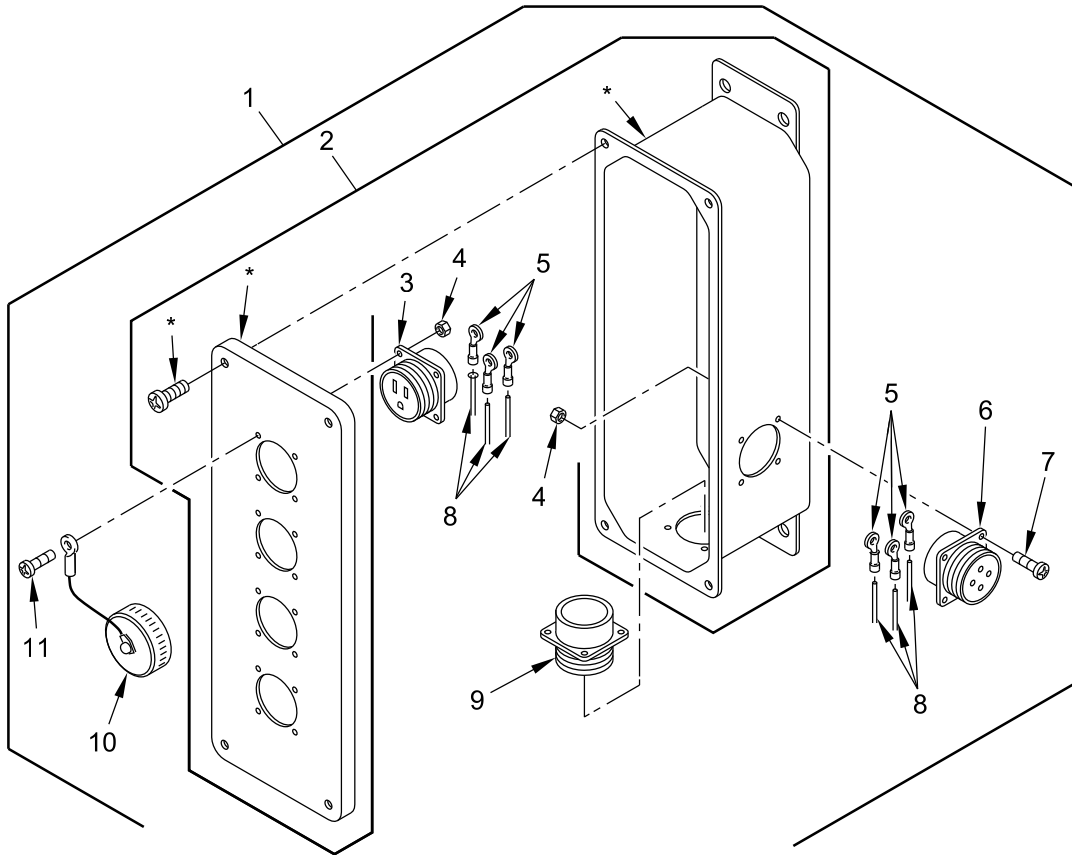
END OF FIGURE



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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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**\* COMPONENT OF ITEM**

Figure 19F. Power Extension Box Assembly (M1068A3).



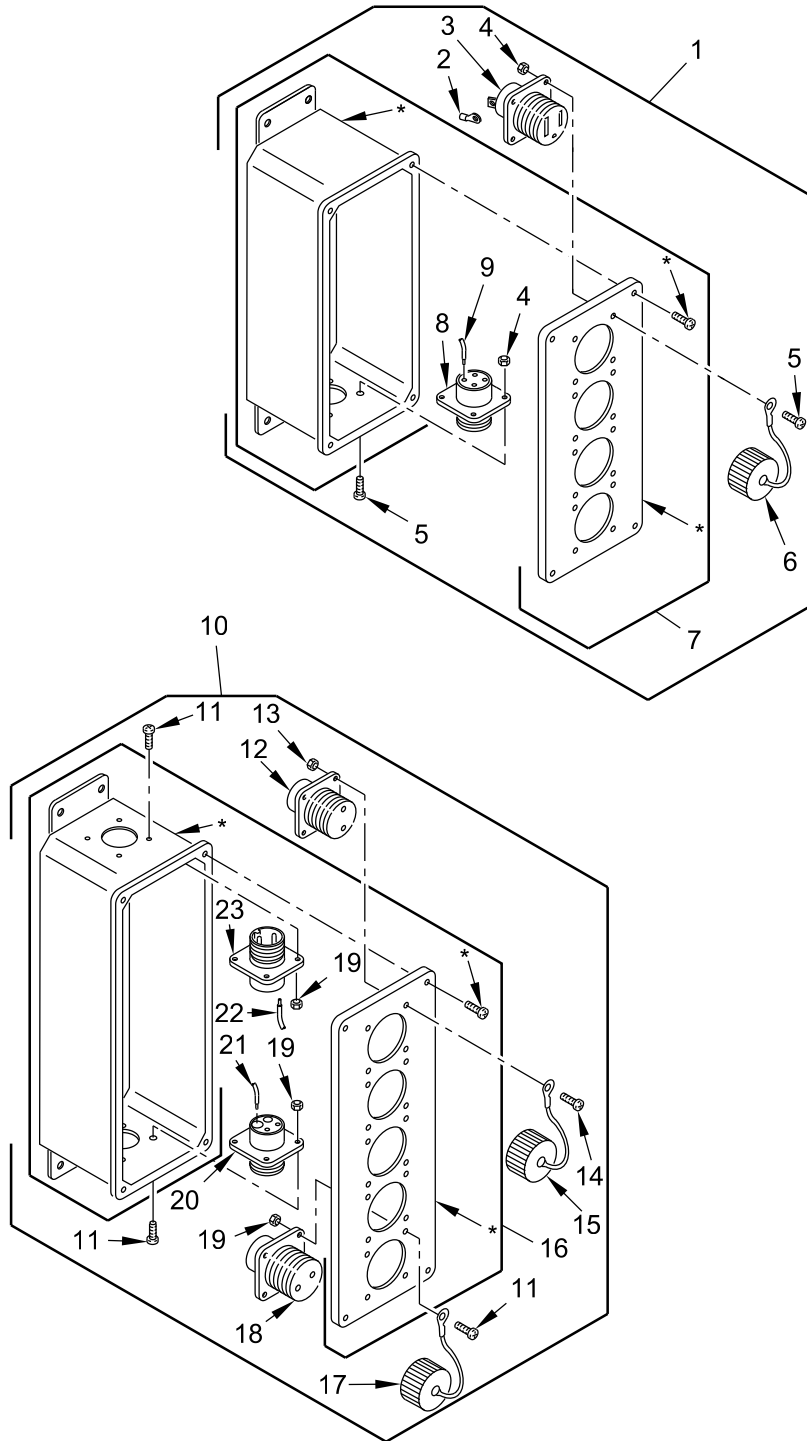
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED	
					FIGURE 19F.Power Extension Box Assembly (M1068A3).	
1	PAFHH	5935-01-497-0386	19207	12408396	BOX,ASSEMBLY AC PWR ..... UOC: AP3	1
2	XAHZZ		19207	12408385-1	.BOX ..... UOC: AP3	1
3	PAHZZ	5935-00-615-3911	14933	85031-1	.CONNECTOR,RECEPTACL ..... UOC: AP3	4
4	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	24
5	PAHZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL,LUG ..... UOC: AP3	24
6	PAHZZ	5935-01-119-2831	96906	MS3470W14-4S	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
7	PAHZZ	5305-00-889-2998	80205	MS35206-216	.SCREW,MACHINE ..... UOC: AP3	4
8	MFHZZ		81349	M81044/9-14-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-14-9 (81349)..... UOC: AP3	1
9	PAHZA	5935-00-824-5180	96906	MS3102R14S-1P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
10	PAHZZ	5935-01-176-1708	81343	MS25043-22DA	.COVER,ELECTRICAL CO ..... UOC: AP3	4
11	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	20
END OF FIGURE						



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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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\* COMPONENT OF ITEM

Figure 19G. AC/DC Power Box Assemblies (M1068A3).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED  FIGURE 19GAC/DC Power Box Assemblies (M1068A3).	
1	PAFHH	6110-01-366-8910	19207	12383854-1	PANEL,POWER DISTRIB ..... UOC: AP3	1
2	PAHZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL,LUG ..... UOC: AP3	12
3	PAHZZ	5935-00-615-3911	14933	85031-1	.CONNECTOR,RECEPTACL ..... UOC: AP3	4
4	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	20
5	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	16
6	PAHZZ	5935-01-176-1708	81343	MS25043-22DA	.COVER,ELECTRICAL CO ..... UOC: AP3	4
7	XAHZZ		19207	12383841-1	.BOX ..... UOC: AP3	1
8	PAHZZ	5935-01-154-6264	96906	MS3452W18-11P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
9	MFHZZ		81349	M81044/9-14-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-14-9 (81349)..... UOC: AP3	1
10	PAFHH	6110-01-386-6720	19207	12383859	DISTRIBUTION BOX ..... UOC: AP3	1
11	PAHZZ	5305-00-889-3000	80205	MS35206-230	.SCREW,MACHINE ..... UOC: AP3	12
12	PAHZZ	5935-01-225-1986	96906	MS3452W20-23S	.CONNECTOR,RECEPTACL ..... UOC: AP3	4
13	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE ..... UOC: AP3	16
14	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE ..... UOC: AP3	16
15	PAHZZ	5935-00-221-8620	96906	MS25043-20DA	.COVER,ELECTRICAL CO ..... UOC: AP3	4
16	XAHZZ		19207	12383841-3	.BOX ..... UOC: AP3	1
17	PAHZZ	5935-01-175-8417	96906	MS25043-24DA	.COVER,ELECTRICAL CO ..... UOC: AP3	1
18	PAHZA	5935-01-238-8108	96906	MS3452W24-9S	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
19	PAHZZ	5310-00-081-8087	80205	MS21044N06	.NUT,SELF-LOCKING,HE ..... UOC: AP3	12

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
20	PAHZA	5935-00-725-0889	96906	MS3102R24-22P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1
21	MFHZZ		81343	M81044/9-8-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-8-9 (81343)..... UOC: AP3	1
22	MFHZZ		81349	M81044/9-4-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-4-9 (81349)..... UOC: AP3	1
23	PAHZA	5935-01-259-8483	96906	MS3452W24-9P	.CONNECTOR,RECEPTACL ..... UOC: AP3	1

END OF FIGURE

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**SUSTAINMENT MAINTENANCE**  
**ELECTRICAL CONTROLS (MAIN AND AUXILIARY)**

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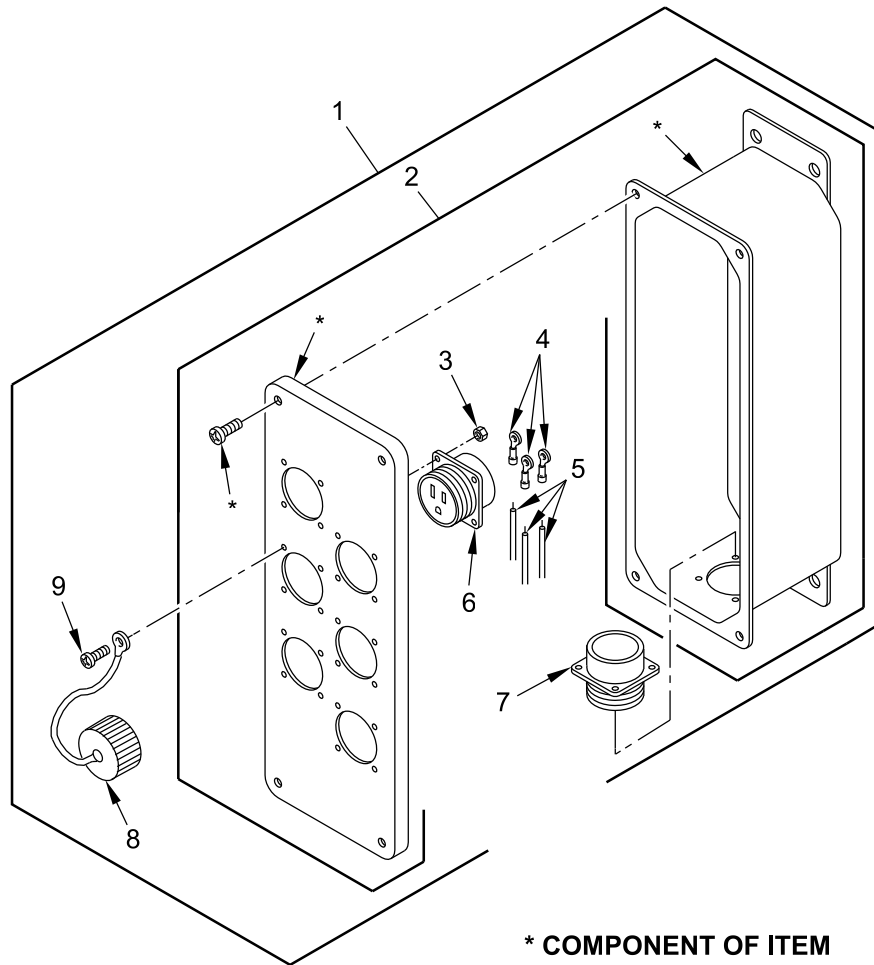


Figure 19H. AC Power Box Assembly (M1068A3).



(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 4202 ELECTRICAL CONTROLS (MAIN AND AUXILIARY) CONTINUED	
					FIGURE 19HAC Power Box Assembly (M1068A3).	
1	PAFHH	5935-01-497-0380	19207	12408397	.BOX,ASSEMBLY AC PWR .....	1
2	XAHZZ		19207	12408385-2	.BOX .....	1
					UOC: AP3	
3	PAHZZ	5310-00-088-0551	80205	MS21044N04	.NUT,SELF-LOCKING,HE .....	28
					UOC: AP3	
4	PAHZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL,LUG .....	33
					UOC: AP3	
5	MFHZZ		81349	M81044/9-14-9	.WIRE,ELECTRICAL MAKE FROM WIRE P/N M81044/9-14-9 (81349).....	1
					UOC: AP3	
6	XDHZZ	5935-00-615-3911	14933	85031-1	.CONNECTOR,RECEPTACL .....	6
					UOC: AP3	
7	PAHZA	5935-00-824-5180	96906	MS3102R14S-1P	.CONNECTOR,RECEPTACL .....	1
					UOC: AP3	
8	PAHZZ	5935-01-176-1708	81343	MS25043-22DA	.COVER,ELECTRICAL CO .....	6
					UOC: AP3	
9	PAHZZ	5305-00-889-2999	80205	MS35206-217	.SCREW,MACHINE .....	33
					UOC: AP3	
END OF FIGURE						



SUSTAINMENT MAINTENANCE

REPAIR KITS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 9401 REPAIR KITS	
					FIGURE KITS	
	PAHZZ	2530-01-257-3906	19207	5703829	REPAIR KIT,ADJUSTER .....	1
					RING,RETAINING (1) 12-4	
					RING,WIPER (1) 12-5	
					O-RING (1) 12-6	
					BEARING,SLEEVE (1) 12-7	
					RING,RETAINING (1) 12-8	
					RING,RETAINING (1) 12-12	
					BEARING,SLEEVE (1) 12-13	
					PACKING ASSEMBLY (1) 12-14	
					END OF FIGURE	

END OF WORK PACKAGE



**SUSTAINMENT MAINTENANCE  
HARDWARE SUPPLIES AND BULK MATERIAL**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 9501 HARDWARE SUPPLIES AND BULK MATERIAL	
					FIGURE BULK	
1	PAHZZ	4020-01-531-9805	58536	AA55622-I-2-8	CORD,FIBROUS ..... UOC: AP5,	1
2	PAHZZ	6145-00-538-8219	81349	M13486/1-11	WIRE,ELECTRICAL ..... UOC: APC,	1
3	PAHZZ	6145-00-705-6674	81349	M13486/1-14	WIRE,ELECTRICAL ..... UOC: APC,AP2,AP3,AP5,	1
4	PAHZZ	6145-00-161-1609	81349	M13486/1-3	WIRE,ELECTRICAL ..... UOC: APC,	1
5	PAFZZ	6145-00-152-6499	81349	M13486/1-5	WIRE,ELECTRICAL ..... UOC: APC,	1
6	PAFZZ	6145-01-062-4948	81349	M81044/9-14-9	WIRE,ELECTRICAL ..... UOC: AP3,	1
7	PAFZZ	6145-00-177-4607	81343	M81044/9-20-9	WIRE,ELECTRICAL ..... UOC: AP3,	1
8	PAFZZ	6145-00-492-8903	81349	M81044/9-22-9	WIRE,ELECTRICAL ..... UOC: AP3,	1
9	PAFZZ	6145-00-251-0188	81349	M81044/9-4-9	WIRE,ELECTRICAL ..... UOC: AP3,	1
10	PAFZZ	6145-00-251-0189	81343	M81044/9-8-9	WIRE,ELECTRICAL ..... UOC: AP3,	1
11	PAFZZ	6145-00-660-8054	81349	M17/75-RG214	CABLE,RADIO FREQUEN ..... UOC: AP3,	1
					END OF FIGURE	



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SUSTAINMENT MAINTENANCE

SPECIAL TOOLS

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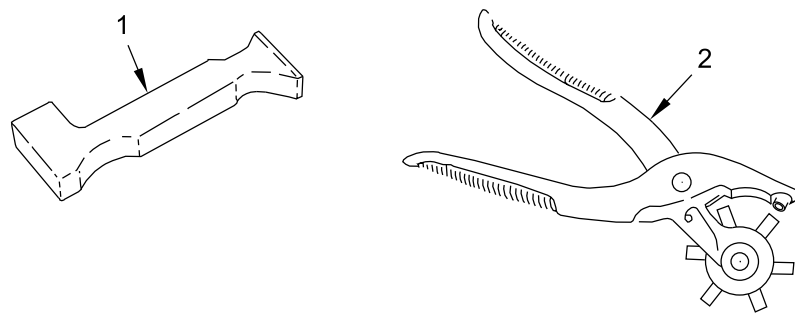


Figure 20. Sustainment Tool Kit.



(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 2604 SPECIAL TOOLS FIGURE 20 Sustainment Tool Kit.	
	XBHHH		19207	12381929	TOOL KIT, SUSTAINMENT SUSTAINMENT MAINTENANCE.....	1
1	PEHZZ	5120-00-293-2501	80049	44B14865	BAR,BUCKLING,RIVET .....	1
2	PEHZZ	5110-00-596-9604	19207	12531457	PUNCH,CUTTING,REV .....	1
END OF FIGURE						

END OF WORK PACKAGE



**SUSTAINMENT MAINTENANCE  
NATIONAL STOCK NUMBER INDEX**

<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>STOCK NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
5330-00-006-2451	12	16	5905-00-089-1111	19	6
4730-00-011-4627	19	14	5365-00-090-5426	9	48
5310-00-014-5850	4	2	5940-00-107-1481	6A	17
5306-00-038-8994	3	19	5935-00-113-0352	19C	14
4730-00-050-4208	12	11		19E	26
2910-00-052-0033	19	5	5940-00-113-3147	6	10
5999-00-057-2929	9	38		6A	10
5330-00-057-4494	12	17	5940-00-115-2684	9	28
5330-00-057-4495	12	15	5940-00-115-4995	9	27
5325-00-057-4501	12	8	5940-00-115-5001	6	22
3120-00-061-9683	13	3		6A	19
2540-00-066-4281	18	1	5310-00-121-7753	19D	3
5305-00-071-2068	3	5	8340-00-134-7512	16	1
5935-00-080-1020	6	15	2530-00-134-8967	12	3
	6A	14	5940-00-143-4774	6	21
5310-00-080-6004	4	7		6A	18
	4	15	6145-00-152-6499	6	6
	4A	9		9	36
	19E	6		BULK	5
5935-00-081-0400	6	14		6A	6
	9	24	6145-00-161-1609	6	26
5310-00-081-8087	19G	19		7	7
5310-00-088-0551	19A	14		8	8
	19B	14		BULK	4
	19C	17	5935-00-170-9768	19A	12
	19D	15		19B	12
	19E	22		19D	28
	19F	4	5970-00-177-1548	19E	21
	19G	4	6145-00-177-4607	BULK	7
	19G	13	5935-00-178-6075	9	6
	19H	3	5935-00-192-4825	19C	8

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5935-00-198-4007	7	3		6A	11
5935-00-201-5997	9	4	5935-00-399-6673	9	47
8340-00-205-2759	16	4	5940-00-399-6676	6	3
5935-00-214-0904	9	40		7	2
2540-00-216-5722	19	3		9	13
5935-00-221-8620	19D	22		6A	3
	19G	15	2530-00-403-6776	12	1
5935-00-233-6783	19C	19	5935-00-425-2107	19C	16
	19D	12	3120-00-425-6467	15	2
6145-00-251-0188	BULK	9	3130-00-443-4826	4	11
6145-00-251-0189	BULK	10		4A	5
5325-00-252-6865	3	29	5310-00-443-5096	4	19
5305-00-253-5614	3	17		4A	2
5305-00-269-3217	4	16	6145-00-492-8903	BULK	8
	4A	8	5935-00-502-9262	9	5
5325-00-276-6089	9	30	5365-00-507-8766	6	16
5325-00-276-6100	9	33		9	21
5940-00-283-5280	19D	14		6A	12
	19F	5	5935-00-509-6194	6	7
	19G	2	5330-00-517-0388	12	5
	19H	4	5975-00-522-7125	9	9
5940-00-283-5281	8	3	6145-00-538-8219	6	27
5325-00-291-0293	16	7		9	32
5331-00-291-7342	12	6		BULK	2
5120-00-293-2501	21	1	5331-00-542-1329	3	3
5365-00-303-4841	6	12	5430-00-543-3477	18	2
	9	20	3110-00-554-5304	3	12
4520-00-312-2017	19	7	5310-00-559-0070	19A	7
5935-00-333-3088	9	11		19B	7
5935-00-333-9414	9	2		19E	36
5930-00-345-5455	19	4	5975-00-570-9598	9	34
5310-00-393-6685	6	11	5935-00-572-9180	9	37
	9	19	5310-00-576-5752	4	3

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
	19C	11	5330-00-714-6129	4	10
	19D	24		4A	4
	19E	28	5935-00-725-0889	19G	20
5935-00-578-2957	19E	38	5305-00-725-2317	4	9
5310-00-579-0079	19C	7	5935-00-730-7325	6	24
5320-00-582-3521	19C	13		9	31
5310-00-595-7044	9	41	5935-00-745-7885	6	20
5110-00-596-9604	21	2	5935-00-745-7886	6	19
5935-00-599-7902	19C	15	5365-00-752-7631	9	10
5935-00-614-3959	9	16	5935-00-767-7936	9	35
5935-00-615-3911	19D	16	5325-00-768-8563	12	4
	19F	3	5935-00-770-8274	9	3
	19G	3	5975-00-771-6634	6	13
	19H	6		6A	13
5325-00-621-3192	12	12	5365-00-772-2322	9	14
5330-00-641-4336	19D	17	4930-00-780-9105	19E	8
5310-00-656-0067	8	5	5315-00-781-2004	3	33
5975-00-660-5962	6	25	5305-00-782-9489	19E	7
	7	9	5935-00-784-1701	6	23
6145-00-660-8054	BULK	11		9	26
5930-00-678-7768	19	15	6105-00-787-8532	19	11
3120-00-679-7949	12	2	5325-00-804-2773	3	9
2530-00-679-7961	12	9	5310-00-809-8546	19D	6
5935-00-686-2599	9	49	5310-00-811-3494	19E	34
5935-00-686-2610	9	8	6145-00-823-2544	19A	11
5935-00-691-5591	8	4		19B	11
5935-00-695-9077	9	43		19D	27
6145-00-705-6674	6	18	5935-00-824-5180	19F	9
	9	29		19H	7
	BULK	3	5935-00-833-8561	6	5
	6A	16		9	23
6145-00-705-6678	9	12		6A	5
5940-00-705-6710	9	46	5970-00-833-8562	6	4

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
	7	10	5330-00-946-8344	19D	29
	9	22	5325-00-950-9956	9	17
	6A	4	5330-00-968-1753	19D	31
5310-00-833-8567	9	39	5305-00-978-9380	3	21
5325-00-852-6862	3	25	5305-00-984-4988	19C	6
5310-00-865-9513	3	20	5305-00-984-6194	19A	8
3120-00-866-6235	12	7		19B	8
5310-00-877-5797	19E	35		19D	23
5305-00-889-2998	19F	7		19E	27
5305-00-889-2999	19A	2	5305-00-984-6195	19E	3
	19B	2	5305-00-984-6211	19C	12
	19C	2	5305-00-984-7341	19E	9
	19D	8	5975-00-985-6630	19E	37
	19E	25	5305-00-989-7434	4	4
	19F	11	5305-00-990-8632	4	6
	19G	5	5305-00-993-1848	19E	11
	19G	14	5305-00-995-3444	19D	7
	19H	9	5961-00-997-1527	19	2
5305-00-889-3000	19G	11	5330-00-997-1528	19	9
5975-00-899-4606	19E	31	5930-00-997-1529	19	10
5310-00-902-6676	19D	4	2590-00-997-1530	19	12
5999-00-925-6495	9	42	2990-00-997-1532	19	1
5999-00-926-3144	8	6	5330-00-997-1533	19	8
5940-00-926-8162	19A	9	5935-01-013-4479	8	7
	19B	9	5935-01-026-5872	6	7
	19D	33		6A	7
	19E	30	5935-01-043-0629	19A	4
5310-00-927-9400	3	4		19B	4
3120-00-930-2340	12	13		19D	10
5940-00-937-5237	19A	10	5935-01-043-0637	19C	3
	19B	10	5935-01-047-7976	7	6
	19D	25	5935-01-048-0080	8	2
	19E	29	5310-01-049-2779	4	20

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
	4A	3		19G	6
5330-01-060-8526	12	14		19H	8
2930-01-061-4294	2	1	5935-01-179-5430	7	5
2520-01-061-5766	11	1	5935-01-181-8997	6	17
5340-01-062-0866	4	5		6A	15
6145-01-062-4948	BULK	6	4730-01-193-7390	19	17
5935-01-076-9456	7	8	5935-01-225-1986	19D	32
5331-01-078-2379	3	24		19G	12
5935-01-080-6329	19E	32	5325-01-235-3610	16	6
5935-01-083-6230	7	4	5935-01-238-8108	19G	18
5315-01-098-3923	4	17	2510-01-239-1954	15	1
	4A	11	6150-01-239-1970	7	1
5935-01-102-4708	6	8	2930-01-242-4596	3	14
	6A	8	3110-01-245-2508	3	26
5935-01-108-7592	6	2	6150-01-245-2560	8	1
	6A	2	5935-01-246-9207	9	7
4140-01-111-2267	4	1	2930-01-248-5002	3	11
3120-01-113-5221	13	2	2815-01-248-7644	1	1
5935-01-119-2831	19F	6	3020-01-248-8939	3	32
5970-01-123-5027	9	44	3020-01-249-0154	3	2
5340-01-127-5482	19D	5	3040-01-249-3383	4	13
6210-01-128-2719	9	45		4A	7
5330-01-129-0361	19	16	3110-01-252-9222	3	28
5970-01-149-4017	6	9	3110-01-253-9879	3	8
	6A	9	5365-01-254-0026	3	10
5935-01-150-8751	19D	30	5310-01-254-1377	3	6
5975-01-151-7033	9	25	5340-01-257-3869	13	1
5935-01-154-6264	19	13	2530-01-257-3906	KITS	
	19G	8	5340-01-258-6097	9	18
5310-01-154-6728	9	15	5935-01-259-8483	19G	23
5935-01-175-8417	19G	17	5935-01-265-3083	19D	20
5935-01-176-1708	19D	19	3110-01-269-9270	4	12
	19F	10		4A	6

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
2920-01-292-2993	5	1		19B	5
3010-01-318-5670	4	18		19D	9
	4A	12	6150-01-482-3390	9	1
2930-01-320-0530	3	1	5935-01-497-0380	19H	1
4320-01-325-9679	3	23	5935-01-497-0386	19F	1
5330-01-326-7597	3	22	5995-01-505-7133	19E	17
5330-01-326-7598	3	30	5995-01-505-7142	19E	18
6110-01-366-8910	19G	1	5325-01-505-9987	18	5
5340-01-369-4857	19E	2	5325-01-505-9992	18	4
5340-01-369-6237	19C	10	6110-01-506-5798	19D	1
5895-01-370-1053	19C	1	6110-01-506-5803	19A	1
5985-01-370-5431	19D	21	6110-01-506-6738	19B	1
	19E	24	2920-01-508-2752	5	1
6150-01-374-7768	19E	33	5325-01-508-4953	18	6
5975-01-376-2278	19D	2	5365-01-509-6708	18	3
6150-01-376-3020	19E	20	5310-01-516-3509	4	8
6150-01-377-5490	19E	19		4	14
5995-01-382-9414	19E	12		4A	10
5995-01-382-9430	19E	13		19E	5
5995-01-382-9469	19E	15	5975-01-519-2771	19E	1
5995-01-382-9527	19E	14	4020-01-531-9805	BULK	1
6110-01-386-6720	19G	10	5895-01-549-6065	19C	1
5330-01-390-4342	3	15	5340-01-554-5668	19E	4
2540-01-396-2826	17	1	6150-01-575-9064	9	1
2520-01-397-1074	10	1			
9330-01-408-8229	19E	39			
2815-01-412-2715	1	1			
6080-01-451-5531	19E	16			
6080-01-451-5532	19E	16			
6080-01-451-5533	19E	16			
6080-01-451-7402	19E	16			
6150-01-453-2089	6	1			
5935-01-464-1697	19A	5			



## SUSTAINMENT MAINTENANCE

## PART NUMBER INDEX

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
A-A-59559-1	19A	10		9	32
	19B	10		BULK	2
	19D	25	M13486/1-14	6	18
	19E	29		9	29
A0012266AC	5	1		BULK	3
A52481-5	19D	29		6A	16
A52481-7	19D	31	M13486/1-3	6	26
A52481-8	19D	17		7	7
AA52536-1	9	42		8	8
AA52536-2	9	38		BULK	4
AA52536-3	8	6	M13486/1-5	6	6
AA55622-I-2-8	BULK	1		9	36
AA59559-2	19A	9		BULK	5
	19B	9		6A	6
	19D	33	M13486/1-7	9	12
	19E	30	M17/60-RG142	19A	11
AA59583-407JABT	3	12		19B	11
AS15003-1	12	11		19D	27
ASME B18.6.3	19C	12	M17/75-RG214	BULK	11
B1821BH031C100N	3	7		19C	5
B1821BH038C150N	4	9	M23053/5-105-P	9	44
B1821BH038C200N	19E	7	M2742610136A	12	12
B1821BH038C225N	4	16	M39012/03-0012	19C	15
	4A	8	M39012/05-0101	19C	3
B1821BH038C375N	4	6	M39012/16-0101	19A	4
B1821BH050C138N	3	5		19B	4
EMS-A-C	19E	39		19D	10
G700139	19	11	M39012/25-0011	19C	14
G702573	19	5		19E	26
G703647	19	12	M45913/1-6CG8Z	4	8
M13486/1-11	6	27		4	14

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
	4A	10	MS20659-118	9	28
	19E	5	MS20659-127	6	10
M55074/3-01	19E	32		6A	10
M641/3-1	19C	8	MS20659-135	6	22
M81044/9-14-9	BULK	6		6A	19
	19D	13	MS21044N04	19A	14
	19F	8		19B	14
	19G	9		19C	17
	19H	5		19D	15
M81044/9-20-9	BULK	7		19E	22
	19A	13		19F	4
	19B	13		19G	4
	19D	11		19G	13
M81044/9-22-9	BULK	8		19H	3
	19C	18	MS21044N06	19G	19
M81044/9-4-9	BULK	9	MS21044N08	19E	34
	19G	22	MS21044N3	19E	35
M81044/9-8-9	BULK	10	MS21083N3	19D	4
	19D	26	MS21318-20	3	17
	19G	21	MS25036-106	19D	14
M85049/52-1-10W	7	5		19F	5
MS16625-1218	3	9		19G	2
MS16625-1500	3	29		19H	4
MS16625-1550	3	25	MS25036-109	8	3
MS16997-61	3	21	MS25036-153	6	21
MS17795-128	15	2		6A	18
MS20066-170	4	17	MS25043-20DA	19D	22
	4A	11		19G	15
MS20068-145	3	33	MS25043-22DA	19D	19
MS20230BS3	16	7		19F	10
MS20600B4W3	19C	13		19G	6
MS20659-104	6A	17		19H	8
MS20659-112	9	27	MS25043-24DA	19G	17

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
MS27130-S15	19D	3	MS3452W24-9P	19G	23
MS27145-1	9	35	MS3452W24-9S	19G	18
MS27183-14	4	7	MS3456W10SL4S	6	7
	4	15	MS3456W16-10S	6	7
	4A	9		6A	7
	19E	6	MS3456W20-7S	7	8
MS27183-42	4	2	MS3456W24-7P	7	6
MS27183-8	19D	6	MS3456W24-7S	8	2
MS27508E16B26P	19A	12	MS3456W32-1P	6	17
	19B	12		6A	15
	19D	28	MS3459W10SL-3S	7	4
MS27508E16B26S	19C	19	MS3470W14-4S	19F	6
	19D	12	MS35191-273	19E	9
MS27508E16B35S	19C	16	MS35206-216	19F	7
MS27511B16CL	19D	20	MS35206-217	19A	2
MS28775-043	3	24		19B	2
MS28775-120	3	3		19C	2
MS28776M2-19	12	5		19D	8
MS29513-224	12	6		19E	25
MS3102R14S-1P	19F	9		19F	11
	19H	7		19G	5
MS3102R24-22P	19G	20		19G	14
MS3187-16	7	3		19H	9
MS3367-2-0	19E	31	MS35206-228	19C	6
MS3367-3-0	19E	37	MS35206-230	19G	11
MS3367-7-9	9	34	MS35206-246	19A	8
MS3450W24-7S	8	7		19B	8
MS3450W32-1S	9	7		19D	23
MS3452W18-11P	19	13		19E	27
	19G	8	MS35206-247	19E	3
MS3452W20-14P	19D	30	MS35207-263	4	4
MS3452W20-23S	19D	32	MS35207-265	19E	11
	19G	12	MS35207-266	19D	7

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
MS35333-37	19C	7	11588688-1	19	8
MS35333-38	19A	7	11601698	19	1
	19B	7	11602328	19	2
	19E	36	11616380	12	3
MS35333-39	4	3	11617260	16	1
	19C	11	11617260-16	16	5
	19D	24	11617260-54	16	3
	19E	28	11617260-57	16	2
MS35489-14	9	33	11646725	4	19
MS35489-16	9	30		4A	2
MS35489-63	9	17	11660968	12	1
N1206	5	1	11660969	12	10
NAS1352-4-14P	3	19	11661485	12	14
RRT206	12	4	11663057	19	4
SCC76220	19D	5	11669369	2	1
UG202AU	19E	38	12253195	4	20
10-40457-12S	9	9		4A	3
10861440	12	2	12253512	11	1
10861777	12	9	12253580	4	5
10874855	6	23	12269363	4	1
	9	26	12293185-5	6	8
10874858	9	3		6A	8
10875100	6	20	12293287-7	6	9
10875101	6	19		6A	9
10875193	4	10	12296787-2	9	45
	4A	4	12313635	4	12
10910174-1	3	20		4A	6
10910174-17	3	6	12349611	16	6
10910174-30	3	4	12349618	4	13
10932417	12	8		4A	7
10932465	12	13	12349744	3	27
10932466	12	7	12349745	3	31
10932720	18	1	12349749	3	32

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
12349762-1	4	18	12383807	19D	2
	4A	12	12383841-1	19G	7
12349764	3	10	12383841-3	19G	16
12349765-1	3	23	12383842	19A	3
12349766 NON-ASBESTOS	3	15		19B	3
12349767	3	2	12383854-1	19G	1
12349768	3	16	12383859	19G	10
12349796	3	14	12383862-1	19D	1
12349802	13	1	12383868	19E	33
12349810	7	1	12383869-1	19E	12
12349813	8	1	12383869-2	19E	13
12349864	3	8	12383869-3	19E	14
12349873-1	6	1	12383869-4	19E	15
12349881-3	9	1	12383870-3	19E	18
12349914	9	18	12383870-4	19E	17
12349994	3	28	12383883-3	19B	1
12349995	3	26	12383883-4	19A	1
12350003-1	3	1	12383887	19D	18
12350062-1	3	11	12383890-1	19B	6
12350077	3	13	12383890-2	19A	6
12350185	15	1	12383907	19E	23
12354667	3	18	12383908	19E	20
12358784-1	3	30	12383909	19E	19
12358784-2	3	22	12383948	19C	1
12371043	10	1	12383948-1	19C	1
12381929	21		12383950	19C	4
12382025	19D	21	12383950-4	19C	4
	19E	24	12383951	19C	10
12382144	19C	9	12383967-1	19E	1
12382508-1	19E	16	12383971	19E	2
12382508-2	19E	16	12383972	19E	10
12382508-3	19E	16	12384119	19E	4
12382508-4	19E	16	12408385-1	19F	2

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
12408385-2	19H	2	702853	19	6
12408396	19F	1	703349	19	9
12408397	19H	1	704225	19	3
12474775-1	18	4	704401-2	19	15
12474776	18	3	7056710	9	46
12474777-1	18	6	730051-1	19	16
12474778	18	5	7388359	9	6
12474864	17	1	7388366	6	16
12475177	9	1		9	21
12498200	14	1		6A	12
12531457	21	2	7527631	9	10
12531877	14	2	7700170	19	7
12553486	4A	1	7716634	6	13
12554698	6A	1		6A	13
12DU08	13	3	7716634-1	9	25
13207E6384-4	6	24	7716785	9	4
	9	31	7722322	9	14
23B28045-1	16	4	7722333	9	48
2586229-88	13	2	7723306	9	11
31-4803	19A	5	7723308	9	2
	19B	5	7723309	6	11
	19D	9		9	19
330620	19E	21		6A	11
37-10-101-10-P	19E	8	7982401	9	47
4-060110B	19	14	7982907	9	40
4-060115	19	17	8338561	6	5
44-103-10004	6	2		9	23
	6A	2		6A	5
44B14865	21	1	8338562	6	4
5703829	20			7	10
5705597	1	1		9	22
57K1006	1	1		6A	4
702566	19	10	8338564	6	3

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	9	13
	6A	3
8338566	9	37
8338567	9	39
8338572	9	43
8338573	9	41
8341848	6	12
	9	20
85031-1	19D	16
	19F	3
	19G	3
	19H	6
8526701	9	16
8690468	18	2
8701325-1	9	15
8713567	9	5
8724199	9	8
8724255	6	15
	6A	14
8724258	9	49
8724259	6	14
	9	24
8724494	6	25
	7	9
8724495	8	4
8724497	8	5
8737863	12	17
8737864	12	15
8737865	12	16
8756933	4	11
	4A	5





**CHAPTER 17**  
**SUPPORTING INFORMATION**  
**FOR**  
**M113A3, M577A3, M1064A3, M1068A3, AND M58**

**CHAPTER 17**  
**SUPPORTING INFORMATION**

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**WORK PACKAGE INDEX**

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EXPENDABLE AND DURABLE ITEMS LIST .....	0068
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**SUSTAINMENT MAINTENANCE**
**REFERENCES**


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**SCOPE**

This work package lists all forms, field manuals, technical manuals, Department of the Army pamphlets and regulations, and miscellaneous publications referenced in this manual.

**FORMS**

SF 368	Product Quality Deficiency Report
DA Form 2028	Recommended Changes to Publications and Blank Forms

**FIELD MANUALS**

FM 4-25.11	First Aid
FM 10-16	General Fabric Repair

**TECHNICAL MANUALS**

TM 750-254	Cooling Systems: Tactical Vehicles
TM 43-0002-33	Destruction of Conventional Ammunition and Improved Conventional Munitions (ICM) to Prevent Enemy Use
TM 9-2520-238-34	Direct Support and General Support Maintenance: Right Angle Drive, Cooling Fan; Gearcase, Transfer; Drive Assembly, Final; Differential, Steering Control; Brake, Single Disk; Cylinder Assembly, Hydraulic Brake
TM 9-2520-272-40	Sustainment Maintenance Manual for Cross Drive Transmission with Container X200-4A
TM 9-2520-272-40P	Sustainment Maintenance Repair Parts and Special Tools List for Cross Drive Transmission with Container X200-4A
TM 9-2815-205-24	Field and Sustainment Maintenance Manual for 6V53/6V53T Engines, Diesel with Containers
TM 9-2815-205-24P	Field and Sustainment Maintenance Repair Parts and Special Tools List for 6V53/6V53T Engines, Diesel with Containers
TM 9-214	Inspection, Care, and Maintenance of Antifriction Bearings
TM 11-7010-256-12&P	Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List) For Tactical Command Systems Used In M1068 Standardized Integrated Command Post System
TM 3-1040-285-10	Operator's Manual: Generator, Smoke, Mechanical: Mechanized Smoke Obscurant System, M58 (NSN 1040-01-413-8332)
TM 9-2350-277-10	Operator's Manual: Carrier, Personnel, Full-Track, Armored, M113A3 (NSN 2350-01-219-7577) (EIC: AEY); Carrier, Command Post, Light Tracked, M577A3 (2350-01-369-6085) (EIC: AE7); Carrier, Mortar, 120 MM M121, Self Propelled, M1064A3 (2350-01-369-6082) (EIC: AE8); Carrier, Standardized Integrated Command Post System (SICPS), M1068A3 (2350-01-369-6086) (EIC: AFC); Carrier, Mechanized Smoke Obscurant, M58 (2350-01-418-6654) (EIC: 5CG)
TM 9-2540-207-14&P	Operator, Field, and Sustainment Maintenance Manual (Including Repair Parts and Special Tools List) for Heater, Vehicular Compartment (NSN 2540-01-396-2826): Model A-20
TM 10-8340-243-13&P	Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modular Command Post System (MCPS), Small Type I, Green, 5-4-6340-1 (NSN 8340-01-323-2454) Type I, Tan, 5-4-6340-2

	(NSN 8340-01-334-7529) Type III, Green, 5-4-9690-1 (NSN 8340-01-528-4188) Type III, Tan, 5-4-9690-2 (NSN 8340-01-528-8210) (This item is included on EM 0153)
TM 43-0139	Painting Instructions for Army Materiel
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use
TM 750-244-7	Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (US Army Tank-Automotive Command)
TM 9-1015-250-23&P	Unit and Direct Support Maintenance (Including Repair Parts and Special Tools List) (Including Depot Repair Parts): Mortar, 120 MM: Towed M120 (NSN 1015-01-226-1672) (EIC: 4SL); Mortar, 120MM: Carrier-Mounted M121 (1015-01-292-3801) (EIC: 4SE); Trailer, Mortar, 120mm: M1100 (1015-01-227-1736) (EIC: 4SM)
TM 9-2350-277-13&P	Field Maintenance Manual Including Repair Parts and Special Tools List: Carrier, Personnel, Full-Tracked, Armored, M113A3 (NSN 2350-01-219-7577) (EIC: AEY); Carrier, Command Post, Light Tracked, M577A3 (2350-01-369-6085) (EIC: AE7); Carrier, Mortar, 120-MM M121, Self Propelled, M1064A3 (2350-01-369-6082) (EIC: AE8); Carrier, Standardized Integrated Command Post System (SICPS), M1068A3 (2350-01-369-6086) (EIC: AFC); Carrier, Mechanized Smoke Obscurant, M58 (2350-01-418-6654) (EIC: 5CG)
TM 3-1040-285-20	Unit Maintenance Manual: Generator, Smoke, Mechanical: Mechanized Smoke Obscurant System, M58 (NSN 1040-01-413-8332)

**MISCELLANEOUS PUBLICATIONS**

MIL-DTL-45360	Processing for Storage and Shipment of Carriers, Personnel, Full Tracked: Armored, M113A2 and M113A3; Mortars, Self-Propelled, 107MM, M106, M106A2, and 81MM, M125A1 and M125A2, and 120MM, M1064
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) User's Manual
DRAWING 12472301	Ground Combat Vehicle Welding Code – Aluminum

**END OF WORK PACKAGE**

**SUSTAINMENT MAINTENANCE**  
**EXPENDABLE AND DURABLE ITEMS LIST**

**INTRODUCTION****Scope**

This work package lists expendable and durable items you will need to operate and maintain the M113A3, M577A3, M1064A3, M1068A3, and M58 Carriers. This list is for information 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), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

**Explanation of Columns in the Expendable/Durable Items List**

*Column (1) Item No.* This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (WP 0098, item 5)).

*Column (2) Level.* This column identifies the lowest level of maintenance that requires the listed item.

H = Sustainment Maintenance

*Column (3) National Stock Number (NSN).* This is the NSN assigned to the item which you can use to requisition it.

*Column (4) Item Name, Description, Part Number/(CAGEC).* This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

*Column (5) U/I.* Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

**Table 1. Expendable and Durable Items List**

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
1	H	8040-00-664-4318	ADHESIVE EC2141 (04963)	PT
2	H	8040-01-068-2423	ADHESIVE 2141 (94960)	QT
3	H	8040-00-839-4919	ADHESIVE SEALANT EC-1099 (04963)	QT
4	H	8030-00-664-7884	CANVAS PRESERVATIVE TT-P-595 (81348)	GL
5	H	6850-01-277-0595	CLEANING COMPOUND 134-HI-SOLV (59557)	CN
6	H	8305-00-170-3903	COTTON DUCK CLOTH CCCC428 (81348)	YD
7	H	5350-00-221-0872	CROCUS CLOTH ANSI B74.18 (80204)	PG

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
8	H	9150-01-421-1432	ENGINE LUBRICATING OIL MIL-PRF-2104 (81349)	DR
9	H	7930-00-282-9699	GENERAL DETERGENT 7930-00-282-9699 (83421)	BX
10	H	5970-00-161-7422	INSULATING VARNISH 1201 (24446)	GL
11	H	5970-00-816-6056	INSULATION TAPE AA55809-C0 (58536)	RO
12	H	8310-00-988-1301	POLYESTER THREAD MIL-DTL-32072 (81349)	TU
13	H	8040-01-383-7059	PRIMER, ADHESIVE LOCTITE 7649 (05972)	KT
14	H	8030-00-174-2598	SEALING COMPOUND AMS-S8802 (81343)	KT
15	H	8030-01-166-0675	SEALING COMPOUND 56747 (05972)	TU
16	H	3439-00-255-9935	SOLDERING FLUX A-A-51145 (58536)	OZ
17	H	3439-00-453-5472	TIN ALLOY SOLDER SN60WRMAP2 0.0361LB (81348)	SL
18	H	8305-00-616-0022	VINYL COATED NYLON CLOTH MIL-PRF-20696F (81349)	YD
19	H	3439-00-803-9498	WELDING ELECTRODE AWSA5.10-80 ER5356 0.047 1/2LB (31505)	SL
20	H	7920-00-205-1711	WIPING RAG 7920-00-205-1711 (80244)	BE

END OF WORK PACKAGE

**SUSTAINMENT MAINTENANCE  
TOOL IDENTIFICATION LIST**

**INTRODUCTION**

**Scope**

This work package lists all common tools, supplements and special tools/fixtures needed to maintain the M113A3, M577A3, M1064A3, M1068A3, and M58 carriers.

**NOTE**

**There is only one supply catalog with numerous component lists within it. The supply catalog number is SC 9999-01-SKO and is only available in digital form.**

**Explanation of Columns in the Tool Identification List**

*Column (1) Item No.* This number is assigned to the entry in the listing and is referenced in the initial setup to identify the item (e.g., Extractor WP 0090, item 32).

*Column (2) Item Name.* This column lists the item by noun nomenclature and other descriptive features (e.g., Gage, belt tension).

*Column (3) National Stock Number (NSN).* This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

*Column (4) Part Number/(CAGEC).* 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. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.

*Column (5) Reference.* This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

**Table 1. Tool Identification List**

(1) Item No.	(2) Item Name	(3) National Stock Number(NSN)	(4) Part Number/ (CAGEC)	(5) Reference
1	APRON, UTILITY		KTC S0126 (00NS2)	CL 4910-95-A81
2	DELETED			
3	BRUSH, WIRE, SCRATCH		KTC S0148 (00NS2)	CL 4910-95-A81
4	DELETED			
5	DELETED			
6	GOGGLES, INDUSTRIAL	4240-00-052-3776		CL 4910-95-A72
7	DELETED			
8	DELETED			
9	HAMMER SET, HOLDER AND INSERTS		KTC S0225 (00NS2)	CL 4910-95-A81

(1) Item No.	(2) Item Name	(3) National Stock Number(NSN)	(4) Part Number/ (CAGEC)	(5) Reference
10	DELETED			
11	DELETED			
12	DELETED			
13	PLIERS SET, RETAINING RING		KTC S0260 (00NS2)	CL 4910-95-A81
14	DELETED			
15	DELETED			
16	PLUG SET, RADIATOR TEST	4910-00-273-3660		CL 4910-95-A68
17	POSITIONER, BEARING	4910-01-128-0093	12313101 (19207)	TM 9-2350-277-13&P
18	PRESS, ARBOR, HAND OPERATED	3444-00-449-7295	AA59384-12A060 (58536)	
19	DELETED			
20	PULLER MECHANICAL	5120-00-937-6140	J22490 (33287)	TM 9-2350-277-13&P
21	SCREW, CAP, SOCKET HEAD (JACKING)	5305-00-978-9380	MS16997-61 (96906)	IMPROVISED TOOL
22	SEWING MACHINE, INDUSTRIAL	3530-01-182-8560	206RB1 (90338)	
22A	SHOP EQUIPMENT, RADIATOR	4910-00-071-0747	SC4910-95CLA76 (19204)	CL 4910-95-A76
23	SOCKET DRIVER, 3/8" DRIVE, CHROME, HEX 3/16"	5120-01-367-3457	FA6E (88244)	CL 4940-95-E42
23A	SOLDERING TORCH KIT		KTC S0144 (00NS2)	CL 4910-95-81A
24	STAKE, BEARING	5120-01-128-0094	12313102 (19207)	TM 9-2350-277-13&P
25	STAND, RADIATOR TEST AND REPAIR	4910-00-078-9190	70A (92418)	CL 4910-95-A68
26	TOOL KIT, AUTOMOTIVE FUEL AND ELECTRICAL SYSTEM REPAIR	5180-00-754-0655		CL 5180-95-CL-B08
27	TOOL KIT, ELECTRICAL CONNECTOR REPAIR	5180-00-876-9336	7550526 (19204)	CL 4940-98-E42
28	TOOL KIT, ELECTRONIC EQUIPMENT	5180-00-610-8177	TK105G (80058)	CL 5180-91-CL-R07
29	TOOL KIT, GENERAL MECHANIC'S	5180-01-548-7634	PD484 (19200)	CL 5180-95-B48
30	DELETED			



(1) Item No.	(2) Item Name	(3) National Stock Number(NSN)	(4) Part Number/ (CAGEC)	(5) Reference
31	DELETED			
32	DELETED			
33	TOOL KIT, RADIO EQUIPMENT	5180-00-064-5178	TK101G (80058)	CL 5180-91-CL-R13
34	DELETED			
35	WRENCH KIT, METRIC	5120-01-070-8954	ZZ-WIM12S (72315)	CL 5180-95-B08
36	WRENCH, ADJUSTABLE		KTC S0977 (00NS2)	CL 4910-95-A81
37	DELETED			
38	WRENCH, TORQUE, 3/8 DRIVE, 0-300 LB-IN		KTC S0987 (00NS2)	CL 4910-95-A81
39	DELETED			
40	WRENCH, TORQUE, 3/8 DRIVE, 5-75 LB-FT		KTC S0989 (00NS2)	CL 4910-95-A81
41	DELETED			
42	WRENCH, TORQUE, 1/2 DRIVE, 50-250 LB-FT		KTC S0991 (00NS2)	CL 4910-95-A81
43	DELETED			
44	DELETED			

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<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER <b>TM 9-2350-277-40&amp;P</b>						DATE <b>30 April 2012</b>	TITLE <b>Sustainment Maintenance for M113 FOV</b>
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given)	
	0007-3					Figure 2, Item 9 should show a lockwasher. Currently shows a flat washer.	
	0018-2					Cleaning and inspection, Step 6, reference to governor support pin (14) is wrong reference. Reference should be change to (12).	
<h1>SAMPLE</h1>							
TYPED NAME, GRADE OR TITLE  <i>Your Name</i>						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION  <i>Your Phone Number</i>	SIGNATURE  <i>Your Signature</i>

<b>TO</b> (Forward direct to addressee listed in publication) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-IM/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	<b>FROM</b> (Activity and location) (Include ZIP Code)  <i>Your Address</i>	<b>DATE</b> <i>Date you filled out this form</i>
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**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION/FORM NUMBER <b>TM 9-2350-277-40&amp;P</b>	DATE <b>30 April 2012</b>	TITLE <b>Sustainment Maintenance for M113 FOV</b>
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<h1>SAMPLE</h1>								

**PART III – REMARKS** (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

TYPED NAME, GRADE OR TITLE <i>Your Name</i>	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION <i>Your Phone Number</i>	SIGNATURE <i>Your Signature</i>
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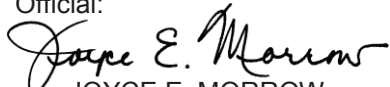
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By Order of the Secretary of the Army:

Official:

  
JOYCE E. MORROW  
*Administrative Assistant to the  
Secretary of the Army*

1211402

RAYMOND T. ODIERNO  
*General, United States Army  
Chief of Staff*

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To be distributed in accordance with the initial distribution number (IDN) 372639 requirements for TM 9-2350-277-40&P.



## THE METRIC SYSTEM AND EQUIVALENTS

<p><b>Linear Measure</b></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><b>Weights</b></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><b>Liquid Measure</b></p> <p>1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces          1 Liter = 1000 Milliliters = 33.82 Fluid Ounces</p>	<p><b>Square Measure</b></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><b>Cubic Measure</b></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><b>Temperature</b></p> <p><math>9/5 C^{\circ} + 32 = F^{\circ}</math>  <math>5/9 (F^{\circ} - 32) = C^{\circ}</math>          212° Fahrenheit is equivalent to 100° Celsius          90° Fahrenheit is equivalent to 32.2° Celsius          32° Fahrenheit is equivalent to 0° Celsius</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

